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INSTALLATION RESTORATION PROGRAM
STAGE 2-1
REMEDIAL INVESTIGATION
VOLUME 3: APPENDICES B - K

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As part of the ongoing Installation Restoration Program at Beale Air Force Base, California, 24 sites of concern have been identified. During the IRP Stage 2-1 Remedial Investigation, which is the subject of this technical report, 16 of the 24 sites were investigated through sampling and analysis of environmental media. Two of the 24 sites were investigated using surface geophysics only, and 1 of the sites was the subject of records search activities only. The remaining 5 sites did not receive any IRP actions during IRP Stage 2-1.

This technical report summarizes the activities accomplished and results obtained during IRP Stage 2-1 Remedial Investigation, through four quarterly rounds of water sampling. Included in this report are discussions of the IRP program origin and objectives, environmental setting of Beale AFB, field and laboratory investigation methods, results obtained, and recommendations for future IRP actions. Eleven appendices are included which present data and relevant information regarding Stage 2-1 activities.

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APPENDIX B

DELIVERY ORDER 0010

STATEMENT OF WORK (SOW)

THE INSTALLATION RESTORATION PROGRAM
REMEDIAL INVESTIGATION (RI)

STAGE 2 FOR

Beale AFB, Marysville, California

I. DESCRIPTION OF WORK

1.1 **Scope.** The objective of the Air Force Installation Restoration Program (IRP) is to assess past hazardous waste disposal and spill sites on Air Force installations and develop remedial actions consistent with the National Contingency Plan (NCP) for those sites which pose a threat to human health and welfare or the environment. The intent is to conduct the remedial investigation and feasibility study in parallel instead of in serial fashion. The USAFOEHL/TS Handbook, Version 2.0, dated April 88 (mailed under separate cover) and the Beale AFB, CA, Stage 2 Work Plan and Quality Assurance Project Plan (QAPP) are an integral part of this task. All references in this Statement Of Work to the "Handbook" refer to the above version of the USAFOEHL/TS Handbook and imply by reference that it is provided under separate cover. The contractor shall comply with all Handbook, applicable portions of the Work Plan and QAPP requirements. Section 1 of the Handbook lists all documents that apply to this Statement of Work (SOW). The contractor shall accomplish the following actions for this stage of the IRP process at Beale AFB CA:

a. literature search,

b. determine public health and environmental requirements,

c. field investigation,

d. prepare Reports, Plans and Decision Documents.

1.2 **Literature Search.** Conduct a literature search to determine the geological, hydrogeological, and environmental settings for this investigation. Requirements are supplied under separate cover (see "Environmental Setting", Section II of the Report Format, contained in Section 3, USAFOEHL/TS Handbook). When gathering information for the demographic setting and conducting the well inventory, consider only those populations and wells within a three mile radius of the installation. Sources include: IRP Phase I Report, IRP Phase II Stage 1 Report, Federal and State geological agency reports, academic theses and related university research, municipality and county reports, and historical and current aerial photographs. Cite all bibliographic references reviewed, including personal communications, in the appropriate part of the report. Identify gaps in data or analyses which may prevent an adequate determination of contaminant migration patterns or other factors critical to assessing the hazard potential associated with the individual sites.

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1.3 **Public Health and Environmental Requirements.** Review the Data Quality Objectives developed during the previous IRP Stage and reevaluate the threat of contaminants to public health and welfare of the environment through a literature search of documents. This effort shall satisfy the requirements contained in the Superfund Amendments and Reauthorization Act (SARA) of 1986, to identify all Applicable or Relevant and Appropriate Requirements (ARARs). Sources for ARARs are listed in the Handbook, Section 2.

1.4 **Field Investigation.** As used in this SOW, 'field investigation' refers to the collection of all data, environmental samples, and subsequent laboratory analysis of samples. The purpose of data collection, sample collection and laboratory analysis is to determine whether any contaminants generated from installation activities are entering the environment. The field investigation is used to determine the source, extent, and migration of any identified contaminants, and the magnitude of contamination relative to ARARs and any naturally occurring or background concentrations for specific compounds. All decisions concerning any aspect of the field investigation shall be made in coordination with the USAFOEHL/TS Technical Program Manager (TPM).

1.4.1 **Quality Assurance/Quality Control (QA/QC).** A quality assurance/quality control (QA/QC) program shall be conducted and documented for ALL work specified in this Delivery Order. The USAFOEHL approved QA/QC. program is described in the IRP Stage 2 Quality Assurance Project Plan (QAPP).

1.4.1.1 Data generated under the QA/QC program shall be used to evaluate the analytical results assembled for each site and to formulate conclusions and recommendations pertaining to the need for additional site investigations or remediation.

1.4.1.2 QA/QC requirements for chemical analyses, laboratory operations, required detection limits, field operations, sampling, sample preservation, sample holding times, equipment decontamination, and chain-of-custody are delineated in the Handbook, Section 12. Project specific QA/QC requirements, if applicable, are described in paragraph 1.4.12, Site-specific Requirements.

1.4.1.3 Annex A, Tables A-4 and A-5 specify the maximum number of field QA/QC samples allowed for each analytical parameter for the entire investigative effort. The distribution of field QA/QC samples by site, sampling round, is specified in the IRP Stage 2 Work Plan.

1.4.2 **Drilling Supervision.** The field investigation (including all drilling and sampling operations) shall be supervised by a registered geologist, engineering geologist, hydrogeologist or Professional Engineer certified by the State to install test wells. A detailed log of the conditions and materials penetrated during the course of the work shall be maintained by the geologist/hydrogeologist on site. Decisions on well and boring locations, well depths, screened intervals, and other well construction details shall be made collectively by the USAFOEHL/TS TPM and the supervising geologist/hydrogeologist.

1.4.3 **Regulatory Requirements and Permits.** All well drilling, development, purging, sampling methods, and other activities pertaining to this effort shall conform to State and other applicable regulatory agency requirements. Cite references in an appendix to the Final Report (paragraph I.1.6.1). Complete permits, applications, and other documents which may be required by local and/or State regulatory agencies for the installation of test wells. File these documents with appropriate agencies and pay all applicable permitting and filing fees.

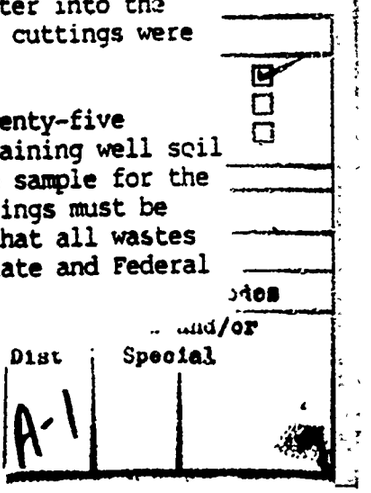
1.4.4 **Borehole Installation.**

1.4.4.1 **Soil Borings.** Drill all borings using hollow-stem auger techniques. Conduct a maximum of fifty-five (55) soil borings, not to exceed a total of two thousand four hundred forty-five (2445) linear feet (see Annex A, Table A-1 for distribution by site). Obtain split-spoon samples (using ASTM Method D-1586) for laboratory analysis. Collect a maximum of two hundred eighty-one (281) boring samples for laboratory analysis.

1.4.4.2 **Lithologic Samples.** For purposes of lithologic descriptions, obtain split-spoon samples at five (5) foot intervals or less frequent as directed by the USAFOEHL/TS TPM. Perform Standard Penetration Test (SPT) and split-spoon sampling as detailed in ASTM D 1586. Monitor all split-spoon samples at the intervals specified with a photoionization meter or appropriate Organic Vapor Analyzer (OVA) and record the vapor levels detected. As often as necessary, describe the continuous drill cuttings to indicate significant changes in lithology or characteristic properties that relate to the strata penetrated. Follow the standard identification practices detailed in ASTM D-2488. Correlate the materials encountered with local geologic formations as determined from the literature search. Include observations made by the driller and hydrogeologist during drilling such as depth to water, penetration rate, drill rig behavior, and other observations that might be indicative of changes in formation characteristics. Compile all of this information into standard boring or well logs. Indicate on the logs the intervals where discrete split-spoon samples were taken and the corresponding OVA or HNu readings and SPT data.

1.4.4.3 **Air Monitoring During Drilling.** Monitor the ambient air during all well drilling and soil boring work with a photoionization meter or appropriate organic vapor analyzer to identify any generation of potentially hazardous and/or toxic vapors or gases. Include air monitoring results in the borehole logs. If soil encountered during borehole drilling is suspected to be hazardous because of abnormal discoloration, odor or air monitoring levels, containerize the soil cuttings in new, unused drums (a maximum of twenty-five (25) drums). (Note: Contractor is responsible for providing all necessary containers, i.e., 55-gallon drums.) Enter into the boring logs the depth(s) from which suspected contaminated soil cuttings were collected.

1.4.4.4 **Soil Toxicity Sampling.** Collect a maximum of twenty-five (25) composite samples, one from the contents of each drum containing well soil cuttings specified in paragraph I.1.4.4.3. Test each composite sample for the parameters specified in Table A-3 to determine if the soil cuttings must be disposed of as hazardous waste. Contractor shall also ensure that all wastes are properly marked, labeled, and containerized according to State and Federal



regulations. Beale AFB will act as the generator and will be preparing and signing manifests and tracking the chain-of-custody for the hazardous wastes.

1.4.4.5 **Water Level Measurements.** Measure water levels in all boreholes after the water level has stabilized. Examine the water surface for the presence of hydrocarbons. Include this information in the borehole logs. Record soil moisture conditions (moist, wet, saturated,) in the boring log.

1.4.4.6 **Sealing Boreholes.** Tremie-grout all soil boreholes with a bentonite/cement slurry. The slurry shall be prepared by adding 3-5 pounds of bentonite and 6.5 gallons of clean water for each 94 pound sack of Type I Portland cement. Boreholes shall be adequately resealed from the bottom to the land surface to preclude future migration of contaminants.

1.4.4.7 **Marking Borehole Locations.** Permanently mark each soil boring location. Record the location on a project map for each specific site or zone, whichever is applicable.

1.4.5 **Well Installation.** Drill a maximum of twenty-six (26) wells for the entire installation (see Annex A, Table A-1 for distribution by site). Total footage for all wells in this task shall not exceed thirty-three hundred (3300) linear feet. Total screening for all wells in this task shall not exceed five hundred (525) linear feet.

1.4.5.1 **Well Drilling.** Drill all wells using air rotary, direct circulation technique. Temporary casings and/or boreholes shall be sufficiently large to provide a minimum of 3-inch annular space on all sides of the well casing and screen during well completion. Ensure wells are installed straight, plumb and centered in the borehole. Drill and describe the lithology of materials encountered as described for borings in paragraph I.1.4.4.2. Drill cuttings shall not be containerized unless visual inspection, odor, and OVA readings indicate contamination. Containerize suspected drill cuttings and test for toxicity as described in paragraphs I.1.4.4.3 and I.1.4.4.4. Avoid installing wells in depressions or areas subject to frequent flooding and/or standing water. If wells must be installed in such areas, design the wells such that standing water does not leak into the top of the casing or cascade down the annular space.

1.4.5.2 **Well Casing Requirements.** Construct each well with 4-inch inside diameter (I.D.), Schedule 40, PVC casing. Use threaded screw-type joints only. Glued fittings are not permitted. Flush-thread all connections. The well materials shall be certified by the National Sanitation Foundation or the ASTM.

1.4.5.3 **Well Depth.** Install wells at a sufficient depth to collect representative samples of aquifer quality and to intercept contaminants that may be floating or stratified in the aquifer. Wells are expected to be about 120 feet deep.

1.4.5.4 **Well Screening Requirements.**

a. Screen each well using 4-inch I.D., wire wrap 304 stainless steel screen having up to 0.010-inch openings. Screen opening size may be

smaller based upon borehole geology or sieve analysis of aquifer materials. Each well shall be screened across the water table into the upper part of the aquifer (about 20 feet of screen). At three sites, deeper wells shall be installed with screens entirely below the water table. Cap the bottom of the screen.

b. Screen all wells so as to collect floating contaminants and to allow for all yearly fluctuations of the water table (except for deeper wells).

c. Once the screen is in place, install the sand/gravel pack. If the formation is compatible with the screen opening size, allow the formation to collapse around the well screen. Supplement with washed and bagged, rounded silica sand or gravel with a grain size distribution compatible with the screen and the formation. Place the pack from the bottom of the borehole to two (2) feet above the top of the screen. The sand/gravel pack shall not extend into an overlying formation. Tremie a two (2) foot bentonite seal (granulated or pellets) above the sand/gravel pack. Ensure that the bentonite forms a complete seal. Grout the remainder of the annulus to the land surface with a Type I Portland cement/bentonite slurry. The slurry shall be prepared by adding 3-5 pounds of bentonite and 6.5 gallons of clean water for each 94 pound sack of Type I Portland cement. The bentonite used shall be free of additives that may affect water quality.

1.4.5.5 **Well Completion.** Complete all test wells using the following specifications:

a. Coordinate with the Base Point Of Contact (POC) to determine well completion (flush or projected above the ground surface) requirements.

(1) If well stick-up is of concern in an area, complete the well flush with the land surface. Cut the casing two to three inches below land surface, and install a protective locking lid consisting of a cast-iron valve box assembly. Center the lid assembly in a three (3) foot diameter concrete pad sloped away from the valve box. Ensure that free drainage is maintained within the valve box. Also, provide a screw-type casing cap to prevent infiltration of surface water. Maintain a minimum of one (1) foot clearance between the casing top and the bottom of the valve box. Clearly mark the well number on the valve box lid and well casing using an impact labeling method.

(2) If an above-ground-surface completion is used, extend the well casing two or three feet above land surface. Provide an end plug or casing cap for each well. Shield the extended casing with a steel guard pipe (sleeve) which is placed over the casing and cap and seated in a two-foot by two-foot by four-inch (2' X 2' X 4") concrete surface pad. Slope the pad away from the well sleeve. Install a lockable cap or lid on the guard pipe. Install three (3), three-inch diameter concrete-filled steel guard posts if the base POC determines the well is in an area which needs such protection. The guard posts shall be five (5) feet in total length and installed radially from each wellhead. Recess the guard posts approximately two (2) feet into the ground and set in concrete. Do not install the guard posts in the concrete pad placed at the well base. Fill each guard post with concrete. Clearly mark the well number on the well

protective sleeve exterior using paint and/or impact lettering. The base POC will specify color to blend with the paint scheme of the base.

b. All wells shall be secured as soon as possible after drilling. Provide corrosion resistant locks for both flush and above-ground well assemblies. The locks shall either have identical keys or be keyed for opening with one master key. Turn the lock keys over to the Base POC following completion of the field effort.

c. Include well completion summaries in the Final Report (paragraph I.1.11.1).

1.4.5.6 **Well Logs.** For each well, prepare a well completion log and schematic diagram showing well construction details. Lithologic descriptions and other information included in the well logs shall conform to the specifications of paragraph I.1.4.4.2.

1.4.5.7 **Well Development.**

a. Develop each well as soon as practical after well completion and grout curing with a submersible pump, bailer, vented surge block, and/or airlift method. Continue well development until the discharge water is clear and free of sediment to the fullest extent possible (i.e., turbidity less than 5 NTU). Measure the rate of water production, pH, specific conductance, and water temperature during well development and include this information in the Final Report (paragraph I.1.11.1).

b. Following well development and after water levels have stabilized, the water-yielding properties of each well shall be determined. Each new well shall be pumped, using a submersible pump, and the discharge and drawdown measured for a period of 1 to 4 hours. Using the discharge and drawdown data, a specific capacity shall be computed for each well.

1.4.5.8 **Water Level Measurements.** Measure water levels at all test wells as feet below the measuring point elevation (usually top of casing) to the nearest 0.01 foot. Report as feet above mean sea level (MSL). Measure static water levels in wells prior to well development and before all well purging preceding sampling events.

1.4.5.8.1 Before each water sampling event, measure water levels at all wells within an 8-hour period for the construction of base-wide potentiometric contour map. In addition, the contractor shall record water levels before well purging and after sampling of each well.

1.4.5.9 **Well Abandonment.** Recommend well abandonment method(s) or technique(s) which are applicable to the type of test wells installed and the geological conditions. Consider that these wells will be abandoned at some future date after the study objectives have been met. The actual process of well abandonment is not a part of this task order. Insure that the recommended method(s) is consistent with State and local well abandonment guidelines or regulations.

1.4.6 **Shallow Soil Augerings.** Conduct a maximum of eighty-four (84) shallow soil augerings using a hand or power auger (see Annex A, Table A-

1 for distribution by site). Total footage for all shallow soil augerings shall not exceed one hundred sixty-six (166). Permanently mark each location. Record the location on a project map for each specific site or zone, whichever is applicable.

1.4.7 Surveying. Determine by certified land surveyor the elevations and locations of all newly installed test wells, soil borings, and sampling points. This shall be a third order survey. Notch the top of the riser casing where well elevations are established. Record the positions on both project and site-specific maps. Bench marks used must have previously been established from, and be traceable to, a US Coast and Geodetic Survey (USCGS) or US Geological Survey (USGS) survey marker. Clearly identify all bench mark locations on the base map.

1.4.8 **Well and Boring Precautions.** Mark the field locations of all test wells, soil borings, and shallow soil augerings during the planning/mobilization phase of the field investigation. Consult with base personnel to minimize disruption of base activities, to properly position wells with respect to site locations, and to avoid underground utilities. Obtain written approval from the base civil engineer prior to commencement of digging or drilling operations.

1.4.9 **Well and Borehole Cleanup.** Dispose of all uncontaminated well/borehole cuttings per direction of the base civil engineer and clean the general area following the completion of each well/borehole. If approved by the base civil engineer, uncontaminated cuttings may be spread over the general area in the vicinity of the well or borehole or trucked to more suitable areas for disposal. Containerize and store cuttings suspected to be hazardous in accordance with paragraph I.1.4.4.3. Transport these drums to an accumulation point within the installation boundary designated by the Base POC. The base is responsible for ultimate disposal of contaminated soils using base resources.

1.4.10 **Geophysical Surveys**

1.4.10.1 **Magnetometer Survey.** Conduct for a maximum of one day on Site 16, one day on Site 17, one day on Site 20, and ten days on Site 22 to locate buried tanks.

1.4.11 **Sample Collection.**

1.4.11.1 **Ground and Surface Water Samples.** Collect a maximum of one hundred fifty-nine (159) groundwater and thirty-six (36) surface water samples. The maximum number of analyses for each parameter and the required analytical method is given in Table A-4, Annex A.

1.4.11.2 **Soil and Sediment Samples.** Collect a maximum of four hundred fifty-four (454) drill cuttings, soil and sediment samples. The maximum number of analyses for each parameter and the required analytical method is given in Table A-5, Annex A.

1.4.12 **Site-specific Requirements.** Perform the site-specific requirements as listed in the following subparagraphs. The field tasks shall be performed as specified below. Refer to Annex A of this SOW, Table A-1 for

the maximum number of wells, borings, soil gas, and geophysical surveys by site. Table A-2 lists water analyses by site, and Table A-3 lists soil analyses by site. All chemical analyses shall be performed in a California State certified laboratory.

1.4.12.1 Site 1. West Drainage Ditch.

a. Install a maximum of five (5) new monitoring wells. Two of these wells shall be screened into the deeper zone (less than 160 feet from land surface) (two locations are to be "paired wells"). Collect water samples from each of the new wells and one existing well quarterly for one year (four sampling rounds). Analyze these samples for the chemical parameters listed in Table A-2.

b. Collect ditch water grab samples at five (5) locations, quarterly for one year (four sampling rounds). Analyze these samples for the chemical parameters listed Table A-2. If possible, collect one sample during or immediately following a precipitation event.

c. Collect ditch sediment samples at four (4) locations. At each location, obtain samples at three points across the ditch profile. If water is present, drive tube sampler up to 2 feet in depth and retain upper and lower 6 inches. If the ditch is dry, obtain samples with a hand auger at depth of 0 to 0.5 foot and 1.5 to 2.0 feet. Analyze these samples for the chemical parameters listed in Table A-3.

1.4.12.2 Site 2. Photowaste Water Treatment Plant.

a. Collect water samples from each of the five existing wells, quarterly for one year (four sampling rounds) and analyze these samples for the chemical parameters listed in Table A-2.

b. Collect a maximum of six (6) sludge pond sediment samples, using hand augers, and analyze them for the chemical parameters listed in Table A-3.

c. Drill (2) two angled borings, using hollow-stem auger drill rig, from the edge of the ponds. Angle hole shall be approximately 30 degrees from vertical. Collect split-spoon soil samples at 10-foot intervals to a maximum of 50 feet (10, 20, 30, 40, and 50) and analyze them for the parameters listed in Table A-3.

d. Drill one (1) 50-foot-deep boring at each of two injection wells (No. 1 and No. 3), using hollow-stem augering. Collect split-spoon soil samples at 10-foot intervals to a maximum of 50 feet (10, 20, 30, 40, and 50) and analyze them for the parameters listed in Table A-3.

e. Drill one (1) 50-foot-deep boring and one (1) 25-foot boring at Injection Well No. 2 and collect split-spoon soil samples at 5, 10, 15, 20, 25, 30, 40, 50 feet for the chemical parameters listed in Table A-3.

f. Collect surface soil samples at eight locations near the photo wastewater treatment plant using hand augers. One sample from each

location shall be retained for analyses of the chemical parameters listed in Table A-3.

g. Drill one (1) boring, in an undisturbed location, to a depth of 50 feet. Collect split-spoon soil samples at 10-foot intervals (0, 10, 20, 30, 40, 50) for background characterization.

h. One soil sample showing the highest pentachlorophenol (PCP) result shall be analyzed for PCDDs/PCDFs by the method listed in Table A-3.

i. Drill one (1) monitoring well and screen in lower part of the aquifer. Collect water samples quarterly and analyze for the chemical parameters listed in Table A-2.

1.4.12.3 **Site 3. Fire Protection Training Area.**

a. Collect one groundwater sample from each of the five (5) existing wells, semiannually for one year (two sampling rounds), and analyze the samples for the chemical parameters listed in Table A-2.

b. Drill a maximum of five (5) hollow-stem auger borings to a depth of approximately 50 ft each. Locate two of these borings within Pit No. 2, two approximately 10 feet from the underground storage tanks, and one from the undisturbed area for background. Collect split-spoon soil samples every 10 feet to depth (0, 10, 20, 30, 40, and 50) and analyze for the chemical parameters listed in Table A-3.

c. Drill up to four (4) hollow-stem auger borings in area of previous FPTA Pit No. 1 to a depth of 20 feet. Collect split-spoon soil samples at 5 foot intervals (0, 5, 10, 15, 20) and submit only those vapors detected by field analyzers. Analyze these samples for the chemical parameters listed in Table A-3.

d. Drill one angled boring (50 feet deep) near overflow pond and collect split spoon samples at 10, 20, 30, 40 and 50 feet. Analyze for chemical parameters listed in Table A-3.

e. Collect sediment samples at three locations within the overflow pond using hand augers. Analyze these samples for the chemical parameters listed in Table A-3.

f. Install one (1) new well and collect one groundwater sample semiannually for one year (two sampling rounds). Analyze the samples for the chemical parameter listed in Tables A-2.

1.4.12.4 **Site 4. Battery Shop Dry Well.**

a. Collect water samples from the existing well, semiannually for one year (two sampling rounds). Analyze these samples for the chemical parameters listed in Table A-2.

b. Drill one (1) hollow-stem angled boring to a depth of 50 feet and collect split-spoon soil samples every 10 feet (10, 20, 30, 40, 50) and analyze these samples for the chemical parameters listed in Table A-3.

1.4.12.5 **Site 5. SR-71 Shelter Drainage Area.**

a. Collect grab samples of runoff from shelter area at two (2) locations, semiannually for one year (two sampling rounds). Analyze these samples for the chemical parameters listed in Table A-2.

b. Collect a maximum of five (5) surface soil samples by hand augering, one sample at each of the five (5) locations along the apron/drainage area boundary One composite sample (0 to 1 foot) shall be retained from each sampling point and analyzed for the chemical parameters listed in Table A-3.

c. Drill a maximum of four (4) hollow-stem auger borings, three (3) in the drainage area west of SR-71 shelters and one (1) in the grass area northeast of shelter area for background. Collect split- spoon soil samples at 10-foot intervals (0, 10, 20, 30, 40, 50) to a depth of 50 feet and analyze the samples for the chemical parameters listed in Table A-3.

d. Install one (1) new monitoring well. Collect one (1) water sample from the new well and one (1) water sample from existing well, semiannually for one year (2 sampling rounds). Analyze the samples for the chemical parameters listed in Table A-2.

1.4.12.6 **Site 7. Landfill No. 2**

a. Install (1) monitoring well, upgradient of the landfill. Collect water samples from the new well and two existing wells, quarterly for one year (four sampling rounds) Analyze these samples for the chemical parameters listed in Table A-2.

b. Drill four (4) angled borings from each side of the landfill to a depth of 60 feet. Collect split-spoon soil samples at 10-foot intervals (10, 20, 30, 40, 50, 60) and analyze these samples for the chemical parameters listed in Table A-3.

c. Drill one (1) background soil boring to a depth of 50 feet in an undisturbed area near the landfill. Select three split-spoon soil samples corresponding to the landfill boring for analyses of the chemical parameters listed in Table A-3.

d. Collect one (1) surface water sample from Hutchinson Creek at the nearest downstream point to the landfill, quarterly for one year (four sampling rounds).

1.4.12.7 **Site 9. Entomology Building 2560.**

Drill one (1) hollow-stem auger boring next to the concrete pad area to a depth of 20 feet. Collect split-spoon soil samples at 5-foot intervals (0, 5, 10, 15, 20) and analyze these samples for the chemical parameters listed in Table A-3.

1.4.12.8 **Site 11. Aircraft Ground Equipment Maintenance Area.**

a. Drill a maximum of three (3) hollow-stem auger borings to a depth of 10 feet. Collect split-spoon soil samples at 0-, 5-, and 10-foot depths and analyze these samples for the chemical parameters listed in Table A-3.

b. Collect water samples from the existing well, semiannually for one year (two sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

1.4.12.9 Site 13. Landfill No. 1.

a. Install a maximum of (6) new monitoring wells. One of these six wells shall be drilled and screened into the deeper part of the aquifer (no deeper than 150 feet from land surface). Collect groundwater samples from the six new wells and two existing wells, quarterly for one year (four sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

b. Drill four (4) angled borings, one from each side of the landfill, to a depth of 60 feet. Drill one (1) vertical boring to a depth of 50 feet for background. Collect split-spoon soil samples at 10-foot intervals (10, 20, 30, 40, 50, 60) and analyze these samples for the chemical parameters listed in Table A-3.

c. Collect one (1) surface water sample from Hutchinson Creek at the nearest downstream point to the landfill, quarterly for one year (four sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

1.4.12.10 Site 15. Landfill No. 3.

a. Collect groundwater samples from four (4) existing wells, quarterly for one year (four sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

b. Drill four (4) angled borings from each side of the landfill to a depth of 60 feet and one vertical 50-foot boring nearby for background. Collect split-spoon soil samples at 10-foot intervals (10, 20, 30, 40, 50, 60) and analyze these samples for the chemical parameters listed in Table A-3.

c. Conduct an air emissions screening over the middle acre of the landfill. Using a portable FID calibrated with methane, determine a background level of volatile organics at the upwind side of the landfill, 10 feet above the surface. Walk the center acre of the landfill with the detector probe within 3 inches of landfill surface. Note any emissions above 50 ppm on topographic map of the site.

d. Install one soil vapor probe in center of landfill. Installation shall be accomplished by pushing the probe or by drilling a hole using hollow-stem auger and completing as a vapor well. Sample vapor probe (at least 24 hours after installation) by drawing a 10-liter Tedlar bag sample at a rate of 1 liter/minute. Analyze the collected air sample as specified by the method in Table A-3.

e. Conduct a 24-hour, downwind, ambient air test. One integrated 24-hour sample shall be collected using a sampling pump and a 30-liter Tedlar bag. Analyze the collected air sample as specified by the method in Table A-3.

1.4.12.11 Site 15. **Explosive Ordnance Disposal Area.**

a. Collect composite (0 to 1 foot) surface soil samples at three (3) locations in the bottom of the pit, using hand augering methods. Analyze these samples for the chemical parameters listed in Table A-3.

b. Drill two (2) angled soil borings to a depth of 50 feet. Locate these borings near each end of the pit. Drill one (1) vertical boring (50 feet depth) nearby for background. Collect split-spoon soil samples every 10-feet (10, 20, 30, 40, 50) and analyze these samples for the chemical parameters listed in Table A-3.

c. Install (1) monitoring well, west (downgradient) of the pit. Collect one groundwater sample from the well, quarterly for one year (four sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

d. Conduct one (1) day of magnetometer survey of area to determine if other disposal trenches exist.

1.4.12.12 **Site 17. Best Slough.**

Conduct one (1) day of magnetometer survey for drums.

1.4.12.13 **Site 18. Bulk Fuel Storage Facility.**

a. Collect composite (0 to 1 foot) surface soil samples at two (2) locations within each AVGAS tank berm area and analyze these samples (a total of 22 samples) for the chemical parameters listed in Table A-3.

b. Drill three (3) hollow-stem auger borings (8-inch diameter) to a depth or 10 feet, along railroad spur unloading area. Collect split-spoon soil samples at 0-, 5-, and 10-foot depth, and analyze these samples for the chemical parameters listed in Table A-3. Augered borings shall be filled with cement and recovered with gravel after sampling.

c. Collect composite (0 to 1 foot) ditch sediment samples at three (3) locations along AVGAS drainage ditch using hand augering method. Analyze these samples for the chemical parameters listed in Table A-3.

d. Collect one (1) composite (0 to 1 foot) soil sample from each of the three (3) MOGAS berm area using hand augering method. Analyze these samples for the chemical parameters listed in Table A-3.

e. Collect five (5) composite (0 to 1 foot) surface soil samples, using hand augering method, in the area where berm drainage is discharged to the east of the MOGAS tanks and in unused bermed area north of the tanks. Analyze these samples for the chemical parameters listed in Table A-3.

f. Collect three (3) composite (0 to 2 feet) surface soil samples, using hand augering method, in area east of MOGAS unloading station. Analyze these samples for the chemical parameters listed in Table A-3.

g. Install a maximum of two (2) new monitoring wells, one west of the AVGAS area and one west of the MOGAS area. Collect one (1) groundwater sample from each well, semiannually for one year (two sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

1.4.12.14 **Site 19. Photowaste Emergency Holding Basin.**

a. Collect two (2) composite (0 to 1 foot and 1 to 2 feet) soil samples at each of the three (3) locations using hand augering method. Analyze these samples for the chemical parameters listed in Table A-3.

b. Drill two (2) angled borings approximately 5 feet from the holding basin rim to a depth of 50 feet. Collect split-spoon soil samples at 10-foot intervals (10, 20, 30, 40, 50) and analyze these samples for the chemical parameters listed in Table A-3.

c. Drill one (1) boring to a depth of approximately 50 feet in an undisturbed location near the basin for background soil analyses and collect split-spoon soil samples, corresponding to the angled boring samples. Analyze these samples for the chemical parameters listed in Table A-3.

d. Collect one (1) surface water sample from Hutchinson Creek at the nearest downstream point to the basin, quarterly for one year (four sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

e. Install a maximum of three (3) monitoring wells, locating two (2) wells west (downgradient) of the basin and one (1) east (upgradient) of the basin. Collect one (1) groundwater sample from each of the wells, quarterly for one year (four sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

f. If pentachlorophenol (PCP) is found, select one (1) water sample and one (1) soil sample with the highest concentration of PCP and analyze these samples for PCDDs and PCDFs by the method listed in Table A-2 and A-3, respectively.

g. Install one (1) aquifer test well. Depth of well shall be determined by hydrogeologic conditions encountered, but no more than 150 feet deep from land surface.

h. Conduct an aquifer test by pumping the aquifer test well for a maximum of 72 hours and monitor drawdowns in the three monitoring wells. Use these test data to calculate groundwater flow velocity and direction.

1.4.12.15 **Site 20. Grease Pit.**

a. Collect one (1) composite (0 to 1 foot) pit bottom sample at three (3) locations in the existing grease pit with hand augers, and analyze these samples for the chemical parameters listed in Table A-3.

b. Drill one (1) angle boring under the grease pit to a depth of 50 feet. Collect split-spoon soil samples at 10-foot intervals (10, 20, 30, 40, 50) and analyze these samples for the chemical parameters listed in Table A-3.

c. Conduct one (1) day of magnetometer survey of area west of the existing grease pit to determine if other pits exists.

1.4.12.16 **Site 21. JP-7 Aboveground Fuel Storage Area.**

a. Collect one (1) composite (0 to 1 foot) soil sample from three (3) locations within the bermed tank area and two (2) locations along the drainage ditch, using hand augering method, and analyze these samples for the chemical parameters listed in Table A-3.

b. Drill one (1) monitoring well, downgradient of tank area. Collect one (1) groundwater sample, semiannually for one year (two sampling rounds), and analyze these samples for the chemical parameters listed in Table A-2.

1.4.12.17 **Site 22. Abandoned Underground Storage Tanks.**

a. Review all available drawings and aerial photographs (supplied by base POC) which show construction activities at Camp Beale/Beale Air Force Base to determine how structures have changed and whether additional tanks need to be deleted from, or added to, the UST base map.

b. Use a maximum of ten (10) days of magnetometer surveying to locate suspected tanks.

c. Prepare an overlay map showing current base structures. By overlaying the current map with the 1943 UST base map (supplied by base POC), determine how many tank locations are accessible.

1.4.12.18 **Site 23. Ninth Transportation Refueling/Maintenance Shop.**

Drill a maximum of four (4) borings to a depth of 20 feet. Collect split-spoon soil samples at 1-, 5-, 10-, 15-, and 20-feet. Analyze these samples for the chemical parameters listed in Table A-3.

Drill one monitoring well downgradient from transportation refueling/ maintenance shop. Collect one (1) water sample and analyze it for parameters listed in Table A-2.

1.4.12.19 **Site 24. Landfill No. 4.** Perform records search by reviewing all base records supplied by the base POC.

1.4.12.20 **Background Wells.** Install two (2) monitoring wells on the east side of the base. Collect one (1) water sample from each well quarterly

for one (1) year (four sampling rounds) and analyze for the parameters listed in Table A-2.

1.5 Decision Documents.

1.5.1 **Technical Document to Suppor No Further Action (TDSNFA).** Based on comments to be provided by USAFC AL, finalize draft TDSNFAs for sites 7, 12, and 17. Using the format provided in the Handbook, Section 11, prepare a decision document for each IRP site where the results of this investigation indicate that no significant threat to human health and welfare or the environment exists (Item VI, Sequence No. 4, paragraph 6.1).

1.5.2 **Technical Document to Support a Remedial Action Alternative.** For those IRP sites (a maximum of five (5) sites) where the available data indicates no feasibility study is necessary in order to take remedial action, prepare a decision document to support the selection process (Item VI, Sequence No. 4, paragraph 6.1). Use the format provided in the Handbook, Section 11.

1.6 Reports

1.6.1 **Final Report.** Prepare a report delineating all findings from this investigative stage of the remedial investigation. Review the Results, Conclusions and Recommendations concerning the sites listed in this task which were investigated during a previous IRP stage work effort. Use this information and data from previous efforts to establish trends and develop conclusions and recommendations. Integrate all investigative work done at each site to date so that the report reflects the total cumulative information for each site studied in this effort. Environmental sample results shall be analyzed with respect to QA/QC data unique to this project. Summary statistics shall be used and reported when justified by the amount and quality of data. Forward RI report to USAFOEHL/TS for Air Force and regulatory agency review (Item VI, Sequence No. 4, paragraph 6.1).

1.6.1.1 **Draft Reports.** Draft reports are considered "draft" only in the sense that they have not been reviewed and approved by the Air Force. In all other respects, "drafts" must be complete, in the proper format, and free of grammatical and typographical errors. All draft reports shall be thoroughly screened through in-house peer technical review before being released to USAFOEHL/TS.

1.6.1.2 **Report Format.** Strictly adhere to the USAFOEHL/TS Report Format (USAFOEHL/TS Handbook, Section 3) for tasks detailed. This format is an integral part of this Delivery Order.

1.6.1.3 **Microfiche Copies of Final Report.** Provide three (3) microfiche copies of the approved Final Report (Item VI, Sequence No. 17, paragraph 6.1).

1.6.2 **Analytical Data.** Upon completion of all analyses, tabulate and incorporate all analytical data into an Informal Technical Information Report and forward the report to USAFOEHL/TS no later than three (3) weeks after all analyses have been completed (Item VI, Sequence No. 3, paragraph 6.1). Use the format provided in the USAFOEHL/TS Handbook, Section 8.

1.6.3 **Solid Waste Assessment Test (SWAT) Reports** Provide SWAT reports following California Calderon legislation for sites 6, 13, and 15 as specified in Sections 6.3.4 and 6.3.5 of Beale Work Plan (Item VI, Sequence No. 4, paragraph 6.1). (Legislation and report format to be provided under separate cover.)

1.6.4 **Toxic Pit Control Act (TPCA) Waste Characterization Report (WCR).** Provide WCR following California Calderon legislation for sites 2, 3, and 20 as specified in Section 6.3.1 of Beale Work Plan (Item VI, Sequence No. 4, paragraph 6.1). (Legislation and report format to be provided under separate cover.)

1.6.5 **Hydrogeological Assessment Report (HAR).** Provide HAR following California Calderon Legislation for site 19 as specified in Sections 6.3.2 and 6.3.3 of the Beale Work Plan (Item VI, Sequence No.4, paragraph 6.1). (Legislation and report format to be provided under separate cover.)

1.7 **Plans.**

1.7.1 **Plans for Current Effort.**

1.7.1.1 **Health and Safety Plan.** Provide a written Health and Safety Plan within two (2) weeks after the Notice To Proceed (NTP) (Item VI, Sequence No. 3, paragraph 6.1). Comply with USAF, OSHA, EPA, State and local health and safety regulations regarding the upcoming work effort. Use EPA guidelines for designating the appropriate levels of protection needed at the study sites. Coordinate the Health and Safety Plan directly with applicable regulatory agencies prior to submittal to USAFOEHL/TS. Provide the USAFOEHL/TS TPM with evidence of Health and Safety Plan approval prior to the start of field work.

1.7.1.2 **Work Plan.** Modify Work Plan dated April 88 to reflect the Scope of the Site specific information delineated in I.1.4.12 of this Statement of Work and instructions obtained from the TPM (Item VI, Sequence No. 4, paragraph 6.1).

1.7.1.3 **Quality Assurance Project Plan (QAPP).** Modify QAPP dated Apr 88 to reflect the scope of this effort and the instructions of the TPM (Item VI, Sequence No. 4, paragraph 6.1).

1.8 **Data Management.** In addition to the hard copy of the field and laboratory test results submitted with the monthly R & D Status Report, data collected in this effort shall be archived with Air Force-compatible computer hardware and software and forwarded to USAFOEHL/TS per format and media instruction provided in the Handbook, Section 7. (Item VI, Atch 2, Sequence No. 1, paragraph 6.2). Additional detailed guidance is provided in the Installation Restoration Program Information Management System (IRPIMS) Data Loading Handbook (provided under separate cover).

1.9 **Meetings.** A maximum of three (3) contractor personnel shall attend four (4) meetings at Beale AFB CA. Each meeting shall be two 8-hour workdays in duration. All meetings shall be coordinated by USAFOEHL/TS.

1.10 **Special Notifications.** Immediately report to the USAFOEHL/TS TPM or his/her supervisor, via telephone, any data/results generated during this investigation which may indicate an imminent health risk. Follow the telephone notification with a written notice within three (3) days and attach a copy of the raw laboratory data (e.g., chromatograms, standards used for calibration,).

1.11 **R & D Status Reports.** Include all data as required by the USAFOEHL/TS Handbook, Section 6. Tabulated field and laboratory test results and QA/QC data shall be incorporated into the next monthly R & D Status Report as it becomes available and forwarded to the USAFOEHL/TS (Item VI, Sequence No. 1, paragraph 6.1).

1.12 The above technical efforts which include maximum requirements are estimates only. Should the contractor determine technical efforts, including field work, require variation from these estimates, the contractor shall obtain a written concurrence from the contracting officer's technical representative at USAFOEHL/TS. This concurrence is required prior to proceeding with the variation. Under such circumstances the ceiling price of this order shall remain unchanged. Should an increase in the ceiling be necessary, contracting officer authorization will be required prior to proceeding with the variation.

II. **SITE LOCATION AND DATES:**

Beale AFB, Marysville, CA
Date to be established

III. **BASE SUPPORT**

The Base will:

3.1 Locate underground utilities and issue digging or other appropriate permits to the IRP contractor prior to the commencement of digging or drilling operations.

3.2 Designate an accumulation point on the base for drill cuttings or well installation/development fluids from the required work that are hazardous waste (HW). The contractor shall be responsible for providing proper containment and analyses of the HW, and for transporting the HW to the accumulation point.

3.3 Make available any base engineering plans, drawings, diagrams, aerial photographs, to facilitate site evaluation.

3.4 Arrange for or have available prior to the start of field work the following services, materials, work space, and items of equipment to support the contractor during the investigation:

a. Base identification badges and vehicle passes.

b. An area (approximately 1000 square feet) for equipment and supplies storage.

c. Access to the base domestic water supply system for needed borehole flushing and equipment-cleaning water. This access will be through existing fire hydrants, hose bibs, on the base.

d. A hard-surfaced area or pad for equipment cleaning that has a potable water hose bib and an electrical outlet.

e. Temporary office space, not larger than 100 square feet, equipped with a telephone for local and long distance calling. The contractor shall pay for all phone costs other than two-party, local-area calls.

f. Access to existing monitoring wells.

g. Construction barriers, traffic cones, and security police surveillance in areas where site work may inhibit normal traffic flow.

IV. GOVERNMENT FURNISHED PROPERTY:

V. GOVERNMENT POINTS OF CONTACT:

5.1 USAFOEHL/TS
Technical Program Manager (TPM)
Carolyn K. Barley
USAFOEHL/TSS
Brooks AFB TX 78235-5501
(512) 536-9001 (X234)
AV 240-2158/2159 (X234)
1-800-821-4528 (X234)

5.2 Base Point of Contact (POC)
Kirk Schmalz
9 CSG/DEE
Beale AFB CA 95903-5000
(916) 634-4486
AV 268-4485

5.3 MAJCOM Point of Contact
HQ SAC/DEVC
Frank Uhlarik
Offutt AFB NE 68046
(402) 294-5854
AV 271-5854

VI. DELIVERABLES

6.1 Attachment 1 of the basic contract. In addition to Sequence Numbers 1 and 5 listed in Attachment 1 to the basic contract which apply to all orders, the Sequence Numbers and dates listed below are applicable to this order:

Sequence No.	Para No.	Block 10	Block 11	Block 12	Block 13	Block 14
3 (Health & Safety)	I.1.7.1.1	OTIME	88OCT10	88OCT11	-	10
3 (ITIR-Analytical Data)	I.1.6.2	OTIME	*	*	-	4
4 (Interim SWAT Tech Report)	I.1.6.3	ONE/R	89FEB15	89MAY17	89JUL19	****
4 (TPCA WCR)	I.1.6.4	ONE/R	89FEB15	89MAY17	89JUL19	*****
4 (HAR)	I.1.6.5	ONE/R	89FEB15	89MAY17	89JUL19	******
4 (Work Plan)	I.1.7.1.2	OTIME	88OCT10	88OCT11	-	25
4 (QAPP)	I.1.7.	OTIME	88NOV10	88NOV11	-	25
4 (Decision Documents)	I.1.5	ONE/R	88DEC14	88DEC18	-	***
4 (Tech. Rpt)	I.1.6.1	ONE/R	89NOV15	90FEB14	90MAY16	**
4 (SWAT Tech Report)	I.1.6.3	ONE/R	89NOV15	90FEB14	90MAY16	****
4 (TPCA WCR)	I.1.6.4	ONE/R	89NOV15	90FEB14	90MAY16	*****
4 (HAR)	I.1.6.5	ONE/R	89NOV15	90FEB14	90MAY16	******
17 (Microfiche)	I.1.6.1.3	OTIME	88OCT10	90MAY16	-	3

6.2 Attachment 2 of the basic contract.

Sequence No.	Para No.	Block 10	Block 11	Block 12	Block 13	Block 14
1 (Data Management)	I.1.8	OTIME	*	*	-	1

6.3 Notes:.

* For the analytical data, provide the ITIR upon completion of the total analytical effort and not later than three weeks after all analyses have been completed.

** One first draft report (15 copies), one second draft report (25 copies), and one Final Report (50 copies plus the original camera-ready copy) are required. Incorporate Air Force comments into the second draft and Final Reports as specified by USAFOEHL/TS. Supply USAFOEHL/TS with an advance copy of the first draft, second draft, and Final Reports for acceptance prior to distribution. Distribute the remaining 14 copies of the first draft report, 24 copies of the second draft report, and 49 copies of the Final Report as specified by USAFOEHL/TS.

*** One draft (15 copies) and one final (10 copies) of each decision document is required. Supply the USAFOEHL/TS with one advance copy of each draft and final decision document for acceptance prior to distribution. Incorporate Air Force comments into the final decision documents as specified by USAFOEHL/TS. Distribute the remaining 14 copies of the draft and 9 copies of the final decision documents as specified by USAFOEHL/TS.

**** Two reports required. One interim SWAT Report (10 copies) is required within three (3) months after completing the first round of sampling. One draft final SWAT Report (10 copies) shall be provided with the first draft of the final technical report. Incorporate Air Force comments into the final SWAT report (10 copies) and distribute the copies as specified by USAFOEHL/TS.

***** Two reports required. One interim WCR report (10 copies) is required one month after waste analysis completion. One final draft report (10 copies) is required three months after final quarterly sampling. Incorporate Air Force comments into the final WCR and distribute the copies as specified by USAFOEHL/TS.

****** Two reports required. One interim HAR Report (10 copies) is required within three (3) months after completing the first round of sampling. One draft final HAR report (10 copies) shall be provided with the first draft of the final technical report. Incorporate Air Force comments into the final HAR report (10 copies) and distribute the copies as specified by USAFOEHL/TS.

ANNEX A, Table A-1
Summary of Field Work by Site

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 9	Site 11	Site 12
No. of Wells	5	1	1	0	1	1	0	0	0	0
No. of Borings	0	7	10	1	4	5	0	1	3	0
No. of Augerings	12	14	3	0	5	0	0	0	0	0
Days of Magnetometer	0	0	0	0	0	0	0	0	0	0

	Site 13	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Site 23	Back-ground	Total
No. of Wells	6	0	1	0	2	4	0	1	0	1	2	26
No. of Borings	5	5	3	0	3	3	1	0	0	4	0	55
No. of Augerings	0	0	3	0	36	3	3	5	0	0	0	84
Days of Magnetometer	0	0	1	1	0	0	1	0	10	0	0	13

ANNEX A, Table A-2
Maximum Number of Water Analyses by Site

PARAMETER	ANALYTICAL METHOD	Site 1 GW/SW	Site 2 GW/SW	Site 3 GW/SW	Site 4 GW/SW	Site 5 GW/SW	Site 6 GW/SW	Site 7 GW/SW	Site 9 GW/SW	Site 11 G/SW	Site 12 GW/SW	Site 13 GW/SW
Alkalinity - Carbonate, Bicarbonate, & Hydroxide (Field Test)	A403	24/20	24/0	12/0	2/0	4/4	12/4			2/0		32/4
Specific Conductance (Field Test)	E120.1	24/20	24/0	12/0	2/0	4/4	12/4			2/0		32/4
pH (Field Test)	E150.1	24/20	24/0	12/0	2/0	4/4	12/4			2/0		32/4
Total Dissolved Solids	E160.1	24/20	24/0	12/0	2/0	4/4	12/4			2/0		32/4
Temperature (Field Test)	E170.1	24/20	24/0	12/0	2/0	4/4	12/4			2/0		32/4
Common Anions (Chloride, Fluoride, Sulfate)	E325.3 E340.2 E375.2	24/20 24/20 24/20	24/0 24/0 24/0	12/0 12/0 12/0	2/0 2/0 2/0	4/4 4/4 4/4	12/4 12/4 12/4			2/0 2/0 2/0		32/4 32/4 32/4
Nitrogen, Nitrate-Nitrite	E353.2	24/20	24/0	12/0	2/0	4/4	12/4			2/0		32/4
Petroleum Hydrocarbons (Gasoline/Diesel)	CALIF	24/20		12/0	2/0	4/4	12/4			2/0		
ICP Screen (23 metals, exclude Boron and Silica)	SW3005/ SW6010											
Dissolved		24/20	24/0	12/0	2/0	4/4	12/4			2/0		32/4
Arsenic	SW7060											
Dissolved			24/0	12/0			12/4					32/4
Lead	SW3005/ SW7421											
Dissolved		24/20	24/0	12/0	2/0		12/4			2/0		32/4
Mercury	SW7470											
Dissolved			24/0	12/0			12/4					32/4

GW = GROUNDWATER
SW = SURFACE WATER

ANNEX A, Table A-2 (Continued)
Maximum Number of Water Analyses by Site

PARAMETER	ANALYTICAL METHOD	Site 1 GW/SW	Site 2 GW/SW	Site 3 GW/SW	Site 4 GW/SW	Site 5 GW/SW	Site 6 GW/SW	Site 7 GW/SW	Site 9 GW/SW	Site 11 GW/SW	Site 12 GW/SW	Site 13 GW/SW
Solvent m	SW7740											
Dissolved			24/0	12/0			12/4					12/4
Purgeable Halocarbons	SW5030/ SW8010	24/20	24/0	12/0		4/4	12/4			2/0		12/4
Purgeable Aromatics	SW5030/ SW8020	24/20	24/0	12/0			12/4			2/0		12/4
Semivolatile Organic Compounds	SW3510/ SW8270	24/20	24/0	12/0			12/4			2/0		12/4
Chemical Oxygen Demand (COD)	A508A						12/4					12/4
TNT, RDX, Picric Acid	see Atch 2											
Polychlorinated Dibenzo-p-dioxins (PCDDs) and polychlorinated Dibenzofurans (PCDFs)	SW8280											
Cyanide, Total	SW9010		24/0									

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ANNEX A, Table A-2 (Continued)
Maximum Number of Water Analyses by Site

PARAMETER	ANALYTICAL METHOD	Site 15 GW/SW	Site 16 GW/SW	Site 17 GW/SW	Site 18 GW/SW	Site 19 GW/SW	Site 20 GW/SW	Site 21 GW/SW	Site 22	Site 23	Back-Ground	Total
Alkalinity - Carbonate, Bicarbonate, & Hydroxide (Field Test)	A403	16/0	4/0		4/0	12/4		2/0		1/0	8/0	195
Specific Conductance (Field Test)	E120.1	16/0	4/0		4/0	12/4		2/0		1/0	8/0	195
pH (Field Test)	E150.1	16/0	4/0		4/0	12/4		2/0		1/0	8/0	195
Total Dissolved Solids	E160.1	16/0	4/0		4/0	12/4		2/0		1/0	8/0	195
Temperature (Field Test)	E170.1	16/0	4/0		4/0	12/4		2/0		1/0	8/0	195
Common Anions (Chloride,	E325.3	16/0	4/0		4/0	12/4		2/0		1/0	8/0	195
Fluoride,	E340.2	16/0	4/0		4/0	12/4		2/0		0	8/0	195
Sulfate)	E375.2	16/0	4/0		4/0	12/4		2/0		0	8/0	195
Nitrogen, Nitrate-Nitrite	E353.2	16/0	4/0		4/0	12/4		2/0		1/0	8/0	195
Petroleum Hydrocarbons (Gasoline/Diesel)	CALIF	16/0	4/0		4/0	12/4		2/0		1/0	8/0	135
ICP Screen (23 metals, exclude Boron and Silica)	SW3005/ SW6010											
Dissolved		16/0	4/0		4/0	12/4		2/0		1/0	8/0	195
Arsenic	SW7060											
Dissolved		16/0	4/0			12/4					8/0	132
Lead	SW3005/ SW7421											
Dissolved		16/0	4/0		4/0	12/4				1/0	8/0	185
Mercury	SW7470											
Dissolved		16/0	4/0			12/4					8/0	132

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ANNEX A, Table A-2 (Continued)
Maximum Number of Water Analyses by Site

PARAMETER	ANALYTICAL METHOD	Stream Site 15 GW/SW	Site 16 GW/SW	Site 17 GW/SW	Site 18 GW/SW	Site 19 GW/SW	Site 20 GW/SW	Site 21 GW/SW	Site 22	Site 23	Back-Ground	Total
Selenium	SW7740											
Dissolved		16/0	4/0			12/4					8/0	132
Purgeable Halocarbons	SW5030/ SW8010	16/0	4/0		4/0	12/4		2/0			8/0	192
Purgeable Aromatics	SW5030/ SW8020	16/0	4/0		4/0	12/4				1/0	8/0	183
Semivolatile Organic Compounds	SW3510/ SW8270	16/0	4/0			12/4					8/0	178
Chemical Oxygen Demand (COD)	A508A	16/0				12/4					8/0	92
TNT, RDX, Picric Acid	see Atch 2		4/0									4
Polychlorinated Dibenzo-p-dioxins (PCDDs) and polychlorinated Dibenzofurans (PCDFs)	SW8280					1/0						1
Cyanide, Total	SW9010											24

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ANNEX A, Table A-3
Maximum Number of Soil Analyses by Site

PARAMETER	ANALYTICAL METHOD	Site 1	Site 2	Site 3 (Drill)	Site 4 (back-)	Site 5	Site 6	Site 7	Site 9	Site 11	Site 12	Site 13
Oil & Grease	SW9071											
Petroleum Hydrocarbons (Gasoline/Diesel)	CALIF	24	53	58	5	29	27		5	9		29
ICP Screen (23 metals, exclude Boron and Silica)	SW3050/ SW6010	24	53	58	5		27		5	9		29
Mercury	SW7471		53	58			27		5			29
Organochlorine Pesticides and PCBs	SW3550/ SW8080								5			
Chlorinated Phenoxy Acid Herbicides	SW8150								5			
Volatile Organic Compounds	SW8240	24	53	58			27		5	9		29
Semivolatile Organic Compounds	SW3550/ SW8270	24	53	58			27			9		29
Soil Moisture Content	ASTM 02216	24	53	58	5	29	27		5	9		29
Soil pH	SW9045				5							
Polychlorinated Dibenzo-p-dioxins (PCDDs) and polychlorinated Dibenzofurans (PCDFs)	SW8280			1								
Explosives	USATHAMA Method 4B see Atch 1											
Ignitability	SW1010			58								
Cyanide, Total	SW9010			53								
Air Samples Analyses	Calif Method ADDL002											
Extraction (STLC)	Calif Title 22											

ANNEX A, Table A-3
Maximum Number of Soil Analyses by Site

PARAMETER	ANALYTICAL METHOD	Site 15	Site 16	Site 17	Site 18	Site 19	Site 20	Site 21	Site 22	Site 23	Cuttings	SPLC	Total
Oil & Grease	SW9071						8						8
Petroleum Hydrocarbons (Gasoline/Diesel)	CALIF	29	18		45	21		5		20			377
ICP Screen (23 metals, exclude Boron and Silica)	SW3050/ SW6010	29	18		45	21	8			20	25	10	386
Mercury	SW7471	29	18			21	8				25	10	283
Organochlorine Pesticides and PCBs	SW3550/ SW8080										25	10	40
Chlorinated Phenoxy Acid Herbicides	SW8150												5
Volatile Organic Compounds	SW8240	29	18		45	21	8			20	25	10	381
Semivolatile Organic Compounds	SW3550/ SW8270	29	18			21	8				25	10	311
Soil Moisture Content	ASTM D2216	29	18		45	21	8	5		20	25	10	420
Soil pH	SW9045												5
Polychlorinated Dibenzo-p-dioxins (PCDDs) and polychlorinated Dibenzofurans (PCDFs)	SW8280					1							2
Explosives	USATHAMA Method 4B see Atch 1		18										18
Ignitability	SW 1010						8						66
Cyanide, Total	SW9010												53
Air Samples Analyses	CALIF ADOL002	2											2
Extraction (STLC)	Calif Title 22											10	10

ANNEX A, Table A-4
Analytical Methods and TOTAL Number of Water Analyses

PARAMETER	ANALYTICAL METHOD (a)	REPORTING UNITS	NUMBER OF ANALYSES	TRIP BLANKS	AMB COND BLANKS	EQUIP BLANKS	DUP/REP	SECOND COLUMN (e)	TOTAL ANALYSES
Alkalinity - Carbonate, Bicarbonate, & Hydroxide (Field Test)	A403	mg/L	195			20	20		235
Specific Conductance (Field Test)	E120.1	umhos/cm	195						195
pH (Field Test)	E150.1	pH Units	195						195
Total Dissolved Solids	E160.1	mg/L	195			20	20		235
Temperature (Field Test)	E170.1	deg C	195						195
Common Anions (Chloride, Fluoride, Sulfate)	E325.3 E340.2 E375.2	mg/L	195 195 195			20 20 20	20 20 20		235 235 235
Nitrogen, Nitrate-Nitrite	E353.2	mg/L	195			20	20		235
Petroleum Hydrocarbons (Gasoline/Diesel)	CALIF	mg/L	135			14	14		163
ICP Screen (23 metals, exclude Boron and Silica)	SW3005/ SW6010	mg/L							
Dissolved (c)			195			20	20		235
Arsenic	SW7060	mg/L							
Dissolved (c)			132			14	14		160
Lead	SW3005/ SW7421	mg/L							
Dissolved (c)			185			19	19		223
Mercury	SW7470	mg/L							
Dissolved (c)			132			14	14		160

ANNEX A, T A-4 (Continued)
Analytical Methods and Total Number of Water Analyses

PARAMETER	ANALYTICAL METHOD (a)	REPORTING UNITS	NUMBER OF ANALYSES	TRIP BLANKS	AMB COND BLANKS	EQUIP BLANKS	DUP/REP	SECOND COLUMN (e)	TOTAL ANALYSES
Selenium	SW7740	mg/L							
Dissolved (c)			132			14	14		160
Purgeable Halocarbons	SW5030/ SW8010	ug/L	192	20	20	20	20	136	408
Purgeable Aromatics	SW5030/ SW8020	ug/L	183	19	19	19	19	130	389
Semivolatile Organic Compounds	SW3510/ SW8270	ug/L	178			18	18		214
Chemical Oxygen Demand (COD)	A508A	ug/L	92			10	10		112
TNT, RDX, Picric Acid	See Atch 2	ug/L	4			1	1		6
Polychlorinated Dibenzo-p-dioxins (PCDDs) and polychlorinated Dibenzofurans (PCDFs)	SW 8280	ug/L	1						1
Cyanide, Total	SW9010	mg/L	24			3	3		30

ANNEX A, Table A-5
Analytical Methods and TOTAL Number of Soil Analyses (b)

PARAMETER	ANALYTICAL METHOD (a)	REPORTING UNITS	NUMBER OF ANALYSES	TRIP BLANKS	AMB COND BLANKS	EQUIP BLANKS	DUP/REP	SECOND COLUMN (e)	TOTAL ANALYSES
Oil & Grease	SW9071/	mg/kg	8				1		9
Petroleum Hydrocarbons (Gasoline/Diesel)	CALIF	mg/kg	377				38		115
ICP Screen (23 metals, exclude Boron and Silica)	SW3050/ SW6010	mg/kg	386				39		425
Mercury	SW7471	mg/kg	283				29		312
Organochlorine Pesticides and PCBs	SW3550/ SW8080	mg/kg	40				5	26	71
Chlorinated Phenoxy Acid Herbicides	SW8150	mg/kg	5				1	3	9
Volatile Organic Compounds	SW8240	mg/kg	381	39			39		459
Semivolatile Organic Compounds	SW3550/ SW8270	mg/kg	311				32		343
Soil Moisture Content (b)	ASTM D2216	per cent (%)	420				43		463
Soil pH	SW9045	pH unit	5				1		6
Polychlorinated Dibenzo-p-dioxins (PCDDs) adn polychlorinated Dibenzofurans (PCDFs)	SW8280	mg/kg	2						2
Explosives	See Atch 1	mg/kg	18				2		20
Ignitability	SW1010	C	66				7		73
Cyanide, Total	SW9010 (d)	mg/kg	53				6		59
Air Samples Analyses	CALIF ADDL002	ppm	2				0		2
Extraction (STLC)	Calif Title 22	mg/L	10				1		11

NOTES

a Unless an abbreviated list of analytes is specified under "Parameter" above, the analytical protocol shall include all analytes listed in the referenced analytical method. The methods cited are from the following sources:

"A" Methods	Standard Methods for the Examination of Water and Wastewater, 16th Edition (1985)
"E" Methods	Methods for Chemical Analysis of Water and Wastes, EPA Manual, 600/4-79-020 (USEPA, 1983 - with additions)
"SW" Methods	Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods, SW-846, 3rd Edition (USEPA, 1986)
"ASTM" Methods	American Society for Testing and Materials, 1919 Race Street, Philadelphia PA 19103
"CALIF" Method	Gasoline/Diesel Components - California Regional Water Quality Control Board, Leaking Underground Fuel Tank Field Manual: Guidelines for Site Assessment, Cleanup, and Underground Tank Closure. December 1987. Air Samples - California Air Resource Board; Testing Guidelines for Active Solid Waste Disposal Sites, December 1986 (Method ADDL002, Attachment 2). STLC - California Administrative Code, Title 22, Division 4, Chapter 30, Article 11 Criteria for Identification of Hazardous and Extremely Hazardous Wastes.

b For soil/sediment samples, report results as mg/kg of dry soil or sediment. Report moisture content for each sample. Contractor shall modify the equation for calculation of moisture content in ASTM D-2216 to read:

$$w = [(W1-W2)/(W1-WC)] \times 100$$

where w = moisture content, %

$W1$ = weight of container and moist soil, g

$W2$ = weight of container and oven-dried soil, g

WC = weight of container, g.

c The sample shall be filtered in the field through a 0.5 um filter at the time of sample collection and before sample preservation.

d Modified for soils. See Method A412, p. 329, Standard Methods for the Examination of Water and Wastewater, 16th Edition (1985).

e The maximum number of second-column confirmational analyses shall not exceed fifty percent (50%) of the actual number of field samples (to include duplicates, replicates, ambient condition blanks, trip blanks and equipment blanks). If the number of samples requiring second-column confirmation exceeds this allowance, contact the USAFOEHL/TS Technical Program Manager. The total number of samples listed in Tables A-4 and A-5 includes the allowance applicable to each GC method. If GC/MS, or a combination of second-column GC and GC/MS, is used, the total cost of all such analyses for a particular parameter shall not exceed the funding allowed for positive confirmation using only second-column GC.

PART I SECTION F OF THE SCHEDULE	1. PROC INSTRUMENT ID NO. (PIIN)	2. SPIIN	3.
SUPPLIES SCHEDULE DATA	F33615-85-D-4535	0010	PAGE 36 OF 37

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT
0001	AA					

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A. 90DEC31	A.	A. 1	U	FY7624	

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *
B.	B.	B.
C.	C.	C.
D.	D.	D.
E.	E.	E.

17. DESCRIPTIVE DATA

SEE SECTION H OF THE BASIC CONTRACT FOR FY7624 ADDRESS.
TECHNICAL EFFORT SHALL BE COMPLETED NO LATER THAN 89 NOV 15.

ALL DATA SHALL BE DELIVERED IAW ATTACHMENT #1 OF THE BASIC CONTRACT AS IMPLEMENTED BY PARAGRAPH VI OF THE TASK DESCRIPTION NO LATER THAN 90 MAY 16.
THE DATA SHALL BE ACCEPTED BY THE GOVERNMENT NOT LATER THAN THE DATE SHOWN IN BLOCK 11A.

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT
0002	AA					

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A. 90DEC31	A.	A. 1	U	FY7624	

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *
B.	B.	B.
C.	C.	C.
D.	D.	D.
E.	E.	E.

17. DESCRIPTIVE DATA

EE SECTION H OF THE BASIC CONTRACT FOR FY7624 ADDRESS.
TECHNICAL EFFORT SHALL BE COMPLETED NO LATER THAN 89 NOV 15.

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT
0003	AA					

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A. 90DEC31	A.	A. 1	U	FY7624	

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *
B.	B.	C.
C.	C.	E.
D.	D.	E.
E.	E.	E.

17. DESCRIPTIVE DATA

SEE SECTION H OF THE BASIC CONTRACT FOR FY7624 ADDRESS.
TECHNICAL EFFORT SHALL BE COMPLETED NO LATER THAN 89 NOV 15.

ALL COMPUTER SOFTWARE/DATA SHALL BE DELIVERED IAW ATTACHMENT #2 AS IMPLEMENTED BY PARAGRAPH VI OF THE TASK DESCRIPTION NO LATER THAN 90 MAY 16.
THE DATA SHALL BE ACCEPTED BY THE GOVERNMENT NOT LATER THAN THE DATE SHOWN IN BLOCK 11A.

*PRESENTS A NET INCREASE/DECREASE WHEN NO + OR – APPEARS AFTER THE ITEM NO.
E = ESTIMATED
– (IN QTY) = DECREASE
+ OR – (IN ITEM NO.) = ADDITION OR DELETION

REF 70H

70H

PART I SECTION F OF THE SCHEDULE. SUPPLIES SCHEDULE DATA	1. PROC INSTRUMENT ID NO. (PIIN) F33615-85-D-4535	2. SPIIN 0010	3. PAGE 37 OF 37

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT
0004	AA					

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A. 90DEC31	A.	A. 1	U	FY7624	

	11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *
B.	D.	D.	D.
C.	E.	E.	E.

17. DESCRIPTIVE DATA

SEE SECTION H OF THE BASIC CONTRACT FOR FY7624 ADDRESS.
TECHNICAL EFFORT SHALL BE COMPLETED NO LATER THAN 89 NOV 15.

ALL CHEMICAL ANALYSIS DATA SHALL BE DELIVERED IAW ATTACHMENT #1
AS IMPLEMENTED BY PARAGRAPH VI OF THE TASK DESCRIPTION.
NO LATER THAN 90 MAY 16.
THE DATA SHALL BE ACCEPTED BY THE GOVERNMENT NOT LATER THAN THE DATE
SHOWN IN BLOCK 11A.

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A.	A.	A.			

	11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *
B.	D.	D.	D.
C.	E.	E.	E.

17. DESCRIPTIVE DATA

4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. CON ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT

11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *	14. SCTY CLAS	15. SHIP TO	16. MARK FOR
A.	A.	A.			

	11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY *
B.	D.	D.	C.
C.	E.	E.	E.

17. DESCRIPTIVE DATA

*REPRESENTS A NET INCREASE/DECREASE WHEN NO + OR – APPEARS AFTER THE ITEM NO.
E = ESTIMATED
– (IN QTY) = DECREASE
+ OR – (IN ITEM NO.) = ADDITION OR DELETION

APPENDIX C

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Clean Air Act, 42 USC 7401-7642, 40 CFR 50.

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National Archaeological and Historical Preservation Act, 16 USC Section 469, 36 CFR 65.

Fish and Wildlife Coordination Act, 16 USC 661 et. seq., 40 CFR 6.302.

Scenic Rivers Act, 16 USC 1271 et. seq., Section 7(a).

Coastal Zone Management Act, 16 USC 1461 et. seq.

Historic Sites, Buildings, and Antiquities Act, 16 USC 461467.

Rivers and Harbors Act, 33 USC 403, 33 CFR 320-330.

National Historic Preservation Act, Section 106, 16 USC 470 et. seq., 36 CFR 800.

Endangered Species Act of 1973, 16 USC 1531, et. seq., 50 CFR 200, 50 CFR 402.

Executive Order on Protection of Wetlands, Executive Order 11990, 40 CFR 6, Appendix A.

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California Hazardous Waste Management Regulations, CAC Title 22, Division 4, Chapter 4, Article 9.

California Department of Health Services Site Mitigation Decision Tree, California Department of Health Services (DHS), Toxic Substances Control Division, Technical Services Unit, May 1986.

California Department of Health Services Applied Action Levels,
California Department of Health Services, Toxic Substances Control Division, Technical Services Unit, June 30, 1989.

California Department of Health Services Action Levels for Public Water Supplies, California Department of Health Services, Public Water Supply Branch, DHS Action Levels for Public Water Supplies, July 1989.

Leaking Underground Fuel Tank (LUFT) Field Manual: Guidelines for Site Assessment, Cleanup, and Underground Storage Tank Closure, State of California Leaking Underground Fuel Tank Task Force, May 1988.

Other

Water Quality for Agriculture, Food and Agriculture Organization of the United States Irrigation and Drainage Paper, Volume 29, Revision 1, R.S. Ayers, Soil and Water Specialist (Emeritus) University of California, Davis, California, and D.W. Westcot, Senior Land and Water Resources Specialist, California Regional Water Quality Control Board, Sacramento, California.

APPENDIX D

APPENDIX D presents borings logs and well completion details for soil borings and monitoring wells.

SOIL BORING AND MONITORING WELL SYMBOLIC LOG:

SOIL TYPE:

	LEAN CLAY	(CL)
	SILT	(ML)
	SILTY CLAY	(CL/ML)
	POORLY GRADED SAND	(SP)
	WELL GRADED SAND	(SW)
	CLAYEY SAND	(SC)
	SILTY SAND	(SM)
	POORLY GRADED GRAVEL	(GW)
	WELL GRADED GRAVEL	(GP)
	SILTY GRAVEL	(GM)
	CLAYEY GRAVEL	(GC)
	FAT CLAY	(CH)

SOIL BORING AND MONITORING WELL LEGEND:

SAMPLE TYPE:

▮	1.4-INCH INSIDE DIAMETER SPLIT BARREL SAMPLE COLLECTED FOR VISUAL CLASSIFICATION AND LOGGING
■	2.5-INCH INSIDE DIAMETER SPLIT BARREL SAMPLE RETAINED FOR CHEMICAL ANALYSIS
▯	2.5-INCH INSIDE DIAMETER SPLIT BARREL SAMPLE COLLECTED FOR VISUAL CLASSIFICATION AND LOGGING

SYMBOLIC LOG:

SEE SYMBOLIC LOG LEGEND FOR KEY TO GRAPHIC PATTERN

NOTES:

1. THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND DATES INDICATED. SOIL CONDITIONS AND WATER LEVELS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURRING AT THESE BORING LOCATIONS. ALSO, THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN THE CONDITIONS AT THESE LOCATIONS.

2. BORINGS WERE LOGGED IN THE FIELD BY CH2M HILL PERSONNEL. SAMPLES WERE EXAMINED AND VISUALLY CLASSIFIED IN APPROXIMATE ACCORDANCE WITH ASTM D 2488.

SITE 1

WEST DRAINAGE DITCH

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
3.0E-359.RI.04	1-C-1GW	SHEET 1 OF 1

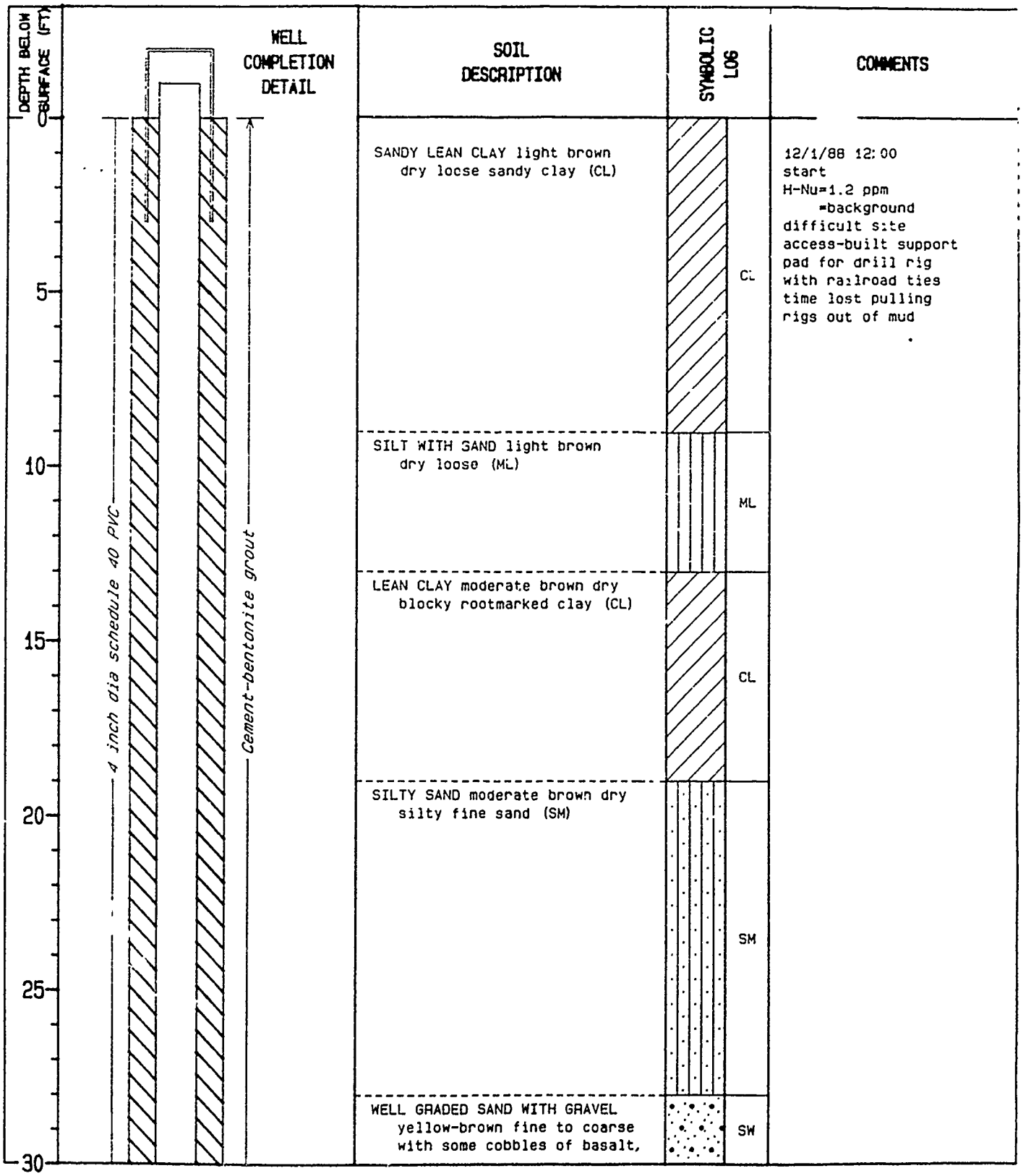
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NE OF HEADWALL

ELEVATION 93.13 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.65 FT NGVD START 12/1/88 FINISH 12/2/88 LOGGER R. PEXTON



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-1GW	SHEET 2 OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION NE OF HEADWALL

ELEVATION 93.13 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.65 FT NGVD START 12/1/88 FINISH 12/2/88 LOGGER B. PEXTON

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	4 inch dia schedule 40 PVC; Cement-bentonite grout	claystone and coarse sandstone (SW)	SW	H-Nu=background at cuttings
40		POORLY GRADED SAND brown dry fine to medium sand (SP)	SP	
50		WELL GRADED SAND brown dry fine to coarse arkosic sand (SW)	SW	
60		POORLY GRADED SAND greenish gray silty fine sand strongly cemented (SP)	SP	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-1GW	SHEET 3 OF 4

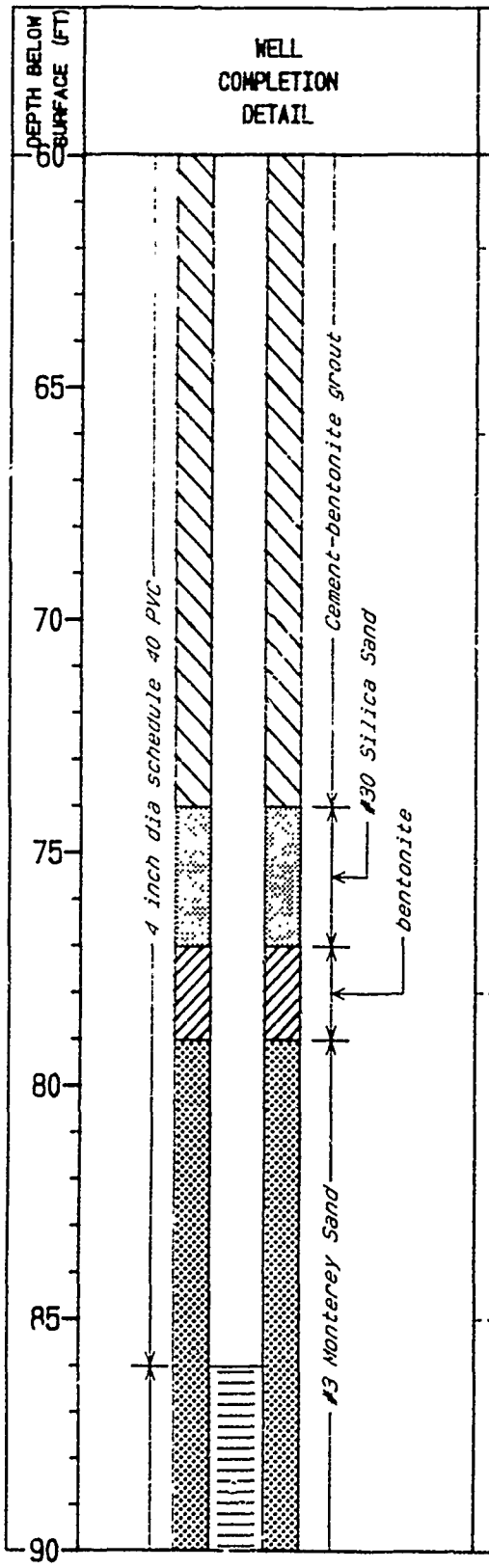
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NE OF HEADWALL

ELEVATION 93.13 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.65 FT NGVD START 12/1/88 FINISH 12/2/88 LOGGER R. PEXTON



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
POORLY GRADED SAND as above	SP	H-Nu=background
CLAYEY SAND reddish brown dry clayey weathered sand (SC)	SC	
WELL GRADED SAND green-brown dry fine to coarse sand (SW)	SW	
SANDY LEAN CLAY reddish brown dry clay with medium sand (CL)	CL	
WELL GRADED SAND WITH GRAVEL moist fine to coarse well cemented sand with cobbles of weathered granodiorite (feldspars weathering to clays) (SW)	SW	H-Nu=background

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-1GW	SHEET 4 OF 4

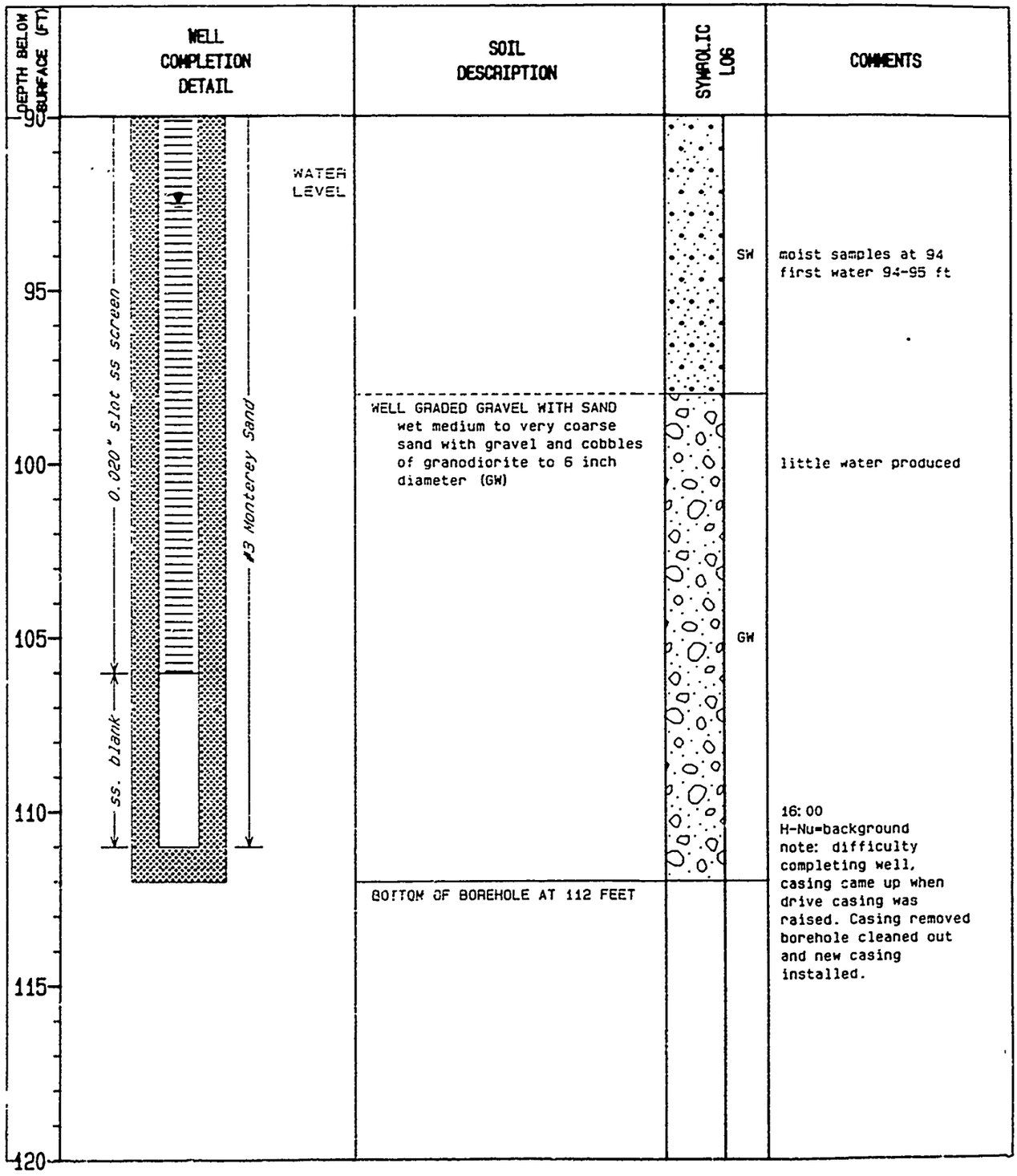
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NE OF HEADWALL

ELEVATION 93.13 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.65 FT NGVD START 12/1/88 FINISH 12/2/88 LOGGER B. PEXTON



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-2GW	SHEET 1 OF 5

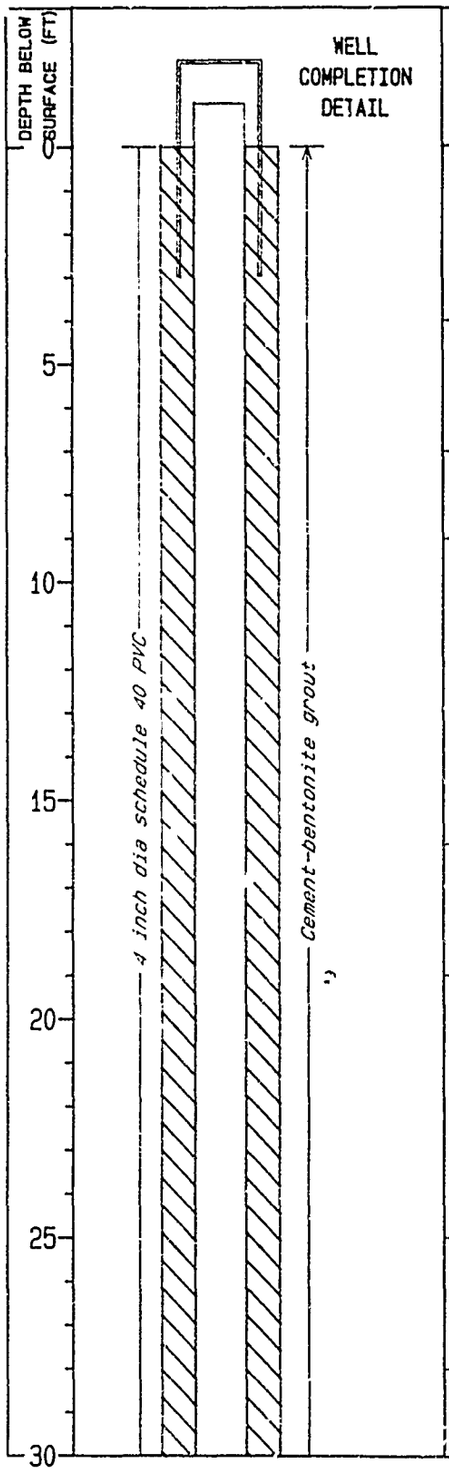
SOIL BORING LOG

PROJECT BEALE AFB LOCATION S OF WEST DRAINAGE DITCH

ELEVATION 89.89 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL [illegible] PERCUSSION AP1000

WATER LEVEL AND DATE 0.21 FT NGVD 3/27/89 START 11/29/88 FINISH 11/29/88 LOGGER C. ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
SILTY SAND yellowish red moist 70% fine to medium sand (SM)	SM	start 9:40 11/29/88 H-Nu=background
POORLY GRADED SAND strong brown dry fine sand trace gravel (SP)	SP	
WELL GRADED SAND WITH GRAVEL yellowish brown dry (SW)	SW	
SILTY SAND brownish yellow dry 60% fine sand with some cementation (SM)	SM	
FAT CLAY yellowish brown moist high dry stregnth, toughness and plasticity (CH)	CH	
CLAYEY SAND yellowish brown moist fine to medium sand with 20% clay (SC)	SC	
POORLY GRADED SAND WITH SILT yellowish red, moist fine sand with 10% silt (SP-SM)	SP/SM	
SANDY SILT yellowish brown moist, low dry stregnth & plasticity 30% sand (ML)	ML	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-2GW	SHEET 2 OF 5

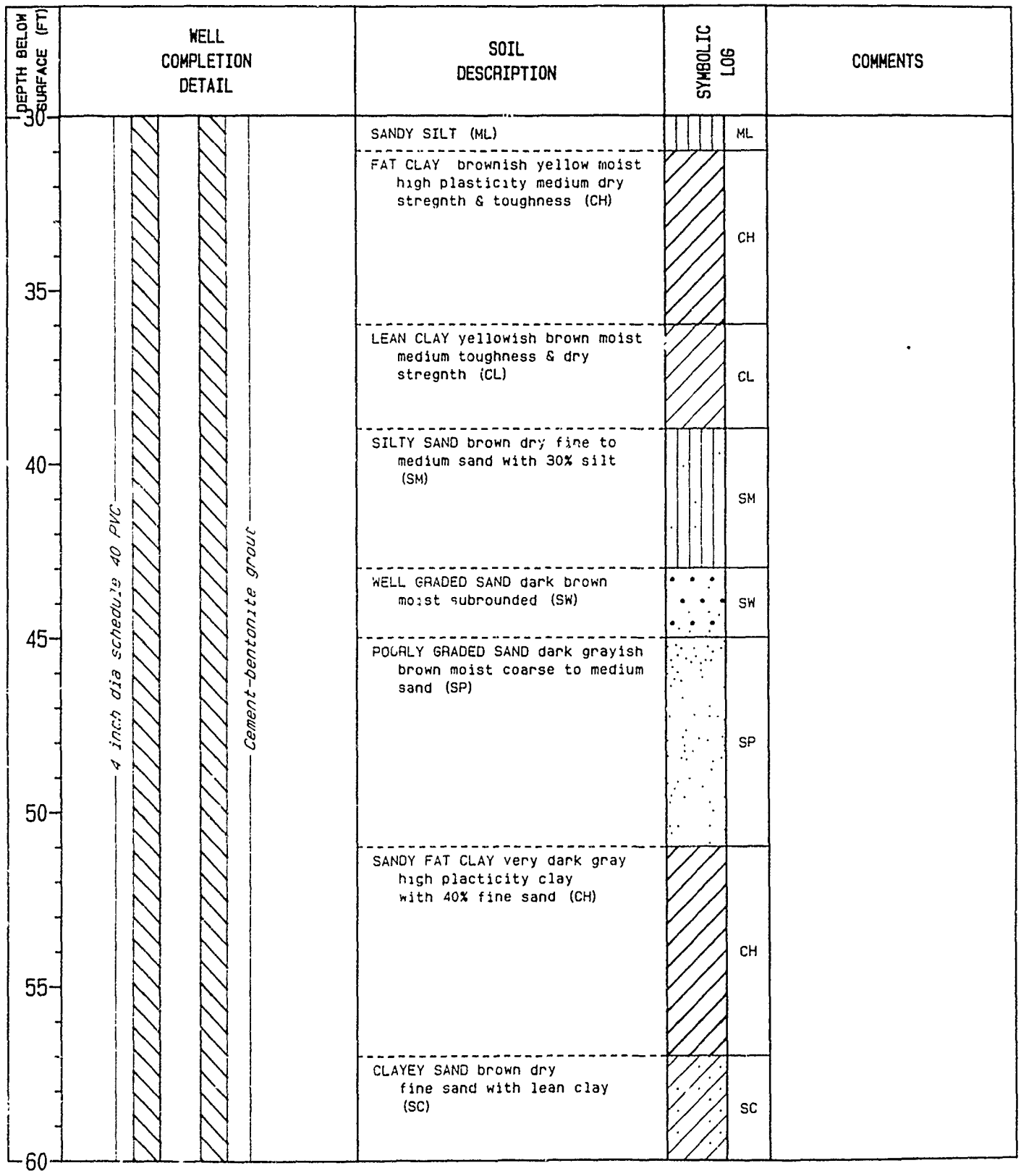
SOIL BORING LOG

PROJECT BEALE AFB LOCATION S. OF WEST DRAINAGE DITCH

ELEVATION 89.89 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DAT 2.21 FT NGVD 3/27/89 START 11/29/88 FINISH 11/29/88 LOGGER C. ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-2GW	SHEET 3 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION S. OF WEST DRAINAGE DITCH

ELEVATION 89.89 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.2. FT NGVD 3/27/89 START 11/29/88 FINISH 11/29/88 LOGGER C. ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
60			SC	
		SILTY SAND reddish brown moist fine sand with 40% silt (SM)	SM	
65		POORLY GRADED SAND WITH SILT reddish brown dry fine sand with 10% silt	SP SM	
		SILTY SAND dark brown moist fine to medium sand with silt (SM)	SM	
70		POORLY GRADED SAND brown moist fine sand with variable amounts of medium sand and silt up to 20% (SP)		
75	4 inch dia schedule 40 PVC			
80	Cement-bentonite grout	as above becoming grayish brown	SP	
85		trace subrounded flat and elongated river cobbles to 4 inches		
90	WATER LEVEL	WELL GRADED SAND dark grayish brown moist fine to coarse subangular sand (SW)	SW	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	1-C-2GW	SHEET 4	OF 5

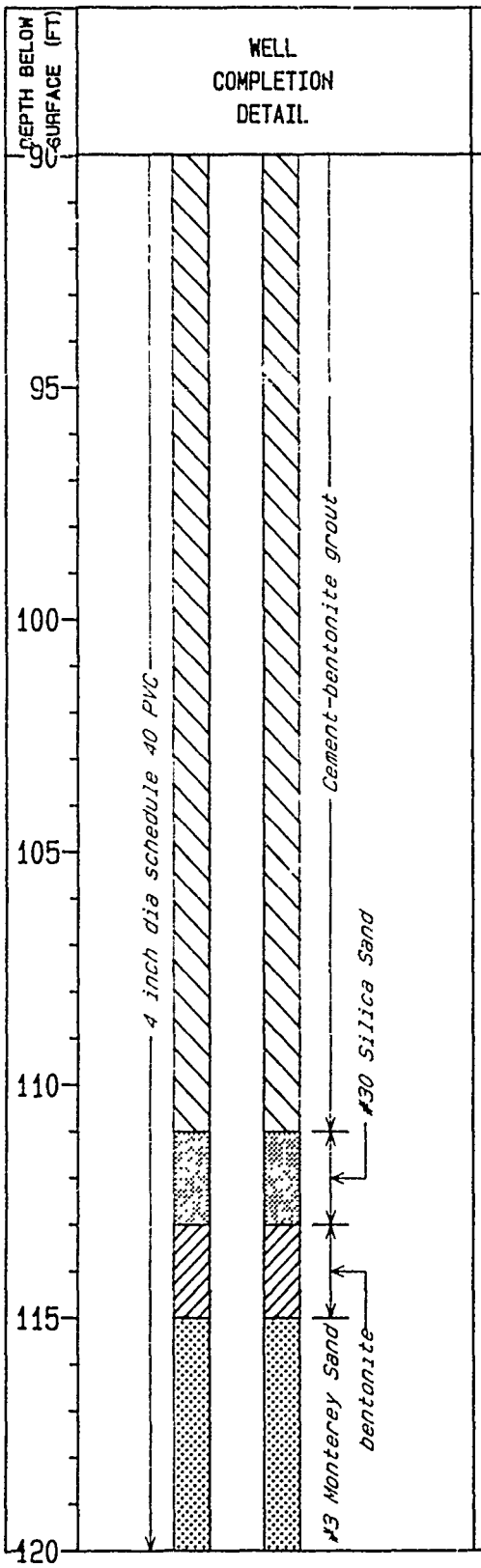
SOIL BORING LOG

PROJECT BEALE AFB LOCATION S. OF WEST DRAINAGE DITCH

ELEVATION 89.89 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.21 FT NGVD 3/27/89 START 11/29/88 FINISH 11/29/88 LOGGER C. ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
WELL GRADED SAND as above (SW)	SW	
POORLY GRADED SAND dark gray wet coarse to medium sand trace fine gravel (granodiorite clasts) (SP)		wet cuttings
POORLY GRADED SAND grayish brown wet (saturated) sand with some granodiorite cobbles to 6 inches dia. (SP)		producing water H-Nu=background
POORLY GRADED SAND as above	SP	producing water continuously

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-2GW	SHEET 5 OF 5

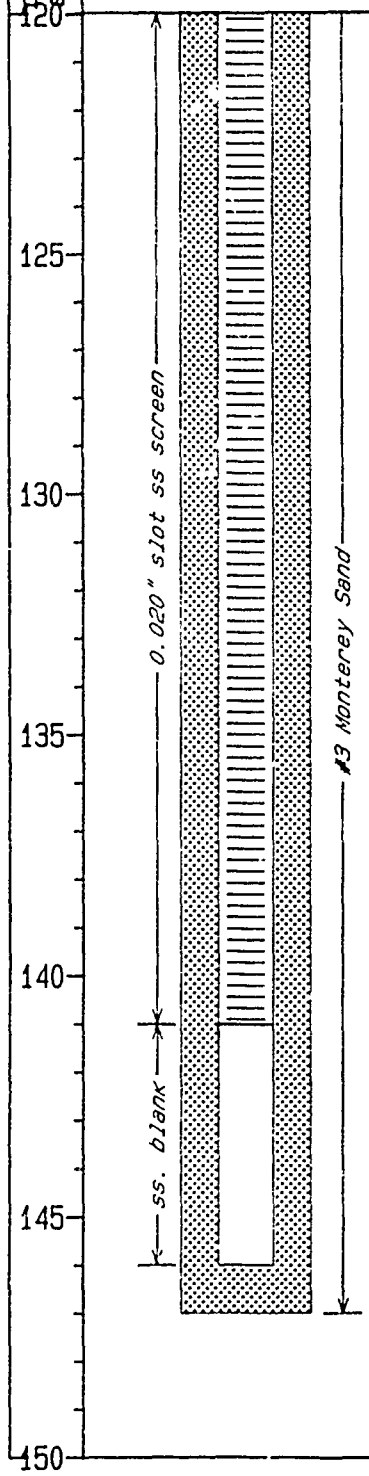
SOIL BORING LOG

PROJECT BEALE AFB LOCATION S. OF WEST DRAINAGE DITCH

ELEVATION 89.89 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.21 FT NGVD 3/27/89 START 11/29/88 FINISH 11/29/88 LOGGER C. ELLIOTT



WELL COMPLETION DETAIL

SOIL DESCRIPTION

POORLY GRADED SAND grayish brown saturated medium sand as above (SP)

SILTY SAND yellowish brown saturated well graded fine to coarse sand trace gravel 30% silt (SM)

FAT CLAY pale brown moist high dry stregnth plasticity and toughness some semi-consolidated (claystone) (CH)

BOTTOM OF BORING AT 147 FEET

SYMBOLIC LOG

SP

SM

CH

COMMENTS

producing water

stop producing water

H-Nu=background

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-3GW	SHEET 1 OF 4

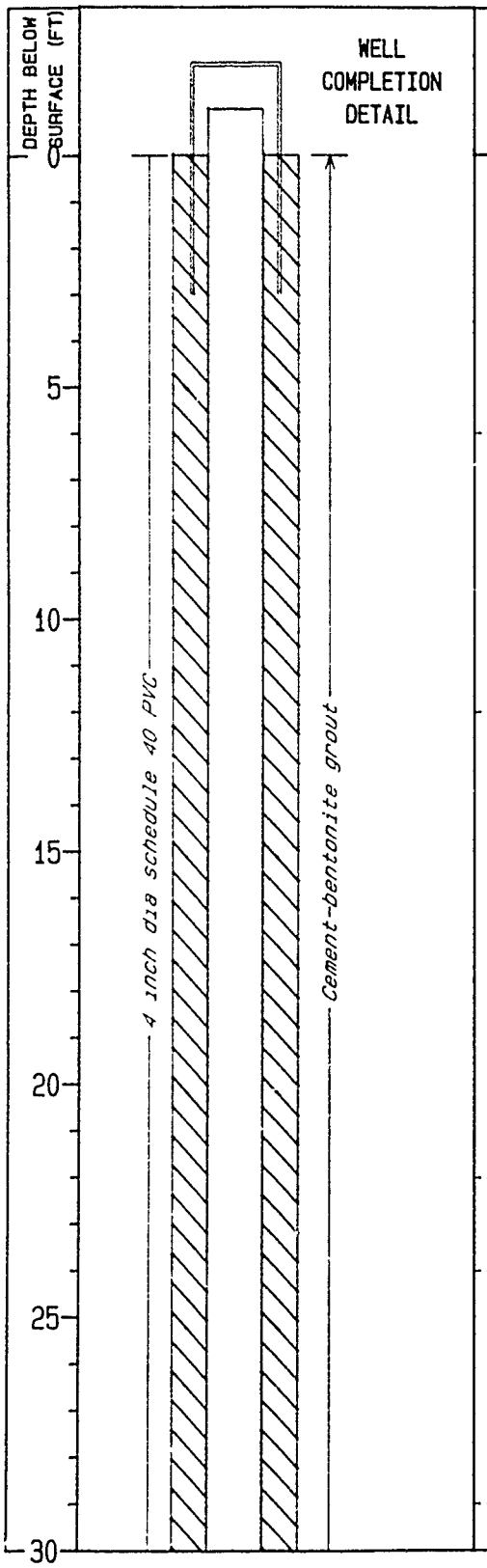
SOIL BORING LOG

PROJECT BEALE AFB LOCATION S. OF WEST DRAINAGE DITCH

ELEVATION 90.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NGVD 3/27/89 START 12/1/88 FINISH 12/1/88 LOGGER C. ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
POORLY GRADED SAND WITH SILT yellowish red moist fine sand some silt and medium sand (SP-SM) trace gravel	SP SM	start 8:45 12/1/88 H-Nu=background
SANDY FAT CLAY brownish yellow dry high dry stregnth and toughness medium plasticity semiconsolidated (hardpan?) Carbonate cement 30% fine sand (CH)	CH	fast drilling
CLAYEY SAND brownish yellow dry fine sand less consolidated with some structure 40% clay (SC)	SC	
SANDY LEAN CLAY yellow brown moist 40% fine sand (CL)	CL	
POORLY GRADED SAND dark yellow brown moist medium sand with 30% fine sand (SP)	SP	
FAT CLAY yellow red moist (CH)	CH	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-3GW	SHEET 2 OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION S. OF WEST DRAINAGE DITCH

ELEVATION 90.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NGVD 3/27/89 START 12/1/88 FINISH 12/1/88 LOGGER C. ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	4 inch dia schedule 40 PVC; Cement-bentonite grout	FAT CLAY yellow red moist high dry stregnth & toughness medium plasticity & cement 10% fine sand (CH)		
35		FAT CLAY strong brown moist high plasticity medium toughness (CH)	CH	
40		LEAN CLAY strong brown moist (CL)	CL	
45		WELL GRADED SAND dark brown moist fine to coarse sand trace fine gravel (SW)	SW	
50		POORLY GRADED SAND dark grey brown moist medium sand	SP	
55		POORLY GRADED SAND WITH SILT dark grayish brown moist some laminated cemented layers 58-63 feet (SP-SM)	SP/SM	
60				

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	1-C-3GW	SHEET 3	OF 4

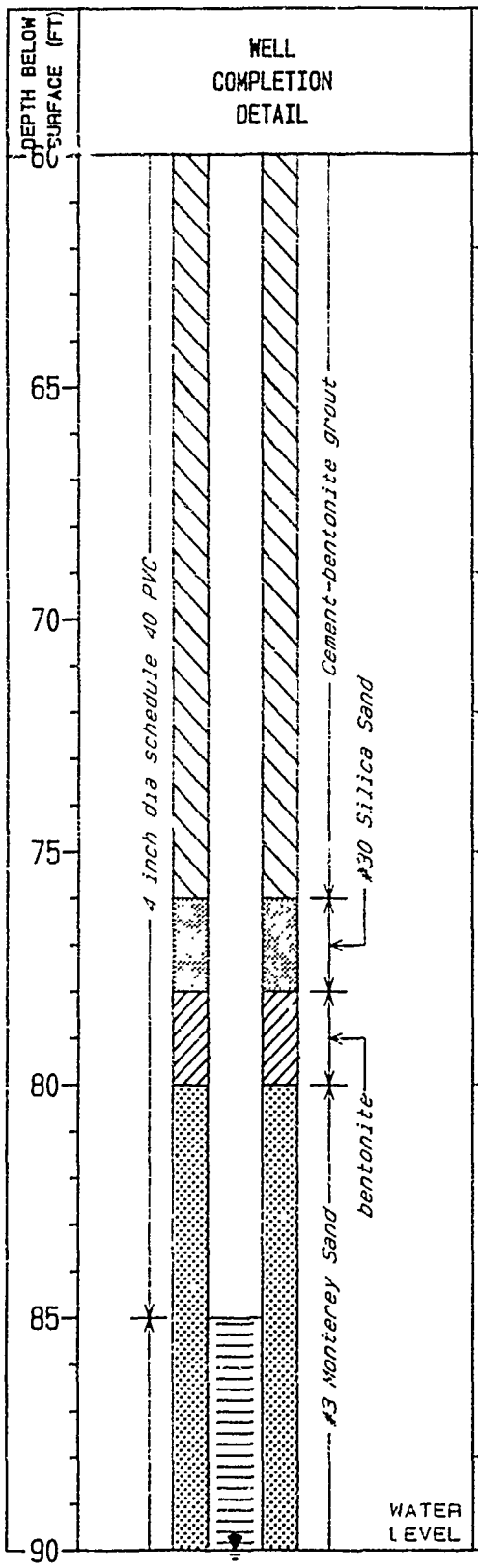
SOIL BORING LOG

PROJECT BEALE AFB LOCATION S. OF WEST DRAINAGE DITCH

ELEVATION 90.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NGVD 3/27/89 START 12/1/88 FINISH 12/1/88 LOGGER C. ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	POORLY GRADED SAND WITH SILT as above (SP-SM)	SP SM	
	SILTY SAND dark yellowish brown moist medium to fine sand with 20% silt (SM)	SM	
	CLAYEY SAND light yellowish brown fine sand 20% clay cemented (SC)	SC	
	SILTY SAND yellowish brown moist poorly graded fine sand with 20% silt (SM)	SM	
	WELL GRADED SAND gray brown moist fine to coarse sand trace silt and gravel (SW)	SW	
	CLAYEY SAND dark brown moist fine to medium sand with 40% fat clay (SC)	SC	
	WELL GRADED SAND dark grayish brown moist fine to coarse subrounded sand (SW)	SW	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-3GW	SHEET 4 OF 4

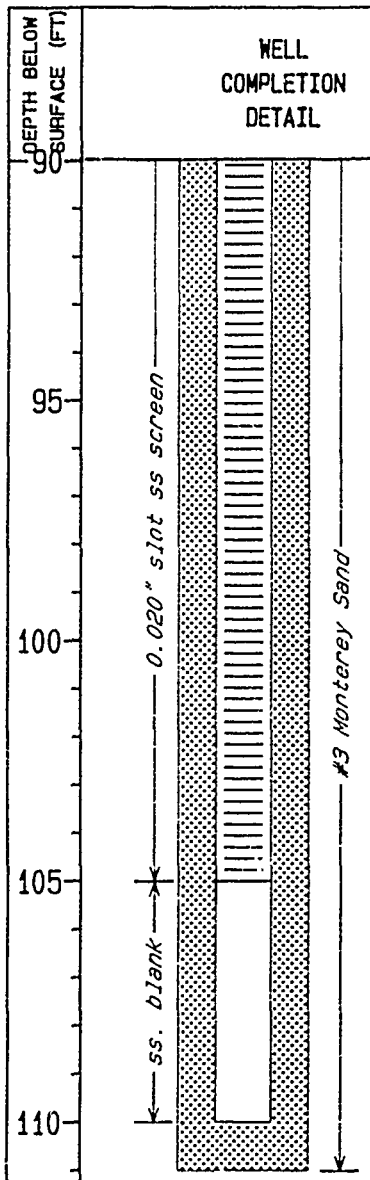
SOIL BORING LOG

PROJECT BEALE AFB LOCATION S. OF WEST DRAINAGE DITCH

ELEVATION 90.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL--HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NGVD 3/27/89 START 12/1/88 FINISH 12/1/88 LOGGER C. ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
WELL GRADED SAND dark grayish brown wet fine to coarse subrounded sand derived from granodiorite	SW	wet cuttings first water H-Nu=1.0 ppm on wet cuttings
WELL GRADED SAND WITH SILT dark gray brown wet (SW-SM)	SW/SM	producing water H-Nu=1.6 ppm downhole 1.0 ppm on wet cuttings
POORLY GRADED SAND WITH GRAVEL wet coarse sand with 20% gravel and 10% granodiorite cobbles to 4 inches (SP-GP)	SP/GP	producing much water
SILTY SAND grayish brown saturated wil graded sand with 40% silt trace gravel (SM)	SM	
BOTTOM OF BORING AT 111 FEET		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-4GW	SHEET 1 OF 5

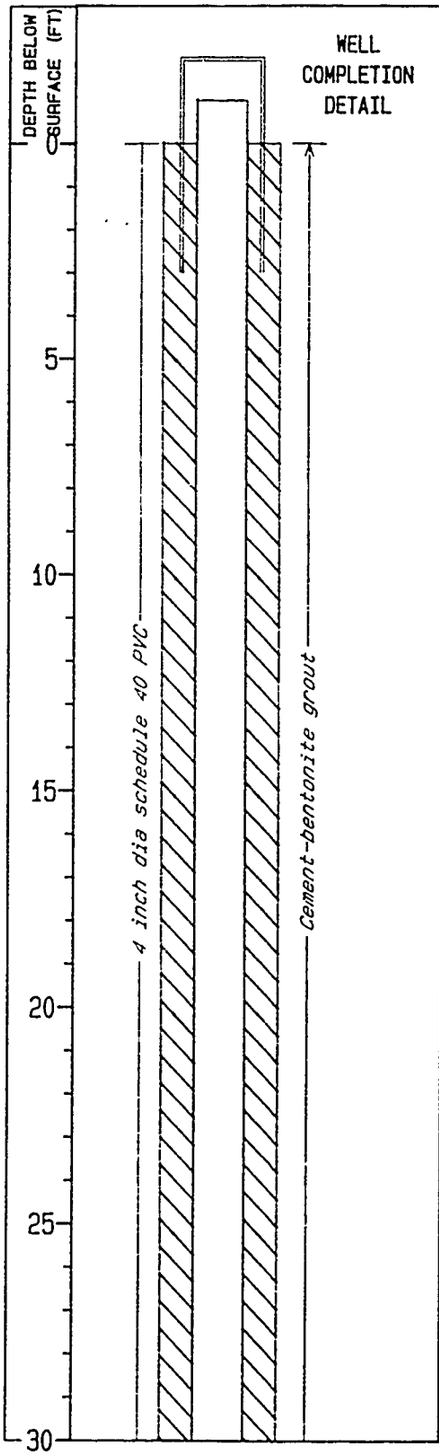
SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 89.78 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.23 FT NGVD 3/27/89 START 12/1/88 FINISH 12/2/88 LOGGER C. ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
SILTY SAND dark brown moist well graded fine to coarse sand 40% silt (SM)	SM	start 15:00 12/1/88
SANDY SILT yellowish brown dry with layers of weakly to strongly cemented hardpan 30% fine sand (ML)	ML	slow drilling through strongly cemented hardpan.
SILTY GRAVEL WITH SAND yellowish brown dry fine rounded gravel 30% well graded sand 30% silt (GM)	GM	
SANDY SILT yellowish brown dry with layers of weakly to strongly cemented hardpan 30% fine sand (ML)	ML	
WELL GRADED SAND dark yellowish brown moist fine to coarse sand (SW)	SW	
SILT WITH SAND moist (ML)	ML	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	1-C-4GW	SHEET 2	OF 5

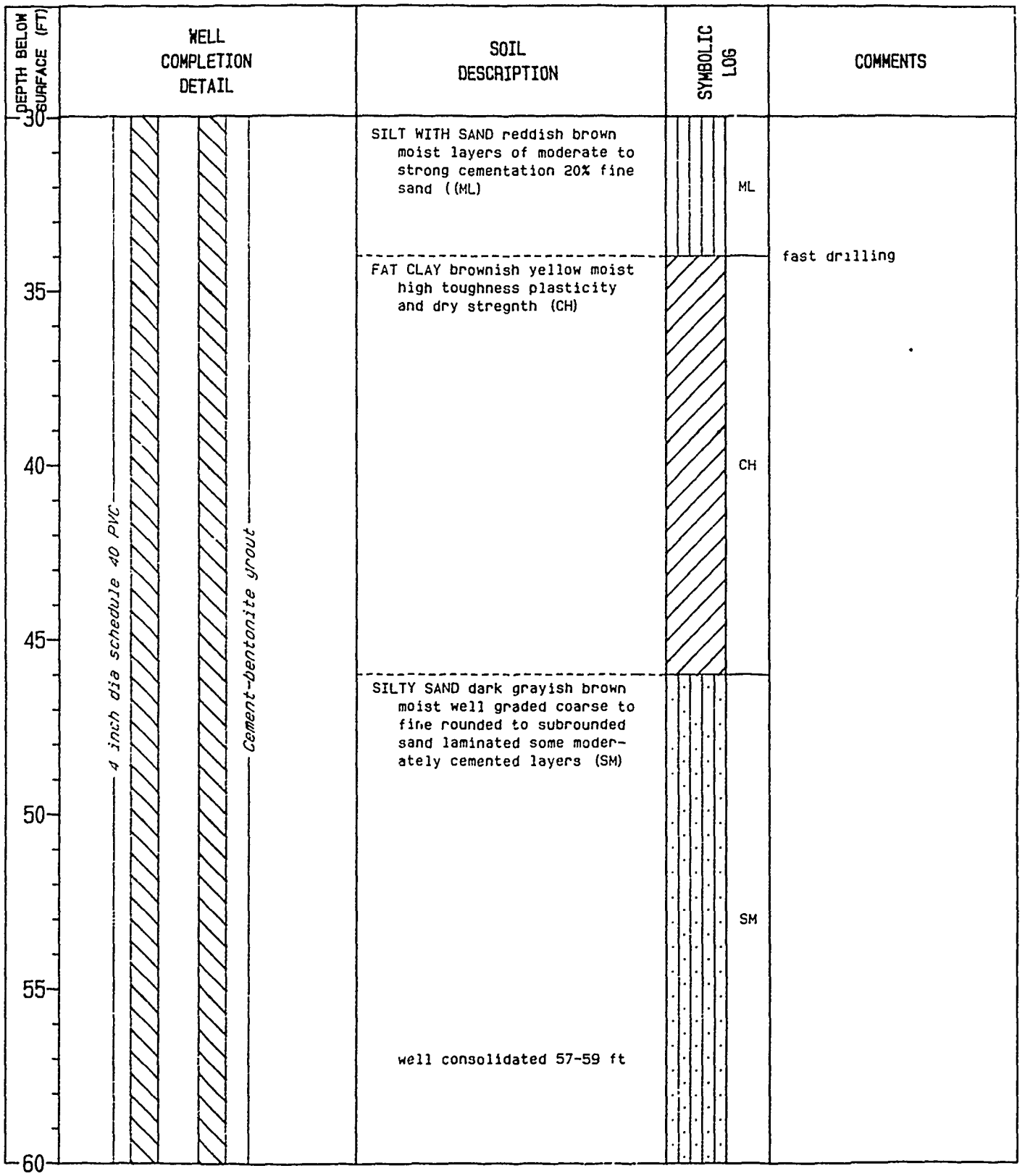
SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 89.78 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.23 FT NGVD 3/27/89 START 12/1/88 FINISH 12/2/88 LOGGER C. ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
4 inch dia schedule 40 PVC; Cement-bentonite grout	SILT WITH SAND reddish brown moist layers of moderate to strong cementation 20% fine sand ((ML)	ML	fast drilling
	FAT CLAY brownish yellow moist high toughness plasticity and dry stregnth (CH)	CH	
	SILTY SAND dark grayish brown moist well graded coarse to fine rounded to subrounded sand laminated some moderately cemented layers (SM)	SM	
	well consolidated 57-59 ft		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-46W	SHEET 3 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 89.78 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.23 FT NGVD 3/27/89 START 12/1/88 FINISH 12/2/88 LOGGER C. ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
60		LEAN CLAY WITH SAND dark gray moist medium toughness and plasticity 20% fine sand (CL)	CL	
65		FAT CLAY WITH SAND reddish brown moist high plasticity and dry stregnth medium toughness 20% fine sand (CH)	CH	
70	4 inch dia schedule 40 PVC	SILTY SAND strong brown moist fine sand 20% silt (SM) moderately to strongly cemented 73-75 ft	SM	
75	Cement-bentonite grout	SILTY SAND dark grayish brown moist well graded coarse to fine sand 30% silt (SM)		
80		POORLY GRADED SAND WITH SILT grayish brown moist fine sand 10% silt (SP-SM)	SP/SM	
85		FAT CLAY brown moist high dry stregnth toughness and plasticity slightly consol-idated (CH)	CH	
90	WATER LEVEL	WELL GRADED SAND dark grayish brown moist medium to fine sand 20% coarse sand trace fine gravel (SW)	SW	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-46W	SHEET 4 OF 5

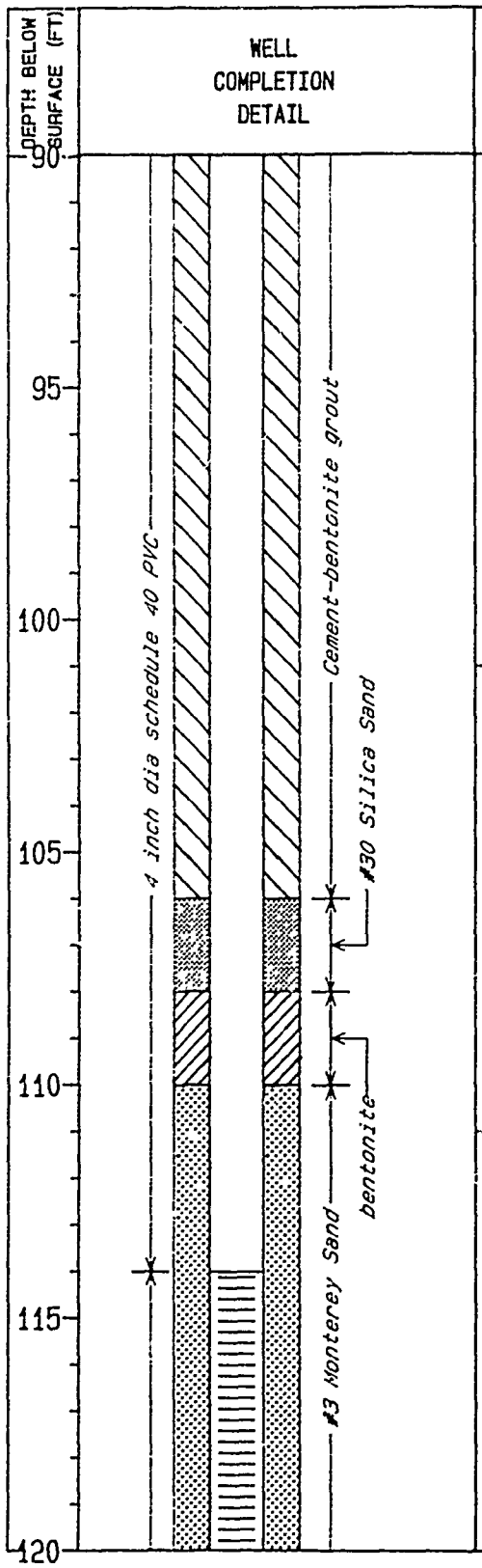
SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 89.78 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.23 FT NGVD 3/27/89 START 12/1/88 FINISH 12/2/88 LOGGER C. ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
WELL GRADED SAND grayish brown wet well graded coarse to medium sand 20% fine sand as above (SW)	SW	first water wet cuttings H-Nu=2 ppm
POORLY GRADED GRAVEL WITH SAND dark gray wet fine rounded to subrounded gravel trace cobbles to 3 inches 40% coarse sand (GP)	GP	producing water H-Nu=2.4 ppm on water 2.8 ppm downhole
WELL GRADED SAND dark grayish brown wet fine to coarse sand with some 1 to 6 inch layers of fine sand (SW)	SW	producing water

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-4GW	SHEET 5 OF 5

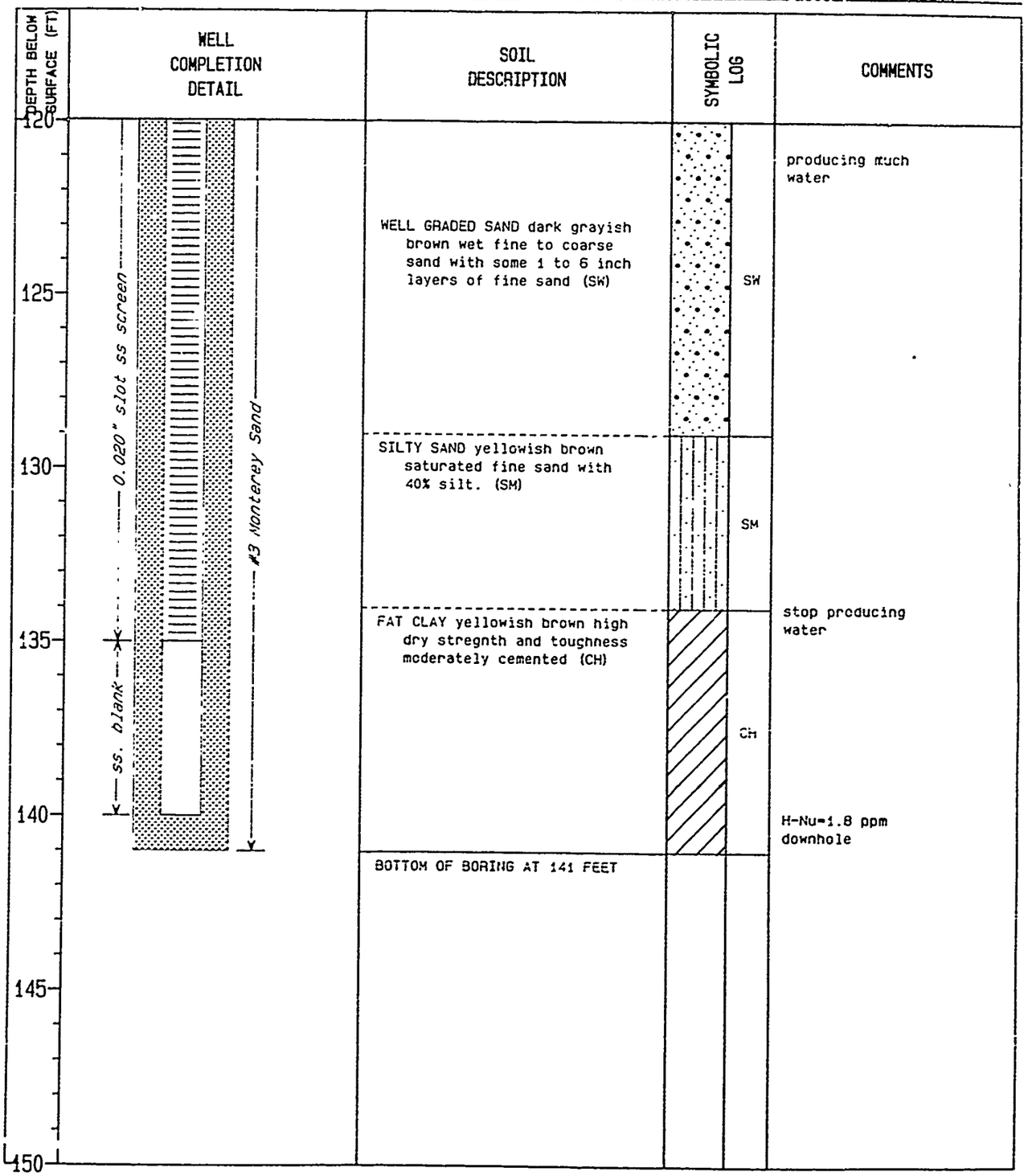
SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 89.78 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.23 FT NGVD 3/27/89 START 12/1/88 FINISH 12/2/88 LOGGER C. ELLIOTT



PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	1-C-5GW	SHEET 1	OF 4

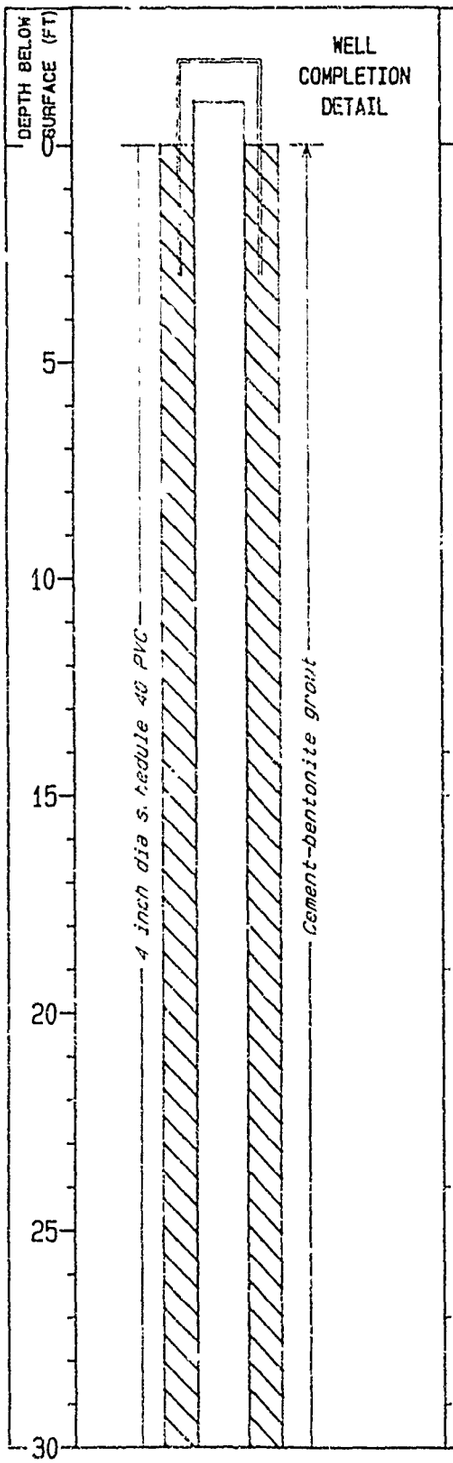
SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 89.99 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.29 FT NGVD 3/27/89 START 12/2/88 FINISH 12/5/88 LOGGER C.ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	SILTY SAND WITH GRAVEL strong brown dry fine to coarse sand with 20% silt and 20% well rounded gravel (SM)	SM	start 14:00 12/2/88 H-Nu=background
	SILTY SAND pale brown dry fine sand with 40% silt		
	SANDY LEAN CLAY dark yellowish brown to reddish brown moist medium dry stregnth plasticity and toughness 40% fine sand (CL)	CL	fast drilling
	FAT CLAY brown gray moist (CH)	CH	
	WELL GRADED SAND dark yellowish brown dry medium to fine sand with some coarse sand and fine gravel (SW)	SW	
	SANDY SILT pale brown dry some moderate cementation with stratification 40% fine sand (ML)	ML	drilling slows slightly in zones of cementation
	CLAYEY SAND reddish brown moist fine sand 40% lean clay (SC)	SC	
	WELL GRADED GRAVEL fine gravel with 30% coarse gravel to 2 inch dia (GW)	GW	
	SANDY SILT as above (ML)	ML	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	1-C-5GW	SHEET 2 OF .

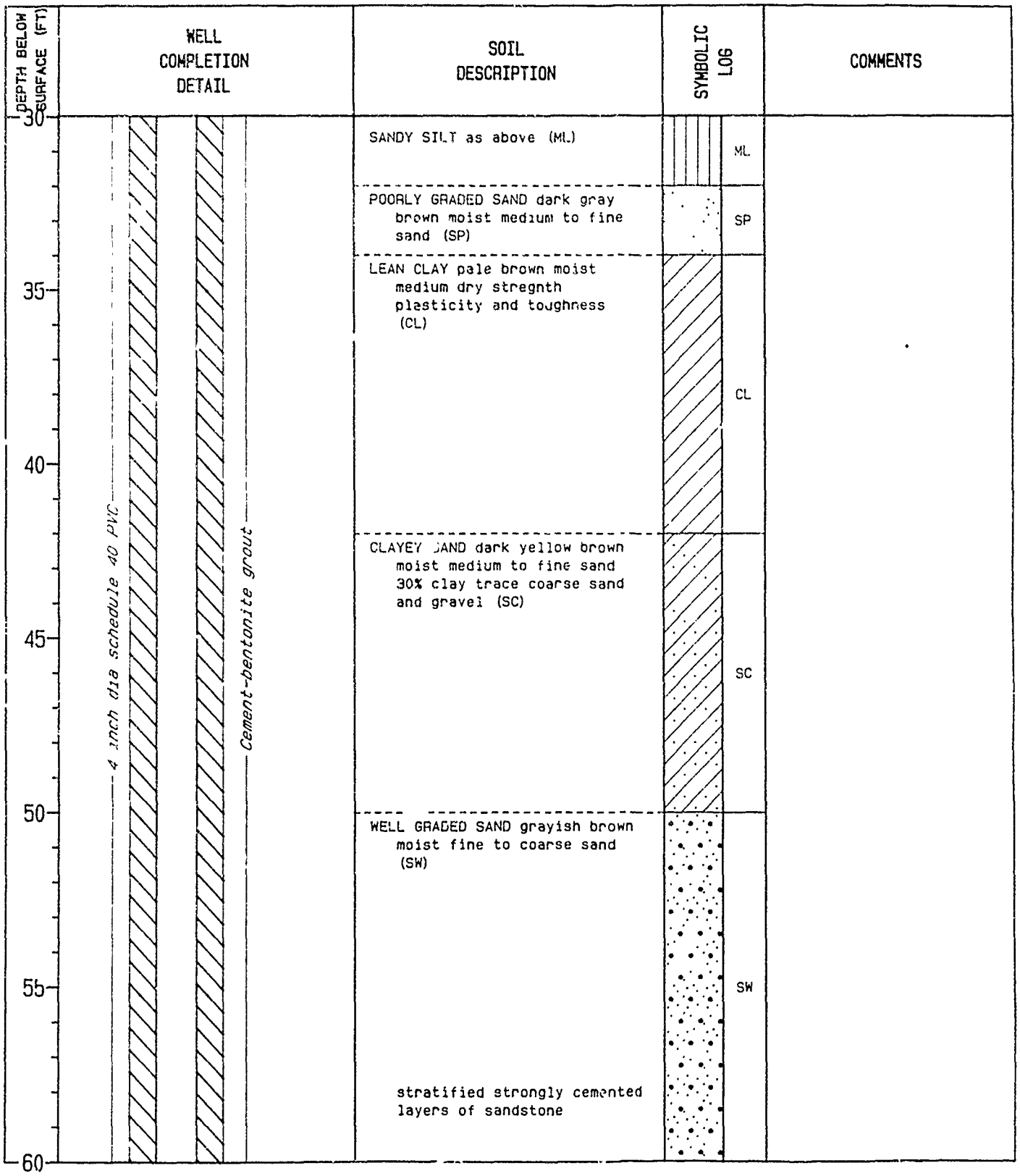
SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 69.99 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.29 FT NGVD 3/27/89 START 12/2/88 FINISH 12/5/88 LOGGER C.ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	1-C-5GW	SHEET 3 OF 4

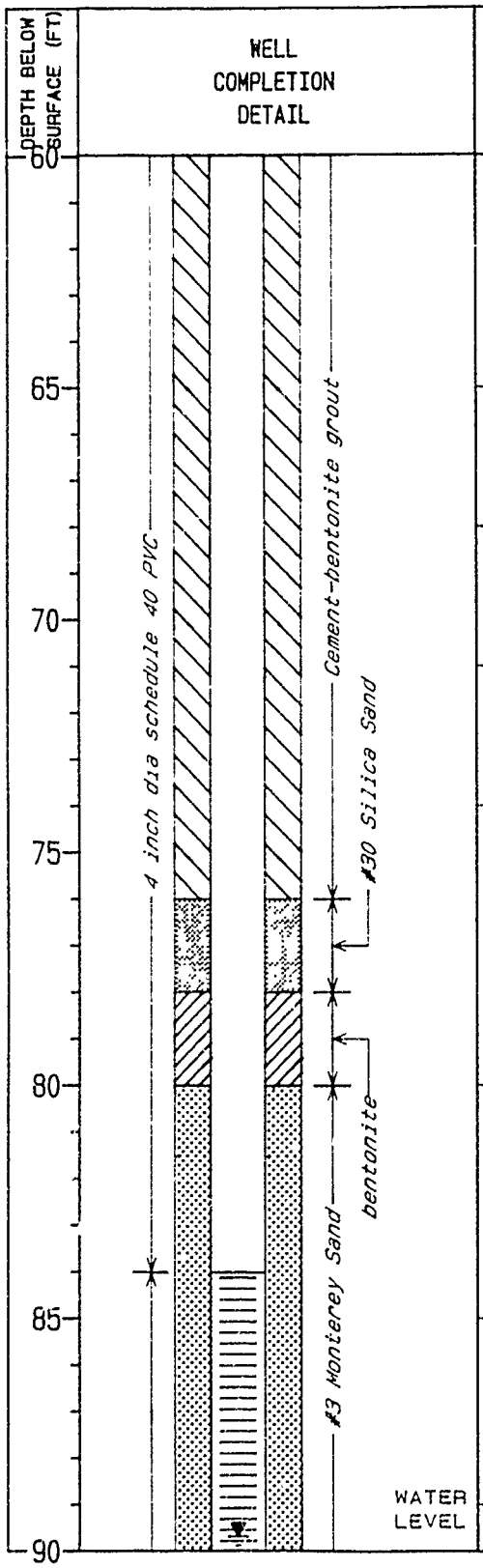
SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 89.99 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.29 FT NGVD 3/27/89 START 12/2/88 FINISH 12/5/88 LOGGER C.ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	CLAYEY SAND dark yellow brown moist fine to medium sand 20% lean clay (SC)	SC	
	SANDY FAT CLAY yellowish brown dry high toughness and plasticity some moderate cementation (CH)	CH	
	WELL GRADED SAND gray brown moist medium to fine sand 10% coarse sand (SW)	SW	
	SANDY FAT CLAY yellow brown moist stiff fat clay 30% fine sand (CH)	CH	
	WELL GRADED SAND grayish brown moist medium to fine sand 10% subrounded coarse sand (SW)	SW	
	CLAYEY SAND dark brown moist fine to coarse sand 20% clay increasing clay content with depth (SC)	SC	
	SANDY FAT CLAY grayish brown moist 40% fine sand layers of moderate cementation & stratification (CH)	CH	
	POORLY GRADED SAND gray brown	SP	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	1-C-5GW	SHEET 4	OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION N. OF WEST DRAINAGE DITCH

ELEVATION 89.99 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.29 FT NGVD 3/27/89 START 12/2/88 FINISH 12/5/88 LOGGER C.ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
90		POORLY GRADED SAND medium (SP)	SP	
95	0.020" slot ss screen; #3 Monterey Sand; ss. blank	WELL GRADED SAND WITH GRAVEL moist fine to coarse sand 20% rounded fine gravel (SW) gravel increases with depth some thin layers of silty sand	SW	first water wet cuttings H-Nu=background =0.3 ppm H-Nu downhole=0.4ppm H-Nu on water from borehole = 0.4ppm
100		WELL GRADED GRAVEL WITH SAND AND COBBLES wet fine to coarse gravel 20% coarse sand 20% cobbles to 4 inch diameter (GW)	GW	producing lots of water
105		interbeds of poorly graded coarse sand with gravel		
110		BOTTOM OF BORING AT 110 FEET		
115				
120				

SITE 2

PHOTOWASTE WATER TREATMENT PLANT,
INJECTION WELL, AND SLUDGE BASINS

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-1SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLANT

ELEVATION 92.41 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/5/88 FINISH 12/5/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SANDY SILT Fine sand (ML)	ML	09:35 Begin drill Hnu = BG
5	0096a	1.1	13-38-56	SILTY SAND Light brown, moist, very dense, fine sand (SM)	SM	
10	0096	1.5	12-22-40	SILTY SAND Medium brown, moist, very dense, rust colored staining (SM)		10:00
	0097	1.5	17-33-50			10:10 BAFB 0096 duplicate
15	0098a	1.5	12-26-36	SILT WITH SAND Medium brown, moist, hard, black flakes, fine sand (ML)		
20	0098	1.5	12-24-32	SILT WITH SAND Light brown, moist, very dense, black flakes, fine sand (ML)	ML	10:30
25	0099a	1.5	13-27-50/2 1/2"	SILT WITH SAND Light brown, moist, hard, black flakes (ML)		
30					CL	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-1SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLA

ELEVATION 92.41 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/5/88 FINISH 12/5/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0099	1.3	15-42-50/3"-100/5"	SANDY LEAN CLAY Light brown, moist, hard, rust and black staining (CL.)	CL	11:00
35	0100a	1.5	24-25-31	SANDY SILTY CLAY Medium brown, moist, hard, gray lenses with black flakes (CL-ML)	CL/ML	
40	0100	1.5	19-36-49	SILTY SAND Medium brown, moist, very dense, gray lenses, black flakes (SM)	SM	11:35
45	0101a	1.5	20-22-34	SILTY SAND Medium brown, moist, very dense, black flakes (SM)		
50	0101	1.5	20-22-50	LEAN CLAY WITH SAND Light brown, moist to wet, hard, mottled, black flakes (CL)	CL	12:00
				END BORING AT 51.5 FEET		12:10 End drill
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-2SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLANT

ELEVATION 86.30 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/5/88 FINISH 12/6/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SANDY SILT Medium brown, fine sand (ML)		15:30 Begin drill
5	0102a	1.0	3-5-8	SANDY SILT Medium brown, moist, low plasticity, sticky, some lean clay (ML)	ML	Hnu = BG
10	0102	1.1	6-12-18	SANDY SILT Medium brown, moist, low plasticity (ML)		15:55 Drive sample 1.0 ft recovery. Redrive sampler 6"
15	0103a	1.4	8-22-29	GRAVELLY WELL GRADED SAND WITH SILT Medium brown, wet, very dense, rounded to sub-angular gravel (SW)	SW	Driller notes: Gravels at 13.8 ft Water at 16 ft
20	0103	1.5	7-16-23	SILTY SAND Medium brown, moist, dense, fine sand (ML)	SM	Driller notes: Out of gravels at 18 ft 16:20
	0104	1.4	9-20-23	POORLY GRADED SAND Medium brown, moist, dense, fine grained, some silt (SP)	SP	16:25 BAFB 0103 duplicate
25	0105a	1.5	9-11-20	POORLY GRADED SAND Light brown, dry, reddish brown stains, trace silt (SP)		
					SM	
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-2SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLA.

ELEVATION 86.30 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/5/88 FINISH 12/6/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0105	1.5	14-39-56	SILTY SAND Light brown, moist, very dense, reddish brown stains (SM)	SM	16:45 End drill. Pull 3 augers for night. 12/6/88 07:55 Begin drill
35	0109a	1.5	24-18-20	WELL GRADED SAND Moist, dense, silt lense near tip (SW)	SW	Water in hole. Add drill steel to keep hammer above water.
40	0109	1.5	9-16-21	WELL GRADED SAND Gray, wet, dense, medium to coarse sand, some fine gravel (SW)		08:40
45	0110a	1.5	8-14-25	SANDY SILT Medium brown, moist, hard, fine sand (ML)	ML	Sampler is wet.
50	0110	1.5	7-23-72	SILTY CLAY WITH SAND Medium to light brown, wet, hard, black flakes in soil (CL-ML)	CL/ML	09:20 Overdrive sampler to get full recovery. 09:25 End drill. Begin mixing grout.
55				END BORING AT 51.5 FEET		
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-3SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLANT

ELEVATION 83.8 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/7/88 FINISH 12/7/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				GRAVEL Fill (GW)	GW	14:10 Begin drill Hnu = BG LEL = 0.0%
5	0114	1.5	4-6-8	SILTY SAND Medium brown, moist, medium dense, fine grained (SM)	SM	14:15 Hnu = BG LEL = 0.0%
10	0115	1.5	6-5-6	SILTY SAND Medium brown, moist, medium dense, fine grained, reddish brown mottling (SM)		14:25 Hnu = BG LEL = 0.0%
	0116	1.5	10-6-16	SILTY CLAY Medium brown, moist, firm, reddish brown mottling (CL-ML)		14:35 BAFB 0115 duplicate Hnu = BG LEL = 0 %
15	0117	1.5	7-8-9	SILTY CLAY Light brown, moist, firm, reddish mottling in soil, black flakes in soil (CL-ML)		14:55 Hnu = BG LEL = 0.0%
20	0118	1.5	11-22-32	SILTY CLAY Light brown, moist, firm, reddish brown mottling, moderate plasticity, crumbly (CL-ML)	CL/ML	15:10 Hnu = BG LEL = 0.0%
25	0119	1.5	18-27-45	SILTY CLAY Light brown, moist, reddish brown mottling (CL-ML)		15:30
30					CL	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-3S8	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLAN

ELEVATION 83.8 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/7/88 FINISH 12/7/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0120	1.0 0.8	10-12-14 24/6"	LEAN CLAY Light brown, firm, reddish staining, black flakes in soil (CL)	CL	15: 40 BAFB 0120 duplicate
35	0121a	1.5	6-8-9	SANDY SILTY CLAY Light to medium brown, moist, firm, oxidation stains, low to moderate plasticity (CL-ML)	CL/ML	Driller notes: Easy drilling at 34 ft.
40	0121	1.5	16-31-40	SILTY CLAY Medium brown, dry, hard, blocky, black flakes in soil (CL-ML)		16: 25
45	0122a	1.3	10-15-13	POORLY GRADED SAND WITH SILT Gray, moist, medium dense, reddish brown mottling (SP)	SP	
50	0122	1.5	12-24-29	SANDY LEAN CLAY Light gray brown, moist, very dense, black flakes, flakey (SC)	SC	16: 50 16: 55 End drill
55				END BORING AT 51.5 FEET		
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-4SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLANT

ELEVATION 83.61 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/8/88 FINISH 12/8/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				WELL GRADED GRAVEL Fill (GW)	GW	09:00 Begin drill Hnu = BG
5	0123	1.5	3-5-6	SANDY SILT Medium to dark brown, moist (ML)	ML	09:05
10	0124	1.5	14-14-13	WELL GRADED SAND WITH GRAVEL Moist, medium dense, angular to subangular gravel (SW)	SW	09:10
15	0125	1.5	8-20-19	SANDY SILTY CLAY Gray to reddish brown mottled, moist, firm, black flakes (CL-ML)	CL/ML	09:20
20	0126	1.5	11-19-32	LEAN CLAY Light brown to reddish brown, moist, firm (CL)	CL	09:30 Hnu = BG
25	0186	1.5	14-16-38	WELL GRADED SAND Medium brown, moist, dense (SW)	SW	09:45
	0187		8-21-35			09:50 BAFB 0186 duplicate
30				END BORING AT 28.0 FEET		

PROJECT NUMBER	BORING NUMBER		
SAC24359.AI.04	2-C-SSB	SHEET 1	OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLA.

ELEVATION 97.49 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 15 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/20/88 FINISH 12/20/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0292a	0.5	8	LEAN CLAY Reddish brown, moist, firm (CL)		09:00 Begin drill Hnu = 9G at surface and in hollow stem
5	0292	1.5	37-136-62	LEAN CLAY Brown, moist, hard, oxidation stains, black coloring (CL)	CL	09:45 Drive 12": pull; auger 12": drive 6"
10	0293	1.4	9-15-33	LEAN CLAY WITH SAND Tan, moist, firm, fine to medium sand (CL)		10:00 BAFB 0293 duplicate, not analyzed
15	0294	1.4	34-51-60	CLAYEY GRAVEL WITH SAND Brown, moist, well graded sand, fine sub-rounded gravel (GC)	GC	
20	0295a	0.5	30	SANDY LEAN CLAY Brown, moist, firm, well graded sand (CL)	CL	
25	0295	1.4	19-49-60	LEAN CLAY WITH SAND Brown, moist, hard, fine to medium sand (CL)		10:50
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	2-C-5SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLANT

ELEVATION 97.49 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 15 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/20/88 FINISH 12/20/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0296c	0.5	31	LEAN CLAY WITH SAND Brown, moist, firm, fine sand (CL)	CL	
35	0296	1.4	31-57-69	LEAN CLAY Tan, moist, firm, oxidation stains (CL)		11:40
40	0297a	0.5	21	SILT Brown, moist, firm, mottled (ML)	ML	
45	0297	1.5	18-24-58	LEAN CLAY Brown, moist, firm, black coloring in soil (CL)	CL	13:10
50				END BORING AT 49.0 FEET		
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	2-C-6SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLA.

ELEVATION 95.88 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 10 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/21/88 FINISH 12/21/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0						11:45 Begin drill Hnu = BG
5	0298a	0.5	27	LEAN CLAY Reddish brown, moist, firm (CL)		
10	0298	1.5	12-25-36	LEAN CLAY WITH SAND Dark brown, moist, hard, well graded (CL)		12:00
15	0299a	0.5	37	LEAN CLAY Tan, moist, firm, oxidation stains, organic material in soil (CL)	CL	Hnu = BG in hollow stem
20	0299	1.3	25-42-68	LEAN CLAY Reddish brown, moist, firm, mottled (CL)		12:20
25	0300a	0.5	38	SANDY LEAN CLAY Brown, moist, firm, well graded (CL)		
30	0300		18-22-45	LEAN CLAY Brown, moist, firm, black coloring (CL)		12:50

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-6SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATI PHOTOWASTE WATER TREATMENT PLANT

ELEVATION 95.68 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 10 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/21/88 FINISH 12/21/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30					CL	
	0301a	0.5	31	SILTY CLAY WITH SAND Brown, moist, firm, fine to medium sand (CL-ML)	CL ML	13:30 Fixing oil line on PTO. Pulled off rig on mob through mud., 14:10 Resume drill
35						
	0301	1.5	42-100-131	LEAN CLAY Tan, moist, hard, oxidation stains (CL)	CL	Drive 7"; pull; auger 7"; sleeves inside sampler are wet.
40						
	0302a	0.5	38	SILTY SAND Dark brown, moist, poorly graded medium sand (SM)	SM	
45						
	0302		42-53-150	LEAN CLAY WITH SAND Tan, moist, hard, well graded, oxidation stains (CL)	CL	14:50
50				END BORING AT 50.0 F .T		
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-7SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLA.

ELEVATION 84.74 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/2/88 FINISH 12/2/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0090	1.1	4-7-11-19	SILTY CLAY Medium to dark brown, moist (CL-ML)	CL ML	09:05 Begin drill 09:10 Sample
5	0091a	0.5	4-9-22	SILTY SAND Medium brown, moist, dense, fine sand (SM)	SM	
10	0091	1.3	14-29-33	WELL GRADED GRAVEL WITH SILT Gray, moist, very dense (GM)	GM	Driller notes: Gravel at 8.7 ft 09:25 Driller notes: Out of gravel at 12 ft In gravel at 14 ft
15	0092a	0.8	20-31-30	WELL GRADED GRAVEL WITH SILT Gray, wet, very dense, medium brown colored gravel (GM)		
20	0092	1.2	12-28-17	SANDY LEAN CLAY Tan to light brown, moist, hard (CL)	CL	10:00 Hnu = BG
25	0093a	1.5	9-12-24	SANDY LEAN CLAY Tan to gray, moist, hard, oxidation stains (CL)		
30					ML	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-7SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE WATER TREATMENT PLANT

ELEVATION 84.74 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/2/88 FINISH 12/2/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0093	1.4	10-25-30	~~SANDY SILT Medium brown to~~ gray, moist, hard, fine sand (ML)	ML	~~10:30~~ Hnu = BG
35	0094a	1.5	9-15-28	POORLY GRADED SAND Reddish brown, moist, dense (SP)	SP	
40	0094	1.5	12-26-30	SANDY SILT Tan to light brown, moist, hard, fine sand, sticky in places, some reddish staining (ML)	ML	11:05
45	0095a	1.5	13-30-42	SANDY SILT Medium brown, moist, hard, fine sand (ML)		
50	0095	1.5	25-50/3"-100/5 1/2"	SANDY LEAN CLAY Tan to light brown, moist, hard, fine sand, sticky (CL)	CL	11:45
55				END BORING AT 51.5 FEET		
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-1GW	SHEET 1 OF 6

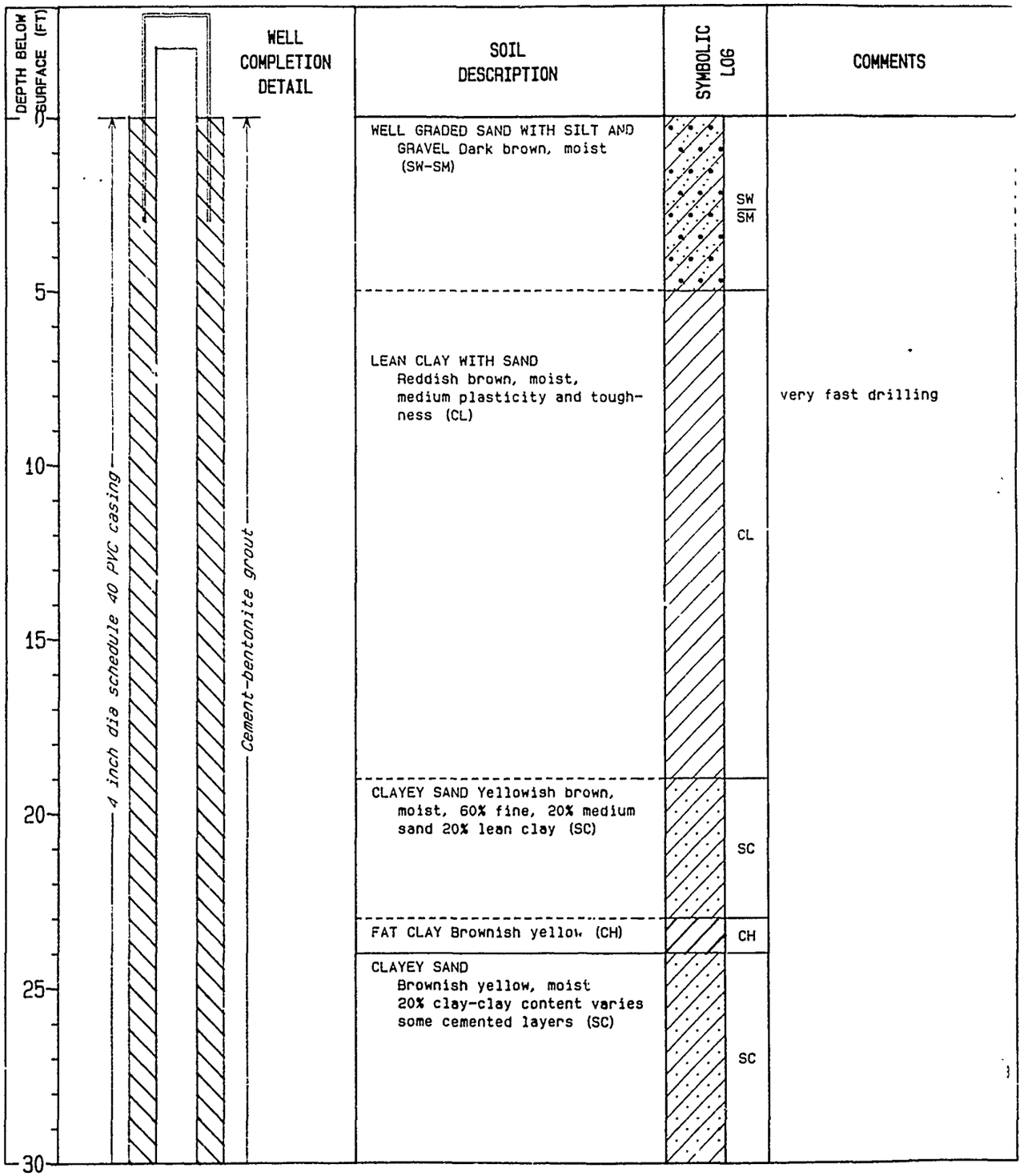
SOIL BORING LOG

PROJECT BEALE AFB LOCATION INJECTION WELL 2

ELEVATION 83.46 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -0.48 FT NGVD 3/27/89 START 12/5/88 FINISH 12/6/88 LOGGER C. ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
WELL GRADED SAND WITH SILT AND GRAVEL Dark brown, moist (SW-SM)	SW/SM	
LEAN CLAY WITH SAND Reddish brown, moist, medium plasticity and toughness (CL)	CL	very fast drilling
CLAYEY SAND Yellowish brown, moist, 60% fine, 20% medium sand 20% lean clay (SC)	SC	
FAT CLAY Brownish yellow (CH)	CH	
CLAYEY SAND Brownish yellow, moist 20% clay-clay content varies some cemented layers (SC)	SC	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-1GW	SHEET 2 OF 6

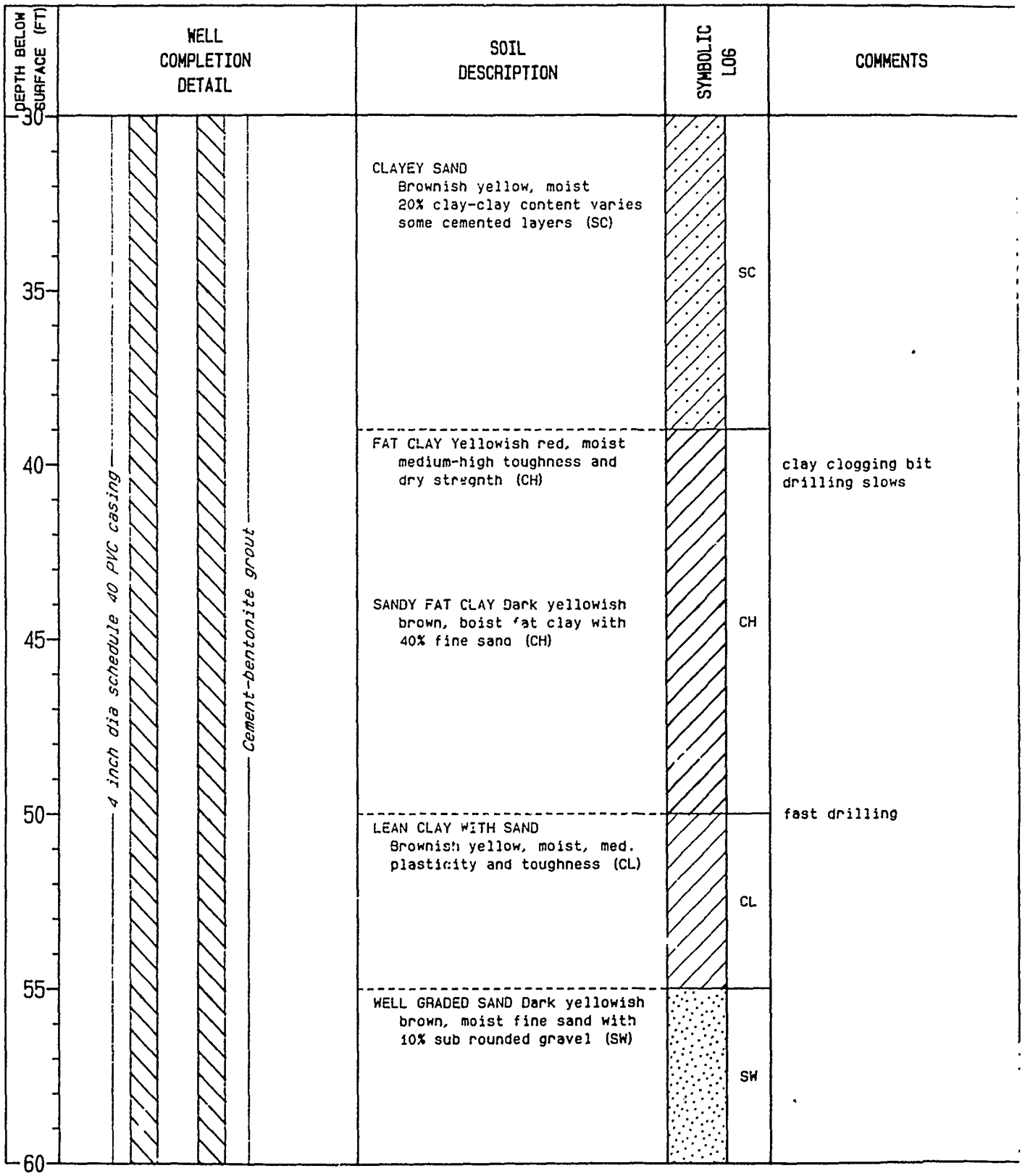
SOIL BORING LOG

PROJECT BEALE AFB LOCATION INJECTION WELL 2

ELEVATION 83.46 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -0.48 FT NGVD 3/27/89 START 12/5/88 FINISH 12/6/88 LOGGER C. ELLIOTT



WELL COMPLETION DETAIL | SOIL DESCRIPTION | SYMBOLIC LOG | COMMENTS

PROJECT NUMBER	BORING NUMBER	
SAC24309.RI.04	2-C-1GW	SHEET 3 OF 6

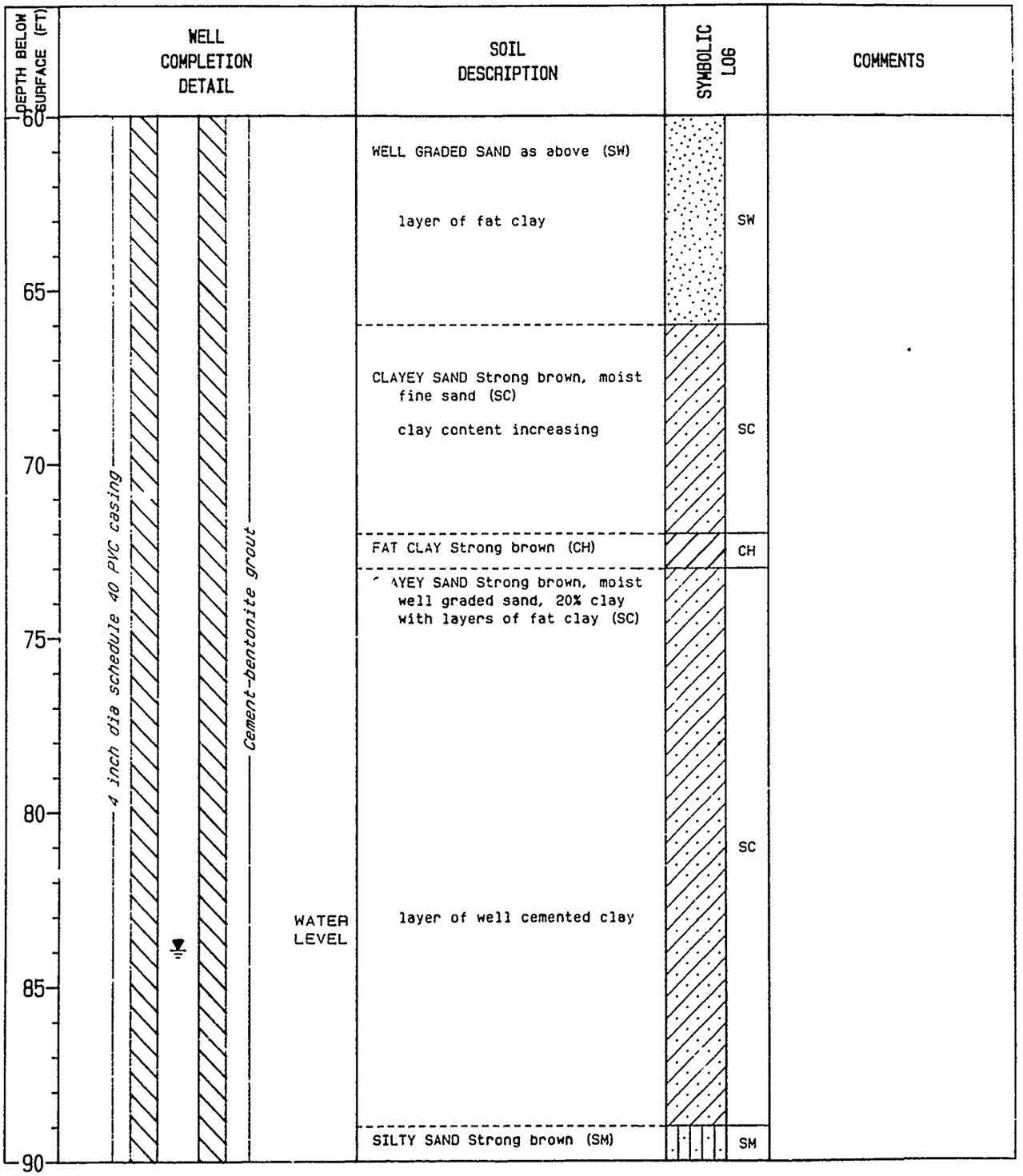
SOIL BORING LOG

PROJECT BEALE AFB LOCATION INJECTION WELL 2

ELEVATION 83.46 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -0.48 FT NGVD 3/27/89 START 12/5/88 FINISH 12/6/88 LOGGER C. ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-1GW	SHEET 4 OF 6

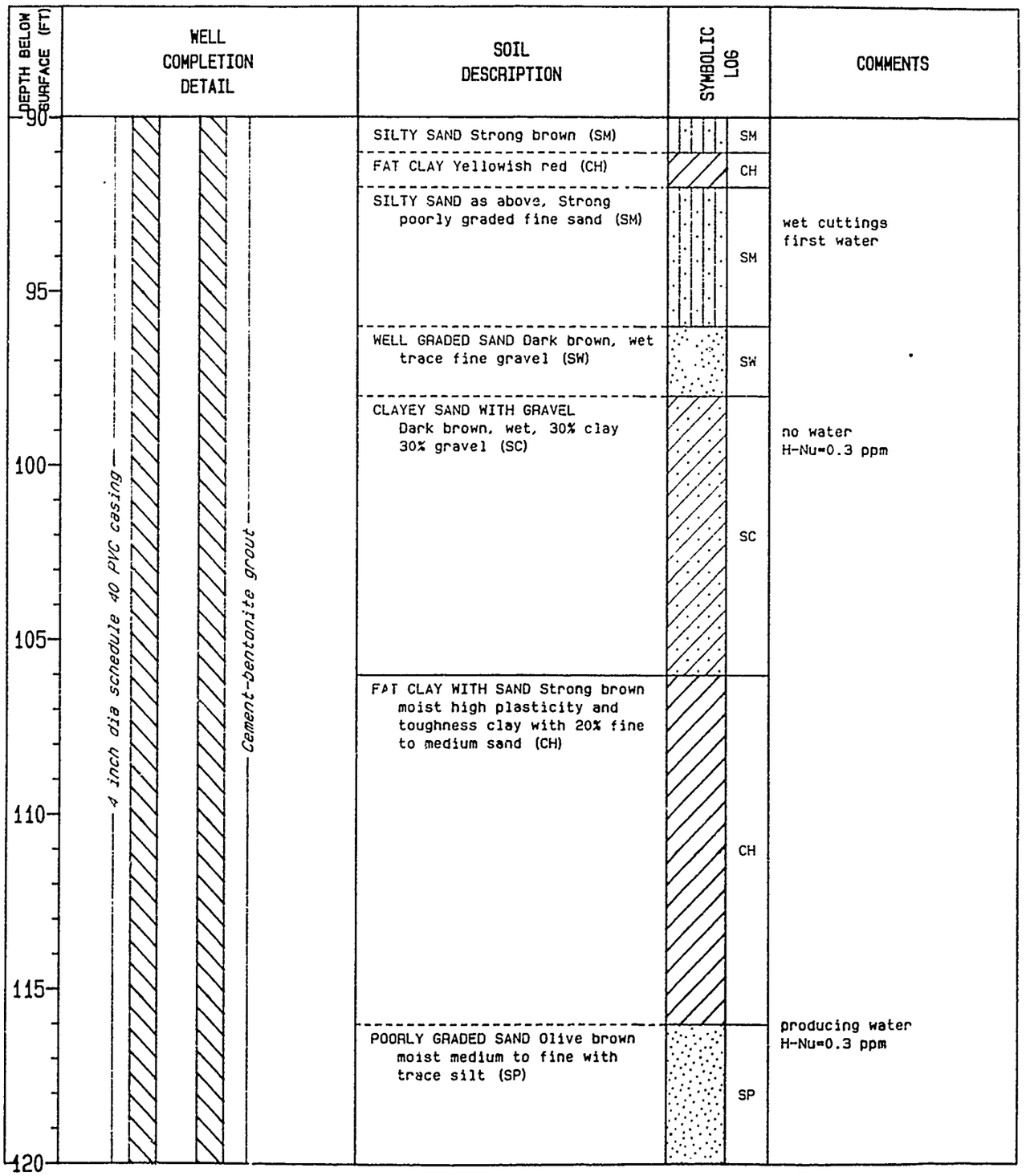
SOIL BORING LOG

PROJECT BEALE AFB LOCATION INJECTION WELL 2

ELEVATION 83.46 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -0.48 FT NGVD 3/27/89 START 12/5/88 FINISH 12/6/88 LOGGER C. ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	2-C-1GW	SHEET 5 OF 6

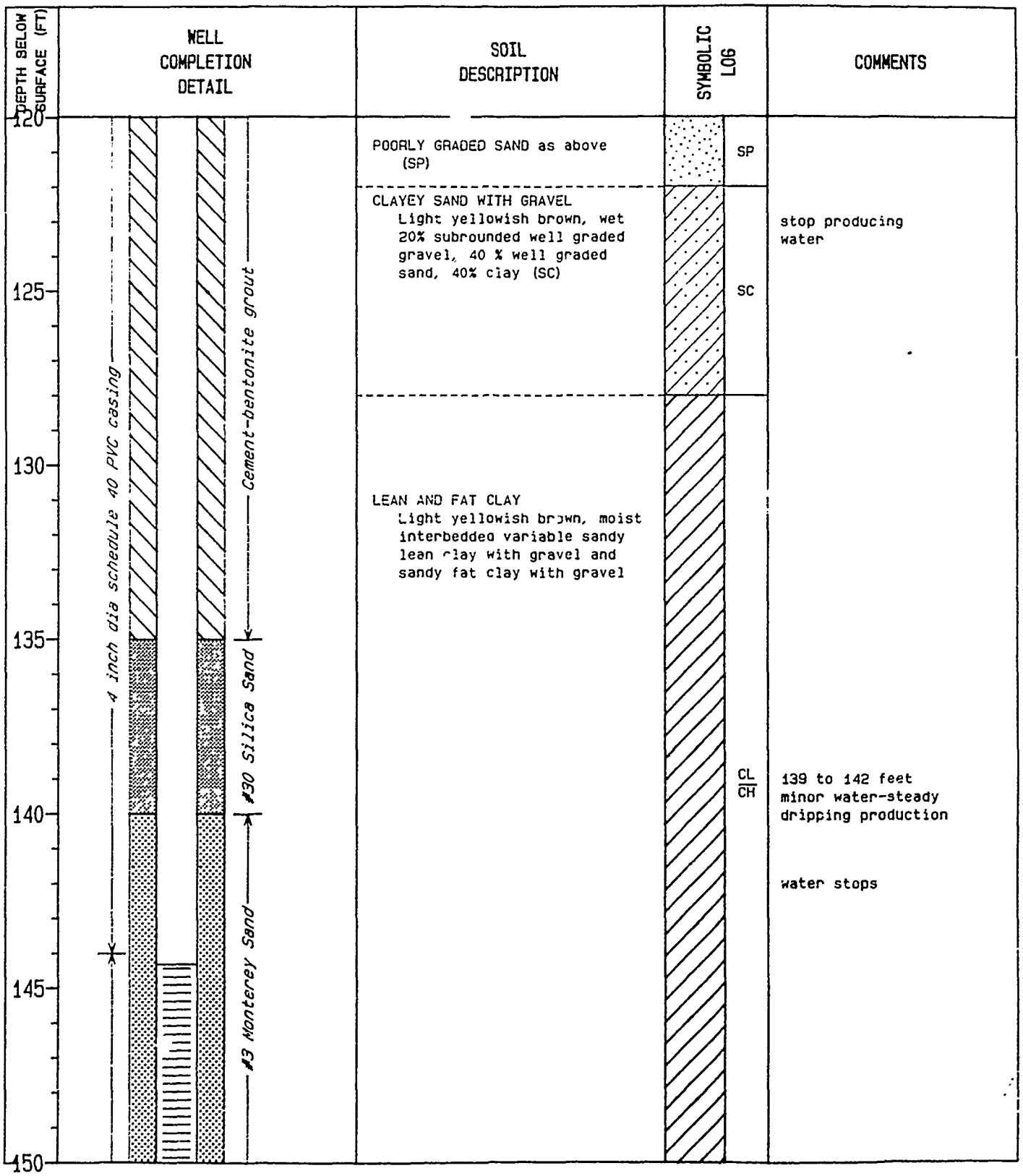
SOIL BORING LOG

PROJECT BEALE AFB LOCATION INJECTION WELL 2

ELEVATION 83.46 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -0.48 FT NGVD 3/27/89 START 12/5/88 FINISH 12/6/88 LOGGER C. ELLIOTT



PROJECT NUMBER	BORING NUMBER	SHEET OF
[illegible]	[illegible]	

SOIL BORING LOG

PROJECT [illegible] LOCATION [illegible]

ELEVATION [illegible] DRILLING CONTRACTOR [illegible]

DRILLING METHOD AND EQUIPMENT [illegible]

WATER LEVEL AND DATE [illegible] START [illegible] FINISH [illegible] LOGGER [illegible]

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
150		[illegible]		
155		[illegible]		start precipitation water
160		[illegible]		
165		[illegible]		water table at a stead, stable
170		[illegible]		continuous water precipitation [illegible] ppm on water and [illegible] ppm in domestic
175				
180				

SITE 3

FIRE PROTECTION TRAINING AREA

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	3-C-1SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 111.43 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/12/88 FINISH 12/12/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0214	1.5	14-15-43	SILT WITH SAND Light tan, moist, hard, mottled (ML)	ML	10:10 Begin drill Hnu = BG LEL = 0.0%
5	0215a	1.5	11-22-29	SILTY CLAY Light brown, moist, hard, reddish mottled, black flakes, crumbly (CL-ML)	CL/ML	
10	0215	1.4	17-37-60	SILTY CLAY Light brown, dry, hard, black flakes (CL-ML)		10:35 This area appears to have had roads or buildings over it. Sample 0216 not taken.
15	0217a	1.5	20-42-50/3 1/2"	SILTY SAND Gray brown, dry, very dense, reddish mottling (SM)	SM	
20	0217	1.5	17-24-50/1"-85/6"	SILTY SAND Reddish brown, dry, very dense (SM)		11:00
	0218	1.5	50-50/4"	SILTY SAND Brown, dry, very dense (SM)		11:20 BAFB 0217 duplicate
25	0219a	1.5	12-35-50/5"	SANDY LEAN CLAY Medium to dark brown, moist, black flakes (CL)	CL	
30					ML	Driller notes Gravel at 28 ft Out of gravel at 29 ft

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	3-C-1SB	SHEET 2 OF 2

SOIL BORING LOG

PROJEC BEALE AFB LOCATION FIRE PROTECTION TRAINING AREA

ELEVATION 111.43 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/12/88 FINISH 12/12/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
30	0219	1.1	17-47-100/4"	SANDY SILT Light brown, dry, hard, contains subangular fine gravel (ML)		ML	12:10
							12:30 - 12:55 Lunch
35	0220a	1.4	11-13-30	SILT WITH SAND Gray brown, dry, hard, fine sand, white crusting for 3" (ML)			Hnu = BG LEL = 0.0%
40	0220	1.5	11-17-50	POORLY GRADED SAND WITH LEAN CLAY Gray brown, dry, dense (SP)		SP	13:25
							LEL = 0.0%
45	0221a	1.5	14-33-50/5"	WELL GRADED SAND Medium brown, moist, very dense (SW)		SW	
50	0221	1.5	26-50-76	WELL GRADED SAND Gray, moist, very dense (SW)			14:00
				END BORING AT 51.5 FEET			14:10 End drill
55							
60							

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-2SB	SHEET : OF :

SOIL BORING LOG

PROJECT BEALE A B LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 103.99 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/12/88 FINISH 12/13/88 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0222	1.5	14-59-36	SILT Brown, dry, some fine gravel (ML)	ML	16:20 Begin drill Sample Hnu in breathing zone = 8.9 LEL = 0.0% Hnu hollow stem = 25ppm Go to Level C
5	0223	1.5	14-50-100/4"	SILT Brown, dry, some fine sand (ML)		16:45 Hnu sample = 20ppm
10	0224	1.5	34-50 4"-33	SILT Brown, with hard lumps of lithified material (ML)		17:05 Hnu hollow stem = 230ppm LEL = 0.0%
15	0225	1.5	30-40-90	POORLY GRADED SAND WITH SILT Brown (SP)	SP	08:40 Hnu cutting = 30ppm
20	0260	1.5	25-57-107	SILT Light yellowish brown, dry, crumbly, some zones of iron oxidation (ML)	ML	09:00
				END BORING AT 21.5 FEET		
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-3SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 103.50 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/13/88 FINISH 12/13/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0261	1.4	10-24-19	SILT WITH LEAN CLAY AND GRAVEL Dark brown, moist, firm (ML)	ML	11:10 Begin drill Sample
						Hnu cuttings = 30ppm
5	0262	1.5	21-45-50/3"-100	SILTY CLAY WITH SAND Medium brown, dry, firm, fine sand, crumbly (CL-ML)	CL/ML	11:25
	0263	1.5	26-77-100/5"	SANDY LEAN CLAY Light brown, dry, firm, fine sand, black flakes (CL)	CL	11:35 BAFB 0262 duplicate
10	0264	1.5	32-100/4"	POORLY GRADED SAND Gray with reddish brown mottling, dry, very dense (SP)	SP	11:55
						12:07 - 12:45 Lunch
15	0265	1.5	25-91-24	POORLY GRADED SAND Dark gray, dry, loose (SP)		12:55
20	0266	1.5	16-30-76	SANDY SILT Medium brown, dry, hard, mottled, black flakes (ML)	ML	13:25
				END BORING AT 21.5 FEET		
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-4SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 107.83 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/13/88 FINISH 12/14/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				ASPHALTIC CONCRETE AND GRAVEL	GW	15:20 Begin drill
	0267	1.5	7-9-9	SILTY SAND WITH GRAVEL Black, moist, soft, subrounded gravel, odors (SM)	SM	15:25 Sample
						15:50 End drill 12/14/88
5	0268a	1.5	21-56-84	SILT WITH SAND Gray, dry, hard, brown mottling, crumbly, medium grained sand (ML)	ML	08:15 Begin drill Hnu near boring =60 ppm
10	0268	1.5	19-66-80	SANDY SILT Grayish brown, dry hard, crumbly, mottled (ML)		09:15 Hnu sample = 18ppm
15	0269a	1.0	25-49-50	CLAYEY SAND Gray, dry, very dense, white crusting (SC)	SC	
20	0269	1.2	28-115/6"	CLAYEY SAND Gray to brown, dry, very dense, crumbly, weakly cemented (SC)		09:55 Hnu cuttings = 60ppm
25	0270a	1.5	17-48-50/5"	SILT WITH SAND Grayish brown, dry, dense, crumbly, oxidation stains (ML)	ML	10:15 Driller notes: Gravel at 28 ft. Out of gravel at 29.5 ft.
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-4SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 107.83 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/13/88 FINISH 12/14/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0270	1.0	30-88	SANDY SILT Dry, hard, reddish staining, weakly cemented (ML)	ML	10:30
35	0271a	1.5	13-21-30	SANDY LEAN CLAY Dry, hard, fine sand, black stains (CL)	CL	
40	0271	1.4	18-30-83	SANDY LEAN CLAY Gray brown, dry, very dense, weakly cemented (CL)		11:30
45	0272a	1.5	13-12-22	CLAYEY SAND Brown, dry, dense, white crusting at one location (SC)	SC	
50	0272	1.5	12-30-44	WELL GRADED SAND Dark gray, dry, dense (SW)	SW	11:55 Sample and end drill
55				END BORING AT 51.5 FEET		
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-SSB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 104.19 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 29 DEG - NORTH 31 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/14/88 FINISH 12/14/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0240a	0.5	13	LEAN CLAY Brown, moist (CL)	CL	08:05 Begin drill 08:07 Hnu = 8G 08:13 Hnu = 8G LEL = 0.0%
5	0240	1.3	32-78-38	LEAN CLAY Brown, moist, tough, mottled (CL)		08:25 Hnu = 50ppm at boring. Go to Level C. 08:50 Resume drill 08:55 Hnu = 8G LEL = 1% Drive 0240 12"; pull; auger 12"; drive 6"
10						
15	0241	1.5	28-75-48	LEAN CLAY Gray, moist, brittle, (CL)		09:20 Drive 12"; pull; auger 12"; drive 6" Hnu hollow stem = 20ppm Hnu sample tip = 2ppm LEL hollow stem = 1%
20	0242	1.4	25-49-79	SILTY SAND Gray, moist, oxide stains in upper 6 inches, some fine sand (SM)	SM	09:40 Hnu hollow stem = 20ppm Hnu above hollow stem = 2 ppm Hnu sample tip = 5ppm
25	0243a	0.5	38	SILT Gray, moist, oxidation stains (ML)	ML	
30	0243	1.4	26-55-107	SILT WITH SAND Gray, moist, white mineralization in seams in soil (ML)		Hnu hollow stem = 20ppm Hnu sample tip = 1ppm Resume Level D

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-5SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREA

ELEVATION 104.19 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 29 DEG - NORTH 31 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/14/88 FINISH 12/14/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0244a	0.5	66	SILT WITH SAND Brown, moist, fine grained sand (ML)	ML	Driller notes: Gravel at 33 ft Cobbles in cuttings
35	0244	1.5	33-88-62	SILTY CLAY WITH SAND Brown, moist, well graded sand (CL-ML)	CL/ML	11:10 Drive 12"; pull; auger 12"; drive 6" Hnu sample = BG
40	0245a	0.3	62	SANDY SILT Brown, dry, hard, fine sand (ML)	ML	
45	0245		23-57-140	SANDY SILT Brown, moist, fine sand (ML)		11:55
				END BORING AT 48.5 FEET		
50						
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-6SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 107.83 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/14/88 FINISH 12/15/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0273	1.3	24-39-42	SANDY LEAN CLAY Gray, dry, hard, reddish mottling, crumbly, black flakes (CL)		10:35 Begin drill 15 - 20 mph wind Hnu hollow stem = 20ppm
5	0274a	1.5	10-20-33	LEAN CLAY Dry, hard, reddish brown stains, black flakes (CL)		
10	0274	1.5	19-61-24	SANDY LEAN CLAY Dry, hard, mottled, fine sand (CL)		15:00
	0275	1.0	80-35-100	SANDY LEAN CLAY White crusting, dry, hard, fine sand (CL)		15:10 BAFB 0274 duplicate
15	0276a	1.0	19-50/5"	SANDY LEAN CLAY Gray, dry, hard, white crusting throughout sample, fine sand (CL)	CL	
20	0276	1.5	14-64-90	SANDY LEAN CLAY Dry, very hard, oxidation stains, fine sand (CL)		15:35
25	0277a		17-24-36	SANDY LEAN CLAY Medium to light brown, dry, hard, black flakes, crumbly (CL)		Driller notes: Gravel at 29 ft
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-6SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 107.83 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/14/88 FINISH 12/15/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0277	1.5	26-39-61	SANDY LEAN CLAY Light brown, dry, hard white crust (CL)	CL	Gravel at sample depth. Sample at 31 ft.
						30 mph wind
35	0278a	1.5	10-18-25	LEAN CLAY Medium to light brown, moist, hard, oxide staining (CL)		Wind gust to 50 mph
40	0278	1.5	15-31-65	CLAYEY SAND Tan, dry, very dense, oxide stains (SC)	SC	16:40 Sample End drill 12/15/88 07:50 Begin drill
45	0279a	1.4	9-27-43	POORLY GRADED SAND Gray, dry, very dense, 2mm black seam in sample (SP)	SP	Hnu = 13ppm
50	0279	1.4	8-34-79	CLAYEY SAND Brown, dry, very dense, oxide staining (SC)	SC	08:35
				END BORING AT 51.5 FEET		
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-7SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 104.38 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/4/89 FINISH 1/4/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0363	1.5	10-22-17	SILT WITH SAND Gray, moist, dense, black flakes and streaks, fine sand (ML)	ML	11:15 Begin drill Sample Hnu sample = 130ppm Level C protection
5	0364	1.5	29-82-119	LEAN CLAY WITH SAND Gray and brown, dry, very hard, crumbly, fuel stains (CL)	CL	11:45 Hnu cuttings = 30ppm
	0365	1.5	22-71-126			12:00 BAFB 0364 duplicate Hnu sample = 5ppm
10	0366	1.5	23-146-130	SANDY LEAN CLAY Gray, dry, very hard, reddish brown stains, fine sand (CL)		12:15 12:25 - 13:15 Lunch Level D protection after lunch
15	0367	1.5	32-58-87	CLAYEY SAND Light gray to brown, very dense, crumbly (SC)	SC	15:35 Hnu cuttings = 40ppm
20	0368	1.5	11-84-132	CLAYEY SAND Brown to light brown, dry, very dense, crumbly, gray mottled (SC)		15:45
				END BORING AT 21.5 FEET		
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-8SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREA.

ELEVATION 104.22 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/5/89 FINISH 1/5/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0369	1.5	7-15-13	SANDY LEAN CLAY Gray, wet, brown and black stains, subrounded gravel (CL)	CL	11:05 Begin drill Sample Hnu sample = 35ppm
5	0370	1.4	30-68-119	SANDY LEAN CLAY Light brown, very hard, discoloring from fuel, crumbly (CL)		11:25 Hnu cuttings = 5ppm
10	0371	1.5	40-200/3"-167	POORLY GRADED SAND Gray to reddish brown, dry, very dense, weakly cemented chunks (SP)	SP	11:45 Hnu cuttings in drum = 18pp.
15	0372	1.4	34-68-160/2"	SILTY CLAY Light brown, dry, very hard, oxide stains throughout, crumbly (CL-ML)	CL/ML	12:10 Hnu cuttings = 5ppm
20	0373	1.5	43-69-84	SANDY SILT Light to medium brown, dry, very hard, fine sand, crumbly (ML)	ML	12:30
25				END BORING AT 21.5 FEET		12:45 End drill
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-9SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 106.54 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 70 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/11/89 FINISH 1/11/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				WELL GRADED GRAVEL Oily (GW)	GW	08:15 Begin drill
	0322	1.5	34-35-78	SANDY LEAN CLAY WITH GRAVEL Brown, wet (CL)		08:20 Hnu hollow stem = 0.4ppm Hnu sample tip = 86
	0323a	0.5	54	GRAVELLY LEAN CLAY Dark brown, wet, fine gravel (CL)		
5						
	0323	1.5	31-101-51	LEAN CLAY Brown, moist, firm, blocky (CL)		08:50 Drive 12"; pull; auger 12"; drive 6"
10					CL	
	0324a	0.5	32	LEAN CLAY Brown, moist, hard, blocky (CL)		
15						
	0324	1.5	39-61-50	LEAN CLAY WITH SAND Brown, moist, firm, fine gravel (CL)		09:45 Drive 12"; pull; auger 12"; drive 6"
				SANDY SILT Brown, moist, fine grained sand (ML)	ML	
20						
	0325a	0.5	51	SILTY CLAY Brown, moist, firm, oxidation stains (CL-ML)	CL/ML	
25						
	0325	1.5	60-72-94	LEAN CLAY Brown, moist, hard, oxidation stains (CL)	CL	10:25 Drive 6"; pull; auger 6"; drive 6"; pull; auger 6"; drive 6"
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-9SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREA

ELEVATION 106.54 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 70 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/11/89 FINISH 1/11/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30					CL	
	0325a	0.5	60	SILTY CLAY Tan, moist, hard, blocky, oxidation stains (CL-ML)	CL/ML	
35						Driller notes: Gravel/cobbles, rotation siezing
	0326	1.5	40-65-85	LEAN CLAY WITH GRAVEL Brown, moist, firm, fine sub-angular gravel (CL)		11:55 Pin on rotary table hoist breaks. Stop to repair. 12:15 Resume drill Drive 0326 12"; pull: auger 12", drive 6"
40						
	0327a	0.5	28	LEAN CLAY Brown, moist, firm, blocky (CL)	CL	
45						
	0327	1.5	39-66-77	LEAN CLAY Brown, moist (CL)		13:50
50				END BORING AT 49.0 FEET		
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-10SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 106.88 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - NORTH 55 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/12/89 FINISH 1/12/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0328	1.4	43-28-41	WELL GRADED GRAVEL Oily (GW)	GW	07:35 Begin drill 13:55 Drive 0328 in mock-up area
	0329a	0.5	35	GRAVELLY LEAN CLAY Dark gray, moist, firm, well graded gravel (CL)		07:45 Drive 0329a Hnu sample = 1.5ppm LEL = 0.0% Hnu cuttings = 1ppm Hnu breathing zone = BG 08:00 Water from mock-up pond in boring. Pull rig ahead 4 ft and continue boring.
5						
	0329	1.4	25-52-72	LEAN CLAY Reddish brown, moist, firm, with sand above 8 ft (CL)	CL	
10						
	0330a	0.5	47	LEAN CLAY Tan, moist, hard (CL)		Hnu breathing zone = BG
15						
	0330	1.4	100-52-62			09:20 Drive 6": pull; auger 6"; drive 12"
				SANDY SILT Tan, moist, firm, fine grained (ML)	ML	
20				SILTY SAND Brown, moist, fine grained (SM)	SM	
	0331a	0.6	56			Hnu breathing zone = BG
				SANDY SILT Brown, moist, firm, fine grained (ML)	ML	
25						
	0331	1.4	50-35-30	SILTY SAND Brown, moist, well graded sand (SM)	SM	09:55 Drive 6": pull; auger 6"; drive 12" Hnu sample = 20ppm
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-10SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION FIRE PROTECTION TRAINING AREAS

ELEVATION 106.88 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - NORTH 55 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/12/89 FINISH 1/12/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30					SM	
	0407a	0.5	58	SANDY LEAN CLAY Brown, moist, white powder, seam at bottom of sample (CL)		
35						Driller notes: Cobbles, gravel
	0407	1.4	27-34-75	LEAN CLAY Brown, moist, firm, black coloring (CL)	CL	11:00
40						
	0408a	0.5	61	LEAN CLAY Brown, moist, firm, black coloring (CL)		
45						11:40 to 12:10 Lunch
	0408	1.4	100-33-33	SILTY CLAY Brown, moist, hard, dry hard lumps in soil, blocky (CL-ML)	CL/ML	12:40 Drive 6"; pull; auger 6"; drive 12" End drill
50				END BORING AT 49.0 FEET		
55						
60						

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	3-C-1GW	SHEET 1	OF 5

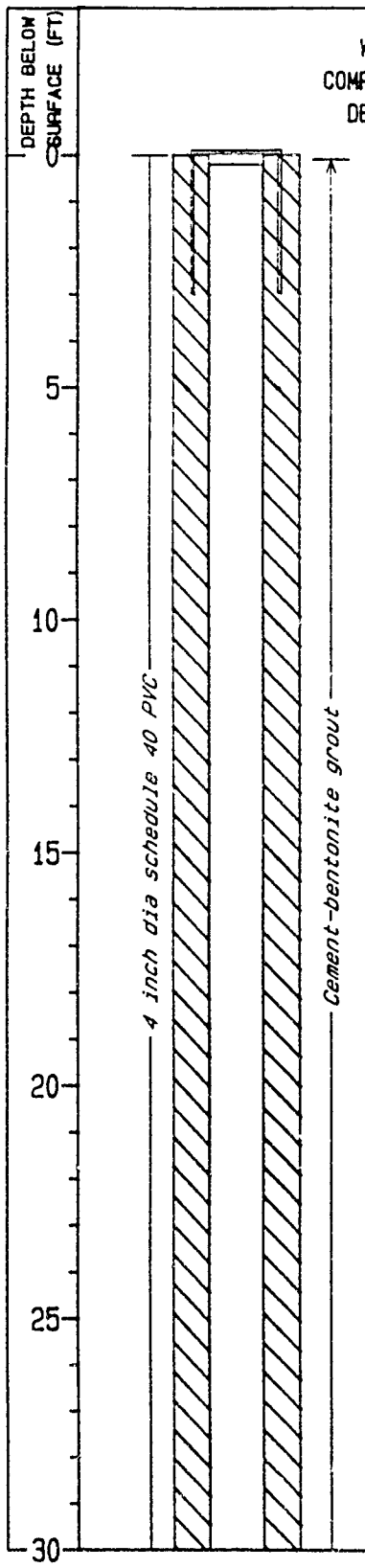
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF MOCK PLANE FPTA NO 2

ELEVATION 105.59 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -10.86 FT NGVD 3/28/89 START 12/13/88 FINISH 12/13/88 LOGGER C.ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
CLAYEY SAND dark yellow brown moist well graded sand 40% lean clay trace gravel (SC)	SC	start 9:50 12/13/88
LEAN CLAY brownish yellow moist medium toughness plasticity 10% well graded subangular gravel (CL)	CL	fast drilling
FAT CLAY brownish yellow dry high dry stregnth (CH)	CH	H-Nu=0.3 ppm
LEAN CLAY yellowish brown moist medium dry stregnth toughness plasticity (CL)	CL	
SILT strong brown moist fast dilatency low toughness plasticity (ML)	ML	fast drilling H-Nu=0.6 ppm downhole
LEAN CLAY light yellow brown moist medium toughness and plasticity (CL)	CL	
FAT CLAY dark yellowish brown dry high dry stregnth (CH)	CH	drilling slows clay clogs discharge hose
LEAN CLAY WITH SAND yellowish brown moist medium toughness plasticity 20% fine sand (CL) moderately cemented layers	CL	H-Nu=1.6 ppm downhole

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	3-C-1GW	SHEET 2	OF 5

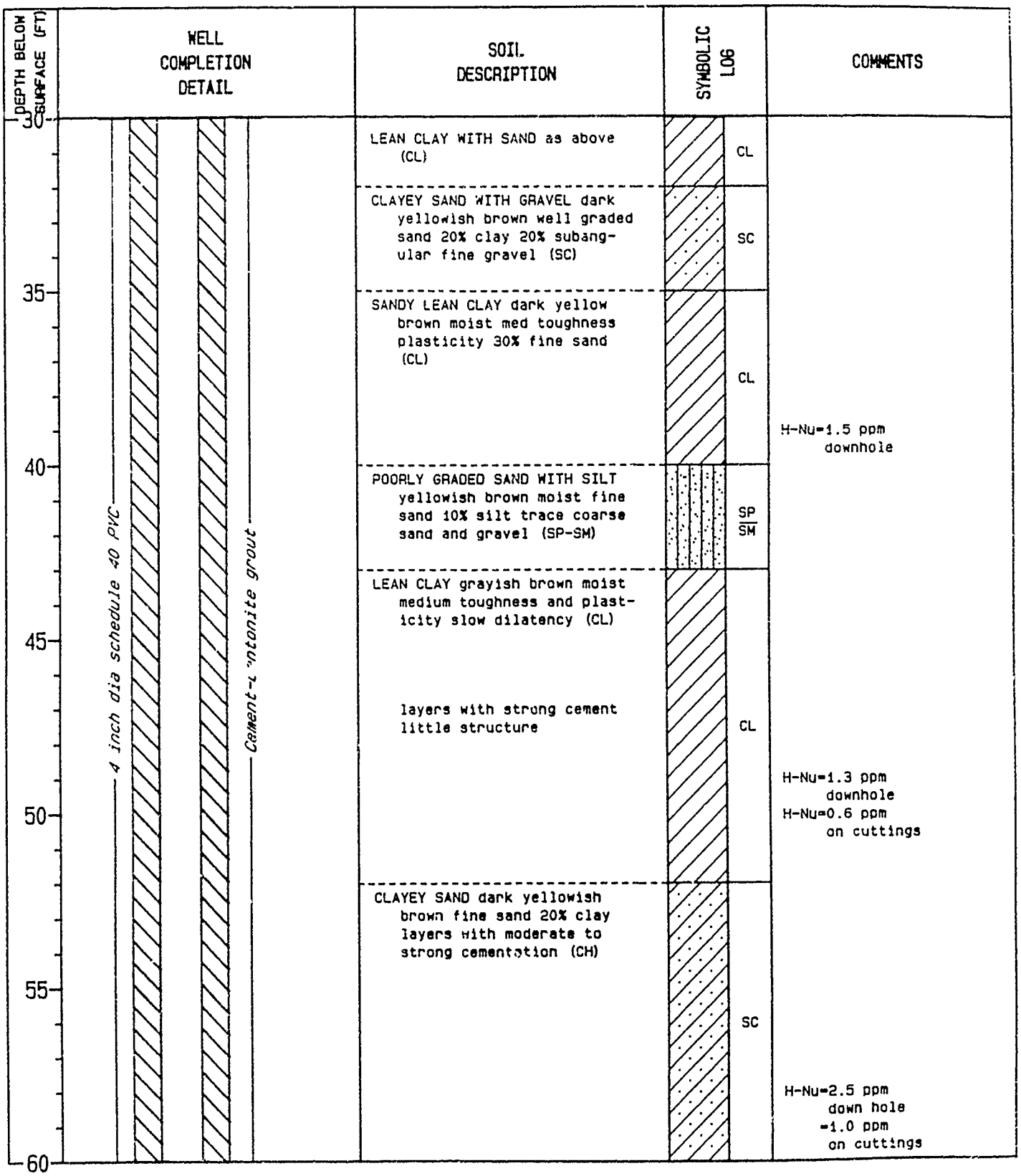
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF MOCK PLANE FPTA NO 2

ELEVATION 105.59 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -10.86 FT NGVD 3/28/89 START 12/13/88 FINISH 12/13/88 LOGGER C.ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-1GW	SHEET 3 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF MOCK PLANE FPTA NO 2

ELEVATION 105.59 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -10.86 FT NGVD 3/28/89 START 12/13/88 FINISH 12/13/88 LOGGER C.ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
60	2nd 4 inch dia schedule 40 PVC; Cement-bentonite grout	CLAYEY SAND as above (SC)	SC	
65		WELL GRADED SAND dark yellow brown moist fine to medium sand 20% subrounded coarse sand layers with moderate cementation (SW)	SW	H-Nu=3.1 ppm downhole =1.6 ppm on cuttings
70		as above coarse sand content increases		
75		POORLY GRADED SAND dark yellow brown moist medium sand 40% fine sand (SP)	SP	H-Nu=2.1 ppm downhole =0.4 ppm on cuttings
80		thin lenses of fat clay		
		LEAN CLAY light yellow-brown mddium dry stregnth plasticity and toughness (CL)	CL	
85		CLAYEY SAND yellowish brown moist fine sand 30% clay (SC)	SC	
		WELL GRADED SAND dark yellow brown moist fine to medium sand 10% coarse sand trace gravel and cobbles (SW)	SW	H-Nu=3.2 ppm downhole =1.7 ppm on cuttings
90				

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	3-C-1GW	SHEET 4	OF 5

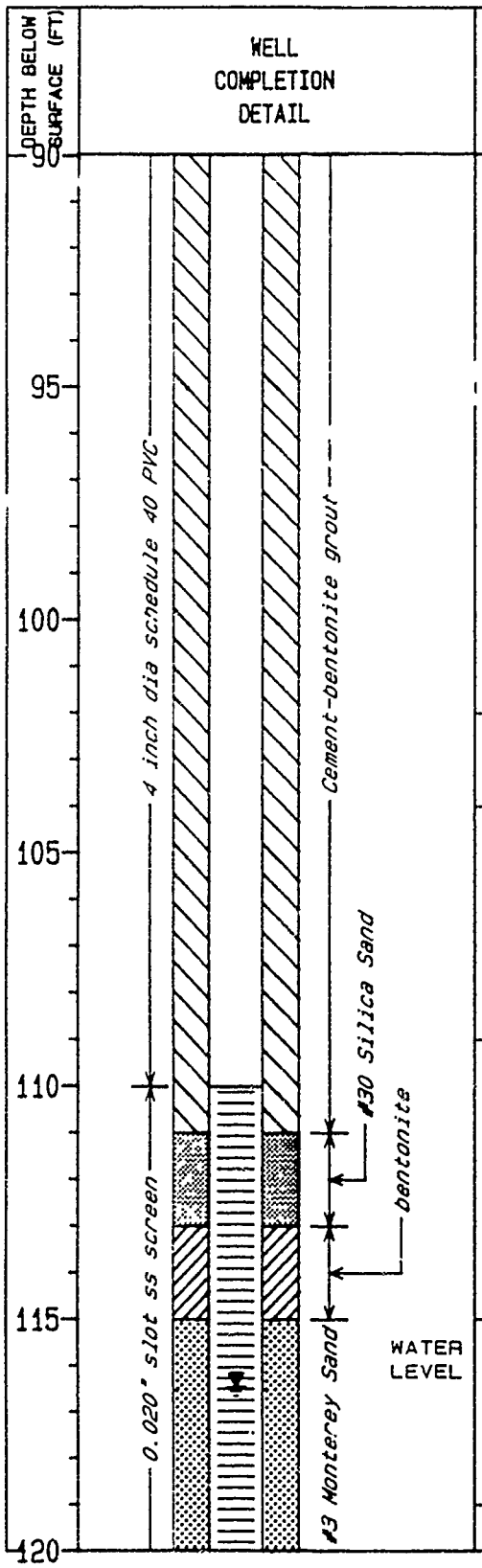
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF MOCK PLANE FPTA NO 2

ELEVATION 105.59 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -10.86 FT NGVD 3/28/89 START 12/13/88 FINISH 12/13/88 LOGGER C.ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	WELL GRADED SAND dark yellow brown fine to medium sand 10% coarse sand trace gravel and cobbles some layers of moderate to strong cementation with no structure (SW)	SW	H-Nu=2.5 ppm downhole =0.7 ppm on cuttings
	FAT CLAY pale brown dry medium to high dry stregnth (CH)	CH	
	SILTY SAND brownish yellow moist fine sand 40% silt (SM)	SM	H-Nu=1.5 ppm downhole =0.4 ppm on cuttings
	POORLY GRADED SAND brownish yellow moist fine sand trace silt layers of moderate cementation (SP)	SP	
	increased silt and coarse sand content		fast drilling through silts and sands
	SILTY SAND dark yellow brown moist fine to medium sand 30% silt trace coarse sand (SM)	SM	H-Nu=1.6 ppm downhole =0.5 ppm cutings
	POORLY GRADED SAND coarse (SP)	SP	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	3-C-1GW	SHEET 5 OF 5

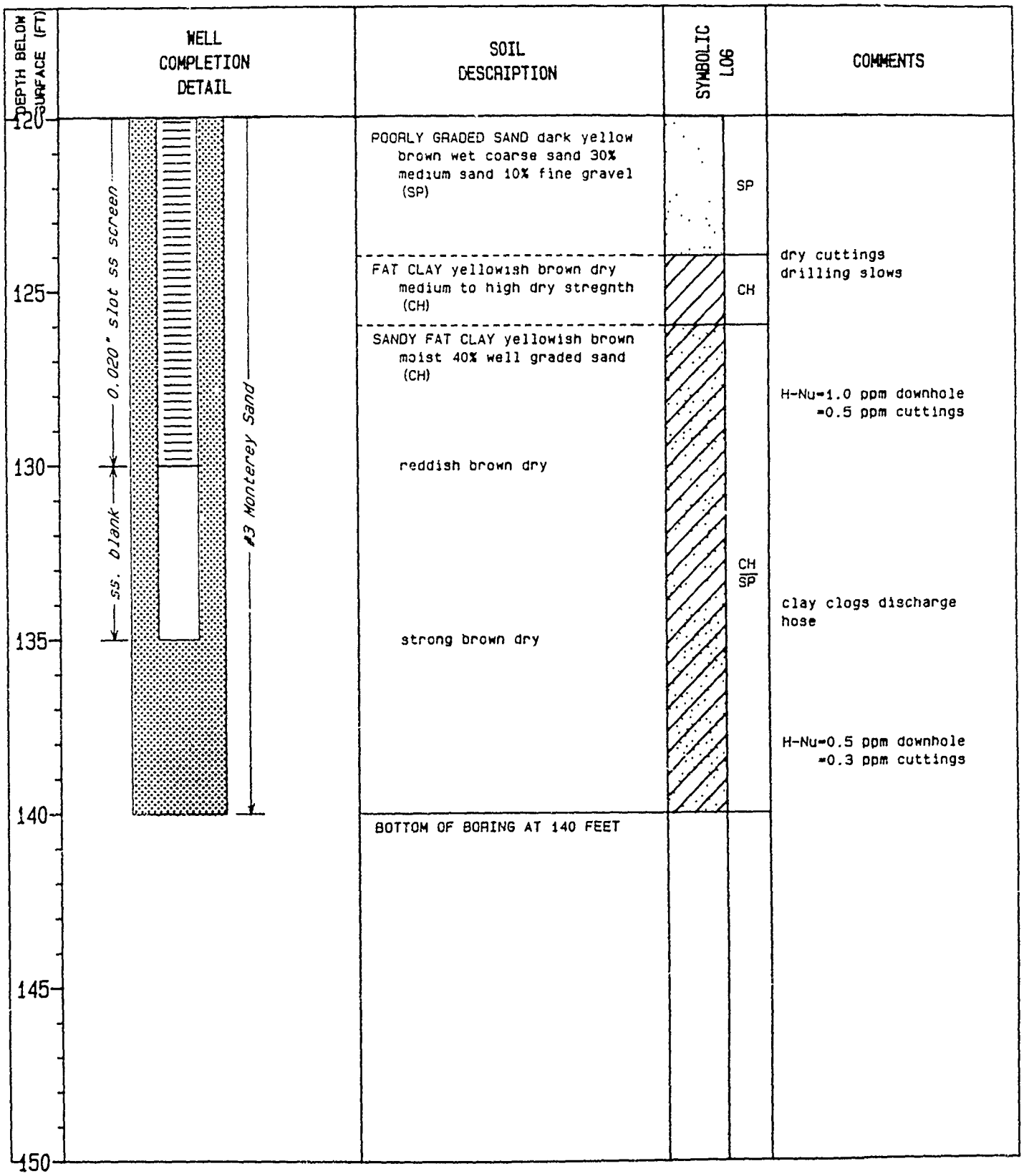
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF MOCK PLANE FPTA NO 2

ELEVATION 105.59 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE -10.86 FT NGVD 3/28/89 START 12/13/88 FINISH 12/13/88 LOGGER C.ELLIOTT



SITE 4

BATTERY SHOP DRY WELL

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	4-C-1SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION BATTERY SHOP DRY WELL

ELEVATION 119.87 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 26.5 DEG - NORTH 30 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/17/89 FINISH 1/18/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				LEAN CLAY WITH SAND Brown, moist (CL)	CL	Boring 11.4 ft south of neutralized acid pit. 08:45 Begin drilling
	0409a	0.5	37	LEAN CLAY WITH FINE GRAVEL Orange brown, moist, firm, completely weathered sub-rounded gravel (CL)		Hnu cuttings = 86
5				COARSE GRAVEL Subrounded, as seen in cuttings (GP)	GP	09:35 Refusal when driving sampler
10	0409	1.5	57-50-54	WELL GRADED SAND Tan, moist, very dense (SW)	SW	10:45 Pin on hydraulic ram breaks 15:25 Resume drill 16:10 Sample 0409 16:30 Sample 0410 BAFB 0409 duplicate 16:40 End drill 1/18/89 08:10 Begin drill
	0410	1.5	47-120-62			
15	0411	1.3	29-45-70	WELL GRADED SAND Gray, moist, very dense (SW)		
20	0412a	1.3	10-16-50/4"	SANDY LEAN CLAY WITH GRAVEL Medium brown, wet, very hard, well graded sand, subrounded fine gravel (CL)	CL	
25	0412	1.5	20-135/5 1/2"-80	SANDY SILT Reddish brown, dry, very hard, well graded sand, crumbly (ML)	ML	
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	4-C-1SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION BATTERY SHOP DRY WELL

ELEVATION 119.87 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 853 ANGLE 26.5 DEG - NORTH 30 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/17/89 FINISH 1/18/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
30						ML	
	0413a	1.0	35-50/4"	SILTY SAND Tan, dry, very dense, coarse sand (SM)		SM	Hnu = BG
35							
	0413	1.5	35-59-60	WELL GRADED SAND Gray, dry, very dense, gray ash (SW)		SW	10: 10
	0414	1.5	100-100-87				10: 52 BAFB 0413 duplicate
40							
	0415a	0.3	50/4"	SILTY SAND Tan, dry, very dense, well graded, lithified chunks (SM)		SM	
45							
	0415	1.5	100-66-100	WELL GRADED SAND Dark gray, dry, very dense, lithified chunks, weakly cemented (SW)		SW	12: 40
50				END BORING AT 49.0 FEET			
55							
60							

SITE 5

SR-71 SHELTERS DRAINAGE AREA

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	5-C-1SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SR-71 SHELTER DRAINAGE AREA

ELEVATION 113.59 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/9/89 FINISH 1/9/89 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0380	1.0	6-12-21	SILTY SAND Orangish brown, moist, medium dense, well graded (SM)	SM	12:10 Begin drill Hnu = 1.2ppm
	0381a		9-19-24	CLAYEY GRAVEL WITH SAND Reddish orange, moist, moderate plasticity (GC)	GC	
5	0381b	0.4	6-11-16	WELL GRADED GRAVEL WITH SILTY CLAY Orange brown, moist, medium dense, moderate plasticity (GW)	GW	12:30
10	0381	1.5	9-17-19	SILTY CLAY WITH SAND AND GRAVEL Orange brown, moist, firm, moderate plasticity, gravel is decomposed ash or siltstone (CL-ML)	CL/ML	12:50
15	0382a	0.5	12-17-50/3"	LEAN CLAY WITH SAND AND GRAVEL Light brown, firm, high plasticity (CL)	CL	13:05 Driller notes: Gravel at 16 ft
20	0382	1.5	24-65-88	WELL GRADED SAND Fine to medium grained, some gravel (SW)	SW	13:45 Driller notes: Cobbles at 24.8 ft
25	0383a	1.0	13-15-15	WELL GRADED SAND Medium density (SW)		14:15
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	5-C-1SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SR-71 SHELTER DRAINAGE AREA

ELEVATION 113.59 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/9/89 FINISH 1/9/89 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0383	1.5	14-17-36	SILTY SAND Medium density, medium to fine grained (SM)		14:20
35	0384a	1.0	17-33-33	SILTY SAND Light brown, medium density, some weathered granite (SM)	SM	14:45
40	0384	1.5	18-24-31	SILTY SAND Light brown (SM)		Cobbles stop drill at 39 ft 15:30
	0385	1.5	45-100-100/1"	POORLY GRADED SAND Fine grained, grading to weathered rock, large biotite flakes (SP)	SP	15:40 BAFB 0384 duplicate
45	0386a	1.5	17-29-37	CLAYEY SAND Grayish orange, medium dense, moist (SC)	SC	16:10
50	0386	1.5	16-34-47	WELL GRADED SAND Orange tint, some weathered rock (SW)	SW	16:20
				END BORING AT 51.5 FEET		
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	S-C-2S8	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SR-71 SHELTER DRAINAGE AREA

ELEVATION 112.11 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/10/89 FINISH 1/10/89 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
0	0387	1.5	6-9-15	SANDY LEAN CLAY Brown, moist, firm, low plasticity (CL)		CL	10:25 Begin drill Sample
5	0388a	1.0	10-13-25	SANDY LEAN CLAY WITH GRAVEL Orange brown, moist, firm, angular to subrounded fine gravel (CL)			10:50
10	0388	1.5	7-12-11	SILTY CLAY WITH SAND Dark brown, moist, firm (CL-ML)		CL/ML	11:00
15	0389a	0.6	19-33-51	SILT WITH SAND AND GRAVEL Orange brown, moist, firm (ML)		ML	11:15
20	0389	1.5	16-33-31	LEAN CLAY Gray, moist, firm, mottled (CL)		CL	11:30
25	0390a	1.5	23-26-44	LEAN CLAY WITH SAND AND GRAVEL Light brown, hard, gravel is weathered (CL)			11:45
30						GW	

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	5-C-2SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SA-71 SHELTER DRAINAGE AREA

ELEVATION 112.11 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/10/89 FINISH 1/10/89 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0390	1.5	31-77-23-80	WELL GRADED GRAVEL WITH SAND Light brown, dense, gravel varies from weathered to competent (GW)	GW	12: 15
35	0391a	0.5	50/4"	SILTY SAND Light brown, dry, very dense (SM)	SM	12: 35 Lunch
40	0391	1.5	23-60-65	WELL GRADED SAND Medium dense (SW)	SW	14: 05
				SILT Light brown, hard (ML)	ML	
45	0392a	1.1	12-12-12	WELL GRADED SAND Orange brown, medium dense (SW)	SW	15: 15
50	0392		7-38-23	WELL GRADED SAND WITH GRAVEL Medium dense (SW)	SW	15: 30
				POORLY GRADED SAND Medium dense (SP)	SP	15: 40 End drill
				END BORING AT 51.5 FEET		
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	5-C-3SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SR-71 SHELTER DRAINAGE AREA

ELEVATION 110.74 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/11/89 FINISH 1/11/89 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0393	1.5	9-6-12	CLAYEY SAND Orange brown, moist, medium dense (SC)	SC	10:40 Begin drill Sample
5	0394a	1.0	7-11-11	SILT WITH SAND Brown, moist, well graded sand (ML)	ML	11:00
10	0394	1.5	3-3-13	LEAN CLAY Reddish brown, moist, black flakes (CL)	CL	11:15
15	0395a	1.3	17-27-25	LEAN CLAY WITH SAND Yellowish brown, hard, crumbly (CL)		11:50
20	0395	1.5	9-10-50	LEAN CLAY WITH SAND Yellowish gray, moist, hard, mottled (CL)		12:00
25	0396a		15-23-30	LEAN CLAY Light brown, hard, crumbly, mottled (CL)		13:00
30					GW	

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	5-C-3SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SR-71 SHELTER DRAINAGE AREA

ELEVATION 110.74 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/11/89 FINISH 1/11/89 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0396	1.5	24-100-32	WELL GRADED GRAVEL Dry, very dense, subrounded, some silt (GW)	GW	13:20
	0397	1.5	50-21-55			13:45 BAFB 0396 duplicate
35	0398a	1.5	10-28-31	SILTY SAND Brownish yellow, medium to fine sand (SM)	SM	
40	0398	1.5	18-32-43	SILT WITH SAND Orange brown, dry, well graded sand (ML)	ML	14:20 14:30 Lost sample in hole 14:40 Retrieved sampler
45	0399a		9-18-25	CLAYEY SAND Orange and brown, moist, medium dense, color changing to gray with depth (SC)	SC	15:00
50	0399	1.5	8-27-32	SILT WITH SAND Orange brown, dry, firm, well graded sand (ML)	ML	15:15
55				END BORING AT 51.5 FEET		
60						

PROJECT NUMBER	BORING NUMBER	SHEET 1 OF 2
SAC24359.R1.04	5-C-4SB	

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SR-71 SHELTER DRAINAGE AREA

ELEVATION 115.40 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/12/89 FINISH 1/12/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0400	1.5	4-6-5	CLAYEY SAND Medium brown, wet, medium dense (SC)	SC	10:35 Begin drill Sample
5	0401a	1.1	9-12-11	SANDY LEAN CLAY Medium brown, moist, stiff, well graded sand (CL)	CL	
10	0401	1.5	12-19-18	SANDY LEAN CLAY Dark gray, moist, stiff, well graded sand, low plasticity (CL)		11:10 Driller notes: Gravel at 12 ft
15	0402a	0.3	62/6"	SANDY LEAN CLAY Light brown, dry, hard, well graded sand, low plasticity (CL)		Out of gravel at 17 ft Driller notes: Gravel at 17.5 ft Out of gravel at 19 ft
20	0402	1.4	17-43-73	SANDY LEAN CLAY Light brown to tan, very hard, low plasticity, crumbly (CL)		11:40
25	0403a	0.6	45/6"	SILTY SAND Tan to brown, dry, very dense, some subrounded fine gravel, crumbly (SM)	SM	Driller notes: Gravelly at 23 ft
30					ML	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	5-C-4SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SR-71 SHELTER DRAINAGE AREA

ELEVATION 115.40 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/12/89 FINISH 1/12/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0403	1.5	19-44-111	SANDY SILT Light brown, dry, very hard, well graded sand, crumbly (ML)	ML	13:15
35	0403a	1.5	26-27-26	WELL GRADED SAND Light brown to dark reddish brown, dry, very dense (SW)	SW	
40	0403	1.4	25-55-50	WELL GRADED SAND WITH GRAVEL Dark reddish brown to gray, dry, very dense, subrounded fine gravel (SW)		13:45
45	0404a	1.5	11-14-22	WELL GRADED SAND Very light tan, dry, dense (SW)		
50	0401	2.0	30-100-21-96	WELL GRADED SAND Dark gray, dry, very dense, weakly cemented (SW)		14:10 14:30 End drill Hnu = BG Hnu = BG
				END BORING AT 52.0 FEET		Hnu = BG
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	5-C-1GW	SHEET 1 OF 5

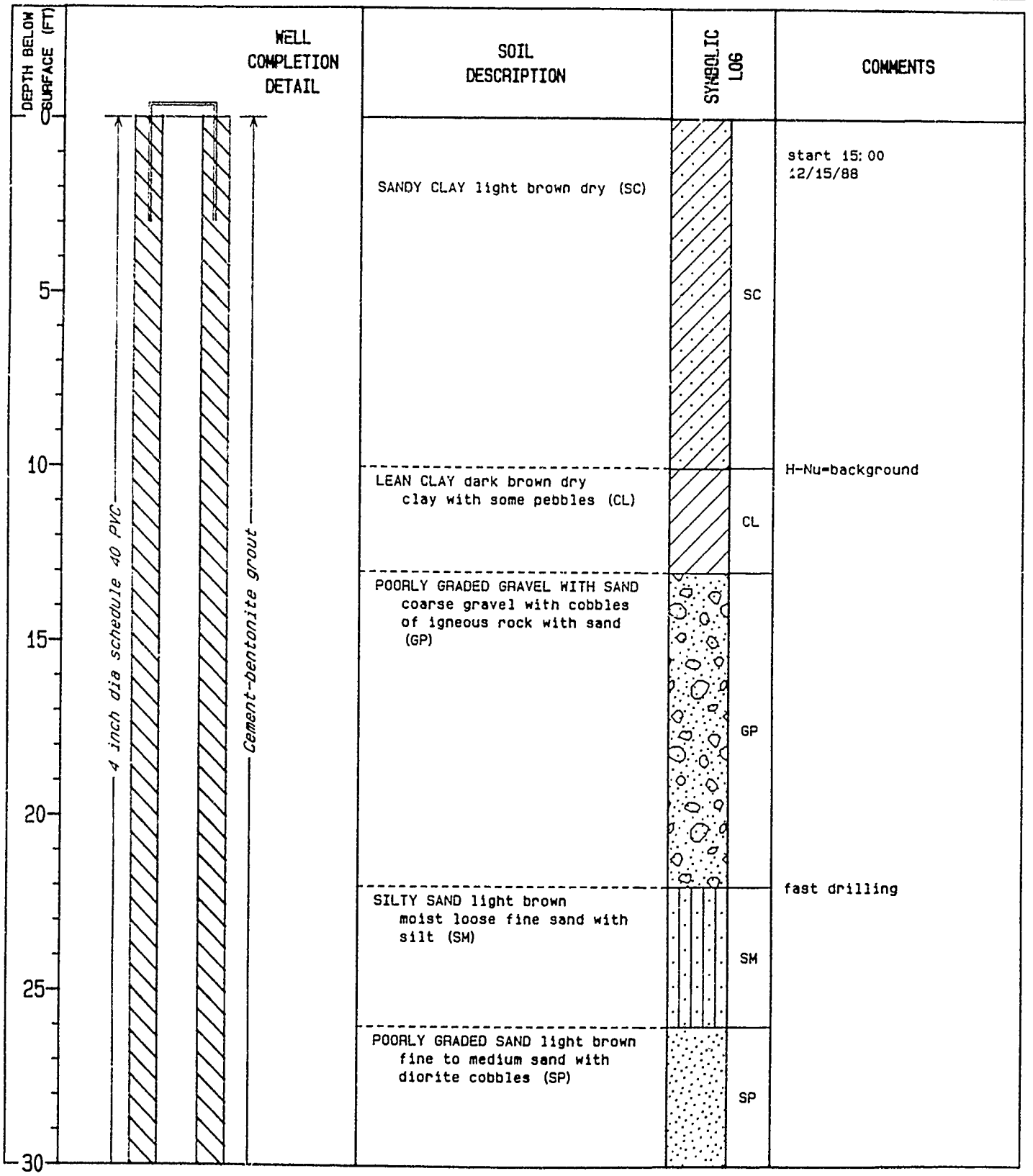
SOIL BORING LOG

PROJECT BEALE AFB LOCATION W. OF SR71 SHELTERS

ELEVATION 110.21 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL--STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.30 FT NGVD 3/27/89 START 12/15/88 FINISH 12/16/89 LOGGER P. LAWSON



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	5-C-1GW	SHEET 2 OF 5

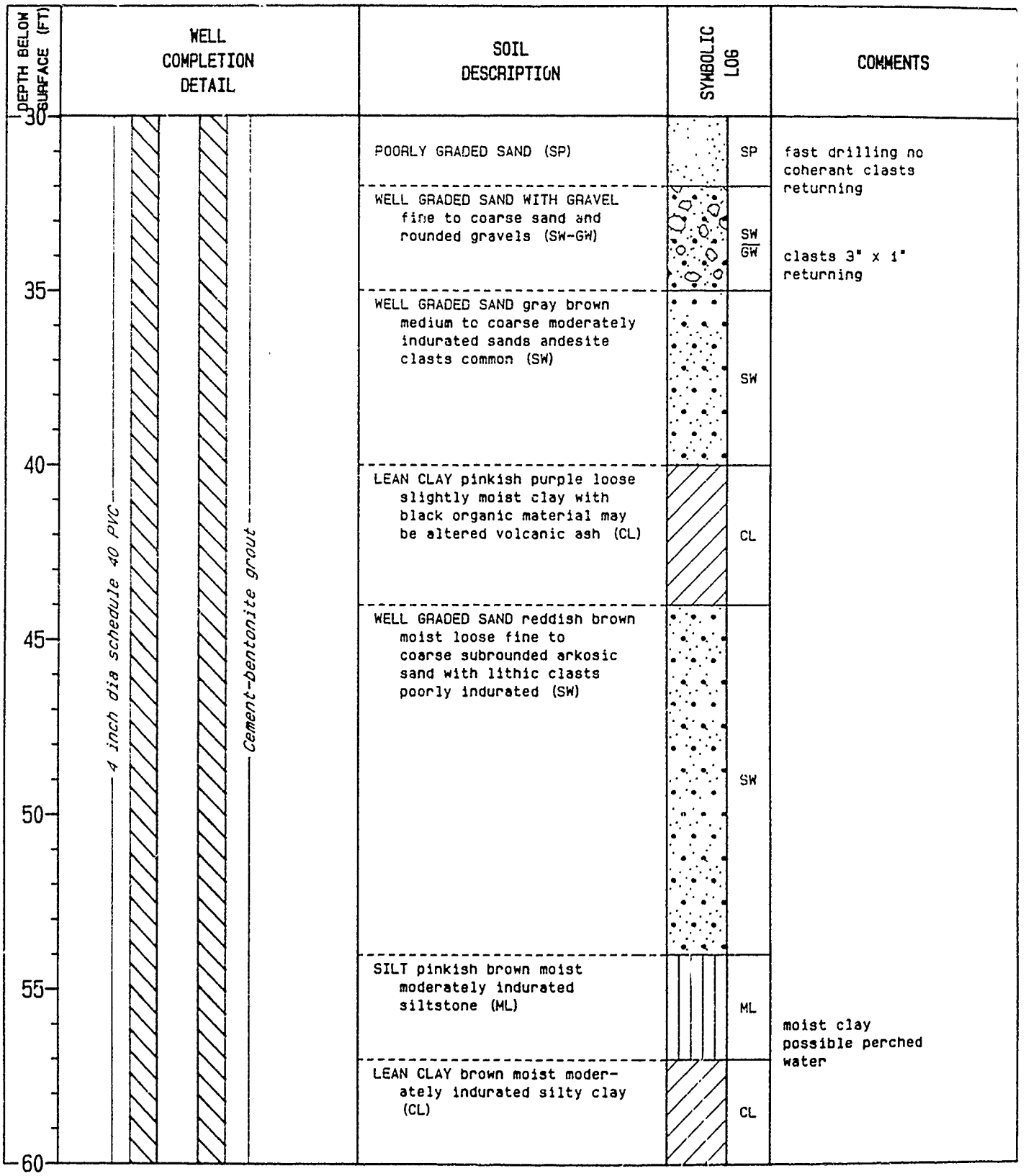
SOIL BORING LOG

PROJECT BEALE AFB LOCATION W. OF SR71 SHELTERS

ELEVATION 110.21 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.30 FT NGVD 3/27/89 START 12/15/88 FINISH 12/16/89 LOGGER P. LAWSON



PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	5-C-1GW	SHEET 3	OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION W. OF SR71 SHELTERS

ELEVATION 110.21 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.30 FT NGVD 3/27/89 START 12/15/88 FINISH 12/16/89 LOGGER P. LAWSON

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
60		LEAN CLAY as above (CL)	CL	
		SANDSTONE fine to coarse well graded well indurated with volcanic clasts (SST)	SST	
65		SILTSTONE very well indurated siltstone (ML)	ML	
		WELL GRADED GRAVEL fine to coarse rounded gravel with some cobbles (GW)	GW	
70	4 inch dia schedule 40 PVC			
75	Cement-bentonite grout	WELL GRADED SAND reddish brown slightly moist loose fine to coarse sand with lithic fragments (SW)		
80			SW	H-Nu=background
85		well graded sand as above		
90				

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	5-C-1GW	SHEET 4	OF 5

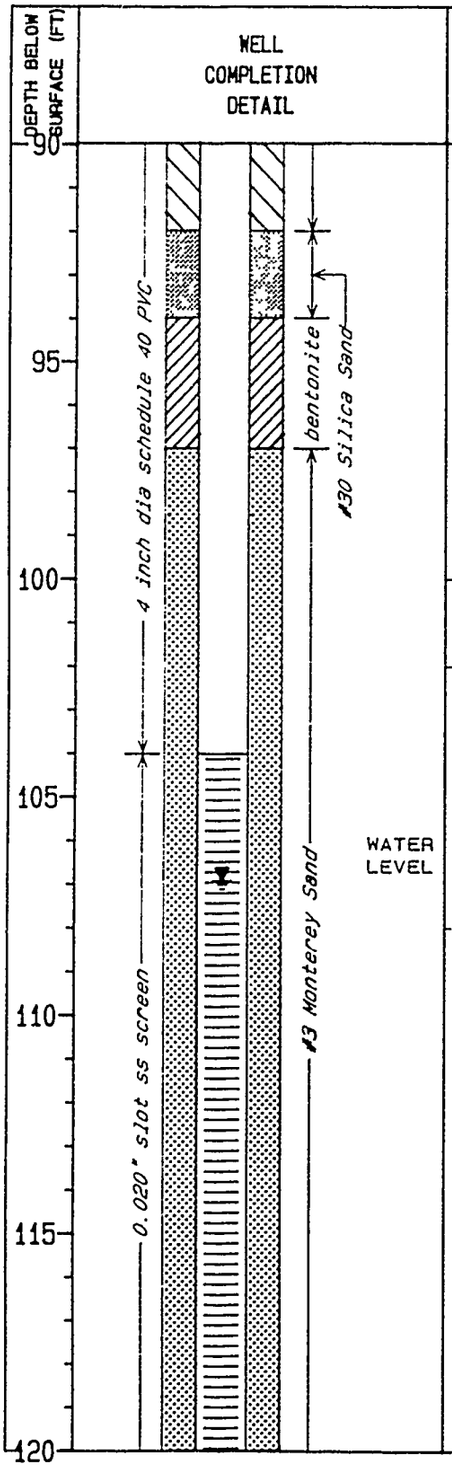
SOIL BORING LOG

PROJECT BEALE AFB LOCATION W. OF SR71 SHELTERS

ELEVATION 110.21 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.30 FT NGVD 3/27/89 START 12/15/88 FINISH 12/16/89 LOGGER P. LAWSON



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	WELL GRADED SAND reddish brown slightly moist loose fine to coarse sand with lithic fragments and some fine gravel (SW)	SW	
	WELL GRADED SAND WITH GRAVEL fine to coarse (GW-SW)	GW/SW	H-Nu=background
	CLAYSTONE well indurated silty claystone (CL)	CL	
	WELL GRADED SAND WITH SILT brown moist loose medium to coarse sand and fine rounded gravel with silt	SW/SM	moist sand

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	5-C-1GW	SHEET 5 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION W. OF SR71 SHELTERS

ELEVATION 110.21 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.30 FT NGVD 3/27/89 START 12/15/88 FINISH 12/16/89 LOGGER P. LAWSON

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
120		LEAN CLAY moist well indurated silty clay (CL)	CL	
				first water produced.
125	ss. blank; #3 Monterey Sand	WELL GRADED SAND brown wet loose fine to coarse sand (SW)	SW	
130		BOTTOM OF BORING AT 130 FEET		
135				
140				
145				
150				

SITE 6

LANDFILL NO. 2

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	6-C-1SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 115.32 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/1/88 FINISH 12/1/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SANDY SILTY CLAY Brown (CL-ML)	CL/ML	13:05 Begin drill Hnu = BG Color change
5	0087a	1.0	18-39-42	SANDY SILT Tan to light brown, dry, hard, some dark flakes (ML)	ML	
10	0087	1.1	16-47-50/3	SILTY SAND Tan to light brown, dry, very dense, some staining (SM)	SM	13:30
15	0088a	1.5	16-28-43	WELL GRADED SAND Tan to light brown, dry, very dense, some staining (SW)	SW	13:50 - 14:00 Fix Kelley unit on rig
20	0088	1.5	15-23-27	SANDY SILT Medium brown, dry, hard, gray stains, fine sand (ML)	ML	14:15
25	0089a	1.5	8-14-17	SANDY SILT Medium brown, dry, hard, gray staining (ML)		
30					SM	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	6-C-1SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 115.32 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/1/88 FINISH 12/1/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0089b	.5	10-29-36	SILTY SAND Medium brown, dry, very dense, gray stains, dark flakes (SM)	SM	
35	0089c	1.1	7-12-15	SANDY SILT Medium brown, dry (ML)	ML	
40	0089	1.3	30-49-70	WELL GRADED SAND WITH SILT AND GRAVEL Brown, dry, very dense, weakly cemented (SW)	SW	Driller notes: Gravels at 39.5 ft 15:30 sample time
45	0089d	1.5	9-10-19	WELL GRADED SAND Light brown to tan, moist, medium dense (SW)		Driller notes: Out of gravel at 43.5 ft
50	0089e		5-8-17	SILTY SAND Brown, wet, medium dense (SM)	SM	Water on sampler at 49.0 ft
55				END BORING AT 51.5 FEET		
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	6-C-2SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 122.13 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER, MOBILE B53 ANGLE 29 DEG SOUTH 10 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/12/88 FINISH 12/12/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SANDY LEAN CLAY Brown, moist, well graded sand (CL)	CL	
	0177A	0.5	29	SILTY SAND WITH GRAVEL Brown, dry, well graded sand, fine subrounded gravel (SM)	SM	Driller notes: Drilling in gravel.
5						
	0177	1.3	97-100/4.5"-100/5"	CLAYEY SAND WITH GRAVEL Brown, moist, well graded, weakly cemented (SC)	SC	09:30 Drive 6": pull; auger 6": drive 4-1/2": pull; auger; drive 5"
10						
	0178A	0.5	30	SANDY SILTY CLAY Brown, moist, well graded, black coarse sand (CL-ML)	CL/ML	
15						
	0178	1.4	20-63-47	LEAN CLAY Brown, moist, gray coloring in soil (CL)		10:00 Drive 12": pull; auger 12": drive 6" 10:00 Hnu = BG
20						
	0179A	0.5	20	LEAN CLAY Brown, moist, gray coloring or mineralization in soil (CL)	CL	
25						
	0179	1.5	34-41-71	LEAN CLAY WITH SAND Brown and yellowish brown mottled, moist, coarse sand (CL)		10:40
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	6-C-2SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 122.13 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER, MOBILE B53 ANGLE 29 DEG SOUTH 10 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/12/88 FINISH 12/12/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30					CL	
	0180a	0.5	31	CLAYEY SAND WITH GRAVEL Brown, moist, well graded sand, fine subrounded gravel (SC)		
35					SC	
	0180	1.3	20-52-109	CLAYEY SAND WITH GRAVEL Brown, moist, well graded, fine subrounded gravel (SC)		11:05
40						
	0181a	0.5	32	SILTY SAND WITH GRAVEL Brown, moist, well graded sand, fine subrounded gravel (SM)	SM	Driller notes: Hard drilling at 44 ft. Shift gear on rotation drive. 11:45 Hnu = 86
45						
	0181	1.5	36-76-60	SILTY SAND WITH GRAVEL Brown, moist, well graded sand, fine subrounded gravel (SM)		11:55 Drive 12": pull: auger 12": drive 6"
50				LEAN CLAY Tan, moist, blocky (CL)	CL	
	0182a	0.5	28	LEAN CLAY WITH GRAVEL Brown, moist, well rounded fine gravel and weathered rock (CL)		
55						
	0182	1.3	36-42-58	LEAN CLAY WITH SAND Brown, moist, fine to medium sand (CL)		12:55
60				END BORING AT 59.0 FEET		

PROJECT NUMBER	BORING NUMBER	
SAC 24359.RI.04	6-C-3SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 113.83 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER, MOBILE B-53 ANGLE 29 DEG NORTH 29 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/8/88 FINISH 12/8/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
0				LEAN CLAY WITH SAND Brown, moist, mottled (CL)		CL	11:40 Begin Hnu = BG
	0164a	0.5	34	SANDY SILT WITH GRAVEL Orange brown, dry, well graded (ML)		ML	
5							
	0164	1.3	31-36-53	GRAVELLY LEAN CLAY WITH SAND Brown, moist, subangular (CL)		CL	
10							
	0165a	0.5	20	SILT Brown, moist, (ML)		ML	
15				d=17.5 SILTY SAND WITH GRAVEL Tan, moist, well graded, fine gravel (SM)			
	0165	1.5	34-63-49				12:40 Drove 12"; pull; auger 12"; drive 6"
20							
	0166a	0.5	21-24-33	SILTY SAND Tan, moist, fine grained (SM)		SM	13:00
25							
	0166		16-18-39	SILTY SAND Tan, moist, well graded (SM)			13:13
30							

PROJECT NUMBER	BORING NUMBER	
SAC 24359.RI.04	6-C-3SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 113.83 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER, MOBILE B-53 ANGLE 29 DEG NORTH 29 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/8/88 FINISH 12/8/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30						
	0167a	0.5	3.	SILTY SAND Tan, moist, well gr ded, lens of fine silty sand at 32.6 feet (SM)	SM	
35				GRAVEL AND COBBLES Well rounded (GW)	GW	Driller notes: cobbles and gravel between 35 and 37 ft
	0167	1.5	9-36-80	SILTY SAND Tan, moist, poorly graded fine (SM)	SM	13:45
40						
	0168a	0.0	34	NO RECOVERY	CL	14:08 No recovery drill 2 ft and sample again.
	0168b	0.5	35	LEAN CLAY Brown, moist (CL)		
45						
	0168	1.5	100-26-54	LEAN CLAY WITH FINE SAND Brown, moist (CL)		14:30 Drove 6"; pull; auger 6"; drive 12"
50						
	0169a	0.0	54-100-45	NO RECOVERY		Drive 12"; pull; auger 12"; drive 6"; 2" recovery, lean clay in tip, cobble may have blocked tip
55	0169	1.4	24-50-88	LEAN CLAY WITH SAND Brown, moist, fine to medium sand (CL)		15:20 Redrive 0169
	0170	1.4	44-71-55	SILTY SAND Brown, moist, well graded (SM)	SM	Drive 12"; pull; auger 12"; drive 6"
60				END BORING AT 59.0 FEET		15:45 End drilling

PROJECT NUMBER	BORING NUMBER	
SAC 24359.RI.04	6-C-4SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 118.01 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER-MOBILE B-53, ANGLE 29 DEG NORTH 70 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/12/88 FINISH 12/13/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0228a	0.5	14	LEAN CLAY WITH SAND Brown, moist, mottled, oxidation stains, fine to medium sand (CL)	CL	
5	0228	1.5	29-59-39	LEAN CLAY Tan, moist, dark brown lumps of lean clay in soil (CL)		15:57 Drive 12"; pull; auger 12"; drive 6"
10	0229a	0.5	37	SILT Brown, moist, crumbly, black coloring in soil (ML)	ML	
15	0229	1.5	36-69-48	SILTY CLAY Tan, moist (CL-ML)	CL/ML	16:25
20	0230a	0.5	34	SILTY CLAY Reddish brown, moist (CL-ML)		17:00 End drill 12/13/88 07:10 Begin drill
25	0230		44-91-41	LEAN CLAY Brown, moist (CL)	CL	07:25 Drive 12"; pull; auger 12"; drive 6"
30						

PROJECT NUMBER	BORING NUMBER	
SAC 24359.RI.04	6-C-4SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 118.01 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER-MOBILE B-53 ANGLE 29 DEG NORTH 70 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/12/88 FINISH 12/13/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0231a	0.5	31	LEAN CLAY Brown, moist, mottled (CL)	CL	07:59 Hnu cuttings = BG
35	0231	1.4	21-46-63	SANDY LEAN CLAY Tan, moist, well graded sand (CL)		08:10
40	0232a	0.5	37	SANDY LEAN CLAY Yellowish brown, moist, well graded (CL)		
45	0232	1.5	27-105/5"	SANDY LEAN CLAY WITH GRAVEL Brown, moist, well graded sand, fine subrounded to subangular gravel (CL)		08:40 Drive 11"; pull; auger 11"; drive 7"
50	0233a	0.5	41	SILTY SAND Brown, moist, fine (SM)	SM	
55	0232		46-46-130	LEAN CLAY Tan, moist, with gravel in upper 6 inches (CL)	CL	09:20
60				END BORING AT 58.0 FEET		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	6-C-5SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 109.84 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 28 DEG - NORTH 16 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/9/88 FINISH 12/9/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SILTY CLAY WITH SAND Reddish brown, moist, well graded (CL-ML)	CL/ML	09:00 Rig on site 09:10 Begin drill
	0171a	0.5	41	SILTY CLAY WITH FINE GRAVEL Brown, moist (CL-ML)		
5						
	0171	1.4	33-104-50	SILTY CLAY WITH SAND Tan, moist, well graded (CL-ML)		09:40 Drive 12"; pull; auger 12"; drive 6"
10						
	0172a	0.5	35	LEAN CLAY Brown, moist, black coloring in soil (CL)	CL	
15						
	0172	1.4	30-49-96	LEAN CLAY Brown, moist, (CL)		10:05
20						
	0173a	0.5	25	LEAN CLAY Brown, moist, trace black coloring (CL)		
25						
	0173	1.4	53-80-47	LEAN CLAY Brown, moist, trace black coloring (CL)		10:35 Drive 12"; pull; auger 12"; drive 6"
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	6-C-5SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2

ELEVATION 109.84 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 28 DEG - NORTH 16 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/9/88 FINISH 12/9/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30					CL	
	0174a	0.5	40	CLAYEY SAND WITH GRAVEL Brown, moist, fine sub-rounded gravel and weathered rock fragments (SC)	SC	
35						
	0174	1.5	12-42-73	LEAN CLAY Brown, moist (CL)		11:11
40						
	0175a	0.5	42	LEAN CLAY WITH SAND Brown, moist, fine to medium, black coloring 42.5 ft to 42.7 ft, sandier at bottom of sample (CL)	CL	
45						
	0175	1.3	24-80-42	GRAVELLY LEAN CLAY WITH SAND Brown, moist, fine gravel, well graded sand, weathered rock fragments (CL)		11:50 Drive 12"; pull; drill 12"; drive 6"
50						
	0176a	0.5	25	LEAN CLAY Tan, moist, blocky, caliche horizons (CL)		
55						
	0176	1.4	35-47-98	SILT Tan and brown, moist, black coloring (ML)	ML	12:50
				END BORING AT 59.0 FEET		13:10
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	6-C-1GW	SHEET 1 OF 3

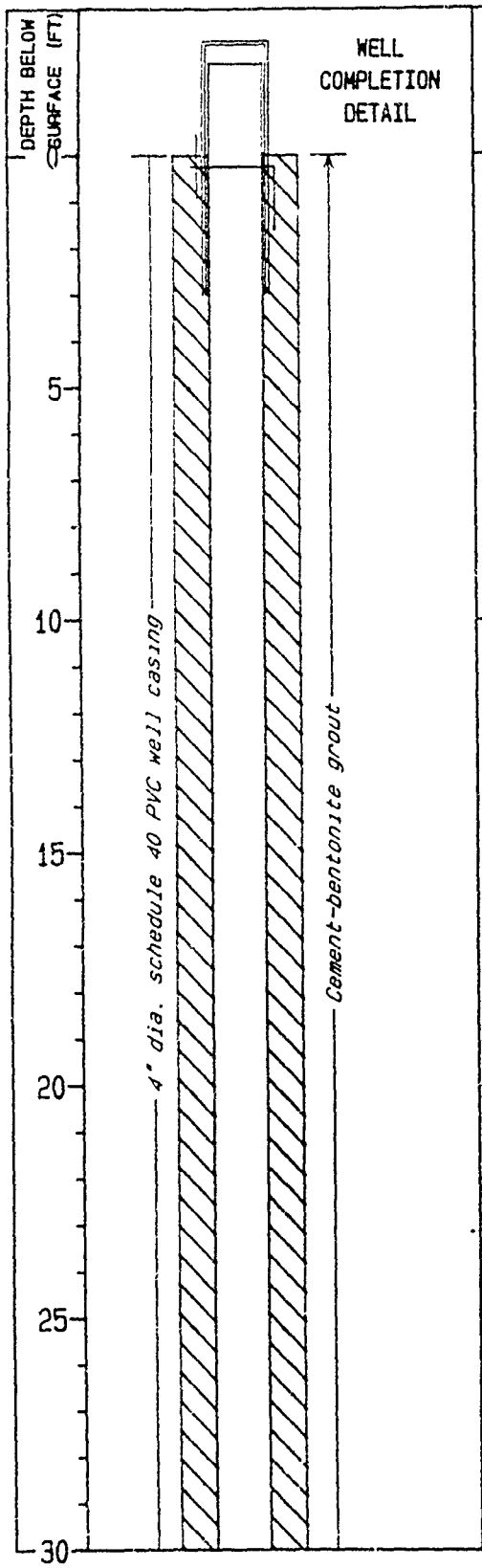
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2, A ST & GAVIN MANDRY

ELEVATION 108.49' NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 56.1 FT NGVD 3/27/89 START 12-5-88 FINISH 12-6-88 LOGGER G.T.VOGT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	SANDY SILT Reddish brown (ML)		
	SANDY SILT WITH GRAVEL Reddish brown, moist (ML)	ML	H-Nu=background Smooth, fast drilling
	SANDY LEAN CLAY Dark Brown, with some fine sand and silt. Clay content increases with depth (CL/ML)	CL/ML	
	GRAVELLY LEAN CLAY Brown wet (CL)	CL	H-Nu=0.0
	SILTY SAND Brown, clumpy (SM)	SM	
	GRAVELLY LEAN CLAY dense gravel silt and clay in clumps (CL)	CL	

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	6-C-1GW	SHEET 2 OF 3

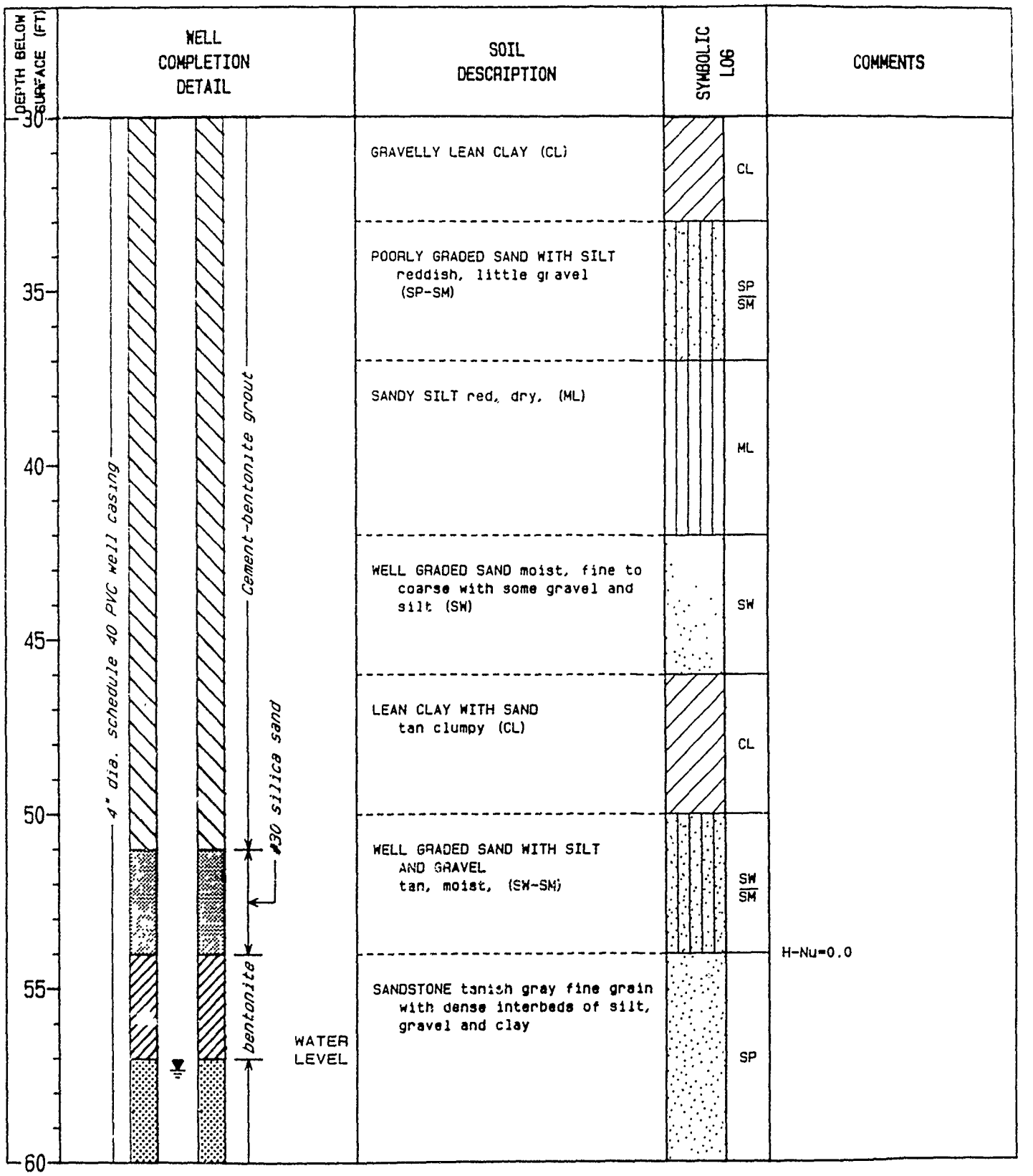
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2, A ST & GAVIN MANOR,

ELEVATION 108.49' NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 56.1 FT NGVD 3/27/89 START 12-5-88 FINISH 12-6-88 LOGGER G.I.VOGT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	GRAVELLY LEAN CLAY (CL)	CL	
	POORLY GRADED SAND WITH SILT reddish, little gravel (SP-SM)	SP/SM	
	SANDY SILT red, dry, (ML)	ML	
	WELL GRADED SAND moist, fine to coarse with some gravel and silt (SW)	SW	
	LEAN CLAY WITH SAND tan clumpy (CL)	CL	
	WELL GRADED SAND WITH SILT AND GRAVEL tan, moist, (SW-SM)	SW/SM	H-Nu=0.0
	SANDSTONE tanish gray fine grain with dense interbeds of silt, gravel and clay	SP	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	6-C-1GW	SHEET 3 OF 3

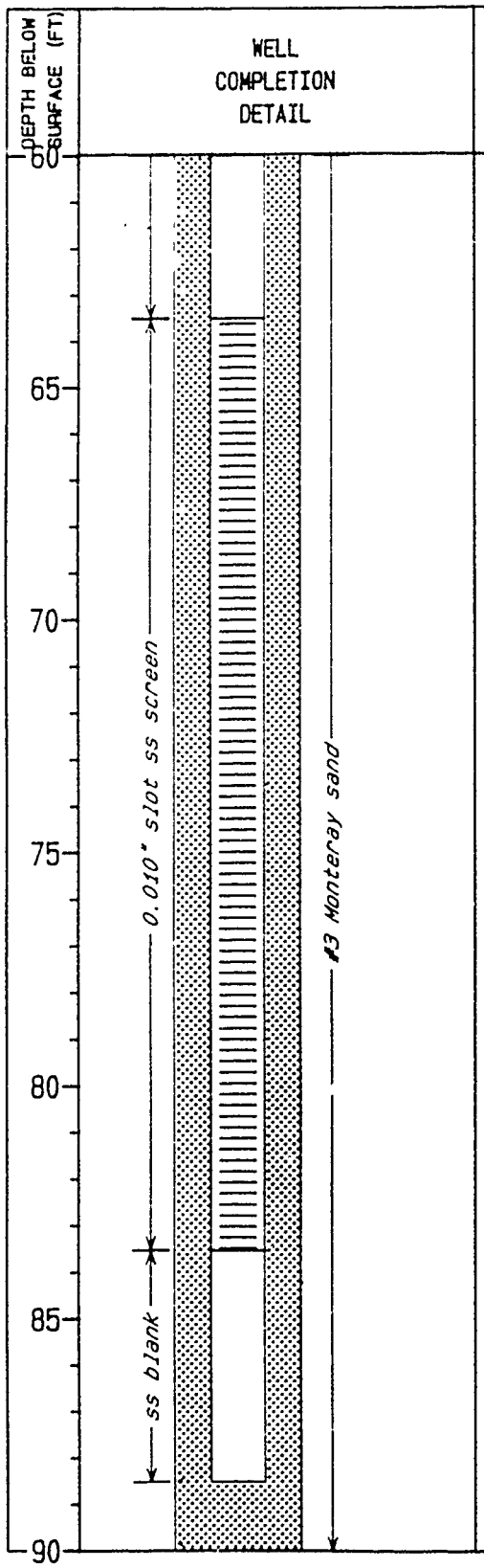
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 2, A ST & GAVIN MANDRY

ELEVATION 108.49' NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 56.1 FT NGVD 3/27/89 START 12-5-88 FINISH 12-6-88 LOGGER G.I.VOGT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
SANDSTONE Gray fine grained with dense interbeds of silt, gravel and clay (SP)		
Platy gray sandstone		
Moist, dark gray to black fine grained sandstone		
Very wet, porous, poorly cemented sandstone	SP	first water production 75-77'
Gray platy siltstone and sandstone		
Brown to tan, fine grained sandstone		
END OF BORING AT 90 FEET		

SITE 9

ENTOMOLOGY BUILDING 2560

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	9-C-1SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION ENTOMOLOGY BUILDING 2560

ELEVATION 129.18 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/9/88 FINISH 12/9/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0204	1.5	13-17-16	SANDY SILT Reddish brown, moist, fine sand (ML)	ML	10:45 Begin ... ll Sample Hnu = BG LEL = 0.0%
5	0205	1.5	20-29-32	SANDY LEAN CLAY Reddish brown, moist, very hard, white mineralization, black flakes (CL)	CL	10:55 Hnu = BG
10	0206	1.5	12-28-45	SILTY CLAY Tan to reddish brown, dry, very hard, flakey (CL-ML)	CL/ML	11:05
15	0207	1.4	8-10-17	CLAYEY SAND Tan to reddish brown, moist, medium dense, black flakes (SC)	SC	11:20 Hnu = BG
20	0211	1.5	10-10-29	CLAYEY SAND Tan, moist, stiff (SC)		11:35
				END BORING AT 51.5 FEET		
25						
30						

SITE 11

AIRCRAFT GROUND EQUIPMENT MAINTENANCE AREA

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	11-C-1SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION A G E. MAINTENANCE AREA

ELEVATION 124.61 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/9/88 FINISH 12/9/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0212	1.0	12-18-22	SANDY GRAVELLY SILT Medium brown, moist, dense, mottled, angular fine gravel (ML)	ML	13:35 Begin drill 13:37 Sample
5	0213	1.0	27-50/3"-22-54	SANDY LEAN CLAY Dry, very hard, crumbly, veins of reddish brown coloring (CL)	CL	Driller notes: Out of gravel at 4 ft 13:56 Rig down 14:20
10				END BORING AT 10.1 FEET		Driller notes: Cemented gravel at 7.8 ft Auger refusal at 10.1 ft
15						
20						
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	11-C-2SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION A.G.E. MAINTENANCE AREA

ELEVATION 124.51 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/16/88 FINISH 12/16/88 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0280		10-12-16	SILTY CLAY WITH SAND Reddish brown, high plasticity (CL-ML)	CL/ML	
5	0281	1.3	38-100	SANDY SILT Light reddish brown, with gravel and broken rock (ML)	ML	Driller notes: Hit gravel or rock at 4.6 ft 12:05 Sample
				END BORING AT 7.8 FEET		Auger refusal at 7.8 ft
10						
15						
20						
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	11-C-3SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION A G E MAINTENANCE AREA

ELEVATION 127.64 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/13/89 FINISH 1/13/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0406	1.5	14-19-10	SANDY LEAN CLAY WITH GRAVEL Medium brown, wet, hard, subrounded gravel (CL)	CL	09:00 BAFB 0406 duplicate
	0416	0.8	79-50/1 3/4"	LEAN CLAY Light to medium brown, dry, very hard, some fine sand (CL)		
5	0417	1.5	35-70-100/5"	LEAN CLAY Medium reddish brown, moist, very hard, black flakes (CL)		09:05
				GRAVEL AND COBBLES (GP)	GP	Driller notes: Gravel and cobbles at 8.9 ft. Unable to drive sampler due to gravels
10				END BORING AT 12.3 FEET		10:00 End drill
15						
20						
25						
30						

SITE 13

LANDFILL NO. 1

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-1SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 89.11 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/6/88 FINISH 12/7/88 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
5	0106a	0.5	8-11-13	SANDY SILT Reddish brown, moist, fine sand (ML)	ML	15:22 Begin drill 15:30 Drive 0106a 15:35 Hnu = BG
10	0106	1.5	9-8-9	POORLY GRADED SAND Medium grained (SP)	SP	
				SANDY LEAN CLAY Reddish brown, satuated, sticky (CL)	CL	
15	0107a	1.5	4-3-3	POORLY GRADED SAND Medium grained (SP)	SP	15:45
				SILTY CLAY Reddish brown, black mottling (CL-ML)	CL/ML	
20	0107	1.5	9-14-23	SILTY CLAY Black mottling (CL-ML)		Hnu = BG
25	0108a		6-6-6	SILTY CLAY Light brown, some mottling, brittle (CL-ML)		15:55
30					CL	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-1SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 89.11 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/6/88 FINISH 12/7/88 LOGGER S. MONTEITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0108		7-7-23	LEAN CLAY Light brown, mottled (CL)	CL	~~16:07 Hnu = BG~~
35	0111a	1.5	6-3.-37	LEAN CLAY Light brown, mottled (CL)		16:25 Hnu = BG
40	0111	1.5	15-31-37	SILT Reddish brown, flakey, crumbly (ML)	ML	08:15 Hnu = BG LEL = 0.0%
45	0112a		13-20-27	SILT Reddish brown, mottled (ML)		08:30 Hnu = BG LEL = 0.0%
50	0112	1.0	14-65	SILT Reddish brown, moist, some black specks (ML)		08:45 Hnu = BG LEL = 0.0%
	0113	1.5	26-36-50			08:55 BAFB 0112 duplicate
				END BORING AT 51.5 FEET		
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	13-C-2SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 88.52 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 70 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/15/88 FINISH 12/16/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0252a	0.4	17	SILTY CLAY Brown, moist, hard, organics (CL-ML)	CL/ML	
5	0252	1.4	31-86-54	CLAYEY GRAVEL WITH SAND Brown, moist, dense, fine subrounded gravel, well graded sand (GC)	GC	14:00 Drive 12": pull: auger 12": drive 6"
10	0253	1.3	14-20-53	LEAN CLAY WITH SAND Tan, moist, firm, well graded, oxidation stains (CL)	CL	14:20
15	0254	1.5	15-17-31	LEAN CLAY WITH SAND Tan, moist, firm, fine poorly graded sand (CL)		14:35
20	0255a	0.5	21	SANDY LEAN CLAY Brown, moist, hard, well graded sand, black coloring in clay matrix, 1 inch lens of black stained sand (CL)		Hnu = BG on sample
25	0255	1.4	16-23-43	LEAN CLAY WITH SAND Brown, moist, firm, poorly graded fine (CL)		15:00
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-2SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 88.52 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 70 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/15/88 FINISH 12/16/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0256a	0.5	31	LEAN CLAY Tan, moist, firm, black coloring in soil (CL)		
35	0256	1.2	12-25-48	SANDY LEAN CLAY Brown, moist, firm, fine to medium sand (CL)		15: 40
40	0257a	0.5	32	LEAN CLAY WITH SAND Brown, moist, firm, fine sand (CL)		
45					CL	
	0257	1.5	22-44-54	LEAN CLAY WITH SAND Brown, moist, firm, fine sand (CL)		16: 05
50						16: 17 End drilling 12/16/88 07: 15 Begin drill
	0258a	0.5	31	LEAN CLAY Brown, moist, hard, black coloring (CL)		
55						
	0258	1.4	15-55-76	LEAN CLAY Brown, moist, hard, black coloring (CL)		08: 10
60				END BORING AT 59.0 FEET		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-3SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 92.25 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 45 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/14/88 FINISH 12/15/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				LEAN CLAY Reddish brown, moist (CL)	CL	15:50 Begin drill Hnu = BG
	0246a	0.5	13	LEAN CLAY WITH SAND Brown, moist, poorly graded fine sand (CL)		
5						
	0246	1.3	21-38-38	SANDY LEAN CLAY Brown, moist, well graded (CL)		16:00
10						
	0247a	0.5	38	CLAYEY SAND Brown, saturated, dense, well graded (SC)	SC	
15						
	0247	1.5	19-23-33	LEAN CLAY Brown, moist, gray and oxide mottled (CL)	CL	16:25
20						
	0248a	0.5	22	SILT Brown, moist (ML)	ML	16:45 End drill 12/15/88 07:35 Begin drill
25						
	0248	1.5	19-32-38	SILTY CLAY Brown, moist, firm, mottled (CL-ML)	CL/ML	07:55
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-3SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 92.25 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 45 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/14/88 FINISH 12/15/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0249a	0.5	33	LEAN CLAY Tan, moist, firm, oxidation stains (CL)	CL/ML	
35	0249	1.4	38-58-130	LEAN CLAY Tan , moist, firm, oxidation stains, 6 inch sand lens from 38.0 ft to 38.5 ft (CL)		08:30
40	0250a	0.5	30	LEAN CLAY Tan, moist, hard, oxidation stains, black coloring in soil (CL)		
45	0250	1.5	33-57-125	LEAN CLAY Brown, moist, hard, black coloring in soil (CL)	CL	09:10
50	0251a	0.5	35	LEAN CLAY Brown, moist, hard, black coloring (CL)		
55	0251		18-34-55	LEAN CLAY WITH SAND Brown, moist, fine to medium sand, black coloring in soil (CL)		09:50
60				END BORING AT 59.0 FEET		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-4SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 91.12 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 85 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/4/89 FINISH 1/4/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				LEAN CLAY Brown, wet (CL)	CL	08:00 Begin drill Hnu = BG
	0303a	0.5	20	LEAN CLAY Brown, wet, soft, organics (CL)		
5						Cuttings moist
	0303	1.5	65-70-80	LEAN CLAY Tan, dry, hard, oxidation stains, crumbly (CL)		08:20 Hnu cuttings = BG Drive 6"; pull; auger 6"; drive 6"; pull; auger 6"; drive 6"
10						
	0304	1.5	28-29-49	CLAYEY SAND Brown, moist, dense, well graded (SC)	SC	08:50 BAFB 0303 duplicate, not analyzed
15						
	0305	1.5	21-27-49	LEAN CLAY Reddish brown, moist, firm, black coloring (CL)	CL	09:05
20						
	0306a	0.5	50	LEAN CLAY Brown, moist (CL)		
25						
	0306		33-50-90	LEAN CLAY Tan, moist, hard (CL)		09:35 Hnu cuttings = BG
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-4SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 91.12 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 85 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/4/89 FINISH 1/4/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0307a	0.5	30	LEAN CLAY Tan, moist, firm (CL)		
35	0307	1.5	40-133-55	LEAN CLAY Tan, moist, hard, oxidation stains, grades sandier towards tip of sampler (CL)	CL	10:15
40	0308	1.5	19-28-46	LEAN CLAY Reddish brown, firm, moist (CL)		10:45
45	0309	1.5	35-46-67	LEAN CLAY Brown, moist, firm, veins of white mineralization at tip (CL)		11:05
50	0310a	0.5	33	SILTY CLAY Brown, moist, soft, mottled (CL-ML)	CL/ML	
55	0310	1.5	33-41-66	LEAN CLAY WITH SAND Brown, moist, firm, well graded (CL)	CL	11:50
60				END BORING AT 59.0 FEET		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-4SB-A	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 89.48 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/3/89 FINISH 1/3/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0						12: 10 Begin drill
	S1	1.0	3-11-29	LEAN CLAY WITH SAND Brown, moist, firm, well graded, grades dry and hard at 4.0 ft (CL)	CL	
5	S2	1.2	12-18-26	SANDY LEAN CLAY Brown, dry, stiff, well graded, broken glass at 5.8 ft (CL)		
	S3	1.0	17-19-16			
	S4	1.3	8-19-28			
				TAR 0.1 ft thick, organics	TAR	Hnu = 150 ppm on sample at tar
10	S5	1.3	11-20-32	SILTY SAND Brown, moist, dense, poorly graded fine (SM)	SM	
	S6	1.8	9-18-32-30	LEAN CLAY Brown, moist, firm, black coloring in soil, native soil (CL)	CL	
				END BORING AT 12.5 FEET		13: 15 End drill Hnu lead auger when pulled: Hnu = 86
15						
20						
25						
30						

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	13-C-4SB-B	SHEET 1	OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 89.62 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/3/89 FINISH 1/3/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				LEAN CLAY WITH SAND Brown, moist, firm, well graded, sandier with depth, ash layer at 3.2 ft (CL)	CL	14:00 Begin drill Hnu = BG
	S1	1.9	5-15-29-50			
5	S2	2.0	9-38-49-50	SILT Tan, moist, hard, oxidation stains, grades sandier with depth, fine sand (ML)	ML	
	S3	1.8	9-34-48-46	LEAN CLAY Brown, moist, hard, black coloring, oxidation stains, native soil (CL)	CL	14:40 End drill
10				END BORING AT 9.0 FEET		
15						
20						
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-5S8	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 89.16 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG DUE NORTH

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/16/88 FINISH 12/16/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0259a	0.5	23	LEAN CLAY Brown, dry, firm, organics (CL)		11:00 Begin drill Hnu cuttings = BG
5	0259	1.5	45-101-58	LEAN CLAY WITH SAND Tan, dry, hard (CL)		11:20 Drive 12"; pull; auger 12"; drive 6"
10	0287a	0.5	21	LEAN CLAY WITH SAND Tan, moist, firm, oxidation stains, fine to medium sand (CL)		
15	0287	1.5	12-13-21	LEAN CLAY WITH SAND Tan, moist, firm, oxidation stains, fine to medium sand (CL)	CL	12:45
20	0288a	0.5	33	LEAN CLAY Brown, moist, hard (CL)		
25	0288	1.4	33-67-58	LEAN CLAY Brown, moist, hard (CL)		13:05 Drive 12"; pull; auger 12"; drive 6"
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-5S8	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1

ELEVATION 92.45 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG DUE NORTH

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/16/88 FINISH 12/16/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0289a	0.5	31	LEAN CLAY Tan, moist, firm, oxidation stains (CL)	CL	
35	0289	1.5	20-33-62	LEAN CLAY Brown, moist (CL)		14:00 End drill 12/19/88 10:30 Begin drill
40	0290a	0.5	34	SILTY CLAY Brown, moist, firm, mottled (CL-ML)	CL/ML	
45	0290	1.5	24-38-57	LEAN CLAY Tan, moist, firm, oxidation stains (CL)	CL	11:37
50	0291a	0.5	8	SILTY CLAY Brown, moist, soft, dry lumps in soil (CL-ML)	CL/ML	
55	0291	1.5	16-27-83	LEAN CLAY Brown, moist, firm, black coloring in soil (CL)	CL	12:45
60				END BORING AT 59.0 FEET		

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	13-C-1GW	SHEET 1	OF 4

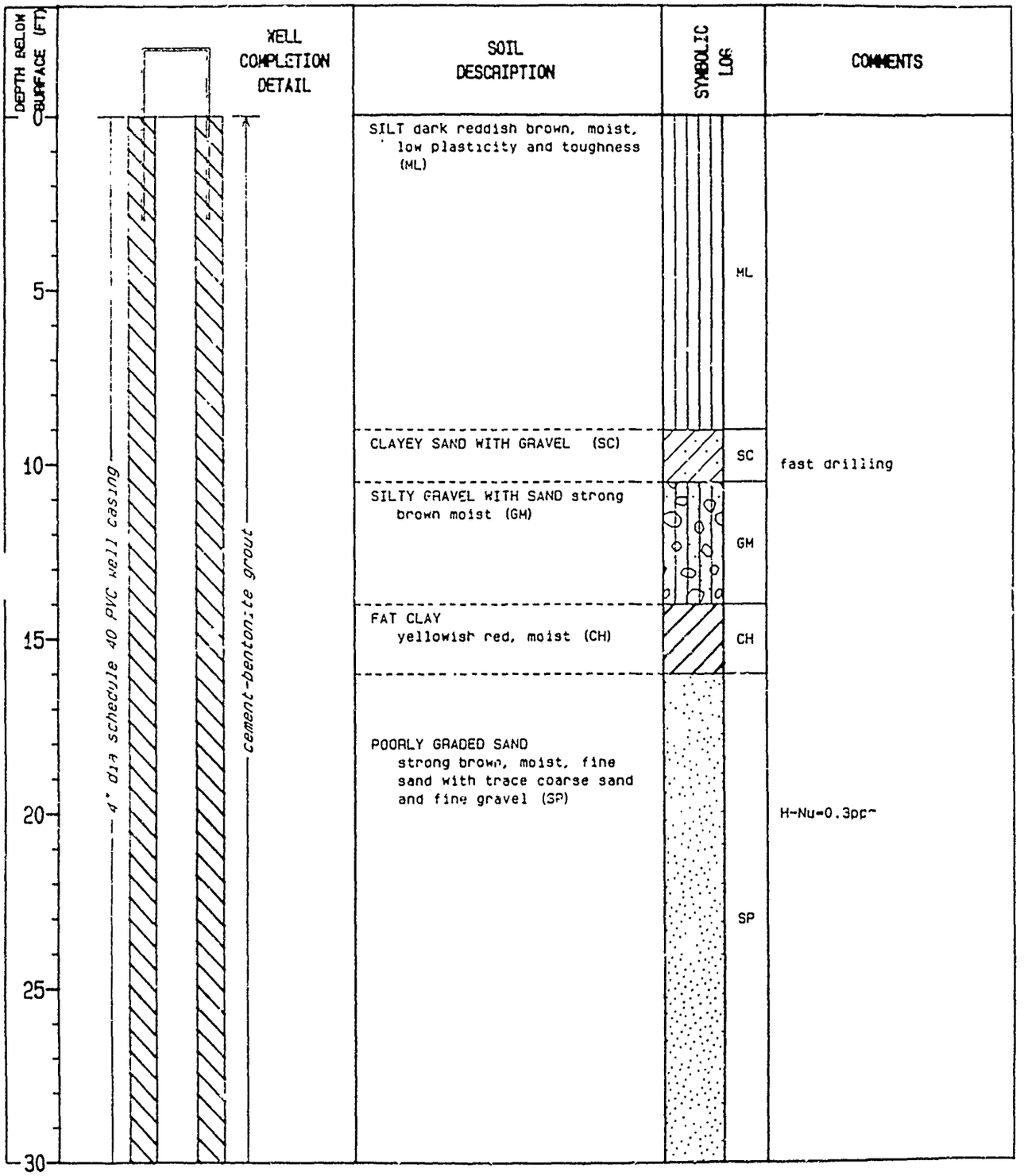
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1 NORTH SIDE BY PIPELINE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.78 FT NGVD 7/27/89 START 12/9/88 FINISH 12/9/88 LOGGER C ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-1GW	SHEET 2 OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1 NORTH SIDE BY PIPE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.78 FT NGVD 3/27/89 START 12/9/88 FINISH 12/9/88 LOGGER C.ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
30		POORLY GRADED SAND (SP)		SP	
		LEAN CLAY dark yellow-brown, moist, medium plasticity and toughness with thin layers of fat clay (CL)		CL	slower drilling
35					
40	4" dia schedule 40 PVC well casing	SILT WITH SAND dark yellow-brown, moist (ML)		ML	H-Nu=0.3ppm
		SILTY SAND dark yellow-brown (SM)		SM	
45		LEAN CLAY yellowish-brown, moist, medium plasticity and toughness (CL)		CL	
50	cement-bentonite grout	SILT yellowish-brown, dry, thin cemented lamina (ML)		ML	
55		FAT CLAY yellowish-brown, dry, high plasticity and dry stregnth. laminations of black organic matter (CH)		CH	
60		SILT reddish brown dry some cemented layers (ML)		ML	H-Nu=0.3ppm

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-1GW	SHEET 3 OF 4

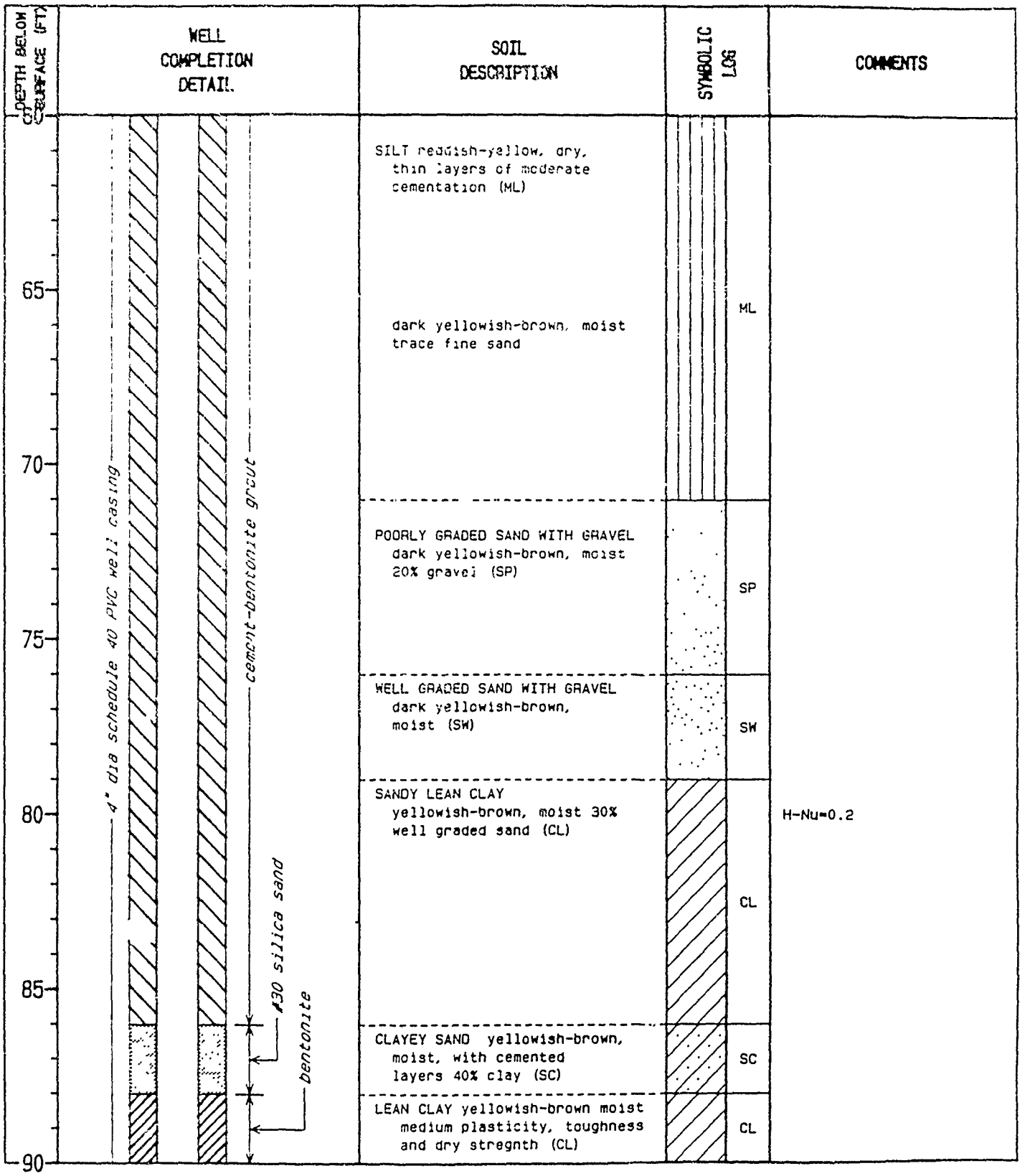
SOIL BORING LOG

PROJECT SEALE AFB LOCATION LANDFILL 1 NORTH SIDE BY PIPELINE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.78 FT NGVD 3/27/89 START 12/9/88 FINISH 12/9/88 LOGGER C.ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	SILT reddish-yellow, dry, thin layers of moderate cementation (ML)	ML	
	dark yellowish-brown, moist trace fine sand		
	POORLY GRADED SAND WITH GRAVEL dark yellowish-brown, moist 20% gravel (SP)	SP	
	WELL GRADED SAND WITH GRAVEL dark yellowish-brown, moist (SW)	SW	
	SANDY LEAN CLAY yellowish-brown, moist 30% well graded sand (CL)	CL	H-Nu=0.2
	CLAYEY SAND yellowish-brown, moist, with cemented layers 40% clay (SC)	SC	
	LEAN CLAY yellowish-brown moist medium plasticity, toughness and dry stregnth (CL)	CL	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	13-C-1GW	SHEET 4	OF 4

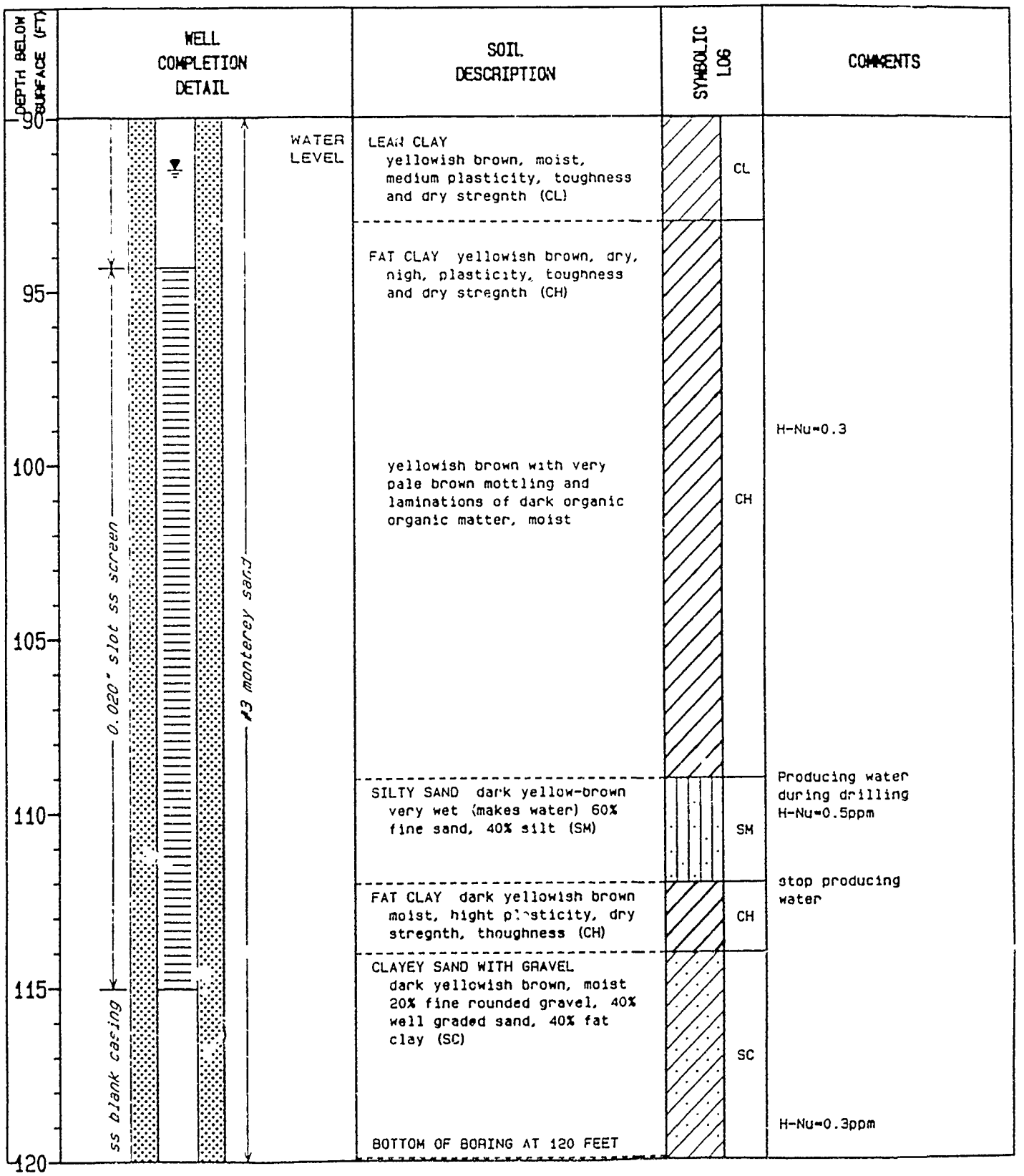
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1 NORTH SIDE BY PIPELINE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.78 FT NGVD 3/27/89 START 12/9/88 FINISH 12/9/88 LOGGER C.ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-2GW	SHEET 1 OF 5

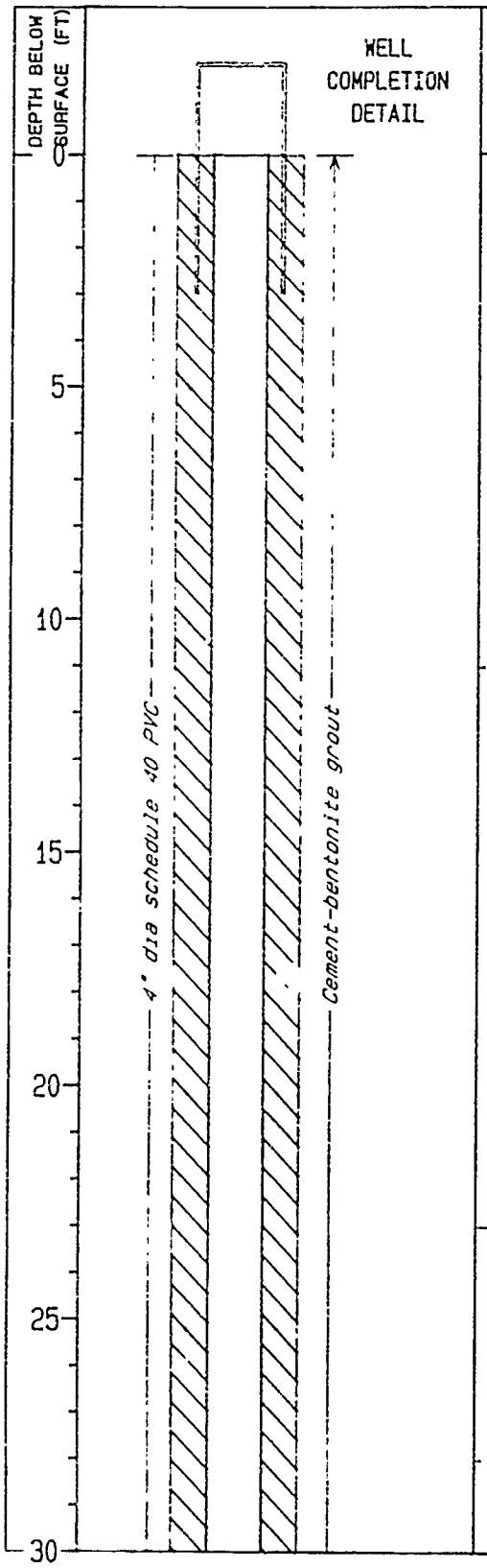
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO. 1: SW SIDE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.26 FT NGVD 3/27/89 START 12/7/88 FINISH 12/7/88 LOGGER C.ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	CLAYEY SAND Dark reddish brown, moist, 60% fine sand 40% lean clay (medium plasticity, toughness), trace fine gravel, organics (SC)	SC	fast drilling
	SILTY SAND Light yellowish brown, dry Moderate cementation, some lamination (SM)	SM	
	FAT CLAY WITH SAND Strong brown, moist, high plasticity and toughness 20% fine sand (CH)	CH	drilling slows
	CLAYEY SAND Light yellowish brown, moist (SC)	SC	fast drilling

PROJECT NUMBER	BORING NUMBER		
SAC24559.RI.04	13-C-2GW	SHEET 2	OF 5

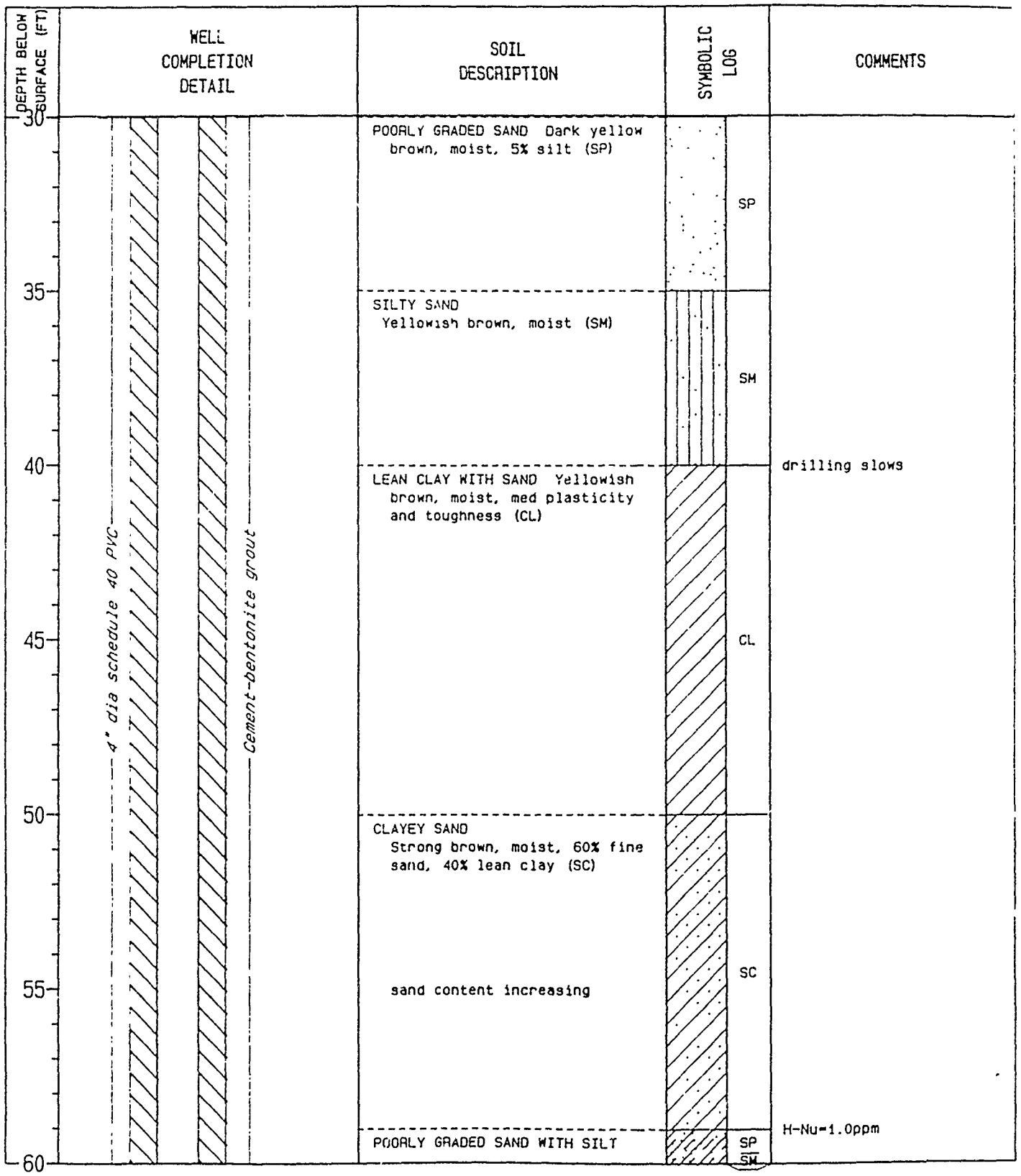
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO. 1: SW SIDE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.26 FT NGVD 3/27/89 START 12/7/88 FINISH 12/7/88 LOGGER C.ELLIOTT



WELL COMPLETION DETAIL | SOIL DESCRIPTION | SYMBOLIC LOG | COMMENTS

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	13-C-2GW	SHEET 3 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO. 1: SW SIDE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.26 FT NGVD 3/27/89 START 12/7/88 FINISH 12/7/88 LOGGER C.ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
60	4" dia schedule 40 PVC; Cement-bentonite grout; WATER LEVEL	POORLY GRADED SAND WITH SILT Strong brown, moist, (SP-SM)	SP SM	fast drilling
65		WELL GRADED SAND Dark grayish brown, moist, trace gravel (SW)	SW	
70		WELL GRADED SAND WITH GRAVEL gravel increases to 20 %		
75				
80		CLAYEY SAND Dark yellowish brown some weak to moderate cementing and laminations, well graded sand (SC)	SC	H-Nu-1.2ppm
85		coarse sand increasing SILT Brownish yellow moist (ML)	ML	
90		CLAYEY SAND Brown moist (SC)	SC	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	13-C-2GW	SHEET 4	OF 5

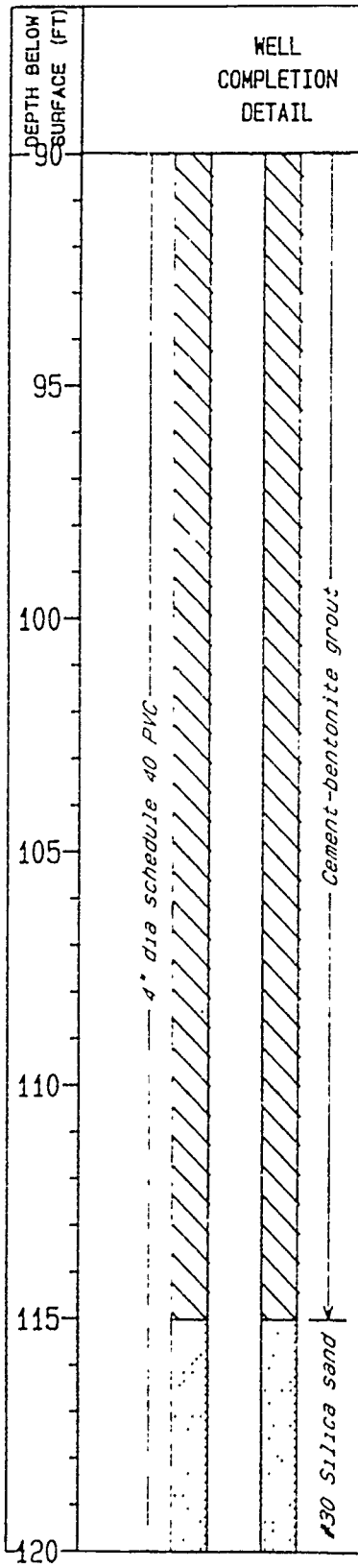
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO. 1: SW SIDE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.26 FT NGVD 3/27/89 START 12/7/88 FINISH 12/7/88 LOGGER C.ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
CLAYEY SAND Strong brown, moist, some layers of moderate cement 30% clay (SC) clay content increasing	SC	drilling slows
FAT CLAY Yellowish brown, moist, high plasticity, toughness (CH)	CH	H-Nu=0.4ppm producing water
WELL GRADED GRAVEL WITH SAND dark yellowish brown, wet, rounded to subrounded (GW)	GW	
CLAYEY SAND Dark yellowish brown, wet, 60% fine sand 40% fat clay (SC)	SC	water stops
LEAN CLAY Brownish yellow, moist, medium plasticity toughness (CL) GRAVELLY LEAN CLAY WITH SAND	CL	
CLAYEY SAND Brownish yellow, moist, 70% fine sand (SC)	SC	H-Nu=1.0ppm

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	13-C-2GW	SHEET 5 OF 5

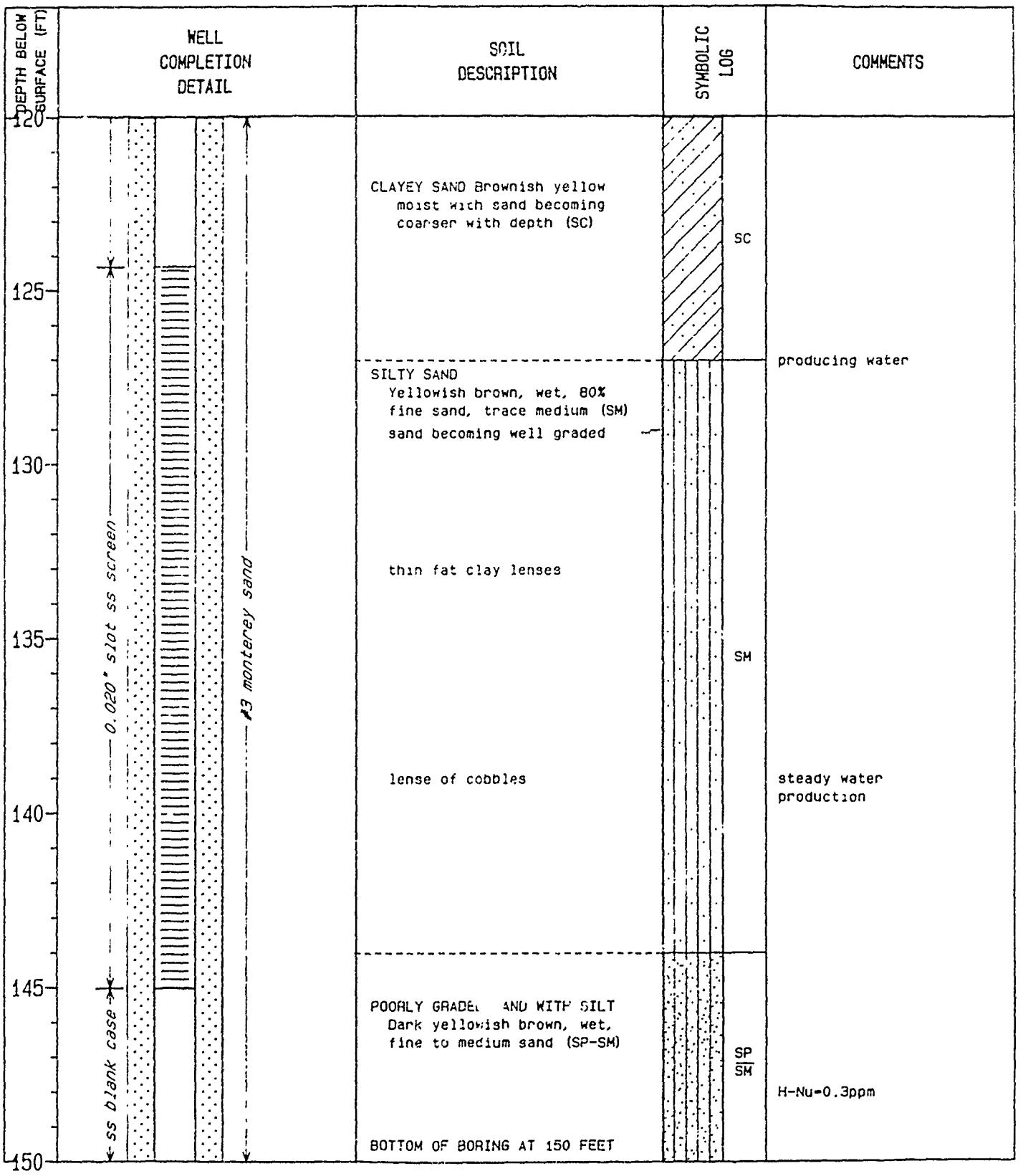
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO. 1: SW SIDE

ELEVATION 88.18 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.26 FT NGVD 3/27/89 START 12/7/88 FINISH 12/7/88 LOGGER C.ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-3GW	SHEET 1 OF 4

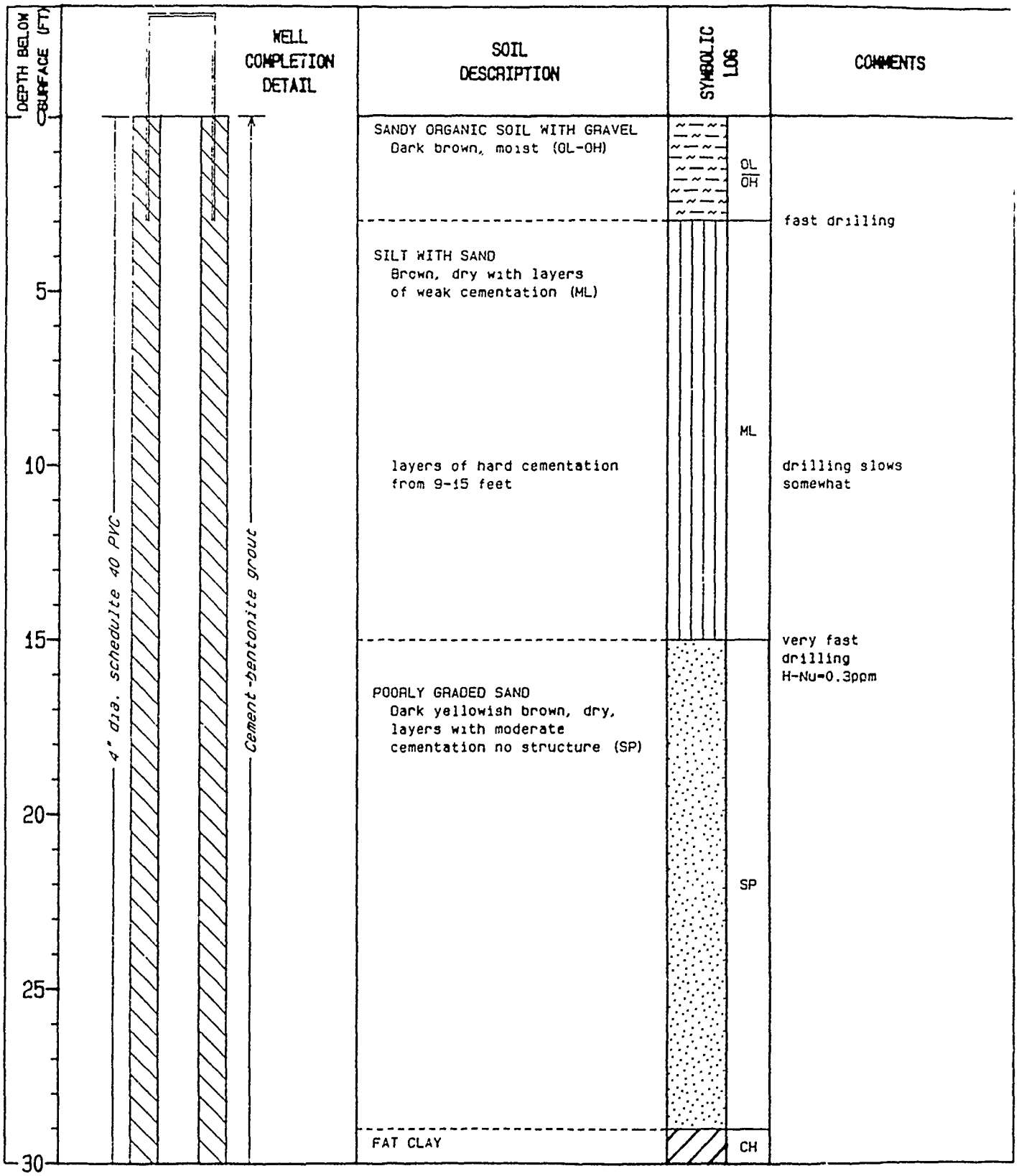
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO 1: SW SIDE

ELEVATION 85.51 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 6.81 FT NGVD 3/27/89 START 12/8/88 FINISH 12/8/88 LOGGER C.ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-3GW	SHEET 2 OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO 1: SW SIDE

ELEVATION 85.51 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 6.81 FT NGVD 3/27/89 START 12/8/88 FINISH 12/8/88 LOGGER C ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30		FAT CLAY Yellowish brown, moist high plasticity, toughness, dry stregnth, some cement (CH)	CH	Drilling slower but smooth
35		SILT Strong brown, dry, some cementation (ML)	ML	H-Nu=0.2
40	4" dia. schedule 40 PVC	LEAN CLAY Yellowish brown, moist, low plasticity, medium toughness and dry stregnth (CL)	CL	drilling slows
45	Cement-bentonite grout	layers of moderate to strong cementation 44-50 ft.		
50		SILT WITH SAND Strong brown, moist, 20% fine sand (ML)	ML	
55		POORLY GRADED SAND Dark yellowish brown, moist, fine sand (SP)	SP	
60				

PROJECT NUMBER	BORING NUMBER		
SAC24359.AI.04	13-C-3GW	SHEET 3	OF 4

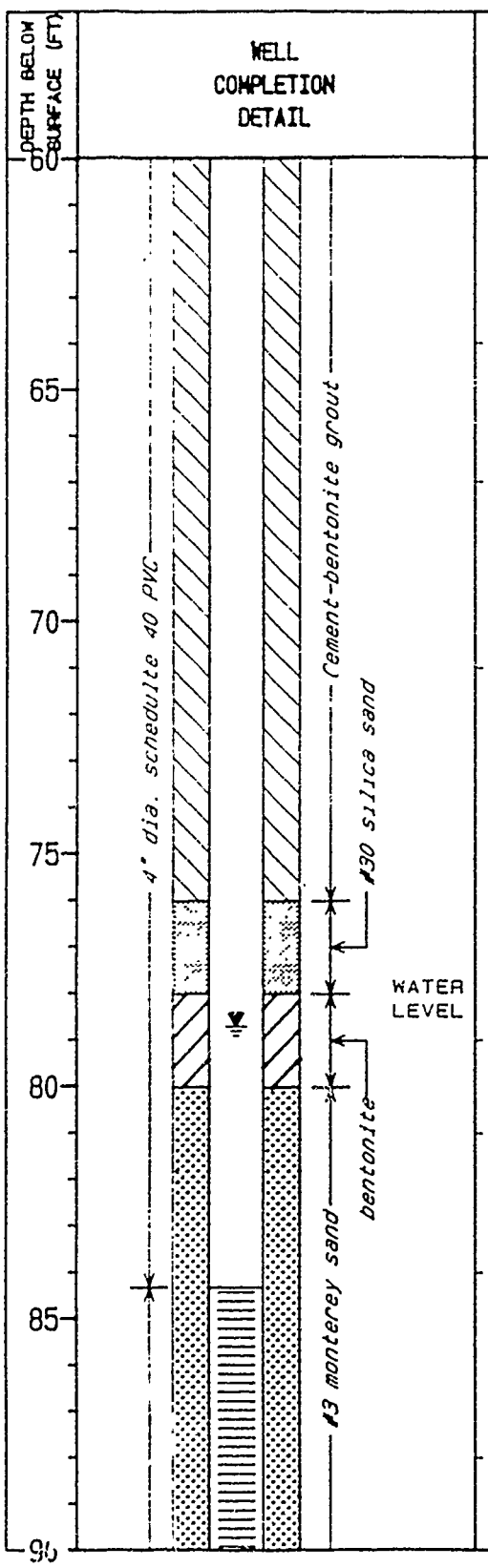
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO 1: SW SIDE

ELEVATION 85.51 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 6.81 FT NGVD 3/27/89 START 12/8/88 FINISH 12/8/88 LOGGER C.ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
POORLY GRADED SAND as above with thin layers of fat clay with dark organic laminations (SP)	SP	
SILTY SAND Dark yellowish brown, moist, 60% well graded sand (SM)	SM	
WELL GRADED SAND Dark yellowish brown, moist, 5% fine gravel (SW)	SW	
WELL GRADED GRAVEL WITH SAND Dark yellowish brown, moist well graded sand and gravel (GW)	GW	
FAT CLAY Pale brown, moist, high plasticity (CH)	CH	H-Nu=0.3
SILT Yellowish brown, moist (ML)	ML	
CLAYEY SAND Dark yellowish brown, moist, trace fine gravel (SC)	SC	
FAT CLAY pale brown, moist, high plasticity, dry strength (CH)	CH	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-3GW	SHEET 4 OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL NO 1: SW SIDE

ELEVATION 85.51 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 6.81 FT NGVD 3/27/89 START 12/8/88 FINISH 12/8/88 LOGGER C.ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
90		FAT CLAY Very pale brown, moist, high plasticity, toughness, dry stregnth (CH)	CH	
95		LEAN CLAY Dark yellowish brown moist, medium plasticity, toughness, dry stregnth (CL)	CL	
100	0.020" slot SS screen; #3 monterey sand	SILT WITH SAND Dark yellowish brown, moist, 20% fine sand (ML)	ML	start water production H-Nu=0.3ppm
		WELL GRADED GRAVEL WITH SAND Dark yellowish brown, wet (GW)	GW	
		CLAYEY SAND WITH GRAVEL (SC)	SC	water slows to a tricle
105	SS blank	FAT CLAY Dark brown, moist, high plasticity, toughness (CH)	CH	water stops; H-Nu=0.3ppm
110		BOTTOM OF BORING AT 110 FEET		
115				
120				

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	13-C-4GW	SHEET 1 OF 4

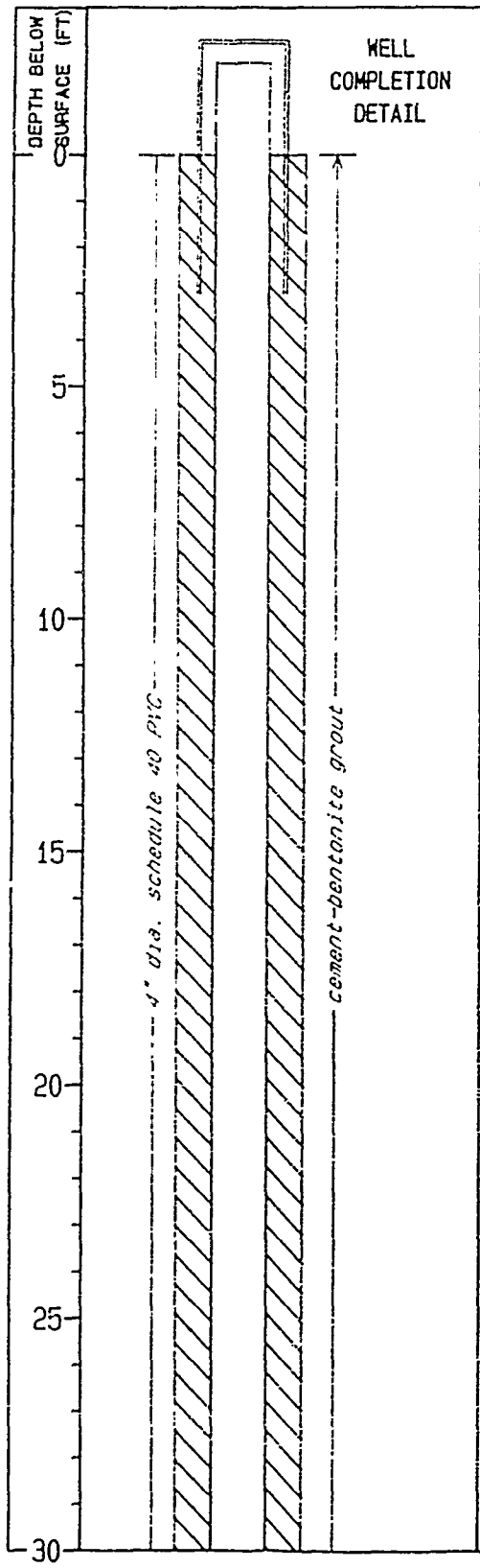
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1 SOUTH SIDE

ELEVATION 87.08 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 7.36 FT NGVD 3/27/89 START 12/6/88 FINISH 12/7/88 LOGGER G.T.VOGT



WELL COMPLETION DETAIL

SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
SILTY SAND dark brown, moist with some clay (SM)	SM	start 13:10 H-Nu=0.3 =background
WELL GRADED GRAVEL WITH SILT AND SAND light brown, moist pea gravel (GW-GM)	GW GM	Rapid Drilling
SILTY SAND brown, moist to wet (perched water?) (SM)	SM	Perched water?
SANDY SILT light brown to reddish brown, moist (ML)	ML	13:45 H-Nu=0.3

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-4GW	SHEET 2 OF 4

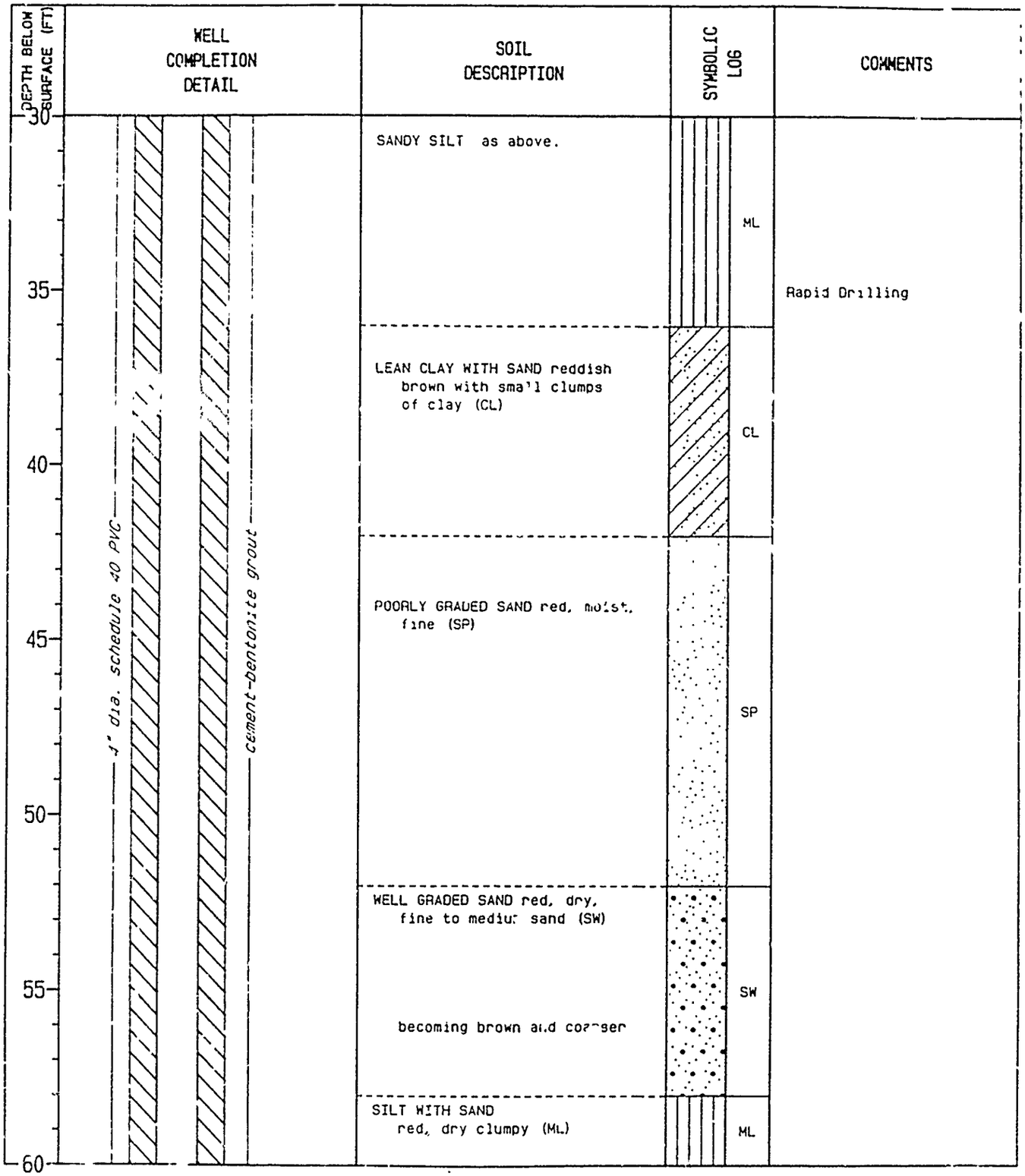
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1 SOUTH SIDE

ELEVATION 87.08 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 7.36 FT NGVD 3/27/89 START 12/6/88 FINISH 12/7/88 LOGGER G.T.VOGT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-4GW	SHEET 3 OF 4

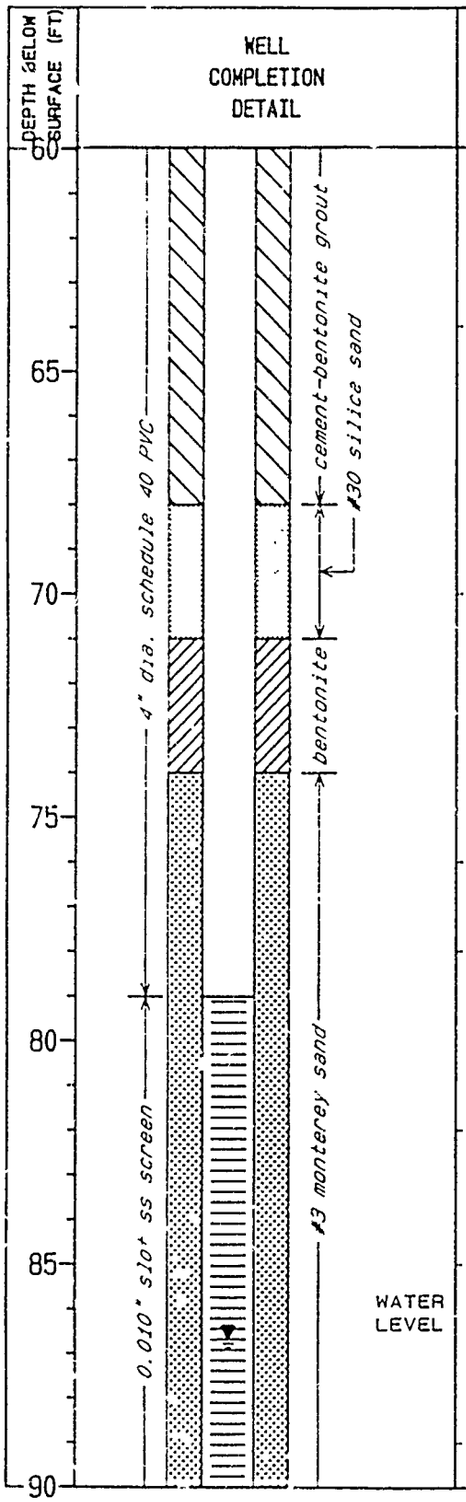
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1 SOUTH SIDE

ELEVATION 87.08 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 7.36 FT NGVD 3/27/89 START 12/6/88 FINISH 12/7/88 LOGGER G.T.VOGT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	SILT WITH SAND red, dry, clumpy (ML)	ML	
	LEAN CLAY WITH SAND Brown, wet, clumpy (CL)	CL	
	WELL GRADED SAND brown, dry, fine to medium (SW)	SW	
	SANDY LEAN CLAY brown, wet (CL)	CL	
	SANDY SILT light brown, dry, clumpy (ML)	ML	
	WELL GRADED SAND Reddish brown, dry (SW)	SW	
	LEAN CLAY light brown to tan moist with some silt (CL)	ML	15:00 H-Nu=0.0
	WELL GRADED SAND WITH GRAVEL (SW)	SW	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	13-C-4GW	SHEET 4	OF 4

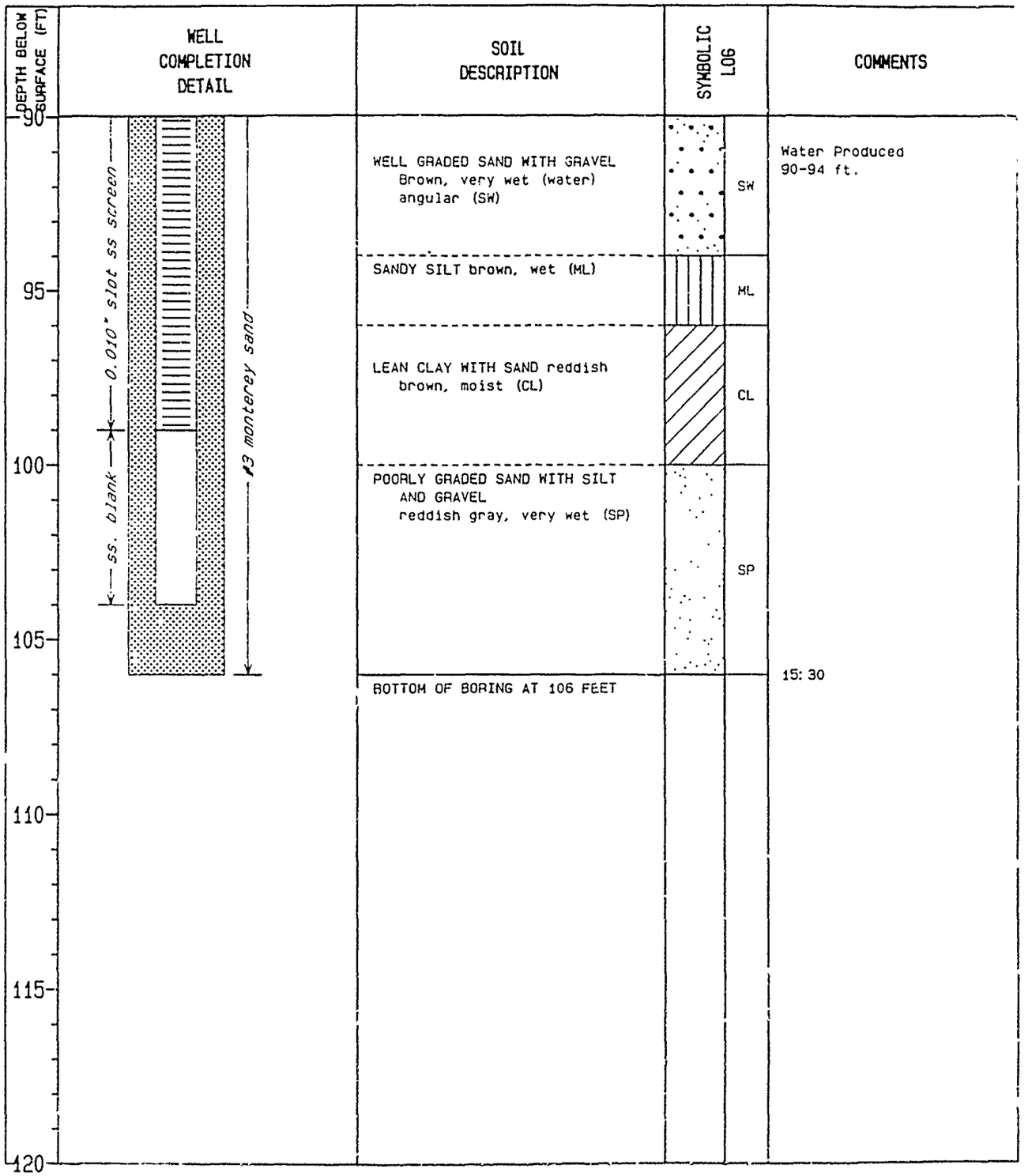
SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1 SOUTH SIDE

ELEVATION 87.08 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 7.36 FT NGVD 3/27/89 START 12/6/88 FINISH 12/7/88 LOGGER G.T.VOGT



PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	13-C-5GW	SHEET 1	OF 4

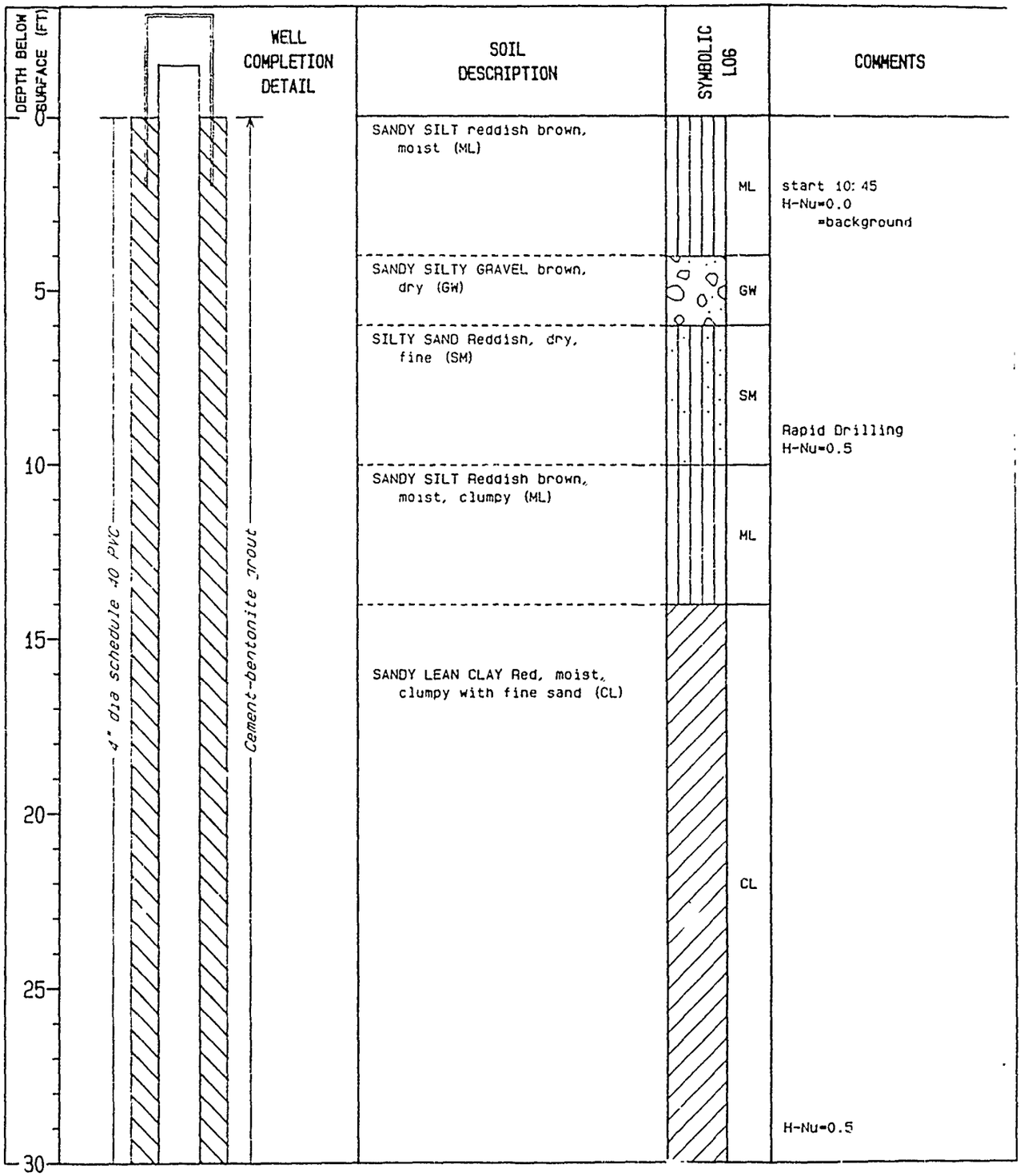
SOIL BORING LOG

PROJECT BEALE AFB LOCATION Landfill 1 EAST SIDE

ELEVATION 92.44 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 8.93 FT NGVD 3/27/89 START 12/7/89 FINISH 12/7/89 LOGGER G.I.VOGT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	SANDY SILT reddish brown, moist (ML)	ML	start 10:45 H-Nu=0.0 =background
	SANDY SILTY GRAVEL brown, dry (GW)	GW	
	SILTY SAND Reddish, dry, fine (SM)	SM	Rapid Drilling H-Nu=0.5
	SANDY SILT Reddish brown, moist, clumpy (ML)	ML	
	SANDY LEAN CLAY Red, moist, clumpy with fine sand (CL)	CL	H-Nu=0.5

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-5GW	SHEET 2 OF 4

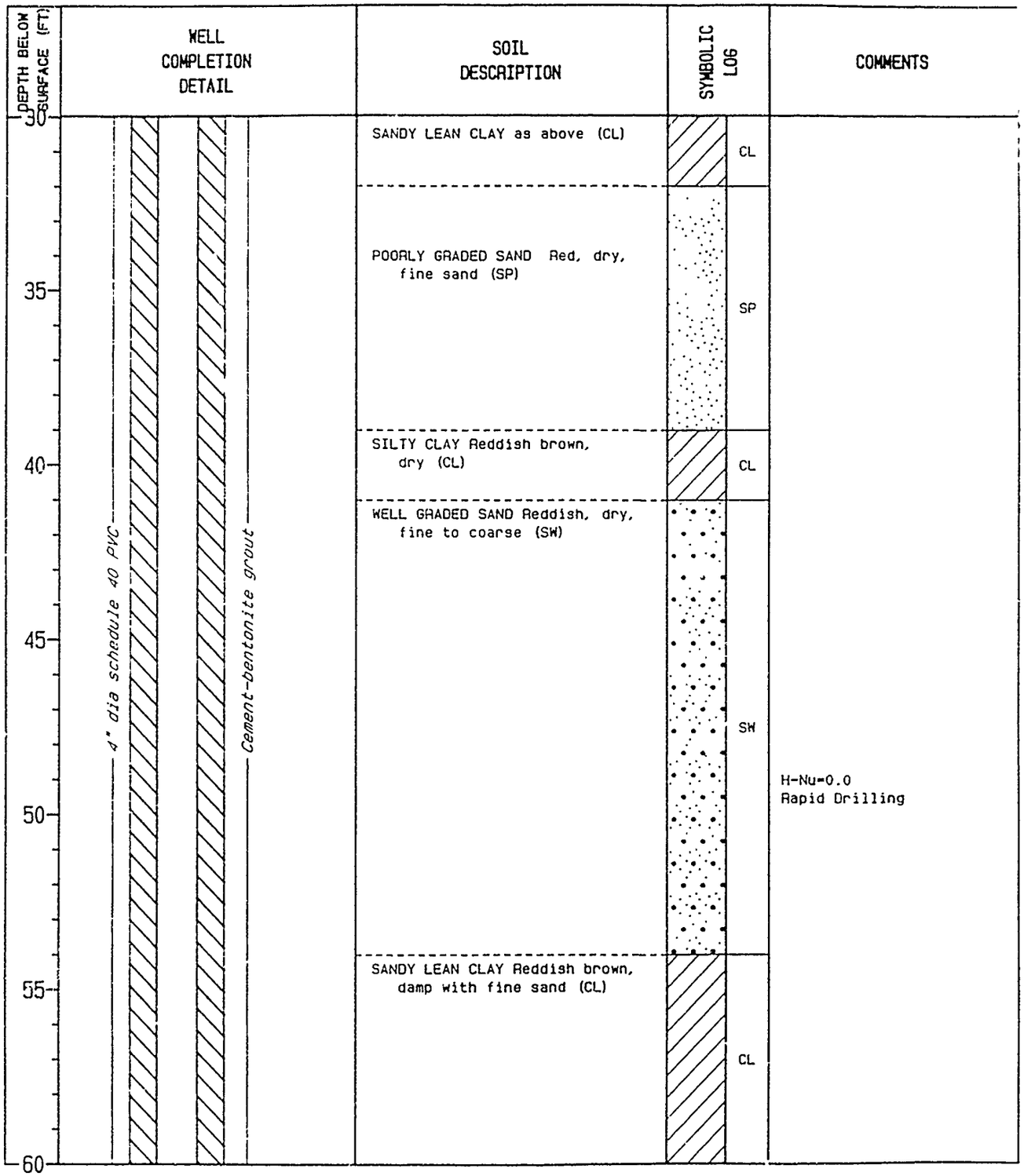
SOIL BORING LOG

PROJECT BEALE AFB LOCATION Landfill 1 EAST SIDE

ELEVATION 92.44 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 8.93 FT NGVD 3/27/89 START 12/7/89 FINISH 12/7/89 LOGGER G.T.VOGT



PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	13-C-5GW	SHEET 3	OF 4

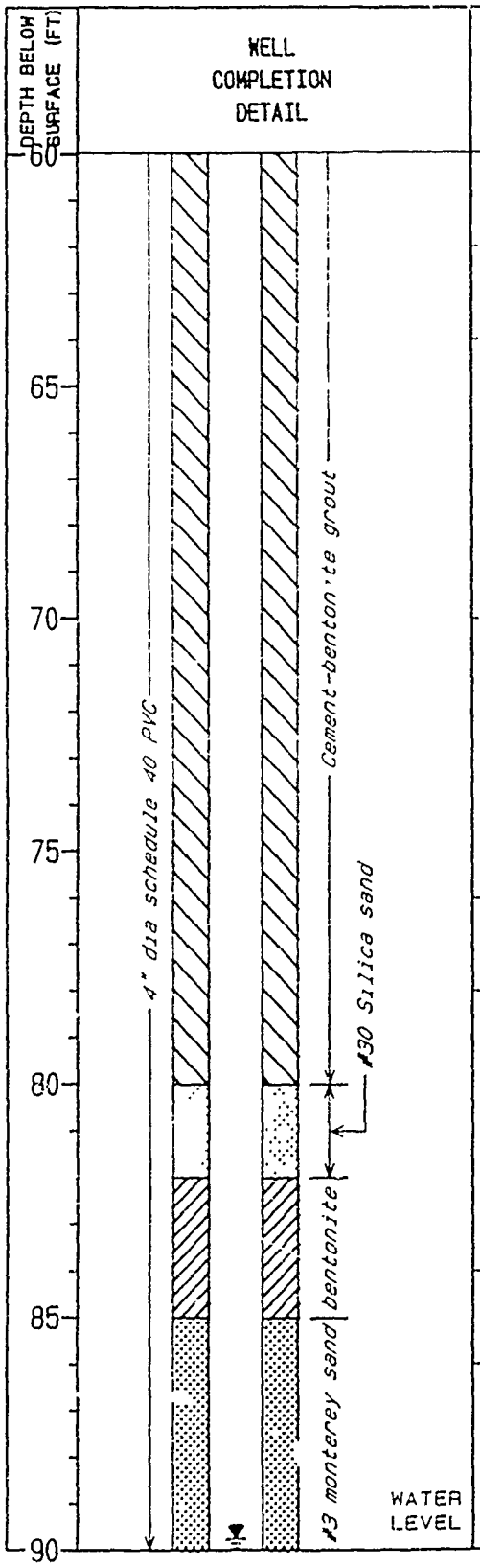
SOIL BORING LOG

PROJECT BEALE AFB LOCATION Landfill 1 EAST SIDE

ELEVATION 92.44 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 8.93 FT NGVD 3/27/89 START 12/7/89 FINISH 12/7/89 LOGGER G.T.VOGT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
SANDY LEAN CLAY as above (CL)	CL	
POORLY GRADED SAND Reddish brown, dry fine sand (SP)	SP	
SANDY SILT Reddish brown, moist, small clumps (ML)	ML	H-Nu=0.0
POORLY GRADED SAND Reddish brown dry fine sand (SP)	SP	
WELL GRADED GRAVEL WITH CLAY AND SAND (GW-GC)	GW GC	
LEAN CLAY Reddish brown, slightly moist, clumpy (CL)	CL	
POORLY GRADED SAND dry, fine sand (SP)	SP	
LEAN CLAY Tannigh-red, slightly, moist small clumps (CL)	CL	H-Nu=0.0

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	13-C-5GW	SHEET 4	OF 4

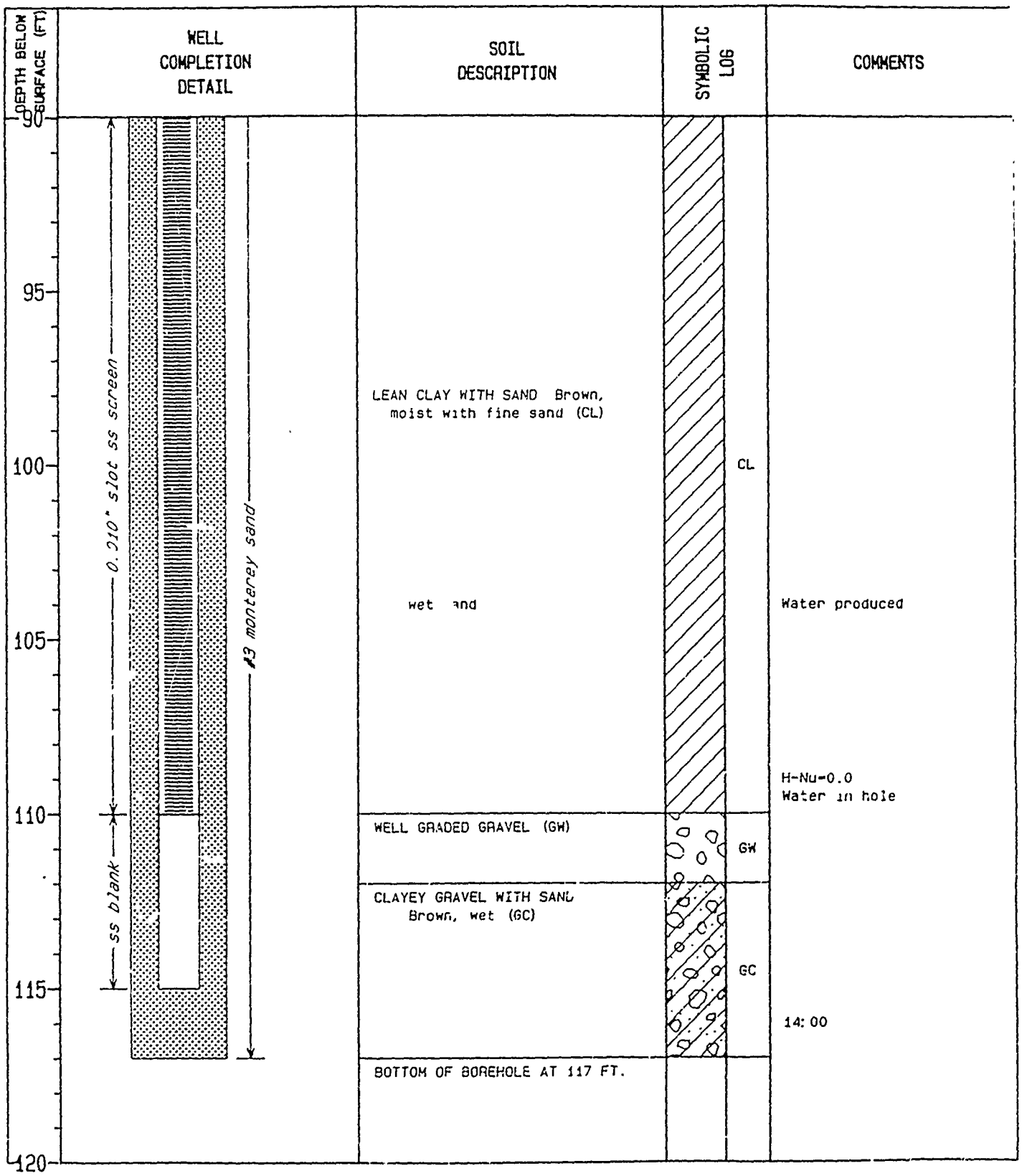
SOIL BORING LOG

PROJECT BEALE AFB LOCATION Landfill 1 EAST SIDE

ELEVATION 92.44 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 8.93 FT NGVD 3/27/89 START 12/7/89 FINISH 12/7/89 LOGGER G.I.VOGT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-6GW	SHEET 1 OF 4

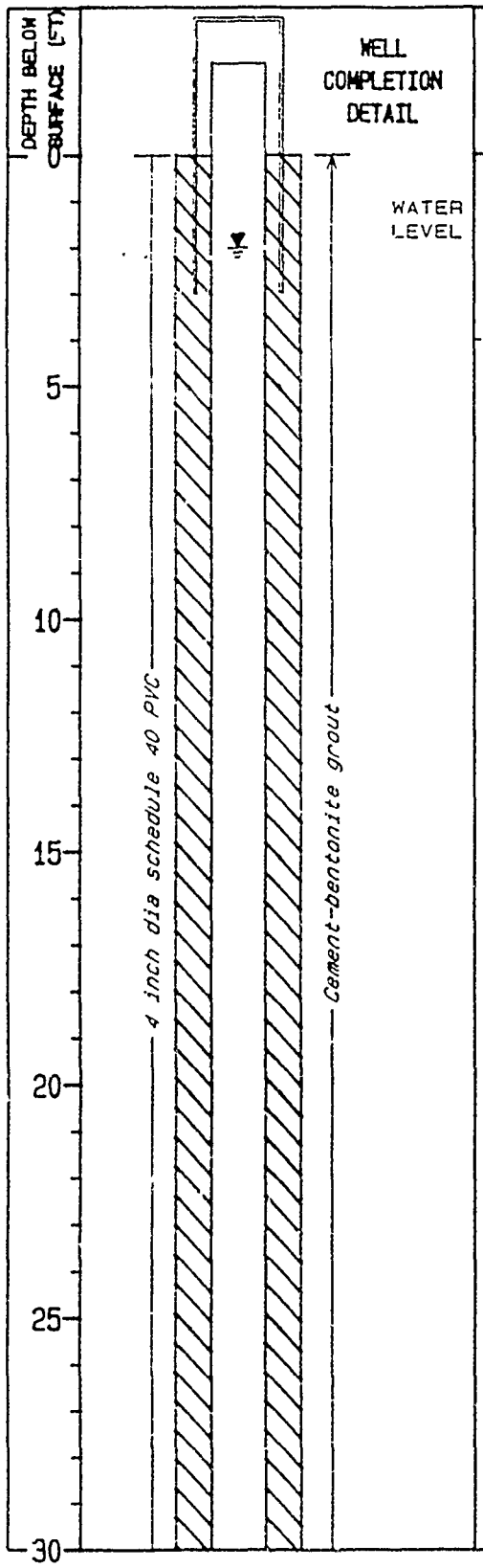
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW of SITE 13

ELEVATION 90. DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE START 8/7/89 FINISH 8/8/89 LOGGER B. PEXTON



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
WATER LEVEL	SILT light brown dry loose (ML)	ML	Start 10:20 8/7/89 H-Nu=background =0.3 ppm
	LEAN CLAY WITH SAND light brown dry clay with 25% fine sand (CL)		
	LEAN CLAY dark yellow orange clay (CL)		10:30 H-Nu=background
	LEAN CLAY light brown dry rootmarked with black organic matter (CL)	CL	
			10:50 H-Nu=background Explosimeter= background
	LEAN CLAY grayish orange dry with black organic matter (CL)		
	LEAN CLAY olive brown blocky rootmarked organic matter		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-6GW	SHEET 2 OF 4

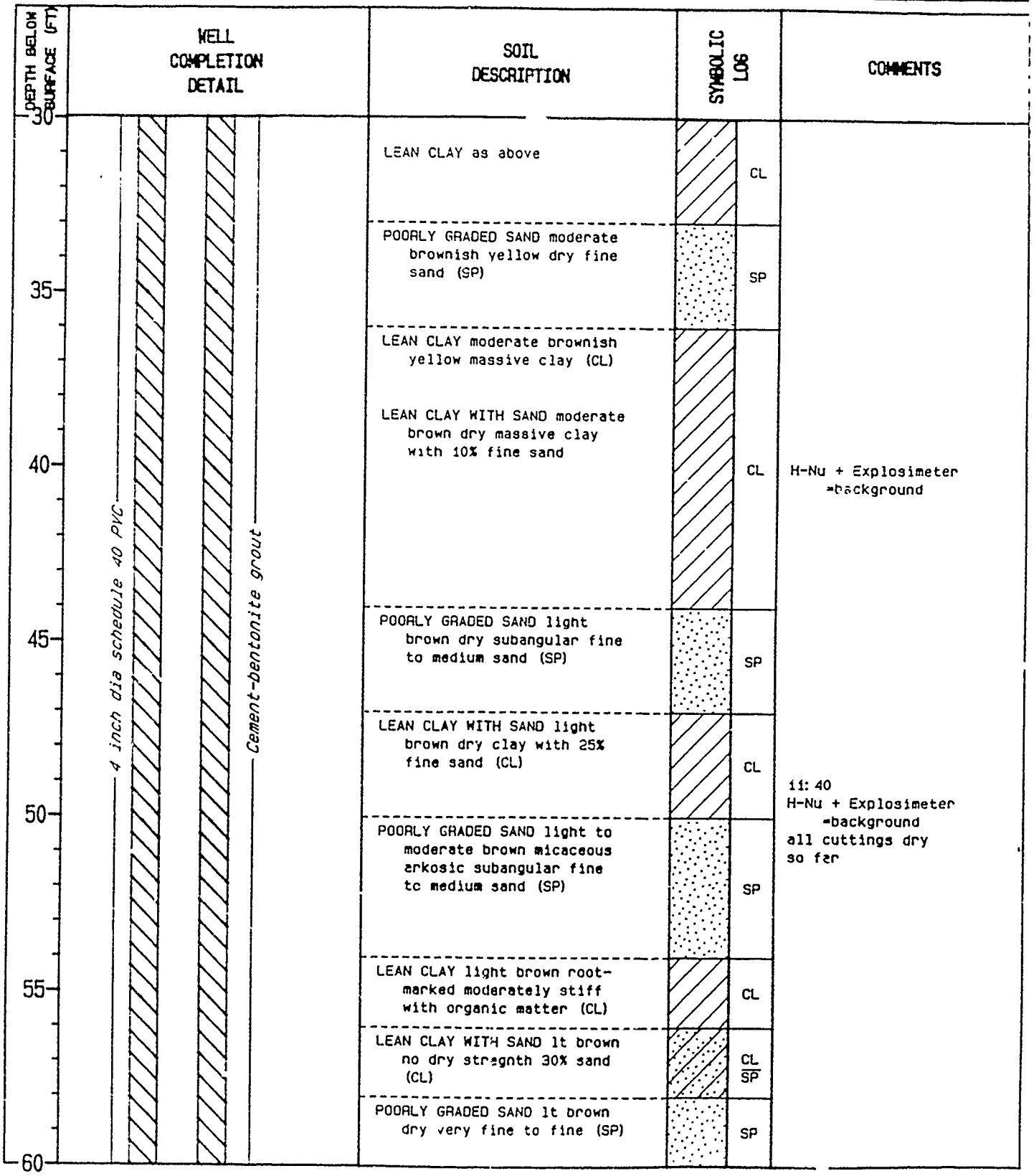
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW of SITE 13

ELEVATION 90. DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE START 8/7/89 FINISH 8/8/89 LOGGER R. PEXTON



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-6GW	SHEET 3 OF 4

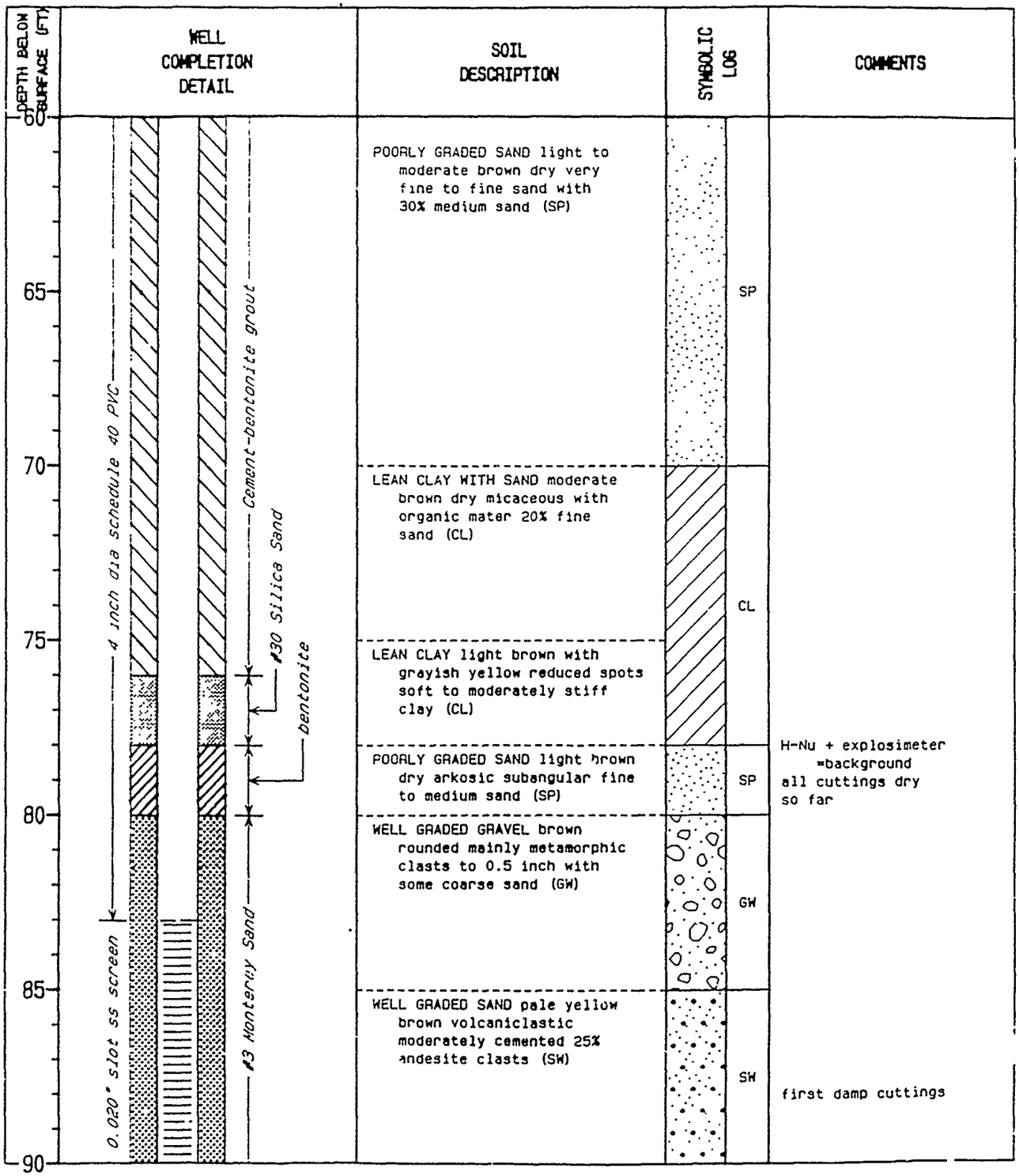
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW of SITE 13

ELEVATION 90. DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE START 8/7/89 FINISH 8/8/89 LOGGER R. PEXTON



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	13-C-6GW	SHEET 4 OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW of SITE 13

ELEVATION 90. DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE START 8/7/89 FINISH 8/8/89 LOGGER R. PEXTON

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
90		WELL GRADED SAND pale yellow brown volcaniclastic well cemented greywacke tight sandstone with weathered andesite clasts (SW)		SW	H-Nu + Explosimeter ckground
95					tight sandstone water production will be poor in this zone
		LEAN CLAY WITH SAND light brown wet 20% fine sand (CL)			13:20 first water
100		LEAN CLAY dark yellow brown wet very soft (CL) grading to well indurated rootmarked clay with black organic matter		CL	
	0.020" slot ss screen				wet gravel cuttings
105		WELL GRADED GRAVEL brown wet rounded fine to coarse gravel (GW)		GW	producing a little water
		LEAN CLAY moderate brown wet moderately cemented root-marked organic matter (CL)		CL	
110		POORLY GRADED SAND dark yellow brown wet moderate cement very fine sand (SP)		SP	14:00 break for lunch pull back drive casing to 90 feet wait for water to rise. 15:05 water level 88.4 ft below ground
		BOTTOM OF BORING AT 111 FEET			
115					
120					

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#3 Monterey Sand

SITE 15

LANDFILL NO. 1

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	15-C-1SB	SHEET 1 OF 3

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 181.01 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 20 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/1/88 FINISH 12/2/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SANDY LEAN CLAY WITH GRAVEL Reddish brown, wet (CL)		11:20 Rig on site 12:00 Lunch 12:42 Begin drill Hnu = BG 13:05 hit garbage at 4 ft. Moved boring 18 ft to north. Deconned lead auger and bit. 13:20 U.S. Rental dozer arrives 13:49 Resume drill
5	0139a	1.0	17-35	LEAN CLAY WITH GRAVEL Reddish brown, moist in upper 5 inches, dry below (CL)	CL	
10	0139	1.0	20-56-50/4	LEAN CLAY Brown, moist (CL) GRAVELLY LEAN CLAY Tan, dry, coarse rounded gravel (CL)		14:30 Drive 0139 15:03 Hnu = BG
15	0140a	0.5	21	SILT Tan, dry, grades reddish at bottom (ML)		15:53 Hnu = BG
20	0141	1.5	21-42-60	SILT WITH SAND Brown, moist, fine sand (ML)	ML	
25	0142a	1.0	19-34-53	SANDY SILT Brown, moist, fine to coarse sand (ML)		
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	15-C-1SB	SHEET 2 OF 3

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 181.01 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 20 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/1/88 FINISH 12/2/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0143	1.0	40-60/4"	SILT Tan, moist (ML)		16:00 Drive 0143 Hnu hollow stem = 86
35	0144a	1.5	23-50-50/4	SILT Tan, moist, oxidation stains, grades reddish with no stains at bottom (ML)		
40	0144	1.5	17-40-75/4	SILT Reddish brown and tan, clayey seam at top of sample (ML)		16:43 Drive sample Hnu hollow stem = 86 Driller cleans hole, pulls 10 ft of auger.
45	0145a	1.0	21-35	SANDY SILT Reddish brown and tan mottled, moist, fine grained sand (ML)	ML	16:50 End drill 12/2/88 07:40 Begin drill
50	0145	1.0	14-120/5"	SANDY SILT Reddish brown and tan mottled, moist, fine grained sand (ML)		08:32 Hnu = 86
55	0184a	1.0	20-23	SANDY SILT Reddish brown, moist, fine to medium sand, white secondary mineralization in soil (ML)		09:06 Hammer broke downhole 12:45 Resume drill
60						

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	15-C-1SB	SHEET 3	OF 3

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 181.01 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG SOUTH 20 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/1/88 FINISH 12/2/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
60	0184	1.1	14-24-100	SILT WITH SAND Reddish brown, moist, fine grained sand (ML)	ML	13:30
	0184b	0.9	24-79			BAFB 0184 duplicate
	0185	1.4	14-101	SILT WITH SAND Reddish brown, moist, fine to coarse sand and granitic rock fragments (ML)		
				END BORING AT 63.5 FEET		
65						
70						
75						
80						
85						
90						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	15-C-2SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1, WOOD PIT

ELEVATION 141.60 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 28 DEG - NORTH 28 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/6/88 FINISH 12/7/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				LEAN CLAY Brown, wet, organics (CL)	CL	12:45 Begin drill 13:30 Lunch break
				WOOD, DEBRIS, RUBBER TIRE Wood pit material	WOOD	
5						
	0151a	0.1	50	LEAN CLAY Brown, wet (CL)	CL	
10						
	0151	1.5	20-40-79	SILT WITH SAND Brown, moist, black stains in soil, fine sand (ML)		14:35 15:00
	0152a	0.5	20			
15						
	0152	1.5	7-42-100	SILT WITH SAND Brown, moist, fine sand (ML)	ML	
20						
	0153a	0.5	40	SILT WITH SAND Brown, moist, fine sand, white mineral in soil (ML)		
25						
	0153		32-86-47	SILT WITH SAND Brown, moist, fine sand (ML)		15:41 Drive 12": pull; auger 12": drive 6"
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	15-C-2SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 1, WOOD PIT

ELEVATION 141.60 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 28 DEG - NORTH 28 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/6/88 FINISH 12/7/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0154a	0.5	29	SANDY SILT Reddish brown, moist, fine sand (ML)	ML	15:55
35	0154	1.5	20-30-65	LEAN CLAY WITH SAND Reddish brown, moist, mottled, fine sand (CL)	CL	16:30
40	0155a	0.5	30	LEAN CLAY Reddish brown, moist (CL)		17:00 End drill 12/7/88 07:20 Begin drill
				SILT WITH SAND Gray, moist, (ML)	ML	
45	0155	1.5	40-108-80	POORLY GRADED SAND Gray, moist, fine grained, moderately cemented (SP)	SP	07:50 Drive 12"; pull; auger 12"; drive 6"
50	0156a	0.5	36	SILTY SAND Gray, moist, fine grained, weakly cemented (SM)	SM	
55	0156	1.2	105-139-150-100	WELL GRADED SAND Gray, moist, strongly cemented (SW)	SW	08:30 Drive 4-1/2"; pull; auger; repeat 4 times
60				END BORING AT 59.0 FEET		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	15-C-3SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 165.72 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 57 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/5/88 FINISH 12/5/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0145a	0.5	9	LEAN CLAY WITH SAND Brown, moist, fine to medium sand (CL)	CL	09:05 Begin drill 09:10 Hnu = BG
5	0145	1.5	57-75/3"-40-56/3"	LEAN CLAY WITH SAND Brown, moist, fine to medium sand (CL)		
10	0146a	0.1		LEAN CLAY Brown, dry (CL)		
15	0146	1.5	39-80-72	SANDY SILT Brown, moist, fine sand (ML)	ML	
20	0147a	0.5	64	GRAVELLY SAND WITH SILT Brown, moist, fine sub-angular gravel and rock fragments, fine to coarse sand (SW)	SW	Driller notes: Gravel at 23 ft 11:15 Lunch, drill crew leaves site 12:35 Resume drill
25	0147		50-70-100	SILT WITH SAND Brown, moist, fine sand (ML)	ML	13:00 Hnu = BG
30						

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	15-C-3SB	SHEET 2	OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 165.72 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 57 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/5/88 FINISH 12/5/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30					ML	
	0148a	0.4	30	SILTY SAND Brown, dry, fine sand, white powdery mineral (SM)	SM	
35	0148	1.1	34-100/5"-100/5"	SILTY SAND Brown, moist, fine sand (SM)		
40				WELL GRADED GRAVEL Gravel and cobbles in cuttings	GW	
	0149a	0.5	60	SANDY LEAN CLAY WITH GRAVEL Brown, moist, fine sand, fine gravel (CL)	CL	
45						Hnu cuttings = BG
	0149	1.5	89-77-105	SILTY CLAYEY GRAVEL WITH SAND Yellowish brown, moist, fine to coarse sand, fine subrounded gravel (GC)	GC	15:25 Drive 0149 Hnu hollow stem = BG
50	0150a	0.5	60	WELL GRADED SAND WITH SILTY CLAY AND GRAVEL Brown, moist, subrounded gravel (SW)	SW	16:15 Hnu at boring = BG
55	0150		60-125-100	CLAYEY GRAVEL WITH SAND Brown, moist, subrounded (GC)	GC	16:50
60				END BORING AT 59.0 FEET		

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	15-C-4SB	SHEET 1	OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 179.81 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 29 DEG - NORTH 15 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/7/88 FINISH 12/8/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0					ML	
	0157a	0.5	34	GRAVELLY LEAN CLAY Brown, dry, subangular gravel (CL)	CL	
5						
	0157	1.5	37-80-31	SILT WITH SAND Tan, moist (ML)	ML	14:30 Drive 12": pull: auger 12": drive 6"
	0158	1.5	34-74-37	SILTY CLAY Tan, moist (CL-ML)	CL/ML	
10						
	0159a	0.5	34	SANDY SILT Tan, moist, fine sand, lenses of orange brown sandier silt (ML)	ML	
15						
	0159	1.4	35-70-39	LEAN CLAY Brown, moist, black coloring in soil (CL)	CL	15:15 Drive 12": pull: auger 12": drive 6"
20						
	0160a	0.5	40	LEAN CLAY Brown, moist, black coloring in soil (CL)		
25						
	0160		30-43-63	LEAN CLAY WITH SAND Brown, moist, fine grained (CL)		
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	15-C-4SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 179.81 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 29 DEG - NORTH 15 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/7/88 FINISH 12/8/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0161a	0.5	34	LEAN CLAY WITH SAND Brown, moist, fine sand, black coloring in soil (CL)	CL	
35	0161	1.3	44-46-49	SILTY SAND Brown, moist, well graded (SM)	SM	16:30
40	0162a	0.5	47	SILTY SAND WITH GRAVEL Reddish brown, moist, well graded, subrounded fine gravel (SM)		16:55 17:00 End drill 12/8/88 07:10 Begin drill
45	0162	1.4	43-70-40	CLAYEY GRAVEL WITH SAND Brown, moist, subangular, well graded sand (GC)	GC	07:43 Drive 12"; pull; auger 12"; drive 6"
50	0163a	0.5	31	SILT WITH SAND Brown, moist, fine sand (ML)	ML	
55	0163		19-32-70	SILT Brown, moist (ML)		08:48 Begin mixing grout
60				END BORING AT 59.0 FEET		09:00 End drill

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	15-C-5SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 144.07 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE: WATER NOT ENCOUNTERED START 11/30/88 FINISH 11/30/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SILT Brown, moist, loose (ML)	ML	
5	0082a	1.1	15-25-28	POORLY GRADED SAND Brown, dry very dense (SP)	SP	Some oil dripping from Kelly Driller notes: Gravels at 7 ft Hnu = BG LEL = 0.0%
10	0082	1.2	16-25-33	POORLY GRADED SAND Dark brown, moist, very dense (SP)		11:45 Driller notes: Cobbles at 13 ft
15	0083a	0.8	39-50/3"	POORLY GRADED SAND Dark brown, very dense, some gravel and silt, cobbles (SP)		Driller notes: Cobbles at 16 ft
20	0083	1.4	16-45-46	SANDY SILT Brown, dry, hard, some mottling and staining (ML)	CL/ML	12:20 12:20 Replace a bent auger flight
25	0084a	1.2	5-30-27	POORLY GRADED SAND Gray to brown, dry, very dense, some gravel (SP)	SP	Driller notes: Gravels at 29 ft
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	15-C-5S8	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION LANDFILL 3

ELEVATION 144.07 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 11/30/88 FINISH 11/30/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: SAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0084	0.7	10-27-50/5"	POORLY GRADED SAND Brown to reddish brown, dry, very dense, some gravel and silt (SP)	SP	12:55 Driller notes: Gravel at 32 ft 13:12 Lunch 13:30 Resume drill 13:40 Driller notes: Gravel at 36 ft
35	0085a	1.2	21-42-50/3"	POORLY GRADED SAND Gray brown, dry, very dense, some cementation (SP)		
40	0085	1.0	21-50/4"	WELL GRADED SAND Light brown to gray, dry, very dense (SW)	SW	Driller notes: Out of gravel at 39 ft 14:10
45	0086a	1.5	10-21-29	WELL GRADED SAND Gray to gray brown, dry, dense, reddish brown 1/2 inch lense at 46 ft (SW)		
50	0086	1.5	9-29-60	WELL GRADED SAND Gray to gray brown, very dense (SW)		14:50 Drive sample 14:52 End drill
				END BORING AT 51.5 FT		
55						
60						

SITE 16

EXPLOSIVE ORDNANCE DISPOSAL (EOD) AREA

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
3AC24359.AI.04	16-C-3SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION EXPLOSIVE ORDNANCE DISPOSAL AREA

ELEVATION 171.07 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 11/29/88 FINISH 11/29/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SANDY SILT Medium brown, moist, soft, fine sand (ML)	ML	Third attempt to drill 16-C-3SB
				POORLY GRADED SAND Gray to tan, moist, very dense (SP)	SP	Hnu = BG
5	0082a	0.5	50/3 1/2"	POORLY GRADED SAND Light brown, moist, very dense (SP)		15:05 Auger refusal at 5.5 ft
				END BORING AT 5.5 FEET		
10						Note: The two angle borings scheduled for Site 16 were not drilled because of the near surface rock. No soil samples from 16-C-3SB were analyzed.
15						
20						
25						
30						

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	16-C-16W	SHEET 1	OF 2

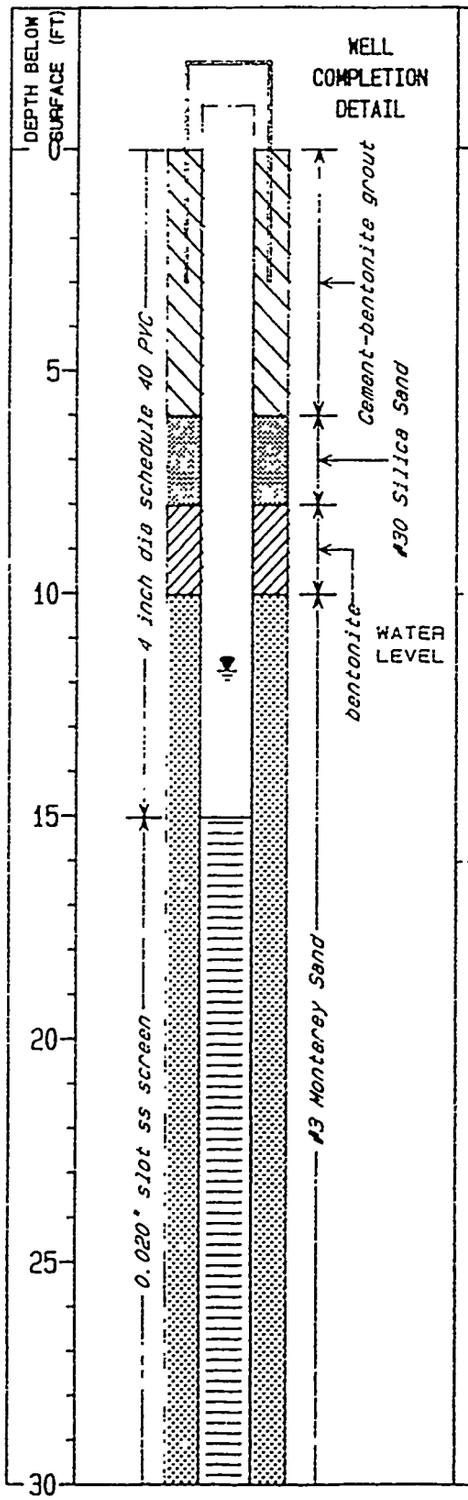
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW OF TRENCH AT EOD

ELEVATION 159.36 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 147.64 FT NVGD 3/27/89 START 1/11/89 FINISH 1/11/89 LOGGER C.ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
GRAVELLY LEAN CLAY WITH SAND dark reddish brown moist but dry below 2 ft 20% subangular gravel 15% well graded sand (CL)		start 9:30 1/11/89
increasing cobbles and gravels metomorphosed basalt dry	CL	very slow drilling
		H-Nu=0.3 ppm downhole
LEAN CLAY brownish yellow dry medium toughness plasticity rock chips of metabasalt at 11 feet (CL)		fast drilling in alteration zone
increasing ratio of meta-basalt chips to clay.	CL	slow drilling
METABASALT gray dry dense meta basalt		very slow drilling H-Nu=0.3 ppm downhole
occasional thin zones where basalt cuttings are mixed with lean clay alteration along fractures dry	BST	
metabalt as above moist cuttings		cutting moist for 6 inches H-Nu=0.4 ppm downhole
dry metabasalt cuttings		

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	16-C-1GW	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW OF TRENCH AT EOD

ELEVATION 159.36 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 147.64 FT NVGD 3/27/89 START 1/11/89 FINISH 1/11/89 LOGGER C ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
35	ss. blank #3 Monterey Sand	altered zone lean clay and metabasalt		BST	H-Nu=0.3 ppm downhole 11:30 1/11/89
		BOTTOM OF BORING AT 37 FEET			
40					
45					
50					
55					
60					

SITE 18

BULK FUEL STORAGE FACILITY

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	18-C-1SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION BULK FUEL STORAGE FACILITY

ELEVATION 117.15 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/3/89 FINISH 1/3/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				POORLY GRADED GRAVEL Railroad ballast (GP)	GP	11:50 Begin drill 1.5 ft to soil
	0353	1.4	10-8-8	SANDY LEAN CLAY Light brown and gray, wet, well graded sand (CL)	CL	12:00 Hnu sample = 13ppm
5	0354	1.4	22-38-54	SANDY SILT Gray, moist, hard, brown mottled, well graded sand (ML)	ML	12:10
10	0355	1.5	23-69-125/5"	SILTY CLAY Light brown, dry, very hard, trace fine sand (CL-ML)	CL/ML	12:20
	0356	1.5	15-60-150/4 1/2"			12:30 BAFB 0355 duplicate
				END BORING AT 13.0 FEET		12:55 End drill
15						
20						
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	18-C-2SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION BULK FUEL STORAGE FACILITY

ELEVATION 117.12 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/3/89 FINISH 1/3/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
0				POORLY GRADED GRAVEL Railroad ballast (GP)		GP	13:57 Begin drill
	0357	1.5	19-26-32	SANDY GRAVELLY LEAN CLAY Medium brown, moist, very hard, mottled (CL)		CL	14:00 Sample
5	0358	1.5	11-8-6	SILT WITH SAND Medium brown, moist, fine sand, mottled (ML)		ML	14:40
10	0359	1.5	8-21-83	SILTY SAND Medium brown, moist, very dense (SM)		SM	14:45 Hnu hollow stem = 100ppm
				END BORING AT 11.5 FEET			
15							
20							
25							
30							

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	18-C-3SB	SHEET 1	OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION BULK FUEL STORAGE FACILITY

ELEVATION 117.36 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/3/89 FINISH 1/3/89 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				POORLY GRADED GRAVEL Railroad ballast (GP)	GP	15:40 Begin drill
	0360	1.3	13-22-26	SANDY LEAN CLAY Medium brown, moist, hard, moderate plasticity, well graded sand (CL)	CL	
5	0361	1.5	6-9-	CLAYEY SAND Medium brown, moist, well graded sand, oily sheen on soil (SC)	SC	15:55
10	0362	1.5	10-29-32	SANDY LEAN CLAY Light brown, moist, very hard (CL)	CL	16:05 Hnu sample = 25ppm
				END BORING AT 11.5 FEET		14:10 End drill
15						
20						
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	18-C-1GW	SHEET 1 OF 5

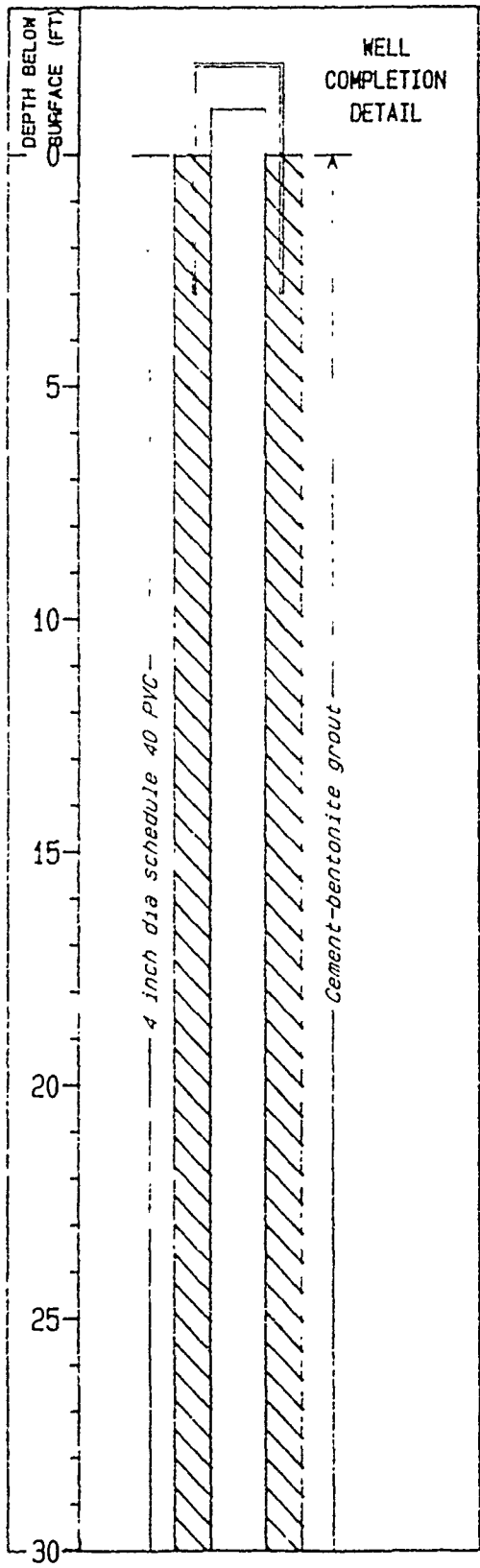
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF MOGAS TANKS

ELEVATION 110.82 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NVGD 3/27/89 START 12/9/88 FINISH 12/12/88 LOGGER P. LAWSON



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
POORLY GRADED SAND WITH SILT yellowish brown (SP-SM)	SP SM	start 14:15 12/9/88 H-Nu=0.0 ppm
WELL GRADED SAND WITH GRAVEL brownish yellow (SW)	SW	H-Nu=0.0 ppm
WELL GRADED SAND WITH SILT dark yellow brown moist fine to mediun (SW-SM) some clay	SW SM	
LEAN CLAY yellowish red damp silty clay (CL)	CL	
FAT CLAY yellowish-red (CH)	CH	H-Nu=0.0 ppm

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	18-C-1GW	SHEET 2 OF 5

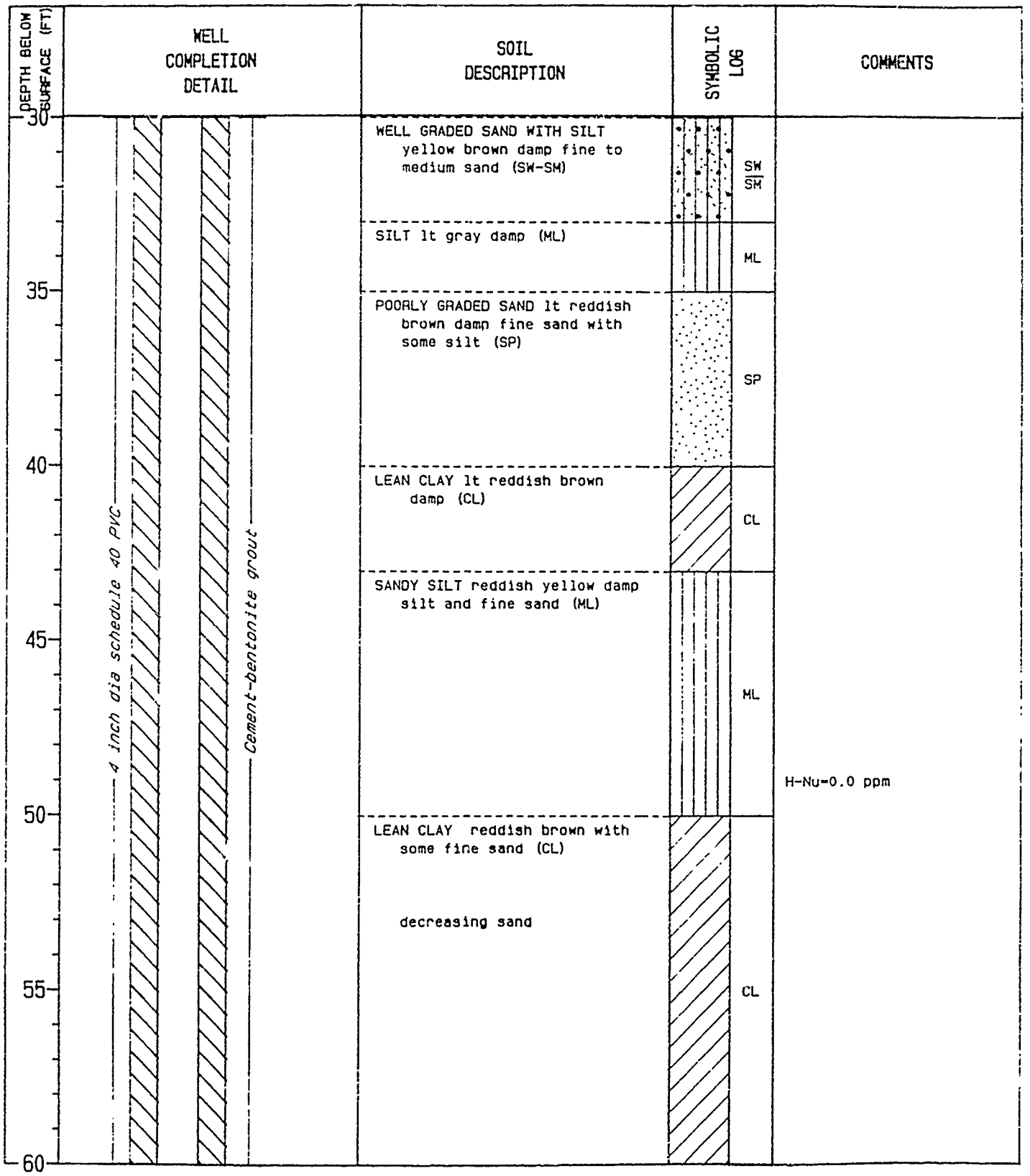
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF MOGAS TANKS

ELEVATION 110.82 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NVGD 3/27/89 START 12/9/88 FINISH 12/12/88 LOGGER P LAWSON



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	18-C-1GW	SHEET 3 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF MCGAS TANKS

ELEVATION 110.82 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NVGD 3/27/89 START 12/9/88 FINISH 12/12/88 LOGGER P. LAWSON

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
60		WELL GRADED SAND WITH SILT lt reddish brown (SW-SM)	SW SM	
		LEAN CLAY lt reddish brown (CL)	CL	H-Nu=0.1 ppm
70		SILT lt brown (ML)	ML	
75	4 inch dia schedule 40 PVC	lt reddish brown siltstone to claystone with black organic matter		
80	Cement-bentonite grout	WELL GRADED SAND lt brown fine to coarse (SW)	SW	
		LEAN CLAY lt brown (CL)	CL	
85		SILTY SAND brown (SM)	SM	
		SILT WITH SAND lt brown silt with fine to medium sand (ML)	ML	H-Nu=0.2 ppm
90				

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	18-C-1GW	SHEET 4 OF 5

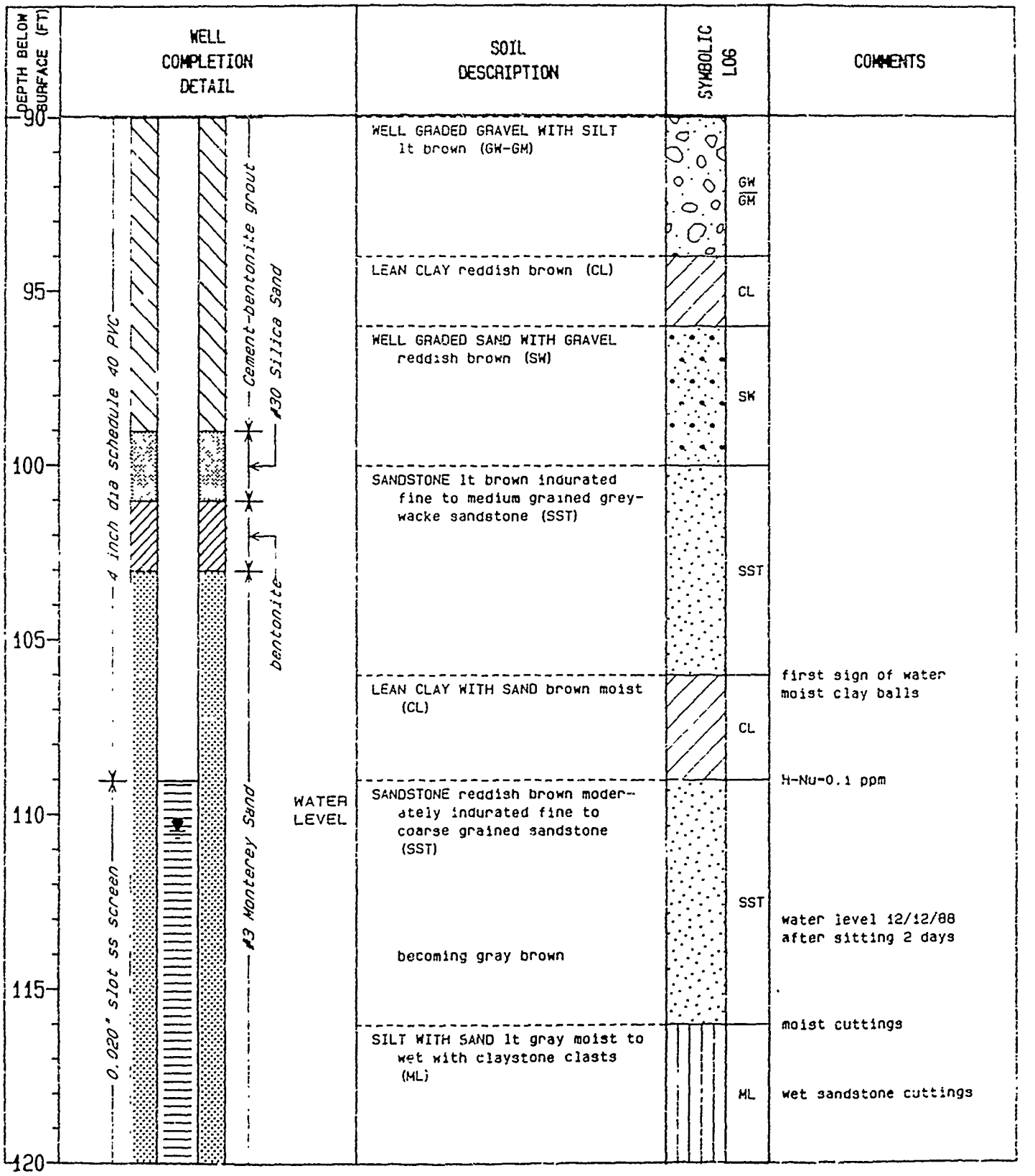
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF MOGAS TANKS

ELEVATION 110.82 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NVGD 3/27/89 START 12/9/88 FINISH 12/12/88 LOGGER P. LAWSON



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	18-C-1GW	SHEET 5 OF 5

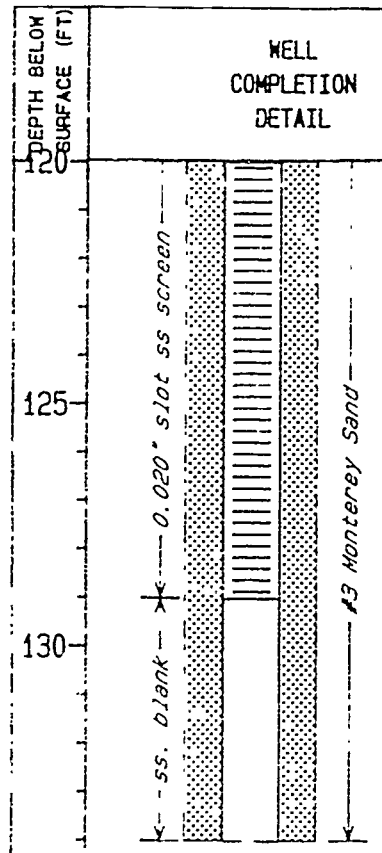
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF MOGAS TANKS

ELEVATION 110.82 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 0.19 FT NVGD 3/27/89 START 12/9/88 FINISH 12/12/88 LOGGER P. LAWSON



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
SILT WITH SAND as above (ML)	ML	
WELL GRADED GRAVEL lt gray wet coarse sand and fine gravel (GW)	GW	first good water production in muddy sand and gravel
SANDY SILT lt brown to grey (SM)	SM	stop drillling 16:30 12/9/88 finish borehole 8:00 12/12/88
LEAN CLAY pale brown indurated clasts of claystone in clay matrix	CL	
BOTTOM OF BORING AT 134 FT.		

PROJECT NUMBER	BORING NUMBER		
SAC24359.AI.04	18-C-2GW	SHEET 1	OF 5

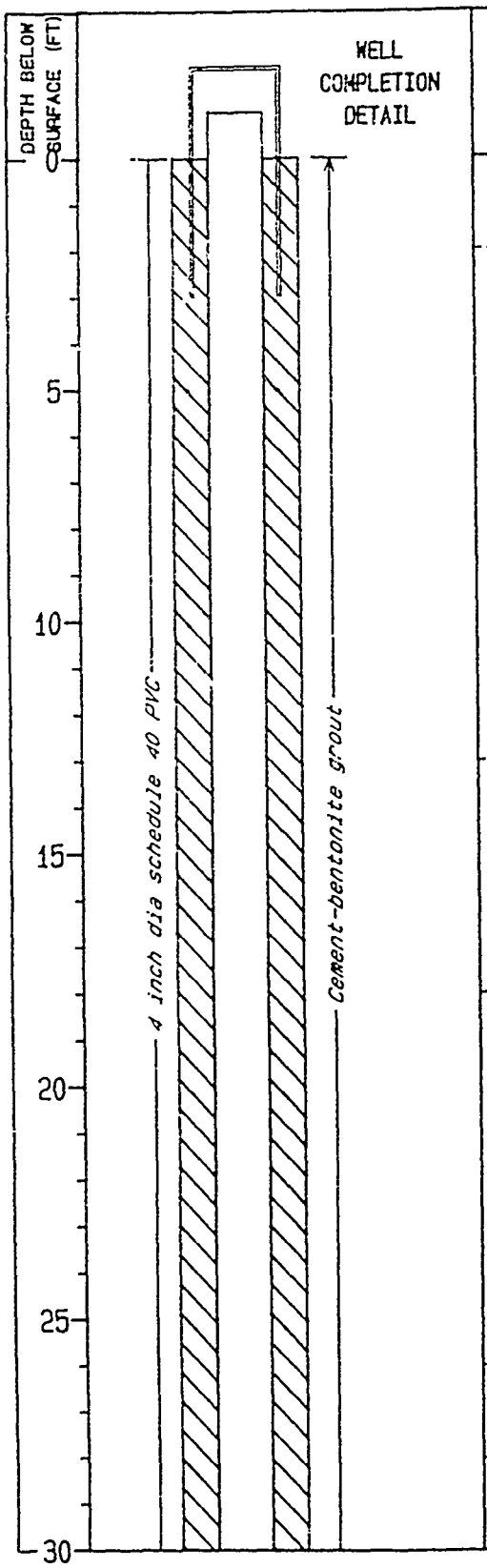
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF AVGAS TANKS

ELEVATION 114.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.07 FT NGVD 3/27/89 START 12/12/88 FINISH 12/12/88 LOGGER C.ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
	CLAYEY SAND red-brown moist well graded sand 40% lean clay 10% gravel (SC)		SC	start 8:30 12/2/88 very fast drilling
	LEAN CLAY brown-yellow moist low dry stregnth medium toughness and plasticity layers with strong cement thin layers of fat clay (CL)		CL	
	WELL GRADED SAND yellowish brown moist fine to medium sand 10% coarse sand trace fine rounded gravel (SW)		SW	very fast drilling
	LEAN CLAY yellowish red dry medium toughness and plasticity no dilatency layers of moderate to strong cementation (CL)		CL	H-Nu=0.8 ppm downhole drilling slows
	FAT CLAY reddish yellow dry high plasticity toughness and dry stregnth (CH)		CH	
	LEAN CLAY lt yellow brown moist medium plasticity toughness & dry stregnth (CL)		CL	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	18-C-2GW	SHEET 2 OF 5

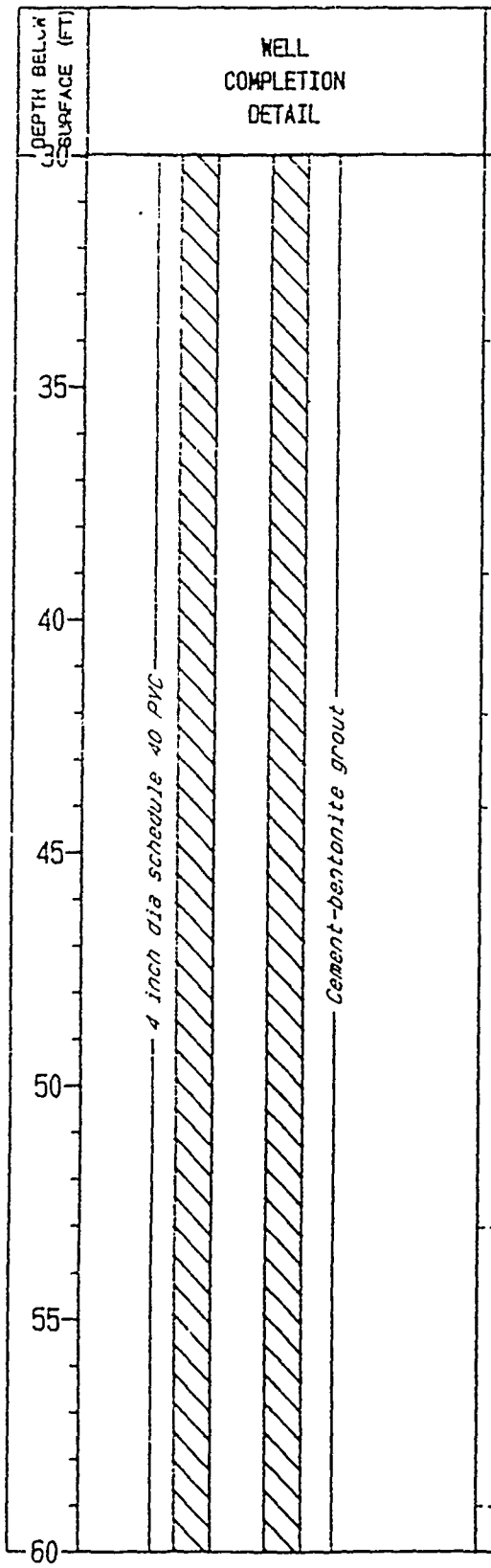
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF AVGAS TANKS

ELEVATION 114.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.07 FT NGVD 3/27/89 START 12/12/88 FINISH 12/12/88 LOGGER C.ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
LEAN CLAY lt yellowish brown moist medium plasticity toughness and dry strength (CL)	CL	
POORLY GRADED SAND gray brown moist clean fine sand trace medium and coarse grains (SP)	SP	
LEAN CLAY reddish brown moist medium plasticity toughness and dry stregnth slow dilatency (CL)	CL	H-Nu=0.7 ppm downhole
POORLY GRADED SAND strong brown moist fine sand trace medium to coarse sand 10% clay (SP)	SP	
LEAN CLAY yellowish brown moist medium plasticity toughness and dry stregnth trace fine sand (CL)	CL	
clay as above strong brown		H-Nu=0.9 ppm downhole
layers with strong cement-ation some stratification		
SILT yellowish brown moist low plasticity and toughness fast dilatency trace fine sand (ML)	ML	H-Nu=1.0 ppm downhole
FAT CLAY yellow-brown moist (CH)	CH	

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	18-C-2GW	SHEET 3 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF AVGAS TANKS

ELEVATION 114.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.07 FT NGVD 3/27/89 START 12/12/88 FINISH 12/12/88 LOGGER C.ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
60	4 inch dia schedule 40 PVC; Cement-bentonite grout	FAT CLAY yellowish brown moist hight plasticity toug' ness & dry stregnth (CH)		CH	
		SANDY LEAN CLAY strong brown moist lean clay 40% fine sand (CL)		CL	
65		WELL GRADED SAND WITH GRAVEL yellowish brown moist fine to coarse sand 20% fine subrounded gravel (SW)		SW	
		POORLY GRADED SAND WITH GRAVEL yellowish brown moist coarse to medium sand 20% fine subrounded gravel (SP)			
70		becoming dark yellow brown increasing fines some layers of fat clay		SP	
75		FAT CLAY dark yellowish brown dry high plasticity tough-ness and very high dry stregnth (CH)			
80				CH	H-Nu=0.5 ppm downhole
85		LEAN CLAY brown yellow moist medium plasticity toughness and dry stregnth (CL)		CL	
		POORLY GRADED SAND dark yellow brown moist medium sand with 20% fine and 10% coarse (SP)		SP	
90		FAT CLAY yellowish brown moist high plasticity toughness and dry strength (CH)		CH	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	18-C-2GW	SHEET 4	OF 5

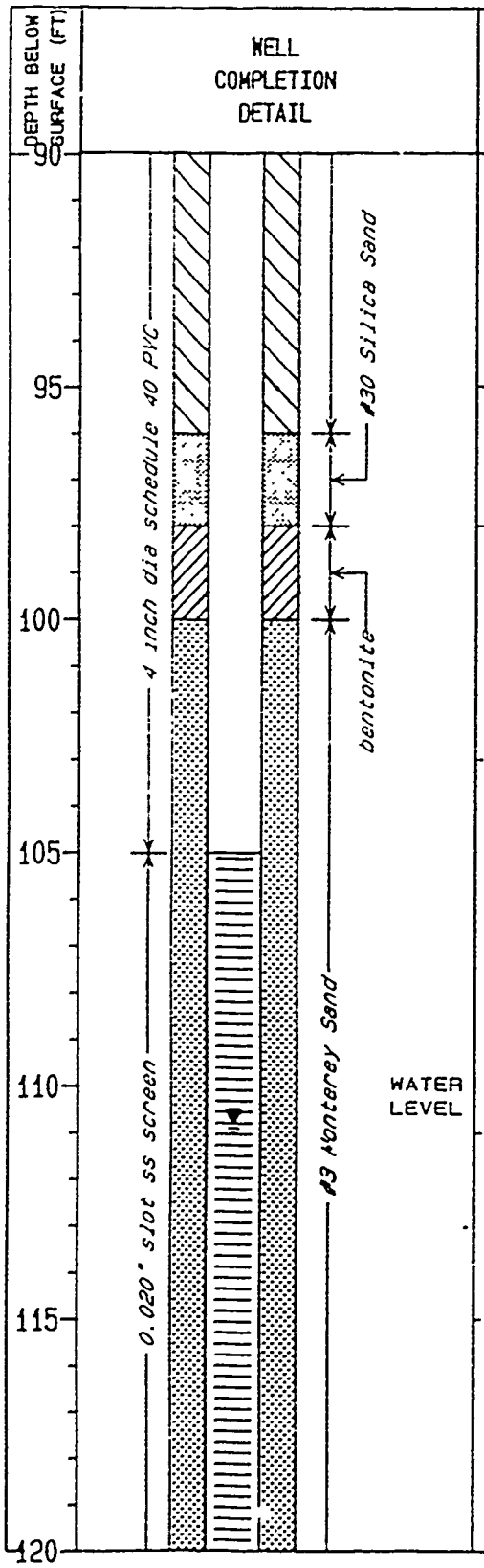
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF AVGAS TANKS

ELEVATION 114.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.07 FT NGVD 3/27/89 START 12/12/88 FINISH 12/12/88 LOGGER C.ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
FAT CLAY yellowish brown moist high plasticity toughness and dry stregnth (CH)	CH	
LEAN CLAY dark yellowish brown moist medium plastictiy and toughness (CL)	CL	
CLAYEY SAND dark yellow brown moist well graded sand 20% lean clay (SC)	SC	H-Nu=0.4 ppm downhole
CLAYEY SAND WITH GRAVEL dark yellowish brown moist well graded sand with 30% fine rounded gravel 20% clay (SC)	SC	
POORLY GRADED SAND dark gray brown moist medium sand 20% fine 10% coarse sand trace fine gravel (SP) layers with moderate to strong cementation	SP	wet cuttings!
CLAYEY SAND WITH GRAVEL dark yellowish brown wet well graded sand 20% clay 20% well graded subrounded to rounded gravel (SC)	SC	producing water
WELL GRADED SAND WITH GRAVEL dark grayish brown wet fine to coarse sand 20% well graded rounded to subrounded gravel (SW)	SW	H-Nu=0.4 ppm downhole

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	18-C-2GW	SHEET 5 OF 5

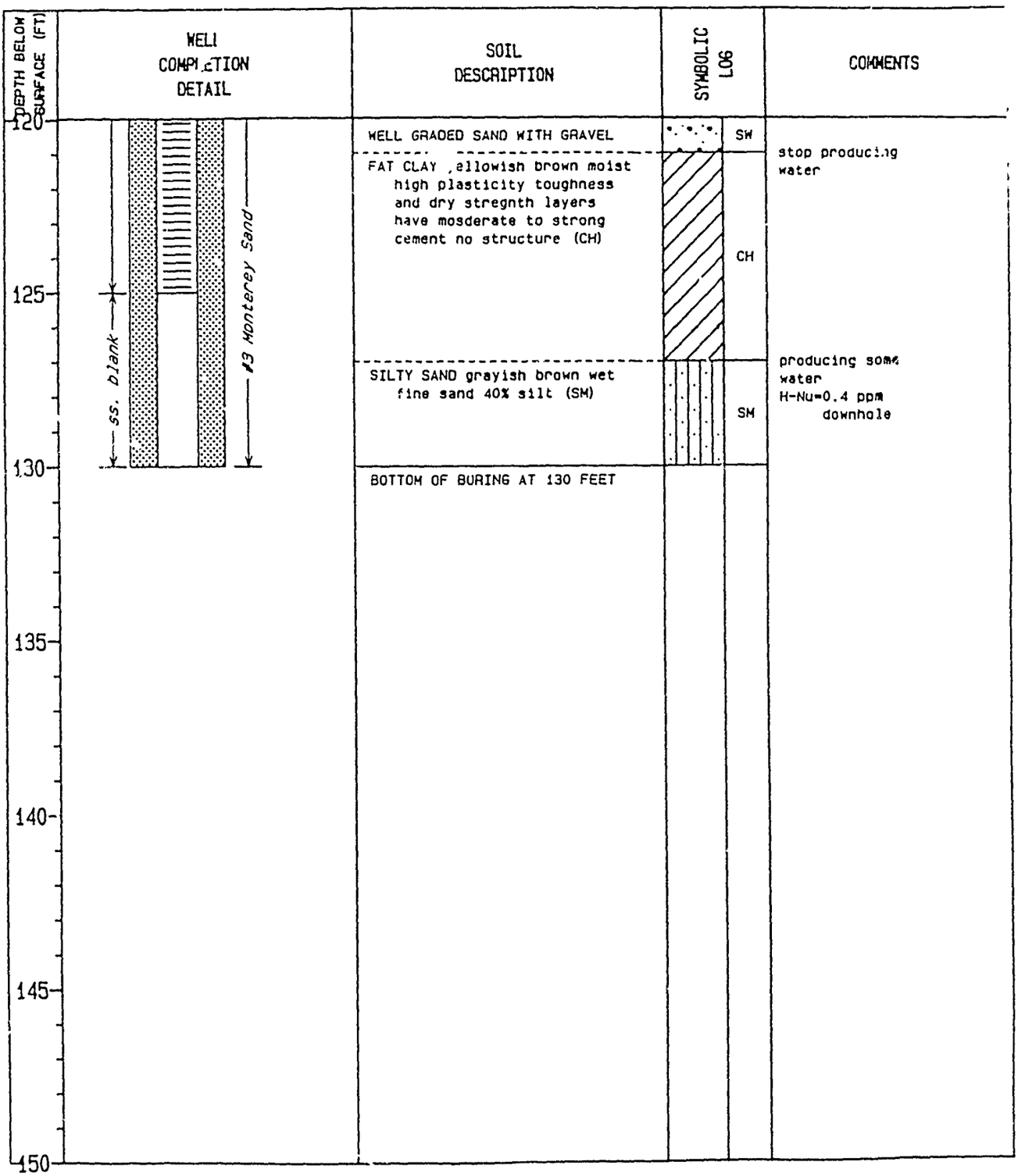
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF AVGAS TANKS

ELEVATION 114.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.07 FT NGVD 3/27/89 START 12/12/88 FINISH 12/12/88 LOGGER C.ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-2GW	SHEET 3 OF 4

SITE 19

PHOTOWASTE EMERGENCY HOLDING BASIN

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-1SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE EMERGENCY HOLDING BASIN

ELEVATION 111.25 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE START 12/8/88 FINISH 12/8/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				SANDY SILT (ML)	ML	14:15 Begin drill
5	0188a	1.5	7-21-25	CLAYEY SAND Reddish brown and gray layers, moist, dense, black flakes (SC)	SC	
10	0188	1.5	19-36-77	SILTY CLAY Medium brown, dry, very hard, black flakes, blocky (CL-ML)		14:35
15	0189a	1.5	11-31-42	SILTY CLAY WITH SAND Medium brown, dry, very hard, fine sand (CL-ML)		
20	0189	1.5	21-25-30	SILTY CLAY WITH SAND Medium brown, dry, very hard, moderate plasticity (CL-ML)	CL/ML	15:00
25	0208a	1.5	15-21-26	SANDY SILTY CLAY Light to medium brown, dry, hard, black flakes, mottled (CL-ML)		
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-1SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE EMERGENCY HOLDING B

ELEVATION 111.25 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE START 12/8/88 FINISH 12/8/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0208	1.4	21-26-24	SILTY CLAY WITH SAND Reddish brown, moist, hard, flaky, fine sand, mottled (CL-ML)	CL/ML	15:25
35	0209a	1.5	15-15-19	SILTY CLAY WITH SAND Reddish brown, moist, hard, medium to coarse sand (CL-ML)		
40	0209	1.5	10-35-46	WELL GRADED SAND AND GRAVEL Moist, very dense, angular fine gravel (SW)	SW	15:55
45	0210a	1.5	10-10-13	SANDY LEAN CLAY Gray, moist, reddish brown mottling, large black flakes (CL)	CL	Water standing at 44 ft in hole
50	0210	1.5	5-29-50	CLAYEY SAND Red brown, wet, very dense, angular to subangular gravel, weakly cemented gravel (SC)	SC	16:30 End drill
55				END BORING AT 51.5 FEET		
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-2SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE EMERGENCY HOLDING BASIN

ELEVATION 110.66 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 28 DEG - SOUTH 25 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/13/88 FINISH 12/13/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0234	1.3	20-24-58	LEAN CLAY WITH SAND Brown, moist, fine sand (CL)	CL	12:25 Begin drill Hnu = BG
5	0235	1.4	20-28-78	LEAN CLAY Gray, moist, oxidation stains (CL)		12:48 Hnu = BG
10	0236a	0.5	43	LEAN CLAY Brown, moist, black coloring, blocky (CL)		13:00 Hnu = BG
15	0236	1.5	21-50-75	SILTY CLAY WITH SAND Brown, moist, well graded sand (CL-ML)	CL/ML	13:15 Hnu = BG
20	0237a	0.5	37	SILT Brown, moist, black coloring (ML)	ML	13:27 Hnu = BG
25	0237		12-30-58	SILTY CLAY Brown, moist (CL-ML)	CL/ML	13:40 Hnu = BG
30						

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	19-C-2SB	SHEET 2	OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE EMERGENCY HOLDING (

ELEVATION 110.66 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53, ANGLE 28 DEG - SOUTH 25 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/13/88 FINISH 12/13/88 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0238a	0.5	30	SILTY CLAY WITH SAND Brown, moist, medium to coarse sand (CL-ML)	CL ML	13:55 Hnu = BG
35	0238	1.5	14-17-26	SILT WITH SAND Brown, moist, medium to coarse sand (ML)	ML	14:12 Hnu = BG
40	0239a	0.5	25	LEAN CLAY Brown, moist, blocky (CL)	CL	14:33 Hnu = BG
45	0239		18-25-38	LEAN CLAY Brown, moist (CL)		14:55 Hnu = BG
50				END BORING AT 48.5 FEET		
55						
60						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-3S8	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE EMERGENCY HOLDING BASIN

ELEVATION 109.63 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 29 DEG - NORTH 20 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/5/89 FINISH 1/5/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0311a	0.5	39	LEAN CLAY Tan, moist. firm, oxidation stains (CL)	CL	Hnu cuttings = 8G
10	0311	1.5	21-104-40	LEAN CLAY Brown, moist, firm, black coloring (CL)		12:50 Drive 12"; pull; auger 12"; drive 6"
15	0312a	0.5	51	LEAN CLAY Brown, moist, firm, black coloring (CL)		
20	0312	1.5	33-51-137	LEAN CLAY Brown, moist, hard (CL)		13:25
25	0313a	0.5	72	LEAN CLAY Brown, moist, hard, blocky (CL)		
30	0313	1.4	12-41-57	LEAN CLAY Brown, moist, firm (CL)		14:05

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-3SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION PHOTOWASTE EMERGENCY HOLDING E N

ELEVATION 109.63 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 29 DEG - NORTH 20 DEG EAST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/5/89 FINISH 1/5/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG		COMMENTS
30							14:20 Rig down 14:40 Resume drill
	0314a	0.5	40	LEAN CLAY WITH SAND Brown, moist, hard, fine sand (CL)			
35							
	0314	1.5	23-82-67	SANDY LEAN CLAY Reddish brown, wet, soft, well graded sand (CL)		CL	15:05 Drive 12"; pull; auger 12"; drive 6" Sampler wet when extracted.
40							
	0315a	0.5	35	LEAN CLAY Tan, moist, hard, black coloring, tan streaks (CL)			Sampler wet
45							
	0315	1.5	15-21-47	LEAN CLAY Tan, moist, firm, oxidation stains (CL)			15:50 Sampler wet
50				END BORING AT 50.0 FEET			
55							
60							

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-1GW	SHEET 1 OF 4

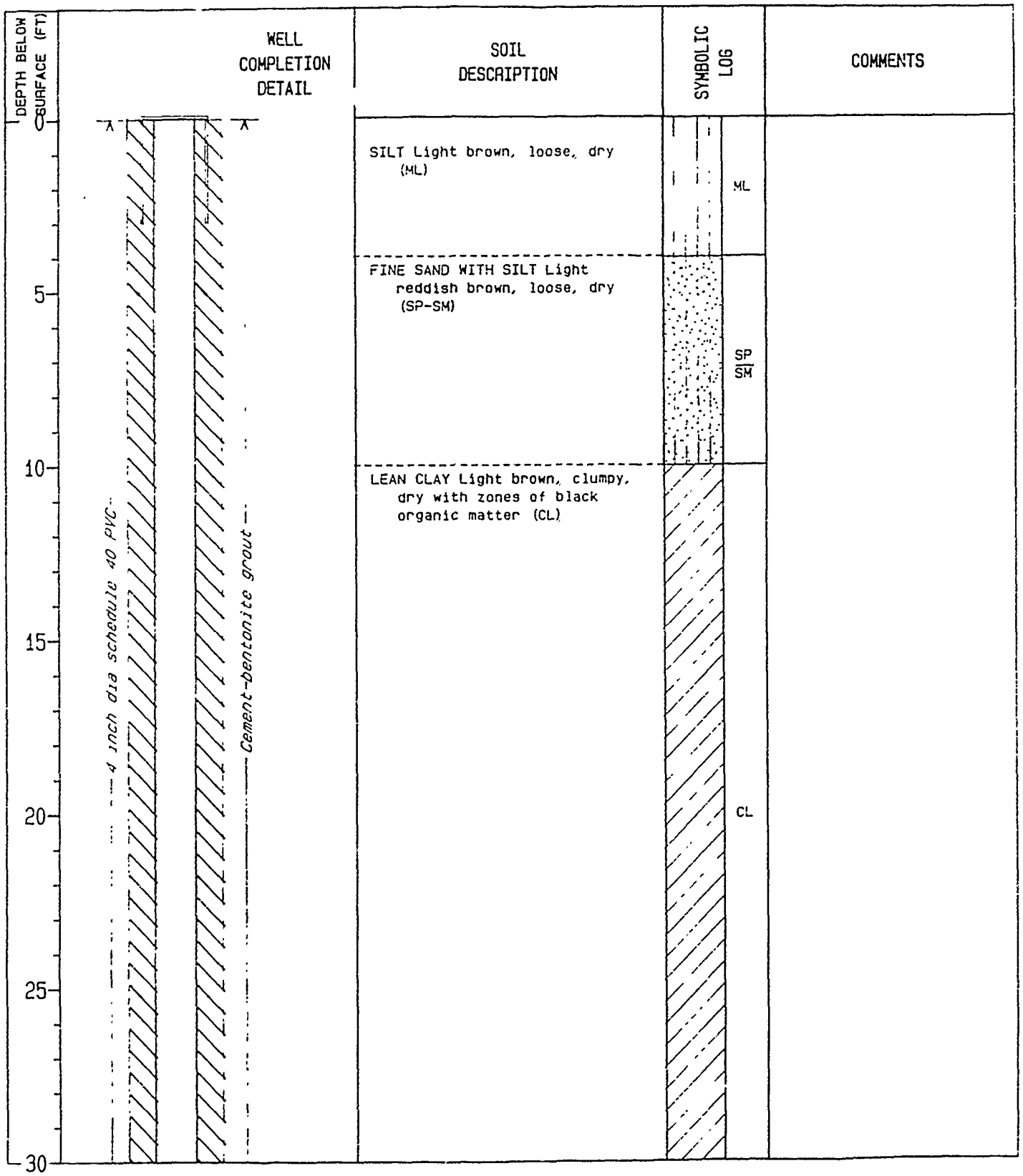
SOIL BORING LOG

PROJECT BEALE AFB LOCATION C ST, E OF EMERGENCY HOLDING BASIN

ELEVATION 114.54 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 45.41 FT NGVD 3/27/89 START 12/12/88 FINISH 12/14/88 LOGGER P. LAWSON



PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	19-C-1GW	SHEET 2	OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION C ST, E OF EMERGENCY HOLDING B

ELEVATION 114.54 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 45.41 FT NGVD 3/27/89 START 12/12/88 FINISH 12/14/88 LOGGER P. LAWSON

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	4 inch dia schedule 40 PVC; Cement-bentonite grout	LEAN CLAY as above (CL)	CL	
35		SAND WITH CLAY Light reddish brown, dry, well graded (SW-SC)	SW/SC	
40		LEAN CLAY WITH SAND Light reddish brown, dry with sand size particles of organic material (CL)	CL	
45				
50		WELL GRADED SAND WITH CLAY AND GRAVEL Light reddish brown, dry, angular rock fragments some oxidized zones (SW-SC)	SW/SC	
55		gravel up to 1.5 cm little clay		
60				

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-1GW	SHEET 3 OF 4

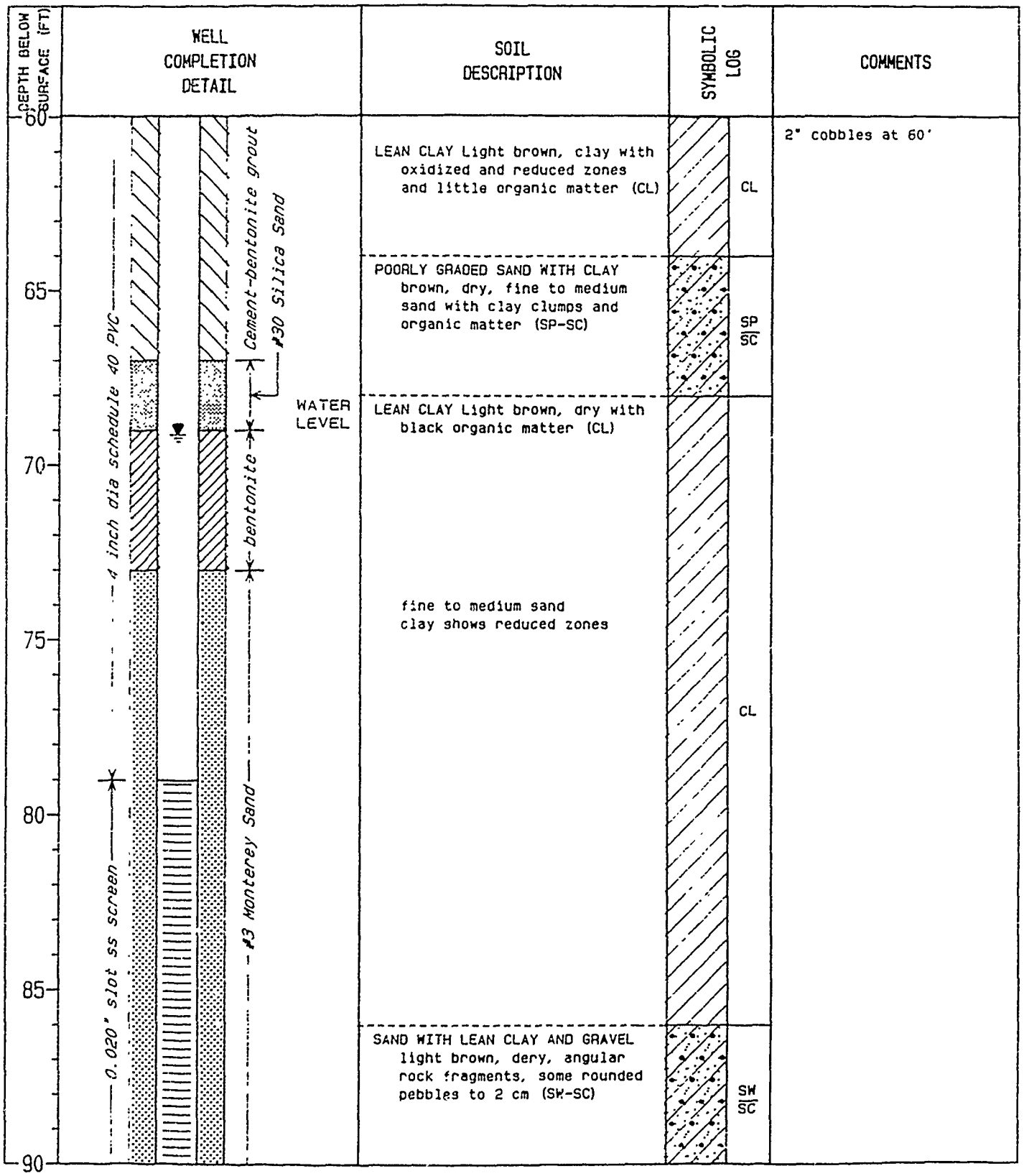
SOIL BORING LOG

PROJECT BEALE AFB LOCATION C ST, E OF EMERGENCY HOLDING BASIN

ELEVATION 114.54 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 45.41 FT NGVD 3/27/89 START 12/12/88 FINISH 12/14/88 LOGGER P. LAWSON



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-1GW	SHEET 4 OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION C ST, E OF EMERGENCY HOLDING E

ELEVATION 114.54 FT NGVD DRILLING CONTRACTOR: AYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 45.41 FT NGVD 3/27/89 START 12/12/88 FINISH 12/14/88 LOGGER P. LAWSON

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
90		LEAN CLAY Light gray, dry, very stiff with minor organic matter (CL)	CL	
95		lean clay with siltstone fragments, very moist at 96 feet		first sign of water
		SANDSTONE reddish brown very wet fine grained sandstone (SP)	SST	
100		WELL GRADED SAND AND GRAVEL volcanic gravels, hornblende phenocrysts in basalt and andesite, chert. (SW)	SW	producing water from 100-105 ft.
105		BOTTOM OF BORING AT 105 FT.		
110				
115				
120				

PROJECT NUMBER	BORING NUMBER	
SAC24359.01.04	19-C-2GW	SHEET 1 OF 4

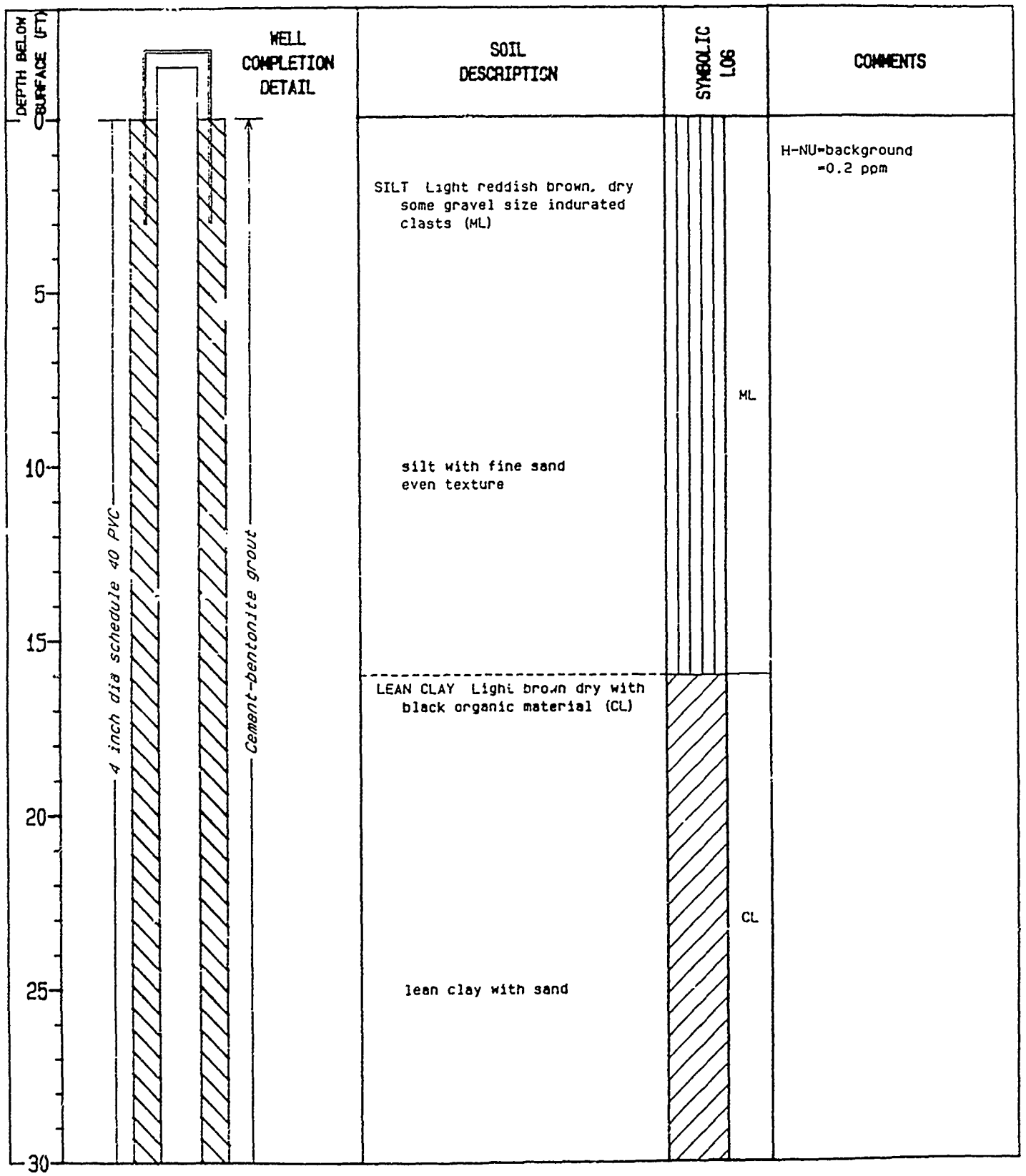
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW OF EMERGENCY HOLDING POND

ELEVATION 112.99 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JPHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 47.07 NGVD, 3/27/89 START 12/8/88 FINISH 12/9/88 LOGGER G.T.VOGT



PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-2GW	SHEET 2 OF 4

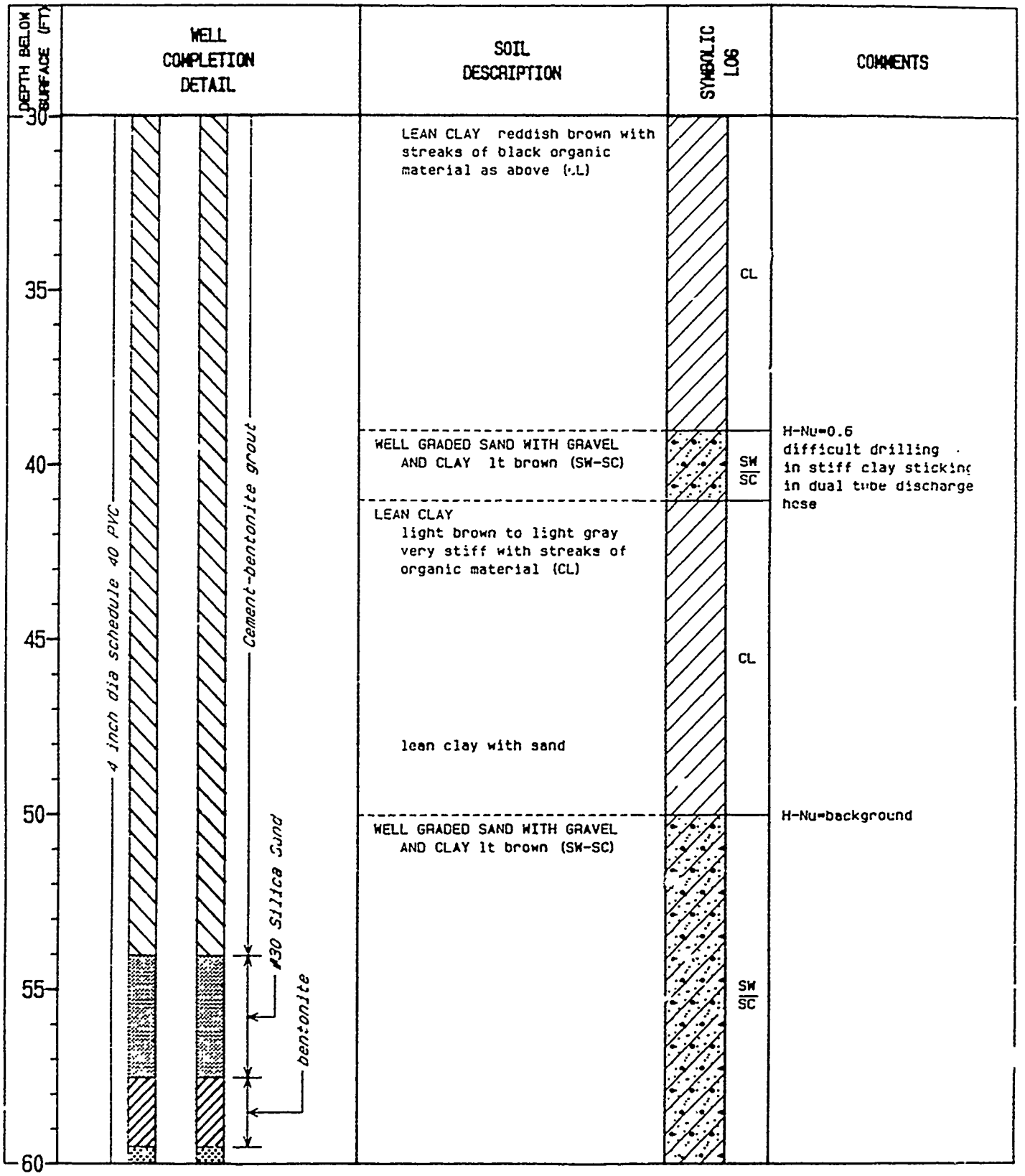
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW OF EMERGENCY HOLDING POND

ELEVATION 112.99 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 47.07 NGVD, 3/27/89 START 12/8/88 FINISH 12/9/88 LOGGER G.T.VOGT



PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	19-C-2GW	SHEET 3	OF 4

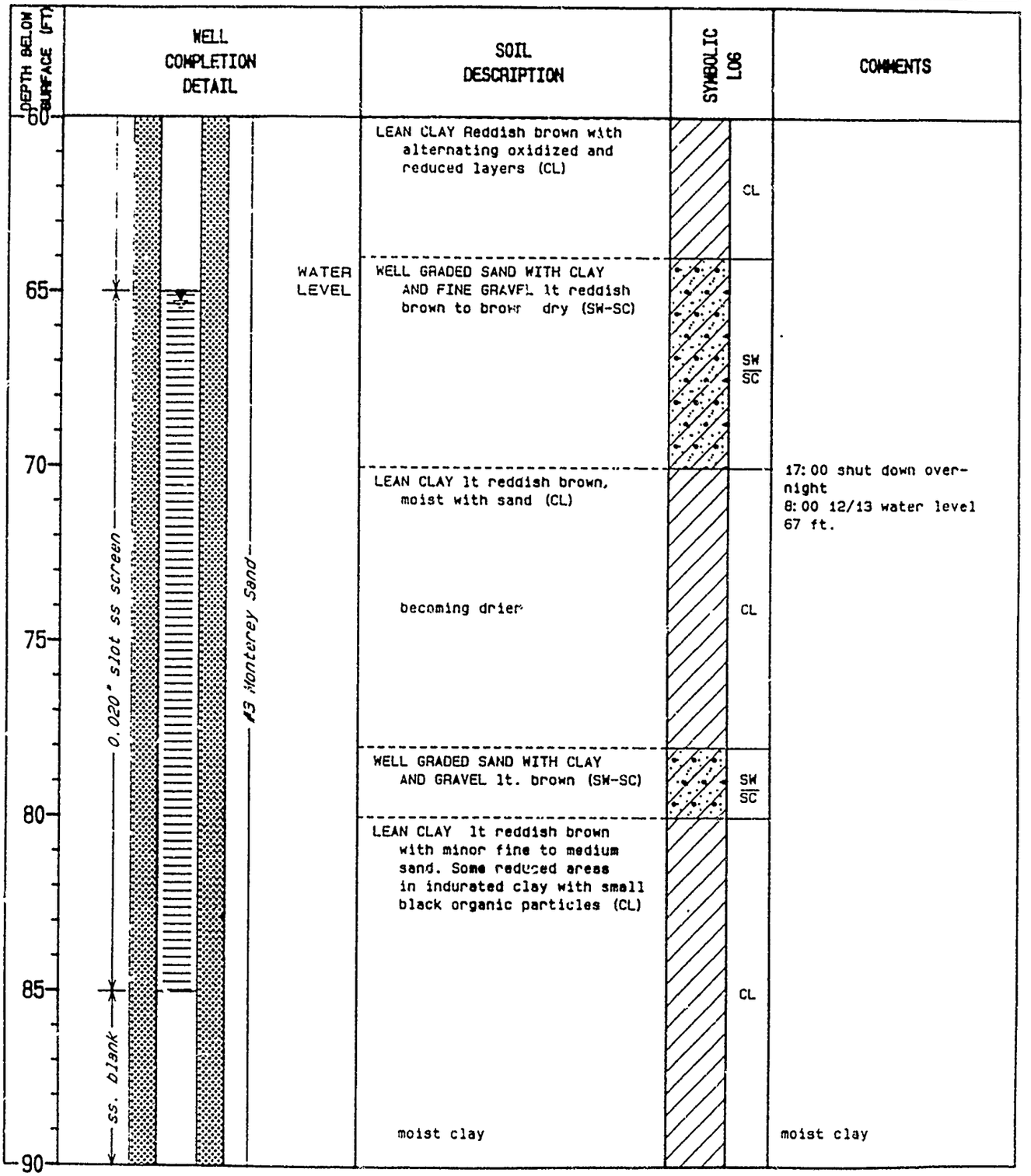
SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW OF EMERGENCY HOLDING POND

ELEVATION 112.99 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JPHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 47.07 NGVD 3/27/89 START 12/8/88 FINISH 12/9/88 LOGGER G.T.VOGT



PROJECT NUMBER	BORING NUMBER	SHEET 4 OF 4
SAC24359.RI.04	19-C-2GW	

SOIL BORING LOG

PROJECT BEALE AFB LOCATION NW OF EMERGENCY HOLDING POND

ELEVATION 112.99 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JPHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 47.07 NGVD, 3/27/89 START 12/8/88 FINISH 12/9/88 LOGGER G.T.VOGT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
90	#3 Monterey Sand	LEAN CLAY Light reddish brown with minor fine to medium sand (CL)	CL	
95		GRAVELLY LEAN CLAY lt gray with coarse gravel (CL)	GC	layer of coarse gravel
		LEAN CLAY lt brown with fine to medium sand and some pebbles (CL)	CL	
100		BOTTOM OF BORING AT 101 FT		
105				
110				
115				
120				

PROJECT NUMBER	BORING NUMBER

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-3GW	SHEET 1 OF 4

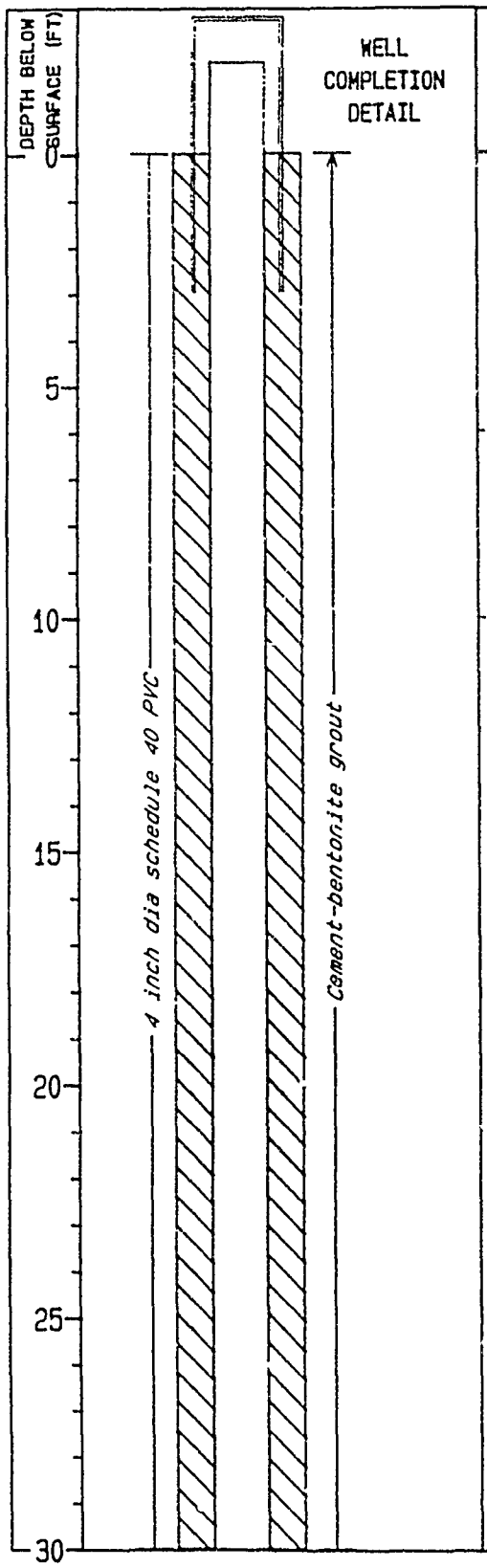
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SW OF EMERGENCY HOLDING POND

ELEVATION 112.17 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 46.49 FT NGVD, 3/27/89 START 12/8/88 FINISH 12/9/88 LOGGER G.T.VOGT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	SANDY LEAN CLAY reddish brown moist with organic matter (CL)	CL	15:30 H-Nu=0.0 =background
	SANDY SILT tan dry silt with fine sand (ML)	ML	H-Nu=0.0
	LEAN CLAY reddish brown, damp with silt (CL)		
	increasing moisture and clay content	CL	H-Nu=0.0

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-36W	SHEET 2 OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SW OF EMERGENCY HOLDING POND

ELEVATION 112.17 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 46.49 FT NGVD, 3/27/89 START 12/8/88 FINISH 12/9/88 LOGGER G.T.VOGT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30		LEAN CLAY reddish brown, moist with silt (CL)	CL	
		POORLY GRADED SAND red, dry, fine sand (SP)	SP	
35		SANDY LEAN CLAY WITH GRAVEL moist clay with coarse sand and fine gravel (CL)	CL	
40		LEAN CLAY tan silty highly compacted		
	4 inch dia schedule 40 PVC	reddish brown moist silty	CL	
45	Cement-bentonite grout			
		POORLY GRADED GRAVEL WITH SAND AND CLAY (GP-GC)	GP/GC	H-Nu=0.0
50				
		WELL GRADED GRAVEL WITH SAND damp rounded to angular (GW)	GW	
55				
60				

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-3GW	SHEET 3 OF 4

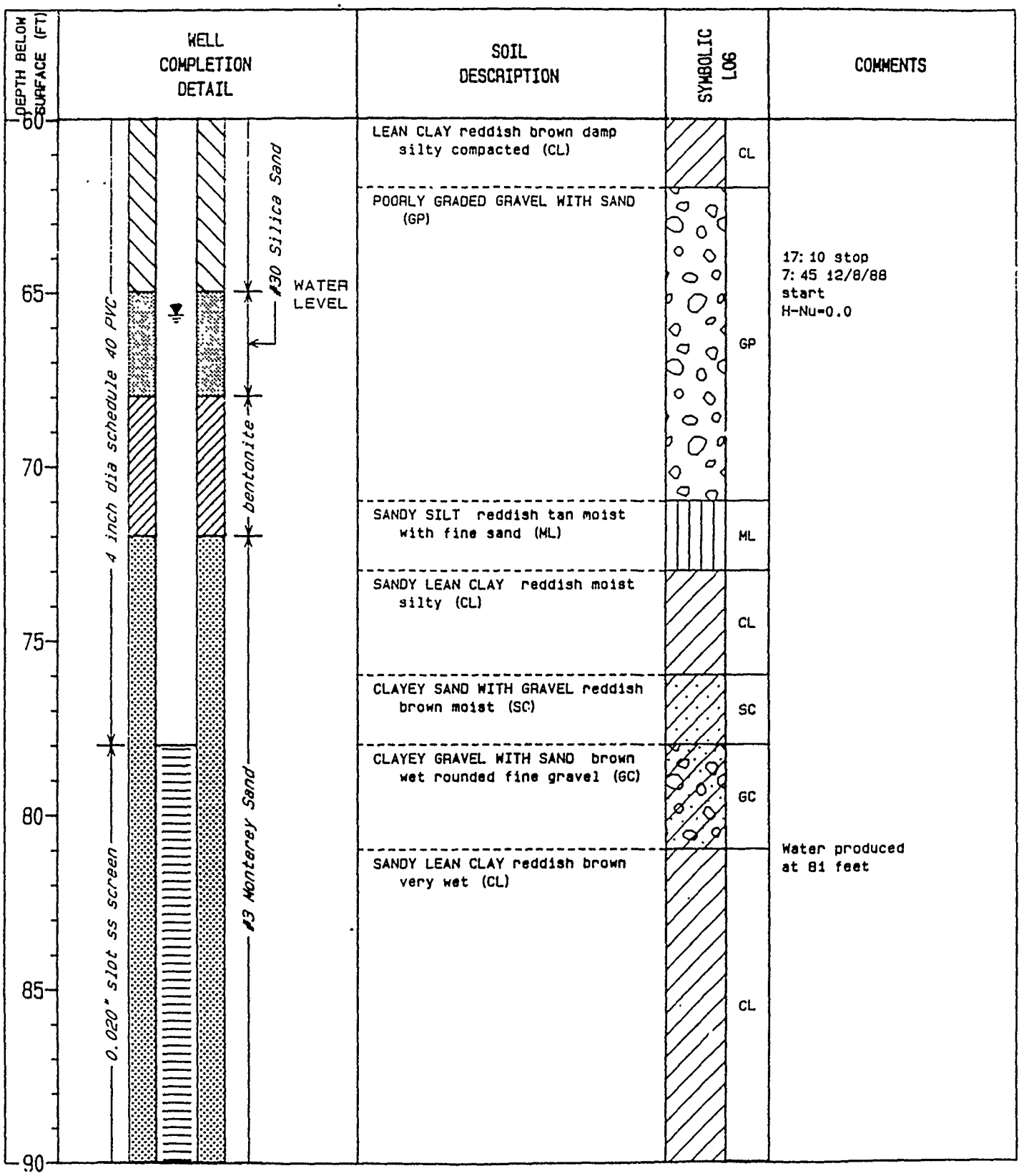
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SW OF EMERGENCY HOLDING POND

ELEVATION 112.17 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 46.49 FT NGVD, 3/27/89 START 12/8/88 FINISH 12/9/88 LOGGER G.T.VOGT



PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	19-C-3GW	SHEET 4	OF 4

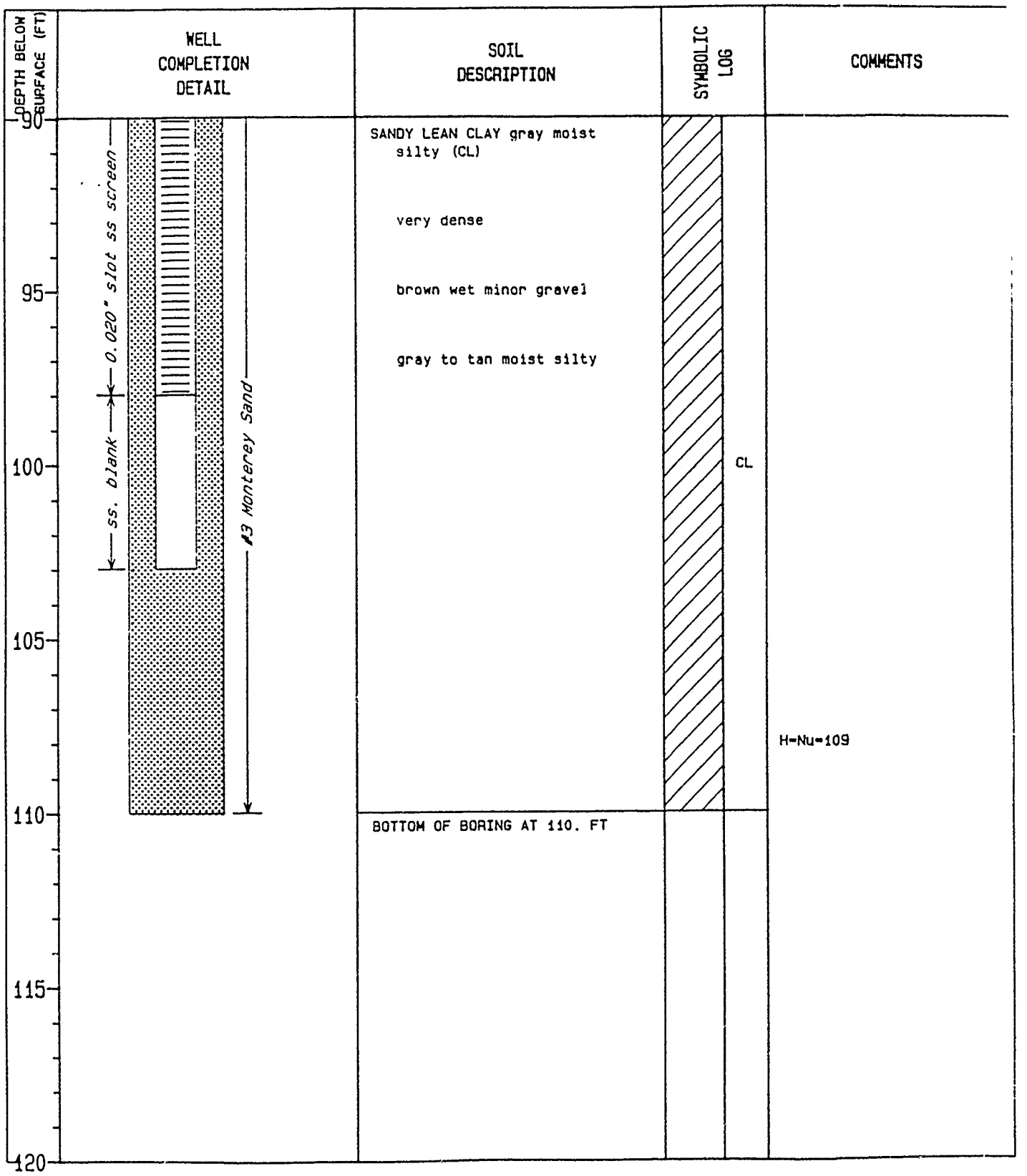
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SW OF EMERGENCY HOLDING POND

ELEVATION 112.17 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 46.49 FT NGVD, 3/27/89 START 12/8/88 FINISH 12/9/88 LOGGER G.T.VOGT



PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	19-C-4GW	SHEET 1 OF 5

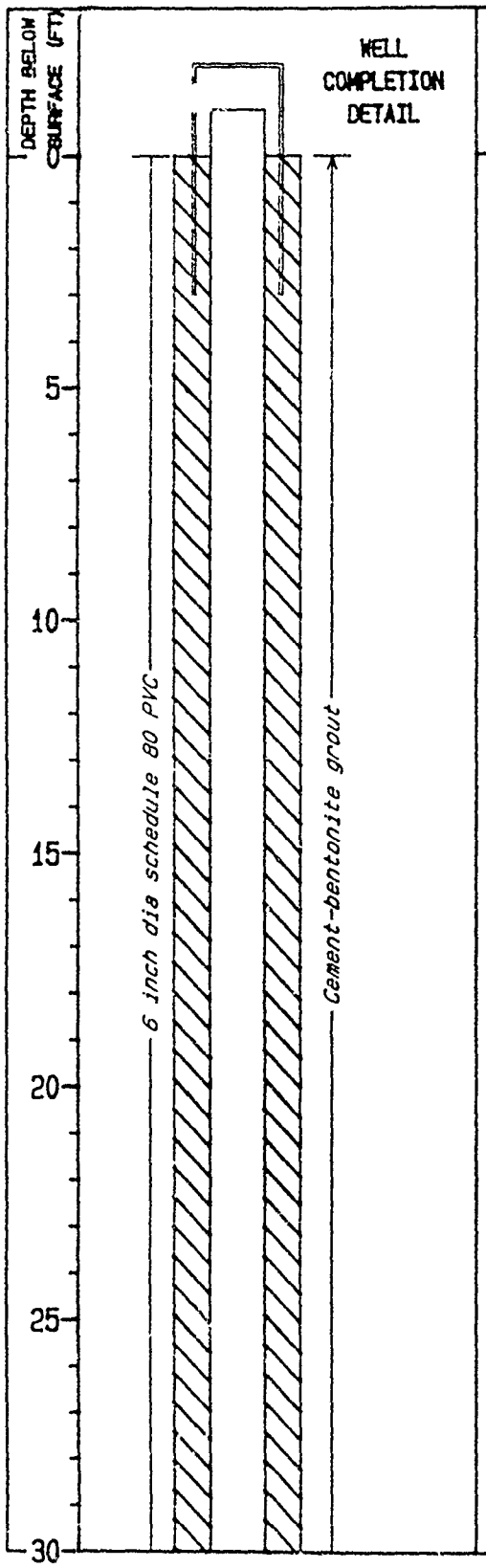
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF EMERGENCY HOLDING BASIN

ELEVATION 109.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 44.76 FT NGVD 3/27/89 START 1/4/89 FINISH 1/9/89 LOGGER C. ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	LEAN SANDY CLAY dark reddish brown soft (CL)		1/4/89 16:00 start
			H-Nu=2.4 ppm =background note drilling 12 inch dia. bore requires triple wall method which is much slower than dual wall
	grayish yellow clay		
	light brown silty clay		
	streaks of black organic matter	CL	17:00 trouble with casing hammer stop 1/5/89 7:30 start
	moderate brown		H-Nu=background
	decreasing sand content		
	light brown clay, becoming moderately stiff		

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	19-C-4GW	SHEET 2 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF EMERGENCY HOLDING BASIN

ELEVATION 109.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 44.76 FT NGVD 3/27/89 START 1/4/89 FINISH 1/9/89 LOGGER C. ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30		SANDY LEAN CLAY light brown soft clay with fine to medium sand and black organic fragments (CL)		
35		becoming moderately stiff	CL	
40		pale yellowish brown stiff clay with mottled colors and spots of black organic matter.		difficult drilling clay sticking in discharge hose
45	6 inch dia schedule 80 PVC Cement-bentonite grout	POORLY GRADED GRAVEL (GP)	GP	
50		CLAYEY GRAVEL well graded fine to coarse gravel and clay with some cobbles (GC)	GC	
55		WELL GRADED GRAVEL dry fine to coarse rounded gravel with some cobbles (GW)	GW	break to jack up rig with railroad ties
60		SANDY LEAN CLAY WITH GRAVEL light brown to grayish orange stiff (CL)	CL	

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-4GW	SHEET 3 OF 5

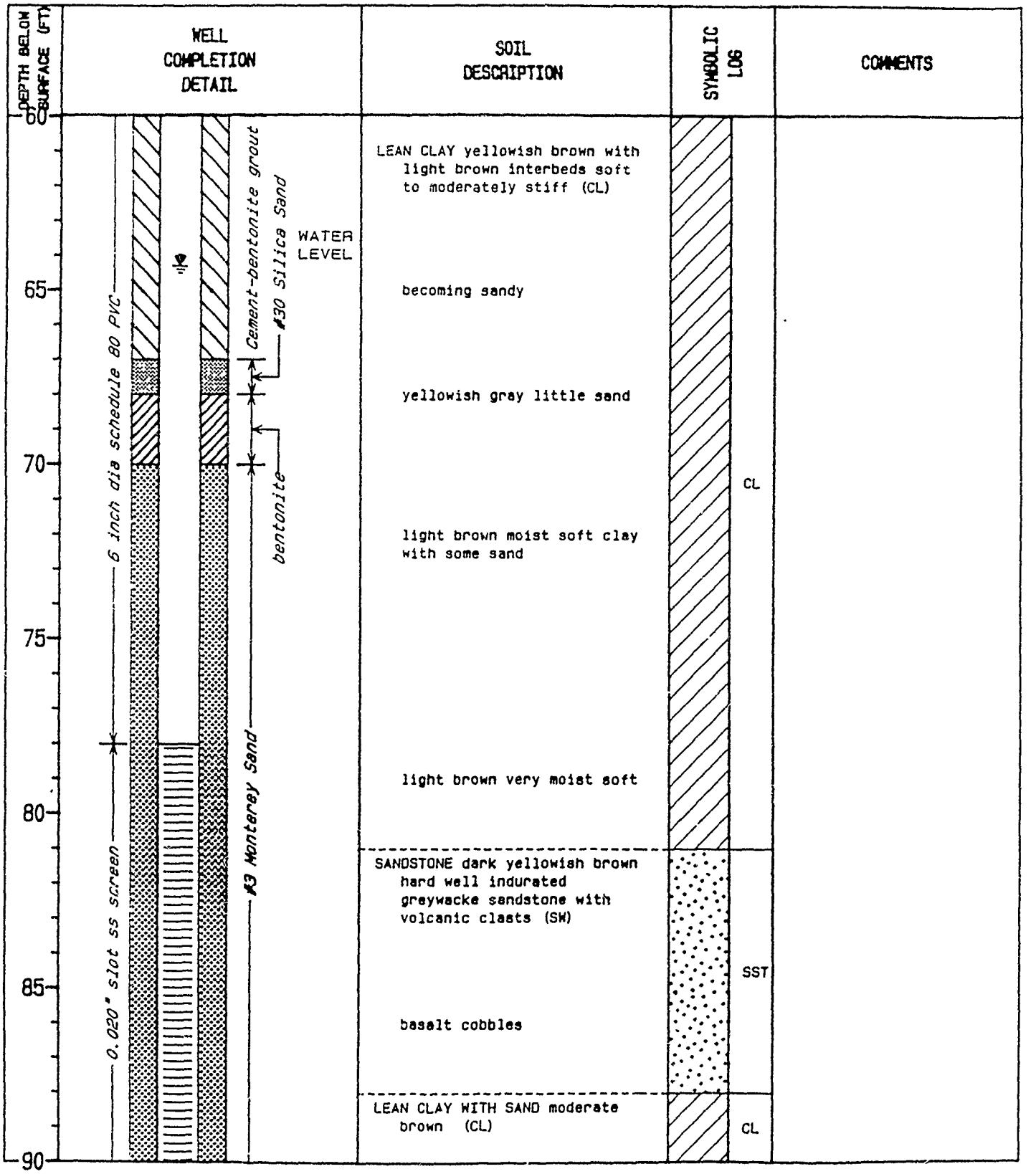
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF EMERGENCY HOLDING BASIN

ELEVATION 109.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 44.76 FT NGVD 3/27/89 START 1/4/89 FINISH 1/9/89 LOGGER C. ELLIOTT



PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	19-C-4GW	SHEET 4 OF 5

SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF EMERGENCY HOLDING BASIN

ELEVATION 109.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 44.76 FT NGVD 3/27/89 START 1/4/89 FINISH 1/9/89 LOGGER C. ELLIOTT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
90		SANDY LEAN CLAY moderate brown (CL)	CL	
95		CLAYEY SAND moderate brown moist (SC)	SC	
100	0.020" slot ss screen			
105	#3 Monterey Sand	LEAN CLAY grayish orange pink may be altered volcanic ash (CL)	CL	17:00 stop 1/6/89 8:30 start
110		CLAYEY SAND gray brown wet (SC)	SC	begin producing water
		SILTY SAND grayish brown wet flowing fine sand and silt layers with strong cementation (SM)	SM	
115		WELL GRADED SAND WITH CLAY dark grayish brown wet 90% sand (SW-SC)	SW/SC	producing a great deal of water H-Nu downhole =0.3 ppm
120				

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	19-C-4GW	SHEET 5 OF 5

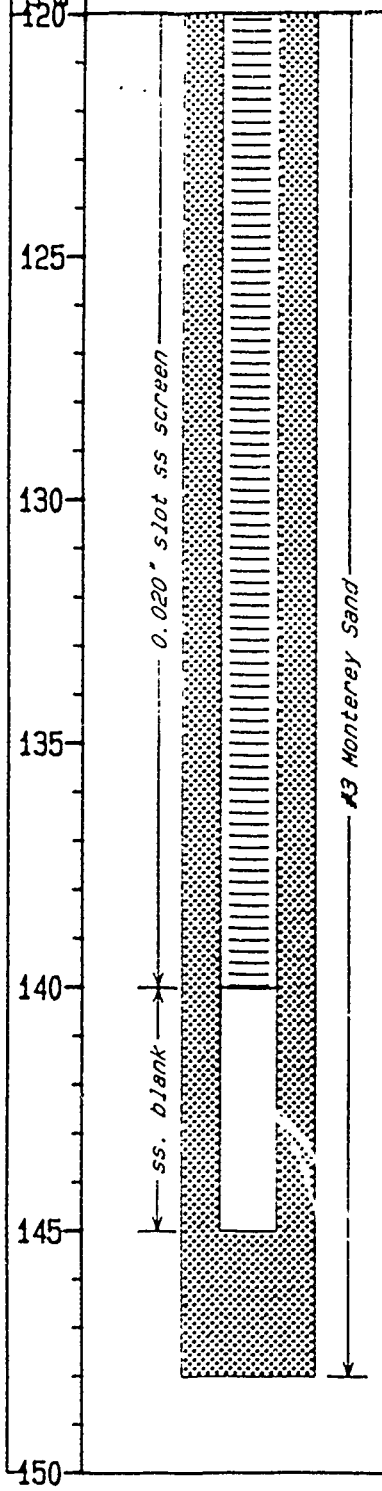
SOIL BORING LOG

PROJECT BEALE AFB LOCATION SE OF EMERGENCY HOLDING BASIN

ELEVATION 109.07 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 44.76 FT NGVD 3/27/89 START 1/4/89 FINISH 1/9/89 LOGGER C. ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
LEAN CLAY brownish gray dry cemented (claystone?) (CL)	CL	stop producing water
CLAYEY SAND fine-med sand (SC)	SC	some water
SANDSTONE cemented sands (SW)	SST	water stops slow drilling
POORLY GRADED SAND WITH SILT dark grayish brown wet fine to medium sand (SP-SM)	SP SM	producing water
SANDSTONE dark grayish brown dry well graded sands with moderate to strong cement (SW)	SST	water stops
CLAYEY SAND gray-brown wet (SC)	SC	
CEMENTED CLAY light brown gray dry strong cement (CL)	CL	trickle of water H-Nu downhole =0.3 ppm
LEAN CLAY dark yellowish brown moist medium toughness and plasticity (CL)		water stops fast drilling
CEMENTED CLAYS yellowish brown dry to moist cement varies from weak to moderate (CL)		H-Nu downhole =0.3 ppm
BOTTOM OF BOREHOLE AT 148 FEET		

SITE 20

GREASE PIT (SANITARY TREATMENT PLANT)

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	20-C-1SB	SHEET 1 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION GREASE PIT

ELEVATION 94.99 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 70 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/10/89 FINISH 1/10/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0				LEAN CLAY Brown, wet (CL)		10:30 Begin drill Hnu cuttings = BG
5	0316	1.5	70-48-36	LEAN CLAY Brown, dry, hard, mottled (CL)	CL	10:40 Drive 6"; pull; auger 6"; drive 12"; pull; only 6" recovery. Auger 12"; drive 12".
	0317	1.3	22-45-75	LEAN CLAY Brown, moist, hard (CL)		11:40
10	0318a	0.5	38	CLAYEY SAND Brown, moist, well graded, micaceous (SC)	SC	
15	0318	1.5	27-34-50	CLAYEY SAND Brown, moist, well graded (SC)		12:30 Hnu hollow stem = BG
20				LEAN CLAY Brown, moist, hard (CL)	CL	12:45 - 13:15 lunch
	0319a	0.5	30	LEAN CLAY Brown, moist, firm (CL)		
25	0319	1.5	27-30-57	LEAN CLAY Tan, moist, hard, black organic particles 1 to 2 mm diameter (CL)		13:45
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.AI.04	20-C-1SB	SHEET 2 OF 2

SOIL BORING LOG

PROJECT BEALE AFB LOCATION GREASE PIT

ELEVATION 94.99 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B53 ANGLE 30 DEG - SOUTH 70 DEG WEST

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 1/10/89 FINISH 1/10/89 LOGGER D. M. SMITH

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
30	0320a	0.5	37	LEAN CLAY Tan, moist, firm (CL)		
35						
	0320	1.5	35-90-48	LEAN CLAY WITH SAND Tan, moist, firm, well graded (CL)	CL	14:20 Drive 12": pull: auger 12": drive 6"
40						
	0321a	0.5	28	LEAN CLAY Tan, moist, firm, blocky (CL)		
45						
	0321	1.5	35-70-135	LEAN CLAY WITH SAND Brown, moist, hard, fine grained (CL)		14:55
50				END BORING AT 49.0 FEET		
55						
60						

SITE 21

JP-7 ABOVEGROUND FUEL STORAGE TANKS

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	21-C-16W	SHEET 1	OF 5

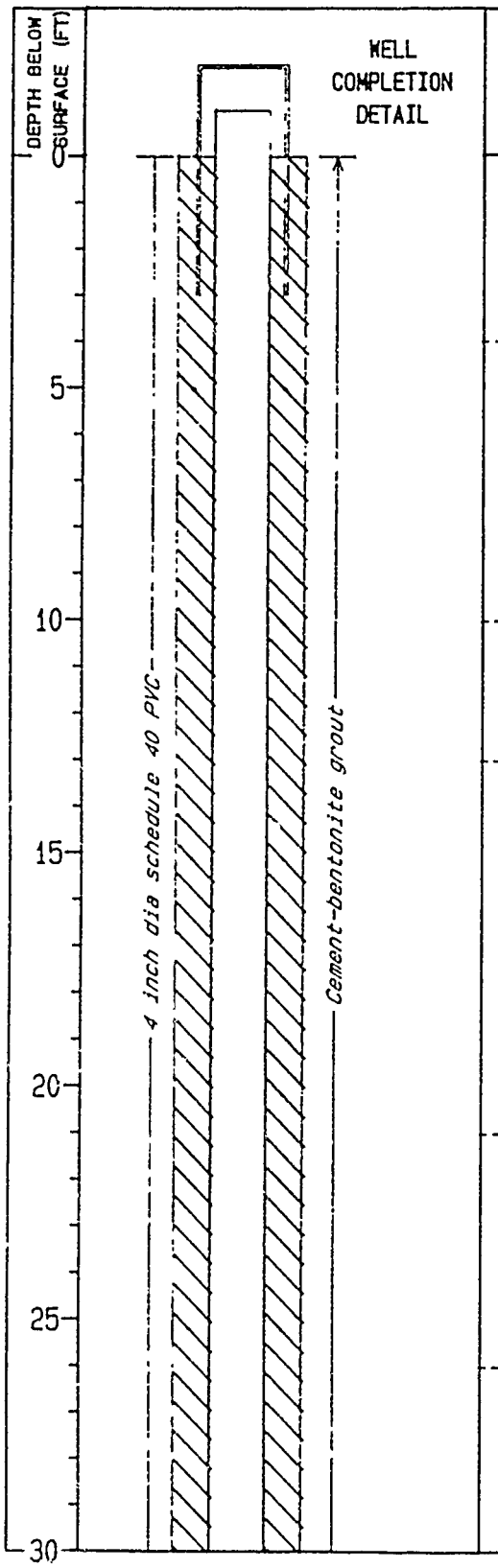
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF 4 JP-7 TANKS

ELEVATION 102.20 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.42 FT NGVD 3/27/89 START 12/16/88 FINISH 12/17/08 LOGGER C ELLIOTT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
FAT CLAY WITH SAND strong brown dry high dry strength 20% well graded sand trace fine gravel (CH)	CH	start 15:20 12/15/88
LEAN CLAY WITH SAND strong brown dry 20% well graded sand 5% fine gravel (CL)	CL	fast drilling
SILT brownish yellow moist low plasticity fast dilatency moderately cemented layers (ML)	ML	H-Nu=0.5 ppm downhole
LEAN CLAY yellowish brown moist medium toughness plasticity slow dilatency (CL) some layers with moderate cementation	CL	H-Nu=0.4 ppm downhole slow drilling
FAT CLAY brownish yellow dry very high dry stregnth (CH)	CH	
WELL GRADED SAND WITH SILT AND GRAVEL yellowish brown moist 20% rounded well graded gravel 10% silt (SW-SM)	SW/SM	H-Nu=0.2 ppm downhole

PROJECT NUMBER BORING NUMBER

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	21-C-1GW	SHEET 2 OF 5

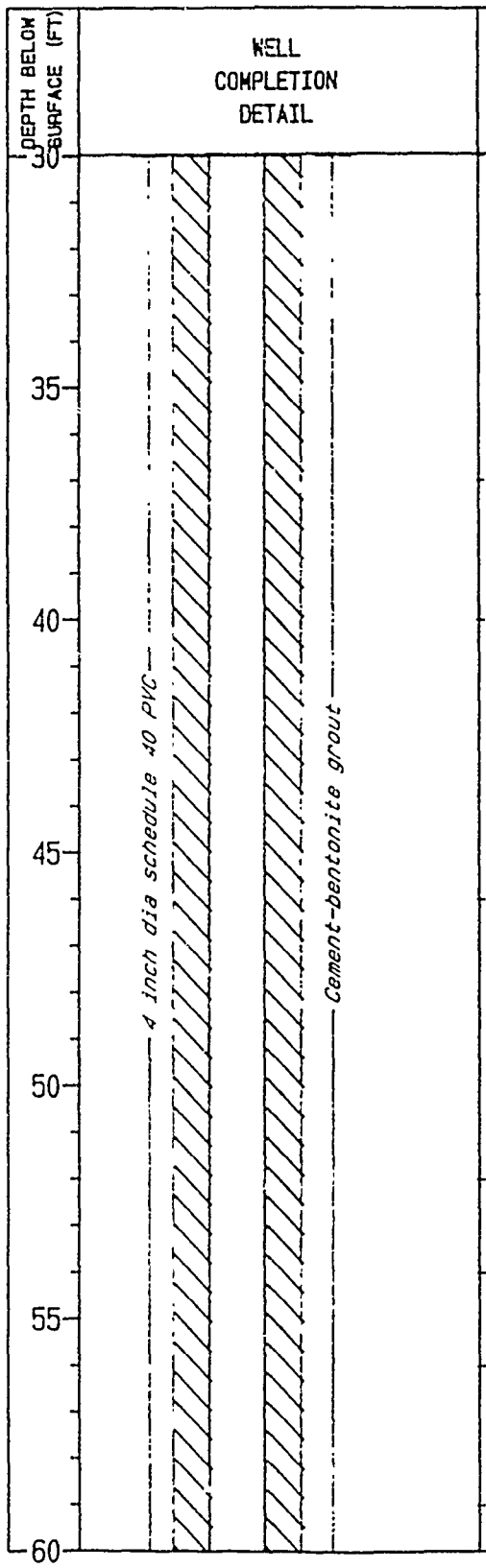
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF 4 JP-7 TANKS

ELEVATION 102.20 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HONER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.42 FT NGVD 3/27/89 START 12/16/88 FINISH 12/17/88 LOGGER C ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	FAT CLAY dark yellowish brown moist high dry stregnth (CH)	CH	slow drilling
	LEAN CLAY WITH SAND yellowish brown moist 20% fine sand (CL)	CL	
	SILTY SAND WITH GRAVEL grayish brown moist 40% well graded sand 40% silt 20% well graded rounded gravel (SM)	SM	slow drilling H-Nu=0.3 ppm downhole
	LEAN CLAY yellowish brown moist medium dry stregnth and plasticity (CL)	CL	normal drilling
	CLAYEY SAND yellowish brown moist well graded sand 30% lean clay	SC	
	WELL GRADED SAND dark yellowish brown moist some strongly cemented layers (SW)	SW	
	CLAYEY SAND yellowish brown moist fine sand 30% lean clay (SC)	SC	
	LEAN CLAY yellow brown moist medium dry stregnth plasticity tougness (CL)	CL	
	SILTY SAND yellow brown (SM)	SM	H-Nu=0.3 ppm downhole

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	21-C-1GW	SHEET 3	OF 5

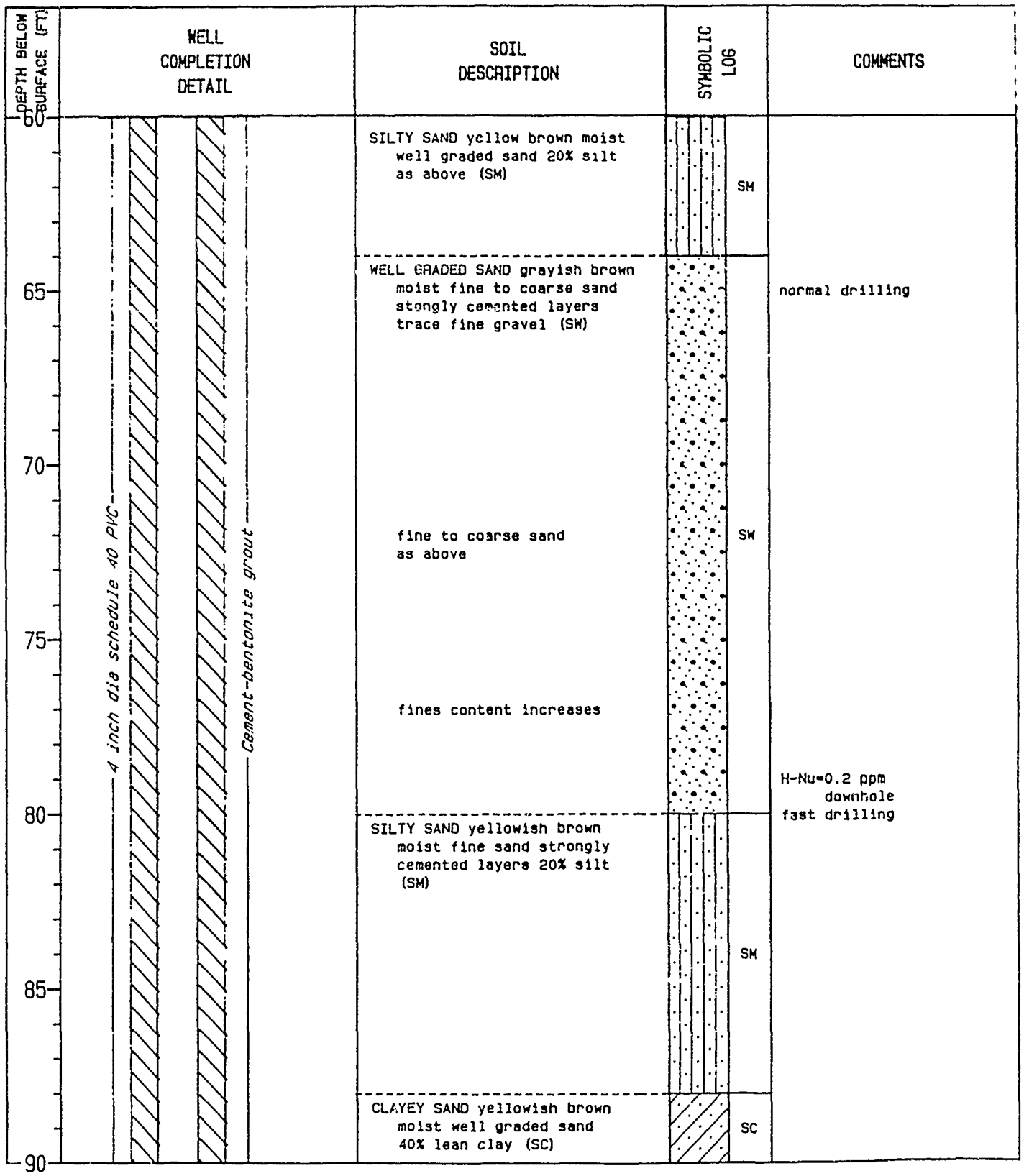
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF 4 JP-7 TANKS

ELEVATION 102.20 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.42 FT NGVD 3/27/89 START 12/16/88 FINISH 12/17/88 LOGGER C.ELLIOTT



PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	21-C-1GW	SHEET 4	OF 5

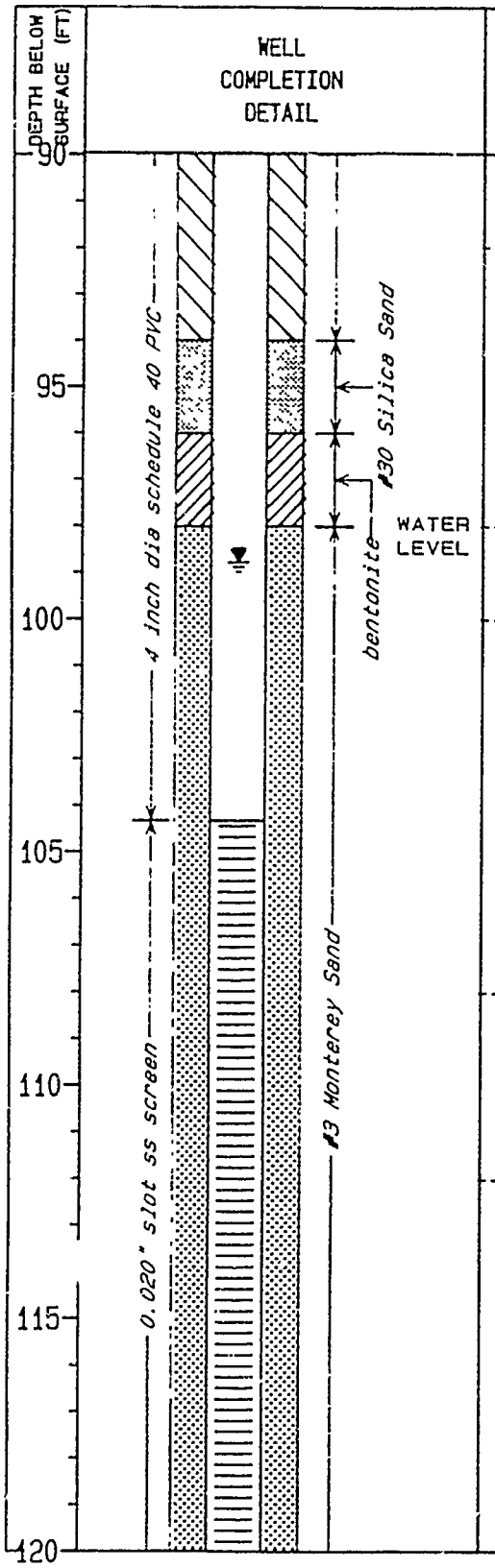
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF 4 JP-7 TANKS

ELEVATION 102.20 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.42 FT NGVD 3/27/89 START 12/16/88 FINISH 12/17/88 LOGGER C.ELLIOTT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	CLAYEY SAND as above (SC)	SC	
	WELL GRADED SAND yellow brown moist medium to fine sand 10% coarse sand (SW)	SW	
	POORLY GRADED SAND WITH SILT gray brown moist fine sand 10% silt (SP-SM)	SP/SM	H-Nu=0.3 ppm downhole
	SANDY LEAN CLAY yellow brown moist high dry stregnth medium plasticity and toughness 40% fine sand (CL)	CL	
	CLAYEY SAND dark yellowish brown moist 20% well graded sand (CL)	SC	wet cuttings
	LEAN CLAY brownish yellow dry moderately cemented (CL)	CL	H-Nu=0.2 ppm downhole

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	21-C-1GW	SHEET 5	OF 5

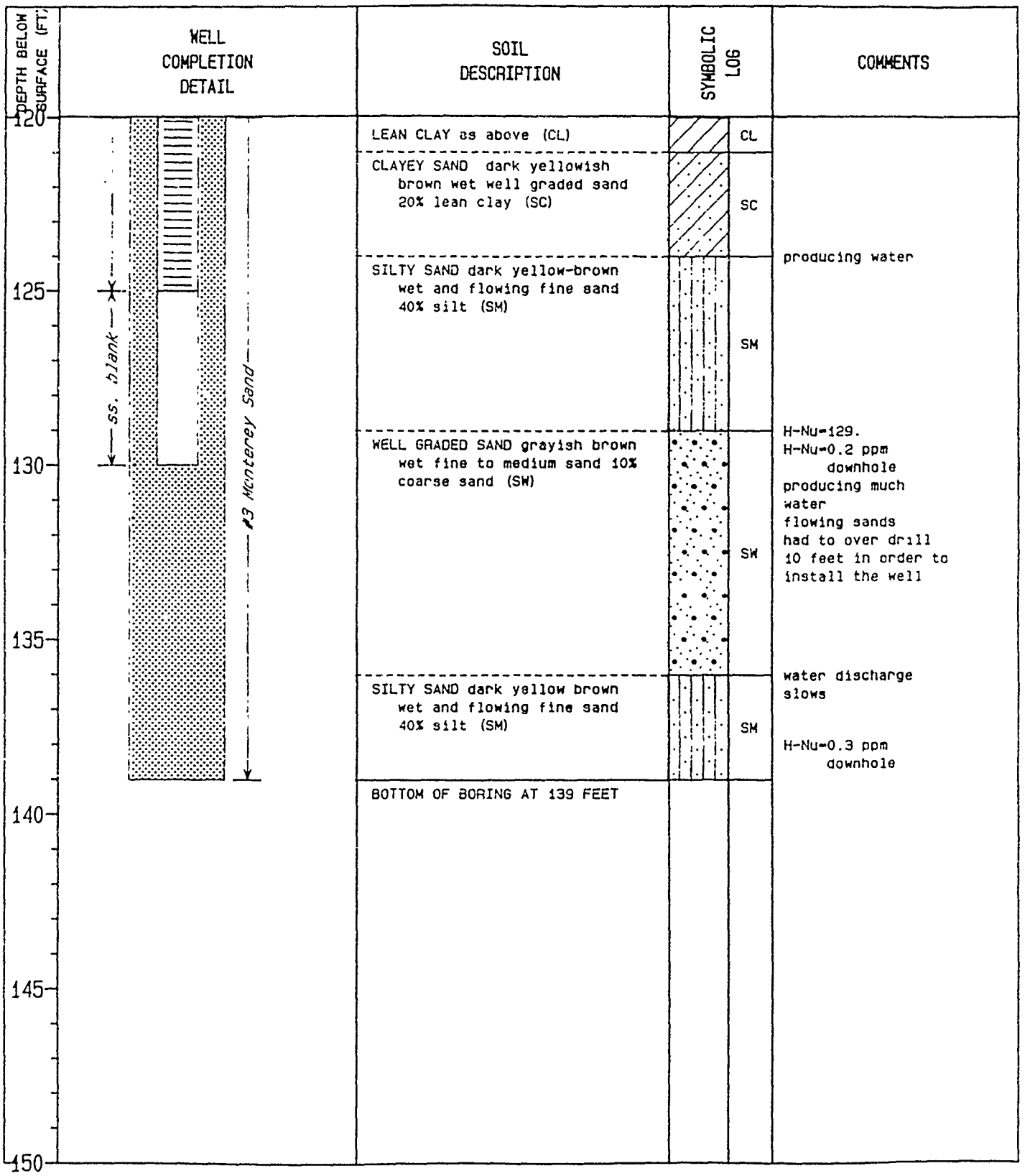
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WEST OF 4 JP-7 TANKS

ELEVATION 102.20 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 3.42 FT NGVD 3/27/89 START 12/16/88 FINISH 12/17/88 LOGGER C.ELLIOTT



SITE 23

NINTH TRANSPORTATION REFUELING/MAINTENANCE SHOP

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	23-C-1SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION 9th TRANSPORTATION MAINTENANCE SHOP

ELEVATION 127.46 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/20/88 FINISH 12/20/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0338	1.3	19-34-56	SANDY SILT Tan, wet, very hard, coarse sand (ML)		13:45 Begin drill 13:50 Sample No Hnu readings because of rain.
5	0339	1.4	13-93-200/4"	SANDY SILT Tan, dry, very hard, black flakes (ML)		14:10
10	0340	1.5	16-38-50	SANDY SILT Medium brown, dry, very hard, black flakes, fine sand, crumbly (ML)	ML	14:35
	0341	1.5	24-45-65			14:45 BAFB 0340 duplicate
15	0342	1.5	50-103-147	SANDY SILT Red brown, very hard, crumbly, weakly cemented (ML)		15:00
20	0343	1.5	23-59-95	SANDY SILT Red brown, dry, very hard, fine sand (ML)		15:30 End drill
				END BORING AT 21.5 FEET		
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	23-C-2SB	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION 9th TRANSPORTATION MAINTENANC OF

ELEVATION 129.58 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/20/88 FINISH 12/20/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0333a	0.3	13-20-15	WELL GRADED GRAVEL WITH COBBLES	GW	08: 45 Begin drill Hnu sample = 15ppm
	0333	1.3	6-11-23	GRAVELLY SILTY SAND Black to gray, saturated, slight odor (SM)	SM	09: 00 Sample at 2.5 ft after no recovery at 1.0 ft
5	0334	1.5	10-43-75	SANDY SILT Gray, dry, very hard, fine sand black flakes, crumbly, cemented (ML)		09: 20
						Hnu hollow stem = 7ppm
10	0335	1.5	10-25-38	SANDY SILT Light gray, moist, very hard, fine sand, mottled (ML)	ML	09: 50
15	0336	1.5	20-44-70	SANDY SILT WITH LEAN CLAY Medium reddish brown, dry, very hard, black flakes, weakly cemented, mottled (ML)		10: 00
						Hnu hollow stem = 5ppm
20	0337	1.5	20-32-89	SILT WITH LEAN CLAY Reddish brown, moist, very hard, black flakes, crumbly (ML)		10: 30
				END BORING AT 21.5 FEET		
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	23-C-3S8	SHEET 1 OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION 9th TRANSPORTATION MAINTENANCE SHOP

ELEVATION 127.43 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE B80 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/19/22 FINISH 12/19/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0282	1.5	8-9-9	SILTY CLAY Medium brown, moist, hard, black flakes, moderate plasticity (CL-ML)	CL/ML	11:50 Begin drill 14:15 Sample
5	0283	1.0	41-98	SANDY SILT Tan, dry, hard, black flakes (ML)		12:00 Water at 6.5 ft
10	0284	1.5	20-63-90	SANDY SILT Reddish brown, moist, very hard, fine sand, crumbly, small gray pockets (ML)		12:30
	0285	1.4	27-65-100		ML	BAFB 0284 duplicate
15	0286	1.5	43-115-	SANDY SILT Reddish brown, [illegible], very hard, fine sand, crumbly (ML)		12:45
20	0332	1.5	16-43-77	SANDY SILT Reddish brown, dry, very hard, black flakes, fine sand (ML)		13:25
				END BORING AT 21.5 FEET		13:25 Lunch 14:15 Sample 0282
25						
30						

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	23-C-4SB	SHEET 1	OF 1

SOIL BORING LOG

PROJECT BEALE AFB LOCATION 9th TRANSPORTATION MAINTENANCE SHOP

ELEVATION 122.91 DRILLING CONTRACTOR DIAMOND CORE

DRILLING METHOD AND EQUIPMENT HOLLOW STEM AUGER - MOBILE 880 VERTICAL

WATER LEVEL AND DATE WATER NOT ENCOUNTERED START 12/21/88 FINISH 12/21/88 LOGGER N. JONES

DEPTH BELOW SURFACE (FT)	SAMPLE: BAFB NUMBER	SAMPLE: RECOVERY (ft)	SAMPLE: BLOW COUNT	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
0	0344	1.3	4-3-4	CLAYEY SAND Gray, wet, loose (SC)	SC	09:30 Begin drill 09:35
5	0345	1.5	36-64-97	SANDY SILT Brown, dry, very hard, black flakes, crumbly, fine sand (ML)	ML	09:50
10	0346	1.5	30-103-32	SILTY SAND Brown, dry, very dense, white crust, black flakes, mottled (SM)	SM	10:10
15	0347	1.5	16-53-76	SILTY SAND Very hard, white crust, black flakes (SM)		10:25
20	0348	1.4	20-29-49	CLAYEY SAND Medium to dark brown, moist, very dense, black flakes, mottled (SC)	SC	10:40 10:50 End drill
				END BORING AT 21.5 FEET		
25						
30						

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	23-C-1GW	SHEET 1 OF 3

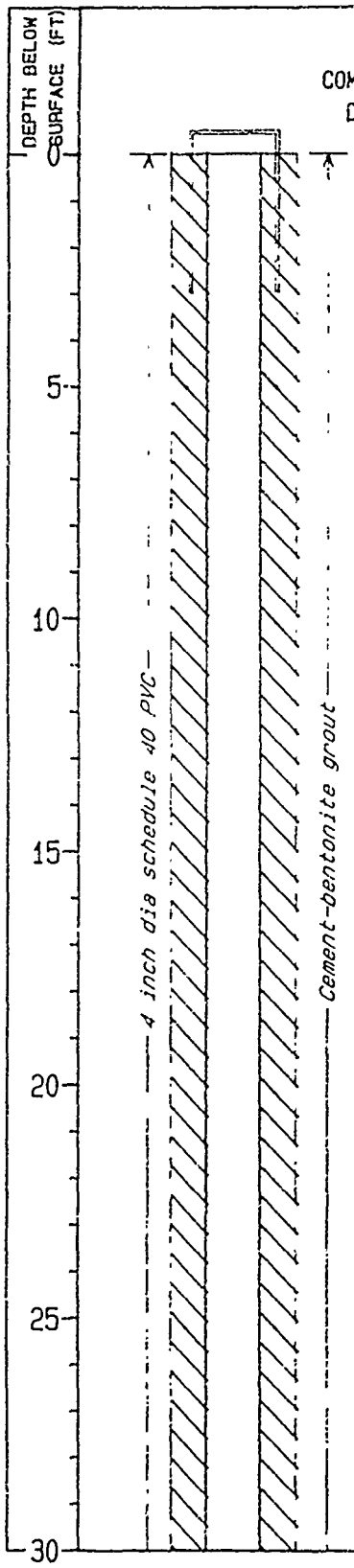
SOIL BORING LOG

PROJECT BEALE AFB LOCATION B ST & 26 ST.-9TH TRANS SHOP

ELEVATION 127.76 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 81.19 FT NGVD START 12/14/88 FINISH 12/14/88 LOGGER C.ELLOITT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	CLAYEY SAND Dark reddish brown moist, organic layers, well graded sand, 40% clay (SC)	SC	fast drilling
	LEAN CLAY Brownish yellow, dry, no dilatency, medium plasticity and toughness (CL)	CL	
	FAT CLAY Yellowish brown, dry, high dry stregnth (CH)	CH	clay clogs discharge hose
	SILTY SAND Yellowish brown (ML)	ML	
	LEAN CLAY Strong brown, moist, medium dry stregnth, toughness, and plasticity. slow dilatency (CL)	CL	
	POORLY GRADED SAND WITH SILT Dark yellowish-brown, dry fine sand, 10% silt (SP-SM)	SP/SM	
	WELL GRADED SAND WITH SILT Dark yellowish brown, dry fine-medium sand (SW-SM)	SW/SM	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	23-C-1GW	SHEET 2	OF 3

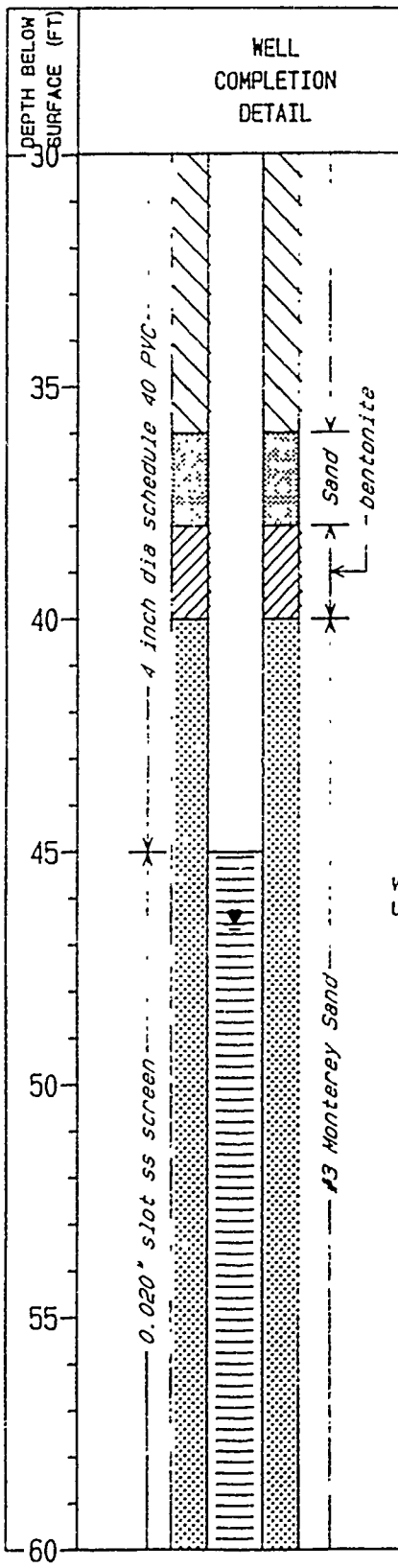
SOIL BORING LOG

PROJECT BEALE AFB LOCATION B ST & 26 ST.-9TH TRANS SHOP

ELEVATION 127.76 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 81.19 FT NGVD START 12/14/88 FINISH 12/14/88 LOGGER C.ELLOITT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	LEAN CLAY Yellowish brown, moist medium toughness, plasticity and dry stregnth (CL)	CL	
	CLAYEY SAND Dark yellowish brown, moist, well graded sand, trace gravel, 40% clay (SC)	SC	
	LEAN CLAY WITH SAND Pale yellow brown with 20% fine sand (CL)	CL	
	FAT CLAY Brownish yellow, dry high toughness, plasticity, dry stregnth (CH)	CH	drilling slows
	SILTY GRAVEL WITH SAND Yellowish-brown, dry, 50% fine subrounded gravel 30% well graded sand, 20% silt (GM) trace cobbles	GM	
	LEAN CLAY Very pale brown, dry, medium toughness and plasticity slow dilatercy (CL)	CL	
	WELL GRADED SAND Dark yellowish brown, wet, trace gravel (SW)	SW	wet cuttings
	POORLY GRADED GRAVEL WITH SILT AND SAND wet (GP-GM)	GP/GM	producing water
	SANDY LEAN CLAY Yellowish brown moist, 30% well graded sand, 10% gravel, 60% clay (CL)	CL	water slows to a trickle; water stops

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	23-C-1GW	SHEET 3	OF 3

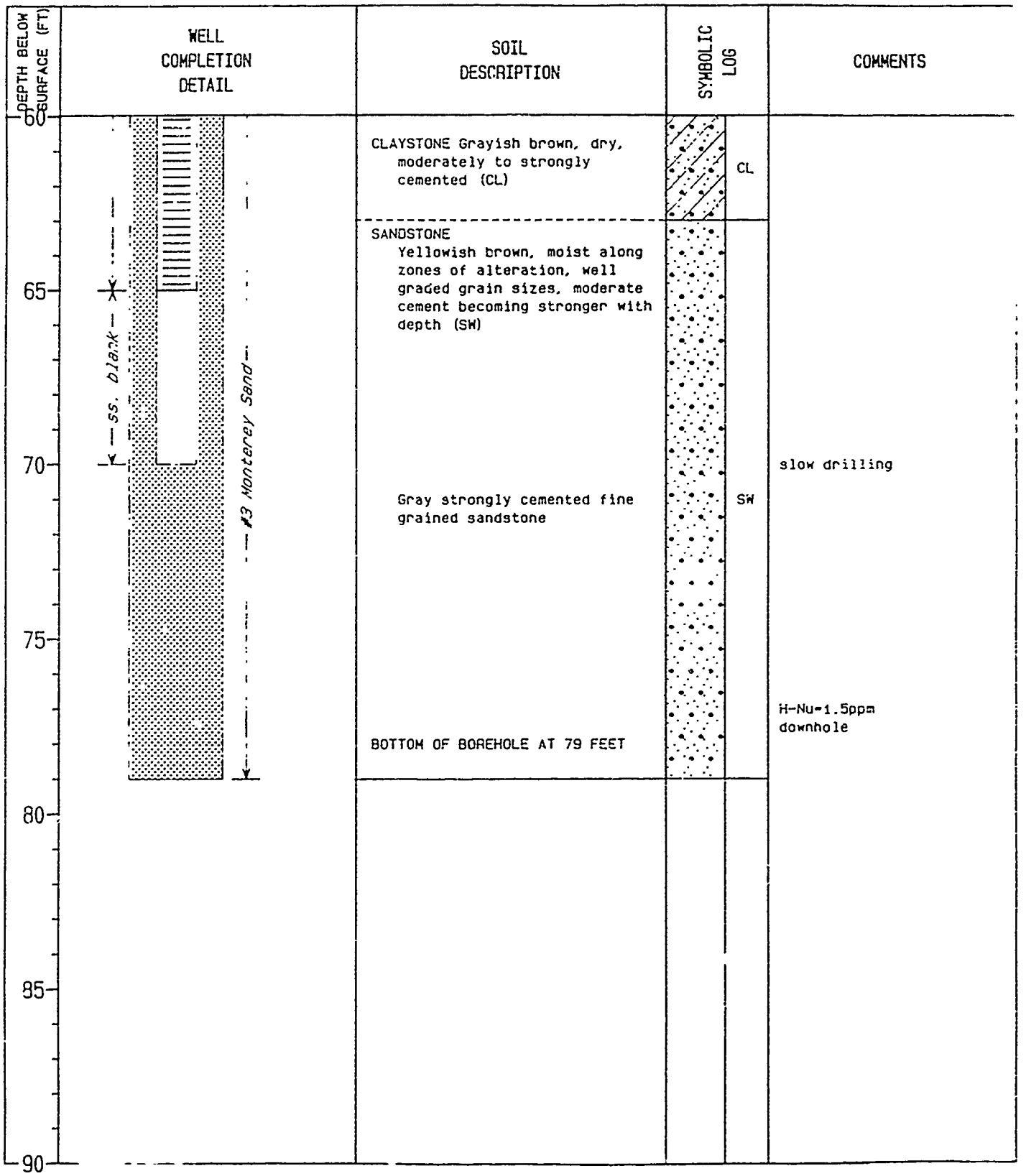
SOIL BORING LOG

PROJECT BEALE AFB LOCATION B ST & 26 ST.-9TH TRANS SHOP

ELEVATION 127.76 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-HOMER SMOTHERS

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 81.19 FT NGVD START 12/14/88 FINISH 12/14/88 LOGGER C.ELLIOTT



BACKGROUND WELLS

Soil Boring and Well Logs

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	BG-C-1GW	SHEET 1 OF 4

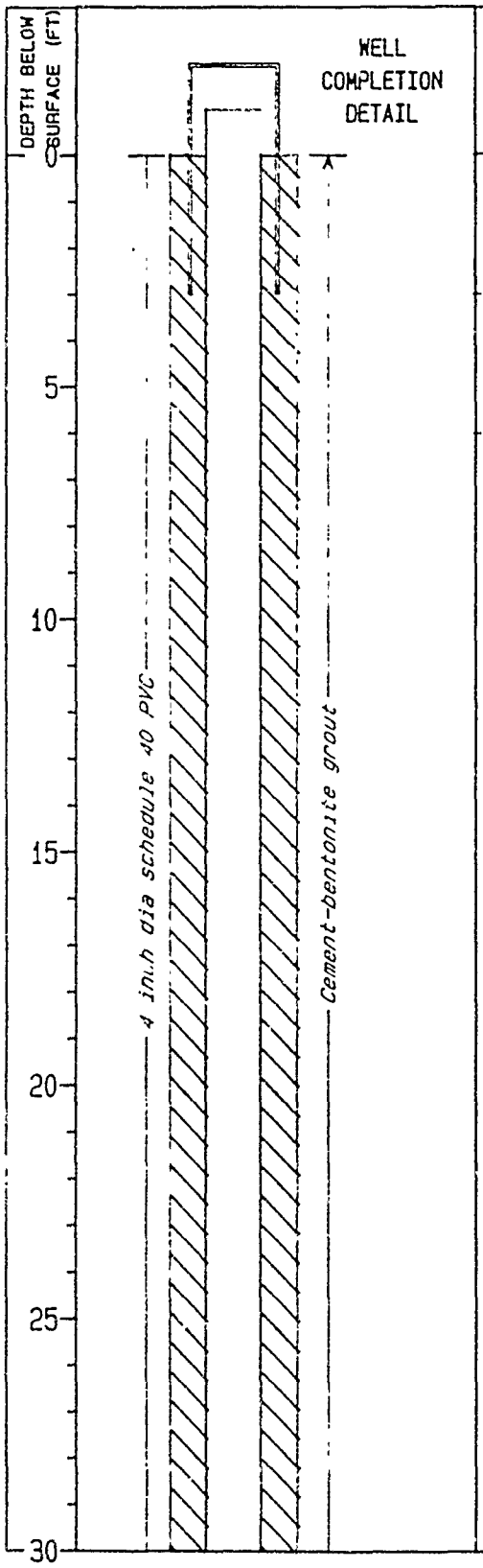
SOIL BORING LOG

PROJECT BEALE AFB LOCATION ALERT DR. EAST OF DOOLITTLE GATE

ELEVATION 169.22 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 89.65 FT NGVD 3/27/89 START 12/8/88 FINISH 12/8/88 LOGGER G.T.VOGT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	SANDY LEAN CLAY WITH GRAVEL brown wet (CL)	CL	start 9:15 12/15/88 H-Nu=0.0 ppm =background
	WELL GRADED SAND WITH GRAVEL redish brown moist fine to medium sand with angular gravel (SW)	SW	
	POORLY GRADED SAND WITH GRAVEL lt brown dry medium to coarse sand with metabasalt clasts (SP)		H-Nu=0.15 ppm downhole
	as above clasts of metabasalt < 10 cm dia	SP	H-Nu=0.2 ppm downhole

PROJECT NUMBER	BORING NUMBER		
SAC24359.AI.04	BG-C-1GW	SHEET 2	OF 4

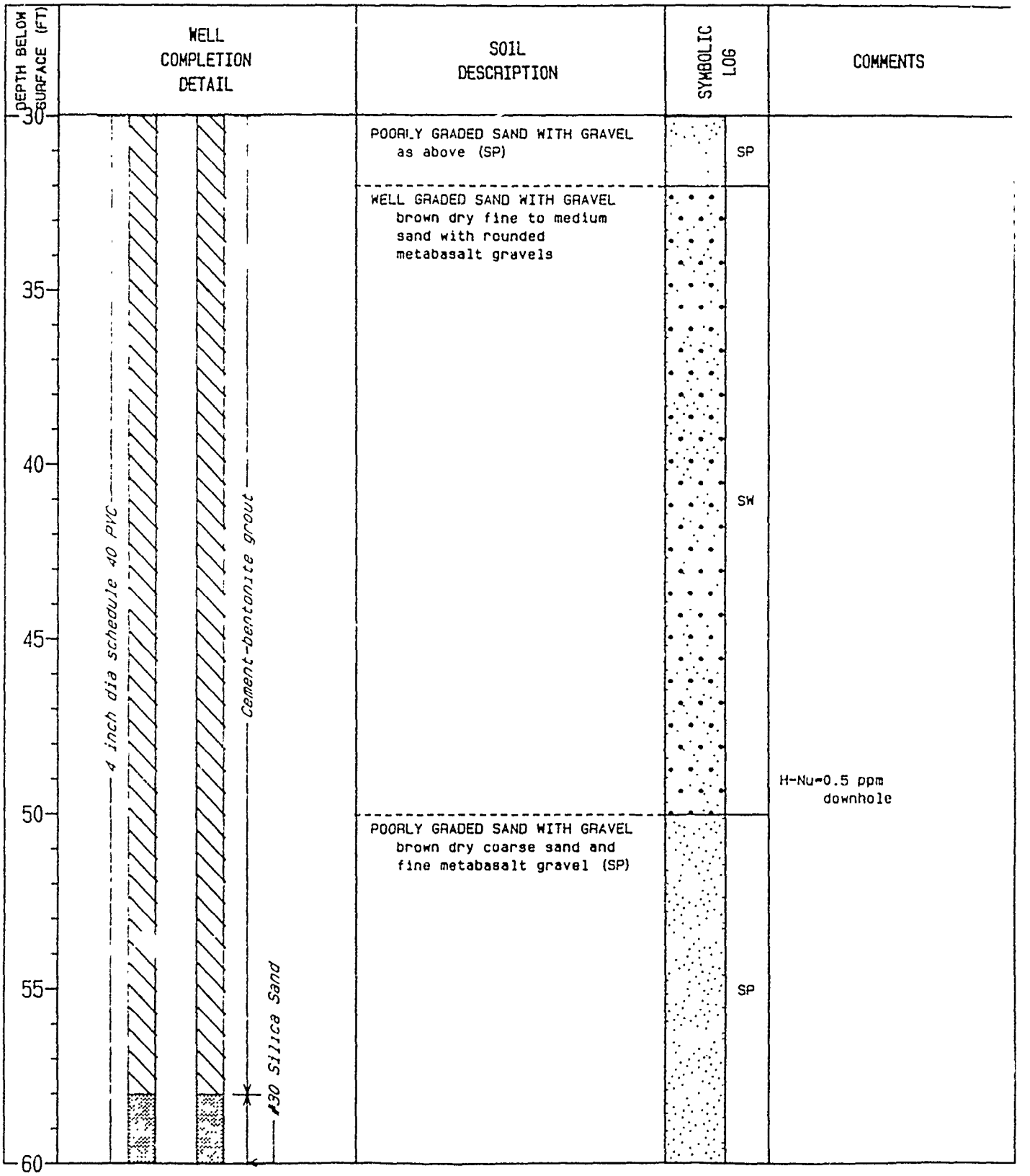
SOIL BORING LOG

PROJECT BEALE AFB LOCATION ALERT DR. EAST OF DOOLITTLE GA

ELEVATION 169.22 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 89.65 FT NGVD 3/27/89 START 12/8/88 FINISH 12/8/88 LOGGER G.T.VOGT



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	BG-C-1GW	SHEET 3	OF 4

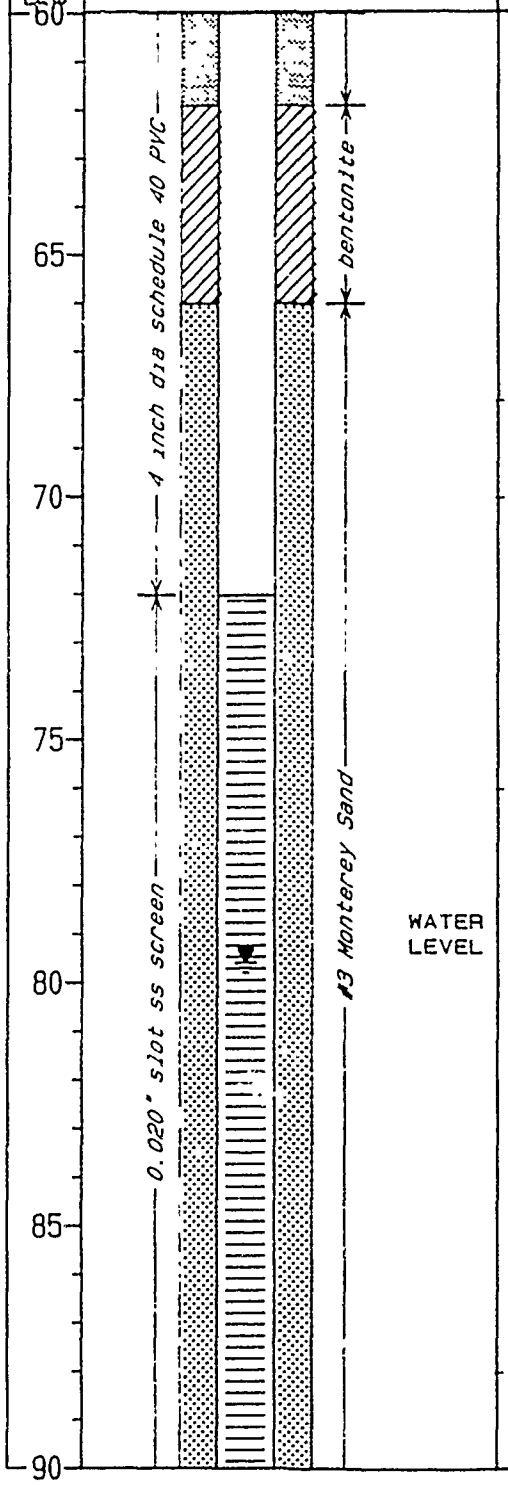
SOIL BORING LOG

PROJECT BEALE AFB LOCATION ALERT DR. EAST OF DOOLITTLE GATE

ELEVATION 169.22 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 89.65 FT NGVD 3/27/89 START 12/8/88 FINISH 12/8/88 LOGGER G T VOGT



SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
POORLY GRADED SAND WITH GRAVEL brown dry coarse sand and fine gravel with metabasalt clasts (SP)	SP	
POORLY GRADED GRAVEL WITH SAND brown dry rounded pea gravel with sand (GP)	GP	H-Nu=0.0 ppm downhole
POORLY GRADED SAND reddish brown damp medium sand (SP)	SP	
SANDY LEAN CLAY WITH GRAVEL brown wet clay with fine sand and angular gravel (CL)	CL	producing water from 79 to 82 feet
SANDY LEAN CLAY brown moist to wet clay with fine sand (CL)		
CLAYEY SAND brown wet fine sand with clay (SC)	SC	H-Nu=0.0 downhole

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	BG-C-1GW	SHEET 4	OF 4

SOIL BORING LOG

PROJECT BEALE AFB LOCATION ALERT DR. EAST OF DOOLITTLE GA

ELEVATION 169.22 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 89.65 FT NGVD 3/27/89 START 12/8/88 FINISH 12/8/88 LOGGER G.T.VOGT

DEPTH BELOW SURFACE (FT)	WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
90		CLAYEY SAND brown wet fine sand with clay as above (SC)	SC	
95	ss. blank; #3 Monterey Sand	SANDY CLAY brown wet clay with fine sand (CL)	CL	
100		BOTTOM OF BORING AT 99 FEET		
105				
110				
115				
120				

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	BG-C-2GW	SHEET 1	OF 4

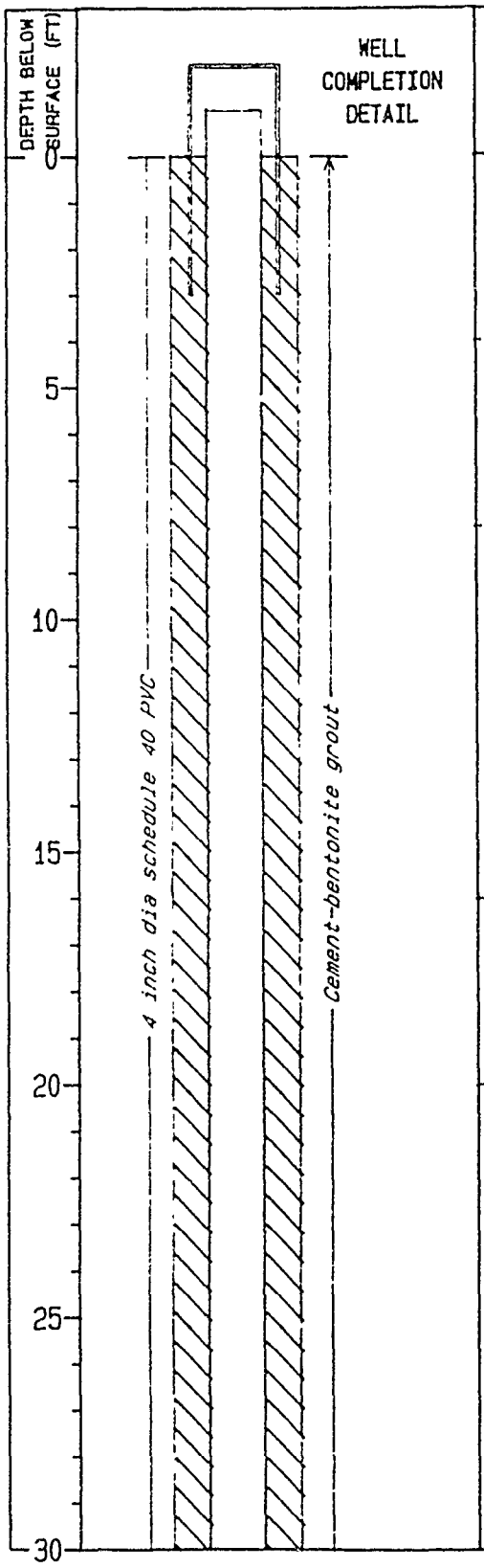
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WARREN SHINGLE NE OF GOLF COURSE

ELEVATION 139.98 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 71.57 FT NVGD 3/27/89 START 12/14/88 FINISH 12/15/88 LOGGER P. LAWSON



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	POORLY GRADED GRAVEL WITH SAND lt brown dry loose angular clasts with oxidized clay clasts (GP)	GP	start 14:15 12/14/88
	LEAN CLAY WITH GRAVEL lt red-brown dry loose clay with angular rock fragments (CL)	CL	
	POORLY GRADED SAND WITH GRAVEL lt gray slightly moist to dry medium to coarse sand some angular gravels (SP)	SP	cobble stuck in discharge hose slow drilling
	WELL GRADED GRAVEL WITH SAND lt gray dry loose anglar gravel (GW)	GW	H-Nu-background
	POORLY GRADED SAND lt brown moist loots fine to medium sand (SP)		moist sands
	POORLY GRADED SAND WITH GRAVEL as above with rounded cobbles (SP)	SP	moisture increasing to 30 feet

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	BG-C-2GW	SHEET 2 OF 4

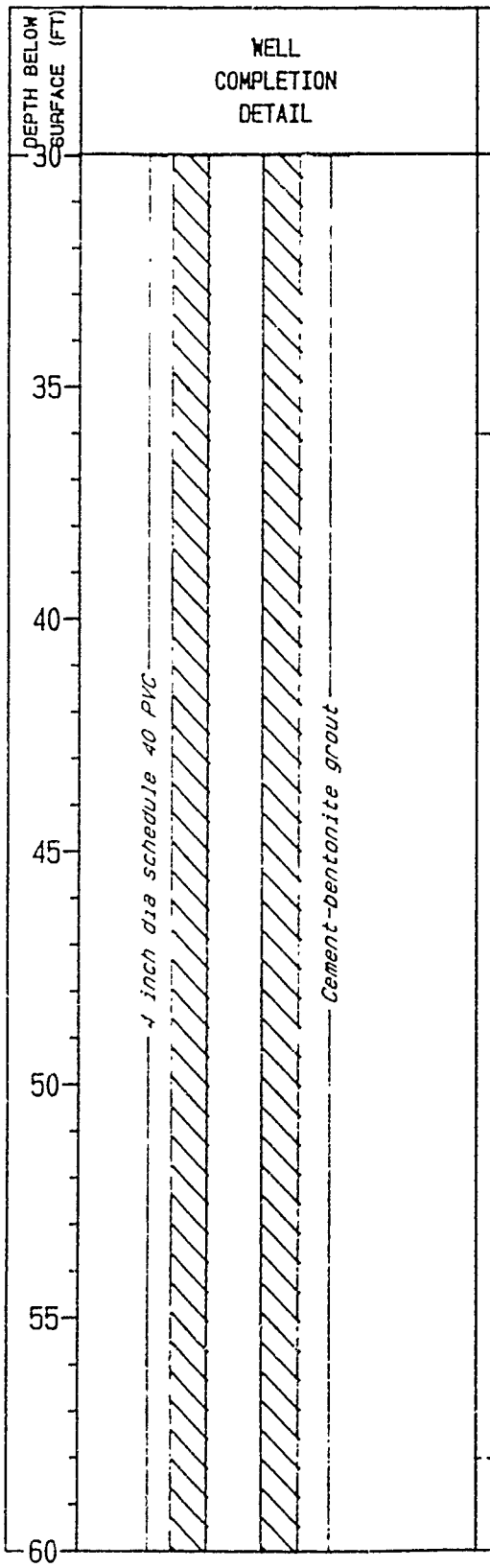
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WARREN SHINGLE NE OF GOLF COUR

ELEVATION 159.98 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 71.57 FT NVGD 3/27/89 START 12/14/88 FINISH 12/15/88 LOGGER P. LAWSON



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	POORLY GRADED SAND lt brown very wet fine to medium sand with clasts of meta-basalt (SP)	SP	wet sands
	CONGLOMERATE brown to reddish brown cemented igneous and sedimentary (sst claystone) clasts silt matrix moist when broken open some organic matter (CGL)	CGL	bedrock contact? siltstone clasts are wet when broken open H-Nu=background
	SANDSTONE lt brown moist fine to medium grained with silt-stone interbeds (SST)	SST	

PROJECT NUMBER	BORING NUMBER		
SAC24359.RI.04	BG-C-2GW	SHEET 3	OF 4

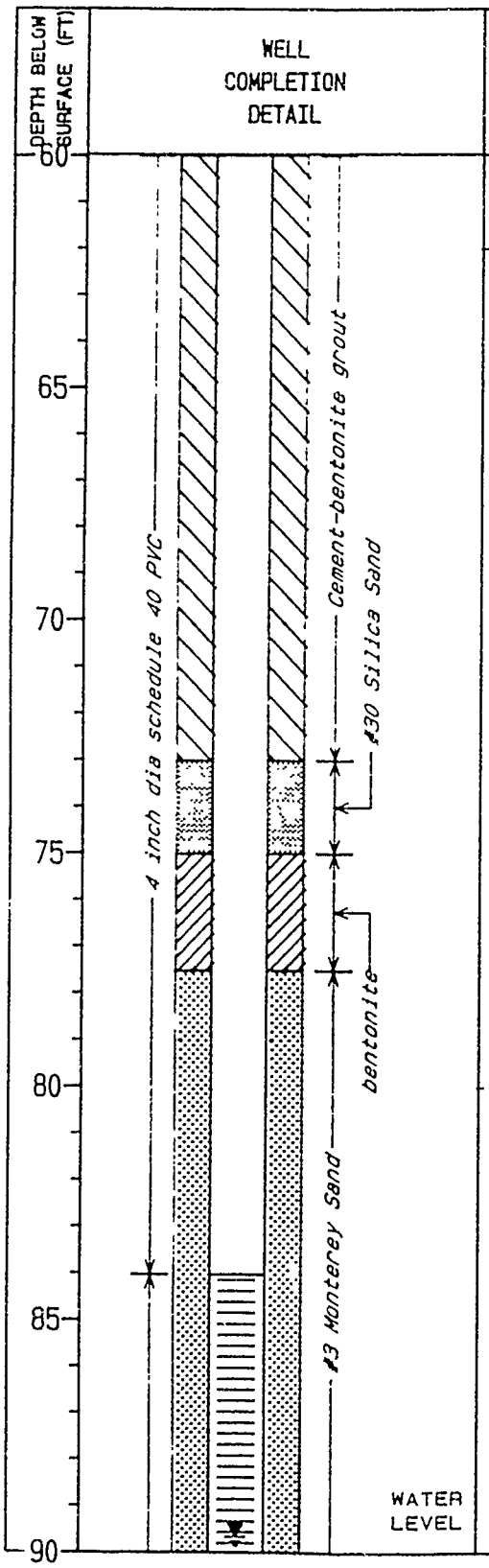
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WARREN SHINGLE NE OF GOLF COURSE

ELEVATION 159.98 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 71.57 FT NVGD 3/27/89 START 12/14/88 FINISH 12/15/88 LOGGER P. LAWSON



WELL COMPLETION DETAIL	SOIL DESCRIPTION	SYMBOLIC LOG	COMMENTS
	SANDSTONE lt brown fine (SST)	SST	moist sandstone
	WELL GRADED SAND WITH GRAVEL light brown moist fine to coarse sand with well rounded gravel to 8 cm dia (SW)	SW	moist sand and gravel
	SANDSTONE brown moist fine grained weak to moderate cement (SST)	SST	moist cuttings

PROJECT NUMBER	BORING NUMBER	
SAC24359.RI.04	BG-C-2GW	SHEET 4 OF 4

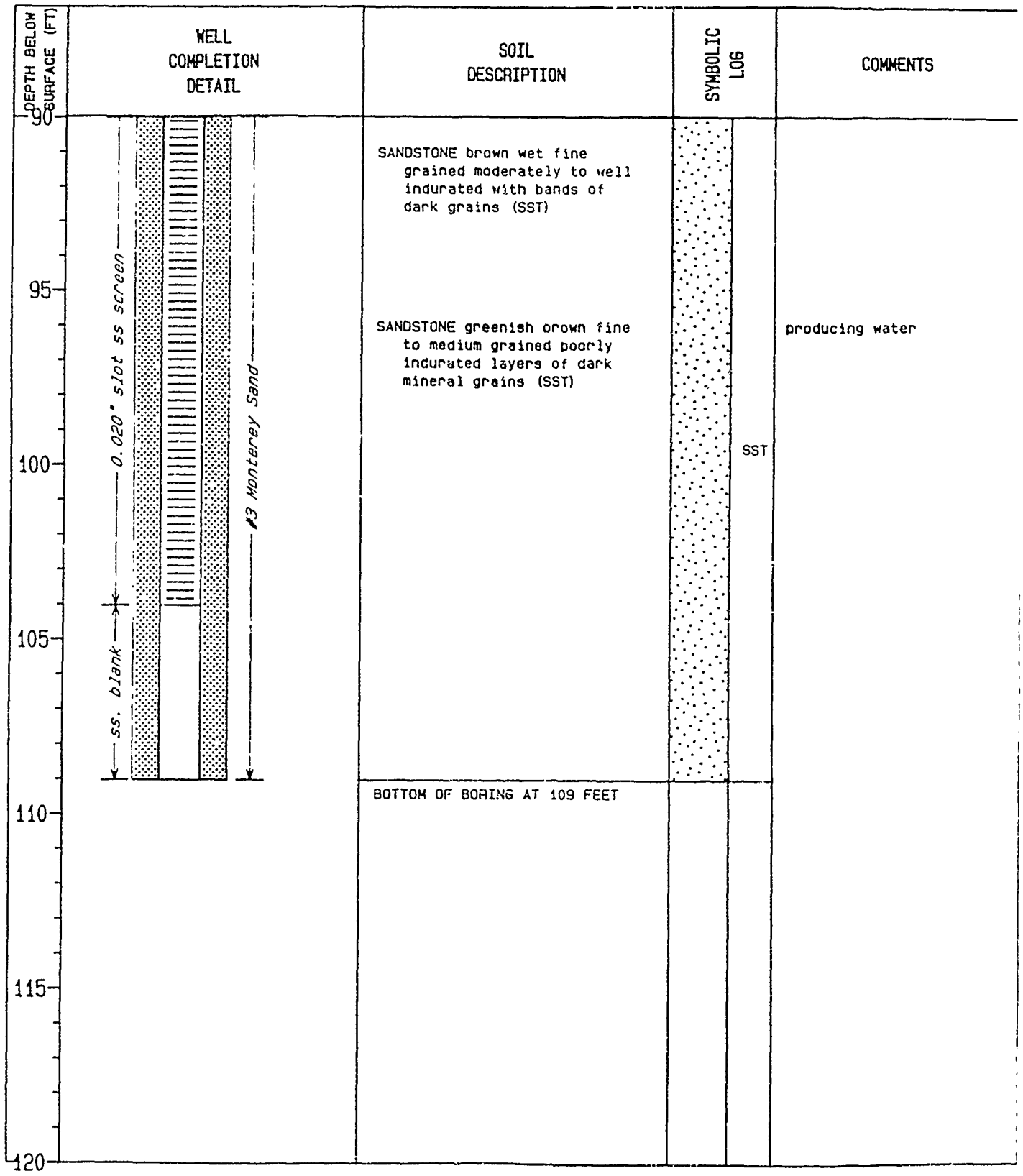
SOIL BORING LOG

PROJECT BEALE AFB LOCATION WARREN SHINGLE NE OF GOLF COUI

ELEVATION 159.98 FT NGVD DRILLING CONTRACTOR LAYNE ENVIRONMENTAL-STEVE JOHNSON

DRILLING METHOD AND EQUIPMENT DUAL TUBE PERCUSSION AP1000

WATER LEVEL AND DATE 71.57 FT NVGD 3/27/89 START 12/14/88 FINISH 12/15/88 LOGGER P. LAWSON



APPENDIX E

AQUIFER TESTING METHODOLOGY AND PLOTS

Appendix E
AQUIFER TESTING METHODOLOGY AND PLOTS

INTRODUCTION

Monitoring wells constructed during IRP Stage 2-1 at Beale AFB were given short-term pump tests to provide an estimate of yield and furnish a picture of hydrogeologic conditions in the immediate vicinity of the well. In addition, Well 19-C-4 was given a 72-hour drawdown test and a 72-hour recovery test to supply an estimate of aquifer parameters that affect groundwater flow velocity. A discussion of hydrogeology at Beale AFB that affects the results of the pump tests is presented in Section 2 of this report. Plots of the pump tests are provided in this appendix, together with a discussion of methodology and a summary of results.

The groundwater system at Beale AFB is characterized by its alluvial geologic setting, in which isolated coarse-grained stream channel deposits are contained within a matrix of fine-grained overbank deposits. There is no "aquifer" in a textbook sense. Groundwater tends to flow in relatively more permeable lenticular clayey and silty sands contained within a complex assemblage of sandy clays and sandy silts. Thus, rather than identifiable aquifers that may be correlated from place to place, the groundwater may be considered to flow in a single, large-scale heterogeneous system.

In a such a setting, pump tests must be regarded as indicators of the yield of the well, as estimates of hydrologic conditions, and as a descriptive tool to help define the subsurface geology. Historically, groundwater analytical techniques have been developed using simplifying assumptions. These include such assumptions as that aquifers and groundwater flow paths are horizontal, are bounded by units capable of being described mathematically, are infinite in areal extent, are of constant thickness, and are homogeneous and isotropic. Pump tests also ideally utilize wells that are screened throughout the thickness of the aquifer, and nearby observation wells that are also screened completely across the aquifer, or at least screened in the center of the aquifer.

Although techniques have been developed that deal with some departure from the simplified assumptions described above, no analytical technique fully addresses a system as complex as that at Beale AFB, where "aquifers" consist of thin discontinuous units contained in a complex assemblage of

alluvium. In addition, wells were installed primarily as monitoring wells, and are usually screened across the uppermost permeable unit(s) encountered during drilling. Thus, wells may be said to only partially penetrate the aquifer, if the aquifer is considered to comprise the entire assemblage of unconsolidated sediments, or in some cases to penetrate more than one aquifer, if the aquifer is considered to consist of each thin discontinuous permeable unit in the assemblage. Nearby monitoring wells used as observation wells may or may not have been screened in the same thin permeable unit.

In this situation, it was decided to employ standard methods of pump test analysis, while recognizing that results are only estimates. The method most often employed was the Cooper-Jacob semilog plot method (Cooper and Jacob, 1946), which is an approximation of the Theis solution. Aquifer thickness, used in the calculation of hydraulic conductivity, was assumed to consist of the saturated portion of the well screen, except in analyses of wells 1-C-2, 1-C-3, 1-C-4, and 1-C-5, where uniform geology was found to a depth of about 45-47 feet below the water table. It was considered unnecessary to correct for partial penetration, since this correction is normally made to account for vertical flow components in the groundwater. Geologic stratification tended to counteract vertical flow in the short-term tests at Beale AFB.

Two wells were given step-drawdown tests, according to a technique developed by Harrill (1970). Three wells were given slug tests, because permeabilities were too low to sustain a constant pumping rate. Results were evaluated according to the Bouwer and Rice method (1976).

Curve-matching techniques were not used, because these analyses depend on proper selection of curves based on clear understanding of subsurface geology, not possible at Beale AFB. The fact that a theoretical curve can be matched by pumping test data in no way proves that the aquifer fits the assumptions on which the curve is based (Freeze and Cherry, 1979).

The Cooper-Jacob semilog plot method provides a snapshot of geologic conditions in the vicinity of the well by showing boundary conditions encountered by the cone of depression on the drawdown curve. For example, nearby units of lower permeability cause the curve to steepen, while units of higher permeability cause the curve to flatten. Curves provided in this appendix clearly show these slope changes, and are

reflective of the heterogeneity of the nearby subsurface geology, and do not represent large-scale regional boundaries that would affect regional groundwater velocities or flow paths.

Portions of the curves used to calculate aquifer parameters depended on judgement. Factors included the desire to use late portions of the curve where possible, portions of longest time duration, or in certain cases the shallow rather than steep portion of the drawdown curve to derive conservatively high values of hydraulic conductivity. In these latter cases, the shallow portion of the curve closely matched the recovery curve and reflected hydrogeologic conditions near the well. In addition, groundwater flows preferentially through zones of higher permeability.

Short-term pump test results are indicative of hydrogeologic conditions in the immediate vicinity of the well screen, and are useful as estimates of yield for sampling purposes. Aquifer parameters such as hydraulic conductivity and transmissivity must be regarded as estimates, and are mainly valid only in the immediate vicinity of the well. Drawdown and recovery curves developed on nearby observation wells are primarily useful in demonstrating whether hydraulic communication occurs between the observation well and the pumping well. Because the geologic relationship of these wells to the pumping well is often unclear, and because of the short-term nature of the tests and often great distance of the observation well from the pumping well, aquifer parameters developed from these curves are even less rigorous than those developed from the pumping well. This includes values of storage coefficient developed from plots of observation well water level changes.

The test that most accurately portrays subsurface groundwater conditions at Beale AFB was the 72-hour test performed at well 19-C-4, which tended to average out local heterogeneities. Estimates of groundwater flow velocity presented in this report were made using the value of hydraulic conductivity derived from this test. However, plots of drawdown and recovery recorded on observation wells during this test should be viewed with caution.

This appendix first describes the testing methodology employed for the 72-hour test, then describes the various methods used to derive aquifer parameters at the monitoring wells. Finally, plots of drawdown and recovery are presented for each test. Included among the plots are background water level fluctuations and barometric pressure variations

which were collected in conjunction with the long-term test at Site 19. Table E-1 summarizes the results of the aquifer testing program at Beale AFB.

72-HOUR TEST

The long-term pump test consisted of 72 hours of drawdown followed by 72 hours of recovery. Well 19-C-4 was the pumping well, and wells 19-C-1, 19-C-2, and 19-C-3 were observation wells. Water levels in 19-C-1 were measured with a calibrated electric sounder. Water levels in the other wells were monitored automatically with In-Situ Hermit data-loggers and pressure transducers. Data were transferred directly to a portable computer in the field. Well 19-C-4 was pumped with a 5-horsepower Grundfos stainless-steel submersible pump powered by a portable generator. Water was discharged to the sump located south of Building 2145, from which it flowed to the photowaste treatment plant. Discharge was measured every 3 hours with a calibrated bucket and stopwatch, and varied little from an average of 22.8 gallons per minute (gpm) during the drawdown portion of the test.

Water levels were measured during the test in well 6-C-1 to provide data on background groundwater fluctuations in a well unaffected by the test. In addition, water levels in wells 6-C-1, 19-C-2, and 19-C-3 were monitored over a 5-day period after the test. These data were then compared with barometric pressure data collected hourly at the Beale AFB weather station.

Plots of the groundwater and barometric pressure variations are included in this appendix. They demonstrate that water levels in wells 6-C-1, 19-C-2, and 19-C-3 vary directly with barometric pressure and with each other during March 23-28, 1989. Water levels in well 6-C-1 also varied with barometric pressure during the drawdown and recovery phases of the pump test (March 16-22, 1989). Based on these relationships, data collected in the pumping and observation wells were modified to reflect the impact of barometric pressure changes during the pump test.

Aquifer parameters were calculated from the modified data according to the Cooper-Jacob semilog plot method (Cooper and Jacob, 1946). In the semilog plot technique, drawdown is plotted on the arithmetic axis against pumping time on the logarithmic axis. In the recovery test, residual drawdown is plotted against the ratio of elapsed time since the

Table E-1
RESULTS OF AQUIFER TESTING AT BEALE AFB

WELL	DATE	METHOD	PUMPING (P) OR OBSERVATION (O)	DRAWDOWN (DD) OR RECOVERY (R)	DURATION (HOURS)	TRANSMISSIVITY T (sq.ft. /d)	HYDRAULIC CONDUCTIVITY K (ft/d)
1-C-1	01/26/89	CJ (1)	P	DD	2	4,400	350
1-C-1	01/26/89	CJ	P	R	2	4,200	340
1-C-3	02/07/89	CJ	P	DD	8	9,200	200
1-C-3	02/07/89	CJ	P	R	8	9,800	210
1-C-4	02/09/89	CJ	P	DD	12	13,000	280
1-C-4	02/09/89	CJ	P	R	12	18,000	380
1-A-1	02/09/89	CJ	O	DD	12	6,200	140
1-C-1	02/09/89	CJ	O	DD	12	6,000	130
1-C-2	02/09/89	CJ	O	DD	12	22,000	480
1-C-2	02/09/89	CJ	O	R	12	22,000	480
1-C-3	02/09/89	CJ	O	DD	12	26,000	560
1-C-3	02/09/89	CJ	O	R	12	23,000	500
1-C-5	03/06/89	H (2)	P	Step DD (3)	4	11,000	240
1-C-2	03/07/89	CJ	P	DD	4	17,000	370
1-C-2	03/07/89	CJ	P	R	4	16,000	350
1-C-4	03/07/89	CJ	O	DD	4	16,000	330
1-C-4	03/07/89	CJ	O	R	4	14,000	300
1-C-5	03/07/89	CJ	O	DD	4	18,000	390
1-C-5	03/07/89	CJ	O	R	4	18,000	390

Table E-1
(Continued)

WELL	DATE	METHOD	PUMPING (P) OR OBSERVATION (O)	DRAWDOWN (DD) OR RECOVERY (R)	DURATION (HOURS)	TRANSMISSIVITY T (sq. ft/d)	HYDRAULIC CONDUCTIVITY K (ft/d)
2-C-1	02/02/89	CJ	P	DD	4	1,000	52
2-C-1	02/02/89	CJ	P	R	4	1,000	52
3-C-1	03/10/89	CJ	P	DD	3.5	320	23
3-C-1	03/10/89	CJ	P	R	3.5	290	21
5-C-1	03/03/89	CJ	P	DD	4	500	29
5-C-1	03/03/89	CJ	P	R	4	1,000	59
6-C-1	02/01/89	CJ	P	DD	1	3.4	0.17
6-C-1	02/01/89	CJ	P	R	1	4.6	0.23
13-C-5	02/03/89	CJ	P	DD	4	380	19
13-C-5	02/03/89	CJ	P	R	4	380	19
13-C-4	02/15/89	CJ	P	DD	4	250	13
13-C-4	02/15/89	CJ	P	R	4	390	21
13-A-2	02/15/89	CJ	O	DD	4	1,100	74
13-A-2	02/15/89	CJ	O	R	4	1,200	63
13-C-3	02/16/89	CJ	P	DD	12	390	19
13-C-3	02/17/89	CJ	P	R	12	450	23
13-C-1	02/16/89	CJ	O	DD	12	780	39
13-A-2	02/16/89	CJ	O	DD	12	570	39

Table E-1
(Continued)

WELL	DATE	METHOD	PUMPING (P) OR OBSERVATION (O)	DRAWDOWN (DD) OR RECOVERY (R)	DURATION (HOURS)	TRANSMISSIVITY T (sq. ft/d)	HYDRAULIC CONDUCTIVITY K (ft/d)
13-A-2	02/17/89	CJ	O	R	12	540	37
13-C-4	02/16/89	CJ	O	DD	12	990	53
13-C-5	02/16/89	CJ	O	DD	12	1,100	57
13-C-2	02/21/89	CJ	P	DD	6	380	19
13-C-2	02/21/89	CJ	P	R	6	440	22
13-C-1	02/24/89	CJ	P	DD	1.7	270	13.5
13-C-1	02/24/89	CJ	P	R	1.7	230	11
13-C-6	09/22/89	CJ	P	DD	3	78	4.9
13-C-6	09/22/89	CJ	P	R	3	280	18
16-C-1	01/31/89	BR (4)	N/A	N/A	1	23	1.2
18-C-1	02/13/89	CJ	P	DD	6	320	23
18-C-1	02/13/89	CJ	P	R	6	270	19
18-C-2	02/10/89	CJ	P	DD	4	230	24
18-C-2	02/10/89	CJ	P	R	4	330	34
19-C-4	03/16/89 - 03/19/89	CJ	P	DD	72	1,300	22
19-C-4	03/19/89 - 03/22/89	CJ	P	R	72	2,000	34
19-C-1	03/16/89 - 03/19/89	CJ	O	DD	72	4,000	67
19-C-1	03/19/89 - 03/22/89	CJ	O	R	72	4,000	67

Table E-1
(Continued)

WELL	DATE	METHOD	PUMPING (P) OR OBSERVATION (O)	DRAWDOWN (DD) OR RECOVERY (R)	DURATION (HOURS)	TRANSMISSIVITY T (sq. ft/d)	CONDUCTIVITY K (ft/d)
19-C-2	03/16/89 - 03/19/89	CJ	O	DD	72	3,400	56
19-C-2	03/19/89 - 03/22/89	CJ	O	R	72	3,000	50
19-C-3	03/16/89 - 03/19/89	CJ	O	DD	72	3,100	52
19-C-3	03/19/89 - 03/22/89	CJ	O	R	72	2,500	42
19-C-1	02/22/89	CJ	P	DD	3	1,100	55
19-C-1	02/22/89	CJ	P	R	3	735	37
19-C-2	02/27/89	CJ	P	DD	4	100	5.3
19-C-2	02/27/89	CJ	P	R	4	81	4.3
19-C-3	02/27/89	CJ	O	DD	4	370	18
19-C-3	03/01/89	CJ	P	DD	8	200	10
19-C-3	03/01/89	CJ	P	R	8	190	9.7
19-C-2	03/01/89	CJ	O	DD	8	190	10
21-C-1	03/09/89	H	P	Step DD	4	750	77
23-C-1	03/29/89	BR	N/A	N/A	1	33	1.9
BG-C-1	02/01/89	BR	N/A	N/A	1	73	5.1
BG-C-2	01/30/89	CJ	P	DD	2.6	1,100	69
BG-C-2	01/30/89	CJ	P	R	2.6	1,000	66

NOTES: (1) Cooper-Jacob (1946)
(2) Harill (1970)
(3) Recovery of Step-Drawdown Test
(4) Bouwer and Rice (1976)

pump was turned on divided by the elapsed time since the pump was turned off (t/t') on the logarithmic axis. A "best-fit" line is then drawn on the plotted data points.

Transmissivity is calculated according to the following formula:

$$T = (264)(Q) / (h-h_o)$$

where:

T = Transmissivity of the aquifer in gallons/day/foot (gpd/ft)

264 = A conversion factor that causes the results to be in gallons/day/foot

Q = Pumping rate in gallons/minute (gpm)

$h-h_o$ = Change in drawdown (or residual drawdown) in feet/log cycle of time on the graphical plot

Hydraulic conductivity is calculated by:

$$K = T/b$$

where:

K = Hydraulic conductivity in feet/day (ft/d)

b = Thickness of the aquifer, here taken to be the saturated thickness of the screened interval of the well (ft)

The storage coefficient may only be determined on drawdown data recorded in an observation well. The storage coefficient is calculated by substitution into the following formula:

$$S = (2.25)(T)(t_o)/(r^2)$$

where:

S = Storage coefficient (dimensionless)

T = Transmissivity in ft^2/min

t_o = Time at which the "best-fit" line crosses the x-axis (min)

r = Distance from the observation well to the pumping well (feet)

Calculations of transmissivity, hydraulic conductivity, and storage coefficient are included on the test plots in this appendix. Summaries of these values are included with the IRP site discussions in Section 4.

SHORT-TERM TESTS

Most of the newly-installed monitoring wells at Beale AFB were tested according to the Cooper-Jacob technique described above. The normal length of time each well was tested was about 4 hours for the pump drawdown test, followed by 4 hours of monitored recovery. However, at Sites 1 and 13, 12-hour pump drawdown and 12-hour recovery tests were conducted. Certain other wells were given tests of varying lengths also. The duration of the test at each well is shown on the test plots in this appendix and in Table E-1. Where possible, nearby wells were utilized as observation wells. As with the 72-hour test, water levels were monitored automatically with In-Situ Hermit dataloggers and pressure transducers. Data were transferred directly to a portable computer in the field. Water discharged from the wells was stored in either a portable tank or a water tank truck in the field, then transferred to the sewage treatment facility at Beale AFB for disposal.

Wells 1-C-5 and 21-C-1 were given a 4-hour step-drawdown test. In this test, the pumping rate is stepped upward at regular intervals. At the conclusion of the pumping period, the pump is turned off and the rate of rise of water in the well is measured. Transmissivity is calculated according to a technique developed by Harrill (1970), using a modified form of the Theis recovery formula.

Transmissivity is calculated according to the following formula:

$$T = (264)(Q_n)/(h-h_o)$$

where:

T = Transmissivity of the aquifer in gpd/ft

264 = A conversion factor that causes the results to be in gpd/ft

Q_n = The final pumping rate in gpm

$h-h_o$ = Change in residual drawdown in feet/log cycle of time

Hydraulic conductivity is calculated by:

$$K = T/b$$

where:

K = Hydraulic conductivity (ft/day)

b = Aquifer thickness (ft)

The term $h-h_o$ is obtained from a semilog graphical plot, where the residual drawdown is plotted on the linear scale against the following which is plotted on the logarithmic scale (referred to as modified ratio t/t'):

$$t_1^{(\text{delta } Q1/Qn)}\ t_2^{(\text{delta } Q2/Qn)}\ t_n^{(\text{delta } Qn/Qn)}\ /\ t'$$

where:

$t_1, t_2, \ldots t_n$ = Elapsed times since the pump was turned on or discharge increased

t' = Elapsed time since the pump was turned off

$Q_1, Q_2, \ldots Q_n$ = Well discharge rates (gpm)

delta Q_1, delta Q_2, ...delta Q_n = incremental increases in discharge

For example, in the test of well 1-C-5:

Q_1 = 37 gpm; delta Q_1 = 37 gpm

Q_2 = 43 gpm; delta Q_2 = 6 gpm

Q_3 = 49 gpm; delta Q_3 = 6 gpm

$Q_4 = Q_n$ = 56 gpm; delta Q_4 = 7 gpm

delta Q_1/Q_n = 0.66

delta Q_2/Q_n = 0.11

delta Q_1/Q_n = 0.11

delta Q_2/Q_n = 0.13

Residual drawdown (feet) is calculated as the difference between recovering water levels and the static (initial) water level. The plots of these tests and calculations of transmissivity and hydraulic conductivity are provided in this appendix.

Wells 16-C-1, 23-C-1 and BG-C-1 were each given slug tests, because the permeabilities of the aquifer materials in which these wells are completed and the available drawdown were too low to sustain a pumping test. Results were interpreted according to the method devised by Bouwer and Rice (1976), which was designed for partially penetrating wells in unconfined aquifers. The test involves the sudden addition of a volume of water to the well, then measuring the rate of decline of the water level in the well as it returns to the static level. The water levels were measured with a pressure transducer and recorded on a datalogger. Hydraulic conductivity is calculated according to the following equation:

$$K = r_c^2 \ln(R/r_w) \ln(Y_0/Y_t) / (2Lt)$$

where:

K = Hydraulic conductivity (L/T)

L = Saturated length of the screen (L)

r_w = Distance from the center of the casing to the undisturbed aquifer

r_c = Inside radius of the casing, with allowance made for the porosity of the filter pack. r_c is calculated as:

$$r_c = [i^2 + n(r_w^2 - i^2)]^{1/2}$$

where:

i = Inside casing radius (L)

n = Porosity of filter pack (assumed to be 0.30)

The terms "Y_0", "Y_t", and "t" are derived from a plot of residual recovery, or the difference between the original water level and water levels after the slug is added, versus the time at which water level measurements are made. A straight line is fitted to the slope of the early portion of the resulting curve. Where this line crosses the y-axis at time = 0, the value "Y_0" is obtained. Another value of Y, "Y_t", is chosen along the straight line at an arbitrarily chosen time, t.

Finally,

$$\ln (R/r_w) = [(1.1/\ln[H/r_w]) + ([A + B \ln(D-H/r_w)]/[L/r_w])]^{-1}$$

where:

D = Depth from the original water level to the bottom of the aquifer

H = Depth from the original water level to the bottom of the well

A and B = Dimensionless parameters taken from a graph included in the original paper

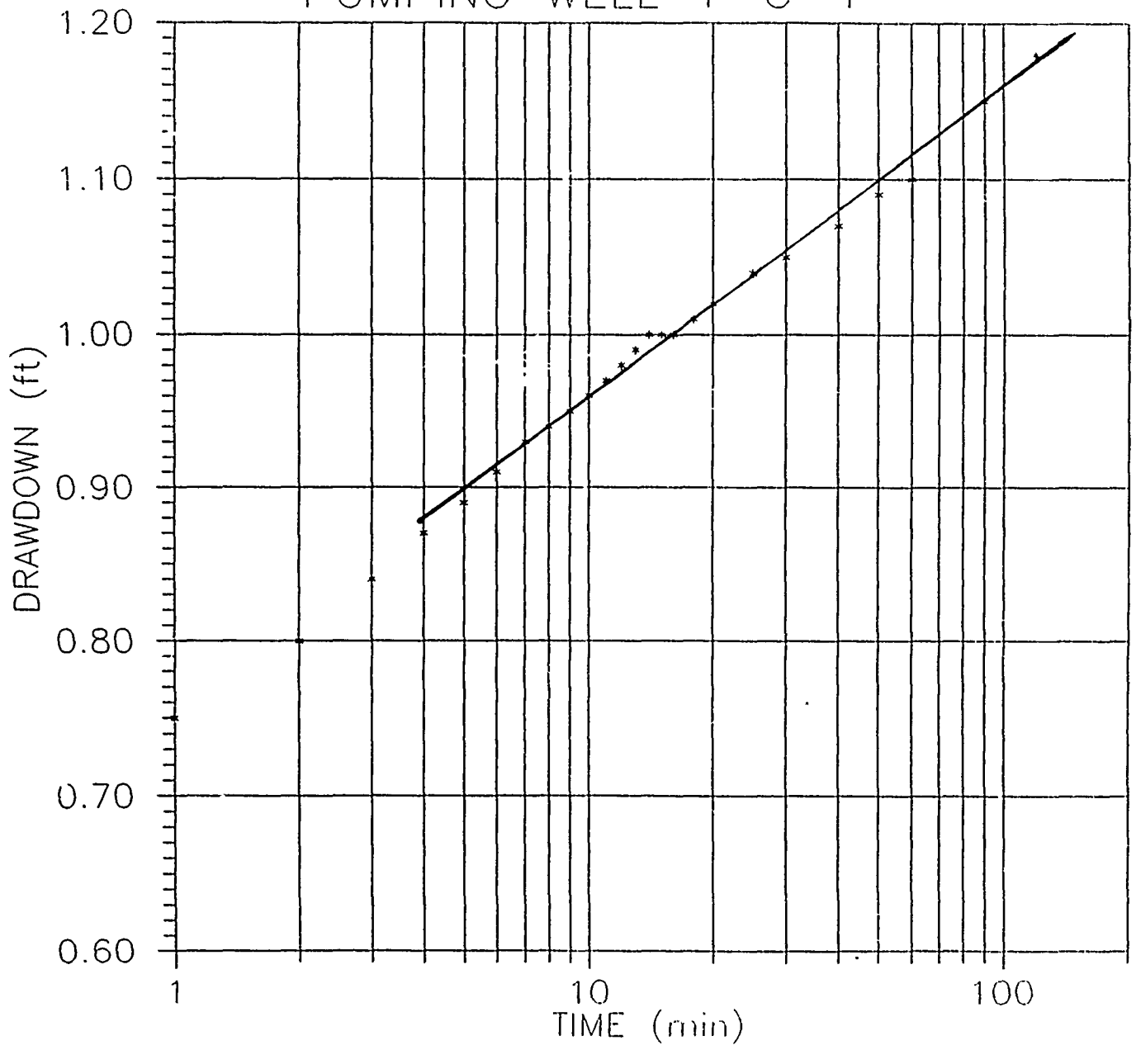
The plots of residual recovery versus time in the wells that were given slug tests are included in this appendix, together with the results.

SITE 1

WEST DRAINAGE DITCH

Pump Test Plots

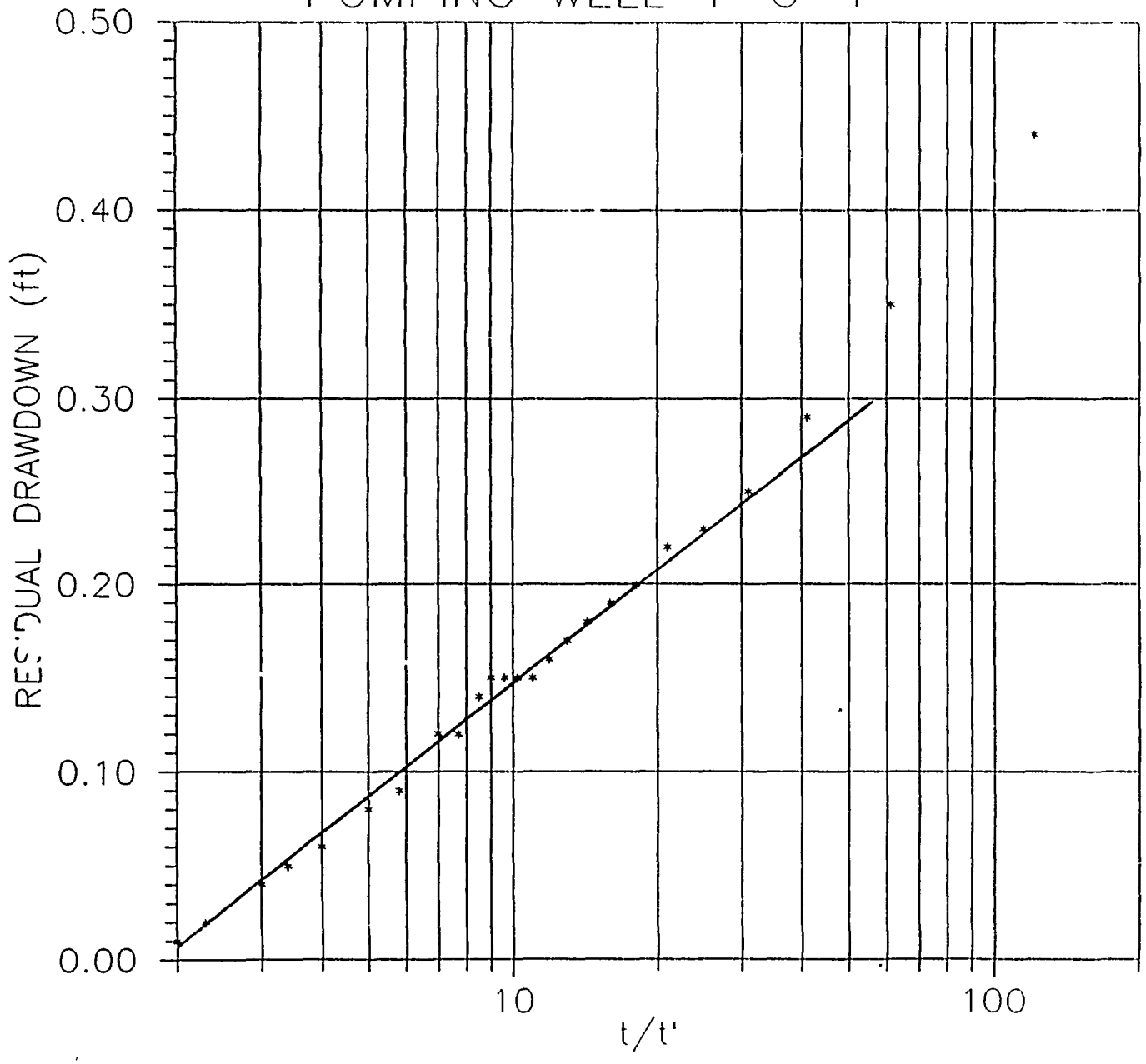
PUMP DRAWDOWN TEST: 1/26/89
PUMPING WELL 1-C-1



T = (264)(Q)/(ΔS)
= (264)(23.6 gpm)/(0.19 ft)
= 33,000 gpd/ft
= 4,400 ft^2/d

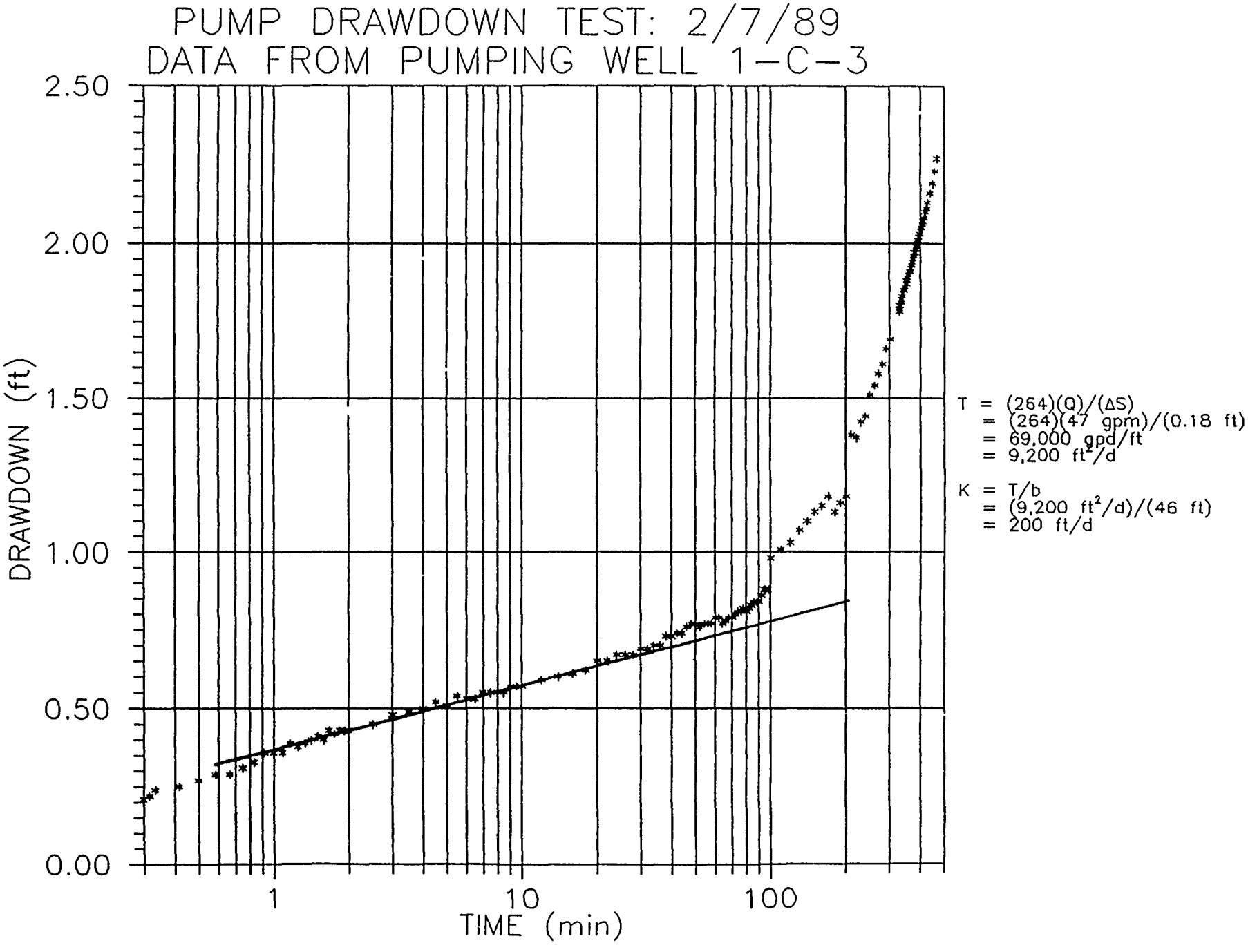
K = T/b
= (4,400 ft^2/d)/(12.4 ft)
= 350 ft/d

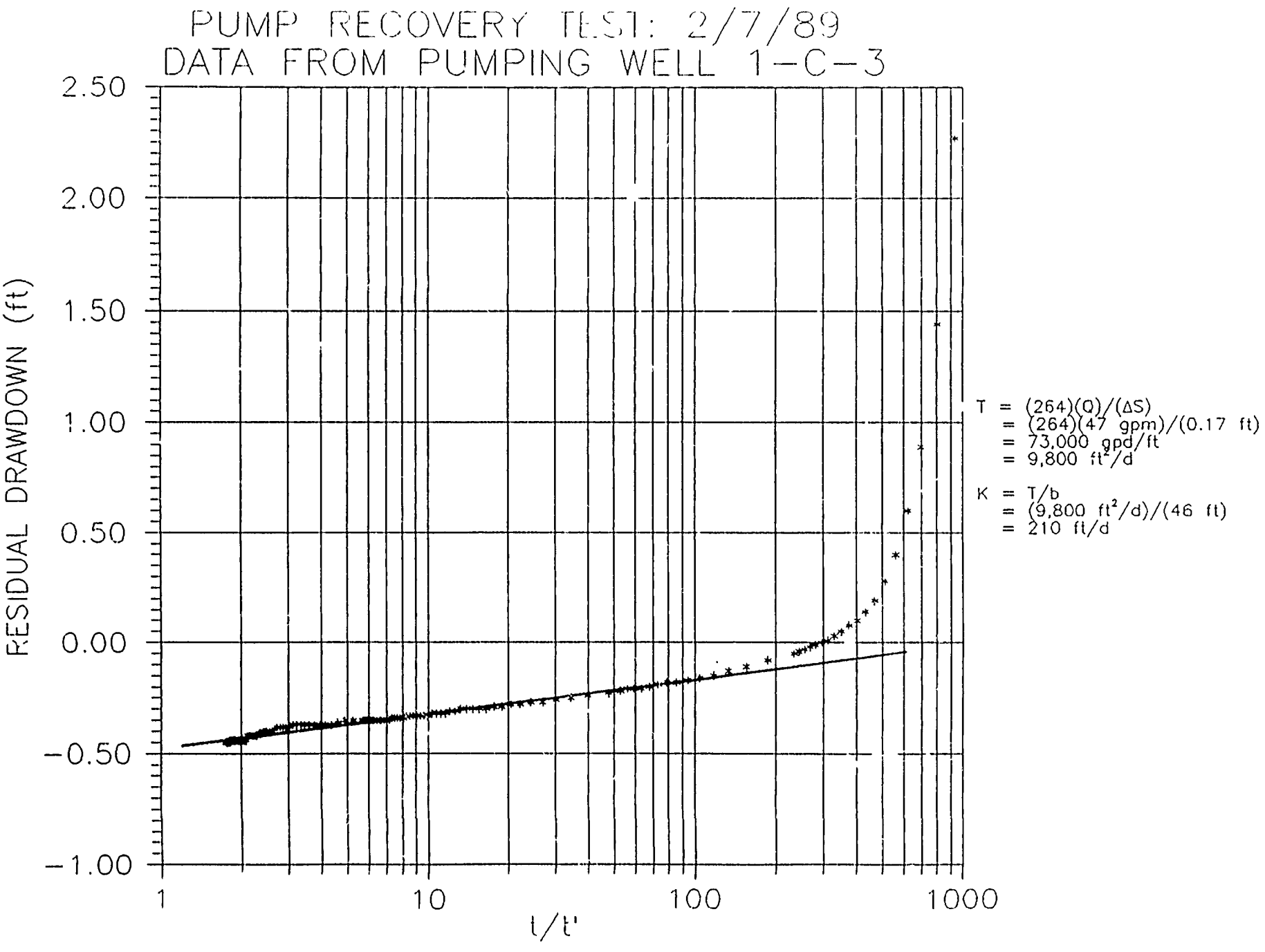
PUMP RECOVERY TEST: 1/26/89
PUMPING WELL 1-C-1

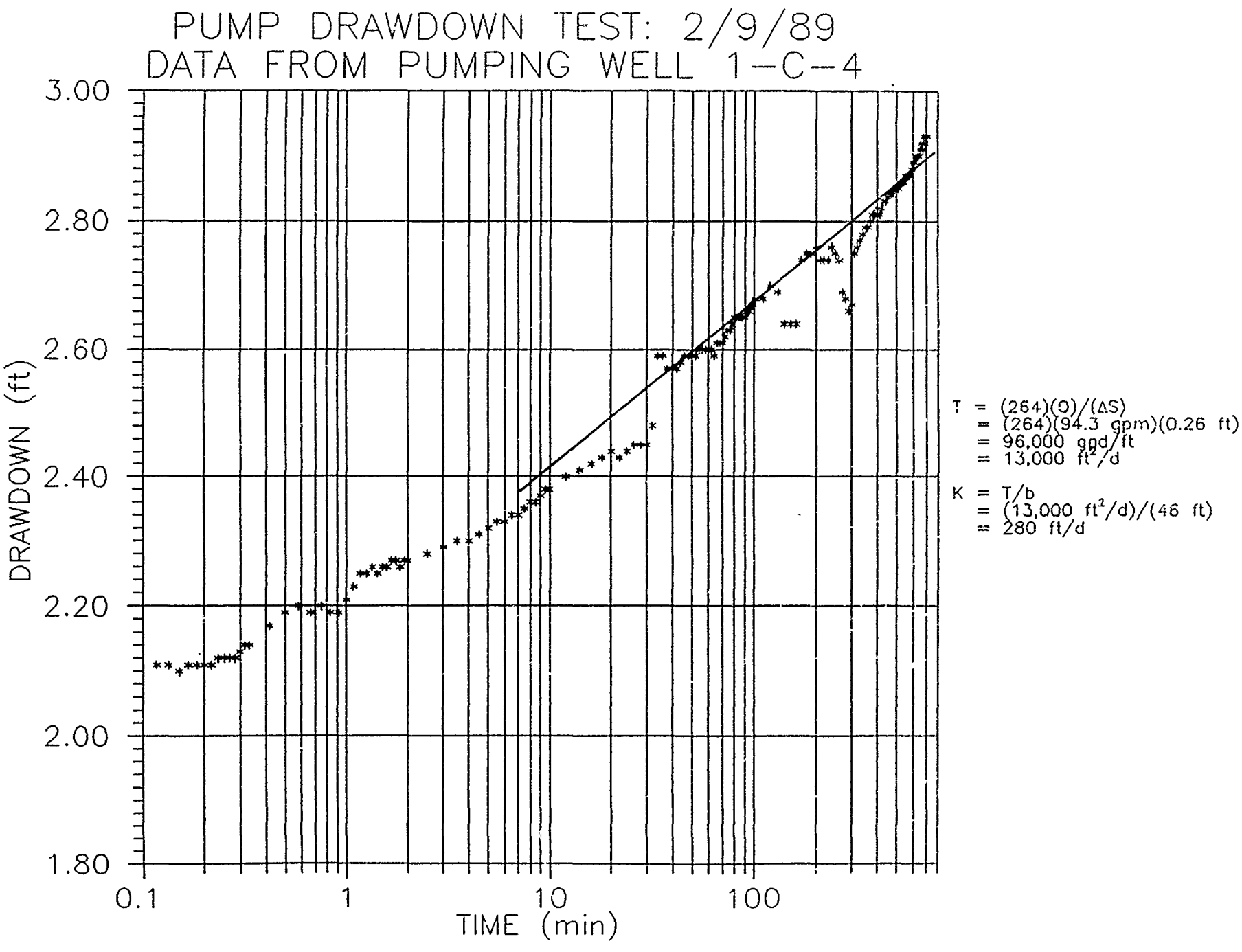


T = (264)(Q)/(ΔS)
= (264)(23.6 gpm)/(0.20 ft)
= 31,000 gpd/ft
= 4,200 ft^2/d

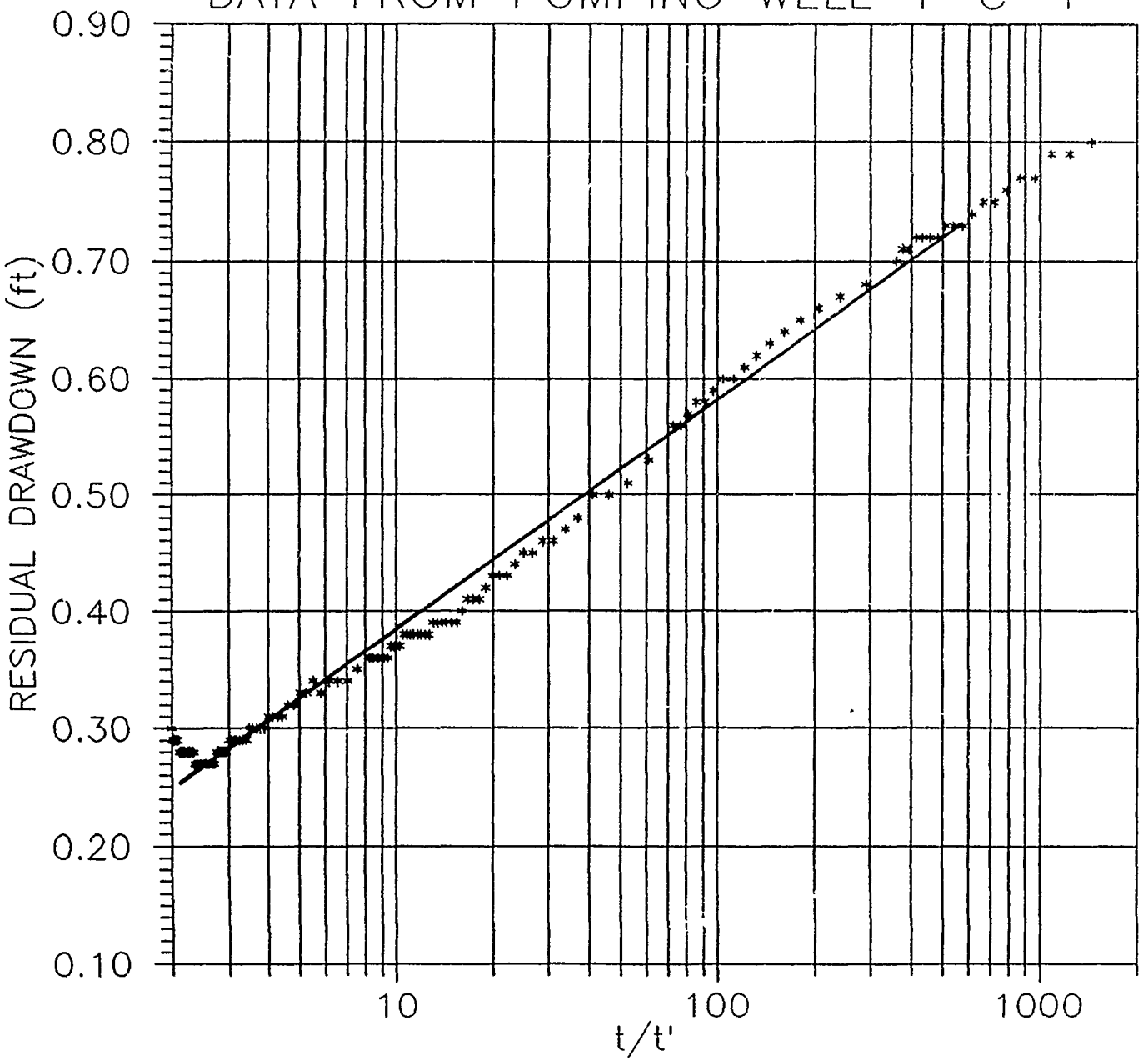
K = T/b
= (4,200 ft^2/d)/(12.4 ft)
= 340 ft/d


PUMP DRAWDOWN TEST: 2/7/89
DATA FROM PUMPING WELL 1-C-3
DRAWDOWN (ft)
2.50
2.00
1.50
1.00
0.50
0.00
1
10
100
TIME (min)
T = (264)(Q)/(ΔS)
= (264)(47 gpm)/(0.18 ft)
= 69,000 gpd/ft
= 9,200 ft²/d
K = T/b
= (9,200 ft²/d)/(46 ft)
= 200 ft/d


PUMP RECOVERY TEST: 2/7/89
DATA FROM PUMPING WELL 1-C-3
RESIDUAL DRAWDOWN (ft)
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
-1.00
1
10
100
1000
t/t'
T = (264)(Q)/(ΔS)
= (264)(47 gpm)/(0.17 ft)
= 73,000 gpd/ft
= 9,800 ft²/d
K = T/b
= (9,800 ft²/d)/(46 ft)
= 210 ft/d

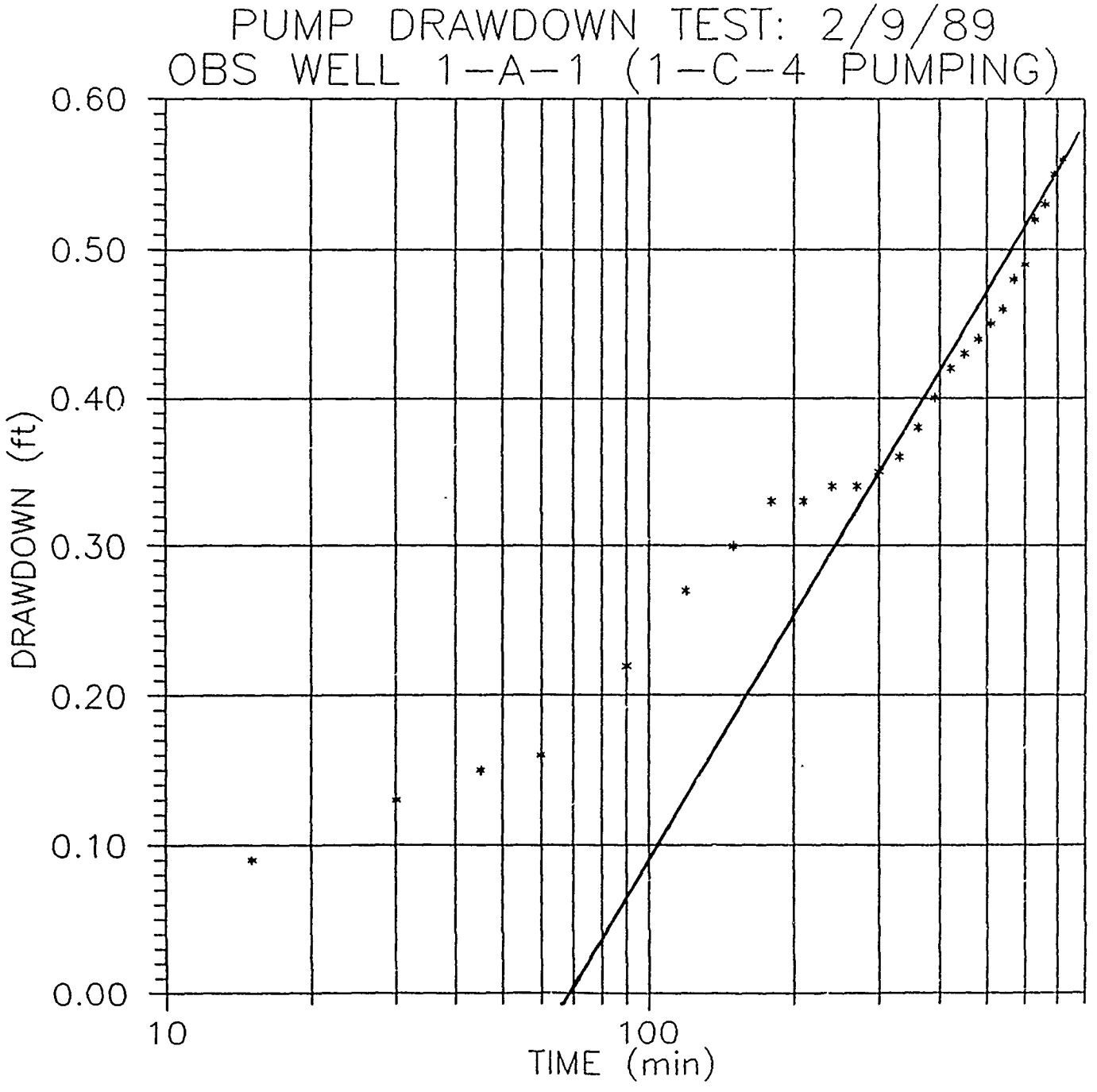

PUMP DRAWDOWN TEST: 2/9/89
DATA FROM PUMPING WELL 1-C-4
DRAWDOWN (ft)
3.00
2.80
2.60
2.40
2.20
2.00
1.80
0.1
1
10
100
TIME (min)
T = (264)(Q)/(ΔS)
= (264)(94.3 gpm)(0.26 ft)
= 96,000 gpd/ft
= 13,000 ft²/d
K = T/b
= (13,000 ft²/d)/(46 ft)
= 280 ft/d

PUMP RECOVERY TEST: 2/9/89
DATA FROM PUMPING WELL 1-C-4



T = (264)(Q)/(ΔS)
= (264)(94.3 gpm)(0.19 ft)
= 130,000 gpd/ft
= 18,000 ft²/d

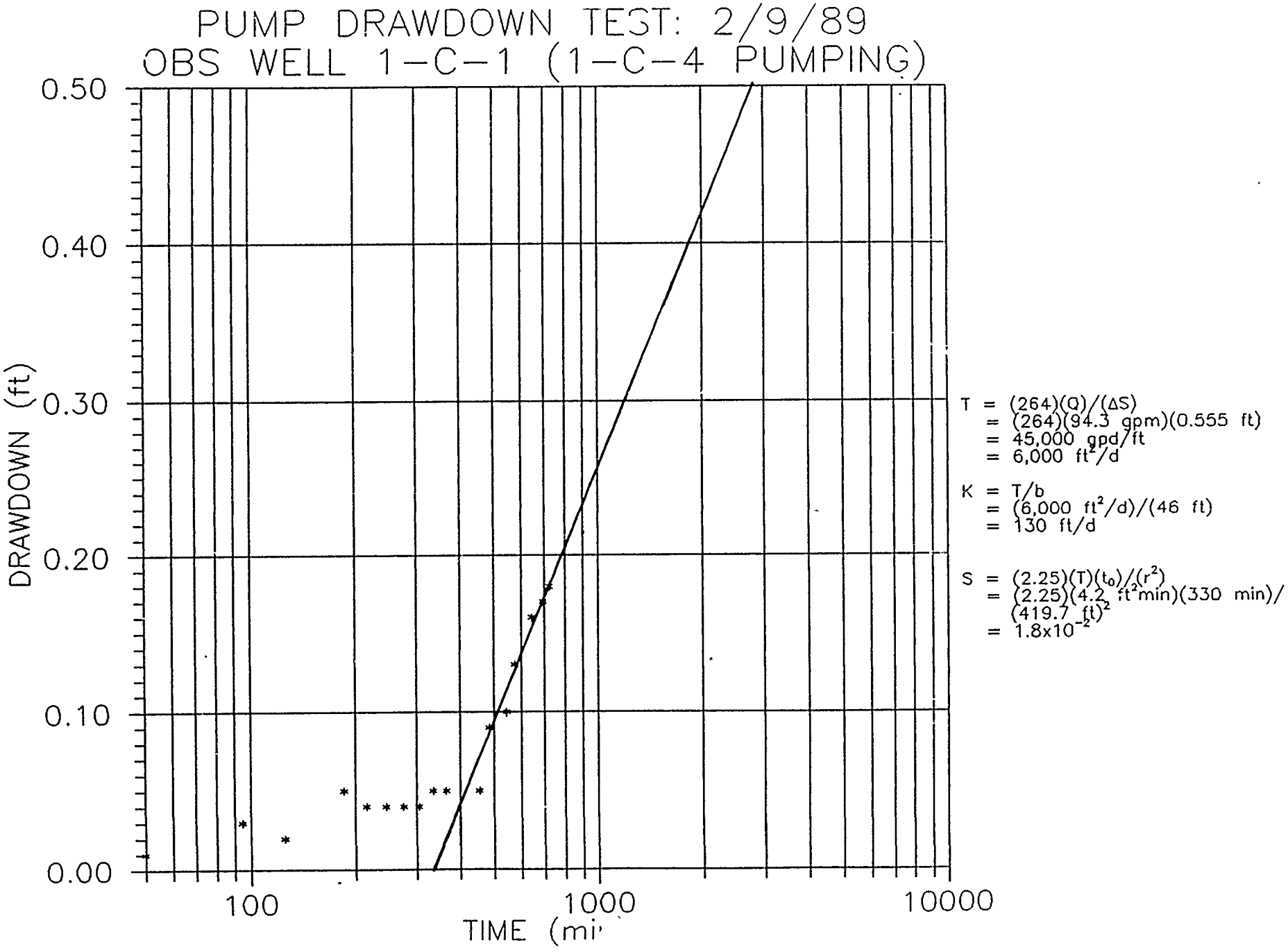
K = T/b
= (18,000 ft²/d)/(46 ft)
= 380 ft/d

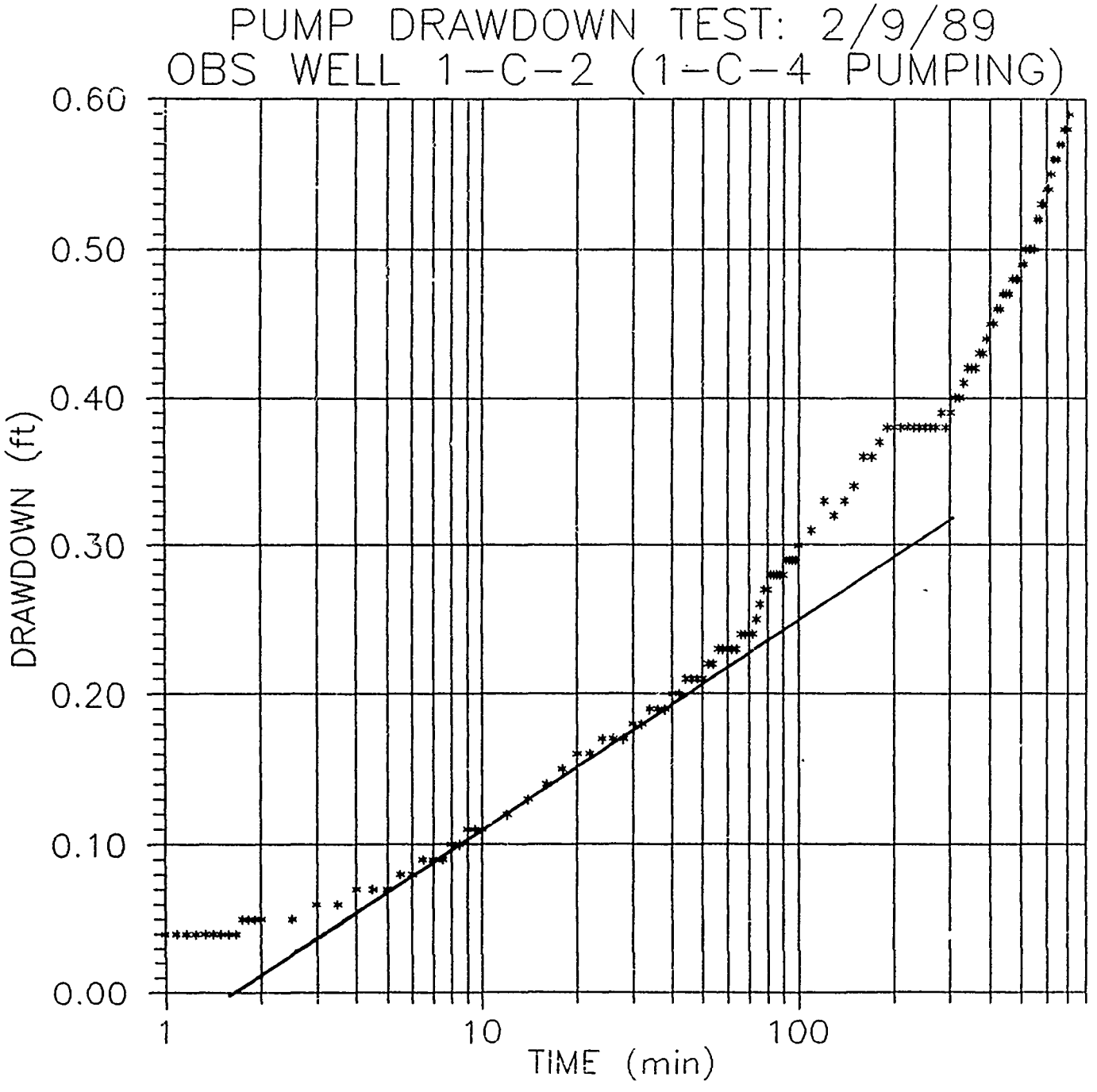


T = (264)(Q)/(ΔS)
= (264)(94.3 gpm)(0.535 ft)
= 47,000 gpd/ft
= 6,200 ft^2/d

K = T/b
= (6,200 ft^2/d)/(46 ft)
= 140 ft/d

S = $(2.25)(T)(t_o)/(r^2)$
= $(2.25)(4.3\ ft^2 min)(66\ min)/(96.8\ ft)^2$
= 6.8×10^{-2}

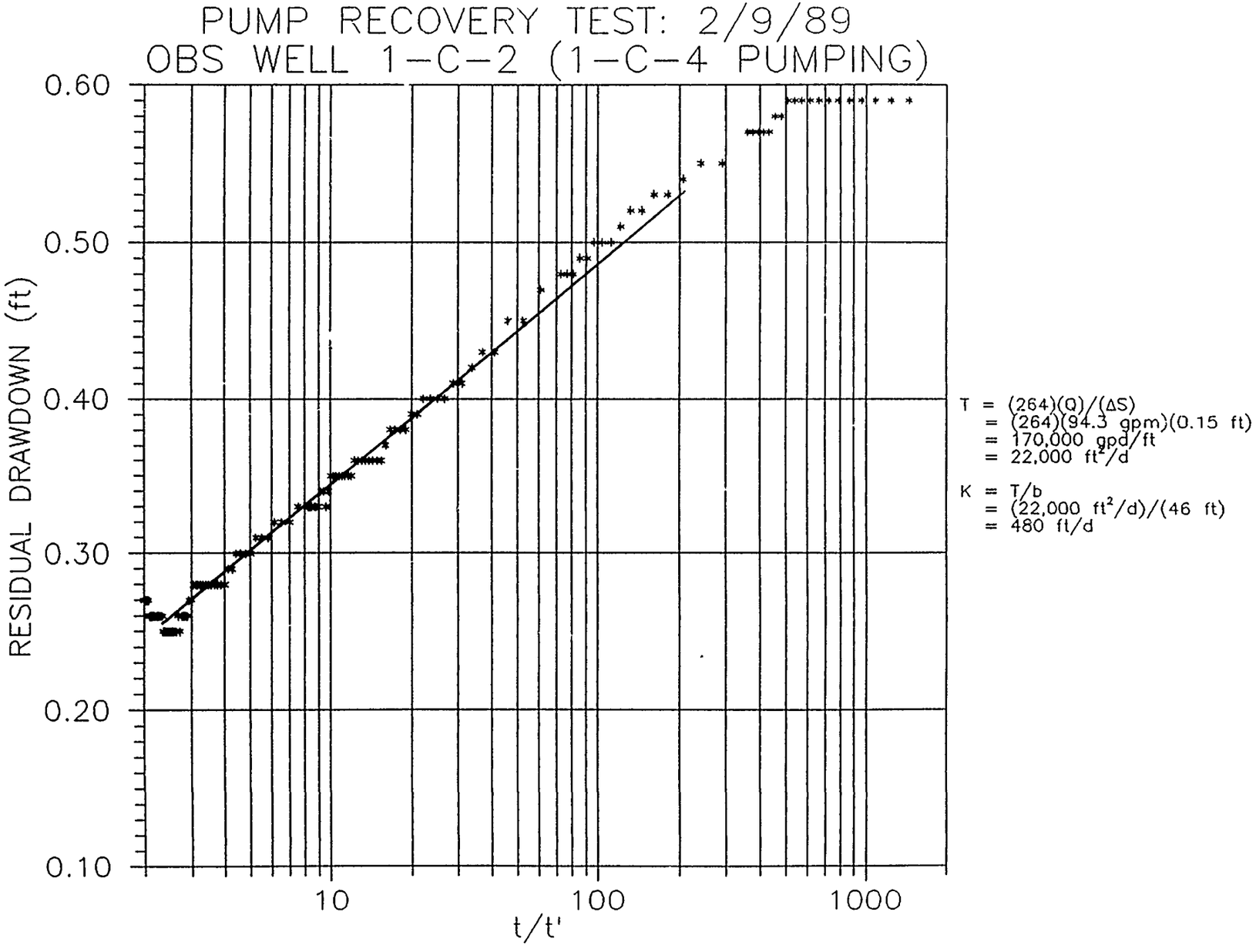

PUMP DRAWDOWN TEST: 2/9/89
OBS WELL 1-C-1 (1-C-4 PUMPING)
0.50
0.40
0.30
0.20
0.10
0.00
DRAWDOWN (ft)
100
1000
10000
TIME (mi
T = (264)(Q)/(ΔS)
= (264)(94.3 gpm)(0.555 ft)
= 45,000 gpd/ft
= 6,000 ft²/d
K = T/b
= (6,000 ft²/d)/(46 ft)
= 130 ft/d
S = (2.25)(T)(t₀)/(r²)
= (2.25)(4.2 ft²min)(330 min)/(419.7 ft)²
= 1.8x10⁻²

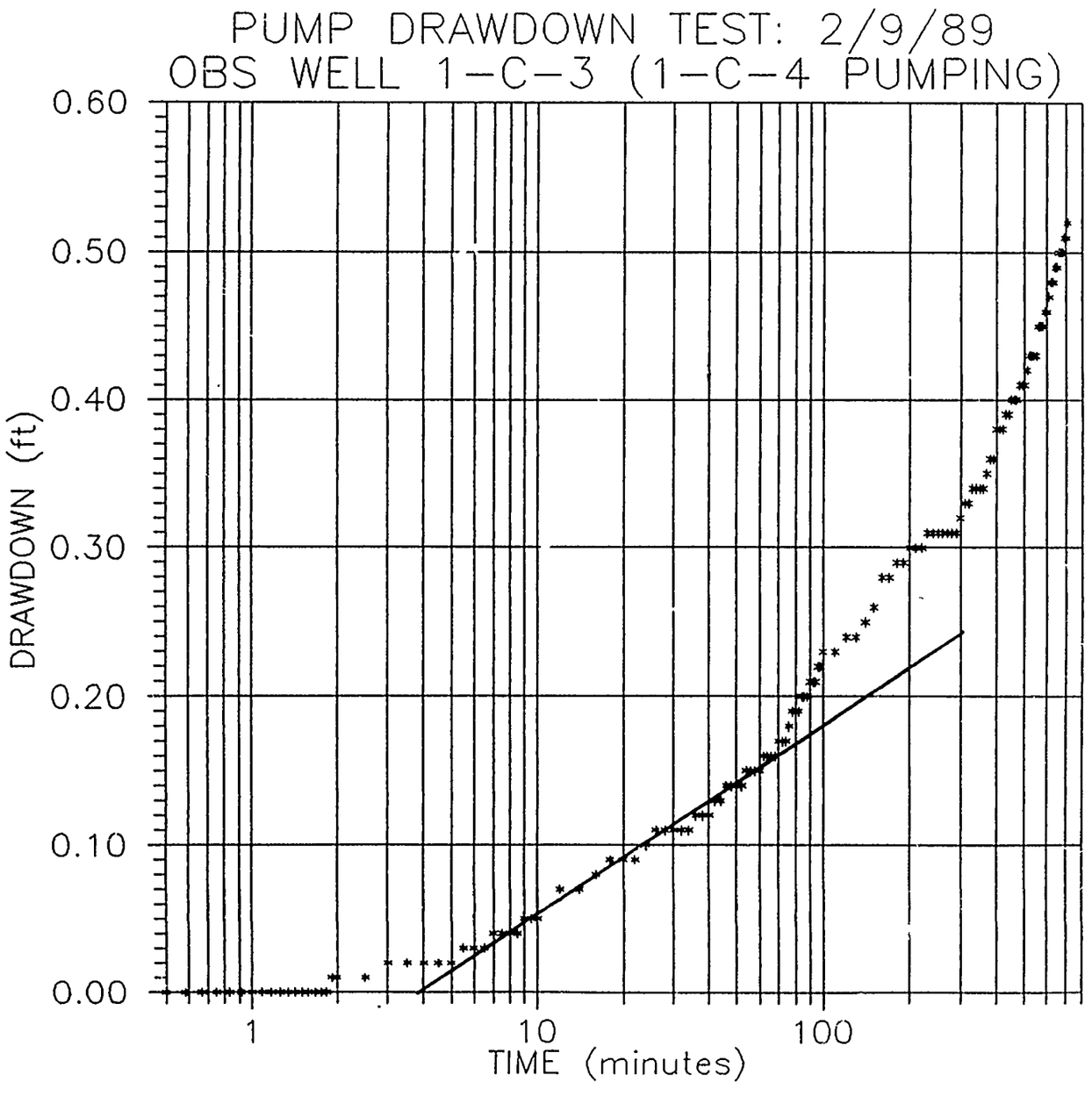


$T = (264)(Q)/(\Delta S)$
$= (264)(94.3\ gpm)(0.15\ ft)$
$= 170{,}000\ gpd/ft$
$= 22{,}000\ ft^2/d$

$K = T/b$
$= (22{,}000\ ft^2/d)/(46\ ft)$
$= 480\ ft/d$

$S = (2.25)(T)(t_0)/(r^2)$
$= (2.25)(15\ ft^2 min)(2\ min)/(86.7\ ft)^2$
$= 9.2 \times 10^{-3}$

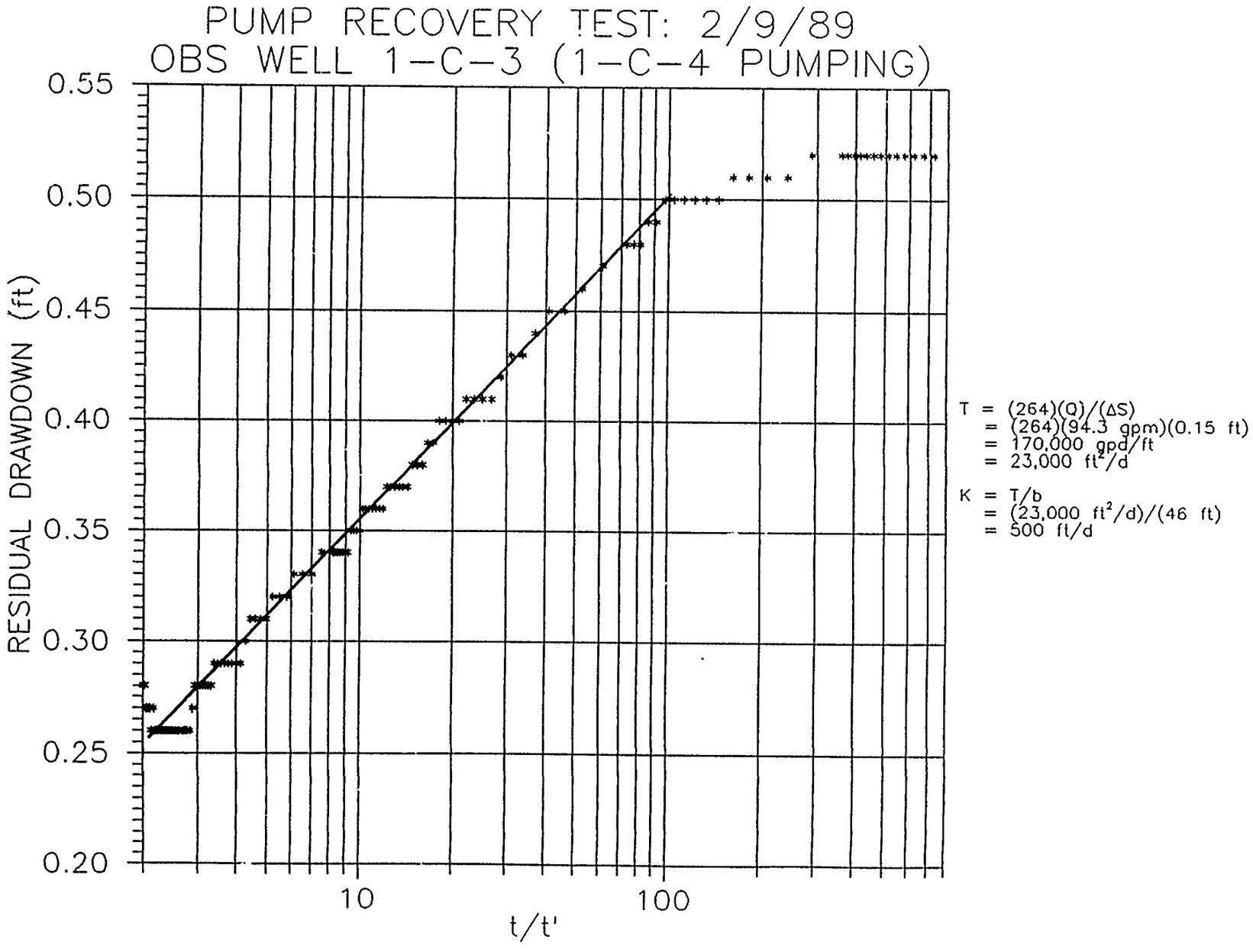

PUMP RECOVERY TEST: 2/9/89
OBS WELL 1-C-2 (1-C-4 PUMPING)
RESIDUAL DRAWDOWN (ft)
0.60
0.50
0.40
0.30
0.20
0.10
10
100
1000
t/t'
T = (264)(Q)/(ΔS)
= (264)(94.3 gpm)(0.15 ft)
= 170,000 gpd/ft
= 22,000 ft²/d
K = T/b
= (22,000 ft²/d)/(46 ft)
= 480 ft/d



$T = (264)(Q)/(\Delta S)$
$= (264)(94.3\ gpm)(0.13\ ft)$
$= 190{,}000\ gpd/ft$
$= 26{,}000\ ft^2/d$

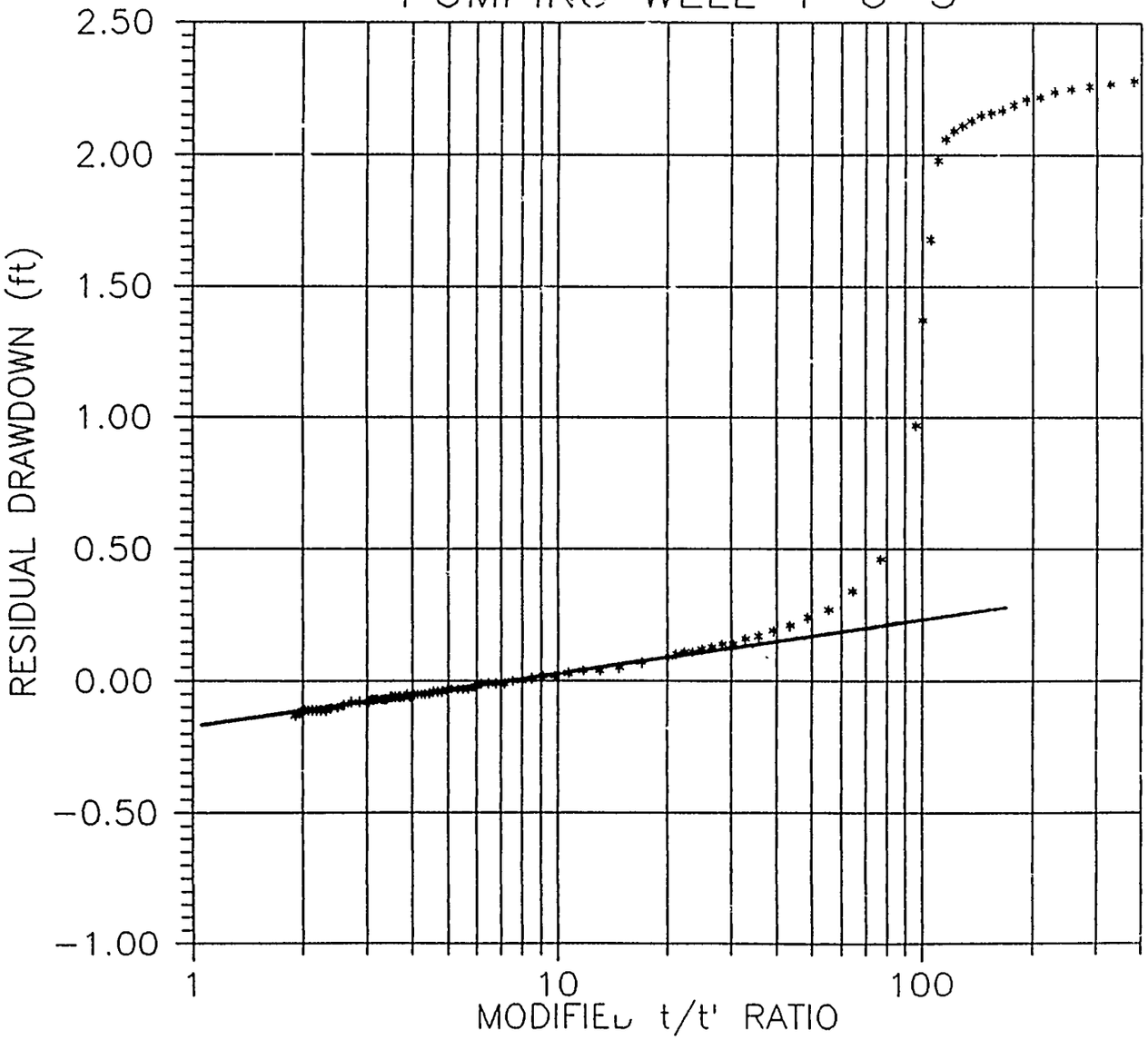
$K = T/b$
$= (26{,}000\ ft^2/d)/(46\ ft)$
$= 560\ ft/d$

$S = (2.25)(T)(t_0)/(r^2)$
$= (2.25)(18\ ft^2 min)(4\ min)/(93.9\ ft)^2$
$= 1.8 \times 10^{-2}$


PUMP RECOVERY TEST: 2/9/89
OBS WELL 1-C-3 (1-C-4 PUMPING)
RESIDUAL DRAWDOWN (ft)
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
10
100
t/t'
T = (264)(Q)/(ΔS)
= (264)(94.3 gpm)(0.15 ft)
= 170,000 gpd/ft
= 23,000 ft²/d
K = T/b
= (23,000 ft²/d)/(46 ft)
= 500 ft/d

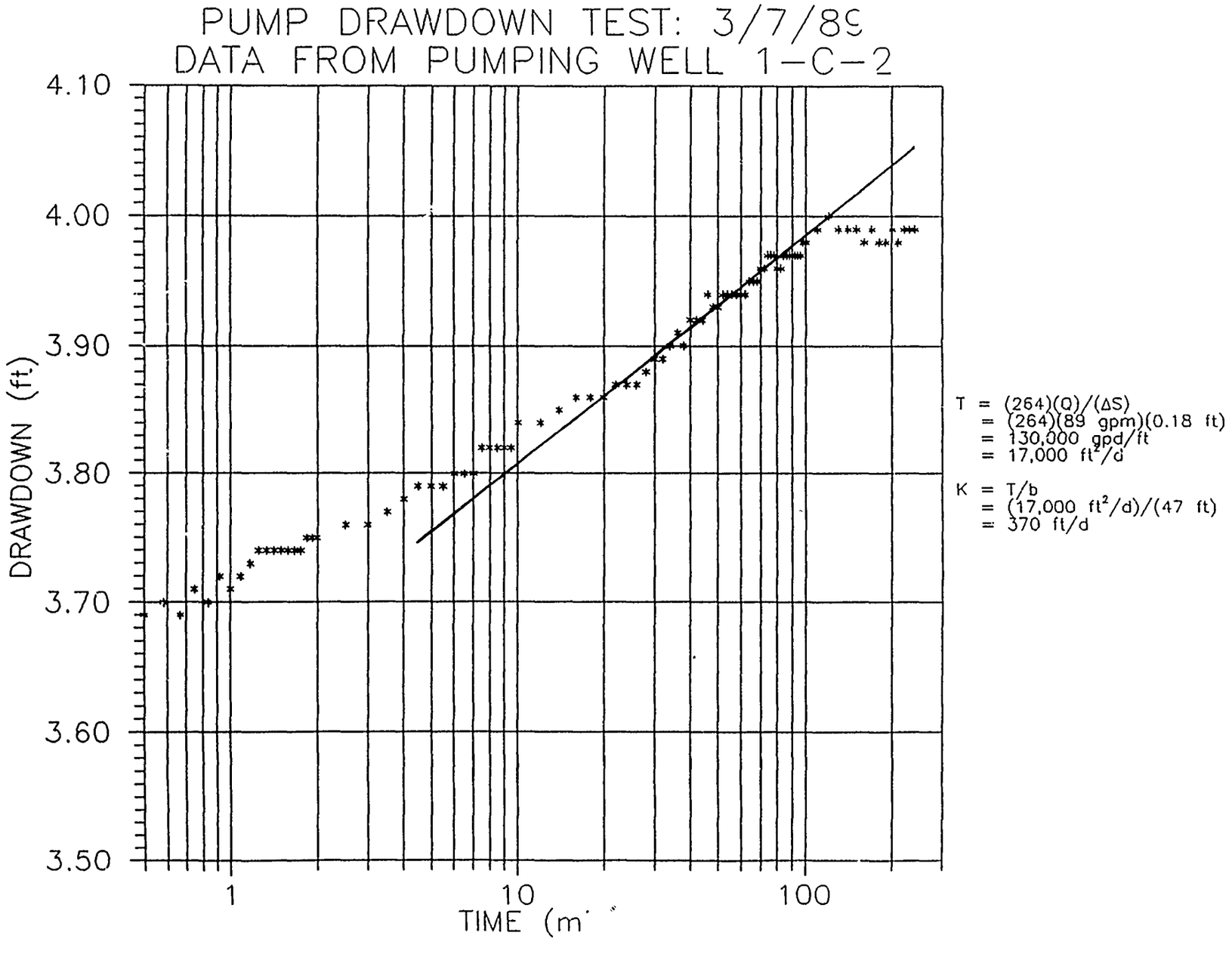
t/t'

RECOVERY OF STEP DRAWDOWN TEST: 3/6/89
PUMPING WELL 1-C-5



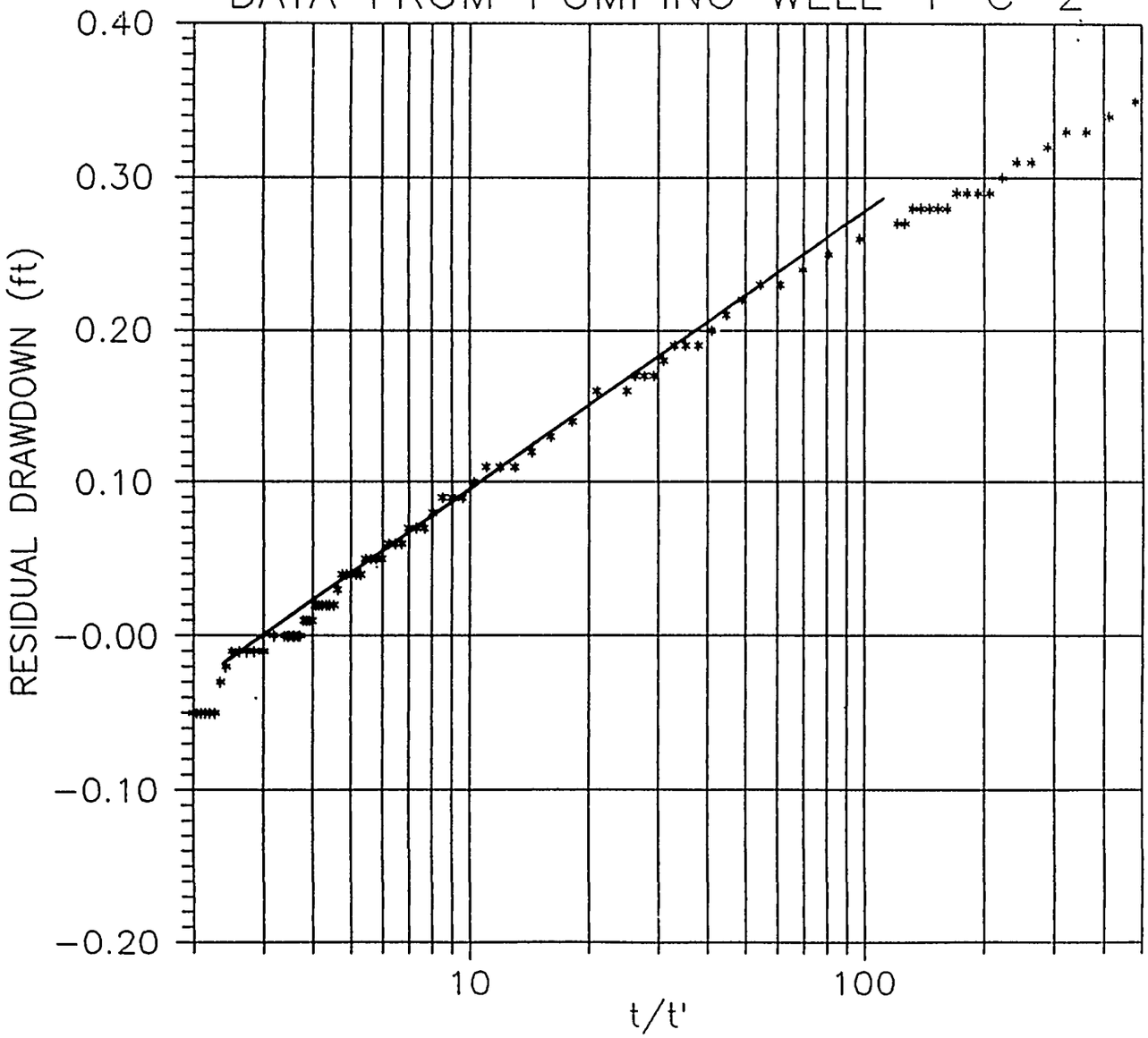
T = (264)(Q)/(ΔS)
= (264)(56 gpm)(0.175 ft)
= 84,000 gpd/ft
= 11,000 ft²/d

K = T/b
= (11,000 ft²/d)/(47 ft)
= 240 ft/d


PUMP DRAWDOWN TEST: 3/7/89
DATA FROM PUMPING WELL 1-C-2
DRAWDOWN (ft)
4.10
4.00
3.90
3.80
3.70
3.60
3.50
1
10
100
TIME (m
T = (264)(Q)/(ΔS)
= (264)(89 gpm)(0.18 ft)
= 130,000 gpd/ft
= 17,000 ft²/d
K = T/b
= (17,000 ft²/d)/(47 ft)
= 370 ft/d

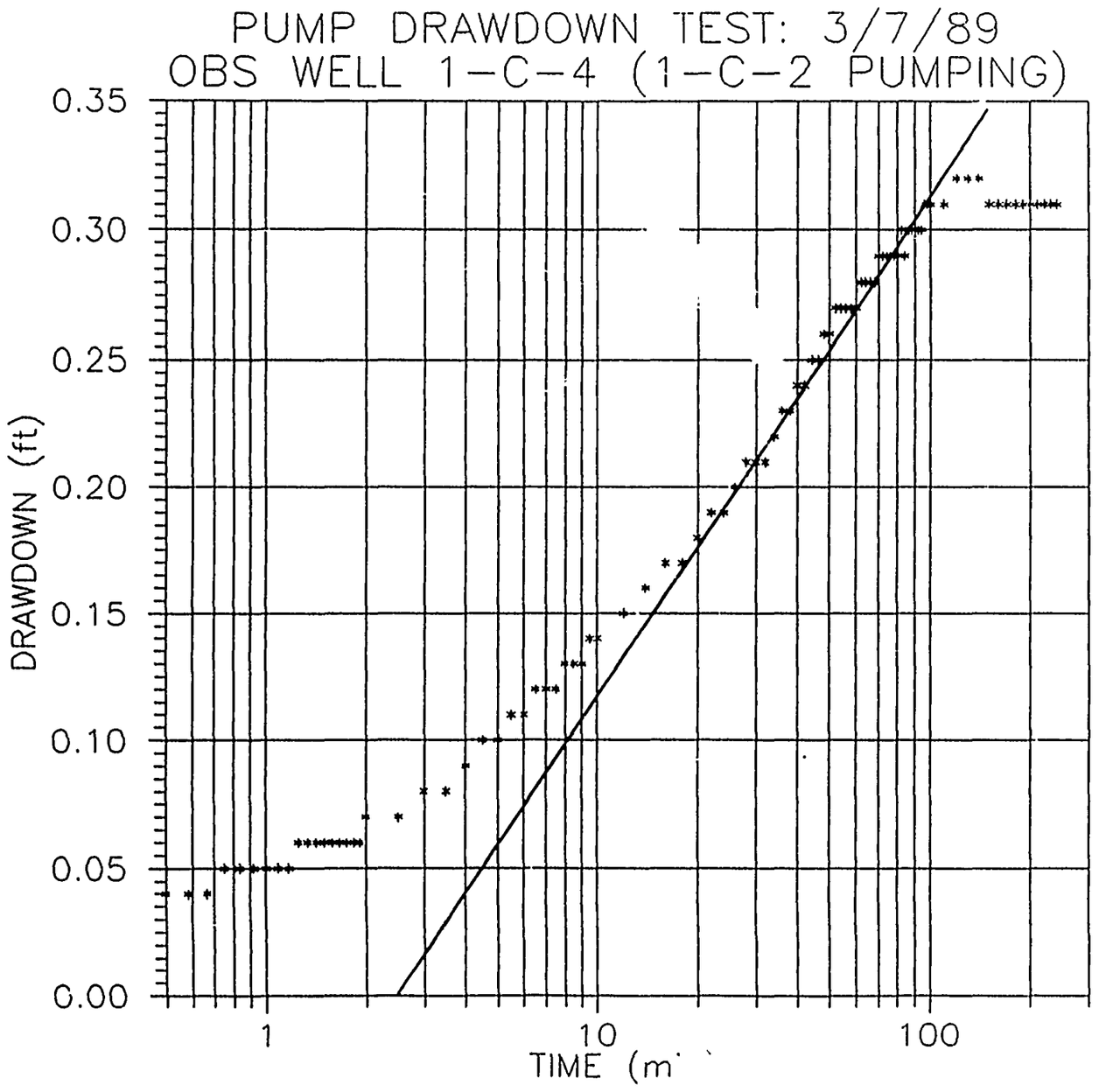
TIME (m

PUMP RECOVERY TEST: 3/7/89
DATA FROM PUMPING WELL 1-C-2



T = (264)(Q)/(ΔS)
= (264)(89 gpm)(0.19 ft)
= 120,000 gpd/ft
= 16,000 ft²/d

K = T/b
= (16,000 ft²/d)/(47 ft)
= 350 ft/d

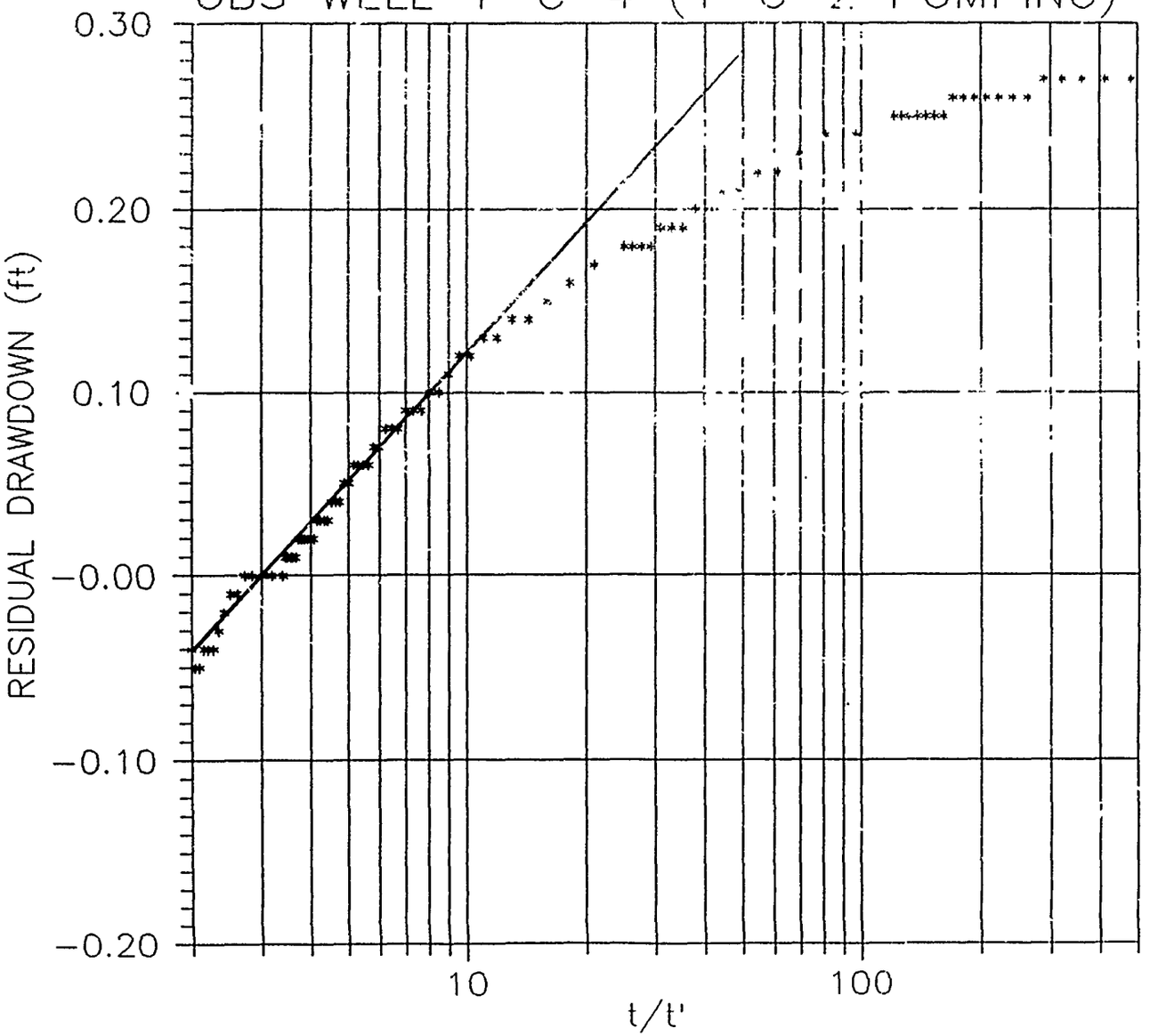


T = (264)(Q)/(ΔS)
= (264)(89 gpm)(0.20 ft)
= 120,000 gpd/ft
= 16,000 ft^2/d

K = T/b
= (16,000 ft^2/d)/(47 ft)
= 330 ft/d

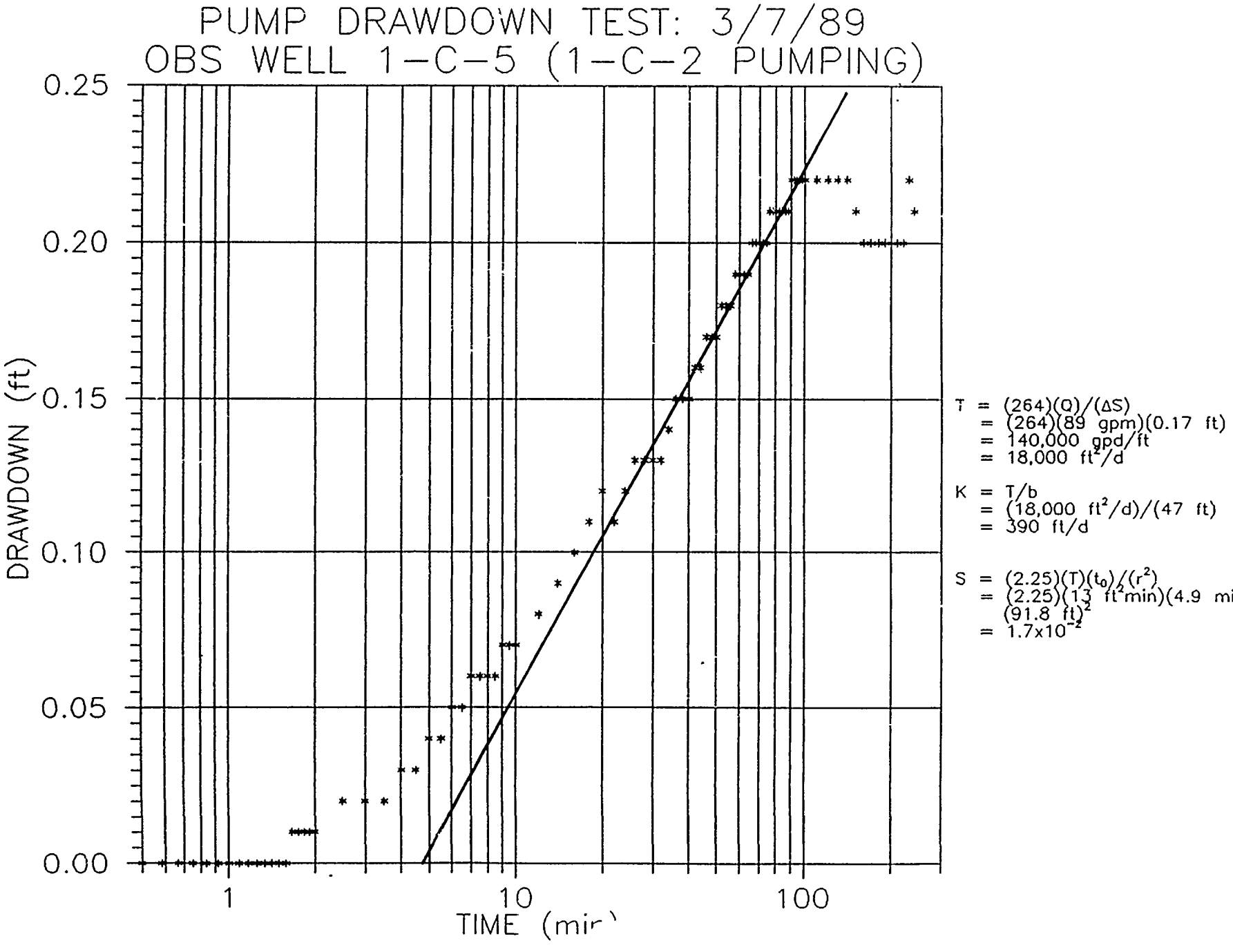
S = $(2.25)(T)(t_o)/(r^2)$
= $(2.25)(11\ ft^2 min)(2.4\ min)/(86.7\ ft)^2$
= 8.0×10^{-3}

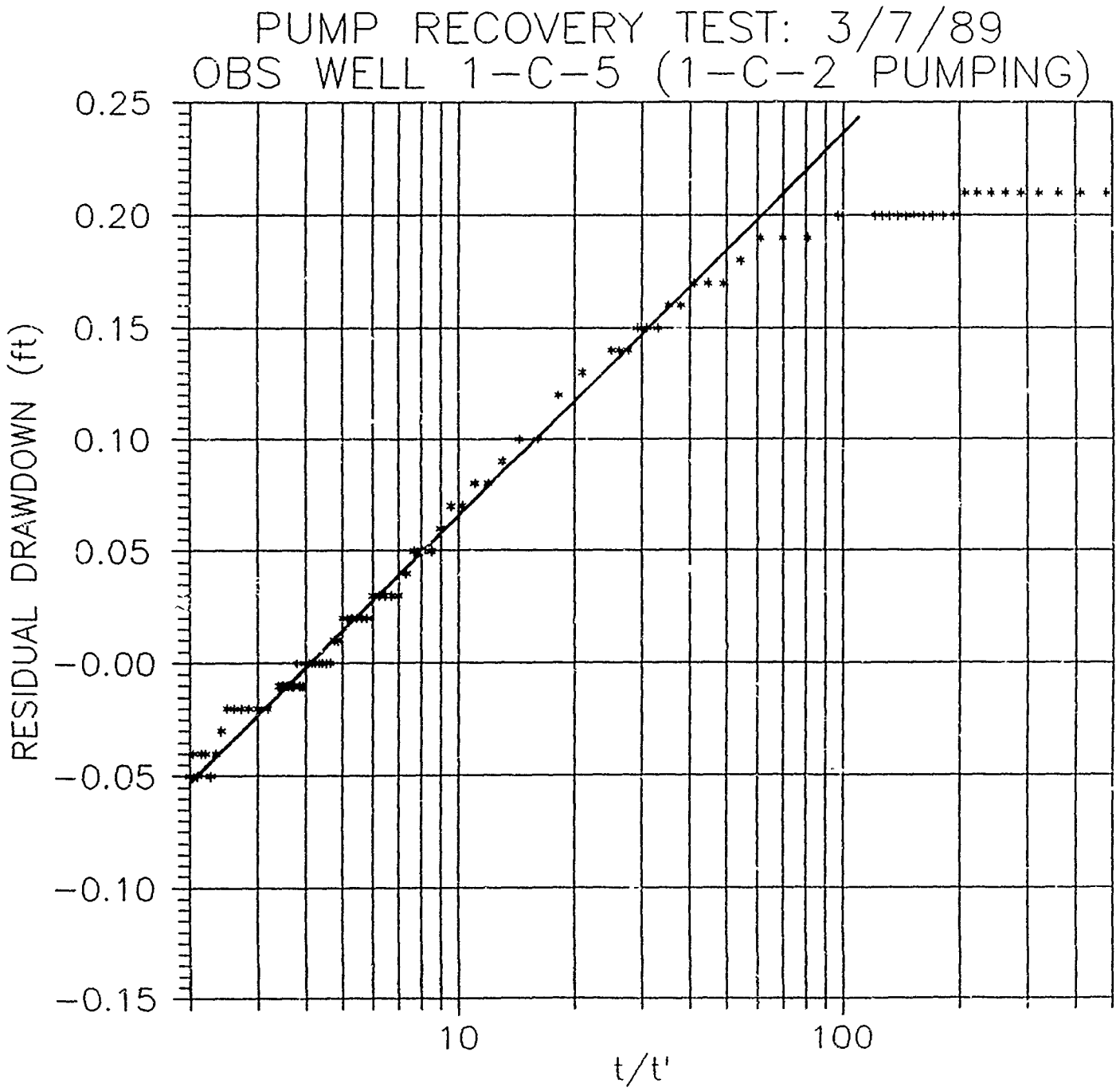
PUMP RECOVERY TEST: 3/7/89
OBS WELL 1-C-4 (1-C-2 PUMPING)



T = (264)(Q)/(ΔS)
= (264)(89 gpm)(0.22 ft)
= 110,000 gpd/ft
= 14,000 ft²/d

K = T/b
= (14,000 ft²/d)/(47 ft)
= 300 ft/d


PUMP DRAWDOWN TEST: 3/7/89
OBS WELL 1-C-5 (1-C-2 PUMPING)
DRAWDOWN (ft)
0.25
0.20
0.15
0.10
0.05
0.00
1
10
100
TIME (min)
T = (264)(Q)/(ΔS)
= (264)(89 gpm)(0.17 ft)
= 140,000 gpd/ft
= 18,000 ft²/d
K = T/b
= (18,000 ft²/d)/(47 ft)
= 390 ft/d
S = (2.25)(T)(t₀)/(r²)
= (2.25)(13 ft²min)(4.9 min)/(91.8 ft)²
= 1.7x10⁻²



$T = (264)(Q)/(\Delta S)$
$= (264)(89\ gpm)(0.17\ ft)$
$= 140{,}000\ gpd/ft$
$= 18{,}000\ ft^2/d$

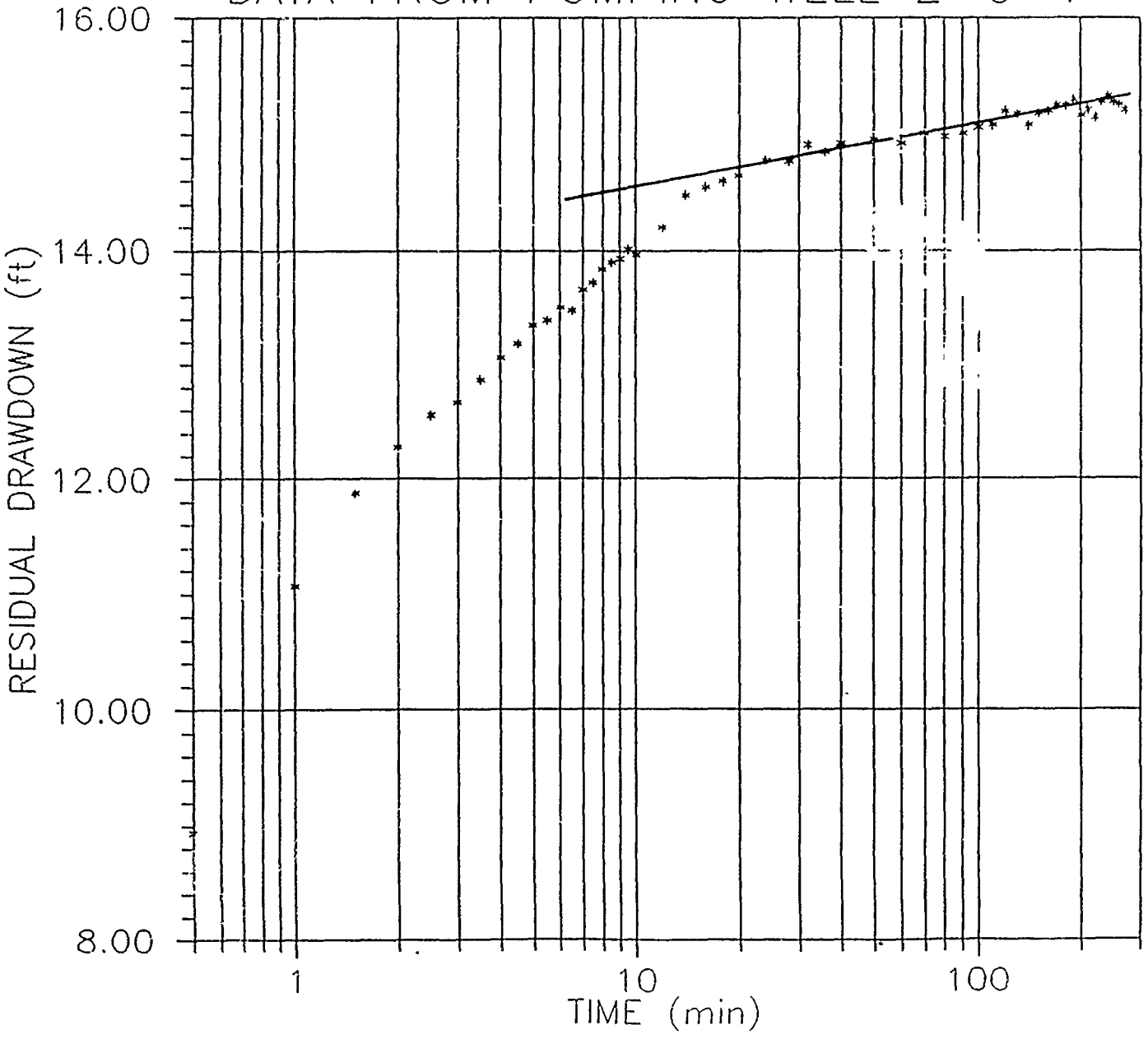
$K = T/b$
$= (18{,}000\ ft^2/d)/(47\ ft)$
$= 390\ ft/d$

SITE 2

PHOTOWASTE WATER TREATMENT PLANT,
INJECTION WELL, AND SLUDGE BASINS

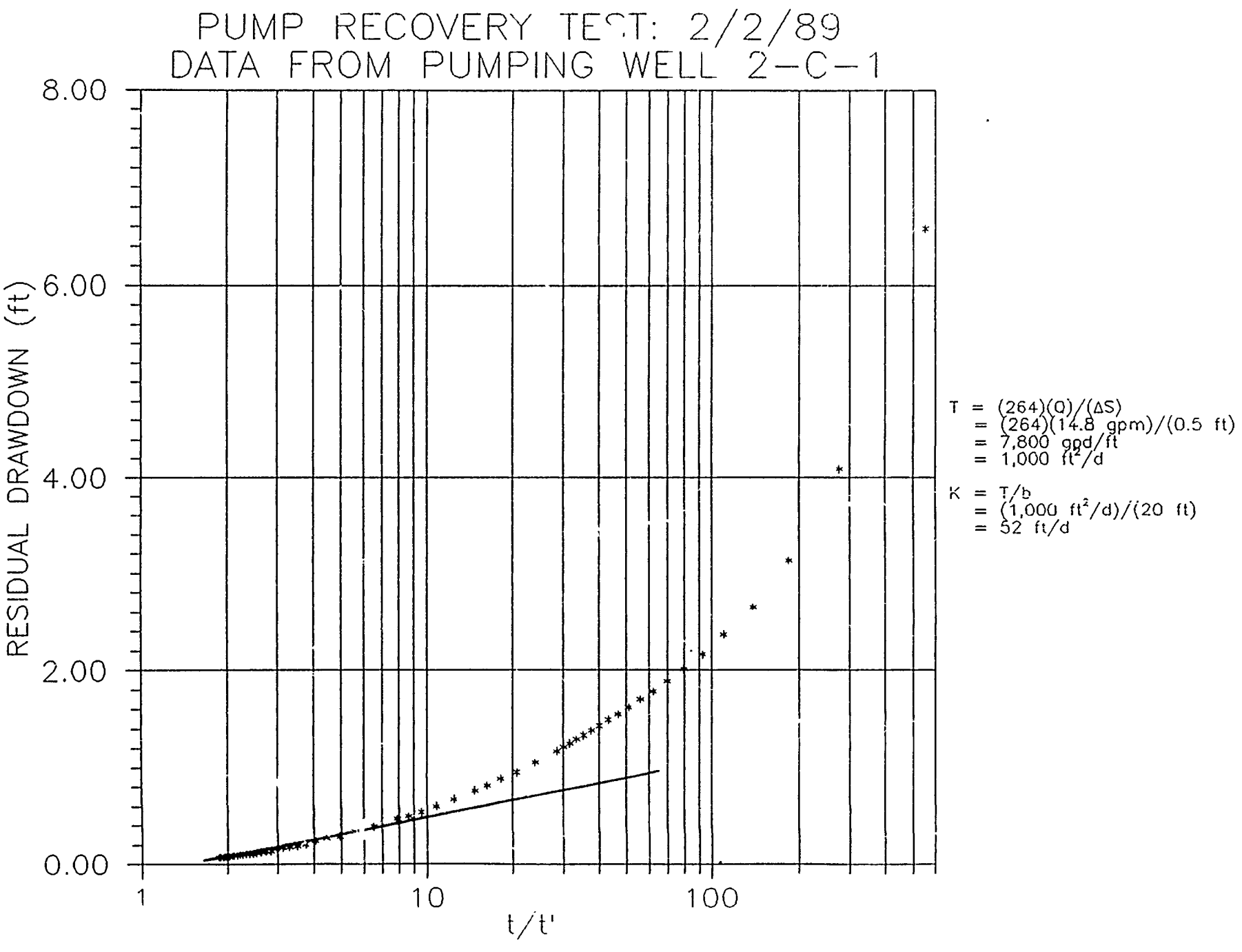
Pump Test Plots

PUMP DRAWDOWN TEST: 2/2/89
DATA FROM PUMPING WELL 2-C-1



T = (264)(Q)/(ΔS)
= (264)(14.8 gpm)/(0.5 ft)
= 7,800 gpd/ft
= 1,000 ft^2/d

K = T/b
= (1,000 ft^2/d)/(20 ft)
= 52 ft/d

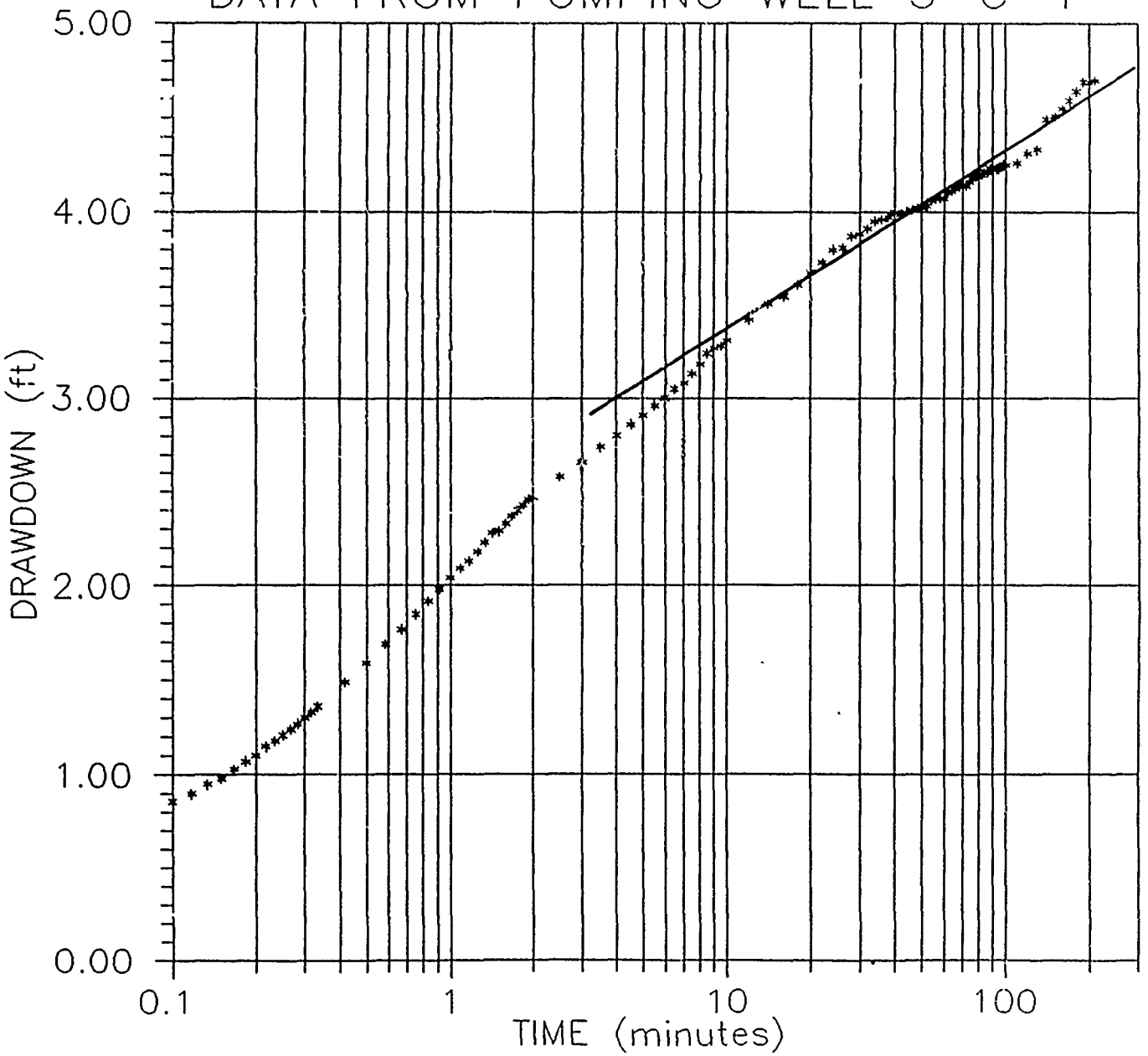

PUMP RECOVERY TEST: 2/2/89
DATA FROM PUMPING WELL 2-C-1
RESIDUAL DRAWDOWN (ft)
8.00
6.00
4.00
2.00
0.00
1
10
100
t/t'
T = (264)(Q)/(ΔS)
= (264)(14.8 gpm)/(0.5 ft)
= 7,800 gpd/ft
= 1,000 ft²/d
K = T/b
= (1,000 ft²/d)/(20 ft)
= 52 ft/d

SITE 3

FIRE PROTECTION TRAINING AREA

Pump Test Plots

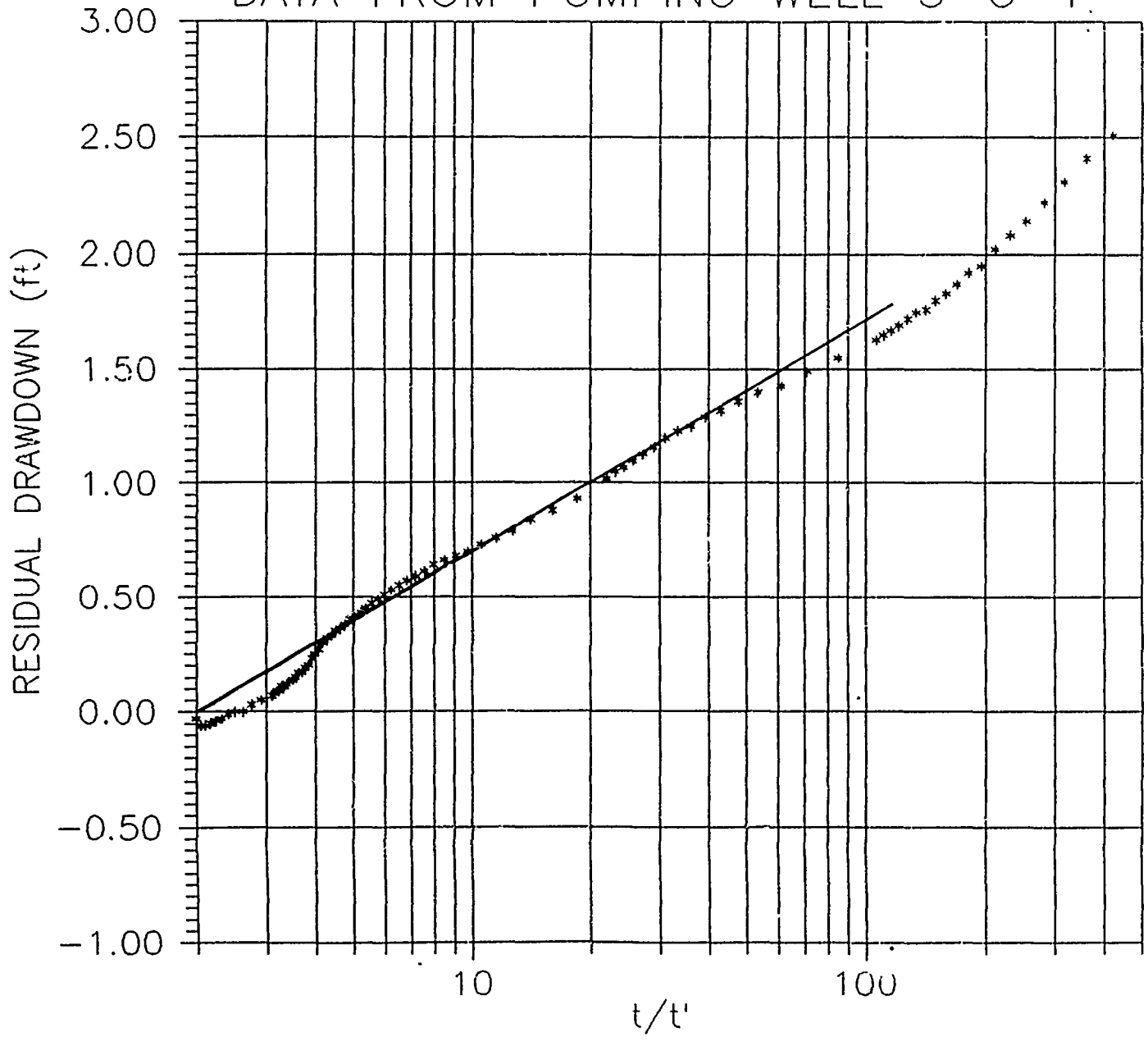
PUMP DRAWDOWN TEST: 3/10/89
DATA FROM PUMPING WELL 3-C-1



T = (264)(Q)/(ΔS)
= (264)(8.2 gpm)/(0.9 ft)
= 2,400 gpd/ft
= 320 ft^2/d

K = T/b
= (2,400 ft^2/d)/(14 ft)
= 23 ft/d

PUMP RECOVERY TEST: 3/10/89
DATA FROM PUMPING WELL 3-C-1



T = (264)(Q)/(ΔS)
= (264)(8.2 gpm)/(1.0 ft)
= 2,200 gpd/ft
= 290 ft^2/d

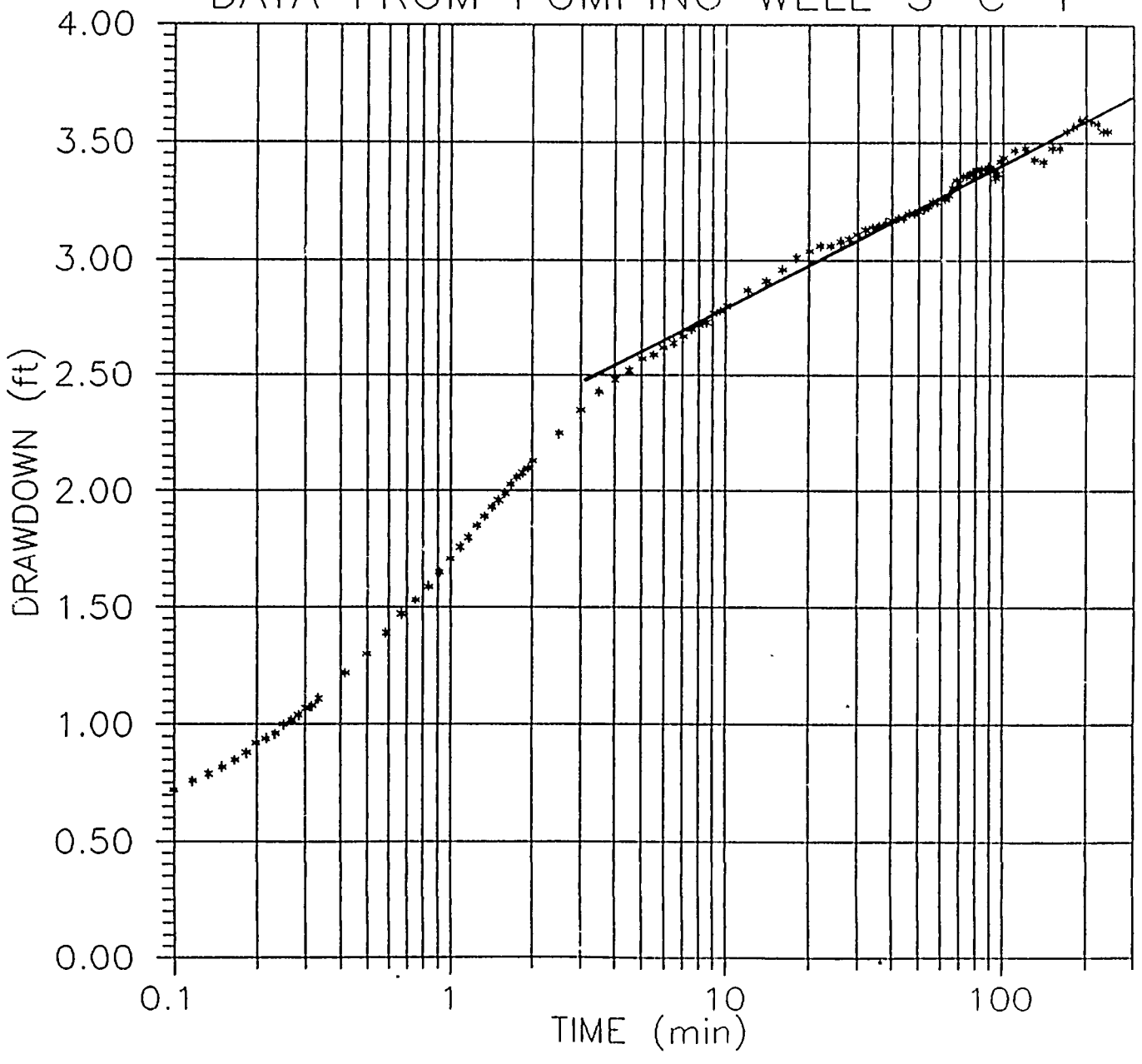
K = T/b
= (2,200 ft^2/d)/(14 ft)
= 21 ft/d

SITE 5

SR-71 SHELTERS DRAINAGE AREA

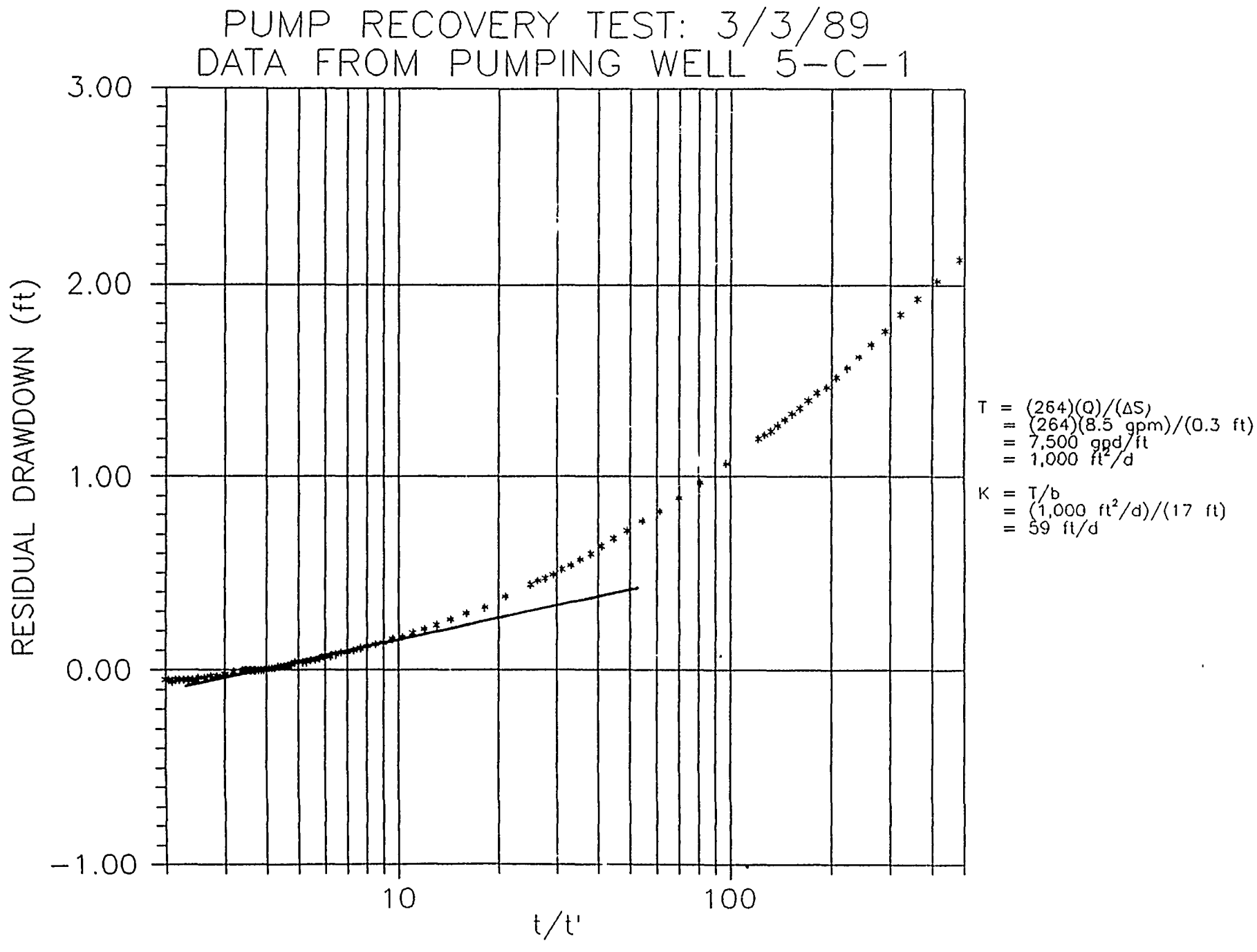
Pump Test Plots

PUMP DRAWDOWN TEST: 3/3/89
DATA FROM PUMPING WELL 5-C-1



T = (264)(Q)/(ΔS)
= (264)(8.5 gpm)/(0.6 ft)
= 3,700 gpd/ft
= 500 ft^2/d

K = T/b
= (500 ft^2/d)/(17 ft)
= 29 ft/d

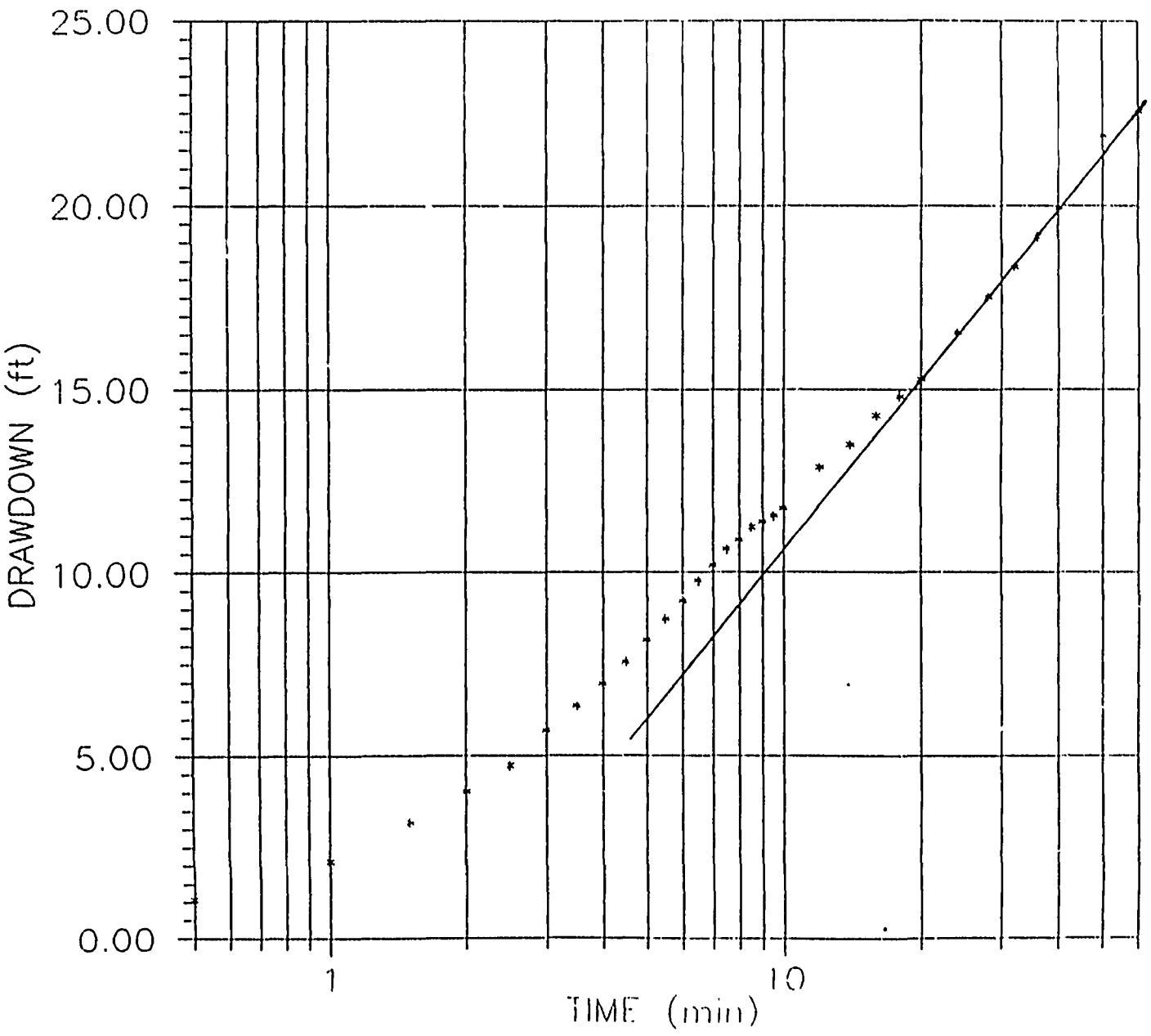

PUMP RECOVERY TEST: 3/3/89
DATA FROM PUMPING WELL 5-C-1
RESIDUAL DRAWDOWN (ft)
3.00
2.00
1.00
0.00
-1.00
10
100
t/t'
T = (264)(Q)/(ΔS)
= (264)(8.5 gpm)/(0.3 ft)
= 7,500 gpd/ft
= 1,000 ft²/d
K = T/b
= (1,000 ft²/d)/(17 ft)
= 59 ft/d

SITE 6

LANDFILL NO. 2

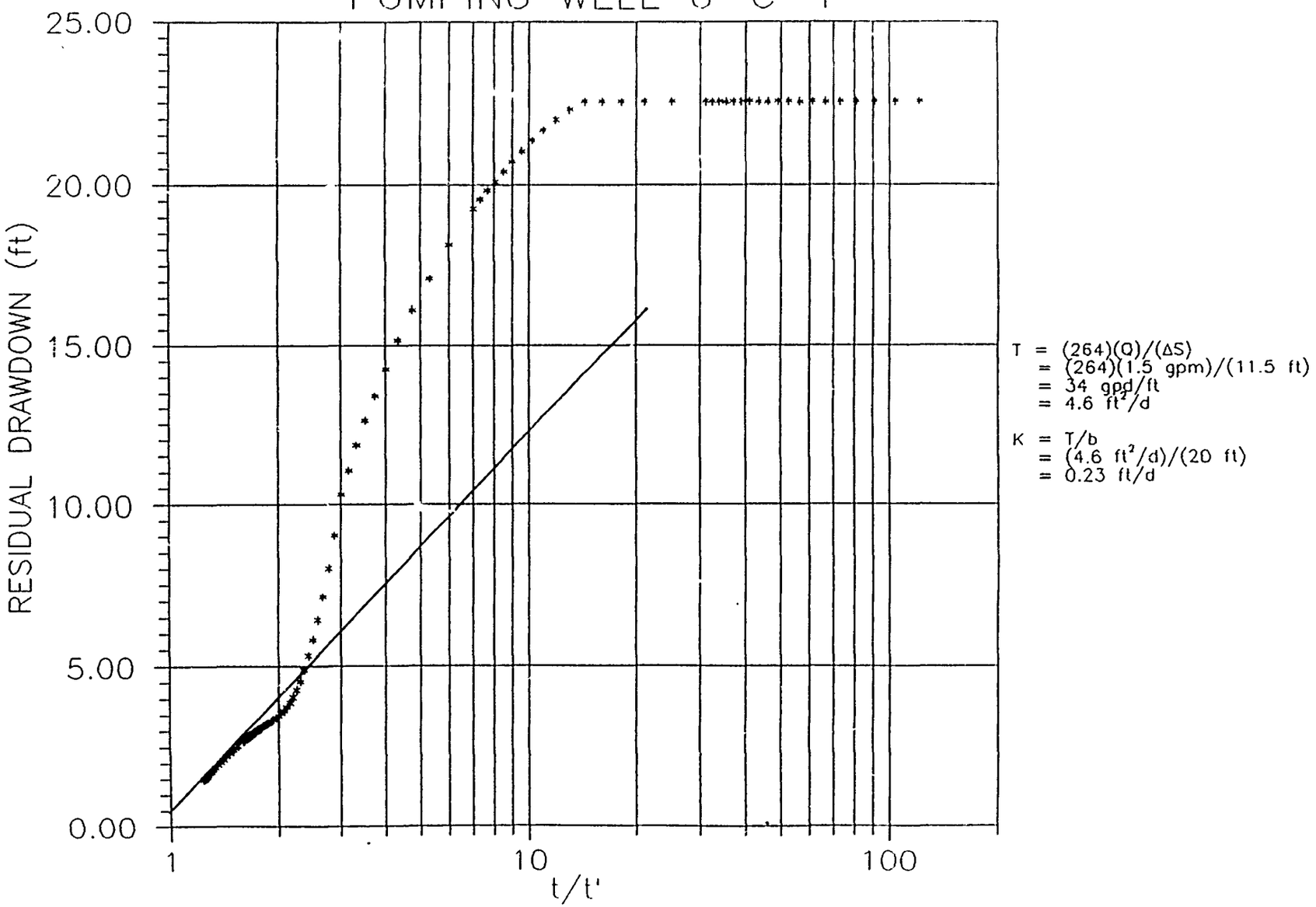
Pump Test Plots

PUMP DRAWDOWN TEST: 2/1/89
PUMPING WELL 6-C-1



T = (264)(Q)/(ΔS)
= (264)(1.5 gpm)/(15.5 ft)
= 26 gpd/ft
= 3.4 ft^2/d

K = T/b
= (3.4 ft^2/d)/(20 ft)
= 0.17 ft/d

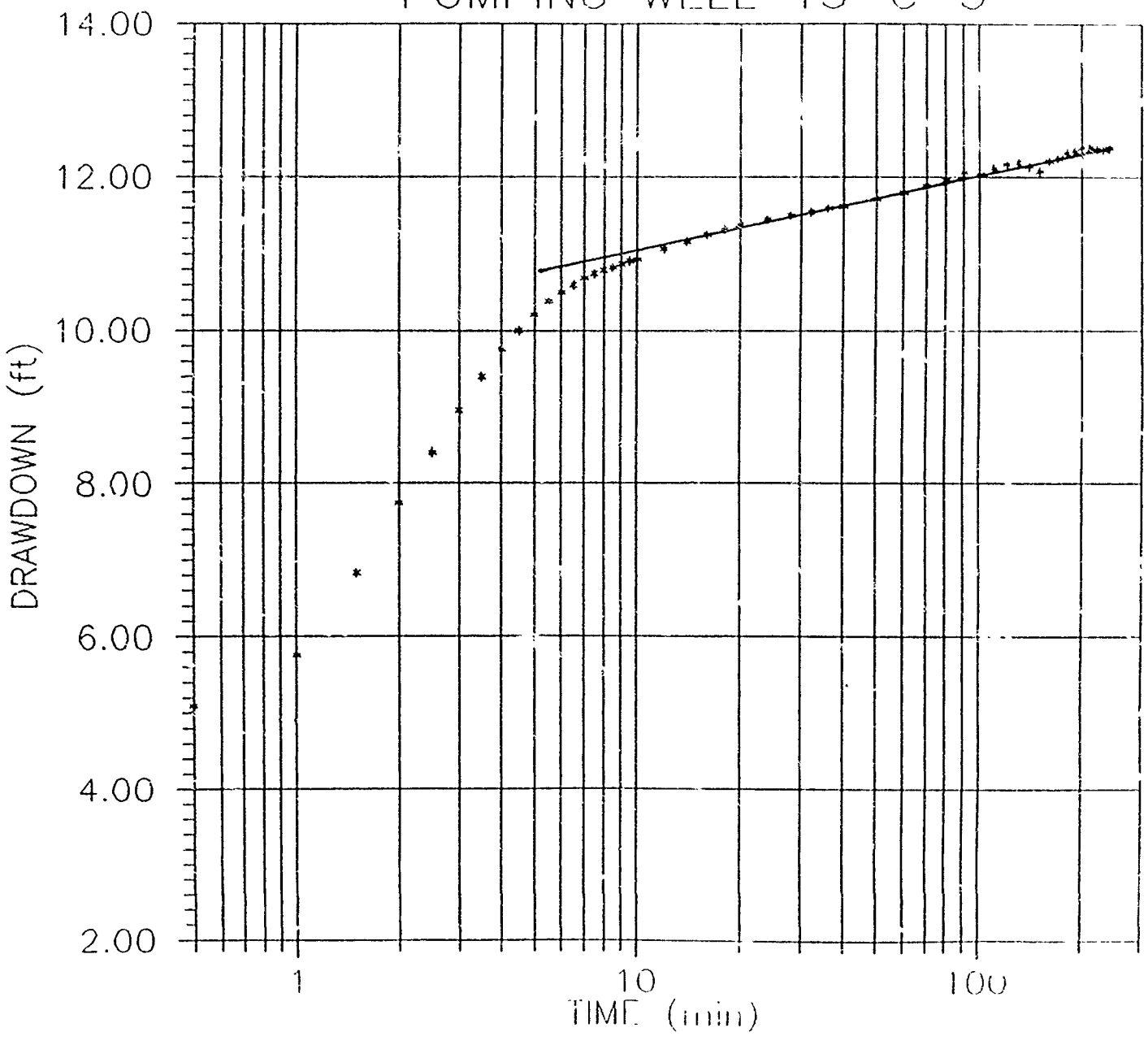

PUMP RECOVERY TEST: 2/1/89
PUMPING WELL 6-C-1
RESIDUAL DRAWDOWN (ft)
25.00
20.00
15.00
10.00
5.00
0.00
1
10
100
t/t'
T = (264)(Q)/(ΔS)
= (264)(1.5 gpm)/(11.5 ft)
= 34 gpd/ft
= 4.6 ft²/d
K = T/b
= (4.6 ft²/d)/(20 ft)
= 0.23 ft/d

SITE 13

LANDFILL NO. 1

Pump Test Plots

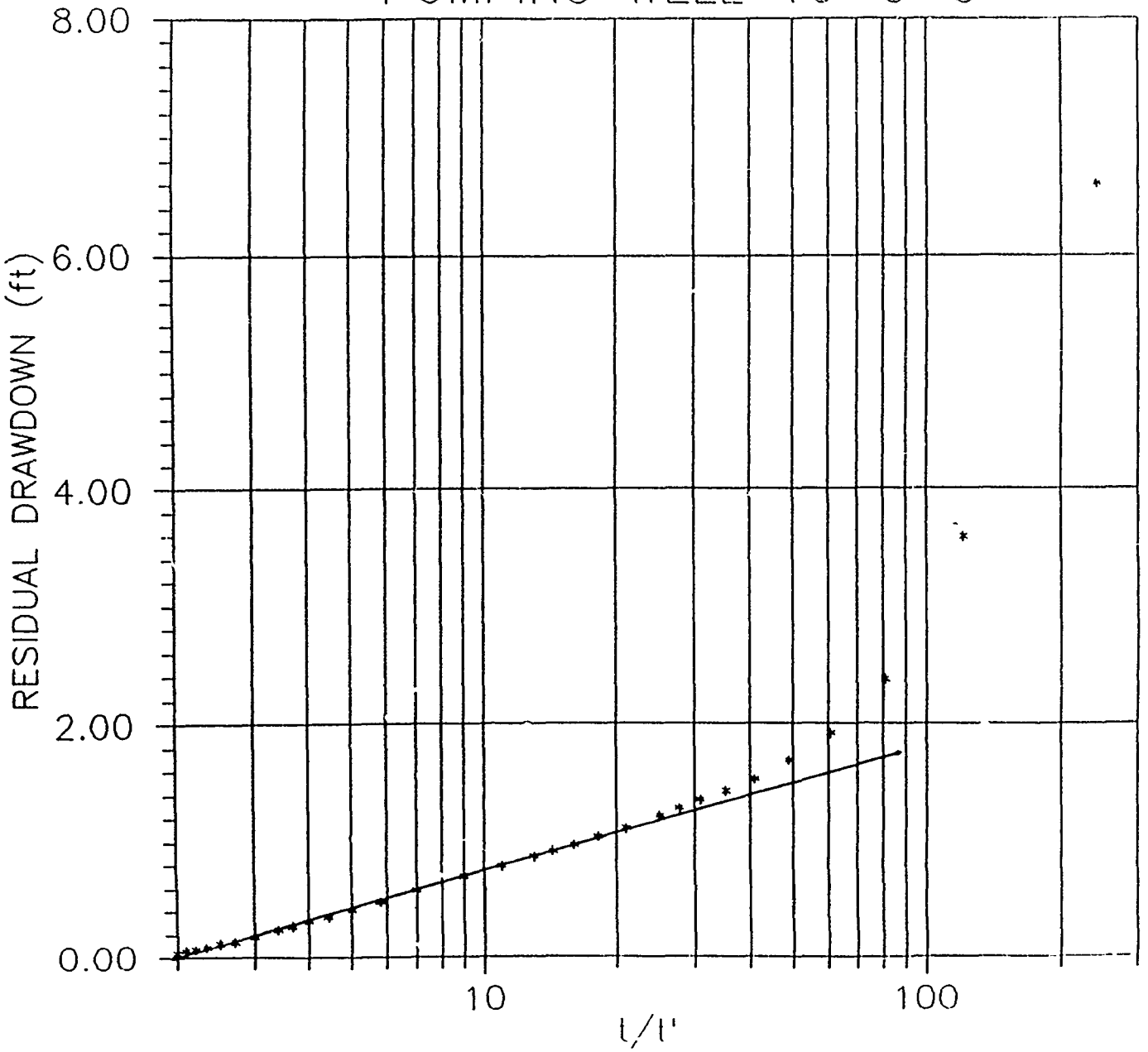
PUMP DRAWDOWN TEST: 2/3/89
PUMPING WELL 13-C-5



T = (264)(Q)/(ΔS)
= (264)(10.9 gpm)/(1.0 ft)
= 2,900 gpd/ft
= 380 ft²/d

K = T/b
= (380 ft²/d)/(20 ft)
= 19 ft/d

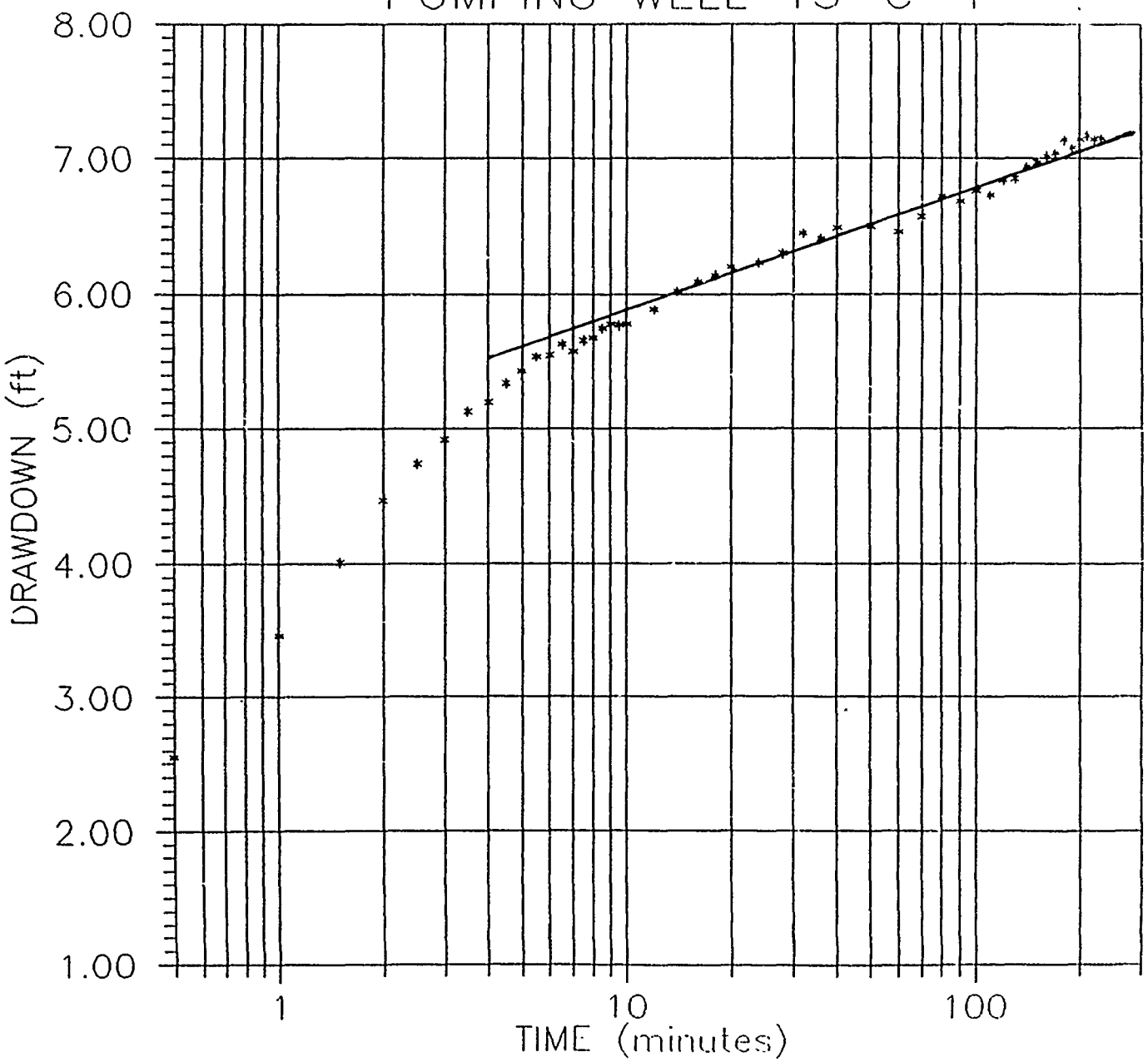
PUMP RECOVERY TEST: 2/3/89
PUMPING WELL 13--C--5



T = (264)(Q)/(ΔS)
= (264)(10.9 gpm)/(1.0 ft)
= 2,900 gpd/ft
= 380 ft^2/d

K = T/b
= (380 ft^2/d)/(20 ft)
= 19 ft/d

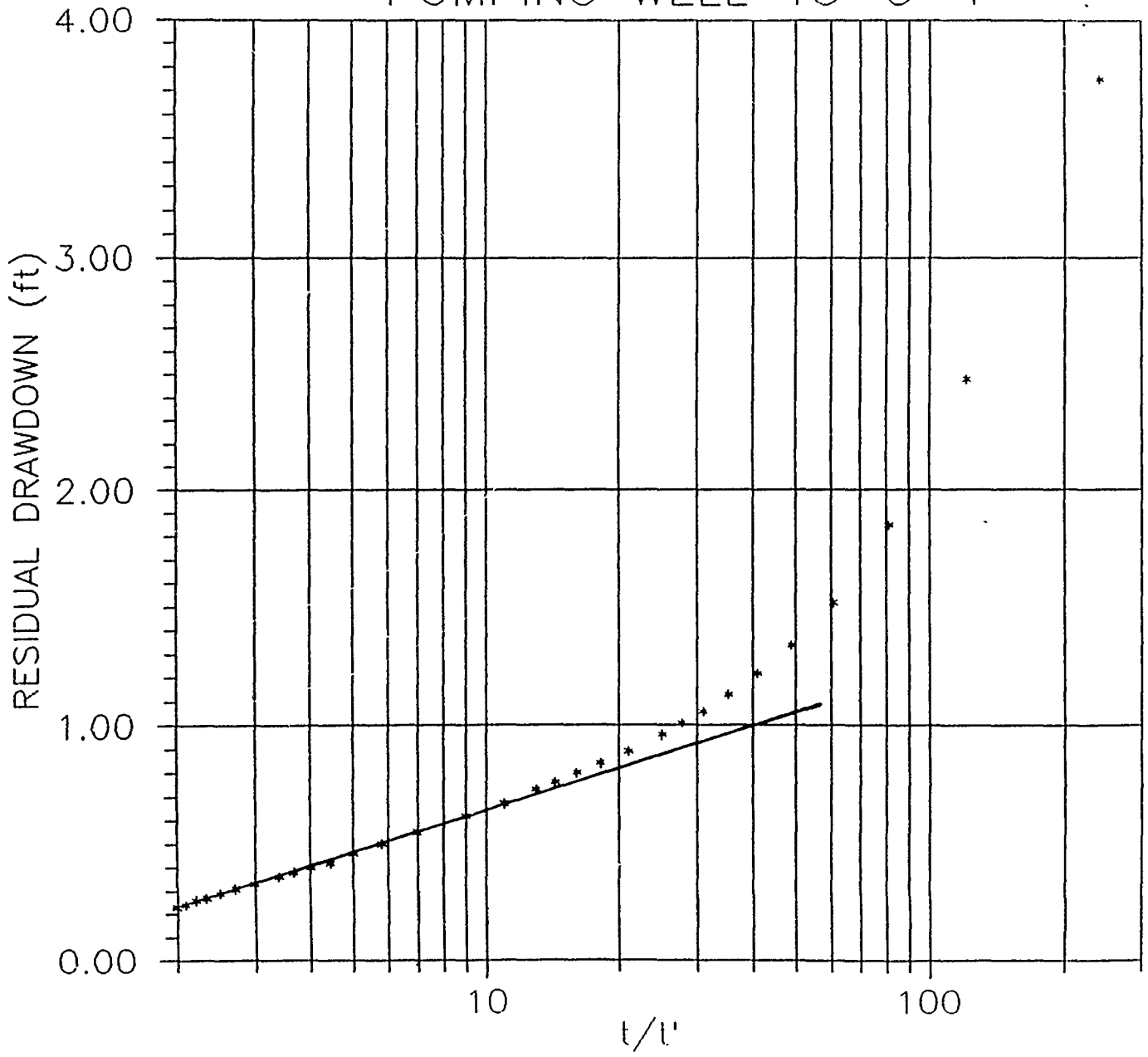
PUMP DRAWDOWN TEST: 2/15/89
PUMPING WELL 13-C-4



T = (264)(Q)/(ΔS)
= (264)(6.3 gpm)/(0.9 ft)
= 1,800 gpd/ft
= 250 ft^2/d

K = T/b
= (250 ft^2/d)/(19 ft)
= 13 ft/d

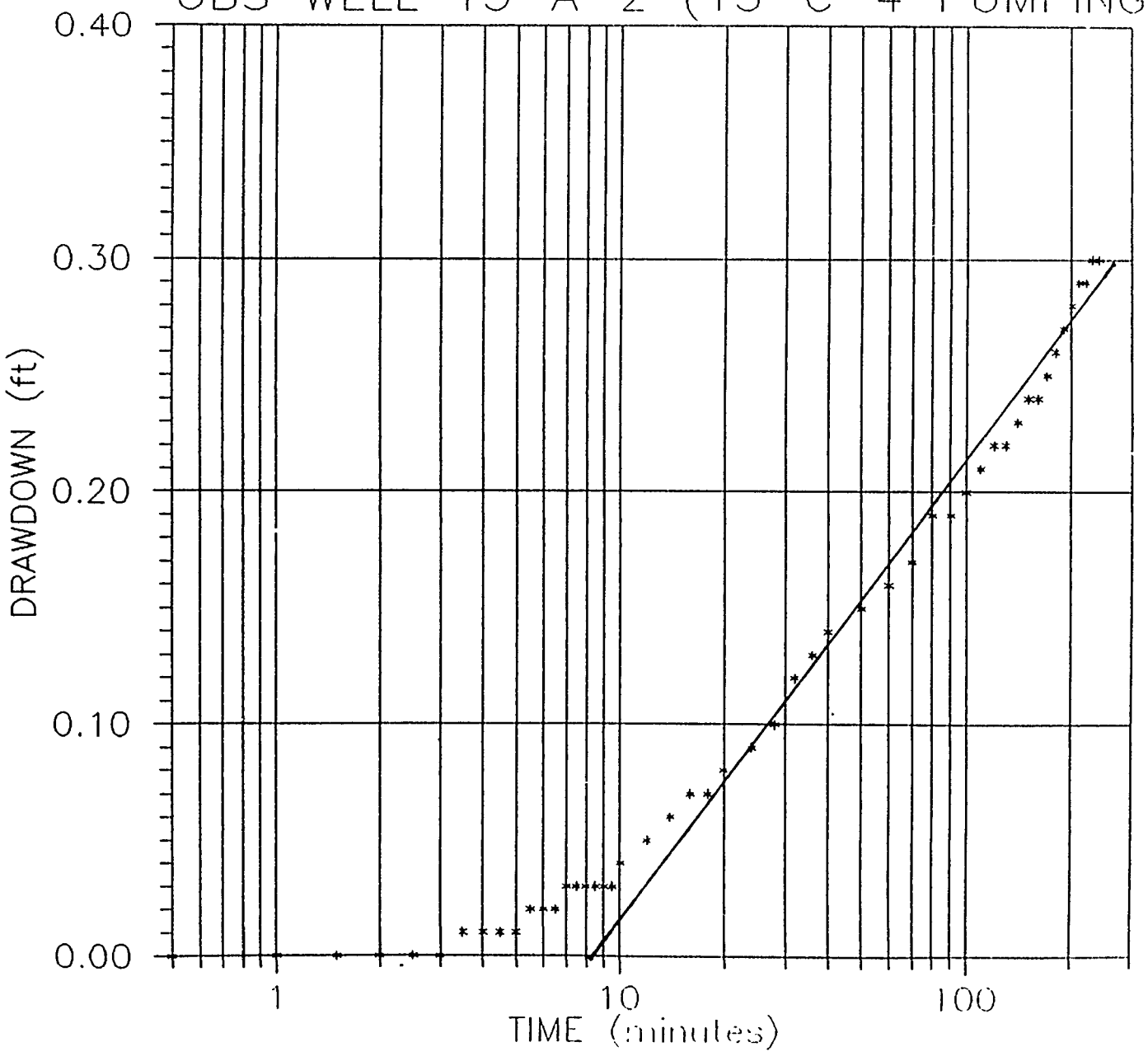
PUMP RECOVERY TEST: 2/15/89
PUMPING WELL 13-C-4



T = (264)(Q)/(ΔS)
= (264)(6.3 gpm)/(0.57 ft)
= 2,900 gpd/ft
= 390 ft^2/d

K = T/b
= (390 ft^2/d)/(19 ft)
= 21 ft/d

PUMP DRAWDOWN TEST: 2/15/89
OBS WELL 13-A-2 (13-C-4 PUMPING)

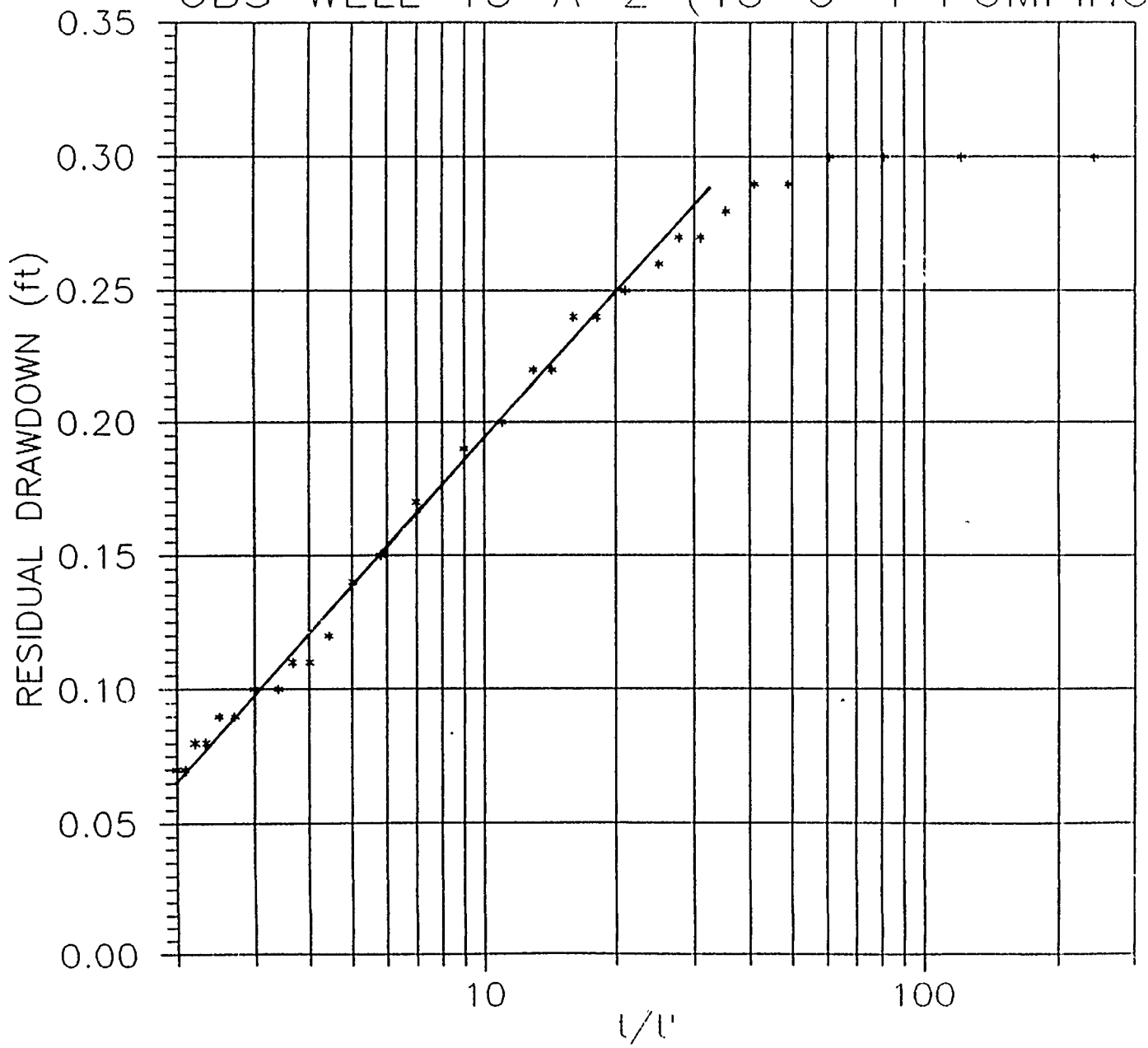


T = (264)(Q)/(ΔS)
= (264)(6.3 gpm)/(0.2 ft)
= 8,300 gpd/ft
= 1,100 ft^2/d

K = T/b
= (1,100 ft^2/d)(19 ft)
= 74 ft/d

S = $(2.25)(T)(t_0)/(r^2)$
= $(2.25)(0.77\ ft^2/min)(8.2\ min)/(125.22\ ft)^2$
= 9.1×10^{-4}

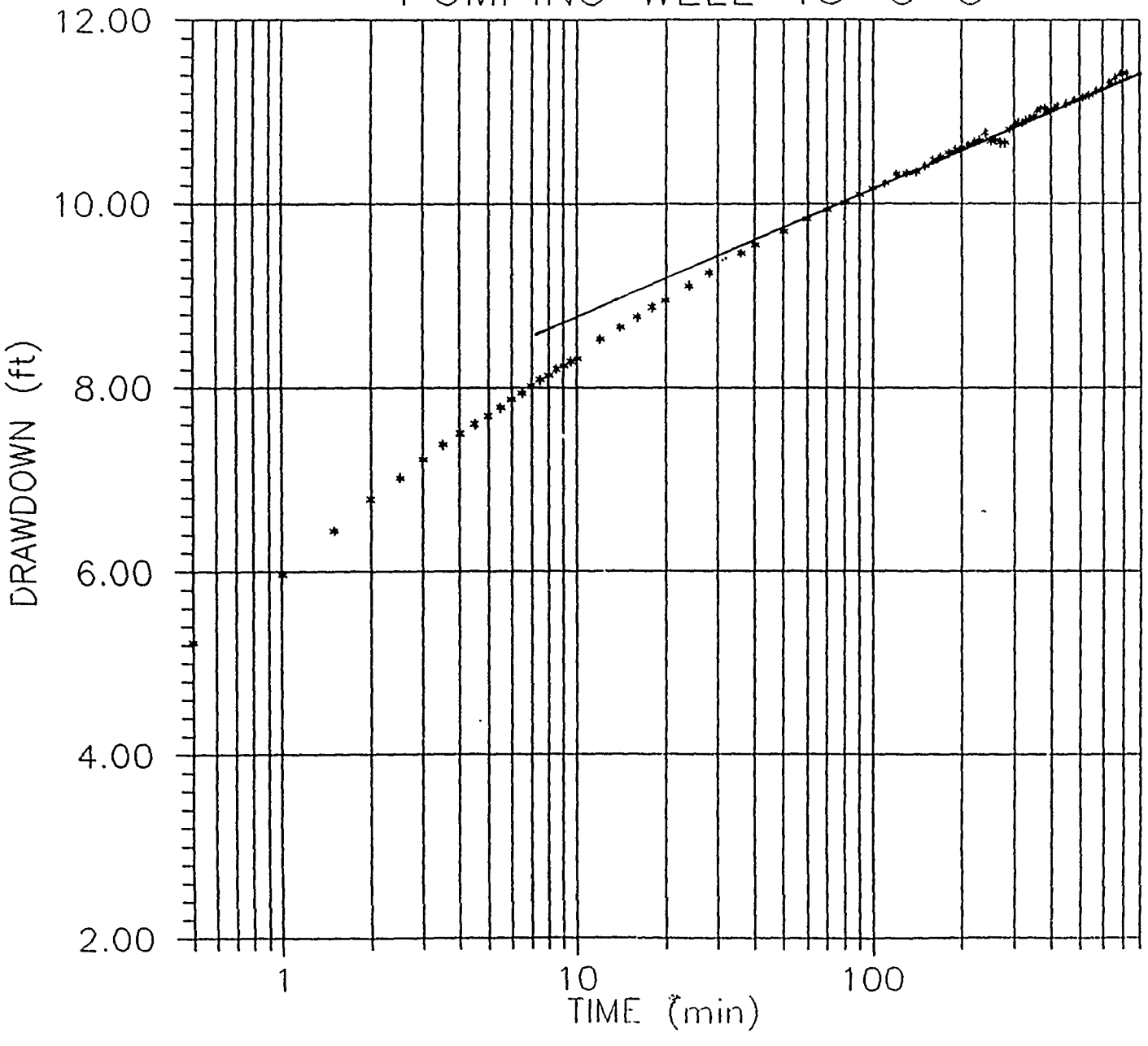
PUMP RECOVERY TEST: 2/15/89
OBS WELL 13-A-2 (13-C-4 PUMPING)



T = (264)(Q)/(ΔS)
= (264)(6.3 gpm)/(0.185 ft)
= 9,000 gpd/ft
= 1,200 ft^2/d

K = T/b
= (1,200 ft^2/d)(19 ft)
= 63 ft/d

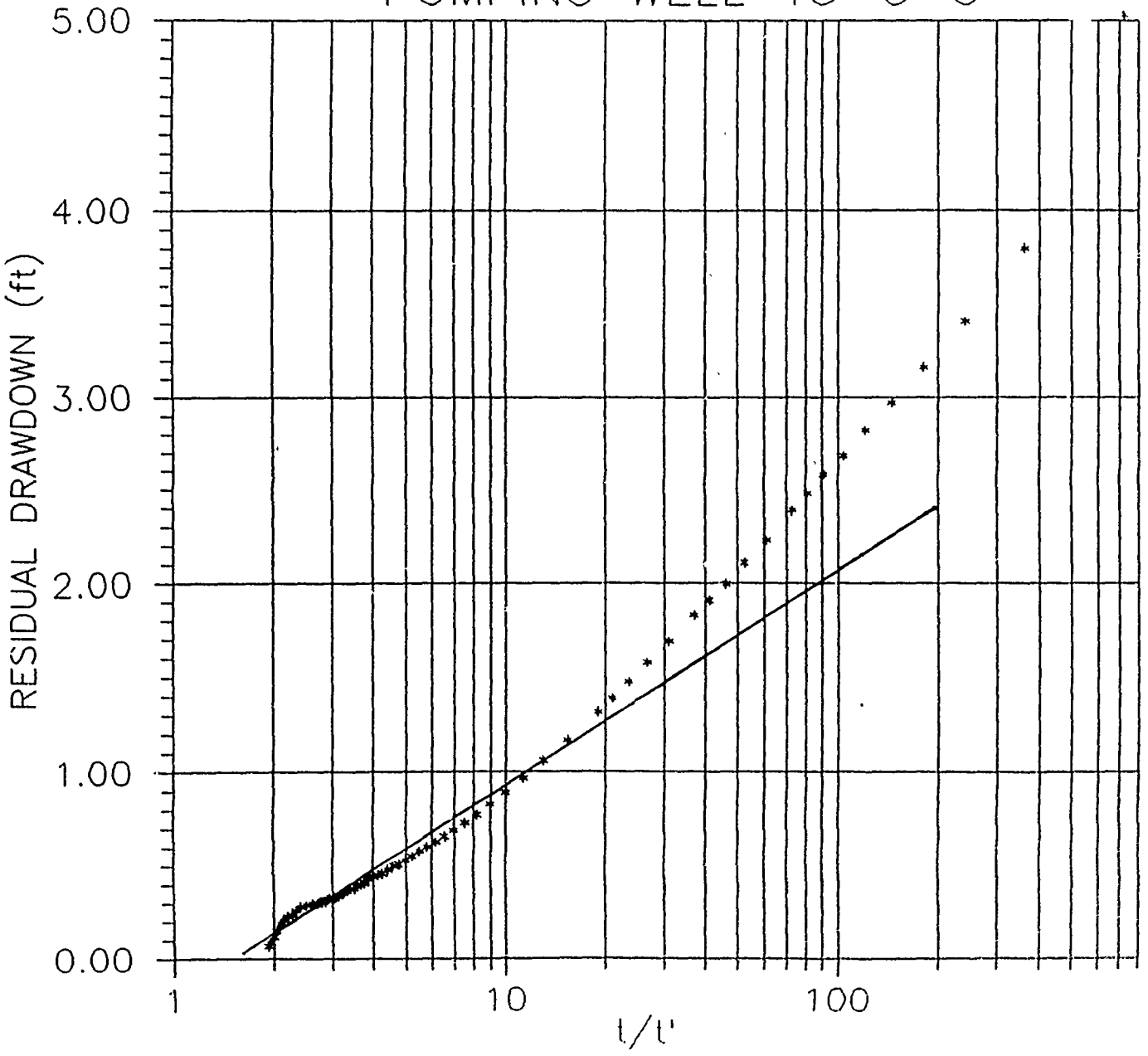
PUMP DRAWDOWN TEST: 2/16/89
PUMPING WELL 13-C-3



T = (264)(Q)/(ΔS)
= (264)(15.4 gpm)/(1.4 ft)
= 2,900 gpd/ft
= 390 ft^2/d

K = T/b
= (390 ft^2/d)(20 ft)
= 19 ft/d

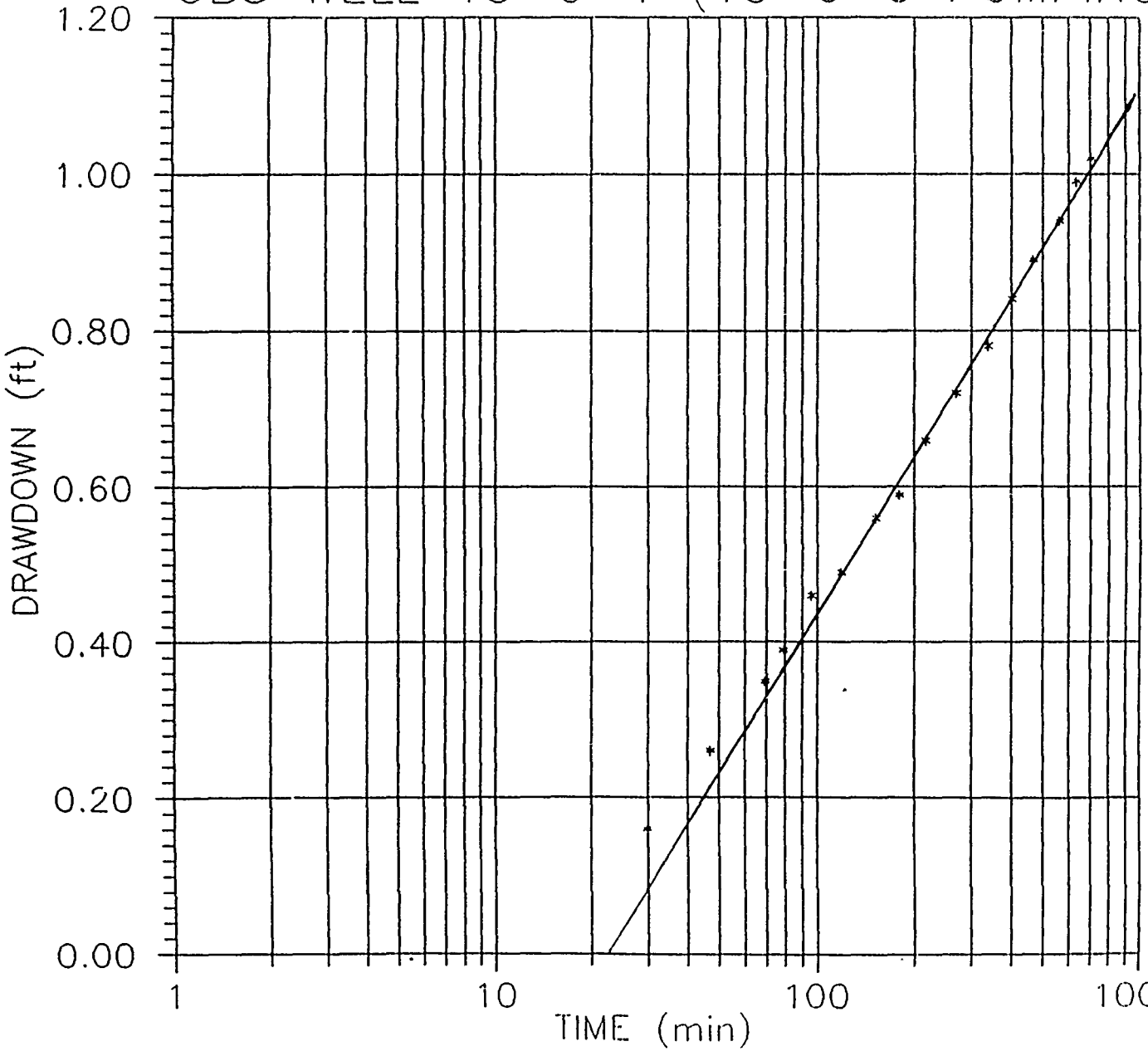
PUMP RECOVERY TEST: 2/17/89
PUMPING WELL 13-C-3



T = (264)(Q)/(ΔS)
= (264)(15.4 gpm)/(1.2 ft)
= 3,400 gpd/ft
= 450 ft^2/d

K = T/b
= (450 ft^2/d)(20 ft)
= 23 ft/d

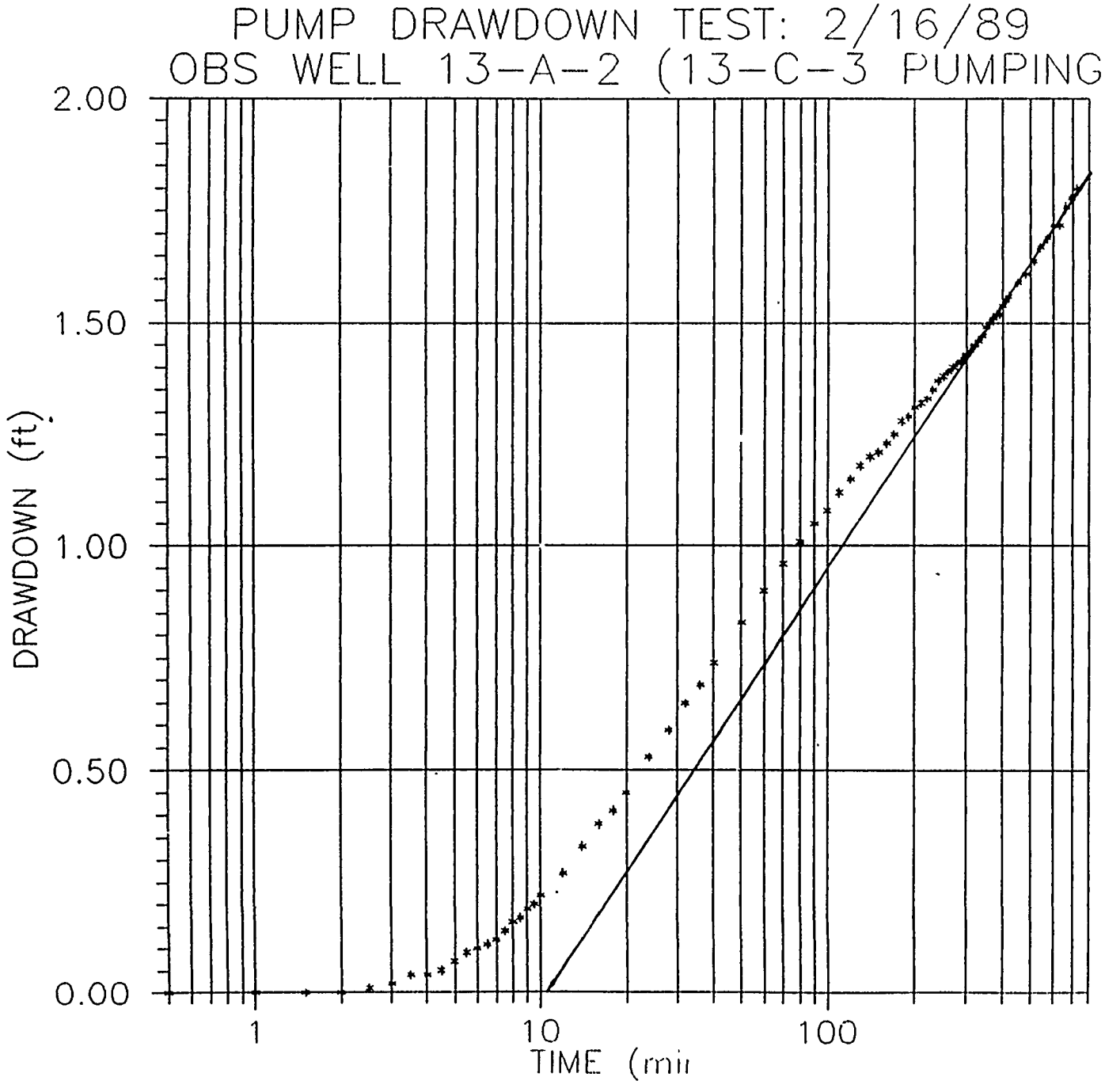
PUMP DRAWDOWN TEST: 2/16/89
OBS WELL 13-C-1 (13-C-3 PUMPING)



$T = (264)(Q)/(\Delta S)$
$= (264)(15.4 \text{ gpm})/(0.70 \text{ ft})$
$= 5{,}800 \text{ gpd/ft}$
$= 780 \text{ ft}^2/\text{d}$

$K = T/b$
$= (780 \text{ ft}^2/\text{d})(20 \text{ ft})$
$= 39 \text{ ft/d}$

$S = (2.25)(T)(t_0)/(r^2)$
$= (2.25)(0.54 \text{ ft}^2/\text{min})(22 \text{ min})/(238.83 \text{ ft})^2$
$= 4.7 \times 10^{-4}$

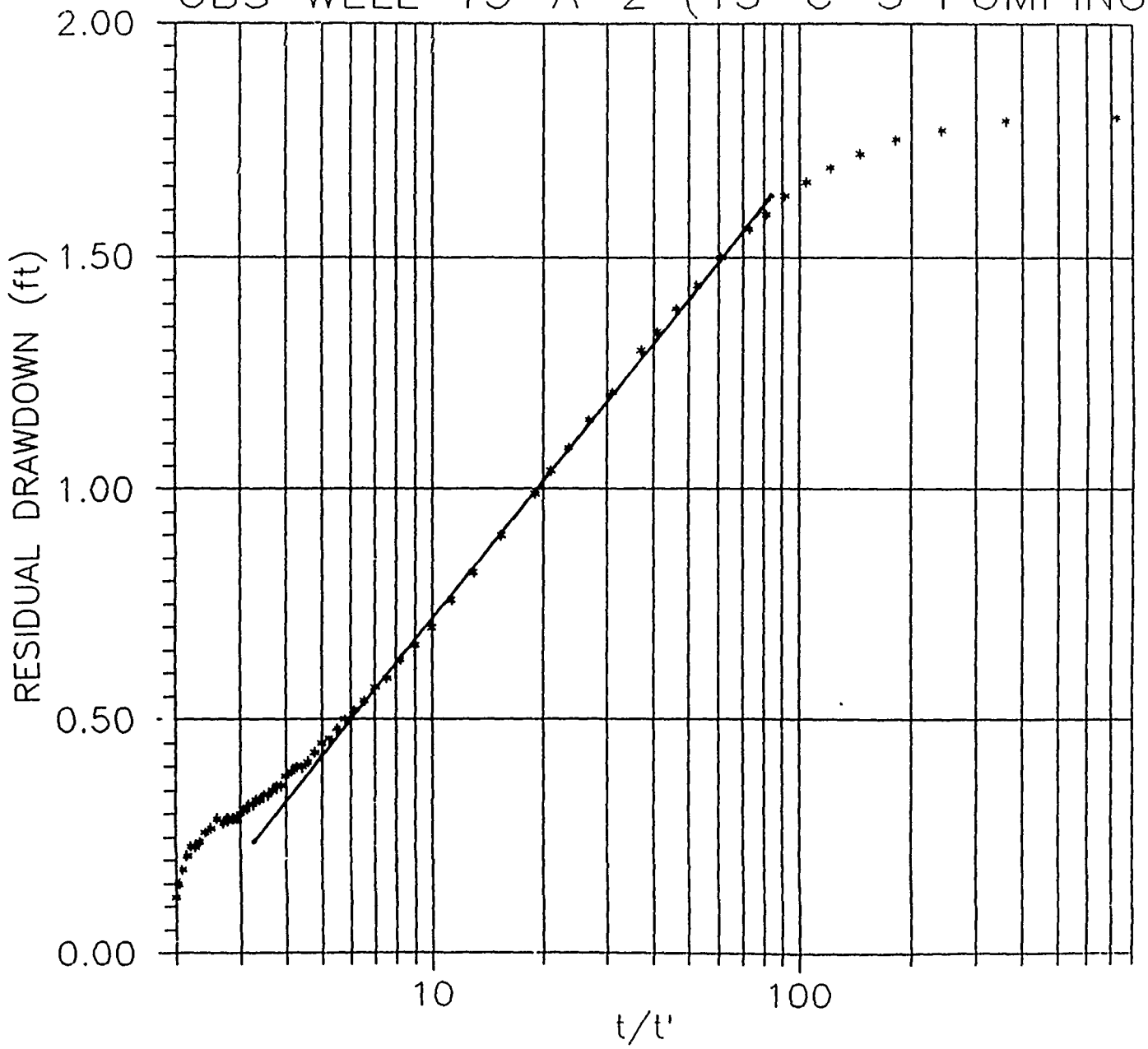


$T = (264)(Q)/(\Delta S)$
$= (264)(15.4\ gpm)/(0.95\ ft)$
$= 4{,}300\ gpd/ft$
$= 570\ ft^2/d$

$K = T/b$
$= (570\ ft^2/d)(14.6\ ft)$
$= 39\ ft/d$

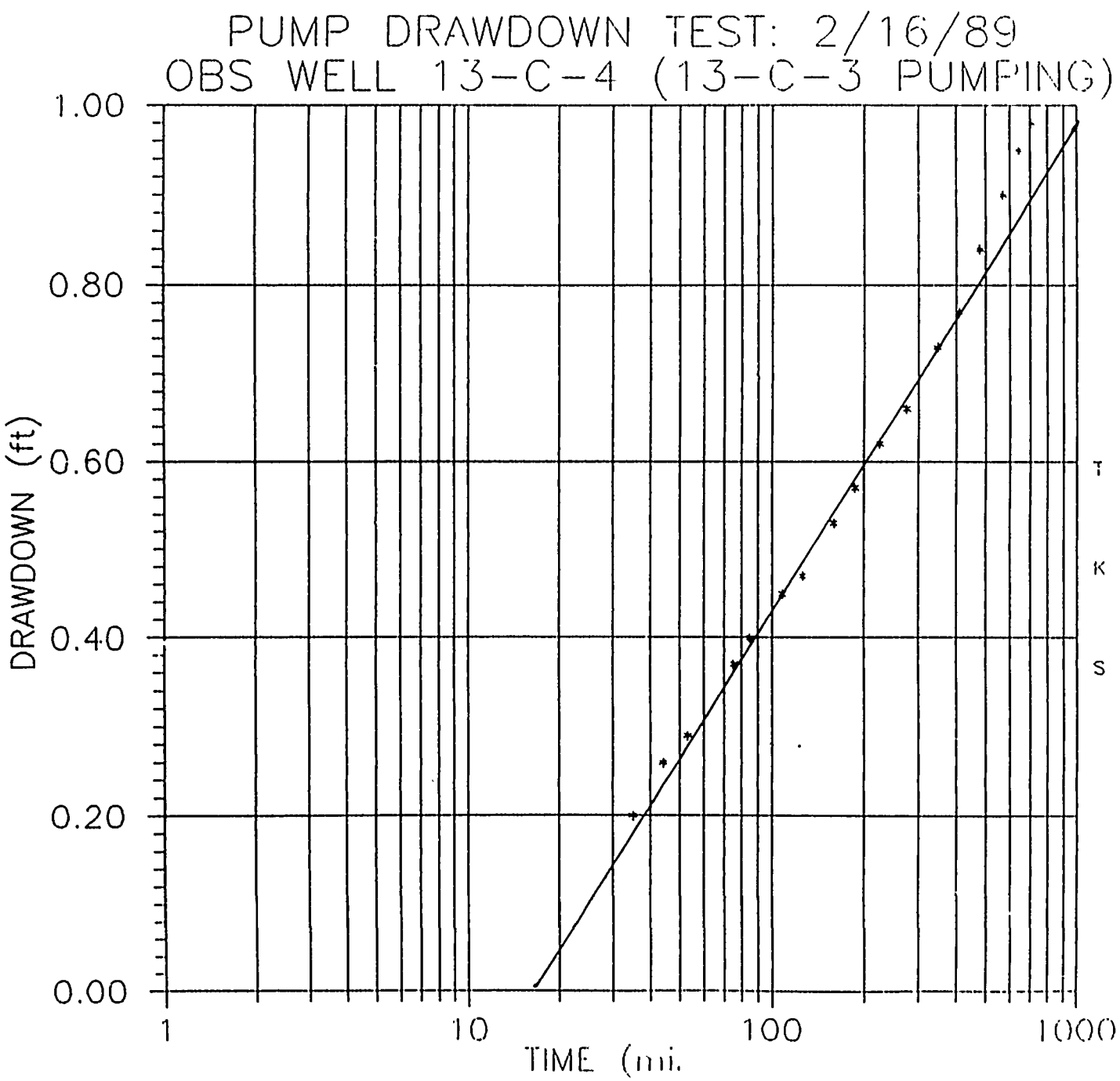
$S = (2.25)(T)(t_0)/(r^2)$
$= (2.25)(0.40\ ft^2/min)(11\ min)/(101.57\ ft)^2$
$= 9.6 \times 10^{-4}$

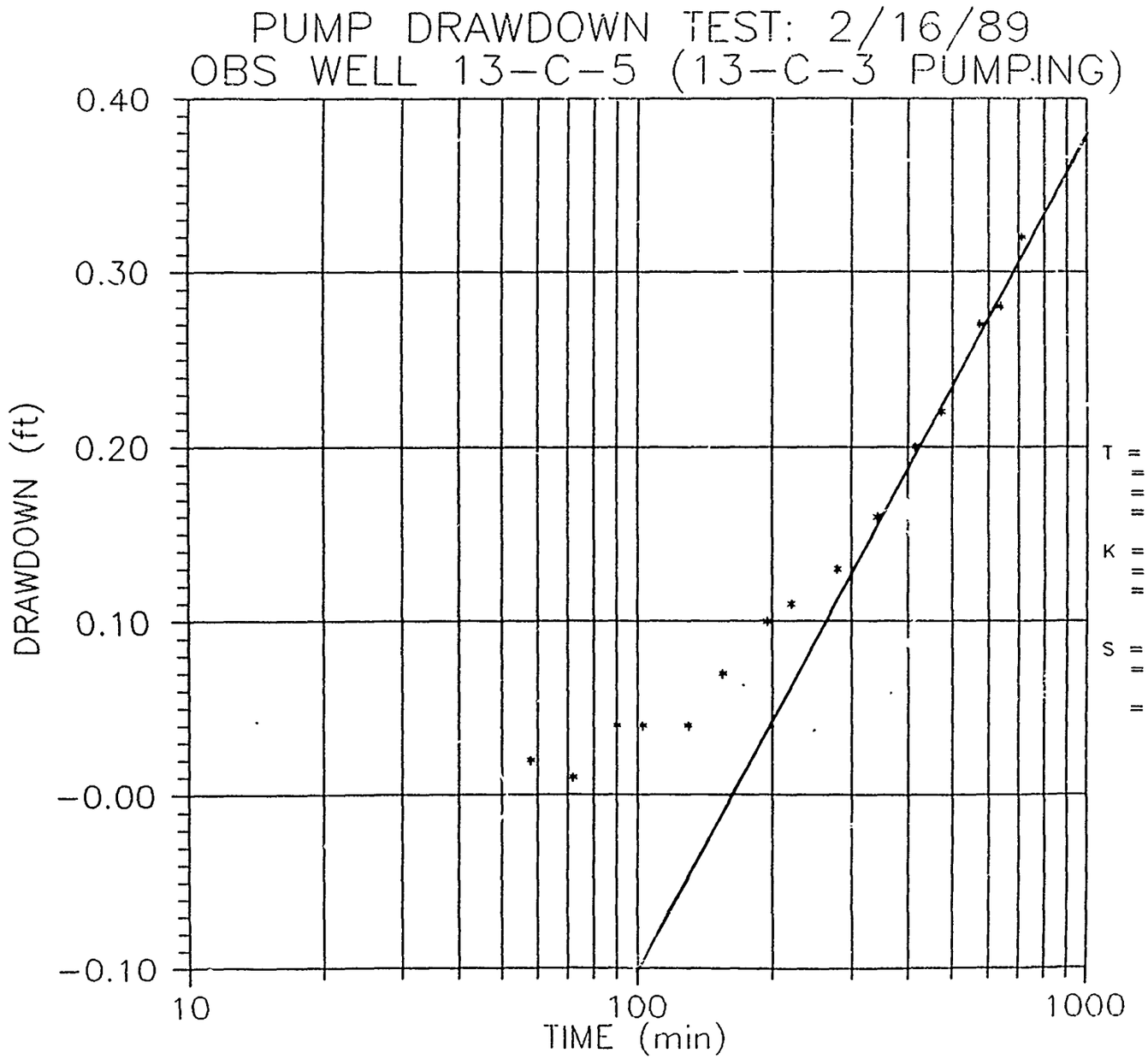
PUMP RECOVERY TEST: 2/17/89
OBS WELL 13-A-2 (13-C-3 PUMPING)



T = (264)(Q)/(ΔS)
= (264)(15.4 gpm)/(1.0 ft)
= 4,100 gpd/ft
= 540 ft^2/d

K = T/b
= (540 ft^2/d)(14.6 ft)
= 37 ft/d


PUMP DRAWDOWN TEST: 2/16/89
OBS WELL 13-C-4 (13-C-3 PUMPING)
1.00
0.80
0.60
0.40
0.20
0.00
DRAWDOWN (ft)
1
10
100
1000
TIME (mi.
T = (264)(Q)/(ΔS)
= (264)(15.4 gpm)/(0.55 ft)
= 7,400 gpd/ft
= 990 ft²/d
K = T/b
= (990 ft²/d)(18.8 ft)
= 53 ft/d
S = (2.25)(T)(t₀)/(r²)
= (2.25)(0.69 ft²/min)(16 min)/
(219.36 ft)²
= 5.1x10⁻⁴

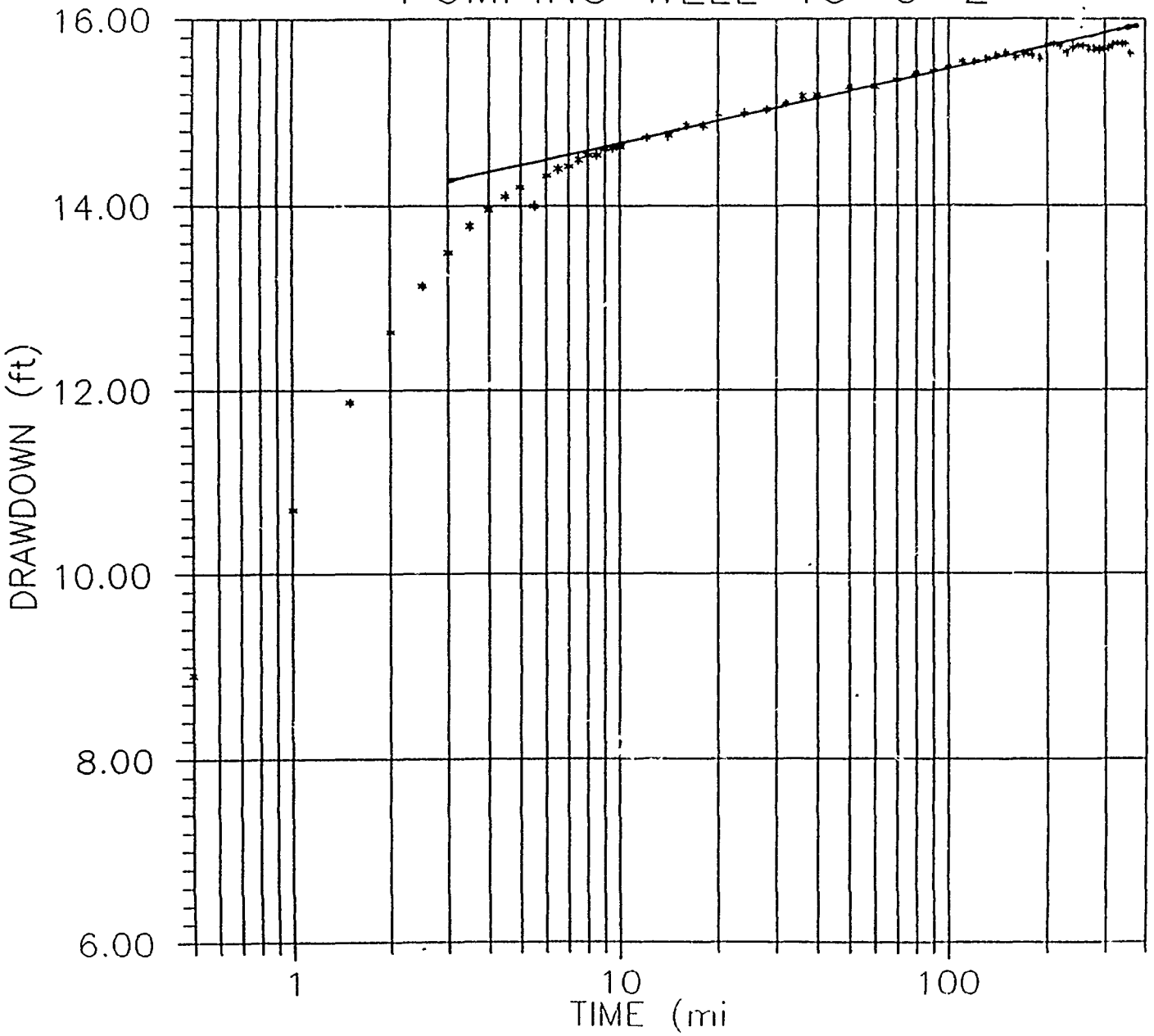


$T = (264)(Q)/(\Delta S)$
$= (264)(15.4\ gpm)/(0.48\ ft)$
$= 8{,}500\ gpd/ft$
$= 1{,}100\ ft^2/d$

$K = T/b$
$= (1{,}100\ ft^2/d)/(20\ ft)$
$= 57\ ft/d$

$S = (2.25)(T)(t_0)/(r^2)$
$= (2.25)(0.79\ ft^2/min)(100\ min)/(547.34\ ft)^2$
$= 5.9 \times 10^{-4}$

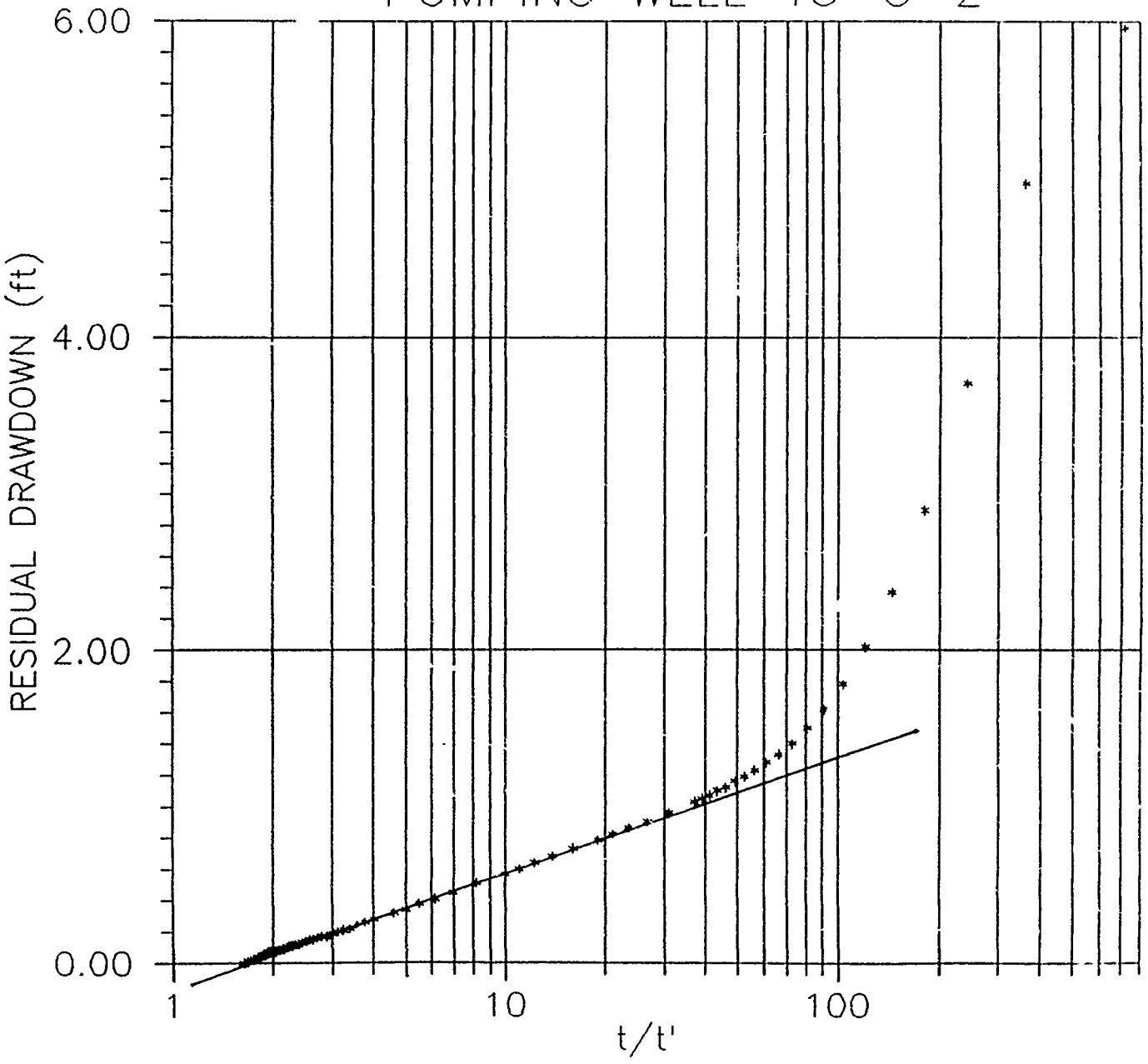
PUMP DRAWDOWN TEST: 2/21/89
PUMPING WELL 13-C-2



T = (264)(Q)/(ΔS)
= (264)(8.7 gpm)/(0.80 ft)
= 2,900 gpd/ft
= 380 ft^2/d

K = T/b
= (380 ft^2/d)/(20 ft)
= 19 ft/d

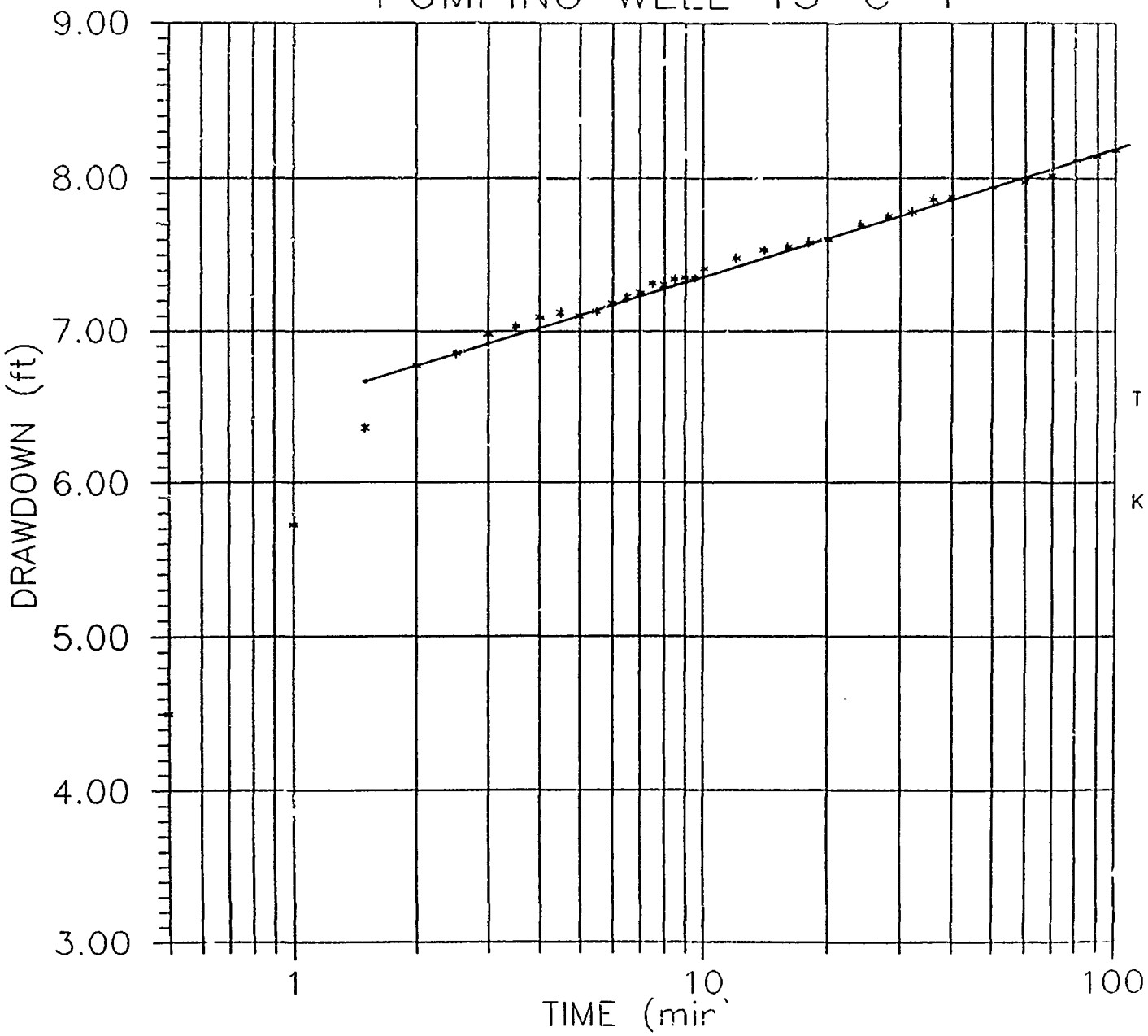
PUMP RECOVERY TEST: 2/21/89
PUMPING WELL 13-C-2



T = (264)(Q)/(ΔS)
= (264)(8.7 gpm)/(0.70 ft)
= 3,300 gpd/ft
= 440 ft^2/d

K = T/b
= (440 ft^2/d)/(20 ft)
= 22 ft/d

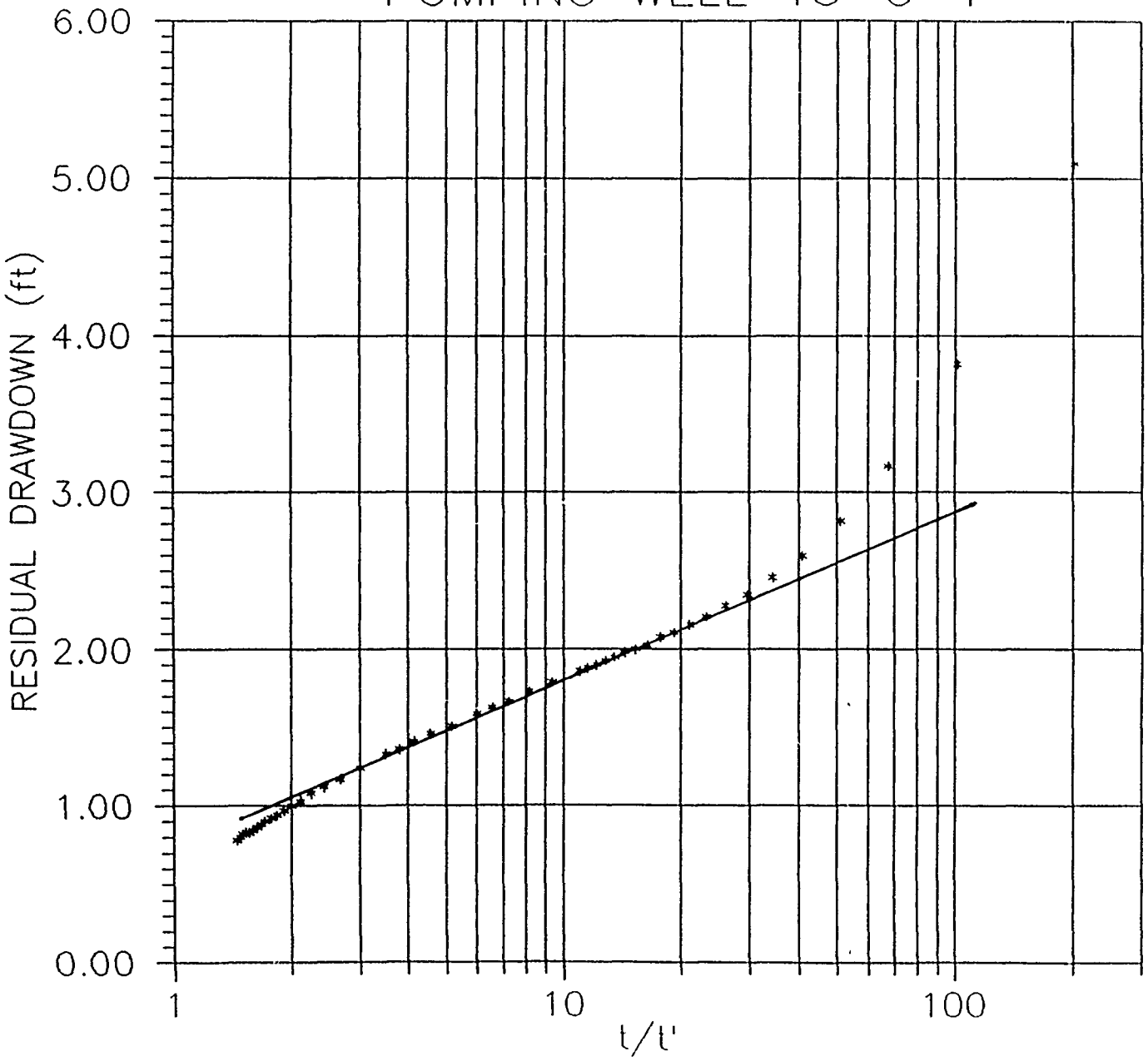
PUMP DRAWDOWN TEST: 2/24/89
PUMPING WELL 13-C-1



T = (264)(Q)/(ΔS)
= (264)(6.5 gpm)/(0.85 ft)
= 2,000 gpd/ft
= 270 ft^2/d

K = T/b
= (270 ft^2/d)/(20 ft)
= 13.5 ft/d

PUMP RECOVERY TEST: 2/24/89
PUMPING WELL 13-C-1



T = (264)(Q)/(ΔS)
= (264)(6.5 gpm)/(1.0 ft)
= 1,700 gpd/ft
= 230 ft^2/d

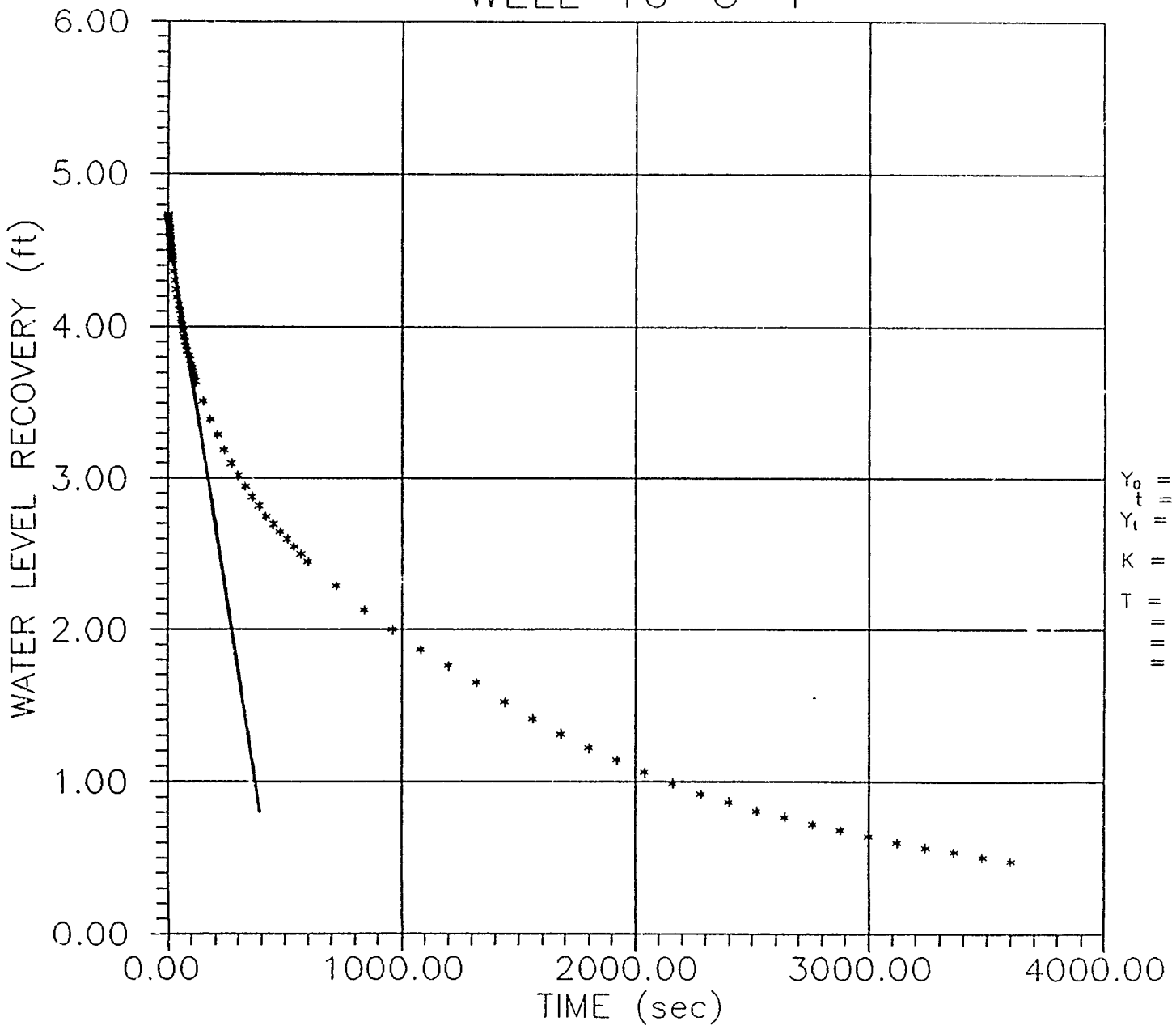
K = T/b
= (230 ft^2/d)/(20 ft)
= 11 ft/d

SITE 16

EXPLOSIVE ORDNANCE DISPOSAL (EOD) AREA

Slug Test Plots

SLUG TEST: 1/31/89
WELL 16--C-1



Y_0 = 4.75 ft
t = 200 sec
Y_t = 2.65 ft

K = 1.2 ft/day

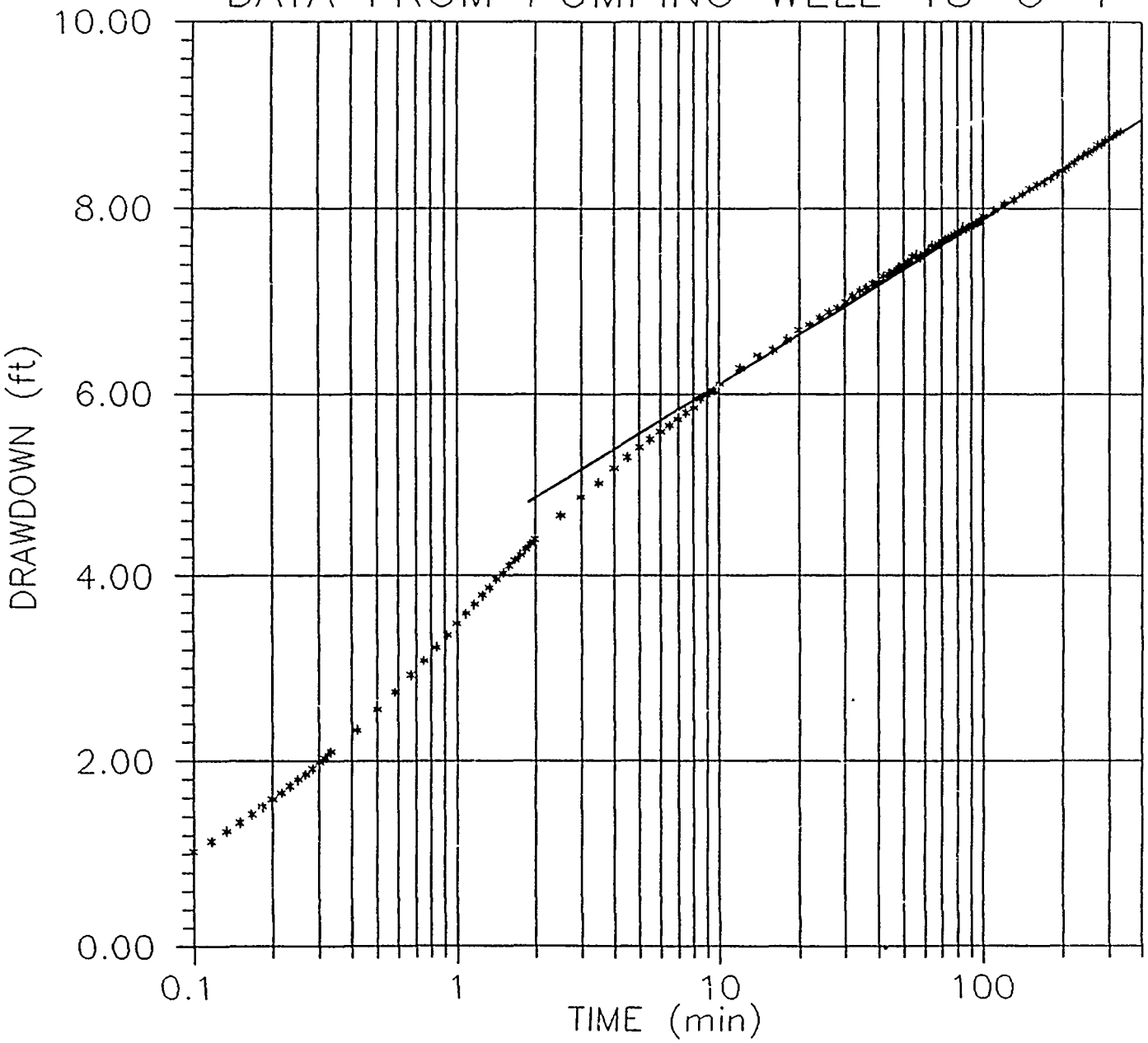
T = (K)(b)
= (1.2 ft/day)(19 6 ft)
= 23 ft^2/day
= 170 gpd/ft

SITE 18

BULK FUEL STORAGE FACILITY

Pump Test Plots

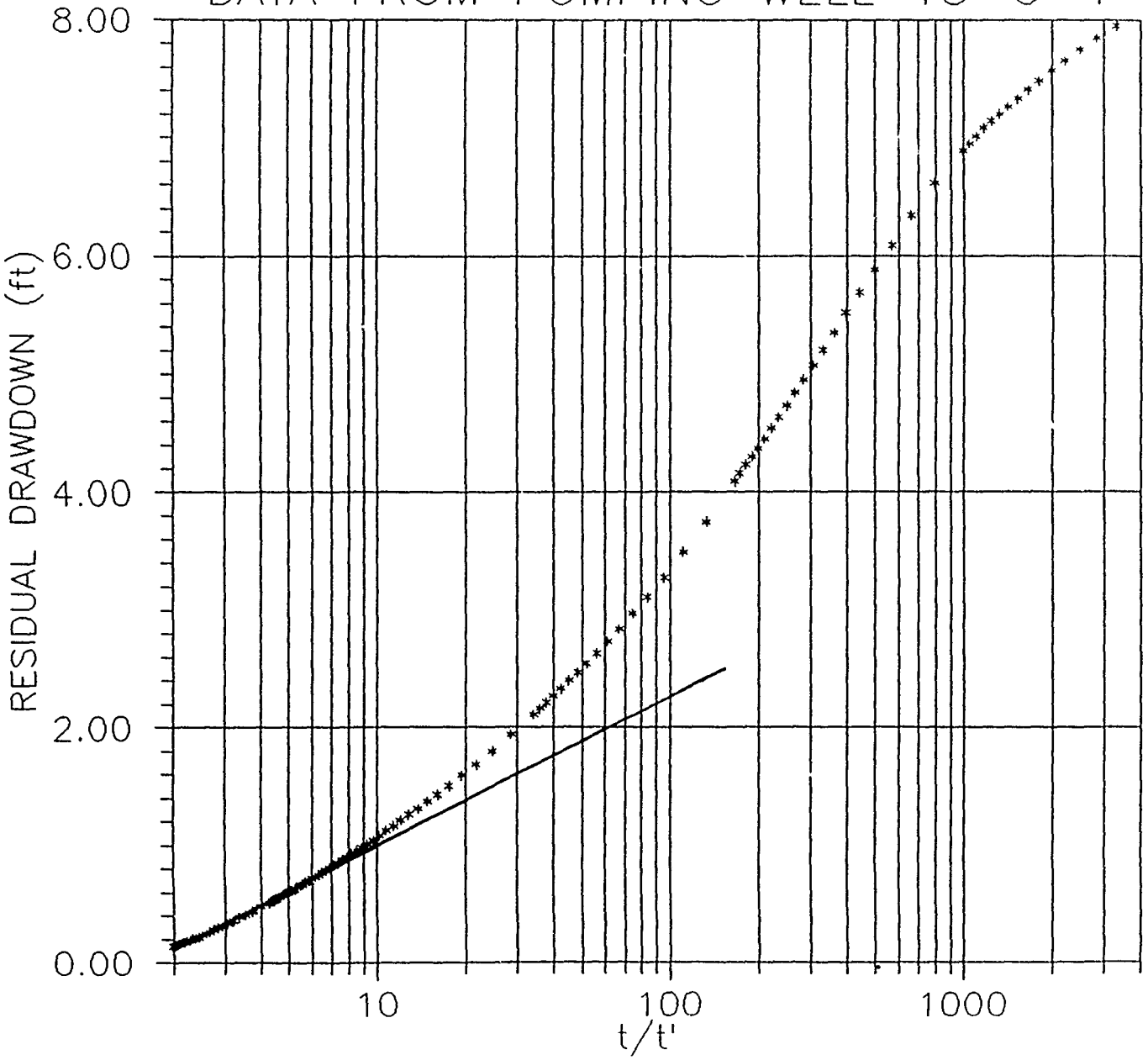
PUMP DRAWDOWN TEST: 2/13/89
DATA FROM PUMPING WELL 18-C-1



$T = (264)(Q)/(\Delta S)$
$= (264)(16.1 \text{ gpm})/(1.75 \text{ ft})$
$= 2{,}400 \text{ gpd/ft}$
$= 320 \text{ ft}^2/\text{d}$

$K = T/b$
$= (320 \text{ ft}^2/\text{d})/(14.1 \text{ ft})$
$= 23 \text{ ft/d}$

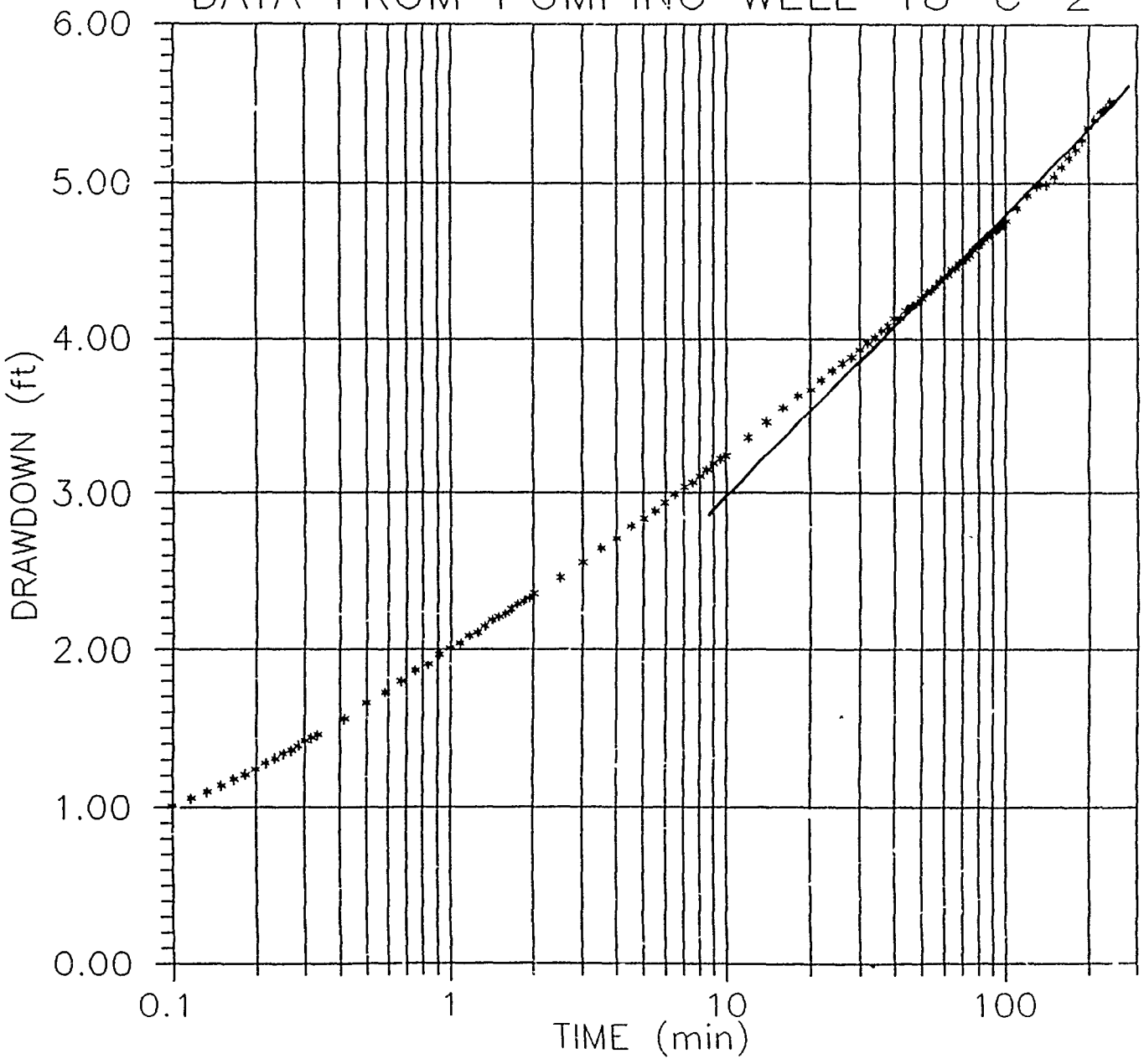
PUMP RECOVERY TEST: 2/13/89
DATA FROM PUMPING WELL 18-C-1



T = (264)(Q)/(ΔS)
= (264)(16.1 gpm)/(2.1 ft)
= 2,000 gpd/ft
= 270 ft^2/d

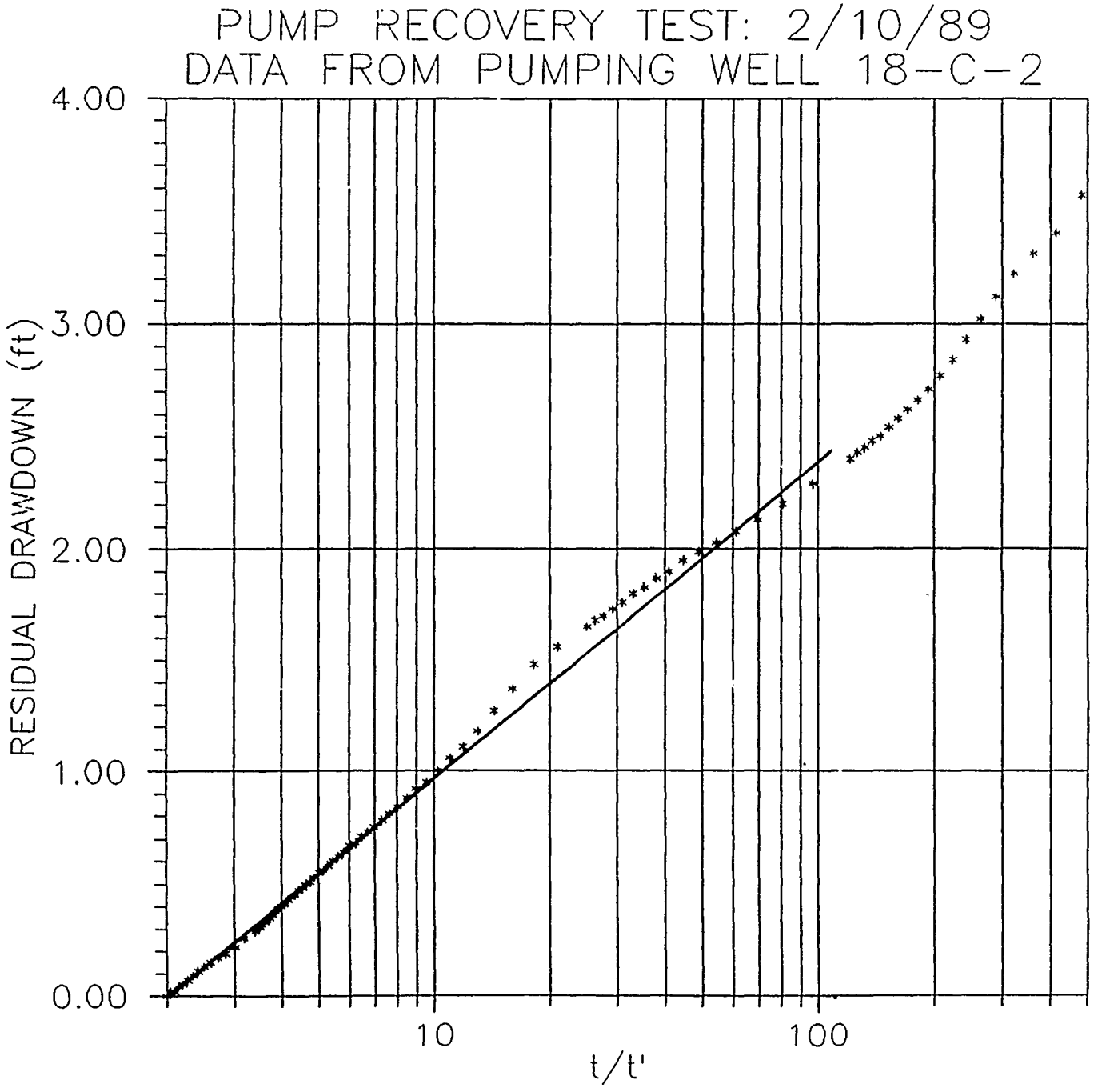
K = T/b
= (270 ft^2/d)/(14.1 ft)
= 19 ft/d

PUMP DRAWDOWN TEST: 2/10/89
DATA FROM PUMPING WELL 18-C-2



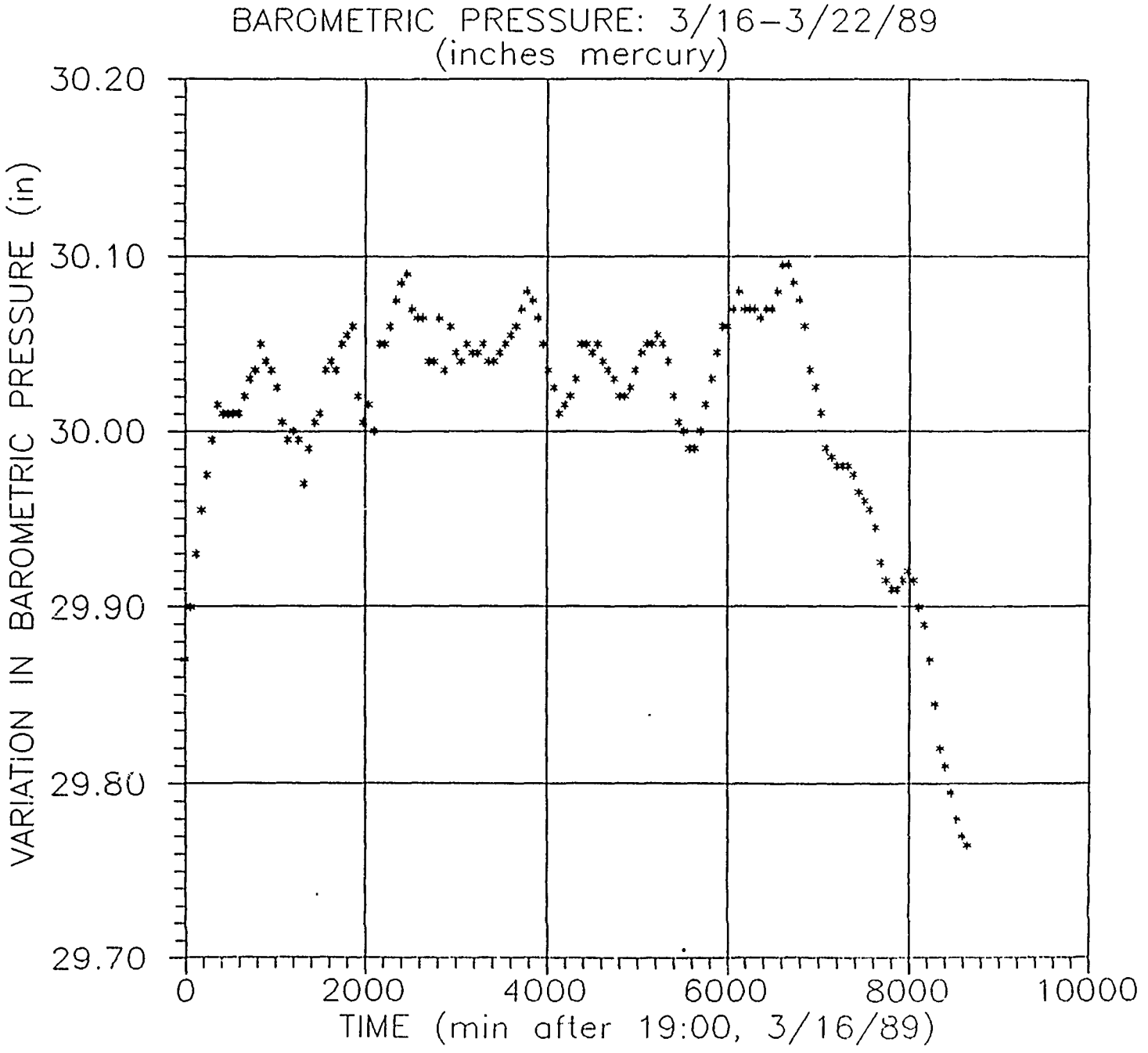
T = (264)(Q)/(ΔS)
= (264)(12.9 gpm)/(2.0 ft)
= 1,700 gpd/ft
= 230 ft^2/d

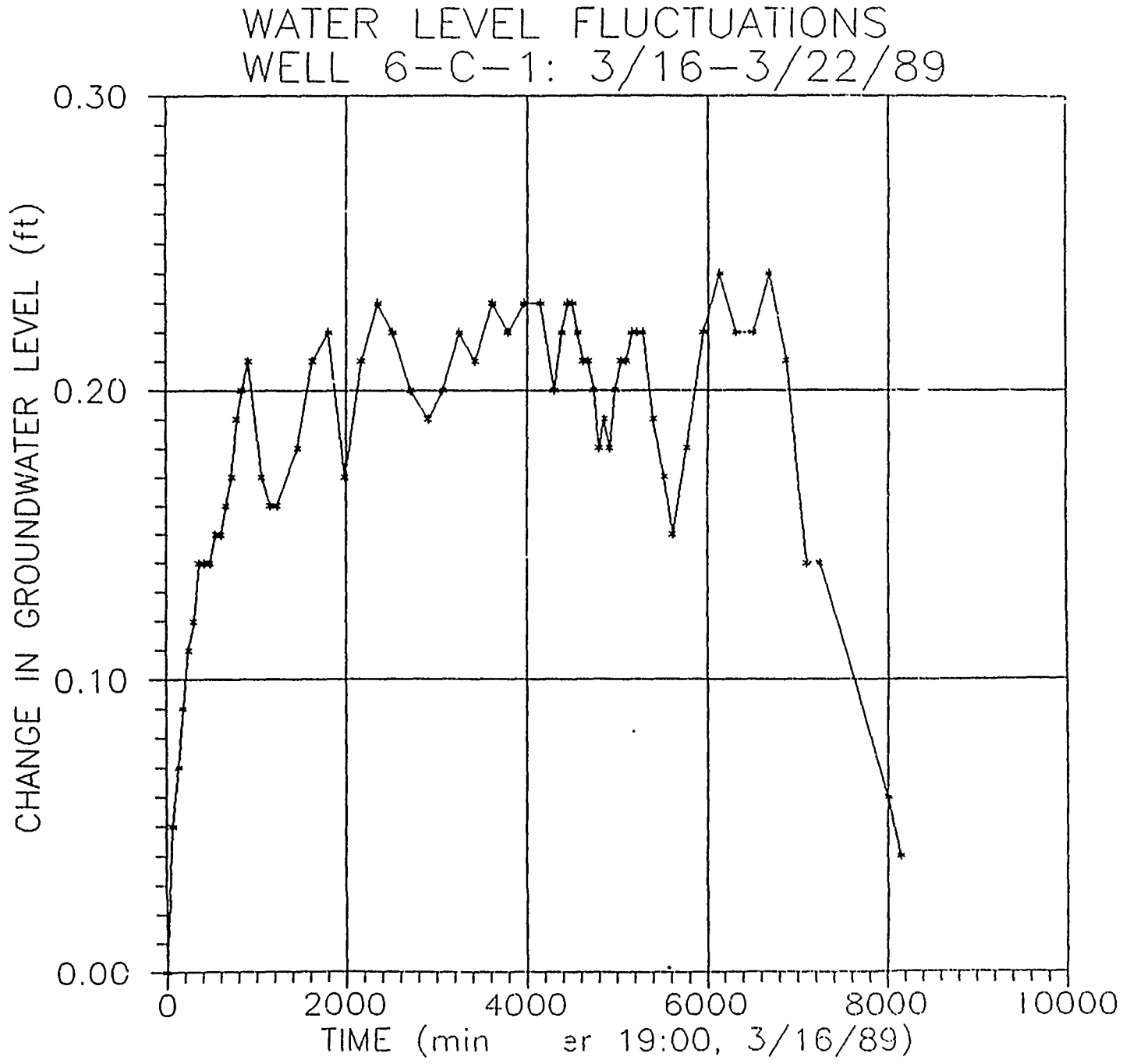
K = T/b
= (230 ft^2/d)/(9.7 ft)
= 24 ft/d

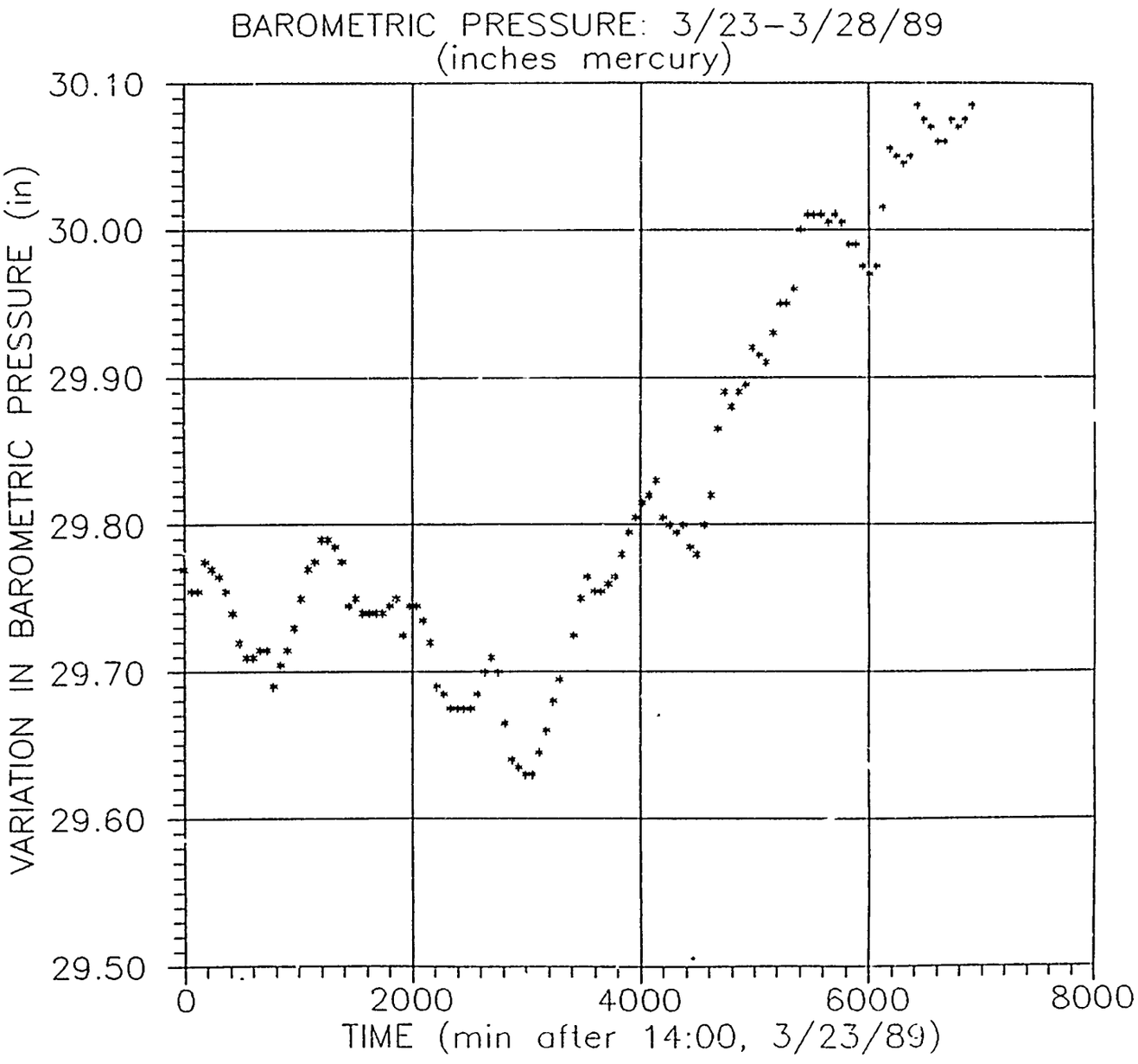


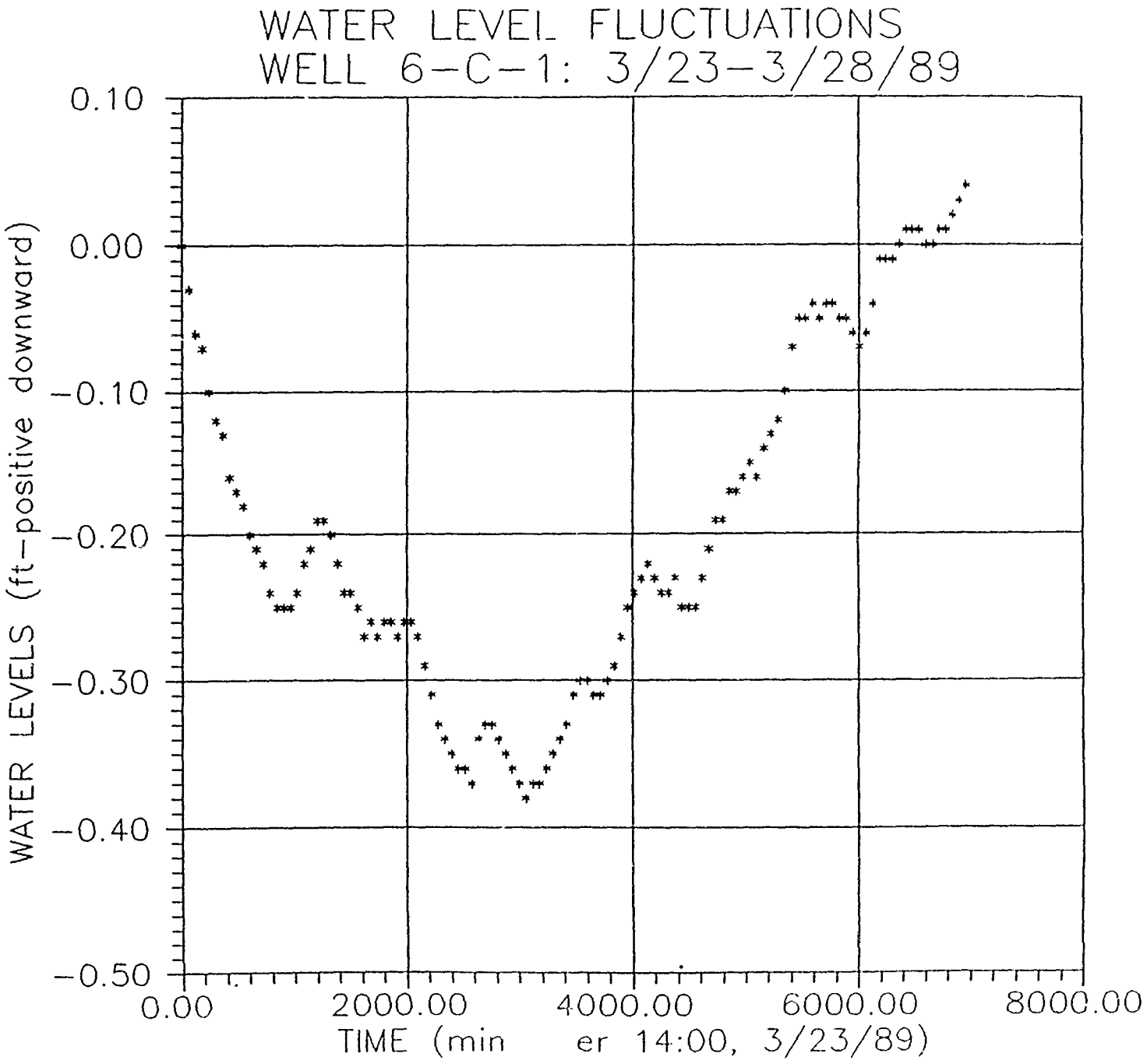
$T = (264)(Q)/(\Delta S)$
$= (264)(12.9 \text{ gpm})/(1.4 \text{ ft})$
$= 2{,}400 \text{ gpd/ft}$
$= 330 \text{ ft}^2/\text{d}$

$K = T/b$
$= (330 \text{ ft}^2/\text{d})/(9.7 \text{ ft})$
$= 34 \text{ ft/d}$


BAROMETRIC PRESSURE: 3/16–3/22/89
(inches mercury)
VARIATION IN BAROMETRIC PRESSURE (in)
30.20
30.10
30.00
29.90
29.80
29.70
0
2000
4000
6000
8000
10000
TIME (min after 19:00, 3/16/89)


WATER LEVEL FLUCTUATIONS
WELL 6-C-1: 3/16-3/22/89
CHANGE IN GROUNDWATER LEVEL (ft)
0.30
0.20
0.10
0.00
0
2000
4000
6000
8000
10000
TIME (min er 19:00, 3/16/89)

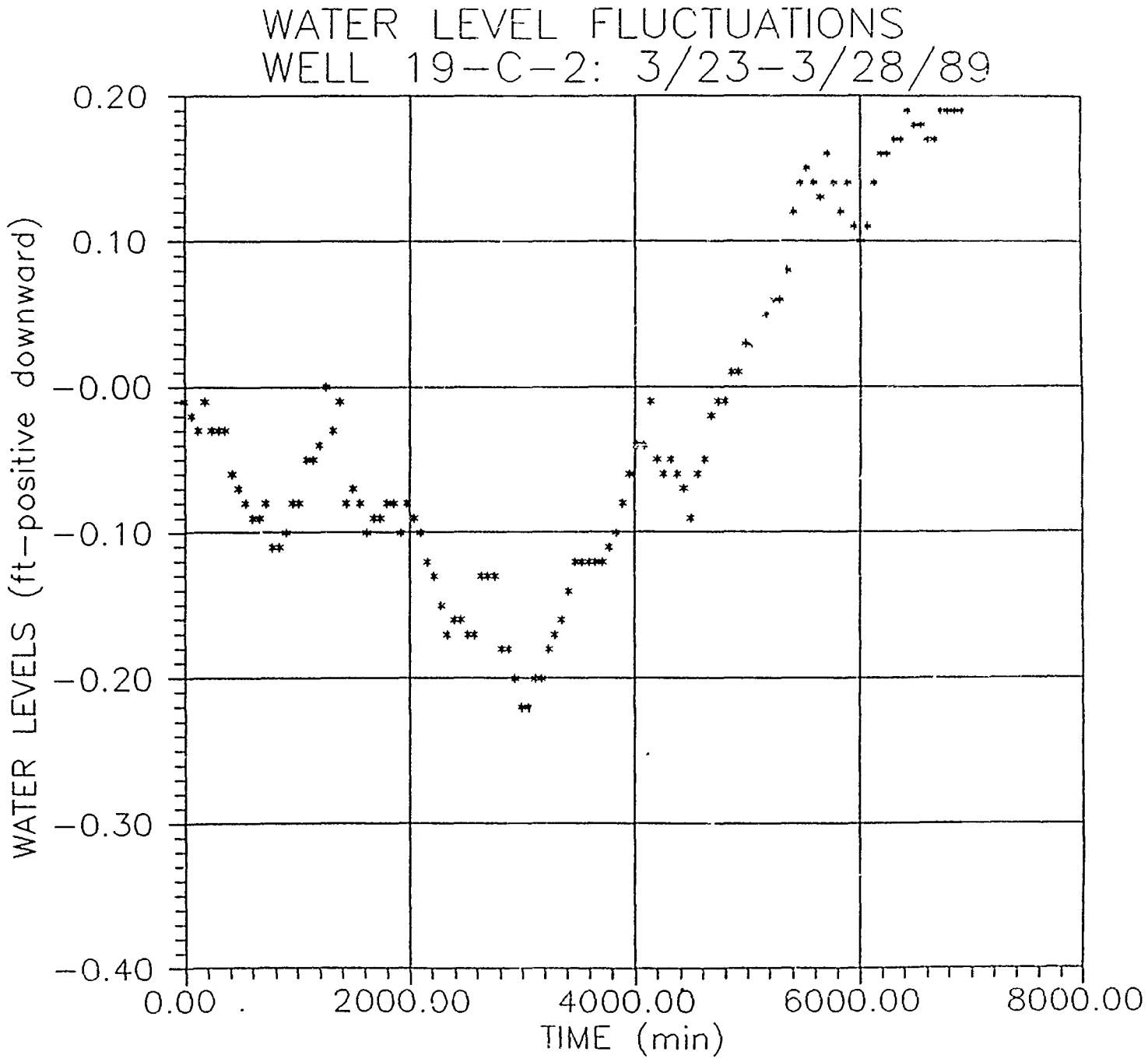

BAROMETRIC PRESSURE: 3/23-3/28/89
(inches mercury)
VARIATION IN BAROMETRIC PRESSURE (in)
30.10
30.00
29.90
29.80
29.70
29.60
29.50
0
2000
4000
6000
8000
TIME (min after 14:00, 3/23/89)

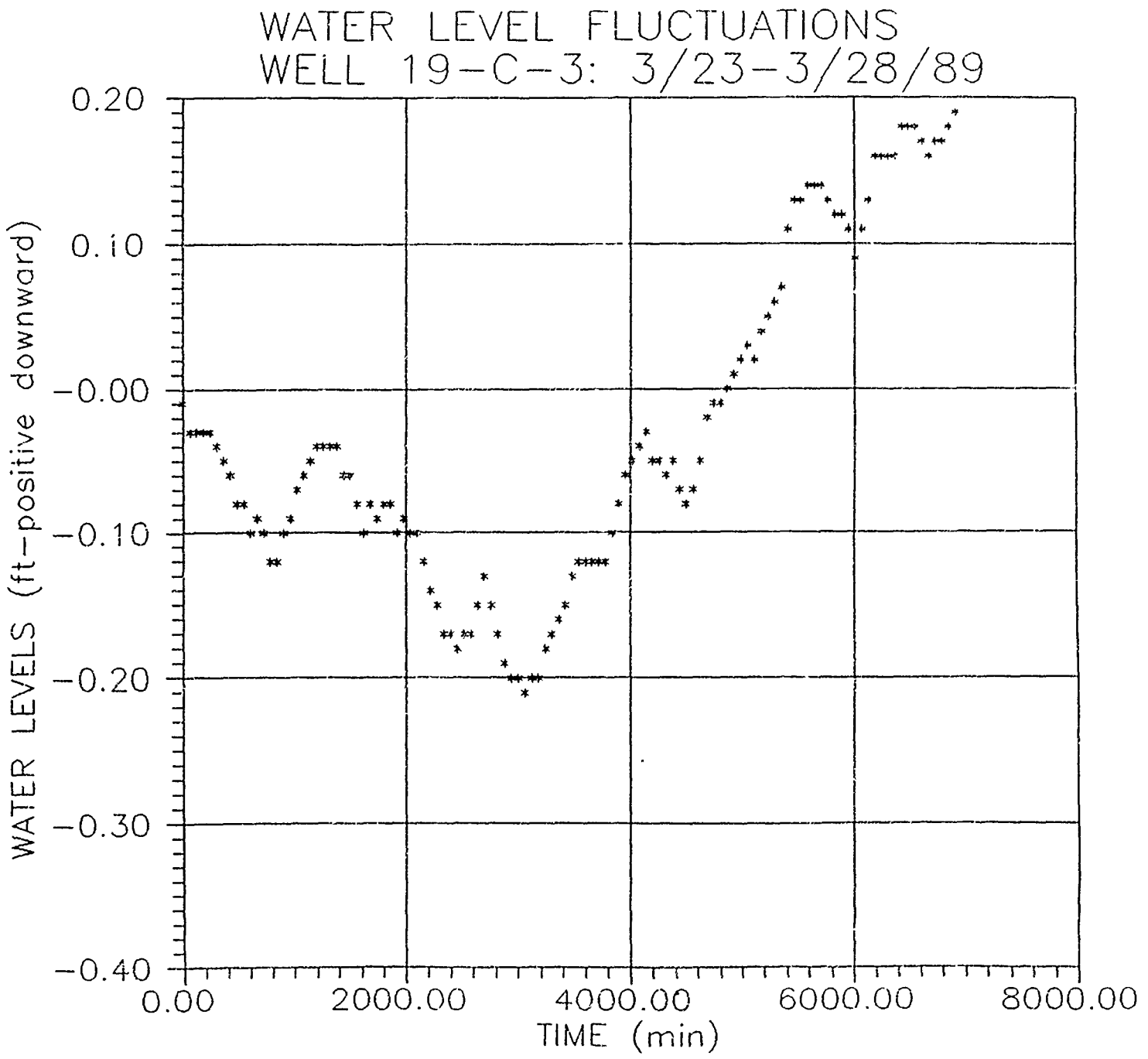

WATER LEVEL FLUCTUATIONS
WELL 6-C-1: 3/23-3/28/89
WATER LEVELS (ft-positive downward)
0.10
0.00
-0.10
-0.20
-0.30
-0.40
-0.50
0.00
2000.00
4000.00
6000.00
8000.00
TIME (min er 14:00, 3/23/89)

SITE 19

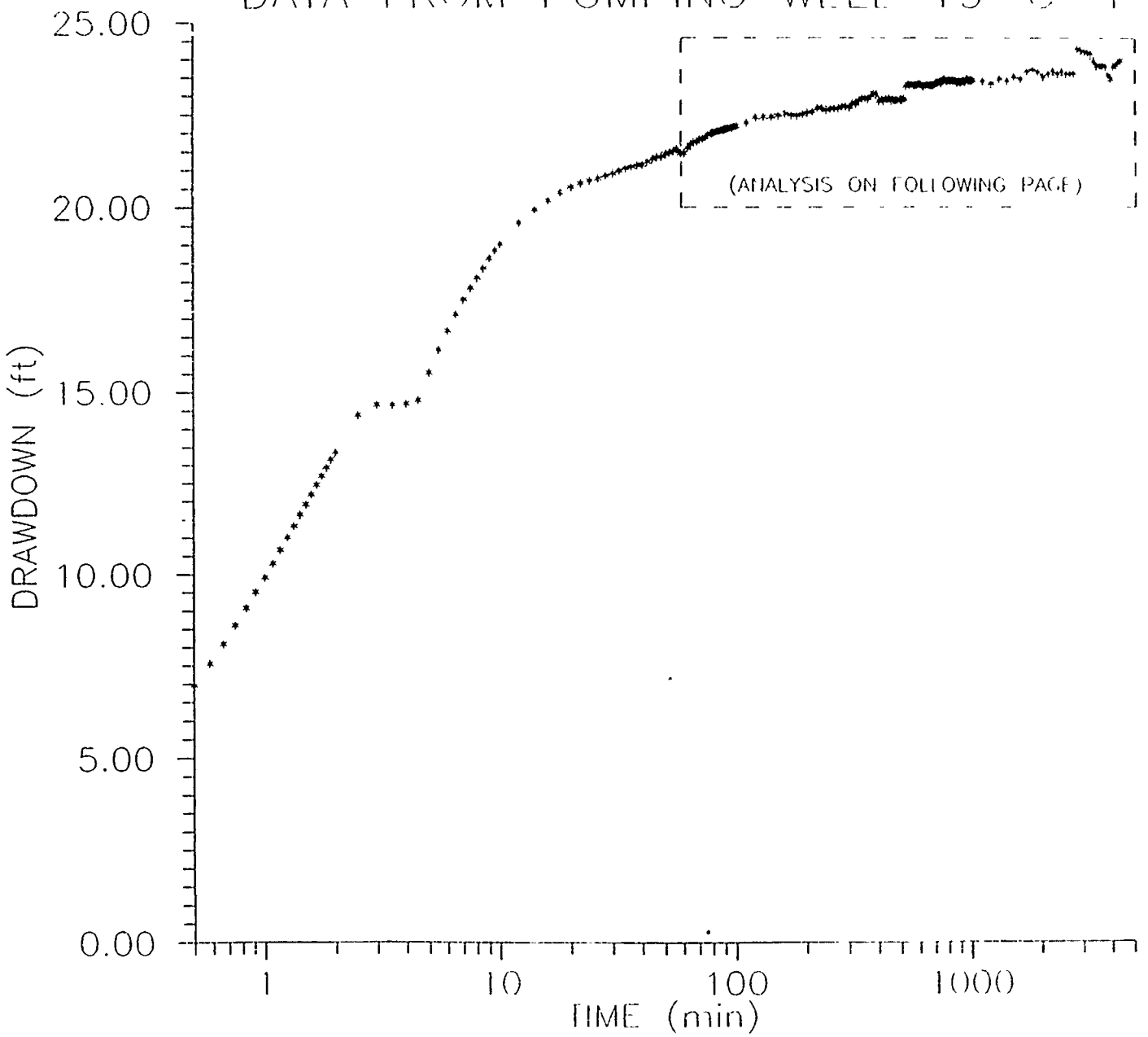
PHOTOWASTE EMERGENCY HOLDING BASIN

Pump Test Plots

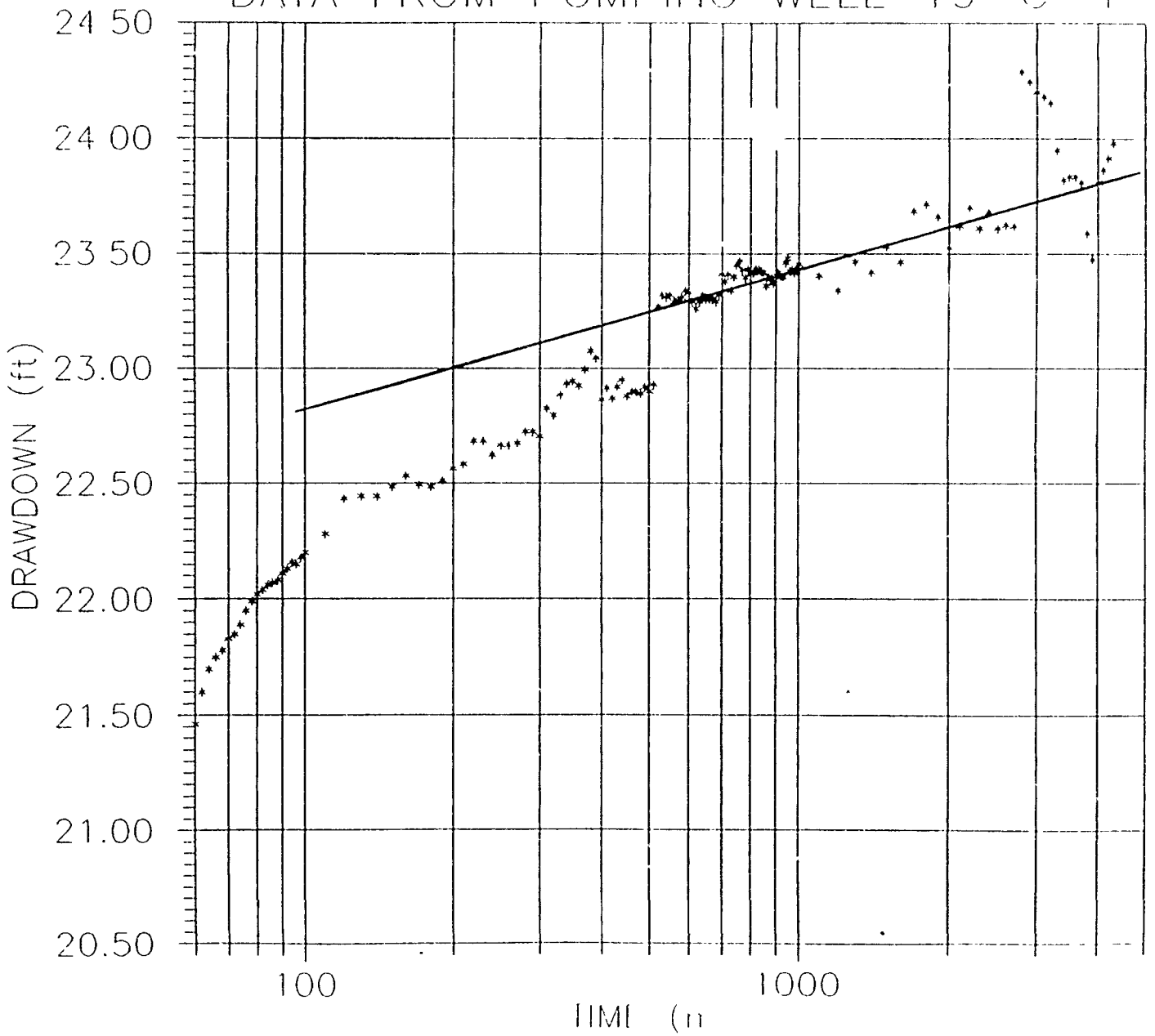

WATER LEVEL FLUCTUATIONS
WELL 19-C-2: 3/23-3/28/89
WATER LEVELS (ft-positive downward)
0.20
0.10
-0.00
-0.10
-0.20
-0.30
-0.40
0.00
2000.00
4000.00
6000.00
8000.00
TIME (min)


WATER LEVEL FLUCTUATIONS
WELL 19-C-3: 3/23-3/28/89
WATER LEVELS (ft-positive downward)
0.20
0.10
-0.00
-0.10
-0.20
-0.30
-0.40
0.00
2000.00
4000.00
6000.00
8000.00
TIME (min)

PUMP DRAWDOWN TEST: 3/16--3/19/89
DATA FROM PUMPING WELL 19--C--4

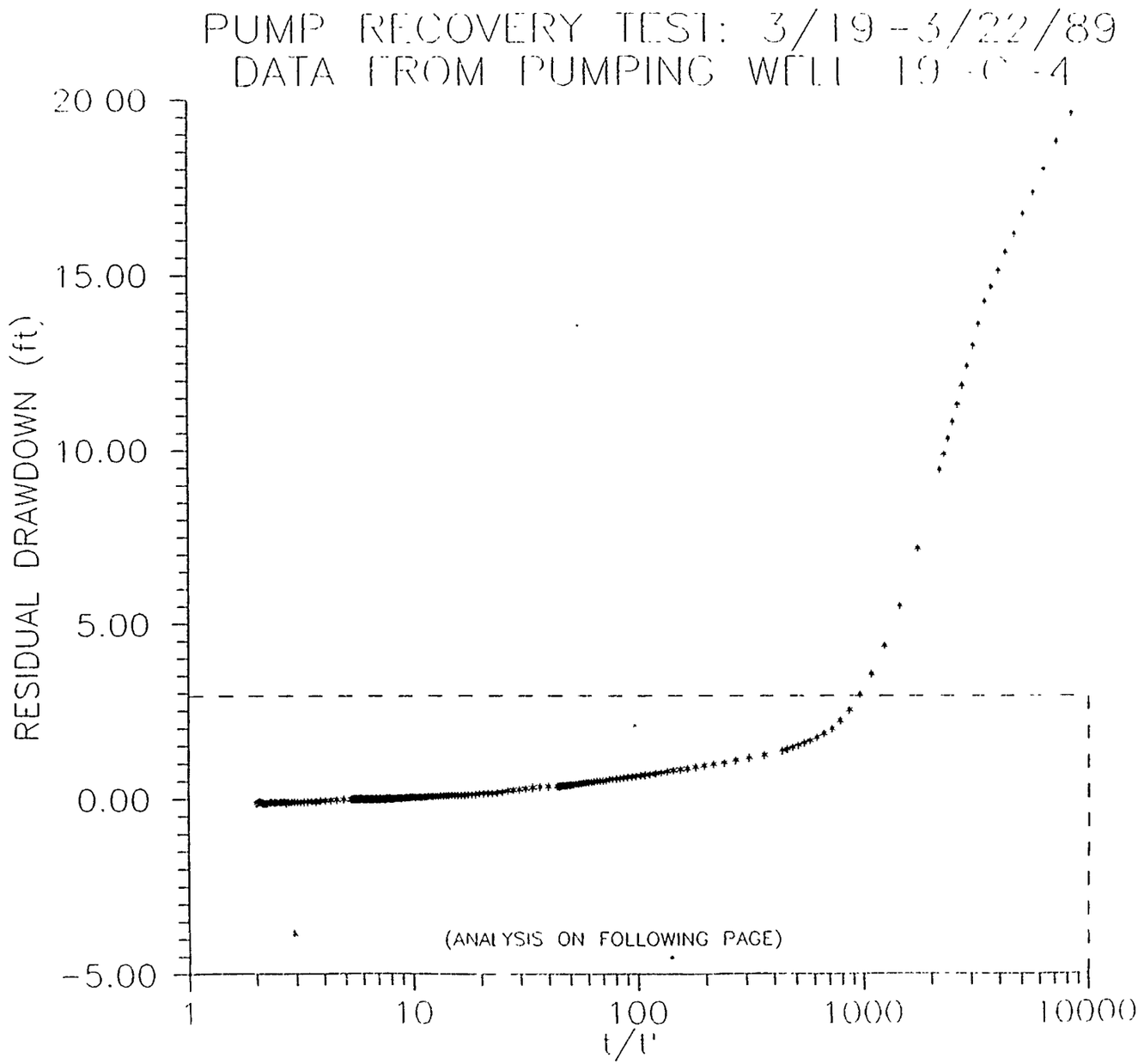


PUMP DRAWDOWN TEST: 3/16–3/19/89
DATA FROM PUMPING WELL 19–C 4

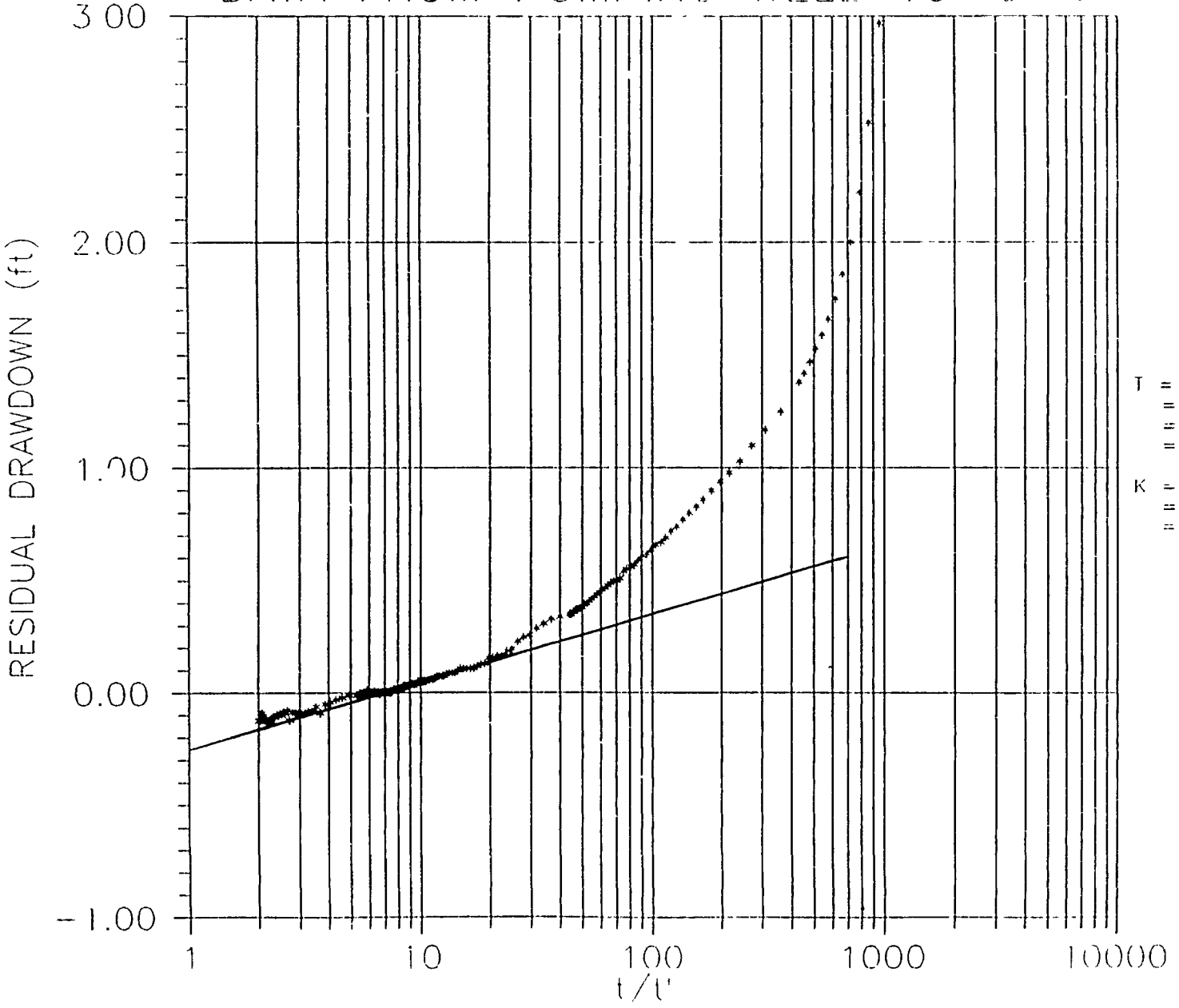


T = (264)(Q)/(ΔS)
= (264)(22 8 gpm)/(0 6 ft)
= 10,000 gpd/ft
= 1,300 ft²/d

K = T/b
= (1,300 ft²/d)/(60 ft)
= 22 ft/d


PUMP RECOVERY TEST: 3/19-3/22/89
DATA FROM PUMPING WELL 19-C-4
RESIDUAL DRAWDOWN (ft)
20.00
15.00
10.00
5.00
0.00
-5.00
1
10
100
1000
10000
t/t'
(ANALYSIS ON FOLLOWING PAGE)

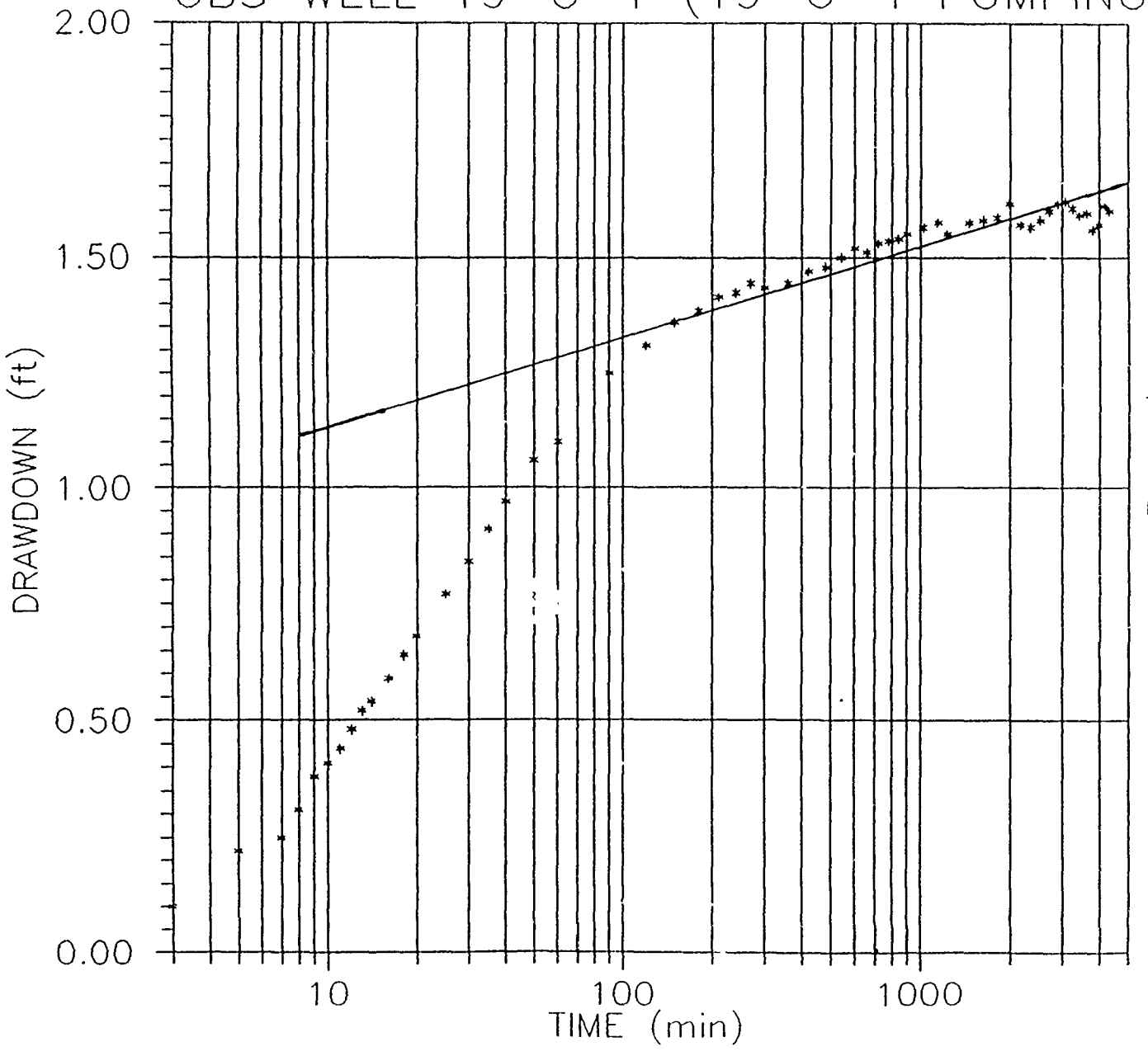
PUMP RECOVERY TEST: 3/19-3/22/80
DATA FROM PUMPING WELL 19-C-4



T = (264)(Q)/(ΔS)
= (264)(22.8 gpm)/(0.4 ft)
= 15,000 gpd/ft
= 2,000 ft^2/d

K = T/b
= (2,000 ft^2/d)/(60 ft)
= 34 ft/d

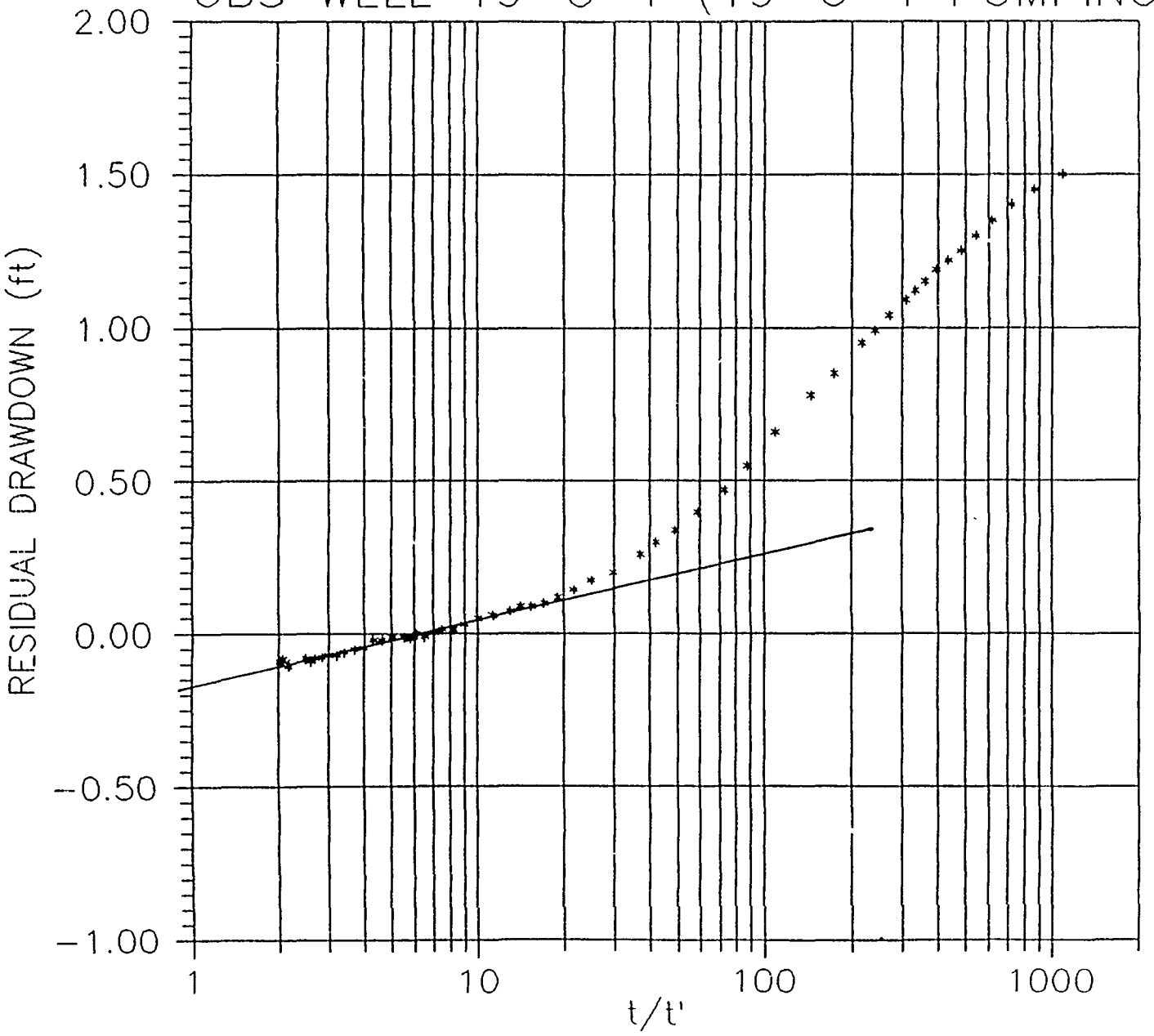
PUMP DRAWDOWN TEST: 3/16–3/19/89
OBS WELL 19–C–1 (19–C–4 PUMPING)



T = (264)(Q)/(ΔS)
= (264)(22.8 gpm)/(0.20 ft)
= 30,000 gpd/ft
= 4,000 ft^2/d

K = T/b
= (4,000 ft^2/d)/(60 ft)
= 67 ft/d

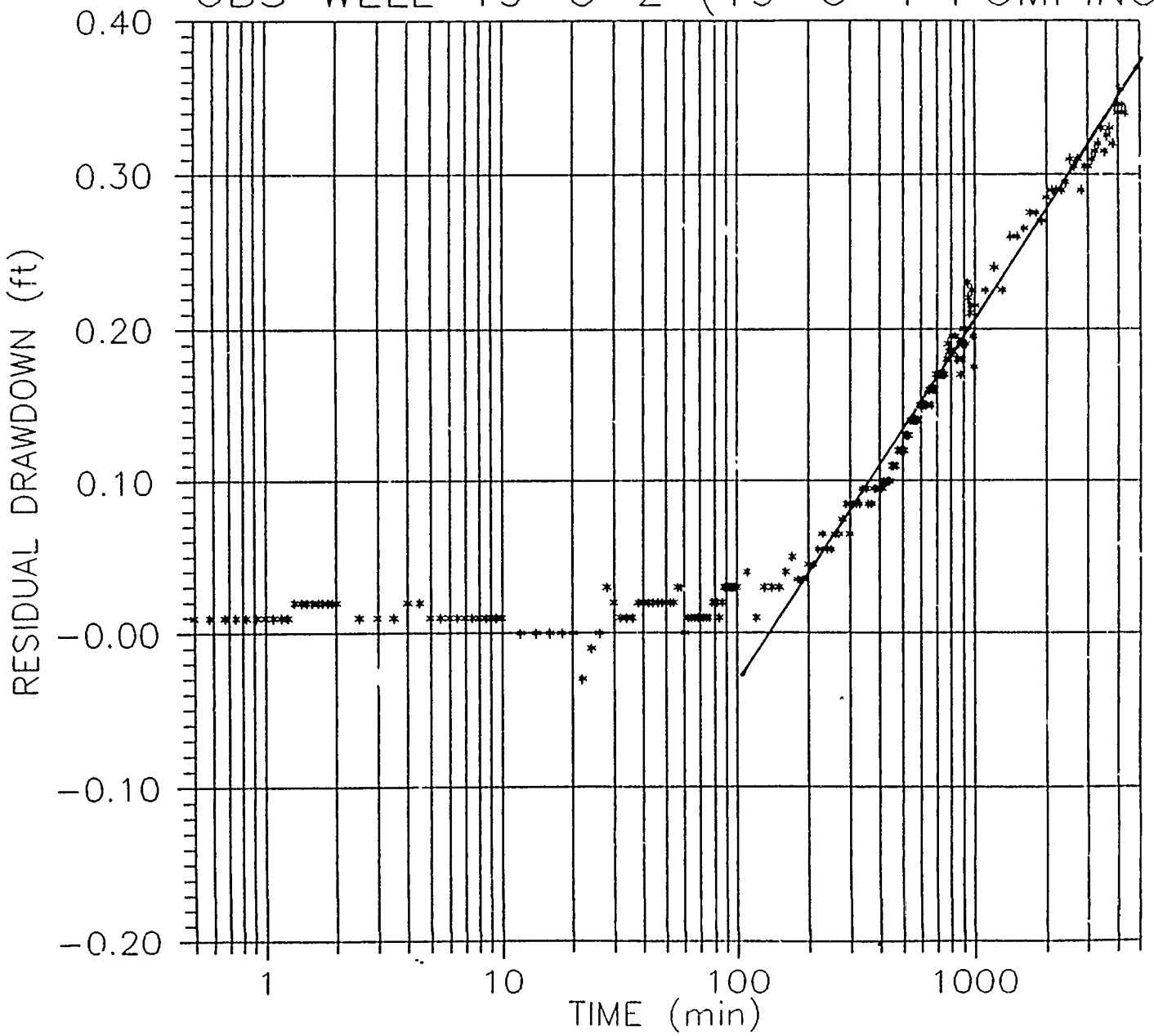
PUMP RECOVERY TEST: 3/19–3/22/89
OBS WELL 19–C–1 (19–C–4 PUMPING)



T = (264)(Q)/(ΔS)
= (264)(22.8 gpm)/(0.20 ft)
= 30,000 gpd/ft
= 4,000 ft^2/d

K = T/b
= (4,000 ft^2/d)/(60 ft)
= 67 ft/d

PUMP DRAWDOWN TEST: 3/16–3/19/89
OBS WELL 19–C–2 (19–C–4 PUMPING)

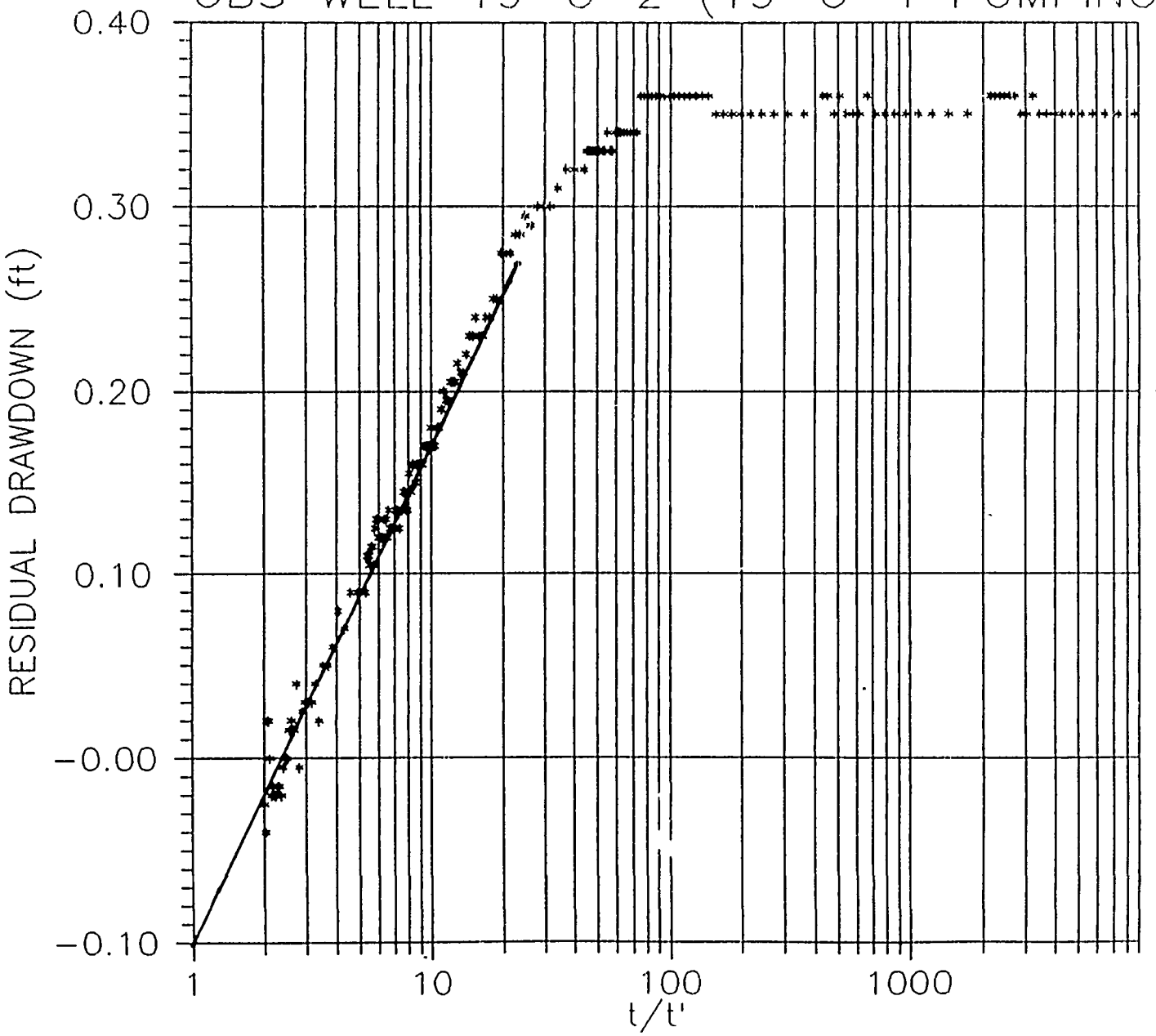


T = (264)(Q)/(ΔS)
= (264)(22.8 gpm)/(0.24 ft)
= 25,000 gpd/ft
= 3,400 ft^2/d

K = T/b
= (3,400 ft^2/d)/(60 ft)
= 56 ft/d

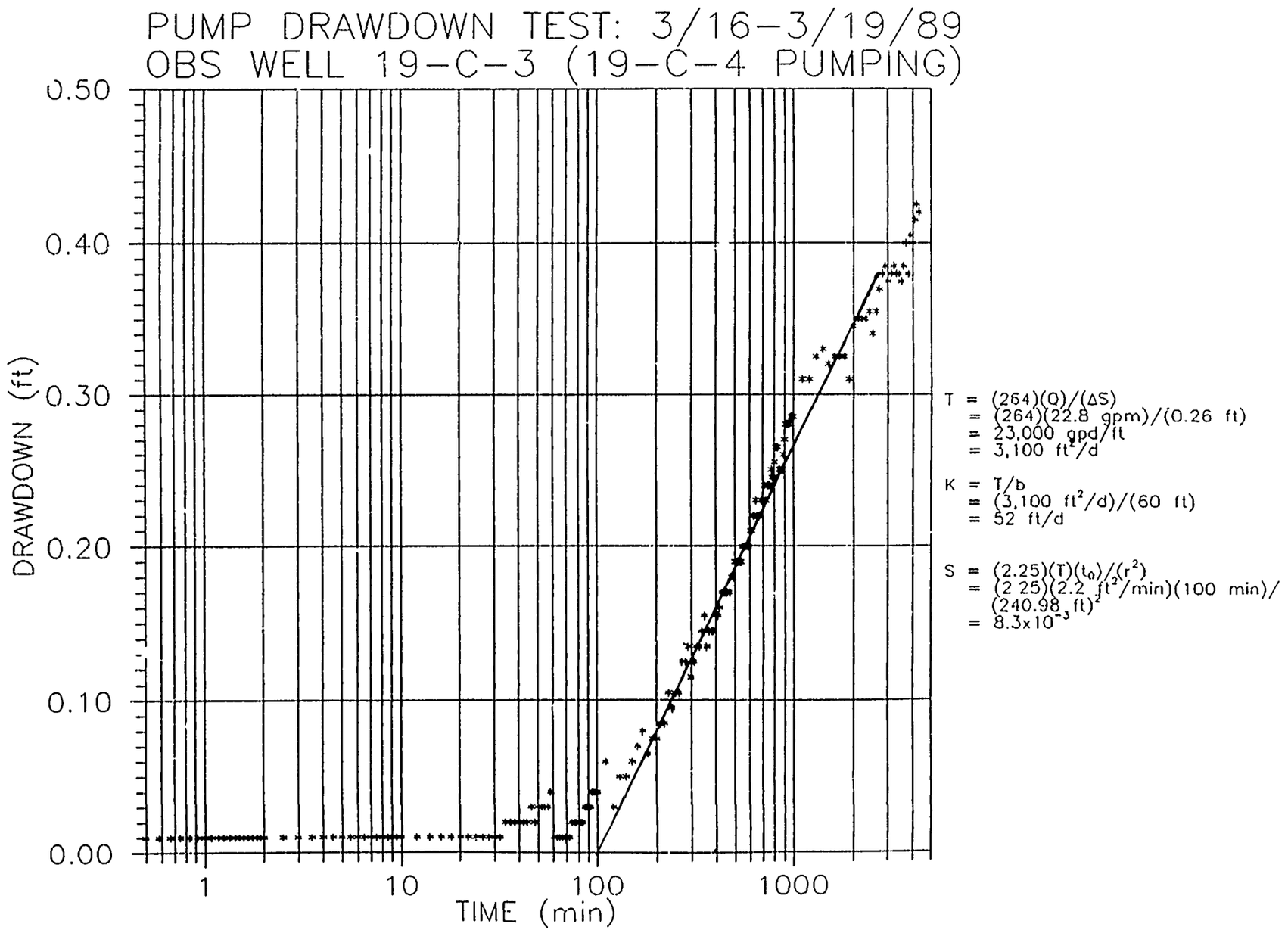
S = (2.25)(T)(t_0)/(r^2)
= (2.25)(2.3 ft^2/min)(150 min)/(324.83 $ft)^2$
= 7.4×10^{-3}

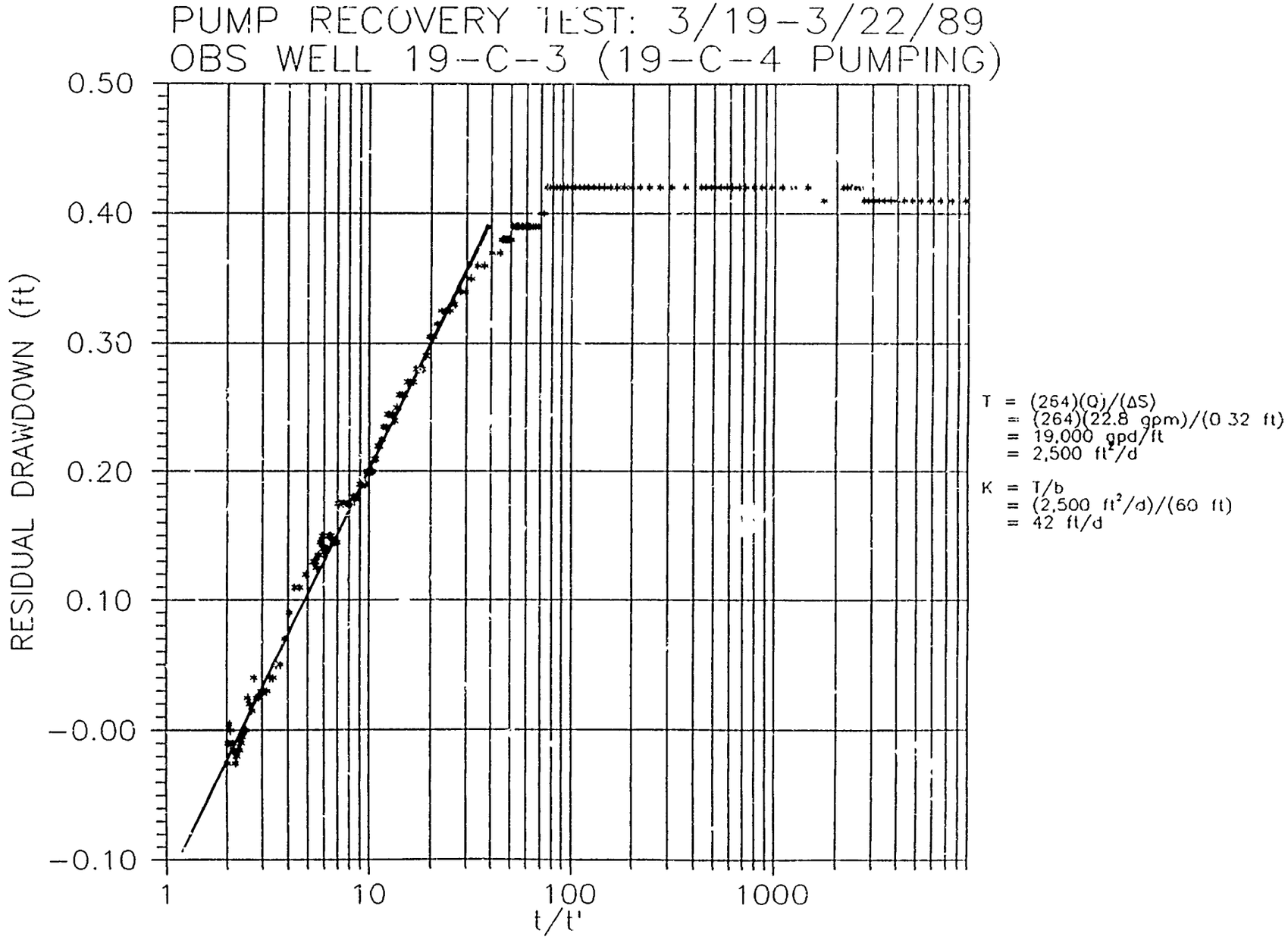
PUMP RECOVERY TEST: 3/19–3/22/89
OBS WELL 19–C–2 (19–C–4 PUMPING)

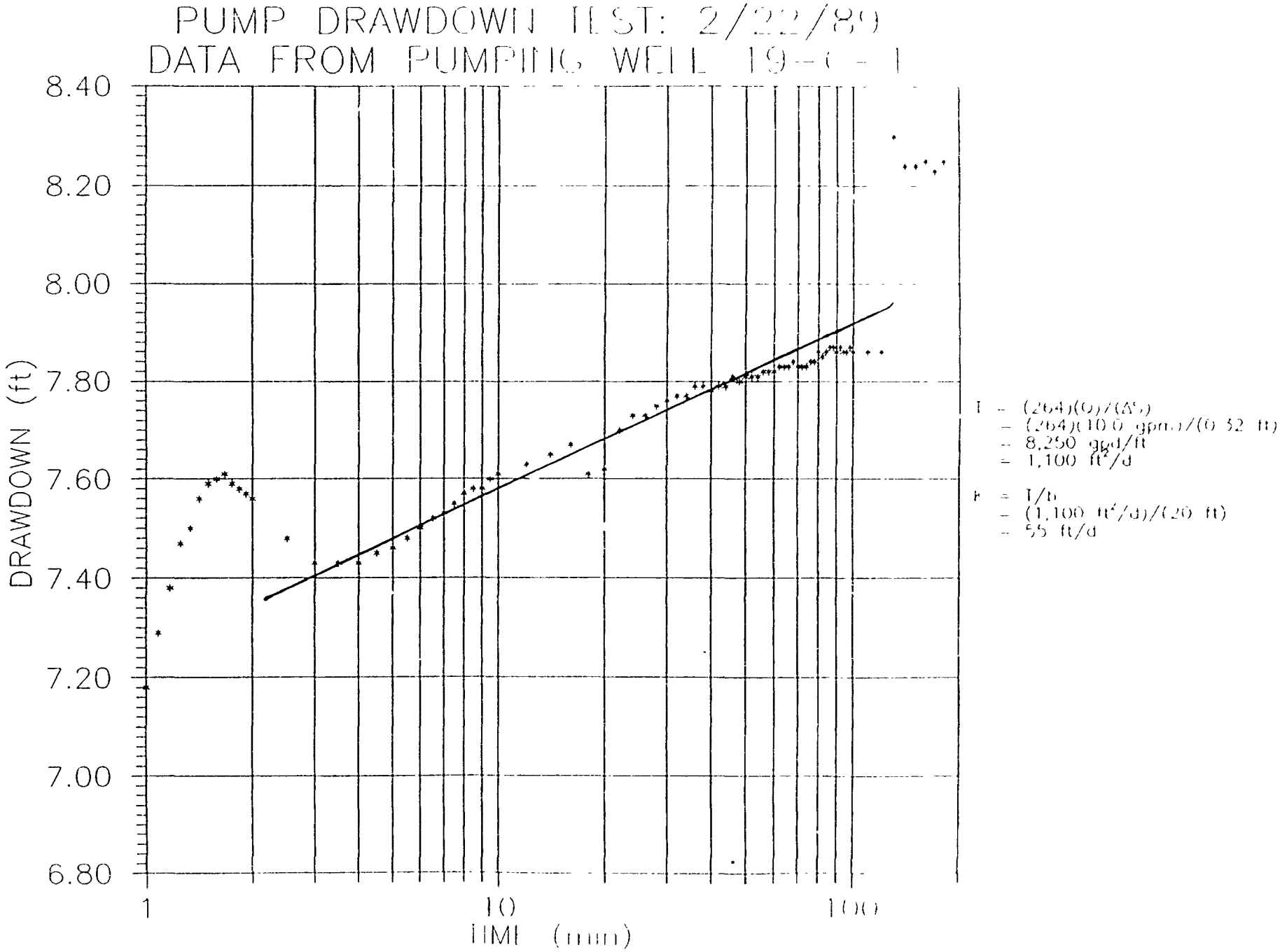


T = (264)(Q)/(ΔS)
= (264)(22.8 gpm)/(0.27 ft)
= 22,000 gpd/ft
= 3,000 ft^2/d

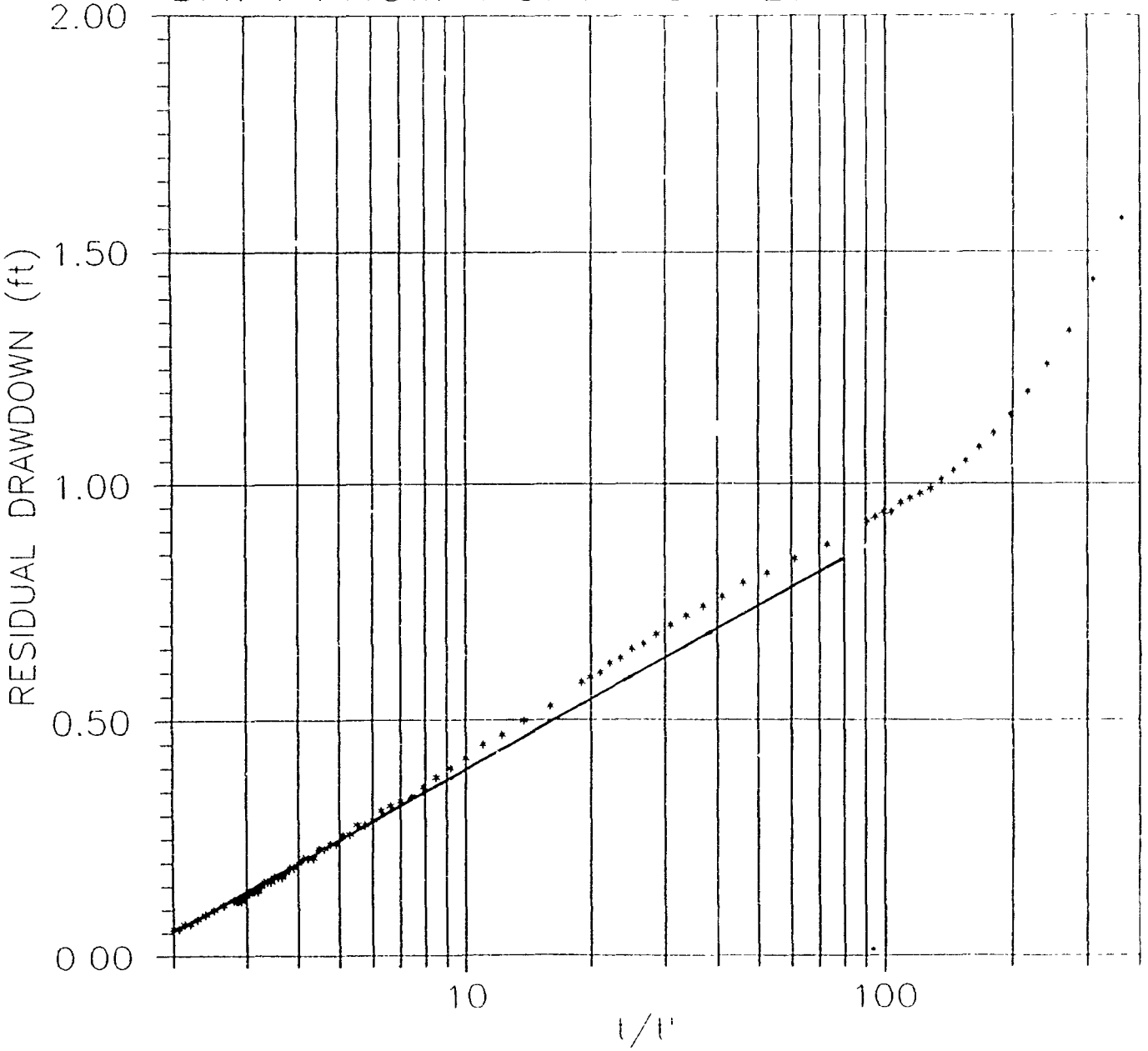
K = T/b
= (3,000 ft^2/d)/(60 ft)
= 50 ft/d


PUMP DRAWDOWN TEST: 3/16-3/19/89
OBS WELL 19-C-3 (19-C-4 PUMPING)
DRAWDOWN (ft)
0.50
0.40
0.30
0.20
0.10
0.00
1
10
100
1000
TIME (min)
T = (264)(Q)/(ΔS)
= (264)(22.8 gpm)/(0.26 ft)
= 23,000 gpd/ft
= 3,100 ft²/d
K = T/b
= (3,100 ft²/d)/(60 ft)
= 52 ft/d
S = (2.25)(T)(t₀)/(r²)
= (2.25)(2.2 ft²/min)(100 min)/(240.98 ft)²
= 8.3x10⁻³


PUMP RECOVERY TEST: 3/19-3/22/89
OBS WELL 19-C-3 (19-C-4 PUMPING)
RESIDUAL DRAWDOWN (ft)
0.50
0.40
0.30
0.20
0.10
-0.00
-0.10
1
10
100
1000
t/t'
T = (264)(Q)/(ΔS)
= (264)(22.8 gpm)/(0.32 ft)
= 19,000 gpd/ft
= 2,500 ft²/d
K = T/b
= (2,500 ft²/d)/(60 ft)
= 42 ft/d

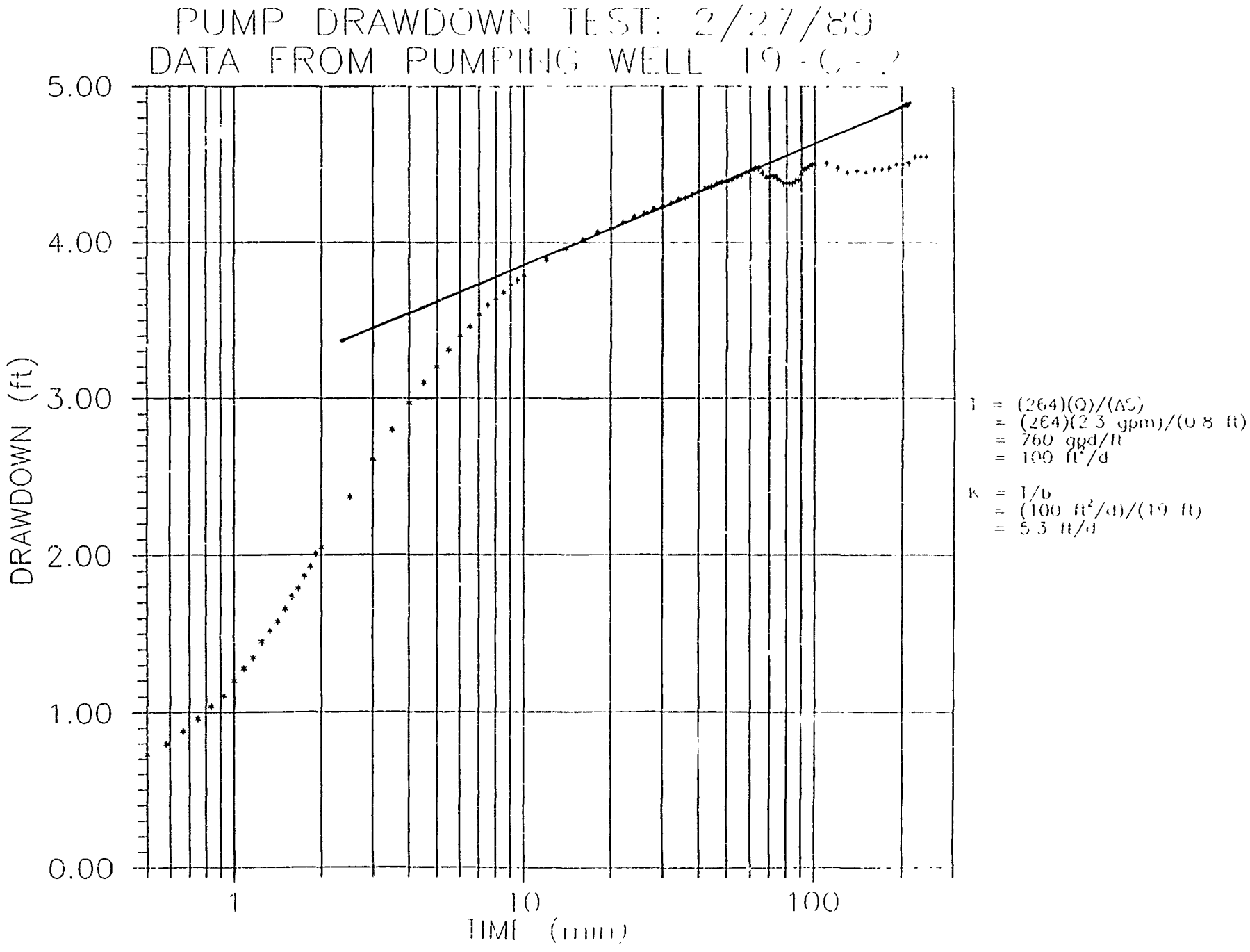

PUMP DRAWDOWN TEST: 2/22/80
DATA FROM PUMPING WELL 19-C - 1
8.40
8.20
8.00
7.80
7.60
7.40
7.20
7.00
6.80
DRAWDOWN (ft)
1
10
100
TIME (min)
T = (264)(Q)/(ΔS)
= (264)(100 gpm)/(0.52 ft)
= 8,250 gpd/ft
= 1,100 ft²/d
K = T/b
= (1,100 ft²/d)/(20 ft)
= 55 ft/d

PUMP RECOVERY TEST: 2/22/89
DATA FROM PUMPING WELL 19--C - 1

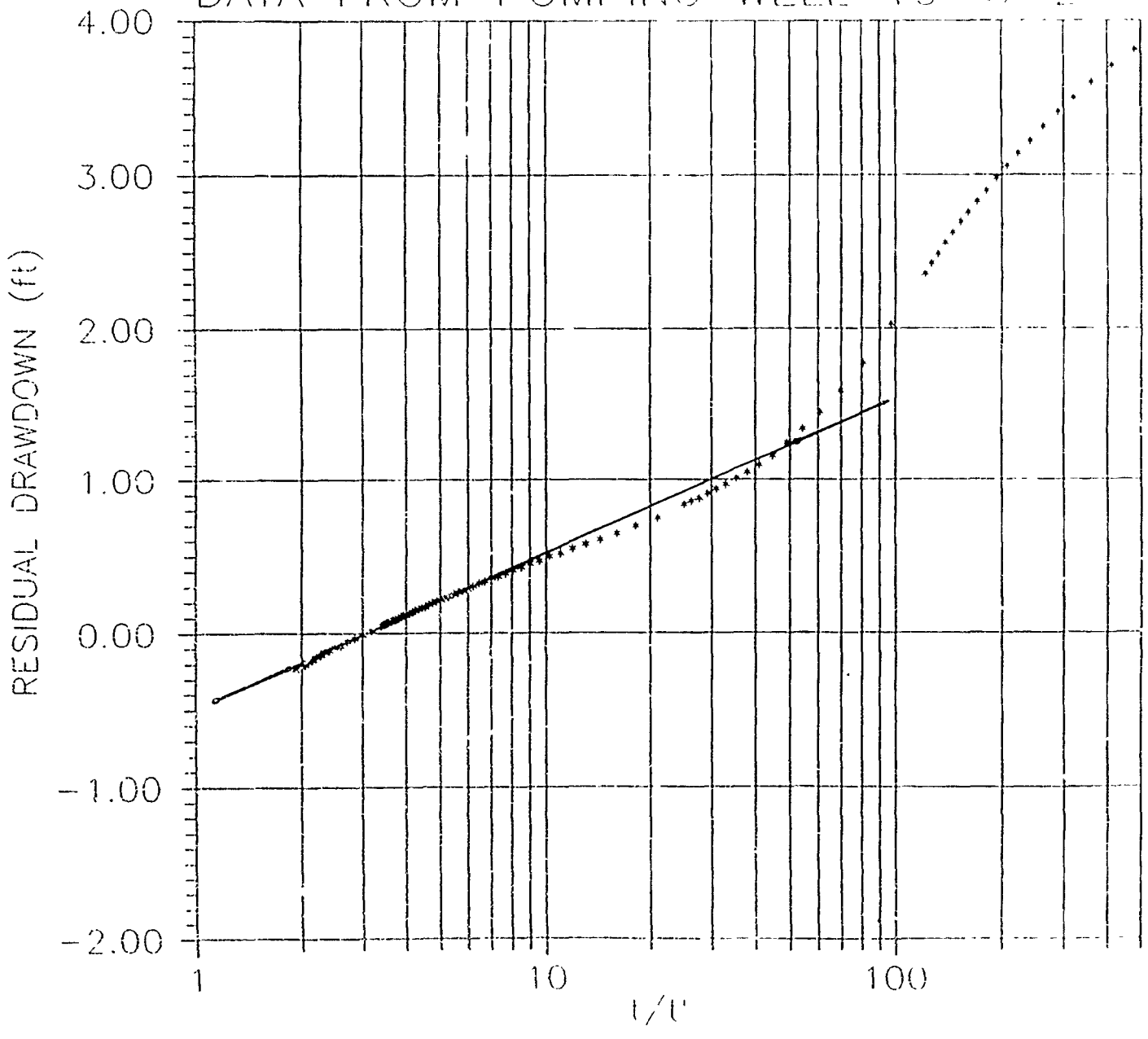


T = (264)(Q)/(ΔS)
= (264)(10 0 gpm)/(0 48 ft)
= 5,500 gpd/ft
= 735 ft²/d

K = T/b
= (735 ft²/d)/(20 ft)
= 37 ft/d


PUMP DRAWDOWN TEST: 2/27/89
DATA FROM PUMPING WELL 19-C-2
5.00
4.00
3.00
2.00
1.00
0.00
DRAWDOWN (ft)
1
10
100
TIME (min)
T = (264)(Q)/(ΔS)
= (264)(2.3 gpm)/(0.8 ft)
= 760 gpd/ft
= 100 ft²/d
K = T/b
= (100 ft²/d)/(19 ft)
= 5.3 ft/d

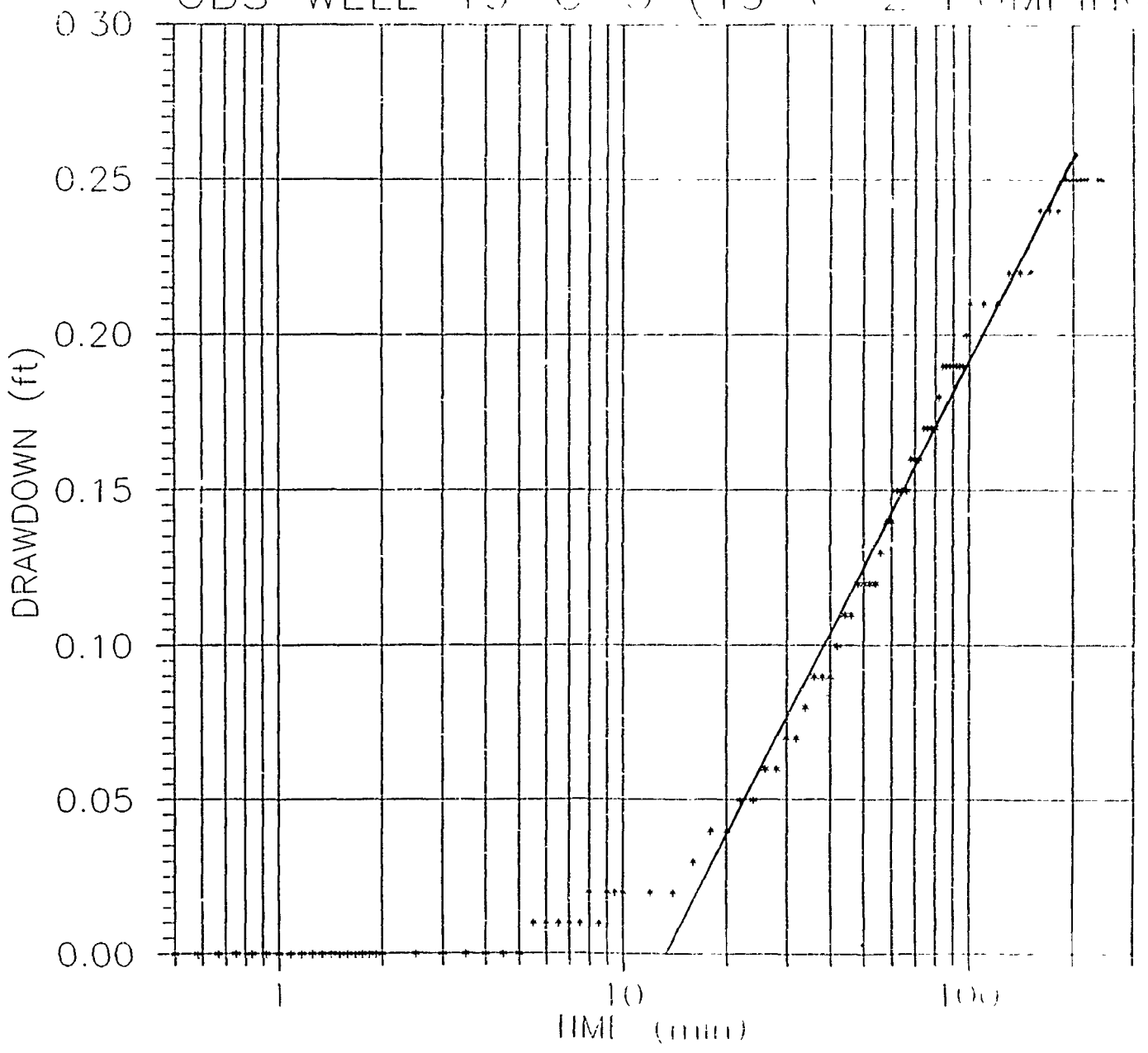
PUMP RECOVERY TEST: 2/27/89
DATA FROM PUMPING WELL 19-C-2



T = (264)(Q)/(ΔS)
= (264)(2.3 gpm)/(1.0 ft)
= 610 gpd/ft
= 81 ft²/d

K = T/b
= (81 ft²/d)/(19 ft)
= 4.3 ft/d

PUMP DRAWDOWN TEST: 2/27/89
OBS WELL 19-C 3 (19-C 2 PUMPED)



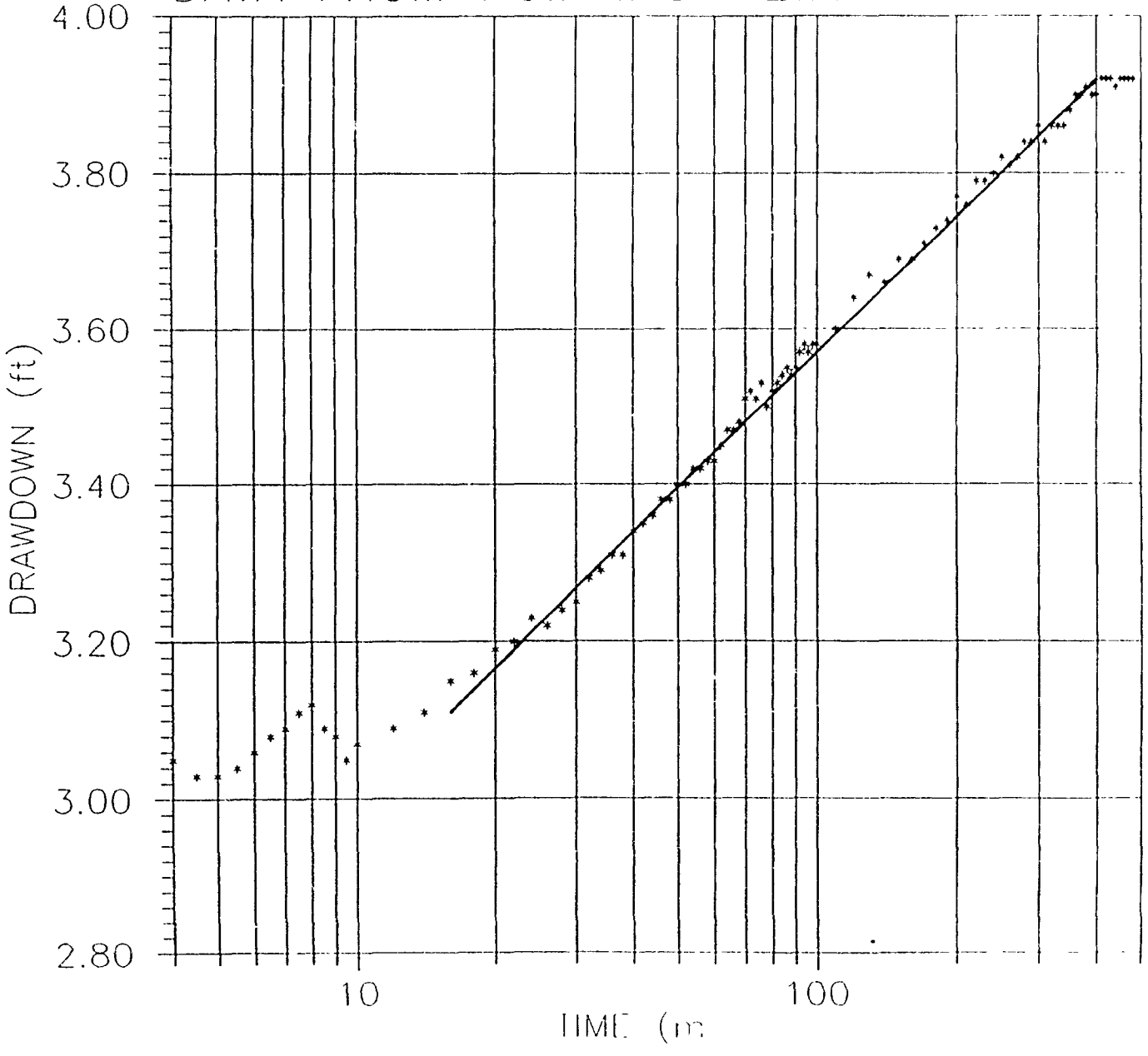
T = (264)(Q)/(ΔS)
= (264)(2.3 gpm)/(0.22 ft)
= 2,800 gpd/ft
= 370 ft²/d

K = T/b
= (370 ft²/d)/(20 ft)
= 18 ft/d

S = (2.25)(T)(t_0)/(r^2)
= (2.25)(0.26 ft²/min)(14 min)/(129.85 ft)²
= 4.8×10⁻⁴

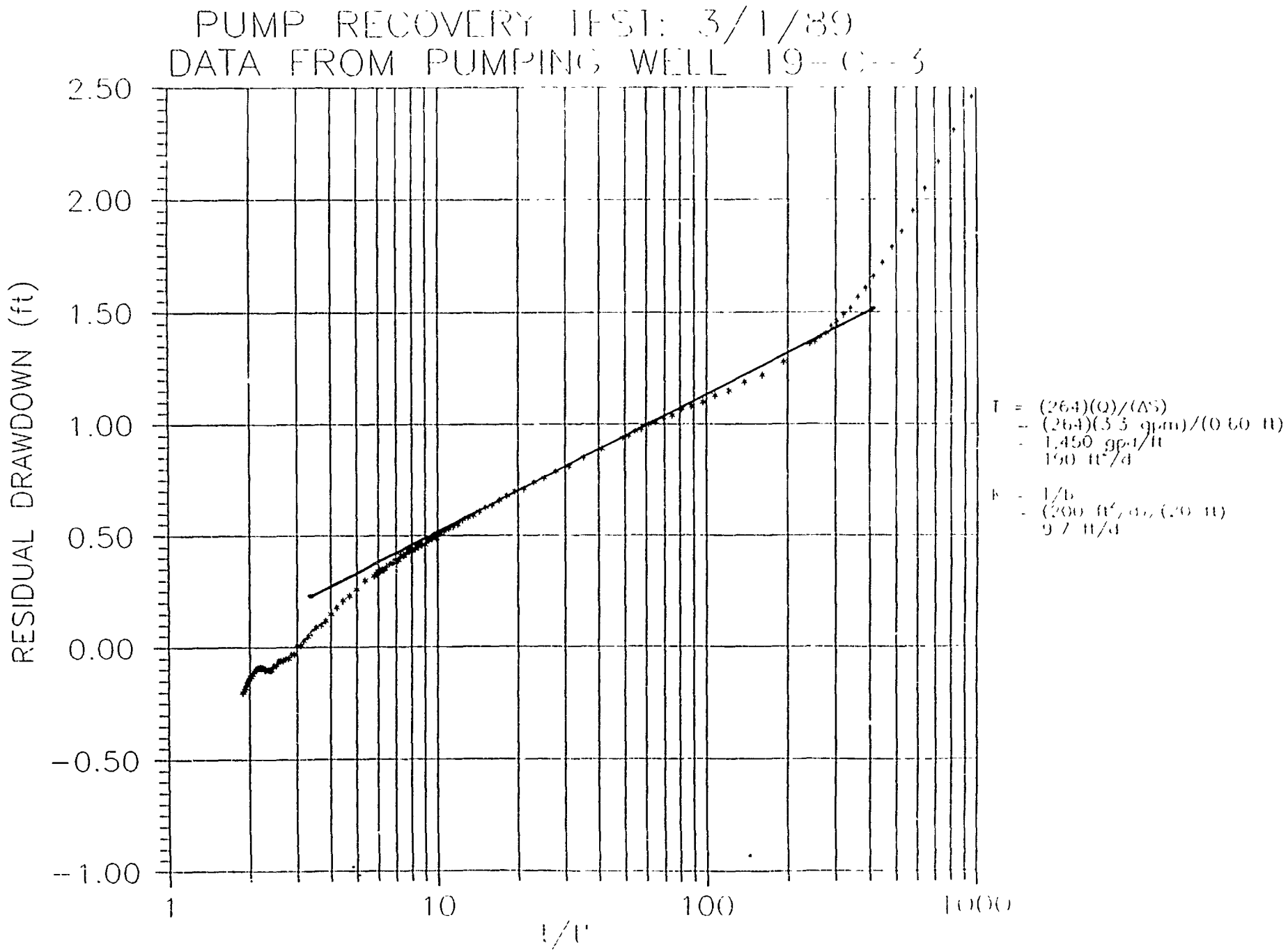
(DATA FROM RECOVERY TEST INCONCLUSIVE)

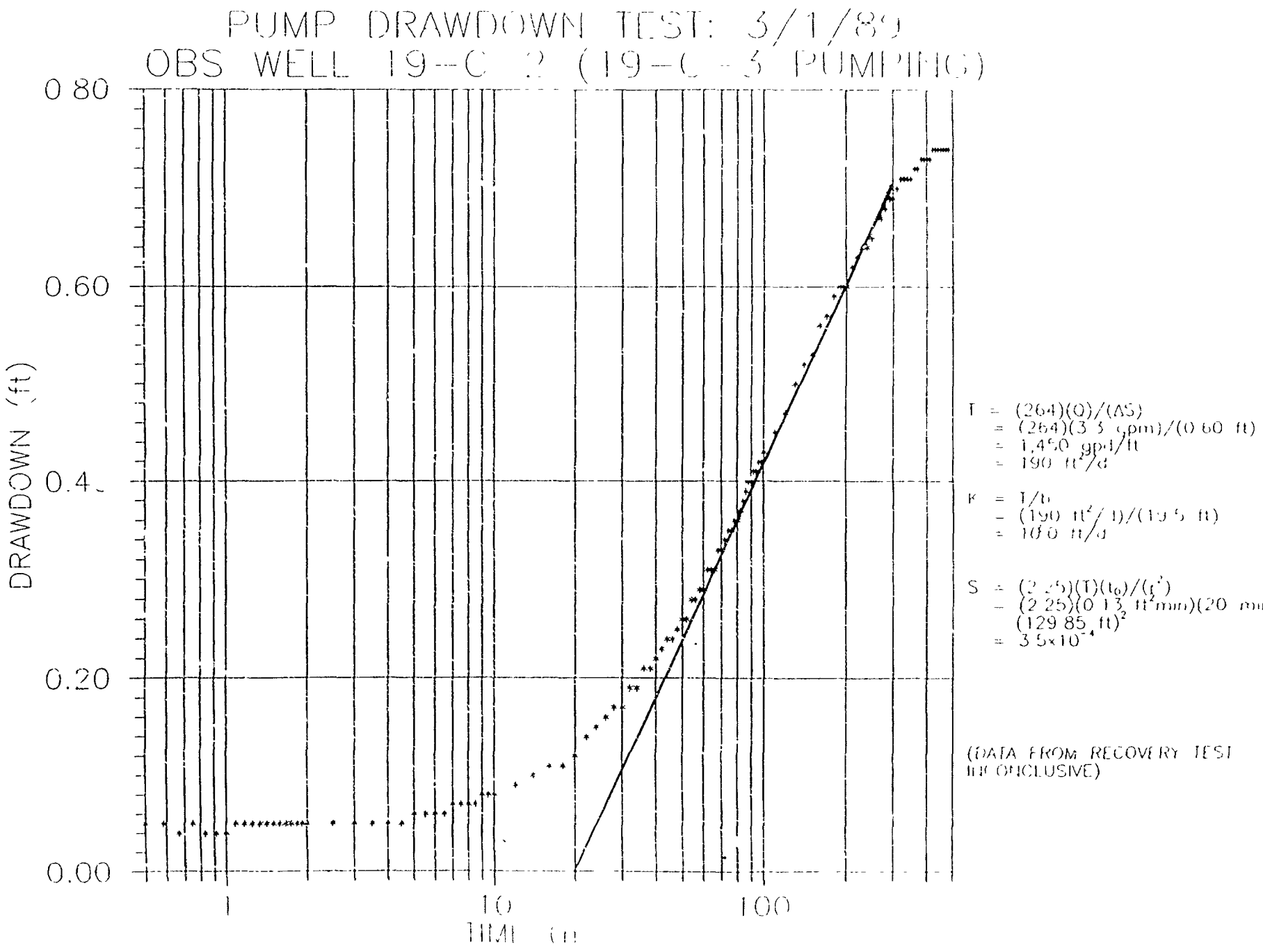
PUMP DRAWDOWN TEST: 3/1/80
DATA FROM PUMPING WELL 19-C--3



T = (.264)(Q)/(ΔS)
= (264)(3.3 gpm)/(0.58 ft)
= 1,500 gpd/ft
= 200 ft²/d

K = T/b
= (200 ft²/d)/(20 ft)
= 10 ft/d


PUMP RECOVERY TEST: 3/1/89
DATA FROM PUMPING WELL 19-C-3
RESIDUAL DRAWDOWN (ft)
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
-1.00
1
10
100
1000
t/t'
T = (264)(Q)/(ΔS)
= (264)(3.5 gpm)/(0.60 ft)
= 1,450 gpd/ft
190 ft²/d
K = T/b
= (200 ft²/d)/(20 ft)
9.7 ft/d

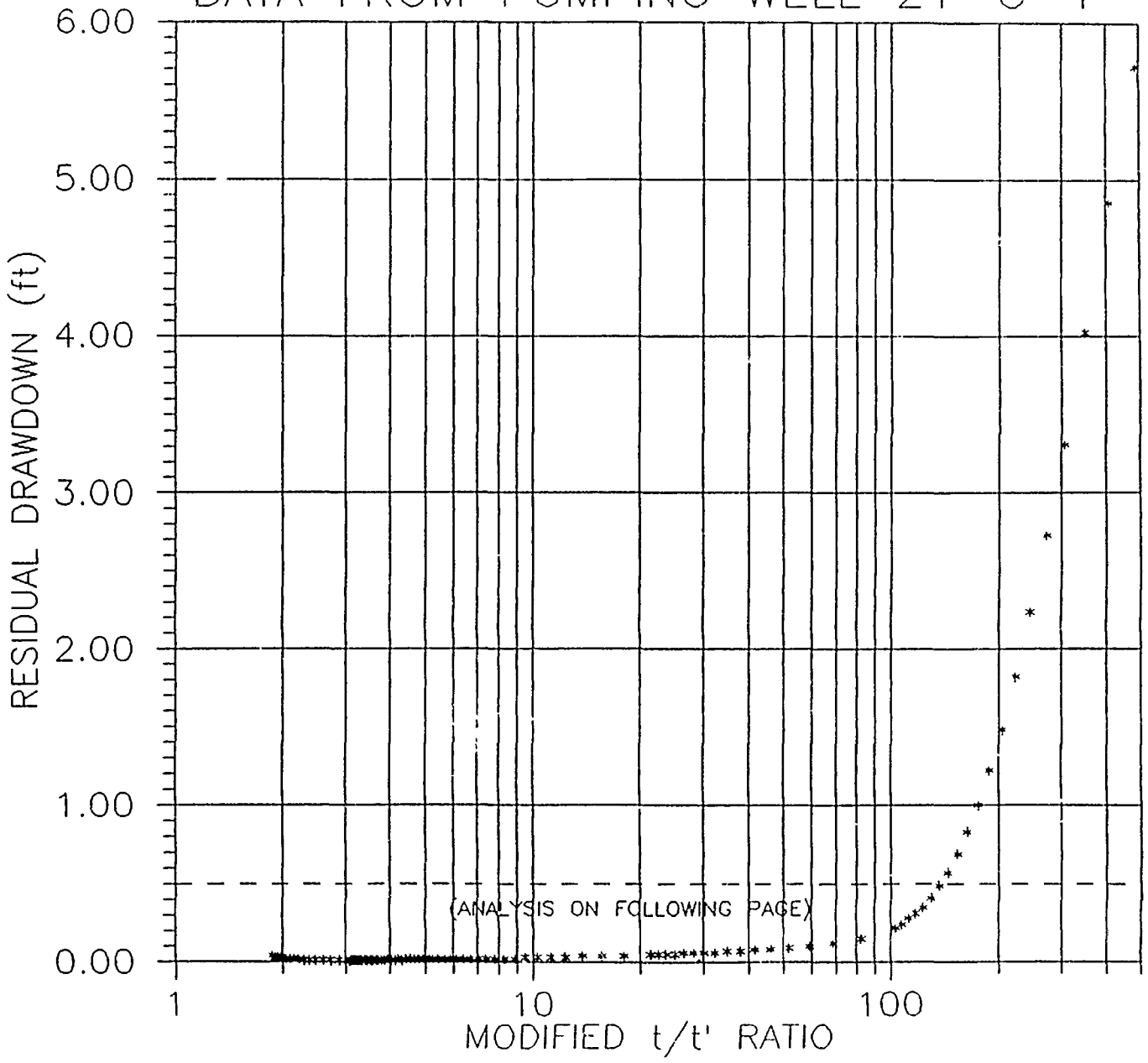

PUMP DRAWDOWN TEST: 3/1/89
OBS WELL 19-C 2 (19-C-3 PUMPING)
0.80
0.60
0.40
0.20
0.00
DRAWDOWN (ft)
1
10
100
TIME (m
T = (264)(Q)/(ΔS)
= (264)(3.3 gpm)/(0.60 ft)
= 1,450 gpd/ft
= 190 ft²/d
K = T/b
= (190 ft²/d)/(19.5 ft)
= 10.0 ft/d
S = (2.25)(T)(t₀)/(r²)
= (2.25)(0.13 ft²/min)(20 min)/(129.85 ft)²
= 3.5×10⁻⁴
(DATA FROM RECOVERY TEST INCONCLUSIVE)

SITE 21

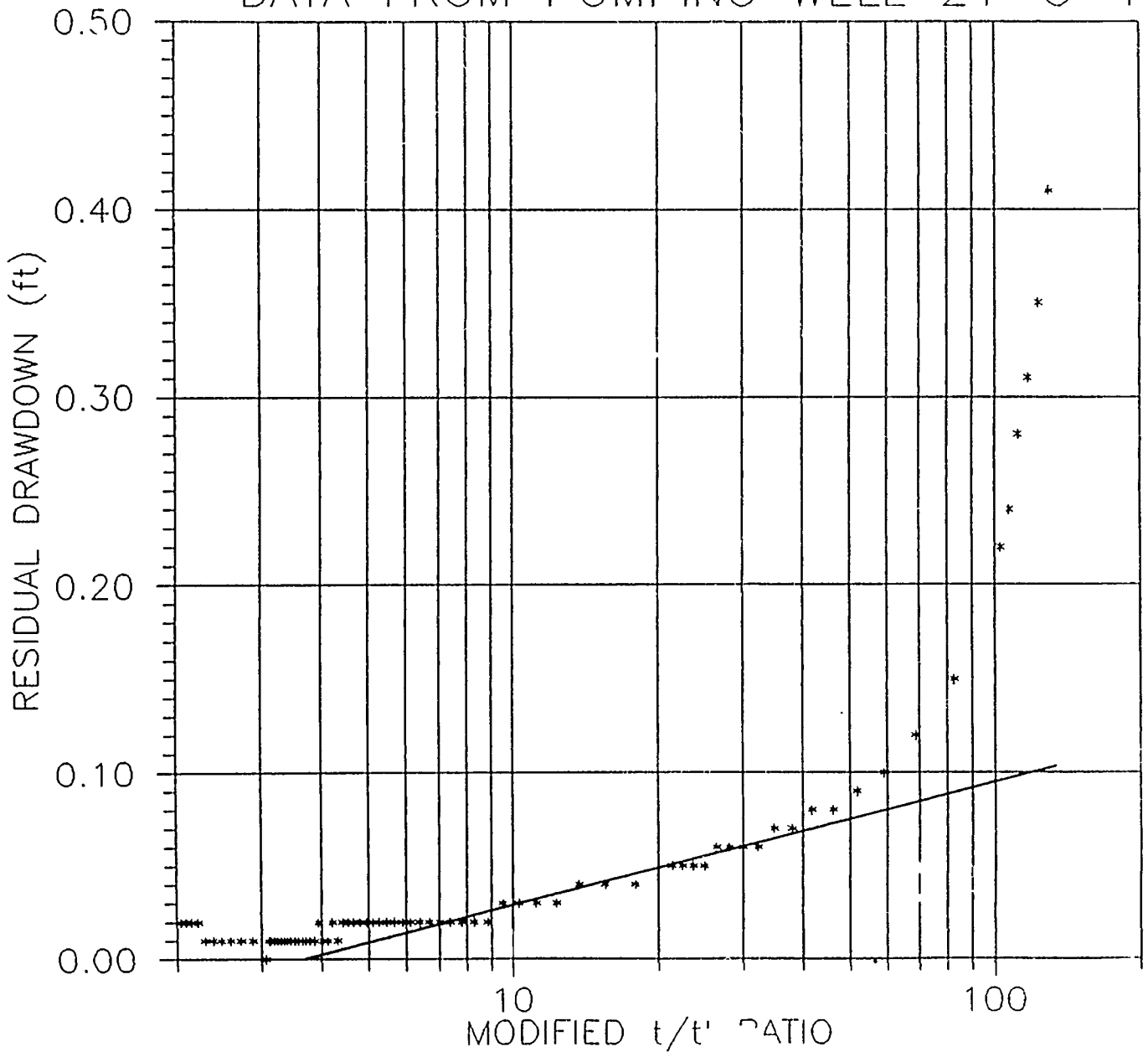
JP-7 ABOVEGROUND FUEL STORAGE TANKS

Pump Test Plots

RECOVERY OF STEP DRAWDOWN TEST: 3/9/89
DATA FROM PUMPING WELL 21-C-1



RECOVERY OF STEP DRAWDOWN TEST: 3/9/89
DATA FROM PUMPING WELL 21-C-1



T = (264)(Q)/(ΔS)
= (264)(13.3 gpm)/(0.63 ft)
= 5,600 gpd/ft
= 750 ft^2/d

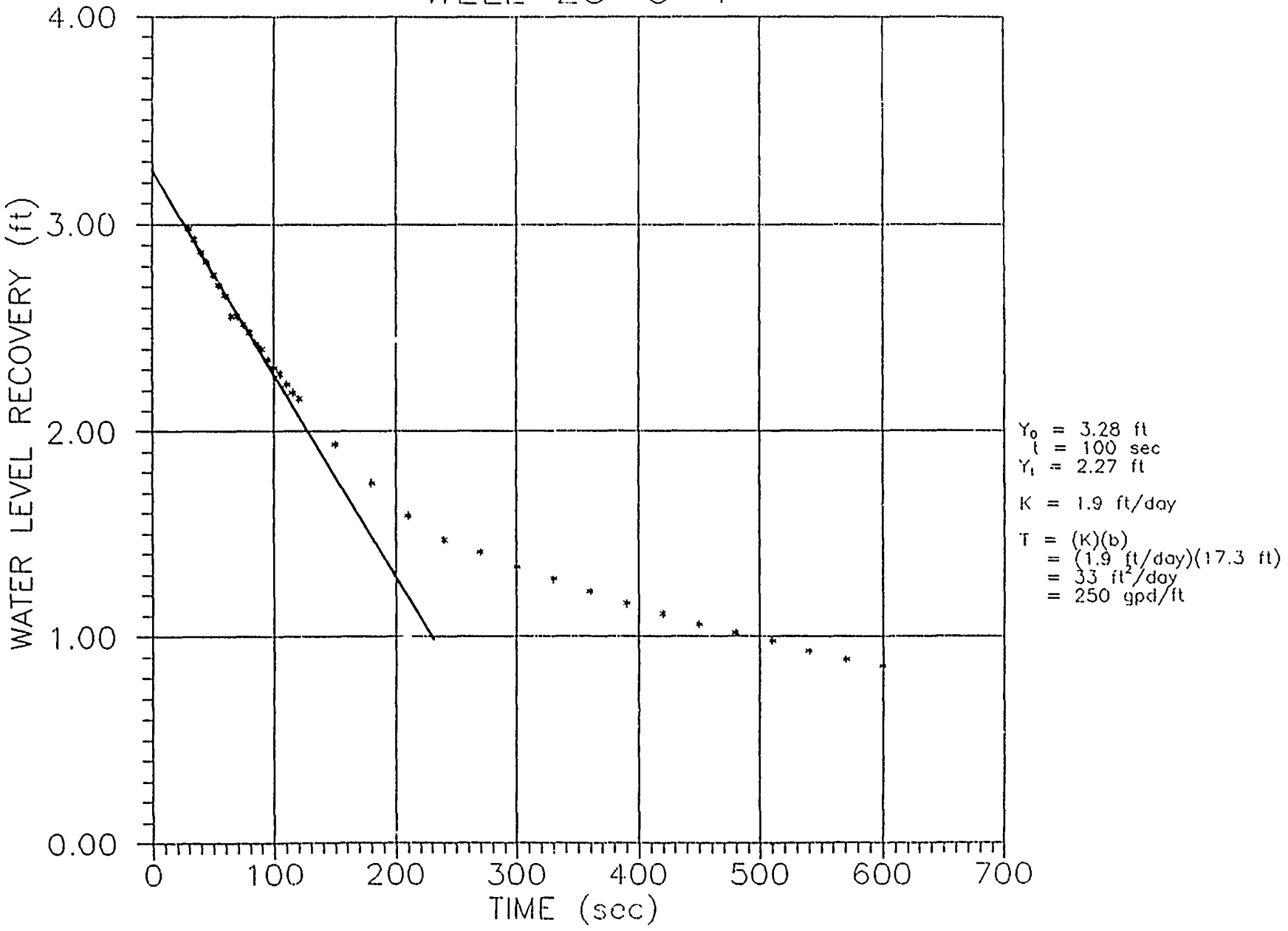
K = T/b
= (750 ft^2/d)/(20 ft)
= 37 ft/d

SITE 23

NINTH TRANSPORTATION REFUELING/MAINTENANCE SHOP

Slug Test Plots

SLUG TEST: 3/29/89
WELL 23-C-1



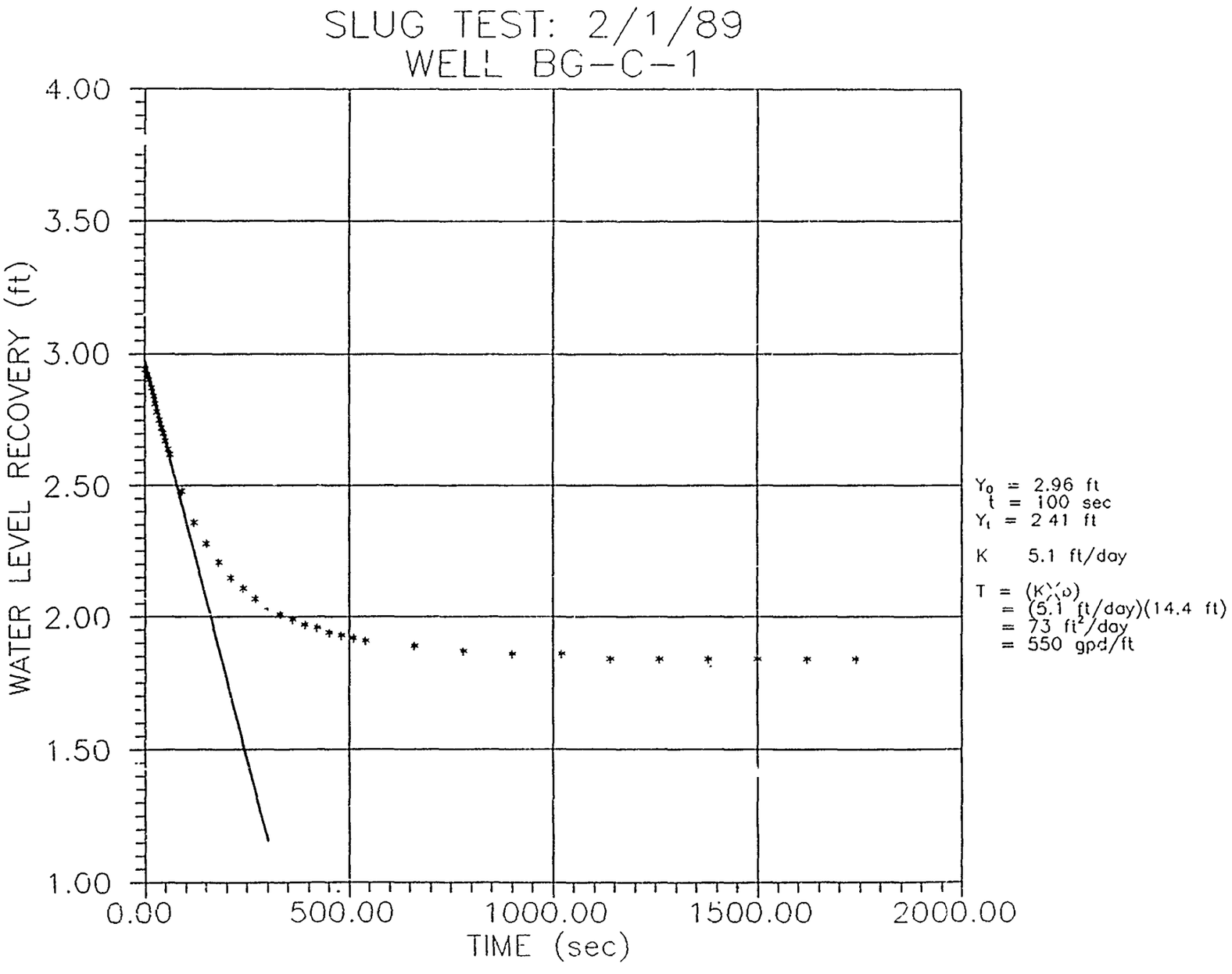
Y_0 = 3.28 ft
t = 100 sec
Y_t = 2.27 ft

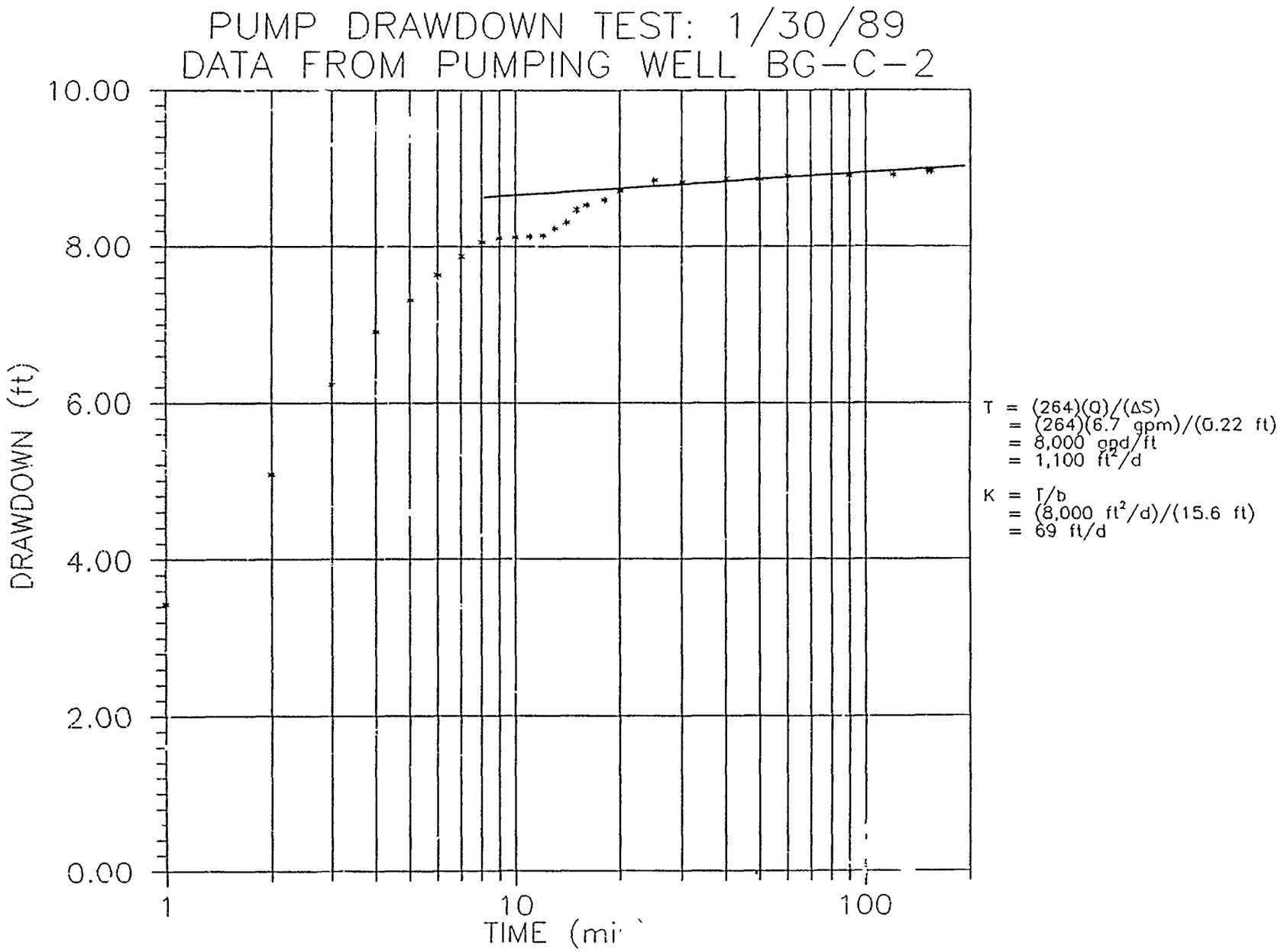
K = 1.9 ft/day

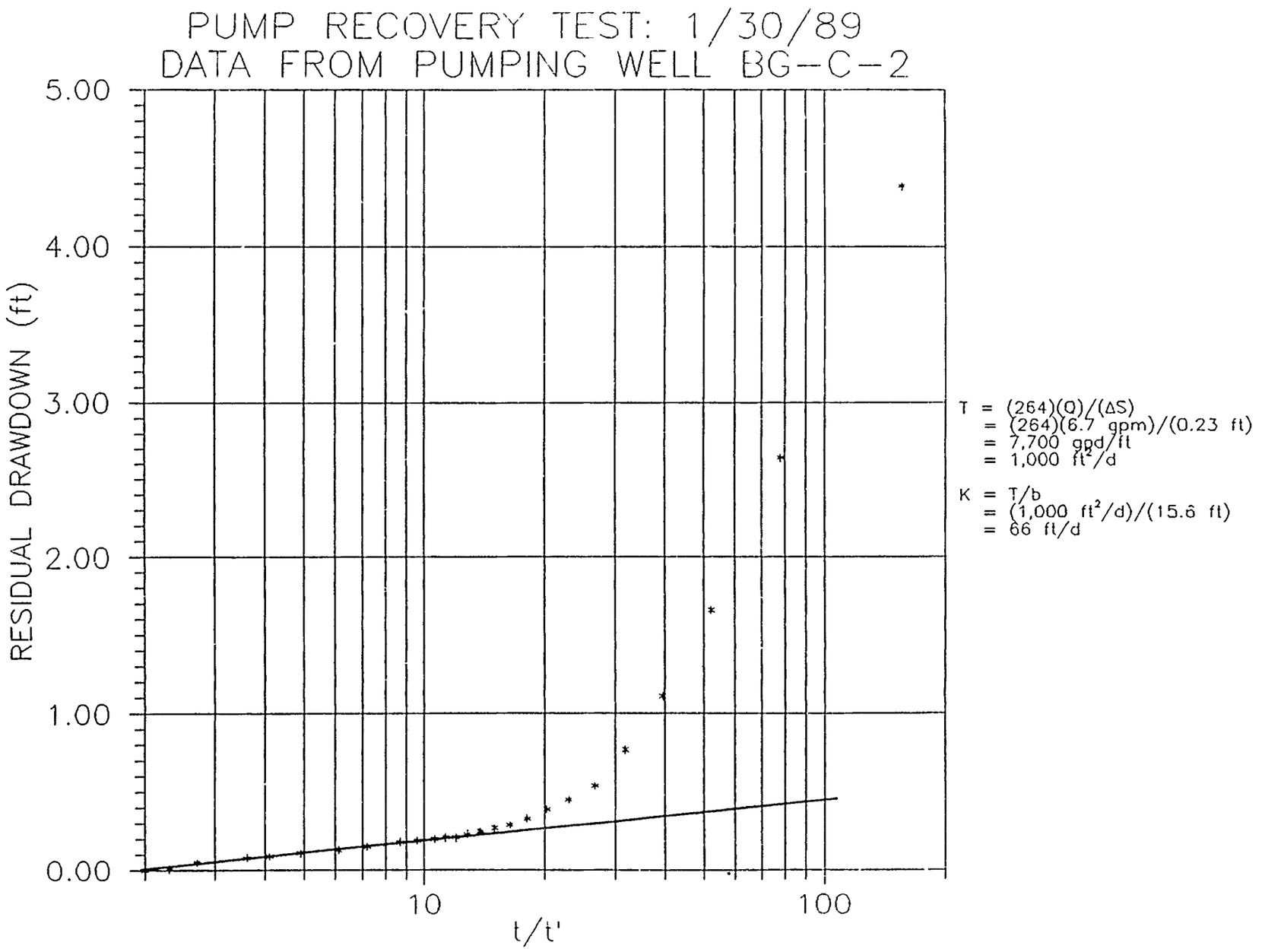
T = (K)(b)
= (1.9 ft/day)(17.3 ft)
= 33 ft^2/day
= 250 gpd/ft

BACKGROUND WELLS

Slug Test and Pump Test Plots


SLUG TEST: 2/1/89
WELL BG-C-1
WATER LEVEL RECOVERY (ft)
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.00
500.00
1000.00
1500.00
2000.00
TIME (sec)
Y_o = 2.96 ft
t = 100 sec
Y_t = 2.41 ft
K 5.1 ft/day
T = (K)(b)
= (5.1 ft/day)(14.4 ft)
= 73 ft^2/day
= 550 gpd/ft


PUMP DRAWDOWN TEST: 1/30/89
DATA FROM PUMPING WELL BG-C-2
10.00
8.00
6.00
4.00
2.00
0.00
DRAWDOWN (ft)
1
10
100
TIME (mi
T = (264)(Q)/(ΔS)
= (264)(6.7 gpm)/(0.22 ft)
= 8,000 gpd/ft
= 1,100 ft²/d
K = T/b
= (8,000 ft²/d)/(15.6 ft)
= 69 ft/d


PUMP RECOVERY TEST: 1/30/89
DATA FROM PUMPING WELL BG-C-2
RESIDUAL DRAWDOWN (ft)
5.00
4.00
3.00
2.00
1.00
0.00
10
100
t/t'
T = (264)(Q)/(ΔS)
= (264)(6.7 gpm)/(0.23 ft)
= 7,700 gpd/ft
= 1,000 ft²/d
K = T/b
= (1,000 ft²/d)/(15.6 ft)
= 66 ft/d

APPENDIX F

QUALITY CONTROL/QUALITY ASSURANCE DATA (QA/QC)

METHOD BLANKS

METHOD BLANKS

Wet Chemistry

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Blank 1	2
Alkalinity	3-10-89	<1	<1	<1			<1	

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Bla 1	2
Chloride	2-24-89	<1.	<1	<1	<1		<1	
	2-27-89	<1	<1				<1	
	3-14-89	<1	<1.0	<1	<1		<1.0	
	3-24-89	-<1.0	<1	<			<1.0	
	3-27-89	<1	<1.0	<1.0	<1		<1	
	4-6-89	<1	<1	<1	<1		<1	
	4-14-89	<1	<1	<1	<1	<1		
	4-18-89	<1	<1	<1	<1			

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank				Method Blank	
			1	2	3	4	1	2
Chloride	6-16-89	<1.0	<1.0	<1.0				
	6-23-89	<1.0	<1.0	<1.0	<1.0		<1.0	
	6-27-89	<1.0	<1.0	<1.0	<1.0		<1.0	
	7-6-89	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

unit: mg/Liter

Form 014

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Bl: 1	2
Fluoride	3-2-89	<0.05	<0.05	<0.05	<0.05			
	3-17-89	<0.10	<0.10	<0.10	<0.10			
	3-30-89	<0.10	<0.10	<0.10			<0.10	
	4-12-89	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Blank 1	2
Fluoride	6-16-89	<0.05					<0.05	
1	6-27-89	<0.05	<0.05	<0.05	<0.05	<0.05		
			<0.05	<0.05				

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Bl. 1	2
Sulfate	2-21-89	<1.0					<1.0	
	3-01-89	<1.0	<1.0	<1.0	<1.0		<1.0	
	3-15-89	<1.0	<1.0	<1.0	<1.0		<1.0	
	3-28-89	<1.0	<1.0	<1.0			<1.0	
	4-03-89	<1.0	<1.0	<1.0	<1.0		<1.0	
	4-07-89	<1.0	<1.0				<1.0	
	4-10-89	<1.0	<1.0	<1.0			<1.0	
	4-17-89	<1.0	<1.0				<1.0	
	4-18-89	<1.0	<1.0	<1.0			<1.0	

Unit: mg/Liter

Form 014

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Blank 1	2
Sulfate	6-15-89	<1.0					<1.0	
	6-29-89	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	6-30-89	<1.0	<1.0				<1.0	
	7-7-89	<1.0	<1.0	<1.0	<1.0		<1.0	

unit: mg/Liter

F-7

Form C14

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Bl 1	2
NO_3 / NO_2	3-3-89	<0.03					<0.03	
	3-08-89	0.03						
	3-16-89	<0.03					<0.03	
	3-23-89	<0.03				-	<0.03	
	3-31-89	<0.03	<0.03				<0.03	
	4-05-89	<0.03	<0.03	<0.03	<0.03		<0.03	
	4-13-89	<0.03						

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Blank 1	2
NO_3/NO_2	6-13-89	<0.03					<0.03	
"	6-28-89	<0.03						
"	7-6-89	<0.03					<0.03	

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Bl. 1	
TCN	3-2-89	<0.01					<0.01	
1	3-21-89	<0.01					<0.01	

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Blank 1	2
TCN	6-15-89	<0.01					<0.01	
"	6-23-89	<0.01	<0.01				<0.01	<0.01
"	6-27-89	<0.01					<0.01	<0.01

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Bl 1	
COD	2-23-89	<7	<7				<7	
	3-14-89	<7	<7				<7	
	4-04-89	<7	<7	<7			<7	
↓	4-14-89	<7	<7	<7	<7		<7	

BLANK REPORT

Test	Date	Initial	Continuing Calibration Blank 1	2	3	4	Method Blank 1	2
COD	6-15-89	<7	<7	<7	<7	<7		
"	7-3-89	<7	<7	<7	<7	<7	<7	

QA/QC SUMMARY

DP#: BAFB3

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES			SPIKE			LCS			LCS SOURCE
						SR	D	RPD	TV	SSR	% R	TV	RESULT	% R	
TDS	08-31-89	mg/l	3	24158-3		263	258	1.9				508	492	96.8	LAB
TDS	09-01-89	mg/l	3	24185-8		251	240	4.5				508	522	103	LAB
TDS	09-01-89	mg/l	3	24191-3		336	335	0.3				508	506	99.6	LAB
TDS	09-06-89	mg/l	3	24202-6		203	1999	2.0				508	499	98.2	LAB
TDS	09-13-89	mg/l	3	24242-7		254	248	2.4				508	560	110	LAB
TDS	09-14-89	mg/l	3	24246-3		228	225	1.3							
TDS	09-14-89	mg/l	3	24265-3		244	250	2.4				508	484	95.3	LAB
TDS	09-18-89	mg/l	3	24272-3		247	244	1.2				575	569	99.0	LAB
TDS	09-19-89	mg/l	3	24304-3		284	283	0.4				575	567	98.6	LAB
TDS	09-20-89	mg/l	3	24337-3		347	363	4.5				575	5882	102	LAB
TDS	09-25-89	mg/l	3	24387-4		385	368	4.5				575	572	99.5	LAB
TDS	09-27-89	mg/l	3	24406-4		359	364	1.4							
TDS	10-02-89	mg/l	3	24451-1		460	457	0.7				575	563	97.9	LAB
Chloride	09-15-89	mg/l	1	24185-8	<1.0	16.8	17.5	4.1	20.0	38.1	106	1000	1008	101	LAB
Chloride	09-20-89	mg/l	1	24202-6	<1.0	10.8	11.2	3.6	20.0	30.5	98.5	1000	976	97.6	LAB
Chloride	09-22-89	mg/l	1	24246-3	<1.0	24.8	25.2	1.6	20.0	44.8	100	1000	982	98.2	LAB
Chloride	09-22-89	mg/l	1	24265-3	<1.0	43.7	43.7	0.0	20.0	64.1	102	1000	983	98.3	LAB
Chloride	10-10-89	mg/l	1	24451-1	<1.0	45.7	45.6	0.2	40.0	86.4	102	1000	999	99.9	LAB
Fluoride	09-15-89	mg/l	0.05	24202-6	<0.05	0.27	0.29	7.1	0.20	0.51	120	0.42	0.44	105	EPA-CI
Fluoride	09-15-89	mg/l	0.05	24185-8	<0.05	0.24	0.27	11.8	0.20	0.45	105	0.40	0.43	108	LAB
Fluoride	09-20-89	mg/l	0.05	24242-6	<0.05	0.18	0.19	5.4	0.20	0.34	80.0	0.42	0.36	85.7	EPA-CI
Fluoride	09-20-89	mg/l	0.05	24337-1	<0.05	0.14	0.13	7.4	0.20	0.29	75.0	0.42	0.38	90.5	EPA-CI
Fluoride	10-13-89	mg/l	0.05	24451-1	<0.05	0.23	0.23	0.0	0.10	0.33	100	0.40	0.41	102	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

* Not a BAFB sample.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

FORM 004

FORM 004

QA/QC SUMMARY

DP#: BAFB3

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES			SPIKE			LCS			LCS SOURCE
						SR	D	RPD	TV	SSR	% R	TV	RESULT	% R	
Sulfate	09-16-89	mg/l	1	24185-3	<1	<1	<1	NC	5.00	5.7	114	20.0	21.9	110	LAB
Sulfate	09-16-89	mg/l	1	24202-4	<1	<1	<1	NC	5.00	5.2	104	20.0	22.2	111	LAB
Sulfate	09-21-89	mg/l	1	24230-16 *	<1	11.7	11.7	0.0	10.0	22.8	111	20.0	21.5	108	LAB
Sulfate	09-21-89	mg/l	1	24242-7	<1	6.0	6.0	0.0	10.0	15.4	94.0	20.0	21.2	106	LAB
Sulfate	10-11-89	mg/l	1	24451-1	<1	7.9	7.7	2.6	5.00	12.3	87.6	20.0	19.8	99.0	LAB
Nitrate-Nitrite @ NO3	09-18-89	mg/l	0.13	24202-6	<0.13	10.14	9.79	3.6	11.1	23.0	116	8.86	10.1	114	EPA-CI
Nitrate-Nitrite @ NO3	09-27-89	mg/l	0.13	24242-7	<0.13	11.4	11.7	2.6	4.4	16.6	117	8.86	8.82	99.5	EPA-CI
Nitrate-Nitrite @ NO3	10-09-89	mg/l	0.13	24451-1	<0.13	0.22	0.22	0.0	0.89	1.20	110	3.54	3.90	110	LAB
COD	09-08-89	mg/l	7.0	24158-3	<7	<7	<7	NC	100	107	107	75.0	76.5	102	LAB
COD	09-11-89	mg/l	7.0	24087-2 *	<7	19.0	20.4	7.0	100	121	102	75.0	75.6	101	LAB
COD	09-28-89	mg/l	7.0	24265-1	<7	<7	<7	NC	100	108	108	75.0	75.9	101	LAB
Total Cyanide	09-26-89	mg/l	0.01	24304-1	<0.01	<0.01	<0.01	NC	0.100	0.111	111	0.094	0.108	115	EPA-LV

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

* Not a BAFB sample.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

FORM 004

CH2M HILL

Engineers, Planners, Economists & Scientists

QA/QC SUMMARY

DP#: BAF248

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	DUPLICATES D	DUPLICATES RPD	SPIKE TV	SPIKE SSR	SPIKE % R	LCS TV	LCS RESULT	LCS % R	LCS SOURCE
Chem. Oxygen Demand	11-17-89	mg/L	7.0	24887-4	<7.0	<7.0	<7.0	NC				75	80.7	108%	LAB
Chem. Oxygen Demand	11-17-89	mg/L	7.0	24887-4	<7.0	<14.0			100	94.2	94.2				
Chem. Oxygen Demand	11-27-89	mg/L	7.0	24898-2	<7.0	<7.0	<7.0	NC				75	85.1	113	LAB
Chem. Oxygen Demand	11-27-89	mg/L	7.0	24898-2	<7.0	<14.0			100	95.6	95.6				
Total Dissolved Solids	11-15-89	mg/L	3.0	24868-2	----	389	372	4.5				575	549	95.5	LAB
Total Dissolved Solids	11-20-89	mg/L	3.0	24887-3	----	241	233	3.3				575	497	86.4	LAB
Total Dissolved Solids	11-20-89	mg/L	3.0	24898-3	----	316	307	2.9				575	560	97.4	LAB
Chloride	11-29-89	mg/L	1.0	24898-3	<1.0	34.2	34.8	1.7	100	140	105	1000	1076	108	LAB
Chloride	11-29-89	mg/L	1.0		<1.0							1000	1075	108	LAB
Fluoride	12-01-89	mg/L	0.10	24868-2	<0.10	0.15	0.15	0.0	0.10	0.25	100	0.40	0.42	105	LAB
Sulfate	11-27-89	mg/L	1.0	24898-1	<1.0	14.8	14.8	0.0	5.0	19.1	86.0	20.0	18.0	90.0	LAB
Nitrate/Nitrite @NO3	11-28-89	mg/L	0.13	24898-3	<0.13	9.13	8.77	4.0	11.1	21.3	110	0.80 *	0.84	105	LAB
Alkalinity	11-15-89	mg/L	1	24868-2	<1	115	114	0.7				0.05 **	0.51	102	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

Comments: * LCS for NITRATE/NITRITE listed here is as N, not NO3.
** The units for LCS is normality for the ALKALINITY test.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

CH2M HILL
Engineers
Planners
Economists
Scientists

QA/QC SUMMARY

DP#: BAF249

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	DUPLICATES D	DUPLICATES RPD	SPIKE TV	SPIKE SSR	SPIKE % R	LCS TV	LCS RESULT	LCS % R	LCS SOURCE
Chemical Oxygen Demand	11-27-89	mg/L	7.0	24898-2 *	<7.0	<7.0	<7.0	NC				75	85.1	113	LAB
Chemical Oxygen Demand	11-27-89	mg/L	7.0	24898-2 *	<7.0	<14.0			100	95.6	95.6				
Chemical Oxygen Demand	12-04-89	mg/L	7.0	24954-1	<7.0	<7.0	<7.0	NC				75	77.0	103	LAB
Chemical Oxygen Demand	12-04-89	mg/L	7.0	24954-1	<7.0	<14.0			100	93.7	93.7				
Total Dissolved Solids	11-21-89	mg/L	3	24934	----	263	252	4.3				575	577	100	LAB
Total Dissolved Solids	11-22-89	mg/L	3	24939-3	----	278	266	4.4				575	540	93 9	LAB
Total Dissolved Solids	11-27-89	mg/L	3	24957-4	----	252	251	0.4				575	585	102	LAB
Chloride	12-08-89	mg/L	1.0	24939-1	<1.0	9.6	8.8	8.7	20.0	29.5	99.5	1000	996	99.6	LAB
Chloride	12-08-89	mg/L	1.0	24939-3	<1.0	37.4	38.5	2.9	20.0	56.3	94.5	1000	991	99.1	LAB
Chloride	12-08-89	mg/L	1.0	24957-4	<1.0	12.2	11.5	5.9	20.0	32.3	100	1000	989	98.9	LAB
Fluoride	12-08-89	mg/L	0.10	24939-3	<0.10	0.16	0.15	6.5	0.20	0.36	100	0.40	0.42	105	LAB
Fluoride	12-08-89	mg/L	0.10	24934	<0.10	0.55	0.55	0.0	2.0	2.51	98.0	6.0	6.16	103	LAB
Sulfate	12-08-89	mg/L	1.0	24957-4	<1.0	11.9	11.9	0.0	5.0	16.0	82.0	2.0	18.0	90.8	LAB
Nitrate/Nitrite @NO3	12-07-89	mg/L	0.13	24939-3	<0.13	3.32	3.19	4.1	0.89	4.39	120	0.80 **	0.86	108	LAB
Nitrate/Nitrite @NO3	12-07-89	mg/L	0.13	24957-4	<0.13	4.08	4.47	9.3	8.86	13.5	106	0.80 **	0.86	108	LAB
Total Alkalinity @CaCO3	11-22-89	mg/L	1	24954-1	<1	132	133	0.8				0.05***	0.05	100	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

* This Beale Sample is reported in data package BAF248 and is used here for QC purposes only.
** The LCS for Nitrate/Nitrite is reported @N.
*** The LCS for Alkalinity is reported in units of Normality.

FORM 004

CH2M HILL Engineers Planners Economists Scientists

QA/QC SUMMARY

DP#: BAF250

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	DUPLICATES D	DUPLICATES RPD	SPIKE TV	SPIKE SSR	SPIKE % R	LCS TV	LCS RESULT	LCS % R	LCS SOURCE
COD	12-04-89	mg/L	7.0	24954-1 *	<7.0	<7.0	<7.0	NC				75	77	103	LAB
COD	12-04-89	mg/L	7.0	24954-1 *	<7.0	<14.0			100	93.7	93.7				
COD	12-13-89	mg/L	7.0	25118-2	<7.0	77.9	83.3	6.7				75	78.9	105	LAB
COD	12-13-89	mg/L	7.0	25118-2	<7.0	88.4			100	180	91.6				
Total Dissolved Solids	12-04-89	mg/L	3	25010-2	----	259	254	1.9				575	558	97.0	LAB
Total Dissolved Solids	12-06-89	mg/L	3	25059-4	----	245	250	2.0				575	573	99.7	LAB
Total Dissolved Solids	12-11-89	mg/L	3	25088-3	----	12	12	0 0				575	464	80.7	LAB
Chloride	12-12-89	mg/L	1.0	25118-2	<1.0	24.8	27.9	11.8	100	126	101	1000	1020	102	LAB
Fluoride	12-12-89	mg/L	0.10	25118-2	<0.10	0.28	0.28	0.0	0.20	0.49	105	0.40	0.42	105	LAB
Sulfate	12-14-89	mg/L	1.0	25118-2	<1.0	320	315	1.6	100	428	108	20.0	19.1	95.5	LAB
Nitrate/Nitrite @NO3	12-15-89	mg/L	0.13	25020-5	<0.13	23.1	23.1	0.0	22.2	48.3	114	0.80 **	0.87	109	LAB
Nitrate/Nitrite @NO3	12-15-89	mg/L	0.13	25059-4	<0.13	18.1	18.2	0.5	22.2	43.5	115	0.80 **	0.89	111	LAB
Nitrate/Nitrite @NO3	12-15-89	mg/L	0.13	25118-2	<0 13	6.20	6.11	1.4	8.86	15.8	108	0.80 **	0.86	108	LAB
Total Cyanide	12-11-89	ug/L	10	25010-1	<10	<10	<10	NC	100	103	103	94	101	107	EPA
Total Cyanide	12-12-89	ug/L	10	25059-2	<10	<10	<10	NC	100	87.6	87.6	94	103	110	EPA
Total Cyanide	12-12-89	ug/L	10	25059-3	<10	<10	<10	NC	100	87.0	87.0	94	101	107	EPA

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

* This Beale sample is reported in Data Package #BAF249 and is listed here for QC purposes only.

** The LCS for Nitrate/Nitrite is reported @N.

FORM 004

CH2MHILL

QA/QC SUMMARY

DP#: BAF251

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	DUPLICATES D	DUPLICATES RPD	SPIKE TV	SPIKE SSR	SPIKE % R			LCS % R	LCS SOURCE
Total Dissolved Solids	12 11 89	mg/L	3	25151-5		219	242	10.0						92.5	LAB
Chloride	12-19-89	mg/L	1 0	25151-5	<1.0	47.2	48.0	1.7	20	68.2	105			104	LAB
Fluoride	12-20-89	mg/L	0.10	25151-5	<0.10	0.40	0.40	0.0	0.10	0.49	90.0			95	LAB
Sulfate	12-22-89	mg/L	1.0	25151-5	<1.0	5.2	5.2	0.0	5.0	9.8	92.0	.0		99.0	LAB
Nitrate/Nitrite @NO3	12-21-89	mg/L	0.13	25151-5	<0.13	0 22	0.27	18.2	1.77	2.30	118	0.80 *	0.81	101	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

* The LCS for Nitrate/Nitrite is reported @N.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

FORM 06a

METHOD BLANKS

TFH-Diesel (CA Method)

METHOD BLANK

LABORATORY NO.: ~~BH-21582~~ RB-11-17 PR# 12969

ANALYSIS: TFH Diesel

MATRIX: SOIL

DATE TESTED: 11-23-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	1	1

COMMENTS:

analyst BB

CHMHILL

METHOD BLANK

LABORATORY NO.: ~~BLK 2462~~ RB-11-22 RN. 6/20/89

ANALYSIS: TFH Diesel

MATRIX: Soil

DATE TESTED: 11-28-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

COMMENTS:

Analyst BB.

CH2MHILL

METHOD BLANK

LABORATORY NO.: RB-11-23 ~~21654~~ ~~21650~~ ~~21645~~ P.N 12/20/89

ANALYSIS: TPH Diesel

MATRIX: Soil

DATE TESTED: 12-15-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH DIESEL	< 1	1

COMMENTS:

Analyst BB

CH2M HILL

METHOD BLANK

LABORATORY NO.: ~~BLK 21658~~ RB-11-29 ~~6165~~) P.N. 4206

ANALYSIS: TFHDiesel

MATRIX: Soil

DATE TESTED: 12-19-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	< 1	1

COMMENTS:

BB

CRM HILL

METHOD BLANK

LABORATORY NO.: ~~216548/K~~ RB-12-1 P.M. 6/20/89

ANALYSIS: TFH Diesel

MATRIX: SOIL

DATE TESTED: 12-22-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	< 1	1

COMMENTS:

Analyst BB

CH2M HILL

METHOD BLANK

LABORATORY NO.: RB-12-7 ~~21716~~

ANALYSIS: TFH Diesel

MATRIX: soil

DATE TESTED: 12-27-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

COMMENTS: analyst BB

CRM HILL

METHOD BLANK

LABORATORY NO.: ~~BLK 12/9~~ EB-12-9 (2+734) PN 6/20/89

ANALYSIS: TFH Diesel

MATRIX: SOIL

DATE TESTED: 12-29-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<4	4

COMMENTS:

Analyst BB

CH2MHILL

METHOD BLANK

LABORATORY NO.: ~~BK 21739~~ RB-12-14 PR. 1/2/89

ANALYSIS: TFH Diesel MATRIX: SOIL

DATE TESTED: 1-4-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<2	2

COMMENTS:

METHOD BLANK

RB-12-15

LABORATORY NO.: ~~BK 21740~~ PN 4120/89

ANALYSIS: TFH Diesel

MATRIX: Soil

DATE TESTED: 1-5-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<5	5

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: ~~BIK 2.774~~ ~~RB-12-14~~ RB-12-19 PN PN 6/20/89

ANALYSIS: TFH Diesel

MATRIX: soil

DATE TESTED: 1-6-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<4	4

COMMENTS:

Analyst BB

CKMHILL

METHOD BLANK

RG-12-21

LABORATORY NO.: ~~BK21786~~ (2,789) PN. 6/20/89 ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 1-10-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<5	5

COMMENTS:

1-17-89

Analyst BB

CH2M HILL

METHOD BLANK

LABORATORY NO.: RB-12-22 BLK 21804

DATE TESTED: 1-19-89 21804 21806 21830 21831 21794

ANALYSIS: TFH Diesel

MATRIX: Soil

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

COMMENTS:

Analyst BB

CH2M HILL

METHOD BLANK

RB-12-23

LABORATORY NO.: SIK 21332

ANALYSIS: TFH Diesel

MATRIX: Soil

DATE TESTED: 1-22-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

COMMENTS:

Analyst DB

CHMHILL

METHOD BLANK

LABORATORY NO.: ~~BHK 2184C~~ RB-12-27 P.R 1/20/89 ANALYSIS: TPH Diesel MATRIX: Soil

DATE TESTED: 1-25-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH DIESEL	< 1	1

1/30/89

COMMENTS:

Analyst BB

CH2M HILL

METHOD BLANK

LABORATORY NO.: ~~BH 21859~~ RB-12-28 P.N. 1/20/89

ANALYSIS: TFH Diesel

MATRIX: SOIL

DATE TESTED: 1-26-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

COMMENTS:

1/30/89

CHMHILL

METHOD BLANK

LABORATORY NO.: ~~21872~~ RB-12-29 P.M. 6/20/89

ANALYSIS: TFH - Diesel

MATRIX: Soil

DATE TESTED: 1/27/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	< 1	1

Pw 1/30/89

COMMENTS:

CRMHILL

METHOD BLANK

LABORATORY NO. R.B-12-30 ~~Instra. Blk~~ Blk 21879 PN 1/30/89

ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 1-30-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

1w 2/1/89

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: ~~B/4 21919~~ RB-1-3 P.N. 6/20/89

ANALYSIS: TFH Diesel

MATRIX: SOIL

DATE TESTED: 1-31-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

Rec 2/1/89

COMMENTS:

CH2M HILL

METHOD BLANK

ABORATORY NO. ~~21930~~ RB-1-4 DN 4/20/89

ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 2/2/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	< 1	1

COMMENTS:

2-8-89 DB

CRMHILL

METHOD BLANK

LABORATORY NO.: RB-1-17 BLK 21979

DATE TESTED: 2-1-89

ANALYSIS: TFH Diesel

MATRIX: Soil

COMPOUND	SAMPLE RESULT (PPM)	-	DETECTION LIMIT (PPM)
TFH DIESEL	<1		1

COMMENTS:

Analyst BB

METHOD BLANK

LABORATORY NO.: EB-1-19 22002 ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 2/5/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

COMMENTS:

BB 2-10-89

CRMHILL

METHOD BLANK

LABORATORY NO.: ~~22042~~ RB-1-23

ANALYSIS: TFH Diesel

MATRIX: Soil

DATE TESTED: 2/10/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

COMMENTS:

CRMHILL

METHOD BLANK

LABORATORY NO.: ~~2030~~ RB-1-24

ANALYSIS: TFH Diesel

MATRIX: Soil

DATE TESTED: 2/15/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	< 1	1

DV 2-21-89

COMMENTS:

CH2MHILL

METHOD BLANK

LABORATORY NO.: ~~2124~~ RB-1-24

ANALYSIS: TFH Diesel

MATRIX: Soil

DATE TESTED: 2/16/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<1	1

COMMENTS: BD 2-21-89

Spectra Physics

CH2M HILL

METHOD BLANK

LABORATORY NO.: 23118 23114 ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 5/4/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	< 1	1

COMMENTS:

[redacted]

METHOD BLANK

LABORATORY NO.: Blank 22345 ANALYSIS: TFH Diesel MATRIX: Water

DATE TESTED: 2/22/89

COMPOUND	SAMPLE RESULT ~~(PPM)~~ ppb	DETECTION LIMIT ~~(PPM)~~ ppb
TFH DIESEL	<50	50

COMMENTS:

BD 2-24-89

CHMHILL

METHOD BLANK

LABORATORY NO.: Blank 22333 ANALYSIS: TFH Diesel MATRIX: Water

DATE TESTED: 2/22/89

COMPOUND	SAMPLE RESULT ~~(PPM)~~ ~~CS~~ ppb	DETECTION LIMIT ~~(PPM)~~ ~~CS~~ ppb
TFH DIESEL	<50	50

COMMENTS:

2-22-89 BB

METHOD BLANK

LABORATORY NO.: Blank 22375 ANALYSIS: TFH Diesel MATRIX: Wt

DATE TESTED: 2/22/89

COMPOUND	SAMPLE RESULT ~~(PPM)~~ ppb	DETECTION LIMIT ~~(PPM)~~ ppb
TFH DIESEL	<50	30

COMMENTS:

2-24-89 BB

[redacted]

METHOD BLANK

LABORATORY NO.: 22421 Blank ANALYSIS: TFH Diesel MATRIX: Water

DATE TESTED: 2/23/89

COMPOUND	SAMPLE RESULT ~~(PPM)~~ ppb	DETECTION LIMIT ~~(PPM)~~ ppb
TFH DIESEL	<50	50

COMMENTS:

METHOD BLANK

LABORATORY NO.: Blank 22542 22553 22428 ANALYSIS: TFH Diesel MATRIX: Wc

DATE TESTED: 3/21

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	< 0.05 mg/l	< 0.05 mg/l

COMMENTS:

CHEMFILE

METHOD BLANK

LABORATORY NO.: 22643, 644, 651 ANALYSIS: TFH Diesel MATRIX: Water
:2660, 674

DATE TESTED: 3/22/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<0.05	<0.05

COMMENTS:

3/24/89

CKMHILL

METHOD BLANK

LABORATORY NO.: 22739 22683 22738

ANALYSIS: TFH - DIESEL

MATRIX: WATER

DATE TESTED: 4-4-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<0.05	0.05

COMMENTS:

CRMHILL

METHOD BLANK

LABORATORY NO.: Method Blank 3-22 22760

ANALYSIS: TFH DIESEL

MATRIX: WATER

DATE TESTED: 4-5-89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	<0.05	0.05

COMMENTS:

CRA HILL

METHOD BLANK

LABORATORY NO.: 22890, 22891, 22906, 22874, 22914, 22915, 22930

ANALYSIS: TFH Diesel MATRIX: Water

DATE TESTED: 4/12

COMPOUND		SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	Blank 4/4	<0.05	0.05
	Blank 4/7	<0.05	0.05

COMMENTS:

CH2M HILL

23320
23325
23324
23307
23306
23293
23291

METHOD BLANK

LABORATORY NO.:

ANALYSIS: TFH Diesel MATRIX: Soil + Wate

DATE TESTED: 6/2/89

COMPOUND		SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	Blank 5/31 (soil)	<1	1
	Blank 5/30 (water)	<0.05	0.05
	Blank 5/31 (water)	<0.05	0.05

Detection Limit

$$1ml \times .05\frac{mg}{ml} = \frac{0.05mg}{1l} = 0.05mg/l \quad water$$

$$1ml \times 0.05\frac{mg}{ml} = \frac{0.05mg}{0.05kg} = 1\ mg/kg \quad soil$$

COMMENTS:

qm 6-5-89

CH2M HILL

23358
23357
23372
23411

METHOD BLANK

LABORATORY NO.:

ANALYSIS: TFH Diesel MATRIX: Water

DATE TESTED: 6/7/89

COMPOUND		SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	Blank 6/5	<0.05	0.05
	Blank 6/7	<0.05	0.05

Detection Limit

$$1\,ml \times \frac{0.05\,mg}{ml} = \frac{0.05\,mg}{1\,l} = 0.05\,mg/l$$

water

COMMENTS:

23473 6/15 METHOD BLANK

23443, 23442 6/12

LABORATORY NO.: 23417 6/8 ANALYSIS: TFH Diesel MATRIX: H_2O & Soil

DATE TESTED: 6/20/89

COMPOUND		SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	Blank 6/8	<0.05	0.05
	Blank 6/12	<0.05	0.05
	Blank 6/15	<1	1

Detection limit water:

$$1\,ml \times \frac{0.05\,mg}{ml} = \frac{0.05\,mg}{1\,l} = 0.05\,mg/l$$

Detection limit soil:

$$1\,ml \times \frac{0.05\,mg}{ml} \div \frac{0.05\,mg}{0.05\,kg} = 1\,mg/kg$$

COMMENTS:

BJR 6-21-89

CH2M HILL

23469
23468
23454
23521 METHOD BLANK
23500
LABORATORY NO.: 23510 ANALYSIS: TFH Diesel MATRIX: water + Soil

DATE TESTED: 6/21/89

COMPOUND		SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH DIESEL	(Soil) Blank (23510)	<2	2
	(water) Blank (23500)	<0.05	0.05
	water Blank (23454)	<0.05	0.05

Detection Limit water:

$$1\,ml \times \frac{0.05\,mg}{ml} = \frac{0.05\,mg}{1\,l} = 0.05\,mg/l$$

Detection Limit soil:

$$1\,ml \times \frac{0.05\,mg}{ml} = \frac{0.05\,mg}{.03\,kg} = 1.67 \quad \text{report } 2\,mg/kg$$

COMMENTS:

Detection Limit higher for soils (23510), extraction used 30 grams instead of 50 grams.

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0603

Reference No: 24158-1

Sample Matrix: Water

Date Sampled: 8-25-1989
Date Received: 8-28-1989
Date Extracted: 8-31-1989
Date Analyzed: 9-9-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		101	51

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Greg Jones

000004

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0606

Reference No: 24185-1

Sample Matrix: Water

Date Sampled: 8-28-1989
Date Received: 8-30-1989
Date Extracted: 9-5-1989
Date Analyzed: 9-9-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		60	62

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Greg Jones

000029

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0614

Reference No: 24191-1

Sample Matrix: Water

Date Sampled: 8-30-1989
Date Received: 8-31-1989
Date Extracted: 9-6-1989
Date Analyzed: 9-9-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		67	65

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Gary Jonah

000069

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0617

Reference No: 24202-2

Sample Matrix: Water

Date Sampled: 08/31/89
Date Received: 09/01/89
Date Extracted: 09/06/89
Date Analyzed: 09/09/89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		100%	62%

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Greg Jones

000093

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0628

Reference No: 24246-1

Sample Matrix: Water

Date Sampled: 9-06-89
Date Received: 9-07-89
Date Extracted: 9-18-89
Date Analyzed: 9-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		100	165

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Gary Jones

000145

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0623

Reference No: 74242-3

Sample Matrix: Water

Date Sampled: 9-06-89
Date Received: 9-07-89
Date Extracted: 9-18-89
Date Analyzed: 9-28-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		100	158

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Greg Jones

000119

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0631

Reference No: 24265-1

Sample Matrix: Water

Date Sampled: 9-06-89
Date Received: 9-07-89
Date Extracted: 9-18-89
Date Analyzed: 9-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		100	95

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Gary Jonk

000166

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0635

Reference No: 24272-3

Sample Matrix: Water

Date Sampled: 9-06-89
Date Received: 9-07-89
Date Extracted: 9-18-89
Date Analyzed: 9-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		100	94

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Greg Jonk

000188

Engineers
Planners
CH2M HILL Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0637

Reference No: 24304-2

Sample Matrix: Water

Date Sampled: 9-12-89
Date Received: 9-13-89
Date Extracted: 9-20-89
Date Analyzed: 9-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		102	112

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Gary Jones

C00205

Engineers
Planners
CH2MHILL Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0639

Reference No: 24313-1

Sample Matrix: Water

Date Sampled: 9-13-89
Date Received: 9-14-89
Date Extracted: 9-20-89
Date Analyzed: 9-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		102	112

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Greg Jones

000223

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0644

Reference No: 24331-3

Sample Matrix: Water

Date Sampled: 9-14-89
Date Received: 9-15-89
Date Extracted: 9-20-89
Date Analyzed: 9-30-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		102	72

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Gary Jones

000246

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0649

Reference No: 24350-1

Sample Matrix: Water

Date Sampled: 9-18-89
Date Received: 9-19-89
Date Extracted: 9-29-89
Date Analyzed: 10-19-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	2.2
Surrogate (SS)		184	102

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: [signature]

000268

Engineers
Planners
CH2MHILL Economists
Scientists

METHOD: TFH DIESEL

Client: Beale Air Force Base
Client Sample ID: BAFB0656

Reference No: 24372-1

Sample Matrix: Water

Date Sampled: 9-19-89
Date Received: 9-20-89
Date Extracted: 9-29-89
Date Analyzed: 10-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (SS)		81	91

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Anthracene used as surrogate standard.

Approved By: Greg Jones

000290

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
CH2M HILL/SAC
SAC 24359.RI.04
Client Sample ID: BAFB 0688
Sample Matrix: Water

Reference No: 24898-2

Date Sampled: 11-15-89
Date Received: 11-16-89
Date Extracted: 11-20-89
Date Analyzed: 12-14-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	0.12
Surrogate (SS)		N/R	N/R

Results reported as mg/L.

Comments: N/R = Not reportable; refer to case narrative for explanation of surrogate standards.

Approved By: Greg Jones

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
Client Sample ID: BAFB 0699

Sample Matrix: Water

Reference No: 24934-1

Date Sampled: 11-19-89
Date Received: 11-20-89
Date Extracted: 11-22-89
Date Analyzed: 12-15-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	< 0.05	0.07
Surrogate (Diesel)		94	78

Results reported as mg/L.

Comments:
SS - Surrogate Standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
Client Sample ID: BAFB 0700

Sample Matrix: Water

Reference No: 24939-1

Date Sampled: 11-20-89
Date Received: 11-21-89
Date Extracted: 11-22-89
Date Analyzed: 12-15-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	0.09
Surrogate (Diesel)		94	78

Results reported as mg/L.

Comments:
SS - Surrogate Standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: Greg Jowlan

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
Client Sample ID: BAFB 0704

Sample Matrix: Water

Reference No: 24954-2

Date Sampled: 11-21-89
Date Received: 11-22-89
Date Extracted: 11-27-89
Date Analyzed: 12-15-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	0.06
Surrogate (Diesel)		121	85

Results reported as mg/L.

Comments:
SS - Surrogate Standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: Gary Jordan

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
Client Sample ID: BAFB 0705

Sample Matrix: Water

Reference No: 24957-1

Date Sampled: 11-21-89
Date Received: 11-22-89
Date Extracted: 11-27-89
Date Analyzed: 12-15-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	0.06
Surrogate (Diesel)		121	88

Results reported as mg/L.

Comments:
SS - Surrogate Standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: [signature]

CH2M HILL

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
Client Sample ID: BAFB 0713

Sample Matrix: Water

Reference No: 25010-2

Date Sampled: 11-28-89
Date Received: 11-29-89
Date Extracted: 11-29-89
Date Analyzed: 12-14-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	0.10
Surrogate (Diesel)		88	76

Results reported as mg/L.

Comments:
SS - Surrogate Standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: Jay Jordan

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
CH2M HILL/SAC
SAC 24359.RI.04
Client Sample ID: BAFB 0714
Sample Matrix: Water

Reference No: 25020-1

Date Sampled: 11-29-89
Date Received: 11-30-89
Date Extracted: 12-04-89
Date Analyzed: 12-16-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	0.07
Surrogate (SS)		87	82

Results reported as mg/L.

Comments:
SS - Surrogate standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
Client Sample ID: BAFB 0725

Sample Matrix: Water

Reference No: 25059-4

Date Sampled: 12-01-89
Date Received: 12-01-89
Date Extracted: 12-04-89
Date Analyzed: 12-16-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	0.06
Surrogate (Diesel)		87	88

Results reported as mg/L.

Comments:
SS - Surrogate Standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: [signature]

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
Client Sample ID: BAFB 0730

Sample Matrix: Water

Reference No: 25118-1

Date Sampled: 12-05-89
Date Received: 12-06-89
Date Extracted: 12-07-89
Date Analyzed: 12-18-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	0.07
Surrogate (Diesel)		73	85

Results reported as mg/L.

Comments:
SS - Surrogate Standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: Greg Jonlan

Engineers
Planners
Economists
Scientists

METHOD: TFH DIESEL

Client: Beale AFB
Client Sample ID: BAFB 0732

Sample Matrix: Water

Reference No: 25151-1

Date Sampled: 12-06-89
Date Received: 12-08-89
Date Extracted: 12-12-89
Date Analyzed: 12-18-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Diesel	0.05	<0.05	<0.05
Surrogate (Diesel)		84	63

Results reported as mg/L.

Comments:
SS - Surrogate Standard reported as percent recovery.
Docosane used as Diesel surrogate standard.

Approved By: Jay Jonlin

METHOD BLANKS

TFH-Gasoline (CA Method)

CRMHILL

METHOD BLANK

LABORATORY NO.: 21621-14→20 ANALYSIS: Gasoline MATRIX: water

DATE TESTED: 11/30/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1

COMMENTS: 21621-14, 15, 16, 17, 18, 20

Analyst: SW

12/5 12/7/88

CH2M HILL

METHOD BLANK

LABORATORY NO.: 21621 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 11/30/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT -(PPM)
TPH/Gas	1.2	0.1.2
	<1	1

COMMENTS: Samples Analyzed: 21621-1, 2, 3, 4, 5, 6, 7, 11, 12, 13
Higher detection limit reported due to high method blank.

Analyst:

CH2M HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS: Gasoline

MATRIX: water

DATE TESTED: 12-1-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH/Gas	<1	1
	<1	1

COMMENTS: Samples: 21621-21, 22, 23, 24
21629-1, 5, 6, 7, 8, 9, 10, 11

Analyst: [illegible]

[illegible] 1/12/88

CH2M HILL

METHOD BLANK

LABORATORY NO.: 21645 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 12/2/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	∠1	1

COMMENTS: 21645-1, 3, 3, 4 & 21654-1, 2, 3

CH2MHILL

METHOD BLANK

LABORATORY NO.: 21662-1→5 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 12-3-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1

COMMENTS: Analyst: SM

11/7/88

CH2M HILL

METHOD BLANK

LABORATORY NO.: ~~[illegible]~~ 21574, 21603, 21633 21649, 21650, 21574 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 12/4/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH/Gas	<1	1
	<1	1

COMMENTS: Analyst: [illegible]

[illegible] 1/17/89

CH2M HILL

METHOD BLANK

LABORATORY NO.: 21656, 21645, 21654 ANALYSIS: Gasoline MATRIX: Water
21657, 21658
DATE TESTED: 12/5/88

COMPOUND	SAMPLE RESULT (FPM)	DETECTION LIMIT (FPM)
TPH/Gas	<1	1

COMMENTS: Reference No: 21656-1, 3, 4, 5, 6; 21645-3, 4; 21654-1
21657-2, 3, 4, 5; 21658-2, 3, 4, 5, 6; ~~21654-2, 3, 4, 5, 6, 7, 8~~

Analyst: [illegible]

CRAMHILL

METHOD BLANK

LABORATORY NO.: 21659, 21676 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 12-6-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1

COMMENTS: 21659-2 → 8 & 21676-2, 3, 4, 5

12/7/88

Analyst: [illegible]

CHMHILL

METHOD BLANK

LABORATORY NO.: 21676-2, 21677-275 ANALYSIS: Gasoline MATRIX: water

DATE TESTED: 12-7-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1

[redacted]

12/7/88

COMMENTS: Analyst: BMJ

CHMHILL

METHOD BLANK

LABORATORY NO.: 21729-3, 21698-1, 21716, 21770 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 12/8/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	4	1

Purged

COMMENTS: 21729-3, 21698-1, 21716-2→7, 21770

Analyst: [illegible]

METHOD BLANK

ATORY NO.: 21770, 21727, 21717 ANALYSIS: Gasoline MATRIX: Water

ATE TESTED: 12/9/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TH/Gas	<1	1
	4	1

12/12/88

OMMENTS: 21770, 21727-2→7, 21717-2→6

analyst: gm

METHOD BLANK

ABORATORY NO.: 21725-2→8 ANALYSIS: Gasoline MATRIX: Wa

ATE TESTED: 12/10/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
H/Gas	<1	1

MW 12/12/88

OMMENTS: analyst: gsy

METHOD BLANK

RATORY NO.: 21725, 21733, 21734 ANALYSIS: Gasoline MATRIX: Water

ATE TESTED: 12-12-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TH/Gas	4	1

MM 1/17/89

OMMENTS: 21725-2→8; 21733-2→5; 21734-2→8

Analyst: JMG

KMHILL

METHOD BLANK

ABORATORY NO.: 21725-8; 21733, 21734 ANALYSIS: Gasoline MATRIX: W

ATE TESTED: 12-13-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
FH/Gas	<1	1

12/17/88

COMMENTS: 21725-8; 21733-3, 4, 5; 21734-9, 10

Analyst: [signature]

METHOD BLANK

ATORY NO.: 21729, 21739, 21740 ANALYSIS: Gasoline MATRIX: Water

ATE TESTED: 12-14-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
	<1	1
TH/Gas		

11/12/89

COMMENTS: 21729-1, 21739-2-9, 21740-2,3

Analyst

METHOD BLANK

ABORATORY NO.: 21729 ANALYSIS: Gasoline MATRIX: Water

ATE TESTED: 12-15-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TH/Gas	4	1

OMMENTS: 21729-3,4,1

12/17/88

METHOD BLANK

RATORY NO.: 21729, 21740 ANALYSIS: Gasoline MATRIX: water

ATE TESTED: 12/16/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TH/Gas	41	1

OMMENTS: 21729-1, 2, 3, 4
21740- 4, 5, 6, 7

Analyst: SM

12/28/88

METHOD BLANK

ABORATORY NO.: 21729, 21740, 21757 21758 21766 ANALYSIS: Gasoline MATRIX: Water

ATE TESTED: 12-17-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TH/Gas	<1	1

OMMENTS: 21729-1, 2, 4, 5; 21740-2→9; 21757-2→7, 21758-2, 3, 4
21766-1

Analyst: [illegible]

[illegible] 1/12/88

J.M.HILL

METHOD BLANK

RATORY NO.: 21771,4,5,21786 ANALYSIS: Gasoline MATRIX: wate

ATE TESTED: 12-18-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TH/Gas	<1	1

COMMENTS: 21771-2→6; 21774-2→8; 21775-2→8, 21786-2

Analyst: Guy

12/19/88

[redacted]

METHOD BLANK

LABORATORY NO.: 21740, 757, 771, 774, 775, 786, 21788, 21789 ANALYSIS: Gasoline MATRIX: Wt

DATE TESTED: 12-19-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1

COMMENTS: 21740-6, 21757-3, 21771-3,4,5,6; 21774-2,3,4,5
21775-8, 21786-3,4,5; 21787-2,3,4,5; 21788-2,-9
21789-2,3,4

Analyst: [redacted]

12/21/88

[illegible] BLANK

[illegible] NO.: 2759, 2813, 21794, 2151, 21854 ANALYSIS: Gasoline MATRIX: Water

TESTED: 12-20-81 21789, 21806-2 → 3
21803-2 → 12

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
	4	1

[illegible]

2759-1, 2813, 2794-1, 2, 21811-1, 2, 3, 21854,
[illegible] 21806-2 [illegible] 7, 8, 21803-2 → 12

CH2M HILL

METHOD BLANK

LABORATORY NO.: 21804, 5; 21830 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 12-21-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1

COMMENTS: 21804-2, 3, 4; 21805-2→8; 21830-2, 3, 4, 5, 6, 7

Analyst: SM

12/21/88

CH2M HILL

METHOD BLANK

LABORATORY NO.: 21831, 21832 ANALYSIS: Gasoline MATRIX: water

DATE TESTED: 12-22-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH/Gas	<1	(

COMMENTS: 21831-2→8; 21832-2→6

Analyst: [signature]

[signature] 1/17/89

METHOD BLANK

LABORATORY NO.: Endgrain ANALYSIS: Caroline MATRIX: Wate

DATE TESTED: 12/23/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH/Gas	<1	1

COMMENTS: Endgrain

Analyst: [illegible]

12/27/88

CH2M HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX: Soil

DATE TESTED: 12/24

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH ~~DIESEL~~ GAS	<10 ppm	10 ppm

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX: Soil

DATE TESTED: 12-27-88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	L 20 ppm	20

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX:

DATE TESTED: 12/28

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	65ppm	5ppm

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: 21860

ANALYSIS: Gasoline

MATRIX: water

DATE TESTED: 12/28/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH/Gas	<1	1

COMMENTS: 21860-2 → 8

[illegible]

[illegible] 1/12/89

CKM HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX:

DATE TESTED: 12/29

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH ~~DIESEL~~ GAS	<20 ppm	20 ppm

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: 21766-2; 21860-8
21932-2, 3;

ANALYSIS: Gasoline

MATRIX: Water

DATE TESTED: 12/29/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1

COMMENTS: GC

12/30/88

CHM HILL

METHOD BLANK

LABORATORY NO.: 21919 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 12/30/88

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1
	<1	1

COMMENTS: Surr

12/12/88

CH2M HILL

METHOD BLANK

LABORATORY NO.: ANALYSIS: MATRIX:

DATE TESTED: 12/30/91

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	<5ppm	5ppm

COMMENTS:

CHMHILL

METHOD BLANK

LABORATORY NO.: 21905, 21920, 21923 ANALYSIS: Gasoline MATRIX: Water

DATE TESTED: 1/3/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	<1	1

COMMENTS:

CH2MHILL

METHOD BLANK

LABORATORY NO.: ANALYSIS: MATRIX: Soil

DATE TESTED: 1/4/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	<10ppm	10ppm

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX: Soil

DATE TESTED: 1/6/84

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH ~~DIESEL~~ GAS	410 ppm	10 ppm

COMMENTS:

CH2M HILL

CKM HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS: TFH

MATRIX: Soil

DATE TESTED: 1/13/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH ~~DIESEL~~ GAS	16 ppm	20 ppm

COMMENTS:

CHMHILL

METHOD BLANK

LABORATORY NO.: 21905, 21925, 21923 ANALYSIS: Gasoline MATRIX: water

DATE TESTED: 1/4/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH/Gas	∠1	1
	∠1	1

COMMENTS:

1/7/89

CHMHILL

CH2M HILL

METHOD BLANK

LABORATORY NO.: 1/17/89

ANALYSIS:

MATRIX:

DATE TESTED:

COMPOUND		SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH ~~DIESEL~~ GAS	#1	15	<20 ppm
	#2	16	
	#3	13	

BB 1-19-89

BB 1-19-89

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: 1/19/87

ANALYSIS:

MATRIX:

DATE TESTED:

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	17 ppm	20

COMMENTS:

1-20-84 BS

CH2M HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX:

DATE TESTED: 1/23/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH ~~DIESEL~~ GAS	#1 8	<10
1-30-89 BR 1-30-89	#2 <10	<10

COMMENTS:

CH2MHILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX: water

DATE TESTED: 2/17/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~GASOL~~ GAS	* 0.48	~~0.50~~ 0.1
	0.175	0.1
BTEX ~~Light~~		~~Light~~

COMMENTS: elevated background due to dilution of prior

D/ 2-27-89

CH2M HILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX:

DATE TESTED: Feb 23

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	.024 mg/l	0.1 mg/l
MTBE	~~ND~~	~~1 mg/l~~
BTEX	ND	1 mg/l

COMMENTS:

2-24-92 BD

CH2MHILL

METHOD BLANK

LABORATORY NO.:

ANALYSIS:

MATRIX:

DATE TESTED: Feb 25

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	0.168	~~0.168~~ 0.1
BTEX	< 1 ug/l	1 ug
MTBE	< 1 ug/l	

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: 22612

DATE TESTED: 22644

3/13/89

ANALYSIS: BTEX/gas

MATRIX: water/soil

COMPOUND	SAMPLE RESULT (FPM)	DETECTION LIMIT (FPM)
TPH ~~DIESEL~~ GAS	ND	0.1 mg/l
BTEX	ND ug/l	1 ug/l

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: 22738 22739 22760

ANALYSIS:

MATRIX:

DATE TESTED: 3/24

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	<0.1	0.1

JM
3-28-89

COMMENTS:

CRMHILL

METHOD BLANK

LABORATORY NO.: 22790, 791, 814, 817 ANALYSIS: MATRIX:

DATE TESTED: 3-28-89

COMPOUND	SAMPLE RESULT (FPM)	DETECTION LIMIT (FPM)
TPH ~~DIESEL~~ GAS	<0.1 ppm	.1 ppm
BTEX	<1 ug/l	1 ug/l

COMMENTS:

RB
3-31-89

CH2MHILL

METHOD BLANK

LABORATORY NO.: 22848, 22849, 22870 ANALYSIS: MATRIX:
22871, 22874

DATE TESTED: 4/4

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	~~<1ppm~~ <0.1	0.1
BTEX	<1ppb	1ppb

4/10-89

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: 22890 22913 22891 22914 22906 22915 22921 22925

ANALYSIS:

MATRIX:

DATE TESTED: 4/7/85

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH ~~DIESEL~~ GAS	< 0.1 mg/kg	0.1
	NTE: ~~[illegible]~~	1 mg/l

COMMENTS:

CH2M HILL Engineers Planners

CH2M HILL

METHOD BLANK

LABORATORY NO.: 03142 03118 03114

ANALYSIS:

MATRIX:

DATE TESTED: 5/9/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	65	5
BTEX	~~<50 ug/kg~~	50 ppm 5-11-89

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: 23320 23291 23293 23324 23360 23325 182

DATE TESTED: 5/31/89

ANALYSIS:

MATRIX:

COMPOUND		SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	DI	< 0.1	0.1
	BTEX	< 1 ppb	1 ppb

JAM 6-2-89

COMMENTS:

CH2MHILL

METHOD BLANK

LABORATORY NO.: 23357 23358, 1-2 23372, 1-4 23361, 1-2

ANALYSIS:

MATRIX:

DATE TESTED: 6/5/89

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TFH ~~DIESEL~~ GAS	H_2O < 0.1 ppm; Soil < 5 ppm	0.1 ppm; 5 ppm
Soil & water	< 1 ppb; < 50 ppb	1 ppb; 50 ppb

GM 6-8-89

COMMENTS:

[redacted]

METHOD BLANK

LABORATORY NO.: 23411 1-3 23417 23415 Jmb

ANALYSIS:

MATRIX:

DATE TESTED:

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	< 0.1	0.1

COMMENTS:

[redacted]

METHOD BLANK

LABORATORY NO.: 23442 23443 23454 23468 23469 23473 23492 23467-13

DATE TESTED: 6/14

ANALYSIS:

MATRIX:

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH [redacted] GAS		
soil	<5	5
water	<0.1	0.1
BTEX	<1 ppb	1 ppb

GM 6-20-89

COMMENTS:

CH2M HILL

METHOD BLANK

LABORATORY NO.: 23500 23521

ANALYSIS:

MATRIX:

DATE TESTED: 6/16

COMPOUND	SAMPLE RESULT (PPM)	DETECTION LIMIT (PPM)
TPH ~~DIESEL~~ GAS	LO.1	0.1

6-20-89

COMMENTS:

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0603

Reference No: 24158-1

Sample Matrix: Water

Date Sampled: 8-25-1989
Date Received: 8-28-1989
Date Analyzed: 8-29-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		93	103

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Greg Fowler

000017

CH2M HILL
Engineers
Planners
Economists
Scientists

METHOD: TPH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0606

Sample Matrix: Water

Reference No: 24185-1

Date Sampled: 8-28-1989
Date Received: 8-30-1989
Date Analyzed: 9-5-1989

Compounds	Detection Limit	Method Blank	Sample Result
TPH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		75	100

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: [signature]

000050

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0614

Sample Matrix: Water

Reference No: 24191-1

Date Sampled: 8-30-1989
Date Received: 8-31-1989
Date Analyzed: 9-5-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	<0.1	<0.1
Surrogate (SS)		75	140

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: [signature]

000092

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0617

Sample Matrix: Water

Reference No: 24202-2

Date Sampled: 8-31-1989
Date Received: 9-1-1989
Date Analyzed: 9-12-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	<0.1	<0.1
Surrogate (SS)		100	65

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Greg Jordan

000107

Engineers
Planners
CH2MHILL
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0628

Sample Matrix: Water

Reference No: 24246-1

Date Sampled: 9-7-1989
Date Received: 9-8-1989
Date Analyzed: 9-12-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		100	124

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By:

C00155

Engineers
Planners
CH2MHILL Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0623

Sample Matrix: Water

Reference No: 24242-3

Date Sampled: 9-6-1989
Date Received: 9-7-1989
Date Analyzed: 9-12-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		100	96

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Gay Jordan

000132

CH2M HILL Engineers Planners Economists Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0631

Sample Matrix: Water

Reference No: 24265-1

Date Sampled: 9-8-89
Date Received: 9-11-1989
Date Analyzed: 9-12-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		100	82

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Greg Franklin

000176

CH2M HILL
Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0632

Sample Matrix: Water

Reference No: 24272-2

Date Sampled: 9-11-1989
Date Received: 9-12-1989
Date Analyzed: 9-13-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		117	124

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Greg Jones

000193

CH2M HILL
Engineers
Planners

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0636

Sample Matrix: Water

Reference No: 24304-1

Date Sampled: 9-12-1989
Date Received: 9-13-1989
Date Analyzed: 9-19-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		98	108

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Gary Jones

000213

Engineers
Planners

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0639

Sample Matrix: Water

Reference No: 24313-1

Date Sampled: 9-13-1989
Date Received: 9-14-1989
Date Analyzed: 9-19-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		98	109

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Jay Jordan

000233

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0643

Sample Matrix: Water

Reference No: 24331-2

Date Sampled: 9-14-1989
Date Received: 9-15-1989
Date Analyzed: 9-25-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		85	70

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Sally Joules

000256

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0649

Sample Matrix: Water

Reference No: 24350-1

Date Sampled: 9-18-1989
Date Received: 9-19-1989
Date Analyzed: 9-25-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		85	78

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Greg Jones

000231

CH2M HILL
Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0636

Sample Matrix: Water

Reference No: 24372-1

Date Sampled: 9-19-1989
Date Received: 9-20-1989
Date Analyzed: 9-25-1989

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		85	73

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Greg Jones

000303

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0688

Sample Matrix: Water

Reference No: 24898-2

Date Sampled: 11-15-89
Date Received: 11-16-89
Date Analyzed: 11-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	<0.1	<0.1
Surrogate (SS)		96	104

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By:

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0690

Sample Matrix: Water

Reference No: 24925-2

Date Sampled: 11-17-89
Date Received: 11-20-89
Date Analyzed: 11-30-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	<0.1	<0.1
Surrogate (SS)		110	107

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Gray Jonker

Engineers
Planners
CH2MHILL Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0699

Sample Matrix: Water

Reference No: 24934-1

Date Sampled: 11-19-89
Date Received: 11-20-89
Date Analyzed: 11-30-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	<0.1	<0.1
Surrogate (SS)		110	93

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By:

CH2M HILL
Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0700

Sample Matrix: Water

Reference No: 24939-1

Date Sampled: 11-20-89
Date Received: 11-21-89
Date Analyzed: 11-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	<0.1	<0.1
Surrogate (SS)		96	100

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Jay Jordan

METHOD: TPH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0705

Reference No: 24954-2

Date Sampled: 11-21-89
Date Received: 11-22-89
Date Analyzed: 11-29-89

Sample Matrix: Water

Compounds	Detection Limit	Method Blank	Sample Result
TPH Gas	0.1	<0.1	<0.1
Surrogate (SS)		96	107

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By:

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Airforce Base
Client Sample ID: BAFB0705

Reference No: 24957-1

Sample Matrix: Water

Date Sampled: 11-21-89
Date Received: 11-22-89
Date Analyzed: 11-29-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	<0.1	<0.1
Surrogate (SS)		96	101

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Greg Jorden

Engineers
Planners
Economists
Scientists

METHOD: TFH Gas

Client: Beale Air Force Base
Client Sample ID: BAFB0713

Sample Matrix: Water

Reference No: 25010-1

Date Sampled: 11-28-89
Date Received: 11-29-89
Date Analyzed: 12-1-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	<0.1	<0.1
Surrogate (SS)		96	113

Results reported as mg/l.

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as surrogate standard.

Approved By: Grey Jordan

Engineers
Planners
CH2MHILL Economists
Scientists

METHOD: TFH - GAS

Client: Beale Air Force Base
Client Sample ID: BAFB-0714

Sample Matrix: Water

Reference No: 25020-1

Date Sampled: 11-29-89
Date Received: 11-30-89
Date Analyzed: 12-14-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		112	86

Comments: Results reported as mg/l.
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as Gas surrogate standard.

Approved By: Gary Jordan

Engineers
Planners
Economists
Scientists

METHOD: TFH - GAS

Client: Beale Air Force Base
Client Sample ID: BAFB-0725

Sample Matrix: Water

Reference No: 25059-4

Date Sampled: 12-01-89
Date Received: 12-01-89
Date Analyzed: 12-14-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		112	115

Comments: Results reported as mg/l.
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as Gas surrogate standard.

Approved By: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD: TFH - GAS

Client: Beale Air Force Base
Client Sample ID: BAFB-0730

Sample Matrix: Water

Reference No: 25118-1

Date Sampled: 12-05-89
Date Received: 12-06-89
Date Analyzed: 12-14-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		112	106

Comments: Results reported as mg/l.
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as Gas surrogate standard.

Approved By: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD: TFH - GAS

Client: Beale Air Force Base
Client Sample ID: BAFB-0732

Sample Matrix: Water

Reference No: 25151-1

Date Sampled: 12-06-89
Date Received: 12-08-89
Date Analyzed: 12-14-89

Compounds	Detection Limit	Method Blank	Sample Result
TFH Gas	0.1	< 0.1	< 0.1
Surrogate (SS)		112	98

Comments: Results reported as mg/l.
SS - Surrogate Standard reported as percent recovery.
Bromofluorobenzene used as Gas surrogate standard.

Approved By: Greg Jordan

METHOD BLANKS

ICP Metals (SW6010)

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	20	U	20	U	20	U			20	U	P
Antimony	30	U	30	U	30	U			30	U	P
enic	30	U	30	U	30	U			30	U	P
ium	10	U	10	U	10	U			10	U	P
Beryllium	0.5	U	0.5	U	0.5	U			0.5	U	P
Cadmium	1	U	1	U	1	U			1	U	P
Calcium	100	U	100	U	100	U			100	U	P
Chromium	3	U	3	U	3	U			3	U	P
Cobalt	4	U	4	U	4	U			4	U	P
Copper	3	U	3	U	3	U			3	U	P
Iron	10	U	10	U	10	U			10	U	P
Lead	20	U	20	U	20	U			20	U	P
Magnesium	100	U	100	U	100	U			100	U	P
Manganese	1.5	U	1.5	U	1.5	U			1.5	U	P
Mercury											
Nickel	4	U	4	U	4	U			4	U	P
Potassium	200	U	200	U	200	U			200	U	P
Selenium	40	U	40	U	40	U			40	U	P
Silver	3	U	3	U	3	U			3	U	P
Sodium	100	U	100	U	100	U			100	U	P
Thallium	50	U	50	U	50	U			50	U	P
Vanadium	4	U	4	U	4	U			4	U	P
Zinc	2	U	2	U	2	U			2.518		P
Cyanide											NR
Molybdenum	4	U	4	U	4	U			4	U	P

ICP 12/09/88 Ref # 21645
21659 6-8
21621 -24
21676 2-3

: F-159 : - :N

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	u	200	u	200	u			20	u	P
Antimony	300	u	300	u	300	u			30	u	P
Arsenic	300	u	300	u	300	u			30	u	[illegible]
Barium	100	u	100	u	100	u			10	u	[illegible]
Beryllium	5	u	5	u	5	u			0.5	u	P
Cadmium	10	u	10	u	10	u			1	u	P
Calcium	1000	u	1000	u	1000	u			100	u	P
Chromium	30	u	30	u	30	u			3	u	P
Cobalt	40	u	40	u	40	u			4	u	P
Copper	30	u	30	u	30	u			3	u	P
Iron	100	u	100	u	100	u			10	u	P
Lead	200	u	200	u	200	u			20	u	P
Magnesium	1000	u	1000	u	1000	u			100	u	P
Manganese	15	u	15	u	15	u			1.5	u	P
Mercury	0.2	u	0.2	u	0.2	u	0.2	u	0.06	u	CV
Nickel	40	u	40	u	40	u			4	u	P
Potassium	1000	u	1000	u	1000	u			200	u	P
Selenium	400	u	400	u	400	u			40	u	P
Silver	30	u	30	u	30	u			3	u	P
Sodium	1000	u	1000	u	1000	u			100	u	P
Thallium	500	u	500	u	500	u			.50	u	P
Vanadium	40	u	40	u	40	u			4	u	P
Zinc	20	u	20	u	20	u			2.310		P
Cyanide											NR
MOLYBDENUM	40	u	40	u	40	u			4	u	P

21852 EV
21676
21677
21716
21717
} ICP 12-13-88

21689-2
21677
21717
21725
} Hg 12-12-88

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	[illegible]	U	300	U	300	U	300	U	30	U	P
Barium	100	U	100	U	100	U	100	U	10	U	P
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury											
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	200	U	P
Selenium	400	U	400	U	400	U	400	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	4	U	P
Zinc	20	U	20	U	20	U	20	U	3.142		P
Cyanide											NR

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3.46		P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			26.87		P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			4	U	P

21752
758
771
774
775
} ICP 12-21-88

21771
774
775
796
798
} Hg 12-16-88

FORM F-162 IN

U.S. EPA - CLP

3
BLANKS

Lab Name: CH3M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	4	U	4	U	4	U			4	U	P

ICP 12/06/88 21654 21656 21657 21658 21659 2-5 Hg 12/01/88 21654 21657

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

Hg 12/06/88 Ref # 21658
21659 3-8
21676

FC: F-164 - 2I

000071

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): UG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	F
Barium	100	U	100	U	100	U	100	U	10	U	P
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	200	U	P
Selenium	40	U	40	U	40	U	40	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	40	U	P
Zinc	20	U	20	U	20	U	20	U	2	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U	40	U	4	U	P

21427
21428
21433
21434 } ICP 12-14-88

21733
21734
21739 } Hg 12-16-88

FC: F-165 - IN

00000

U.S. EPA - CLP

3
BLANKS

Lab Name: [illegible] Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.5	U							CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

21733
21734
21739
} Hg 12-16-88

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	u	200	u	200	u			20	u	P
Antimony	300	u	300	u	300	u			30	u	P
Arsenic	300	u	300	u	300	u			30	u	P
Barium	100	u	100	u	100	u			10	u	P
Beryllium	5	u	5	u	5	u			0.5	u	P
Cadmium	10	u	10	u	10	u			1	u	P
Calcium	1000	u	1000	u	1000	u			100	u	P
Chromium	30	u	30	u	30	u			3	u	P
Cobalt	40	u	40	u	40	u			4	u	P
Copper	30	u	30	u	30	u			3	u	P
Iron	100	u	100	u	100	u			10	u	P
Lead	200	u	200	u	200	u			20	u	P
Magnesium	1000	u	1000	u	1000	u			100	u	P
Manganese	15	u	15	u	15	u			1.5	u	P
Mercury	0.5	u	0.5	u	0.5	u	0.5	u	0.06	u	CV
Nickel	40	u	40	u	40	u			4	u	P
Potassium	1000	u	1000	u	1000	u			200	u	P
Selenium	400	u	400	u	400	u			40	u	P
Silver	30	u	30	u	30	u			3	u	P
Sodium	1000	u	1000	u	1000	u			100	u	P
Thallium	500	u	500	u	500	u			50	u	P
Vanadium	40	u	40	u	40	u			4	u	P
Zinc	20	u	20	u	20	u			2	u	P
Cyanide											NR
MOLYBDENUM	40	u	40	u	40	u			4	u	P

21734, 739, 740, 757 } ICP 12-19-88

21740, 757, 758 } Hg 12-22-88

000077

U S. EPA - CLP

3
BLANKS

Lab Name: CLAM GILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): Soil

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.5	U							CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

2,771
774
775
780
788
} Hg 12-26-88

3
BLANKS

Lab Name: CHEM AIR Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	P
Barium	100	U	100	U	100	U	100	U	10	U	P
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury											
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	200	U	P
Selenium	400	U	400	U	400	U	400	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	4	U	P
Zinc	20	U	20	U	20	U	20	U	2	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U	40	U	4	U	P

21775 } ICP
21786 } 12-29-88

FC: F-169 - IN

3
BLANKS

Lab Name: CHEM TECH Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	
Barium	100	U	100	U	100	U	100	U	10	U	
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1081		1000	U	200	U	P
Selenium	400	U	400	U	400	U	400	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	4	U	P
Zinc	20	U	20	U	20	U	20	U	2	U	P
Cyanide											
MOLYBDENUM	40	U	40	U	40	U	40	U	4	U	P

21787 788 789 803 804 805 806 — ICP 12-30-88

21788 789 805 806 831 — Mg 12-30

3
BLANKS

Lab Name: CHEM HILL Contract: BEALE

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			200	U							P
Antimony			300	U							P
Arsenic			300	U							P
Barium			100	U							P
Beryllium			5	U							P
Cadmium			10	U							P
Calcium			1000	U							P
Chromium			30	U							P
Cobalt			40	U							P
Copper			30	U							P
Iron			100	U							P
Lead			200	U							P
Magnesium			1000	U							P
Manganese			15	U							P
Mercury			0.5	U	0.5	U	0.5	U			CV
Nickel			40	U							P
Potassium			1000	U							P
Selenium			400	U							P
Silver			30	U							P
Sodium			1000	U							P
Thallium			500	U							P
Vanadium			40	U							P
Zinc			20	U							P
Cyanide											NR
MOLYBDENUM			40	U							P

21787
708
789
803
804
805
806
} ICP 12-30-88

21787
789
805
806
831
} Hg 12-30

FOR F-171 . EN

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.5	U	0.5	U	0.5	U			CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

21787
789
805 Hg
806
831 12-30

FC: F-172 - IN

7/87
000033

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	20	U	20	U	20	U			20	U	P
Antimony	30	U	30	U	30	U			30	U	P
Arsenic	30	U	30	U	30	U			30	U	P
Barium	10	U	10	U	10	U			10	U	P
Beryllium	0.5	U	0.5	U	0.5	U			0.5	U	P
Cadmium	1	U	1	U	1	U			1	U	P
Calcium	100	U	100	U	100	U			100	U	P
Chromium	3	U	3	U	3	U			3	U	P
Cobalt	4	U	4	U	4	U			4	U	P
Copper	3	U	3	U	3	U			3	U	P
Iron	10	U	10	U	10	U			10	U	P
Lead	20	U	20	U	20	U			20	U	P
Magnesium	100	U	100	U	100	U			100	U	P
Manganese	1.5	U	1.5	U	1.5	U			1.5	U	P
Mercury											
Nickel	4	U	4	U	4	U			4	U	P
Potassium	200	U	200	U	200	U			200	U	P
Selenium	40	U	40	U	40	U			40	U	P
Silver	3	U	3	U	3	U			3	U	P
Sodium	100	U	100	U	100	U			100	U	P
Thallium	50	U	50	U	50	U			50	U	P
Vanadium	4	U	4	U	4	U			4	U	P
Zinc	2	U	2	U	2	U			2	U	P
Cyanide											
Molybdenum	4	U	4	U	4	U			4	U	P

ICP 01/03/89 Ref # 21806 5-7
21830
21831
21832 2-5

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03803

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	u	200	u	200	u			20	u	P
Antimony	300	u	300	u	300	u			30	u	P
Arsenic	300	u	300	u	300	u			30	u	P
Barium	100	u	100	u	100	u			10	u	P
Beryllium	5	u	5	u	5	u			0.5	u	P
Cadmium	10	u	10	u	10	u			1	u	P
Calcium	1000	u	1000	u	1000	u			100	u	P
Chromium	30	u	30	u	30	u			3	u	P
Cobalt	40	u	40	u	40	u			4	u	P
Copper	30	u	30	u	30	u			3	u	P
Iron	100	u	100	u	100	u			10	u	P
Lead	200	u	200	u	200	u			20	u	P
Magnesium	1000	u	1000	u	1000	u			100	u	P
Manganese	15	u	15	u	15	u			1.5	u	P
Mercury	0.5	u	0.5	u	0.5	u	0.5	u	0.06	u	CV
Nickel	40	u	40	u	40	u			4	u	P
Potassium	1000	u	1000	u	1000	u			200	u	P
Selenium	400	u	400	u	400	u			40	u	P
Silver	30	u	30	u	30	u			3	u	P
Sodium	1000	u	1000	u	1000	u			100	u	P
Thallium	500	u	500	u	500	u			50	u	P
Vanadium	40	u	40	u	40	u			4	u	P
Zinc	20	u	20	u	20	u			2	u	P
Cyanide											NR
MOLYBDENUM	40	u	40	u	40	u			4	u	P

21832-6, 846, 847, 848 } ICP 1-5-89

21830, 832, 846 } Hg 1-4

000031

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	u	200	u	200	u	200	u	20	u	P
Antimony	300	u	300	u	300	u	300	u	30	u	P
Arsenic	300	u	300	u	300	u	300	u	30	u	P
Barium	100	u	100	u	100	u	100	u	10	u	P
Beryllium	5	u	5	u	5	u	5	u	0.5	u	P
Cadmium	10	u	10	u	10	u	10	u	1	u	P
Calcium	1000	u	1000	u	1000	u	1000	u	100	u	P
Chromium	30	u	30	u	30	u	30	u	3	u	P
Cobalt	40	u	40	u	40	u	40	u	4	u	P
Copper	30	u	30	u	30	u	30	u	3	u	P
Iron	100	u	100	u	100	u	100	u	10	u	P
Lead	200	u	200	u	200	u	200	u	20	u	P
Magnesium	1000	u	1000	u	1000	u	1000	u	100	u	P
Manganese	15	u	15	u	15	u	15	u	1.5	u	P
Mercury	0.5	u	0.5	u	0.5	u	0.5	u	0.06	u	CV
Nickel	40	u	40	u	40	u	40	u	4	u	P
Potassium	1000	u	1000	u	1000	u	1000	u	200	u	P
Selenium	400	u	400	u	400	u	400	u	40	u	P
Silver	30	u	30	u	30	u	30	u	3	u	P
Sodium	1000	u	1000	u	1000	u	1000	u	100	u	P
Thallium	500	u	500	u	500	u	500	u	50	u	P
Vanadium	40	u	40	u	40	u	40	u	4	u	P
Zinc	20	u	20	u	20	u	20	u	2	u	P
Cyanide											NR
MOLYBDENUM	40	u	40	u	40	u	40	u	4	u	P

21858, 859, 860, 872 } ICP 1-6

21847, 848, 858, 859, 860 } Hg 1-11

000056

U.S. EPA - CLP

3
BLANKS

Lab Name: CHEM-HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											P
Antimony											P
Arsenic											P
Barium											P
Beryllium											P
Cadmium											P
Calcium											P
Chromium											P
Cobalt											P
Copper											P
Iron											P
Lead											P
Magnesium											P
Manganese											P
Mercury			0.5	U	0.5	U	0.5	U			CV
Nickel											P
Potassium											P
Selenium											P
Silver											P
Sodium											P
Thallium											P
Vanadium											P
Zinc											P
Cyanide											NR
Molybdenum											P

21847
848
858
859
860
} Hg 1-11

C0003

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	20	U	20	U	20	U			20	U	P
Antimony	30	U	30	U	30	U			30	U	P
Arsenic	30	U	30	U	30	U			30	U	P
Barium	10	U	10	U	10	U			10	U	P
Beryllium	0.5	U	0.5	U	0.5	U			0.5	U	P
Cadmium	1	U	1	U	1	U			1	U	P
Calcium	100	U	100	U	100	U			100	U	P
Chromium	3	U	3	U	3	U			3	U	P
Cobalt	4	U	4	U	4	U			4	U	P
Copper	3	U	3	U	3	U			3	U	P
Iron	10	U	10	U	10	U			10	U	P
Lead	20	U	20	U	20	U			20	U	P
Magnesium	100	U	100	U	100	U			100	U	P
Manganese	1.5	U	1.5	U	1.5	U			1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U			0.06	U	CV
Nickel	4	U	4	U	4	U			4	U	P
Potassium	200	U	200	U	200	U			200	U	P
Selenium	40	U	40	U	40	U			40	U	P
Silver	3	U	3	U	3	U			3	U	P
Sodium	100	U	100	U	100	U			100	U	P
Thallium	50	U	50	U	50	U			50	U	P
Vanadium	4	U	4	U	4	U			4	U	P
Zinc	2	U	2	U	2	U			2	U	P
Cyanide											NR
Molybdenum	4	U	4	U	4	U			4	U	P

ICP 01/09/89 Ref # 21872 3-12
21879 2-8
21899 2-4

21872, 8 99 } Hg 1-17-89

FORM F-177 IN

U.S. EPA - CLP

3
BLANKS

Lab Name: CHEM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: ____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	
Aluminum	200	U	200	U	200	U			20	U	
Antimony	300	U	300	U	300	U			30	U	
Arsenic	200	U	200	U	200	U			30	U	
Barium	100	U	100	U	100	U			10	U	
Beryllium	5	U	5	U	5	U			0.5	U	
Cadmium	10	U	10	U	10	U			1	U	
Calcium	1000	U	1000	U	1000	U			100	U	
Chromium	30	U	30	U	30	U			3	U	
Cobalt	40	U	40	U	40	U			4	U	
Copper	30	U	30	U	30	U			3	U	
Iron	100	U	100	U	100	U			10	U	
Lead	200	U	200	U	200	U			20	U	
Magnesium	1000	U	1000	U	1000	U			100	U	
Manganese	15	U	15	U	15	U			1.5	U	
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	
Nickel	40	U	40	U	40	U			4	U	
Potassium	1000	U	1000	U	1000	U			200	U	
Selenium	400	U	400	U	400	U			40	U	
Silver	30	U	30	U	30	U			3	U	
Sodium	1000	U	1000	U	1000	U			100	U	
Thallium	500	U	500	U	500	U			50	U	
Vanadium	40	U	40	U	40	U			4	U	
Zinc	20	U	20	U	20	U			2	U	
Cyanide											
Molybdenum	40	U	40	U	40	U			4	U	

21897, 919 } ICP I-11

21919, 923, 931, 991 } Mg I-17

00003

U.S. EPA - CLP

3
BLANKS

Lab Name: CHEM-HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											P
Antimony											P
enic											P
Barium											P
Beryllium											P
Cadmium											P
Calcium											P
Chromium											P
Cobalt											P
Copper											P
Iron											P
Lead											P
Magnesium											P
Manganese											P
Mercury			0.5	U	0.5	U					CV
Nickel											P
Potassium											P
Selenium											P
Silver											P
Sodium											P
Thallium											P
Vanadium											P
Zinc											P
Cyanide											NR
Molybdenum											P

21919
923
931
991
} Hg 1-17

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	u	200	u	200	u			20	u	P
Antimony	300	u	300	u	300	u			30	u	P
Arsenic	300	u	300	u	300	u			30	u	
Barium	100	u	100	u	100	u			10	u	P
Beryllium	5	u	5	u	5	u			0.5	u	P
Cadmium	10	u	10	u	10	u			1	u	P
Calcium	1000	u	1000	u	1000	u			100	u	P
Chromium	30	u	30	u	30	u			3	u	P
Cobalt	40	u	40	u	40	u			4	u	P
Copper	30	u	30	u	30	u			3	u	P
Iron	100	u	100	u	100	u			10	u	P
Lead	200	u	200	u	200	u			20	u	P
Magnesium	1000	u	1000	u	1000	u			100	u	P
Manganese	15	u	15	u	15	u			1.5	u	P
Mercury											
Nickel	40	u	40	u	40	u			4	u	P
Potassium	1000	u	1000	u	1000	u			200	u	P
Selenium	400	u	400	u	400	u			40	u	P
Silver	30	u	30	u	30	u			3	u	P
Sodium	1000	u	1000	u	1000	u			100	u	P
Thallium	500	u	500	u	500	u			50	u	P
Vanadium	40	u	40	u	40	u			4	u	P
Zinc	20	u	20	u	20	u			2	u	P
Cyanide											NR
Molybdenum	40	u	40	u	40	u			4	u	P

21920
923
930
931
ICP 1-17-89

FORM F-180 IN

00809

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury											
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			4	U	P

21920 (2-5) ICP 1-23
9729 (2-5)

U.S. EPA - CLP

3
BLANKS

Lab Name: Cham Hill Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	u	200	u	200	u			20	u	P
Antimony	300	u	300	u	300	u			30	u	P
Arsenic	300	u	300	u	300	u			30	u	
Barium	100	u	100	u	100	u			10	u	P
Beryllium	5	u	5	u	5	u			0.5	u	P
Cadmium	10	u	10	u	10	u			1	u	P
Calcium	1000	u	1000	u	1000	u			100	u	P
Chromium	30	u	30	u	30	u			3	u	P
Cobalt	40	u	40	u	40	u			4	u	P
Copper	30	u	30	u	30	u			3	u	P
Iron	100	u	100	u	100	u			10	u	P
Lead	200	u	200	u	200	u			20	u	P
Magnesium	1000	u	1000	u	1000	u			100	u	P
Manganese	15	u	15	u	15	u			1.5	u	P
Mercury	0.5	u	0.5	u	0.5	u	0.5	u	0.06	u	CV
Nickel	40	u	40	u	40	u			4	u	P
Potassium	1000	u	1000	u	1000	u			200	u	P
Selenium	400	u	400	u	400	u			40	u	P
Silver	30	u	30	u	30	u			3	u	P
Sodium	1000	u	1000	u	1000	u			100	u	P
Thallium	500	u	500	u	500	u			50	u	P
Vanadium	40	u	40	u	40	u			4	u	P
Zinc	20	u	20	u	20	u			2	u	P
Cyanide											NR
Molybdenum	40	u	40	u	40	u			4	u	P

21979, 21991, 22002 } ICP 1-25

22002 - Hg 1-24

U.S. EPA - CLP

3
BLANKS

Lab Name: [illegible] Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	[illegible]	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Senic	300	U	300	U	300	U			30	U	P
rium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury											
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
[illegible]ide											NR
[illegible]	20	U	20	U	20	U			4	U	P

[illegible] CP
[illegible] -27

[illegible]

U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	
Barium	100	U	100	U	100	U	100	U	10	U	
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U			0.06	U	CV
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	200	U	P
Selenium	40	U	40	U	40	U	40	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	4	U	P
Zinc	20	U	20	U	20	U	20	U	2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U	40	U	4	U	P

22020, 053, 067, 099, 080, 097 — ICP 1-3

22053, 067, 029, 080, 134 — Hg 2-3

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	.05	U	.05	U	.05	U	.25	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1144	B	1000	U			200	U	P
Selenium	40	U	40	U	40	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			4	U	P

22.124 ICP 2-8

22.159
17.6
19.1
} Mg 2-8

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	20	U	20	U	20	U			20	U	P
Antimony	30	U	30	U	30	U			30	U	P
Arsenic	30	U	30	U	30	U			30	U	
Barium	10	U	10	U	10	U			10	U	
Beryllium	0.5	U	0.5	U	0.5	U			0.5	U	P
Cadmium	1	U	1	U	1	U			1	U	P
Calcium	100	U	100	U	100	U			100	U	P
Chromium	3	U	3	U	3	U			3	U	P
Cobalt	4	U	4	U	4	U			4	U	P
Copper	3	U	3	U	3	U			3	U	P
Iron	10	U	10	U	10	U			10	U	P
Lead	20	U	20	U	20	U			20	U	P
Magnesium	100	U	100	U	100	U			100	U	P
Manganese	1.5	U	1.5	U	1.5	U			1.5	U	P
Mercury											
Nickel	4	U	4	U	4	U			4	U	P
Potassium	200	U	200	U	200	U			200	U	P
Selenium	40	U	40	U	40	U			40	U	P
Silver	3	U	3	U	3	U			3	U	P
Sodium	100	U	100	U	100	U			100	U	P
Thallium	50	U	50	U	50	U			50	U	P
Vanadium	4	U	4	U	4	U			4	U	P
Zinc	2	U	2	U	2	U			2.518		P
Cyanide											NR
Molybdenum	4	U	4	U	4	U			4	U	P

ICP 12/09/88 Ref # 21645
21659 6-8
21621 -24
21676 2-3

FOR F-186 IN

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10.	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2.310		P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			4	U	P

21852, 21676, 21677, 21716, 21717 } ICP 12-13-88

21689-92, 21697, 21719, 21725 } Hg 12-12-88

000073

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	
Barium	100	U	100	U	100	U	100	U	10	U	
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury											
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	200	U	P
Selenium	400	U	400	U	400	U	400	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	4	U	P
Zinc	20	U	20	U	20	U	20	U	3.142		P
Cyanide											NR

21582 ICP 12-5-88

C00007-

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	u	200	u	200	u			20	u	P
Antimony	300	u	300	u	300	u			30	u	P
Arsenic	300	u	300	u	300	u			30	u	P
Barium	100	u	100	u	100	u			10	u	P
Beryllium	5	u	5	u	5	u			0.5	u	P
Cadmium	0	u	10	u	10	u			1	u	P
Calcium	1000	u	1000	u	1000	u			100	u	P
Chromium	30	u	30	u	30	u			3.46		P
Cobalt	40	u	40	u	40	u			4	u	P
Copper	30	u	30	u	30	u			3	u	P
Iron	100	u	100	u	100	u			26.87		P
Lead	200	u	200	u	200	u			20	u	P
Magnesium	1000	u	1000	u	1000	u			100	u	P
Manganese	15	u	15	u	15	u			1.5	u	P
Mercury	0.5	u	0.5	u	0.5	u	0.5	u	0.06	u	CV
Nickel	40	u	40	u	40	u			4	u	P
Potassium	1000	u	1000	u	1000	u			200	u	P
Selenium	400	u	400	u	400	u			40	u	P
Silver	30	u	30	u	30	u			3	u	P
Sodium	1000	u	1000	u	1000	u			100	u	P
Thallium	500	u	500	u	500	u			50	u	P
Vanadium	40	u	40	u	40	u			4	u	P
Zinc	20	u	20	u	20	u			2	u	P
Cyanide											NR
MOLYBDENUM	40	u	40	u	40	u			4	u	P

757, 758, 771, 774, 775 } ICP 12-21-88

21771, 774, 775, 796, 788 } Hg 12-28-88

000076

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	
Arsenic	300	U	300	U	300	U			30	U	
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	5000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	4	U	4	U	4	U			4	U	P

ICP 12/06/88 21654 21656 21657 21658 21659 0-5

Hg 12/1/88 21654 21657

FCR F-190 IN

U.S. EPA - CLP

3
BLANKS

Lab Name: HALM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Unit: (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	C
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

Hg 12/06/88 Ref # 21658
21659 7-8
21676

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	
Barium	100	U	100	U	100	U	100	U	10	U	P
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	200	U	P
Selenium	40	U	40	U	40	U	40	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	40	U	P
Zinc	20	U	20	U	20	U	20	U	2	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U	40	U	4	U	P

21717
21725
21727 } ICP 12-14-88
21733
21734

21733
21734 } Hg 12-16-88
21739

000075

U.S. EPA - CLP

3
BLANKS

Lab Name: C-3M Hill Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
rium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.5	U							CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

21733
21734
21739 } 12-16-88

CONFIDENTIAL

U.S. EPA - CLP

3
BLANKS

Lab Name: CHEM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			4	U	P

2734, 739, 740, 757 } ICP 12-19-89

21740, 751, 759 } Hg 12-22-88

000377

U.S. EPA - CLP

3
BLANKS

Lab Name: [illegible] Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.5	U							CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

21771
774
775
790
788
Hg
12-28-88

U.S. EPA - CLP

3
BLANKS

Lab Name: [illegible] Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	u	200	u	200	u	200	u	20	u	P
Antimony	300	u	300	u	300	u	300	u	30	u	P
Arsenic	300	u	300	u	300	u	300	u	30	u	P
Barium	100	u	100	u	100	u	100	u	10	u	
Beryllium	5	u	5	u	5	u	5	u	0.5	u	P
Cadmium	10	u	10	u	10	u	10	u	1	u	P
Calcium	1000	u	1000	u	1000	u	1000	u	100	u	P
Chromium	30	u	30	u	30	u	30	u	3	u	P
Cobalt	40	u	40	u	40	u	40	u	4	u	P
Copper	30	u	30	u	30	u	30	u	3	u	P
Iron	100	u	100	u	100	u	100	u	10	u	P
Lead	200	u	200	u	200	u	200	u	20	u	P
Magnesium	1000	u	1000	u	1000	u	1000	u	100	u	P
Manganese	15	u	15	u	15	u	15	u	1.5	u	P
Mercury											
Nickel	40	u	40	u	40	u	40	u	4	u	P
Potassium	1000	u	1000	u	1000	u	1000	u	200	u	P
Selenium	400	u	400	u	400	u	400	u	40	u	P
Silver	30	u	30	u	30	u	30	u	3	u	P
Sodium	1000	u	1000	u	1000	u	1000	u	100	u	P
Thallium	500	u	500	u	500	u	500	u	50	u	
Vanadium	40	u	40	u	40	u	40	u	4		
Zinc	20	u	20	u	20	u	20	u	2		
Cyanide											
MOLYBDENUM	40	u	40	u	40	u	40	u	4		

2775 } ICP
21786 } 12-29-88

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	P
Barium	100	U	100	U	100	U	100	U	10	U	P
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1081		1000	U	200	U	P
Selenium	400	U	400	U	400	U	400	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	4	U	P
Zinc	20	U	20	U	20	U	20	U	2	U	P
Cyanide											
MOLYBDENUM	40	U	40	U	40	U	40	U	4	U	P

21787, 788, 789, 903, 804, 805, 806 } ICP 12-30-88

21787, 789, 805, 806, 831 } Hg 12-30

00003

U.S. EPA - CLP

3
BLANKS

Lab Name: CHEM HILL Contract: BEALE

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
Aluminum			200								P
Antimony			300								P
Arsenic			300								P
Barium			100								P
Beryllium			5								P
Cadmium			10								P
Calcium			1000								P
Chromium			30								P
Cobalt			40								P
Copper			30								P
Iron			100								P
Lead			200								P
Magnesium			1000								P
Manganese			15								P
Mercury			0.5		0.5		0.5				CV
Nickel			40								P
Potassium			1000								P
Selenium			400								P
Silver			30								P
Sodium			1000								P
Thallium			500								P
Vanadium			40								P
Zinc			20								P
Cyanide											NR
MOLYBDENUM			40								P

21787 708 789 803 804 805 806 ICP 12-30-88

21787 789 805 806 831 Hg 12-30

FORM F-198 IN

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury			0.5	U	0.5	U	0.5	U			CV
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											NR

21787
789
805
806
831
} Hg 12-30

U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
Aluminum	20	U	20	U	20	U			20	U	P
Antimony	30	U	30	U	30	U			30	U	
Arsenic	30	U	30	U	30	U			30	U	
Barium	10	U	10	U	10	U			10	U	P
Beryllium	0.5	U	0.5	U	0.5	U			0.5	U	P
Cadmium	1	U	1	U	1	U			1	U	P
Calcium	100	U	100	U	100	U			100	U	P
Chromium	3	U	3	U	3	U			3	U	P
Cobalt	4	U	4	U	4	U			4	U	P
Copper	3	U	3	U	3	U			3	U	P
Iron	10	U	10	U	10	U			10	U	P
Lead	20	U	20	U	20	U			20	U	P
Magnesium	100	U	100	U	100	U			100	U	P
Manganese	1.5	U	1.5	U	1.5	U			1.5	U	P
Mercury											
Nickel	4	U	4	U	4	U			4	U	P
Potassium	200	U	200	U	200	U			200	U	P
Selenium	40	U	40	U	40	U			40	U	P
Silver	3	U	3	U	3	U			3	U	P
Sodium	100	U	100	U	100	U			100	U	P
Thallium	50	U	50	U	50	U			50	U	P
Vanadium	4	U	4	U	4	U			4	U	P
Zinc	2	U	2	U	2	U			2	U	P
Cyanide											
Molybdenum	4	U	4	U	4	U			4	U	P

ICP 01/03/89 Ref # 21806 5-7
21830
21831
21832 2-5

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			4	U	P

21832-6, 846, 847, 848 } ICP 1-5-89

21830, 832, 846 } Hg 1-4

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	[illegible]
Barium	100	U	100	U	100	U	100	U	10	U	
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	200	U	P
Selenium	400	U	400	U	400	U	400	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	4	U	P
Zinc	20	U	20	U	20	U	20	U	2	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U	40	U	4	U	P

21858, 859, 860, 872 } ICP 1-6

21847, 848, 858, 859, 860 } Hg 1-11

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											P
Antimony											P
Arsenic											P
Barium											P
Beryllium											P
Cadmium											P
Calcium											P
Chromium											P
Cobalt											P
Copper											P
Iron											P
Lead											P
Magnesium											P
Manganese											P
Mercury			0.5	U	0.5	U	0.5	U			CV
Nickel											P
Potassium											P
Selenium											P
Silver											P
Sodium											P
Thallium											P
Vanadium											P
Zinc											P
Cyanide											NR
Molybdenum											P

21844
848
858
859
860 } Hg 1-11

U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	20	U	20	U	20	U			20	U	P
Antimony	30	U	30	U	30	U			30	U	P
Arsenic	30	U	30	U	30	U			30	U	P
Barium	10	U	10	U	10	U			10	U	P
Beryllium	0.5	U	0.5	U	0.5	U			0.5	U	P
Cadmium	1	U	1	U	1	U			1	U	P
Calcium	100	U	100	U	100	U			100	U	P
Chromium	3	U	3	U	3	U			3	U	P
Cobalt	4	U	4	U	4	U			4	U	P
Copper	3	U	3	U	3	U			3	U	P
Iron	10	U	10	U	10	U			10	U	P
Lead	20	U	20	U	20	U			20	U	P
Magnesium	100	U	100	U	100	U			100	U	P
Manganese	1.5	U	1.5	U	1.5	U			1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U			0.04	U	CV
Nickel	4	U	4	U	4	U			4	U	P
Potassium	200	U	200	U	200	U			200	U	P
Selenium	40	U	40	U	40	U			40	U	P
Silver	3	U	3	U	3	U			3	U	P
Sodium	100	U	100	U	100	U			100	U	P
Thallium	50	U	50	U	50	U			50	U	P
Vanadium	4	U	4	U	4	U			4	U	P
Zinc	2	U	2	U	2	U			2	U	P
Cyanide											NR
Molybdenum	4	U	4	U	4	U			4	U	P

ICP 01/09/89 Ref = 21872 3-12
21879 2-8
21899 2-4

21872, 899 } Hg 1-17-89

U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	200	U	200	U	200	U			30	U	P
ium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	0.3	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			4	U	P

21899 719 } ICP 1-11

21919 923 931 991 } MS 1-17

00083

U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum											P
Antimony											P
Arsenic											P
Barium											P
Beryllium											P
Cadmium											P
Calcium											P
Chromium											P
Cobalt											P
Copper											P
Iron											P
Lead											P
Magnesium											P
Manganese											P
Mercury			0.5	U	0.5	U					CV
Nickel											P
Potassium											P
Selenium											P
Silver											P
Sodium											P
Thallium											P
Vanadium											P
Zinc											P
Cyanide											NR
Molybdenum											P

21919
923
931
991
} Hg 1-17

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
[illegible]ium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury											
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			4	U	P

21920, 923, 930, 931 } ICP 1-13-89

FORM F-207 IN

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury											
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			4	U	P

21920 (2-5) ICP 1-23
979 (2-5)

U.S. EPA - CLP

3
BLANKS

Lab Name: Cuam Hill Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	32	U			30	U	P
Arsenic	300	U	300	U	30	U			30	U	P
Barium	100	U	100	U	10	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	260	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	0.2	U	0.5	U	0.5	U	0.5	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1000	U	1000	U			200	U	P
Selenium	400	U	400	U	400	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			4	U	P

21979
21991
22002 } ICP 1-25

22002 - Hg 1-24

FO: F-209- IN

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

M	Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
P	Aluminum	200	U	200	U	200	U			20	U	P
P	Antimony	300	U	300	U	300	U			30	U	P
P	Arsenic	300	U	300	U	300	U			30	U	P
P	Barium	100	U	100	U	100	U			10	U	P
P	Beryllium	5	U	5	U	5	U			0.5	U	P
P	Cadmium	10	U	10	U	10	U			1	U	P
P	Calcium	1000	U	1000	U	1000	U			100	U	P
P	Chromium	30	U	30	U	30	U			3	U	P
P	Cobalt	40	U	40	U	40	U			4	U	P
P	Copper	30	U	30	U	30	U			3	U	P
P	Iron	100	U	100	U	100	U			10	U	P
P	Lead	200	U	200	U	200	U			20	U	P
P	Magnesium	1000	U	1000	U	1000	U			100	U	P
P	Manganese	15	U	15	U	15	U			1.5	U	P
CV	Mercury											
P	Nickel	40	U	40	U	40	U			4	U	P
P	Potassium	1000	U	1000	U	1000	U			200	U	P
P	Selenium	400	U	400	U	400	U			40	U	P
P	Silver	30	U	30	U	30	U			3	U	P
P	Sodium	1000	U	1000	U	1000	U			100	U	P
P	Thallium	500	U	500	U	500	U			50	U	P
P	Vanadium	40	U	40	U	40	U			4	U	P
P	Zinc	20	U	20	U	20	U			2	U	P
NR	Cyanide											NR
P	Molybdenum	20	U	20	U	20	U			4	U	P

22002 } ICP
22020 } 1-27

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U	200	U	20	U	P
Antimony	300	U	300	U	300	U	300	U	30	U	P
Arsenic	300	U	300	U	300	U	300	U	30	U	P
Barium	100	U	100	U	100	U	100	U	10	U	P
Beryllium	5	U	5	U	5	U	5	U	0.5	U	P
Cadmium	10	U	10	U	10	U	10	U	1	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	100	U	P
Chromium	30	U	30	U	30	U	30	U	3	U	P
Cobalt	40	U	40	U	40	U	40	U	4	U	P
Copper	30	U	30	U	30	U	30	U	3	U	P
Iron	100	U	100	U	100	U	100	U	10	U	P
Lead	200	U	200	U	200	U	200	U	20	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	100	U	P
Manganese	15	U	15	U	15	U	15	U	1.5	U	P
Mercury	0.5	U	0.5	U	0.5	U			0.06	U	CV
Nickel	40	U	40	U	40	U	40	U	4	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	200	U	P
Selenium	40	U	40	U	40	U	40	U	40	U	P
Silver	30	U	30	U	30	U	30	U	3	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	100	U	P
Thallium	500	U	500	U	500	U	500	U	50	U	P
Vanadium	40	U	40	U	40	U	40	U	4	U	P
Zinc	20	U	20	U	20	U	20	U	2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U	40	U	4	U	P

22020, 053, 067, 079, 080, 087 (ICP 1-31)

22053, 067, 079, 080, 134 (Hg 2-3)

U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
Aluminum	200	U	200	U	200	U			20	U	P
Antimony	300	U	300	U	300	U			30	U	P
Arsenic	300	U	300	U	300	U			30	U	P
Barium	100	U	100	U	100	U			10	U	P
Beryllium	5	U	5	U	5	U			0.5	U	P
Cadmium	10	U	10	U	10	U			1	U	P
Calcium	1000	U	1000	U	1000	U			100	U	P
Chromium	30	U	30	U	30	U			3	U	P
Cobalt	40	U	40	U	40	U			4	U	P
Copper	30	U	30	U	30	U			3	U	P
Iron	100	U	100	U	100	U			10	U	P
Lead	200	U	200	U	200	U			20	U	P
Magnesium	1000	U	1000	U	1000	U			100	U	P
Manganese	15	U	15	U	15	U			1.5	U	P
Mercury	.05	U	.05	U	.05	U	.25	U	0.06	U	CV
Nickel	40	U	40	U	40	U			4	U	P
Potassium	1000	U	1144	B	1000	U			200	U	P
Selenium	40	U	40	U	40	U			40	U	P
Silver	30	U	30	U	30	U			3	U	P
Sodium	1000	U	1000	U	1000	U			100	U	P
Thallium	500	U	500	U	500	U			50	U	P
Vanadium	40	U	40	U	40	U			4	U	P
Zinc	20	U	20	U	20	U			2	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			4	U	P

220/24 ICP 2-8

22.159
136
191
} Hg 2-8

U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury											NR
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			40	U	P

ICP 2-27-89 22333

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											
Barium											
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	P
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											

Pb GFAA 2-28-89
22333-1

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

M	Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
NR	Aluminum	200	U	200	U					200	U	P
NR	Antimony	300	U	300	U					300	U	P
NR	Arsenic	300	U	300	U					300	U	P
NR	Barium	100	U	100	U					100	U	P
NR	Beryllium	5	U	5	U					5	U	P
NR	Cadmium	10	U	10	U					10	U	P
NR	Calcium	1000	U	1000	U					1000	U	P
NR	Chromium	30	U	30	U					30	U	P
NR	Cobalt	40	U	40	U					40	U	P
NR	Copper	30	U	30	U					30	U	P
NR	Iron	100	U	100	U					100	U	P
NR	Lead	200	U	200	U					200	U	P
NR	Magnesium	1000	U	1000	U					1000	U	P
NR	Manganese	15	U	15	U					15	U	P
NR	Mercury											NR
NR	Nickel	40	U	40	U					40	U	P
NR	Potassium	1000	U	1000	U					1000	U	P
NR	Selenium	400	U	400	U					400	U	P
NR	Silver	30	U	30	U					30	U	P
NR	Sodium	1000	U	1000	U					1000	U	P
NR	Thallium	500	U	500	U					500	U	P
NR	Vanadium	40	U	40	U					40	U	P
NR	Zinc	20	U	20	U					20	U	P
NR	Cyanide											NR
	Molybdenum	40	U	40	U					40	U	P

ICP 3-2-89 22345-2
22345-2,3
22383-1,2

-/37

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U	5	U	5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											

Pb-GF
22349-2
22395-2,3
22383-1,2
22398-1,2
22405-1

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury	0.2	U	0.5	U	0.5	U	0.5	U	0.5	U	CV
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			40	U	P

ICP 3-14-89 22302-1,3 22505-1

Hg-CV - 3-1-89 22504-3 22303-1,2 22398-1,2,3 22405-1

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic	5	U	5	U	5	U	5	U	5	U	F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U			5	U	F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											CN

Pb-GFAA 3-13-91 22302-1,3 22398-1,2,3

As-GFAA-3-15-91 22302 22303 22398 22405 22445 22455 22505

Se-GFAA-3-18-91 22302 22303 22398 22405 22445 22455

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic			5	U							F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR

AS-GFAA-3-15-89 22302
22303
22398
22405
22445
22455
22525

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	260	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury											NR
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1050	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			30	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

ICP 3-3-89
22398-1,2,3
22405-1

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic	5	U	5	U	5	U	5	U	5	U	F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury	0.5	U	0.5	U	0.5	U			0.5	U	CV
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U	5	U			F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
Molybdenum											

Hg-CV 3-8-89
22445-1
22455-1

As-GF - 3-23-89
22512-1
22505-1

Se-GF - 3-24-89
22512-1
22505-1

-/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											[illegible]
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium			5	u							F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Se - GFAA - 3-24-89
22512
22505

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury	0.5	U	0.5	U	0.5	U			0.5	U	CV
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

ICP 3-8-89
22421
22428
22445
22465

Hg-CV 3-16-89
22445
22505
22512

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											AIR
Arsenic											
Barium											
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Pb-GF-3-16-89
22481
22429
22445

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: ____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Pb-GFAA-3-18-89
22455-1
22429-2
22505-1
22512-1

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U					200	U	P
Antimony	300	U	300	U					300	U	P
Arsenic	300	U	300	U					300	U	
Barium	100	U	100	U					100	U	
Beryllium	5	U	5	U					5	U	P
Cadmium	10	U	10	U					10	U	P
Calcium	1000	U	1000	U					1000	U	P
Chromium	30	U	30	U					30	U	P
Cobalt	40	U	40	U					40	U	P
Copper	30	U	30	U					30	U	P
Iron	100	U	100	U					100	U	P
Lead	200	U	200	U					200	U	P
Magnesium	1000	U	1000	U					1000	U	P
Manganese	15	U	15	U					15	U	P
Mercury	0.5	U	0.5	U	0.5	U			0.5	U	CV
Nickel	40	U	40	U					40	U	P
Potassium	1000	U	1000	U					1000	U	P
Selenium	400	U	400	U					400	U	P
Silver	30	U	30	U					30	U	P
Sodium	1000	U	1000	U					1000	U	P
Thallium	500	U	500	U					500	U	P
Vanadium	40	U	40	U					40	U	P
Zinc	20	U	20	U					20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U					40	U	P

ICP 3-16-89
22512
22542
22601
22622

Hg-CV - 3-29-89
22601
22622
22643
22644
22693

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic	5	U	5	U	5	U			5	U	P
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U	5	U	5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U			5	U	F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Pb GF 3-30-89
22643
22644
22601
22622
22623
22638
22639
22640

As GF 3-30-89
22643
22644
22601
22622
22623

Se-GF 3-29-89
22643
22601
22622
22644
22623

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											P
Barium											
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead			5	U	5	U			5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Pb-GFAA-3-30-89
22443
22442
22601
22622
22663
22938
22939
22760

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury											NR
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			40	U	P

ICP 3-29-89
22643-1,2,3
22644-1
22659-1
22660-1
22693-1

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U					200	U	P
Antimony	300	U	300	U					300	U	P
Arsenic	300	U	300	U					300	U	
Barium	100	U	100	U					100	U	
Beryllium	5	U	5	U					5	U	P
Cadmium	10	U	10	U					10	U	P
Calcium	1000	U	1000	U					1000	U	P
Chromium	30	U	30	U					30	U	P
Cobalt	40	U	40	U					40	U	P
Copper	30	U	30	U					30	U	P
Iron	100	U	100	U					100	U	P
Lead	200	U	200	U					200	U	P
Magnesium	1000	U	1000	U					1000	U	P
Manganese	15	U	15	U					15	U	P
Mercury											NR
Nickel	40	U	40	U					40	U	P
Potassium	1000	U	1000	U					1000	U	P
Selenium	400	U	400	U					400	U	P
Silver	30	U	30	U					30	U	P
Sodium	1000	U	1000	U					1000	U	P
Thallium	500	U	500	U					500	U	P
Vanadium	40	U	40	U					40	U	P
Zinc	20	U	20	U					20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U					40	U	P

ICP 3-30-89
22634-1

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury											NR
Nickel	40	U	40	U	40	U			40	U	P
Potassium	5708		1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			40	U	P

ICP - 5-31-89
22430-1,2,3,4
22439-1,3,4

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	5	U	5	U	5	U	5	U	5	U	
Barium	100	U	100	U	100	U			100	U	
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead											NR
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury	0.5	U	0.5	U					0.5	U	CV
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	5	U	5	U	5	U			5	U	F
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

ICP 4-3-89
22760-1

As GFAA 4-10-89
22819-1,3,4,5
22761-1
22760-1
22792-1,2,3
22814-1

Se-GFAA 4-5-89

Hg 4-3-89
22761-1

-/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic			5	U							F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											

ASCPAA 4.10-89
220/4-1,3,4,5
220/6-1
220/0-1
220/2-1,2,3
220/4-1

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	
Barium	100	U	100	U	100	U			100	U	
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	CV
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium											NR
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

ICP 4-7-89
22761-1
22792-1,2,3

Hg 4-6-89
22892-1,2,3

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	P
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
Molybdenum											NR

Pb-GP 45-89
22792-1,2,3

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											
Beryllium											
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	F
Magnesium											NR
Manganese											NR
Mercury	0.5	U	0.5	U	0.5	U			0.5	U	CV
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
Molybdenum											NR

Pb-GF-4-10-89
22961-1
22013-1

Hg 4-11-89
22014-1
22013-1,3-5

-/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury											NR
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1191	B			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

ICP 4-12-89
22814-1
22817-1,3-5

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	200	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	500	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	CV
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			40	U	P

ICP 4-18-89
22848-1
22849-1

Hg 4-20
22848-1
22849-1
22870-1
22871-1→3
22890-1
22891-1,2

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic	5	U	5	U	5	U	5	U	5	U	F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U			5	U	F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

As - GF 4-19-89
22848-1
22849-1
22870-1
22871-1→3
22890-1
22891-1,2
22906-3,5,6

Pb - GF 4-14-89
22848-1
22849-1
22817-1,3,4,5

As GF 4-17-89
22848-1
22849-1

U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	260	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury											NR
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1050	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U	40	U			40	U	P

ICP 4-20-89
22870-1
22871-1,2,3
22890-1
22891-1,2
22906-1,3-6

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U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic	5	U	5	U					5	U	P
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U	5	U	5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U			5	U	P
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Pb-GP 4-18-89
22870-1
22871-1-3
22890-1
22891-1
22906-1,3-6
22914-1
2295-1

Se-GP-4-20-89
22870-1
22871-1-3
22890-1
22891-1
22906-3,5,6

As-GP 4-21-89
22871-3

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U.S. EPA - CLP

3
BLANKS

Lab Name: CHAM HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											
Barium											
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead			5	U							F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Pb-GF 9-18-89
22890
22891
22898
22899
22906
22914
22915

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

M	Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
NR	Aluminum	260	U	200	U	200	U			200	U	P
NR	Antimony	300	U	300	U	300	U			300	U	P
	Arsenic	300	U	300	U	300	U			300	U	P
	Barium	100	U	100	U	100	U			100	U	P
NR	Beryllium	5	U	5	U	5	U			5	U	P
NR	Cadmium	10	U	10	U	10	U			10	U	P
NR	Calcium	1000	U	1000	U	1000	U			1000	U	P
NR	Chromium	30	U	30	U	30	U			30	U	P
NR	Cobalt	40	U	40	U	40	U			40	U	P
NR	Copper	30	U	30	U	30	U			30	U	P
NR	Iron	100	U	100	U	100	U			100	U	P
F	Lead	200	U	200	U	200	U			200	U	P
NR	Magnesium	1000	U	1000	U	1000	U			1000	U	P
NR	Manganese	15	U	15	U	15	U			15	U	P
NR	Mercury											NR
NR	Nickel	40	U	40	U	40	U			40	U	P
NR	Potassium	1000	U	1000	U	1000	U			1000	U	P
NR	Selenium	400	U	400	U	400	U			400	U	P
NR	Silver	30	U	30	U	30	U			30	U	P
NR	Sodium	1000	U	1000	U	1000	U			1000	U	P
NR	Thallium	500	U	500	U	500	U			500	U	P
NR	Vanadium	40	U	40	U	40	U			40	U	P
NR	Zinc	20	U	20	U	20	U			20	U	P
NR	Cyanide											NR
NR	Molybdenum	40	U	40	U	40	U			40	U	P

TCP 4-21-89
22914-1
22915-1

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U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	260	U	200	U					200	U	P
Antimony	300	U	300	U					300	U	
Arsenic	300	U	300	U					300	U	
Barium	100	U	100	U					100	U	P
Beryllium	5	U	5	U					5	U	P
Cadmium	10	U	10	U					10	U	P
Calcium	1000	U	1000	U					1000	U	P
Chromium	30	U	30	U					30	U	P
Cobalt	40	U	40	U					40	U	P
Copper	30	U	30	U					30	U	P
Iron	100	U	100	U					100	U	P
Lead	200	U	200	U					200	U	P
Magnesium	1000	U	1000	U					1000	U	P
Manganese	15	U	15	U					15	U	P
Mercury	0.5	U	0.5	U	0.5	U			0.5	U	CV
Nickel	40	U	40	U					40	U	P
Potassium	1000	U	1000	U					1000	U	P
Selenium	400	U	400	U					400	U	P
Silver	30	U	30	U					30	U	P
Sodium	1000	U	1000	U					1000	U	P
Thallium	500	U	500	U					500	U	P
Vanadium	40	U	40	U					40	U	P
Zinc	20	U	20	U					20	U	P
Cyanide											NR
MOLYBDENUM	40	U	40	U					40	U	P

ICP 6-7-89
23306-1
23324-1,2
23325-1,4

Hg 6-5-89
23306-1

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic	5	U	5	U	5	U			5	U	F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U			5	U	F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
Molybdenum											NR

As GF 6-6-89
23306-1
23324-1,2
23325-1,4

Pb GF 6-7-89 = same

Se GF 6-6-89 = same

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	260	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	CV
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

ICP 6-9-89
23353-1
23358-1,2
23362-1-4

Hg 6-13-89
23324-1,2
23[illegible]-1-4
23358-1,2
23375-1-5
23393-1-3,5
23399-2

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											CV
Mercury			0.5	M							NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Hg 6-13-89
23324-1,2
23325-1 → 4
23350-1,2
23375-1 → 5
23397-1-3.5
23398-2

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum											NR
Antimony											
Arsenic	5	U	5	U	5	U			5	U	
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U			5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U			5	U	F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

As GFA 6-8-89
23358-1/2
23365-1/5

Pb GFA 6-9-89
23358-1/2
23362-1/4
23365-1/5

Se GFA 6-89
23358

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	260	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury											NR
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

ICP 6-14-89
23375-1-5
23399-1,2,3,5
23398-2

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											
Arsenic	5	U	5	U	5	U			5	U	F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	U	5	U	5	U	5	U	5	U	F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U	5	U	5	U	F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
Molybdenum											NR

As CF 6-1-89
23393-1-4,5
23419-2
23412-1
23418-1-3

Pb-CF 6-26-89
23353-1
393-1,2,3,5
398-2
418-1
418-1-3
442-2

6-26-89
23443-2,3
454-1,2,3,5
468-1
469-1

Se CF 6-26-89
23398-1,2,3,5
398-2
418-1-3
442-2
443-2,3
454-1,2,3,5
468-1
469-1

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum	260	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	P
Barium	100	U	100	U	100	U			100	U	P
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	CV
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

Hg 6-16-89
23418-1-3

ICP 6-20-89
23417-1
23418-1-3
23442-2
23443-2.3

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											
Arsenic	5	U	5	U	5	U			5	U	P
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											

AS OF 6-23-89
23454-1,2,3,
442-2
443-2,3
468-1
469-1
470-1
493-1

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	260	U	200	U	200	U	200	U	200	U	P
Antimony	300	U	300	U	300	U	300	U	300	U	P
Arsenic	300	U	300	U	500	U	300	U	300	U	P
Barium	100	U	100	U	100	U	100	U	100	U	P
Beryllium	5	U	5	U	5	U	5	U	5	U	P
Cadmium	10	U	10	U	10	U	10	U	10	U	P
Calcium	1000	U	1000	U	1000	U	1000	U	1000	U	P
Chromium	30	U	30	U	30	U	30	U	30	U	P
Cobalt	40	U	40	U	40	U	40	U	40	U	P
Copper	30	U	30	U	30	U	30	U	30	U	P
Iron	100	U	100	U	100	U	100	U	100	U	P
Lead	200	U	200	U	200	U	200	U	200	U	P
Magnesium	1000	U	1000	U	1000	U	1000	U	1000	U	P
Manganese	15	U	15	U	15	U	15	U	15	U	P
Mercury	0.5	U	0.5	U	0.5	U			0.5	U	CV
Nickel	40	U	40	U	40	U	40	U	40	U	P
Potassium	1000	U	1000	U	1000	U	1000	U	1000	U	P
Selenium	400	U	400	U	400	U	400	U	400	U	P
Silver	30	U	30	U	30	U	30	U	30	U	P
Sodium	1000	U	1000	U	1000	U	1000	U	1000	U	P
Thallium	500	U	500	U	500	U	500	U	500	U	P
Vanadium	40	U	40	U	40	U	40	U	40	U	P
Zinc	20	U	20	U	20	U	20	U	20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U	40	U	40	U	P

ICP 6-22-87
23454-1,2,3,5
468-1
469-1
470-1
483-1
485-1→3

Hg 6-23-87
23442-2
443-2,3
459-1,2,3,5
469-1
470-1
483-1
485-1→3
486-1

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2 HILL Contract: BEALE AFB

Lab Code: ____ Case No.: ____ SAS No.: ____ SDG No.: ____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
Aluminum											NR
Antimony											
Arsenic	5	U	5	U	5	U	5	U	5	U	P
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	5	F	5	F	5	F			5	F	F
Magnesium											NR
Manganese											NR
Mercury	0.5	U	0.5	U					0.5	U	CV
Nickel											NR
Potassium											NR
Selenium	5	U	5	U	5	U	5	U	5	U	P
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Pb-GF 7-9-89
23483-1
405-1→3
406-1
520-1→3
501-1
521-1→4

Se-GF 7-6-89
← SAME

Hg 7-7-89
23500-1→3
23501-1

7/87

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium			5	U							P
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR
MOLYBDENUM											NR

Se CF 7-6-89
23493-1
185-193
196-1
200-1→3
201-1
211-1→4

U.S. EPA - CLP

3
BLANKS

Lab Name: CH2M HILL Contract: BEALE AFB

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	260	U	200	U	200	U			200	U	P
Antimony	300	U	300	U	300	U			300	U	P
Arsenic	300	U	300	U	300	U			300	U	
Barium	100	U	100	U	100	U			100	U	L
Beryllium	5	U	5	U	5	U			5	U	P
Cadmium	10	U	10	U	10	U			10	U	P
Calcium	1000	U	1000	U	1000	U			1000	U	P
Chromium	30	U	30	U	30	U			30	U	P
Cobalt	40	U	40	U	40	U			40	U	P
Copper	30	U	30	U	30	U			30	U	P
Iron	100	U	100	U	100	U			100	U	P
Lead	200	U	200	U	200	U			200	U	P
Magnesium	1000	U	1000	U	1000	U			1000	U	P
Manganese	15	U	15	U	15	U			15	U	P
Mercury											NR
Nickel	40	U	40	U	40	U			40	U	P
Potassium	1000	U	1000	U	1000	U			1000	U	P
Selenium	400	U	400	U	400	U			400	U	P
Silver	30	U	30	U	30	U			30	U	P
Sodium	1000	U	1000	U	1000	U			1000	U	P
Thallium	500	U	500	U	500	U			500	U	P
Vanadium	40	U	40	U	40	U			40	U	P
Zinc	20	U	20	U	20	U			20	U	P
Cyanide											NR
Molybdenum	40	U	40	U	40	U			40	U	P

ICP 6-27-89
23406-1
510-1→3
521-1
521-1→4

CHEM Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Aug. 30, 1989 9-26-0

WC DIG MET
jim ben lawry

DUE DATE:08-28-89

REPORT TO:BEALE AIR FORCE BASE

CHEM HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;S 24158
PAGE OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER
DATE OF SAMPLE:08-25-89

PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:08-28-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	1.603	2.604	3.605		DETECT LIMIT	DATE ANALYZED
Aluminum	<200	→	→	→	ug/l	200	9/20/89
Antimony	<300	→	→	→		300	
Arsenic	<300	→	→	→		300	
Barium	<100	→	→	→		100	
Beryllium	<5	→	→	→		5.0	
Cadmium	<10	→	→	→		10.0	
Calcium	<1000	6680	18900	29100		1000	
Chromium	<30	→	→	→		30.0	
Cobalt	<	→	→	→		40.0	
Copper	<3	→	→	→		30.0	
Iron	<100	→	→	→		100	
Lead	<200	→	→	→		200	
Magnesium	<1000	2500	10200	10700		1000	
Manganese	<15	→	→	→		15.0	
Molybdium	<40	→	→	→		40.0	
Nickel	<40	→	→	→		40.0	
Potassium	<1000	→	→	1400		1000	
Selenium	<400	→	→	→		400	
Silver	<30	→	→	→		30.0	
Sodium	<1000	36400	11200	54100		1000	
Thallium	<500	→	→	→		500	
Vanadium	<40	→	→	→		40.0	
Zinc	<20	→	→	→		20.0	

ICP complete 9/22/89 m.

COMMENTS:

copy to;WC DIG MET

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Aug. 30, 1989 9-26-89

Page 1

DIG MET WC
jim ben lawry

DUE DATE;08-30-89

REPORT TO;BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;S 24185
PAGE OF
DATE;

ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;SITE 6 AND 15
DATE OF SAMPLE;08-28-89

PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;08-30-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	8/28/89 1.0606	8/28/89 2.0607	8/29/89 3.0608	8/29/89 4.0609	DETECT LIMIT	DATE ANALYZED
Aluminum	<200					200 ug/l	9/20/89 6010
Antimony	<300					300	
Arsenic	<300					300	
Barium	~~<5~~ <100					100	
Beryllium	~~<10~~ <5					5.0	
Cadmium	~~<1000~~ <10					10.0	
Calcium	~~<30~~ <1000	44600	11600	22900	17200	1000	
Chromium	~~<40~~ <30					30.0	
Cobalt	~~<30~~ <40					40.0	
Copper	~~<100~~ <30					30.0	
Iron	~~<200~~ <100					100	
Lead	~~<200~~ <200					200	
Magnesium	<1000	22000	6760	16000	5530	1000	
Manganese	<15	76	31	26	<15	15.0	
Molybdium	<40					40.0	
Nickel	<40					40.0	
Potassium	<1000			1800	<1000	1000	
Selenium	<400					400	
Silver	<30					30.0	
Sodium	<1000	21400	16500	30200	41900	1000	
Thallium	<500					500	
Vanadium	<40					40.0	
Zinc	<20					20.0	

MHC 9/22/89

COMMENTS:

copy to;DIG MET WC

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Aug. 31, 1989

WC DIG MET
jim ben lawry

DUE DATE:08-31-89

REPORT TO:BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:S 24191
PAGE OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER
DATE OF SAMPLE:08-30-89

PHONE;
SAMPLED BY: WAYNE PEARCE
DATE RECEIVED:08-31-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank ✓	1.0614 ✓	2.0615 ✓	3.0616 ✓		DETECT LIMIT	DATE ANALYZED
Aluminum	<200				6010	200	9/22/89 ug/l
Antimony	<300					300	
Arsenic	<300					300	
Barium	<100					100	
Beryllium	<5					5.0	
Cadmium	<10					10.0	
Calcium	<1000	15800	15200	20300		1000	
Chromium	<30					30.0	
Cobalt	<40					40.0	
Copper	<30					30.0	
Iron	<100					100	
Lead	<200					200	
Magnesium	<1000	5100	5300	9860		1000	
Manganese	<15			16		15.0	
Molybdium	<40				9/20/89	40.0	
Nickel	<40			45		40.0	
Potassium	<1000	2000	1600	1100		1000	
Selenium	<400					400	
Silver	<30					30.0	
Sodium	<1000	37400	25900	51700		1000	
Thallium	<500					500	
Vanadium	<40					40.0	
Zinc	<20					20.0	

ICP complete 9/22/89 mc

COMMENTS:

copy to:WC DIG MET

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

5090 Caterpillar Road, Redding, Ca 96002

Sep. 1, 1989

WC DIG MET
jim ben lawry

DUE DATE;09-01-89

REPORT TO:BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;S 24202
PAGE OF
DATE;

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER
DATE OF SAMPLE;08-31-89

PHONE;
SAMPLED BY: CORLEY
DATE RECEIVED;09-01-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank		2.0617		4.0619	DETECT LIMIT	DATE ANALYZED
Aluminum	<200		<200		<200	200 ug/l	9/20/89 6C
Antimony	<300		<300		<300	300	
Arsenic	<300		<300		<300	300	
Barium	<100		<100		<100	100	
Beryllium	<5		<5		<5	5.0	
Cadmium	<10		<10		<10	10.0	
Calcium	<1000		20200		<1000	1000	
Chromium	<30		<30		<30	30.0	
Cobalt	<40		<40		<40	40.0	
Copper	<30		<30		<30	30.0	
Iron	<100		<100		<100	100	
Lead	<200		<200		<200	200	
Magnesium	<1000		9480		<1000	1000	
Manganese	<15		24		<15	15.0	
Molybdium	<40		<40		<40	40.0	
Nickel	<40		<40		<40	40.0	
Potassium	<1000		1400		<1000	1000	
Selenium	<400		<400		<400	400	
Silver	<30		<30		<30	30.0	
Sodium	<1000		62700		<1000	1000	
Thallium	<400		<400		<400	500	
Vanadium	<40		<40		<40	40.0	
Zinc	<20		<20		<20	20.0	

ICP complete 9/21/89 mm

COMMENTS:

copy to:WC DIG MET

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, CA 96002

Sep. 8, 1989

WC DIG MET
jim ben lawry

DUE DATE:09-08-89

REPORT TO:BEALE AIR FORCE BASE

REFERENCE NUMBER:S 24246
PAGE 3 OF
DATE:

CH2M HILL/SAC
SAC 24359.FI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 4.1P
DATE OF SAMPLE:09-07-89

PHONE:
SAMPLED BY: COPLEY
DATE RECEIVED:09-08-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	Method Blank	1.#0522	2.#0529	3.#0530		DETECT LIMIT	DATE ANALYZED
Aluminum	<200				6010	200	9/27/89
Antimony	<300					300	
Arsenic	<300					300	
Barium	<100					100	
Beryllium	<5					5.0	
Cadmium	<10					10.0	
Calcium	<1000	10200	22300	16400		1000	
Chromium	<30					30.0	
Cobalt	<40					40.0	
Copper	<30					30.0	
Iron	<100					100	
Lead	<200					200	
Magnesium	<1000	5360	14100	10300		1000	
Manganese	<15					15.0	
Molybdenum	<40					40.0	
Nickel	<40					40.0	
Potassium	<1000	1100	<1000	1500		1000	
Selenium	<400					400	
Silver	<30					30.0	
Sodium	<1000	17100	20400	27400		1000	
Thallium	<500					500	
Vanadium	<40					40.0	
Zinc	<20					20.0	

ICP complete 9/28/89 mt

COMMENTS:

copy to:WC DIG MET

ANALYST _____ APPROVED BY: _____

10-11-89

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 11, 1989

Page 2

WC MET DIG
jim ben lawry

DUE DATE:09-07-89

REPORT TO:BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:S 24242
PAGE 4 OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER
DATE OF SAMPLE:09-06-89

PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:09-07-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	3.0623	4.0624	~~3.0623~~ units	~~4.0624~~ method	DETECT LIMIT	DATE ANALYZED
Aluminum	<200			ug/l	6010	200	9/27/89
Antimony	<300					300	
Arsenic	<300					300	
Barium	<100					100	
Beryllium	<5					5.0	
Cadmium	<10					10.0	
Calcium	<1000		12600			1000	
Chromium	<30					30.0	
Cobalt	<40					40.0	
Copper	<30					30.0	
Iron	<100					100	
Lead	<200					200	
Magnesium	<1000		5140			1000	
Manganese	<15		21			15.0	
Molybdium	<40					40.0	
Nickel	<40					40.0	
Potassium	<1000		2000			1000	
Selenium	<400					400	
Silver	<30					30.0	
Sodium	<1000		19000			1000	
Thallium	<500					500	
Vanadium	<40					40.0	
Zinc	<20					20.0	

ICP complete 9/28/89 mhc

COMMENTS:

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ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 11, 1989

WC MET DIG
jim ben lawry

DUE DATE:09-11-89

REPORT TO:BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.R1.04

REFERENCE NUMBER:S 24265
PAGE 3 OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 19.3
DATE OF SAMPLE:09-08-89

PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:09-11-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	1.BAFB 0631	2.BAFB 0633 ✓	3.BAFB 0634 ✓		DETECT LIMIT	DATE ANALYZED
Aluminum	<200	→	→	→	6010	200	ug/L 9/27/89
Antimony	<300	→	→	→		300	
Arsenic	<300	→	→	→		300	
Barium	<100	→	→	→		100	
Beryllium	<5	→	→	→		5.0	
Cadmium	<10	→	→	→		10.0	
Calcium	61000	17500	25800	20700		1000	
Chromium	<30	→	→	→		30.0	
Cobalt	<40	→	→	→		40.0	
Copper	<30	→	→	→		30.0	
Iron	<100	→	→	→		100	
Lead	<200	→	→	→		200	
Magnesium	<1000	10200	10500	9310		1000	
Manganese	<15	→	25	<15		15.0	
Molybdenum	<40	→	→	→		40.0	
Nickel	<40	→	→	→		40.0	
Potassium	<1000	→	2200	2000		1000	
Selenium	<400	→	→	→		400	
Silver	<30	→	→	→		30.0	
Sodium	<1000	21100	23800	22400		1000	
Thallium	<500	→	→	→		500	
Vanadium	<40	→	→	→		40.0	
Zinc	<20	→	→	→		20.0	

ICP complete 9/28/89 mk

COMMENTS:

copy to:WC MET DIG

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

10-11-89

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 12, 1989

WC DIG MET
jim ben lawry

DUE DATE:09-12-89

REPORT TO;BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:S 24272
PAGE OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:W SITE 3&4
DATE OF SAMPLE:09-11-89

PHONE:
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:09-12-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	~~method blank~~	Method Blank	2.0632	3.0635		DETECT LIMIT	DATE ANALYZED
Aluminum		<200			6010	200	9/27/89
Antimony		<300				300	
Arsenic		<300				300	
Barium		<100				100	
Beryllium		<5				5.0	
Cadmium		<10				10.0	
Calcium		<1000	15000 26700	22500		1000	
Chromium		<30				30.0	
Cobalt		<40				40.0	
Copper		<30				30.0	
Iron		<100				100	
Lead		<200				200	
Magnesium		<1000	9310 9420	9170		1000	
Manganese		<15				15.0	
Molybdenum		<40				40.0	
Nickel		<40				40.0	
Potassium		<1000	1200	2100		1000	
Selenium		<400				400	
Silver		<30				30.0	
Sodium		<1000	25700	21800		1000	
Thallium		<500				500	
Vanadium		<40				40.0	
Zinc		<20				20.0	

ICP complete 9/27/89 mdc

COMMENTS:

copy to:WC DIG MET

ANALYST _____ APPROVED BY _____

COMPLETED BY _____

CHZM Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 13, 1989

WC DIG MET
jim ben lawry

DUE DATE:09-13-89

REPORT TO:BCALE AIR FORCE BASE

CHZM HILL/SAC
SAC 24359.81.04

REFERENCE NUMBER:S 24304
PAGE OF
DATE:

ATTENTION:WAINE PEARCE
SAMPLE DESCRIPTION:WATER
DATE OF SAMPLE:09-12-89

PHONE:
SAMPLED BY; CORLEY
DATE RECEIVED:09-13-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	1.BAFB 0636 ✓	2.BAFB 0637 ✓	3.BAFB 0638 ✓		DETECT LIMIT	DATE ANALYZED
Aluminum	<200	→	→	→	6010	200	10/5/89 ug/l
Antimony	<300	→	→	→		300	
Arsenic	<300	→	→	→		300	
Barium	<100	→	→	→		100	
Beryllium	<5	→	→	→		5.0	
Cadmium	<10	→	→	→		10.0	
Calcium	<1000	22600	23300	21800		1000	
Chromium	<30	→	→	→		30.0	
Cobalt	<40	→	→	→		40.0	
Copper	<30	→	→	→		30.0	
Iron	<100	→	→	→		100	
Lead	<200	→	→	→		200	
Magnesium	<1000	9680	10500	14600		1000	
Manganese	<15	→	→	→		15.0	
Molybdenum	<40	→	→	→		40.0	
Nickel	<40	→	→	→		40.0	
Potassium	<1000	2300	2700	<1000		1000	
Selenium	<400	→	→	→		400	
Silver	<30	→	→	→		30.0	
Sodium	<1000	27100	22400	11200		1000	
Thallium	<500	→	→	→		500	
Vanadium	<40	→	→	→		40.0	
Zinc	<20	→	→	→		20.0	

ICP complete 10/6/89 MHC

COMMENTS:

copy to:WC DIG MET

ANALYST_____ APPROVED BY_____

COMPLETED BY_____
CHECKED BY_____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 14, 1989

WC DIG MET
jim ben lawry

DUE DATE:09-14-89

REPORT TO:BEALE AIR FORCE BASE

REFERENCE NUMBER:S 24313
PAGE OF
DATE:

CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE FEARCE
SAMPLE DESCRIPTION:WATER-SITES.1
DATE OF SAMPLE:09-13-8

PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:09-14-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	1.BAFB 0639 ✓	2.BAFB 0640 ✓	3.BAFB 0641 ✓		DETECT LIMIT	DATE ANALYZED
Aluminum	<200				6010	200	10/5/89 ug/l
Antimony	<300					300	
Arsenic	<300					300	
Barium	<100					100	
Beryllium	<5					5.0	
Cadmium	<10					10.0	
Calcium	<1000	28900	11800	13800		1000	
Chromium	<30					30.0	
Cobalt	<40					40.0	
Copper	<30					30.0	
Iron	<100					100	
Lead	<200					200	
Magnesium	<1000	12100	5880	8020		1000	
Manganese	<15			18		15.0	
Molybdenum	<40					40.0	
Nickel	<40			60		40.0	
Potassium	<1000	2300	2200	2300		1000	
Selenium	<400					400	
Silver	<30					30.0	
Sodium	<1000	29700	28100	21600		1000	
Thallium	<500					500	
Vanadium	<40					40.0	
Zinc	<20					20.0	

ICP complete 10/6/89 mm

COMMENTS:

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ANALYST_____ APPROVED BY_____

COMPLETED BY_____
CHECKED BY

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 15, 1989

WC DIG MET
jim ben lawry

DUE DATE:09-15-89

REPORT TO:BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:S 24331
PAGE OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER
DATE OF SAMPLE:09-14-89

PHONE:
SAMPLED BY: COBLE
DATE RECEIVED:09-15-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	1.BAFB 0642	2.BAFB 0643	3.BAFB 0644	4.BAFB 0645	DETECT LIMIT	DATE ANALYZED
Aluminum	<200	→	→	245	<200	200 ug/l	10/5/89 6010
Antimony	<300	→	→	→	→	300	
Arsenic	<300	→	→	→	→	300	
Barium	<100	→	→	→	→	100	
Beryllium	<5	→	→	→	→	5.0	
Cadmium	<10	→	→	→	→	10.0	
Calcium	<1000	14400	10400	11600	9930	1000	
Chromium	<30	→	→	→	→	30.0	
Cobalt	<40	→	→	→	→	40.0	
Copper	<30	→	→	→	→	30.0	
Iron	<100	→	→	392	<100	100	
Lead	<200	→	→	→	→	200	
Magnesium	<1100	6800 6020	6280 6800	5850 5200	5550	1000	
Manganese	<15	→	→	→	→	15.0	
Molybdenum	<40	→	→	→	→	40.0	
Nickel	<40	→	→	→	→	40.0	
Potassium	<1000	2000	2200	1900 2000	2200	1000	
Selenium	<400	→	→	→	→	400	
Silver	<30	→	→	→	→	30.0	
Sodium	<1000	19500	20400	27800	16700	1000	
Thallium	<500	→	→	→	→	500	
Vanadium	<40	→	→	→	→	40.0	
Zinc	<20	→	→	→	→	20.0	

ICP complete 10/6/89 mac

COMMENTS:

copy to:WC DIG MET

ANALYST _____ APPROVED BY _____

COMPLETED BY _____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 18, 1989

WC DIG MET
jim ben lawry

DUE DATE;09-18-89

REPORT TO:BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:S 24337
PAGE OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:09-15-89

PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:09-18-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	1.BAFB 0646	2.BAFB 0647	3.BAFB 0648		DETECT LIMIT	DATE ANALYZED
Aluminum	<200				6010	200	10/5/89
Antimony	<300					300	
Arsenic	<300					300	
Barium	<100					100	
Beryllium	<10 <5					5.0	
Cadmium	<10					10.0	
Calcium	<1000	19800	22400	29300		1000	
Chromium	<30					30.0	
Cobalt	<40					40.0	
Copper	<30					30.0	
Iron	<100		351	<100		100	
Lead	<200					200	
Magnesium	<1000	12600	12900	~~13600~~ 13100	P3 10/4/89	1000	
Manganese	<15	90	<15			15.0	
Molybdenum	<40					40.0	
Nickel	<40					40.0	
Potassium	<1000	1300	1700	~~1200~~ 1100	P3 10/11/89	1000	
Selenium	<400					400	
Silver	<30					30.0	
Sodium	<1000	9240	11400	~~11600~~ 12300	P3 10/11/89	1000	
Thallium	<500					500	
Vanadium	<40					40.0	
Zinc	<20					20.0	

ICP complete 10/6/89 mke

COMMENTS:

copy to:WC DIG MET

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 19, 1989

WC DIG MET
jim ben lawry

DUE DATE:09-19-89

REPORT TO:BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:S 24350
PAGE OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2.5.19
DATE OF SAMPLE:09-18-89

PHONE:
SAMPLED BY: COPLEY
DATE RECEIVED:09-19-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	~~method blank~~	~~1.BAFB 0649~~ Method Blank	1.BAFB 0649	3.BAFB 0650	4.BAFB 0651	DETECT LIMIT	DATE ANALYZED
Aluminum		<200				200 ug/l	10/5/89 601
Antimony		<300				300	
Arsenic		<300				300	
Barium	<100	~~<2~~ <5 mwc 10/6/89				100	
Beryllium		<5 ~~<10~~				5.0	
Cadmium		<10				10.0	
Calcium		<1000	5100	6100	4900	1000	
Chromium		<30				30.0	
Cobalt		<40				40.0	
Copper		<30				30.0	
Iron		<100		~~<100~~ ~~149~~ mwc 10/6/89	~~<100~~ 149	100	
Lead		<200				200	
Magnesium		<1000			1800	1000	
Manganese		<15			43	15.0	
Molybdenum		<40				40.0	
Nickel		<40				40.0	
Potassium		<1000			2300	1000	
Selenium		<400				400	
Silver		<30				30.0	
Sodium		<1000		1310 ~~1300~~	~~3340~~ ~~3300~~ mwc 10/6/89	1000	
Thallium		<500				500	
Vanadium		<40				40.0	
Zinc		<20	70	28	62	20.0	

ICP complete 10/6/89 mw

COMMENTS:

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ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 21, 1989

WC DIG MET
jim ben lawry

DUE DATE:09-21-89

REPORT TO;BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24387.RI.04

REFERENCE NUMBER;S 24387
PAGE OF
DATE;

ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 13
DATE OF SAMPLE:09-20-89

PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:09-21-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	1.BAFB 0660 ✓	2.BAFB 0661 ✓	3.BAFB 0662 ✓	4.BAFB 0663 ✓	DETECT LIMIT	DATE ANALYZED
Aluminum	<200	→	→	→	→	200 ug/l	10/6/89
Antimony	<300	→	→	→	→	300	
Arsenic	<300	→	→	→	→	300	
Barium	<100	→	→	→	→	100	
Beryllium	<5	→	→	→	→	5.0	
Cadmium	<10	→	→	→	→	10.0	
Calcium	<1000	29000	49700	10300	36900	1000	
Chromium	<30	→	→	→	→	30.0	
Cobalt	<40	→	→	→	→	40.0	
Copper	<30	→	→	→	→	30.0	
Iron	<100	→	→	→	159	100	
Lead	<200	→	→	→	→	200	
Magnesium	<1000	19200	32700	7030	25000	1000	
Manganese Found in Blk	<15	→	<15	~~<15~~ 15 Found <15		15.0	
Molybdenum	<40	→	→	→	→	40.0	
Nickel	<40	→	→	→	→	40.0	
Potassium Found in Blk	<1000	→	<1000	~~<1000~~ 1800 Found 1000		1000	
Selenium	<400	→	→	→	→	400	
Silver	<30	→	→	→	→	30.0	
Sodium	<1000	14400	19000	10700	16400	1000	
Thallium	<500	→	→	→	→	500	
Vanadium	<40	→	→	→	→	40.0	
Zinc Found in Blk	<20	→	21 <20	~~<20~~ 21	→	20.0	

ICP complete 10/17/89 m

COMMENTS:

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ANALYST ✓ FBB 10/17/89 APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
5090 Caterpillar Road, Redding, Ca 96002

Sep. 21, 1989

WC DIG MET
jim ben lawry

DUE DATE:09-20-89

REPORT TO;BEALE AIR FORCE BASE

CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:S 24372
PAGE OF
DATE:

ATTENTION:WAYNE FEARCE
SAMPLE DESCRIPTION:WATER SITE 2.13.16
DATE OF SAMPLE:09-19-89

PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:09-20-89

Test Methods: ICP metals (6010) DISSOLVED
Units: ug/l

	method blank	1.BAFB 0656	2.BAFB 0657	3.BAFB 0658	4.BAFB 0659	DETECT LIMIT	DATE ANALYZED
Aluminum	<200					200 ug/l	9/6/89
Antimony	<300					300	
Arsenic	<300					300	
Barium	<100					100	
Beryllium	<5					5.0	
Cadmium	<10					10.0	
Calcium	<1000	26500	37600	59900	31200	1000	
Chromium	<30					30.0	
Cobalt	<40					40.0	
Copper	<30					30.0	
Iron	<100					100	
Lead	<200					200	
Magnesium	<1000	12000	23500	33300	21300	1000	
Manganese	<15		436	<15		15.0	
Molybdenum	<40					40.0	
Nickel	<40					40.0	
Potassium	<1000					1000	
Selenium	<400					400	
Silver	<30					30.0	
Sodium	<1000	10900	26400	19200	14600	1000	
Thallium	<500					500	
Vanadium	<40					40.0	
Zinc	<20					20.0	

601

ICP complete 10/17/89 mmc

COMMENTS:

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ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

3
BLANKS

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB5_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200.0	U	200.0	U	200.0	U	200.0	U	200.0	U	P
Antimony	300.0	U	300.0	U	300.0	U	300.0	U	300.0	U	P
Arsenic	300.0	U	300.0	U	300.0	U	300.0	U	300.0	U	P
Barium	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	P
Beryllium	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	P
Cadmium	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Calcium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Chromium	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	P
Cobalt	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Copper	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	P
Iron	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	P
Lead	200.0	U	200.0	U	200.0	U	200.0	U	200.0	U	P
Magnesium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Manganese	15.0	U	15.0	U	15.0	U	15.0	U	15.0	U	P
Molybdenu	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Nickel	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Selenium	400.0	U	400.0	U	400.0	U	400.0	U	400.0	U	P
Silver	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	P
Sodium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Thallium	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	P
Vanadium	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Zinc	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	P

ICP metals
S24868
S24887
S24898
S24925
S24934
S24939
S24954
S24957
S25000
S25010
S25020

3
BLANKS

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB5_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Arsenic	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	F
Lead	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	F
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	CV
Selenium	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	F

ICP Metals
S24868
S24887
S24898
S24926
S24939
S24939
S24954
S24957
S25000
S25010
S25020

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB7_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			200.0	U	200.0	U	200.0	U	200.0	U	P
Antimony			300.0	U	300.0	U	300.0	U	300.0	U	P
Arsenic			300.0	U	300.0	U	300.0	U	300.0	U	P
Barium			100.0	U	100.0	U	100.0	U	100.0	U	P
Beryllium			5.0	U	5.0	U	5.0	U	5.0	U	P
Cadmium			10.0	U	10.0	U	10.0	U	10.0	U	P
Calcium			1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Chromium			30.0	U	30.0	U	30.0	U	30.0	U	P
Cobalt			40.0	U	40.0	U	40.0	U	40.0	U	P
Copper			30.0	U	30.0	U	30.0	U	30.0	U	P
Iron			100.0	U	100.0	U	100.0	U	100.0	U	P
Lead			200.0	U	200.0	U	200.0	U	200.0	U	P
Magnesium			1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Manganese			15.0	U	15.0	U	15.0	U	15.0	U	P
Molybdenu			40.0	U	40.0	U	40.0	U	40.0	U	P
Nickel			40.0	U	40.0	U	40.0	U	40.0	U	P
Potassium			1000.0	U	1000.0	U	1000.0	U	-1000.0	U	P
Selenium			400.0	U	400.0	U	400.0	U	400.0	U	P
Silver			30.0	U	30.0	U	30.0	U	30.0	U	P
Sodium			1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Thallium			500.0	U	500.0	U	500.0	U	500.0	U	P
Vanadium			40.0	U	40.0	U	40.0	U	40.0	U	P
Zinc			20.0	U	20.0	U	20.0	U	20.0	U	P

S25059
S25088
S25118
S25151

BLANKS

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB6_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Arsenic	5.0	U	5.0	U	5.0	U			5.0	U	F
Lead	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	F
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	CV
Selenium	5.0	U	5.0	U	5.0	U			5.0	U	F

METHOD BLANKS

Herbicides (SW8150)

ORGANICS ANALYSI DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: S02069B1
Client Sample ID: QC BLANK

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 02/06/89
Date Analyzed: 02/07/89
Dilution Factor: 1.0

SDWA HERBICIDE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg
94-75-7	2,4-D	10	U			
93-72-1	Silvex	2	U			
93-76-5	2,4,5-T	2	U			
	3,5-Dichlorobenzoic acid - SS	98				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: SO208981
Client Sample ID: QC BLANK

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 02/08/89
Date Analyzed: 02/08/89
Dilution Factor: 1.0

SDWA HERBICIDE COMPOUNDS

CAS Number		ug/Kg		CAS Number	ug/Kg
94-75-7	2,4-D	10	U		
93-72-1	Silvex	2	U		
93-76-5	2,4,5-T	2	U		
	3,5-Dichlorobenzoic acid - SS	35			

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

METHOD BLANKS

Purgeable Halocarbons (SW8010)
Purgeable Aromatics (SW8020)

[illegible]

[illegible] Railroad [illegible], Redding, [illegible]

Feb. 17, 1989

Page 1

[illegible]

DUE DATE: [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

SAMPLE DESCRIPTION: WATER SITE 13

DATE OF SAMPLE: [illegible]-13-89

DATE EXTRACTED:

DATE ANALYZED:

Test Methods: EPA [illegible]-8010 ( ) mg/l (✓) ug/l ( ) mg/kg ( ) ug/kg

Extraction method: EPA 5030

REFERENCE NUMBER: [illegible]

PAGE OF

DATE:

[illegible]

SAMPLED BY: CHRIS CURLEY

DATE RECEIVED: 2-17-89

	detect LIMIT	METHOD BLANK	1.0459	2.0461		
Chloromethane	1	<1	<1	<1		
[illegible]						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5		
Trichlorofluoromethane	1	<1	<1	<1		
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene			30			
Dibromochloromethane			<1			
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan			<1			
Tetrachloroethene			<1			
Chlorobenzene			<1			
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 2-24-89	128% 2-24-89	98% 2-24-89		

COMMENTS: SS-Surrogate standard reported as percent recovery

copy to:

ANALYST [illegible] APPROVED BY [illegible]

COMPLETED BY _____

CHECKED BY _____

[illegible] Hill Laboratory
2218 Railroad Avenue, Redding, CA [illegible]

Feb. 17, 1989

Page 1

LAURY FRED [illegible] RANDY
TRACY

DUE DATE:02-15-89

[illegible] :BEALE AIR FORCE BASE
[illegible] HILL [illegible]
[illegible]

REFERENCE NUMBER:SF 22383 [illegible]
PAGE [illegible]
[illegible]
PHONE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 13
DATE OF SAMPLE:02-13-89
DATE EXTRACTED:
DATE ANALYZED:

SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:02-17-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0459	2.0461		
tert-Butyl Methyl Ether	1	<1	<1	<1		
Benzene			<1			
Toluene			11			
Chlorobenzene			<1			
Ethyl Benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100%	97%	98%		
		2-24-89	2-24-89	2-24-89		

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST [illegible] APPROVED BY _____

COMPLETED BY _____
[illegible] BY _____

CHEM HILL Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 1-, 1-89

Page 1

LARRY FARB MIKE RANDY
TRACY

DUE DATE:03-16-89

REPORT TO:BEALE AIR FORCE BASE
CHEM HILL SAC
SAC 24359.81.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 18
DATE OF SAMPLE:02-15-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:SP 22382
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS COPLEY
DATE RECEIVED:02-16-89

Test Matrix: EPA-SCL-9040 ( ) mg/l (✓) ug/l ( ) mg kg ( ) ug/kg
Extraction Method: EPA 5030

	DETECT LIMIT	method blank	1.0455	2.0457	3.0453	
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	
Benzene			<1			
Toluene			2			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS:		100%	97%	91%	95%	
		2-24-89	2-25-89	2-24-89	2-24-89	

SS- Surrogate Standard reported as percent recovery

Remarks:

cc: to:

ANALYST JW APPROVED BY _____

COMPLETED BY YMJ
CHECKED BY _____

CH2M Hill Laboratory
2.15 Railroad Avenue, Redding, CA [illegible]

Feb. 16, 1989

Page 1

DEN RICHARD
TRACY

DUE DATE:03-16-89

REPORT: [illegible] PURGE BASE
[illegible]
[illegible]
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 18[illegible]
DATE OF SAMPLE:02-15-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601 8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER:SP 22382
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS COPLEY
DATE RECEIVED:02-16-89

	detect LIMIT	method Blank			3.0458	
Chloromethane	1	<1			<1	
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene Chloride	5	<5			<5	
Trichlorofluoromethane	1	<1			<1	
1,1-Dichloroethene						
1,1-Dichloroethene						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethene						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 100% J. 2-24-89			111% 2-24-89	

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JR APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
2213 Railroad Avenue, Redding, CA 96001

Feb. 14, 1989

Page 1

BCN RICHARD
TRACY

DUE DATE:03-10-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 18 -
DATE OF SAMPLE:02-13-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER:SF 22333
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:02-14-89

	detect LIMIT	Method Blank	1.TB	2.0448		
Chloromethane	1	<1	<1	<1		
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5		
Trichlorofluoromethane	1	<1	<1	<1		
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
~~BCM~~ BCM SURROGATE RECOVERY		100% 2-24-89	94% 2-24-89	92% 2-24-89		

COMMENTS:

copy to:

ANALYST J.W. APPROVED BY DKB

COMPLETED BY_____
CHECKED BY

F-282

CHEM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 14, 1989

SENRICH TARABETH
TRACY

DUE DATE:03-10-89

REPORT TO:MEARE AIR FORCE BASE
CHEM HILL/SAC
SAC 24359.R1.04
ATTENTION:WAYNE FEARCE
SAMPLE DESCRIPTION:WATER SITE 18
DATE OF SAMPLE:02-13-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:SP 22333
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS COFIELD
DATE RECEIVED:02-14-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	1. TB	2.0448	Method Blank		
tert-Butyl Methyl Ether	1	<1	<1	<1		
Benzene			<1			
Toluene			3			
Chlorobenzene			<1			
Ethyl benzene						
meta-Xylene						
o&p Xylene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
% TFT SURROGATE RECOVERY		97% 2-24-89	96% 2-24-89	100% 2-24-89		

COMMENTS:

copy to:

ANALYST: JW APPROVED BY: _____

COMPLETED BY: _____

[illegible]

[illegible]

BEN RICHARD
TRACY

DUE DATE: [illegible]

REPORT TO: BEALE AIR FORCE BASE
CHUM HILL SAC
SAC [illegible]
ATTENTION: WAYNE FRANCE
SAMPLE DESCRIPTION: WATER SITE 18
DATE OF SAMPLE: 02-14-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-[illegible] ( ) mg/l (✓) ug/l ( ) mg/kg ( ) ug/kg
Extraction method: EPA [illegible]

REFERENCE NUMBER: SF [illegible]2045
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS [illegible]
DATE RECEIVED: 02-15-89

	Detect Limit	Method Blank	1.TBLANK	2.045		
Chloromethane	1	<1	<1	<1		
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5		
Trichlorofluoromethane	1	<1	<1	<1		
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethane						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
BLM SURROGATE RECOVERY		100%	101%	123%		
COMMENTS:		2-24-89	2-24-89			

copy to:

ANALYST

APPROVED BY [illegible]

COMPLETED BY [illegible]
CHECKED BY [illegible]

Page 1

Ben Rich Tracy 1

[illegible]

DATE: 03-13-89

PROJECT: [illegible] AIR FORCE BASE
[illegible]
[illegible]
ATTEN: [illegible]
[illegible] DESCRIPTION: WATER SITE 12
DATE OF SAMPLE: 02-14-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA 602-8020
Extraction Method: EPA 5030

REFERENCE NUMBER: SF 22345
PAGE: F
DATE:
PHONE:
SAMPLED BY: CHRIS COPKEY
DATE RECEIVED: 02-15-89

	DETECT LIMIT	Method Blank	1.[illegible]	2.0452		
[illegible] Methyl Ether	1	< 1	< 1	< 1		
Benzene				< 1		
Toluene				12		
[illegible] benzene				< 1		
Ethyl benzene						
[illegible]						
o&p [illegible]						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
% TFT Surrogate Recovery		100% 2-24-89	103% 2-24-89	103% 2-24-89		

COMMENTS:

COPY TO:

[illegible] APPROVED BY

COMPLETED BY MJ
CHECKED BY

[illegible] Hill Laboratory
[illegible] Avenue, Redding, CA [illegible]

Feb. 15, 1989

Page 1

Ben Rich
~~LAWRY FRED MILE~~
TRACY

DUE DATE: 2-14-89

REPORT TO: BEALE AIR FORCE BASE
CH2M HILL SAC
SAC 2435-.FI.04
ATTENTION: WAYNE PEARCE
SAMPLE DESCRIPTION: WATER SITE 23
DATE OF SAMPLE: 02-15-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER: SP 22375
PAGE OF
DATE:
PHONE:
SAMPLED BY: CLIENT
DATE RECEIVED: 02-16-89

Test Methods: EPA-602-8020 ( )mg/l (✓)g/l ( ) mg/kg ( )ug/kg
Extraction Method: EPA 5030

	DETECT LIMIT	Method Blank	1.TB	2.[illegible]45[illegible]	3.0454	
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	
Benzene					<1	
Toluene					2	
Chlorobenzene					<1	
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	~~X~~	100% 2-24-89	97% 2-24-89	92% 2-24-89	94% 2-24-89	

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST JW APPROVED BY DKB

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 20, 1989

Page 2

BEN RICHARD
TRACY

DUE DATE:03-17-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.PI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:02-17-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER:SP 22398
PAGE OF
DATE;
PHONE:
SAMPLED B : CHRIS CORLEY
DATE RECEIVED:02-20-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	method Blank	1.0462	2.0460	3.0463	
Chloromethane	1	<1	<1	<1	<1	
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	
Trichlorofluoromethane	1	<1	<1	<1	<1	
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100%	108%	102%	95%	
		2-25-89	2-25-89	2-25-89	2-25-89	

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST [signature] APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 20, 1989

BEN RICH MARYBETH
TRACY

DUE DATE:03-17-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.PI.04
ATTENTION:WAYNE FEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:02-17-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER:SP 22398
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:02-20-89

	DETECT LIMIT	method Blank	1.0462	2.0460	3.0463	
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS:		100% 2-25-89	96% 2-25-89	96% 2-25-89	96% 2-25-89	

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST J. APPROVED BY CKB

COMPLETED BY _____
CHECKED BY _____

CHOM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 21, 1989

SEN RICHARD
TRACY

DUE DATE:03-17-89

REPORT TO:BEALE AIR FORCE BASE
CHOM HILL/SAC
SAC 24059.FI.04
ATTENTION:WAYNE FEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:02-20-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010

REFERENCE NUMBER;SP 22405
PAGE OF
DATE:
PHONE:
SAMPLED BY; S MONTEITH
DATE RECEIVED:02-21-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

Extraction Method: EPA 5030

	detect Limit	Method Blank 1.0464				
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 2-25-89	114 2-25-89			

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVED BY CKD

DELETED BY
ENTERED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 21, 1989

Page 2

BEN RICH ~~MR BRIAN~~
TRACY

DUE DATE:03-17-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24759.R1.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:02-20-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA 602-8020 ( ) mg/l (✓) ug/l ( ) mg/kg ( ) ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER:SP 22405
PAGE OF
DATE:
PHONE:
SAMPLED BY: S MONTEITH
DATE RECEIVED:02-21-89

DETECT Method Blank 1.0364
LIMIT

tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100%	92			

Use surrogate standard reported as percent recovery

COMMENTS:

copy to:

ANALYST [signature] APPROVED BY _____

[illegible] BY
[illegible] BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 22, 1989

BEN RICHARD
TRACY

DUE DATE;03-20-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.R1.04

REFERENCE NUMBER;SF- 22421
PAGE OF
DATE;

ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 1
DATE OF SAMPLE:02-21-89
DATE EXTRACTED;
DATE ANALYZED :

PHONE;
SAMPLED BY; CRIS CORLEY
DATE RECEIVED;02-22-89

Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	Method Blank	1.T-BLANK	2.0442	3.0443	4.0444
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chlorcethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene	1					
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene				2	3	4
Dibromochloromethane				<1	<1	<1
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		108% 2-25-89	113% 2-25-89	99% 2-25-89	100% 2-25-89	118%

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST JW APPROVED BY CKB

COMPLETED BY_____
CHECKED BY_____
P22

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 22, 1989

BEN RICHARD
TRACY

DUE DATE;03-20-89

REPORT TO;SEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.A1.04
ATTENTION;WAYNE FEARCE
SAMPLE DESCRIPTION;WATER SITE 1
DATE OF SAMPLE;02-21-89
DATE EXTRACTED;
DATE ANALYZED
Test Methods: EPA-601-8010
Extraction method: EPA 5030

REFERENCE NUMBER;SP 22421
PAGE OF
DATE;
PHONE;
SAMPLED BY; CRIS CORLEY
DATE RECEIVED;02-22-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	detect LIMIT	METHOD BLANK 5.0445				
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1.1-Dichloroethane						
trans-1.2-Dichlorcethene						
Chloroform						
1.2-Dichloroethane						
1.1.1-Trichlorcethane						
Carbon Tetrachloride						
Bromodichloromethane						
1.2-Dichloropropane						
cis-1.3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1.1.2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane ss		100% 2-25-89	95% 2-25-89			

COMMENTS;ss- Surrogate Standard reported as percent recovery
copy to;

ANALYST J.W. APPROVED BY DLG

F-292

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding. CA 96001

Feb. 22, 1989

BEN RICHARD
TRACY

DUE DATE;03-20-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 1
DATE OF SAMPLE;02-21-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SP 22421
PAGE OF
DATE;
PHONE;
SAMPLED BY; CRIS CORLEY
DATE RECEIVED;02-22-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK 5.0445				
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
total xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100% 2-25-89	95% 2-25-89			

SS-Surrogate Standard reported as percent recovery

COMMENTS:

copy to;

ANALYST J.W APPROVED BY DLS

COMPLETED BY_____
CHECKED BY_____

F-293

BEN RICHARD

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 23, 1989

[redacted] BEN RICH [redacted]
TRACY

DUE DATE;03-20-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-SITE 1
DATE OF SAMPLE;02-22-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SP 22428
PAGE OF
DATE;
PHONE;
SAMPLED BY; MONTEITH
DATE RECEIVED;02-23-89

Test Methods; EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.T-BLANK	2.0446	3.0447	4.0465
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene						<1
Toluene						<1
Chlorobenzene						<1
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100%	97%	111%	116%	97%
		3-7-89	3-7-89	3-7-89	3-7-89	3-7-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JW APPROVED BY DWB

COMPLETED BY_____
CHECKED BY_____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 23, 1989

BEN RICHARD
TRACY

DUE DATE;03-20-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-SITE 1
DATE OF SAMPLE;02-22-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22428
PAGE OF
DATE;
PHONE;
SAMPLED BY; MONTEITH
DATE RECEIVED;02-23-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK	1.T-BLANK	2.0446	3.0447	4.0455
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform			2 <1			
1,2-Dichloroethane			1			
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-7-89	84 3-7-89	112% 3-7-89	90% 3-7-89	97% 3-7-89

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST Jim APPROVED BY DKB

COMPLETED BY_____
CHECKED BY_____
P22

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 24, 1989

Page 1

~~LAWRY RANDY FRED MIKE~~ BEN ~~MR~~ RICH ~~X~~
TRACY

DUE DATE;03-21-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-SITE BG
DATE OF SAMPLE;02-23-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods; EPA-602-8020
Extraction method; EPA 5030

REFERENCE NUMBER;SP 22445
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;02-24-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	DETECT LIMIT	METHOD BLANK	1.0468			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100%	97%			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST J.W. APPROVED BY DVB

COMPLETED BY
CHECKED BY MJ

F-296

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Feb. 24, 1989

BEN RICHARD
TRACY

DUE DATE;03-21-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-SITE BG
DATE OF SAMPLE: 2-23-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22445
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;02-24-89

Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK 1.0468				
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-7-89	90% 3-7-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST JW APPROVED BY CKB

COMPLETED BY
CHECKED BY MJ

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA

Mar. 14, 1989

BEN RICHARD
TRACY

DUE DATE;03-22-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 19
DATE OF SAMPLE;02-24-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SP 22455
PAGE OF
DATE;
PHONE;
SAMPLED BY; S MONTEITH
DATE RECEIVED;02-27-89

Test method; EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1. C479			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
total xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100% 3-7-89	97% 3-7-89			

SS-Surrogate Standard reported as percent recovery

COMMENTS:

copy to;

ANALYST J.M APPROVED BY CLB

F-298

COMPLETED BY_____
CHECKED BY_____

CHOM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

MAR. 14, 1989

BEN RICHARD
IRAC:

DUE DATE;03-22-89

REPORT TO;BEALE AIR FORCE BASE
CHOM HILL/EAC
EAC 24J99.PI.04
ATTENTION;ANNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 1P
DATE OF SAMPLE;02-24-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22455 /
PAGE OF
DATE;
PHONE;
SAMPLED BY; S MONTEITH
DATE RECEIVED;02-27-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK 1.0479					
Chloromethane	1	<1	<1				
Bromomethane							
Dichlorodifluoromethane							
Vinyl Chloride							
Chloroethane							
Methylene chloride	5	<5	<5				
Trichlorofluoromethane	1	<1	<1				
1,1-Dichloroethene							
1,1-Dichloroethane							
trans-1,2-Dichloroethene							
Chloroform							
1,2-Dichloroethane							
1,1,1-Trichloroethane							
Carbon Tetrachloride							
Bromodichloromethane							
1,2-Dichloropropane							
cis-1,3-Dichloropropene							
Trichloroethene							
Dibromochloromethane							
1,1,2-Trichloroethane							
trans-1,3-Dicholoropropene							
Bromoform							
1,1,2,2-Tetrachloroethan							
Tetrachloroethene							
Chlorobenzene							
1,3-Dichlorobenzene							
1,2-Dichlorobenzene							
1,4-Dichlorobenzene							
Bromochloromethane SS		100% 3-7-89	109% 3-7-89				

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVED CVR

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 1, 1989

BEN [redacted]
TRACY

DUE DATE;03-23-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 13
DATE OF SAMPLE;02-28-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22505 ;
PAGE OF
DATE;
PHONE;
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;03-01-89

Test Methods; EPA-601-8010 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK 1.0467				
Chloromethane	1	<1	<1			
Bromomethane	↓	↓	↓			
Dichlorodifluromethane	↓	↓	↓			
Vinyl Chloride	↓	↓	↓			
Chloroethane	↓	↓	↓			
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene	↓	↓	↓			
1,1-Dichloroethane	↓	↓	↓			
trans-1,2-Dichloroethene	↓	↓	160			
Chloroform	↓	↓	2			
1,2-Dichloroethane	↓	↓	<1			
1,1,1-Trichloroethane	↓	↓	↓			
Carbon Tetrachloride	↓	↓	↓			
Bromodichloromethane	↓	↓	↓			
1,2-Dichloropropane	↓	↓	↓			
cis-1,3-Dichloropropene	↓	↓	↓			
Trichloroethene	↓	↓	1500			
Dibromochloromethane	↓	↓	↓			
1,1,2-Trichloroethane	↓	↓	20			
trans-1,3-Dicholoropropene	↓	↓	↓			
Bromoform	↓	↓	<1			
1,1,2,2-Tetrachloroethan	↓	↓	38			
Tetrachloroethene	↓	↓	↓			
Chlorobenzene	↓	↓	<1			
1,3-Dichlorobenzene	↓	↓	↓			
1,2-Dichlorobenzene	↓	↓	↓			
1,4-Dichlorobenzene	↓	↓	↓			
Bromochloromethane SS		99% 3-7-89	99% 3-7-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST (J.-) APPROVED BY 3/30/89

F-300

COMPLETED BY
CHECKED BY JM

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 1, 1989

TRACY

DUE DATE;03-23-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;SP 22505
PAGE OF
DATE;

ATTENTION;WAYNE PEARCE
PHONE;

SAMPLE DESCRIPTION;WATER SITE 13
SAMPLED BY; CHRIS CORLEY

DATE OF SAMPLE;02-28-89
DATE RECEIVED;03-01-89

DATE EXTRACTED:
DATE ANALYZED:

Test Methods; EPA-602-8020 ( )mg/l (✓ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0467			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100% 3-7-89	103 3-7-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST (D.?) APPROVED BY

COMPLETED BY
CHECKED BY

F-301

RANDY LAWRY FRED MIKE
TRACY

DUE DATE:03-23-89

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 2, 1989

BEN [redacted] Brian MB
TRACY

DUE DATE;03-25-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE FEARCE
SAMPLE DESCRIPTION;WATER SITE 13
DATE OF SAMPLE;03-01-89
DATE EXTRACTED;
DATE ANALYZED :
Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

REFERENCE NUMBER;SP 20512
PAGE OF
DATE;
PHONE;
SAMPLED BY; MONTEITH
DATE RECEIVED;03-02-89

	detect LIMIT	Method Blank 1.0470					
Chloromethane	1	<1	<1				
Bromomethane							
Dichlorodifluromethane							
Vinyl Chloride							
Chloroethane							
Methylene chloride	5	<5	<5				
Trichlorefluoromethane	1	<1	<1				
1,1-Dichloroethene							
1,1-Dichloroethane							
trans-1,2-Dichloroethene							
Chloroform							
1,2-Dichloroethane							
1,1,1-Trichloroethane							
Carbon Tetrachloride							
Bromodichloromethane							
1,2-Dichloropropane							
cis-1,3-Dichloropropene							
Trichloroethene			18				
Dibromochloromethane			<1				
1,1,2-Trichloroethane							
trans-1,3-Dicholoropropene							
Bromoform							
1,1,2,2-Tetrachloroethan							
Tetrachloroethene							
Chlorobenzene							
1,3-Dichlorobenzene							
1,2-Dichlorobenzene							
1,4-Dichlorobenzene							
Bromochloromethane SS		100% 3-14-89	92 3/14/89				

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST JW. APPROVED BY [signature]

F-302

COMPLETED BY_____
CHECKED BY_____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 2, 1989

LAWRY BEN RANDY FRED MIKE RICH MB B
TRACY

DUE DATE;03-25-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;SP 22512
PAGE OF
DATE;

ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 13

PHONE;
SAMPLED BY; MONTEITH

DATE OF SAMPLE;03-01-89
DATE EXTRACTED:
DATE ANALYZED:

DATE RECEIVED;03-02-89

Test Methods; EPA-602-8020 ( )mg/l (✓ ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	Method Blank	1.0470			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS:		100% 3-14-89	92 3-14-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JW APPROVED BY_____

COMPLETED BY_____
CHECKED BY_____

F-303

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 8, 1989

LAWRY FRED MIKE RANDY
TRACY

DUE DATE;03-30-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;SP 22601
PAGE OF
DATE;
PHONE;

ATTENTION;WAYNE FEARCE
SAMPLE DESCRIPTION;WATER SITE 2
DATE OF SAMPLE;03-07-89
DATE EXTRACTED:
DATE ANALYZED:

SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;03-08-89

Test Methods; EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	Method Blank	1.0476	2.0477	3.0478	4.0480
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene					<1	
Toluene				3	3	
Chlorobenzene				<1	<1	
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100%	104%	103	107	102
		3-16-89	3-16-89	3-16-89	3-16-89	3-17-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JO APPROVED BY

COMPLETED BY
CHECKED BY

F-304

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 8, 1989

BEN [redacted]
TRACY

DUE DATE;03-30-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 2
DATE OF SAMPLE;03-07-89
DATE EXTRACTED;
DATE ANALYZED :
Test Methods; EPA-601-8010 ( )mg/l (✓ ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

REFERENCE NUMBER;SP 22601 ;
PAGE OF
DATE;
PHONE;
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;03 '8-89

	detect LIMIT	method Blank	1.0476	2.0477	3.0478	4.0480
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene				2	2	
Dibromochloromethane				<1	<1	
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-16-89	89 3-16-89	98 3-16-89	111 3-16-89	100 3-17-89

COMMENTS;SS-Surrogate standard reported as percent recovery
Confirmations on back copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY
CHECKED BY [signature]
P22

F-305

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 3, 1989

BEN [redacted]
TRACY

DUE DATE;03-26-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE FEARCE
SAMPLE DESCRIPTION;WATER SITE 5
DATE OF SAMPLE;03-02-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22542
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;03-03-89

Test Methods: EPA-601-8010 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	method Blank	1.0471	2.0472	3.0473	4.0474
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100 3-16-89	105 3-16-89	124 3-16-89	96 3-16-89	91 3-16-89

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to:

ANALYST [signature] APPROVED [signature]

COMPLETED BY
CHECKED BY

F-306

CH2M Hill Lab
2218 Railroad Avenue, F

Mar. 9, 1989

LAWRY RANDY FRED MIKE
TRACY

DUE DATE;03-31-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 2
DATE OF SAMPLE;03-08-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods; EPA-602-8020
Extraction method; EPA 5030

REFERENCE NUMBER;SP 226
PAGE OF
DATE;
PHONE;
SAMPLED BY; MONTEITH
DATE RECEIVED;03-09-89

( )mg/l (✓) ug/l ( ) mg

	DETECT LIMIT	method Blank	1.0481	
Tert-butyl Methyl Ether	1		<1	
Benzene			<1	
Toluene			2 <1	
Chlorobenzene			<1	
Ethyl benzene				
Total Xylenes				
1,3-Dichlorobenzene				
1,2-Dichlorobenzene				
1,4-Dichlorobenzene				
Trifluorotoluene SS		100% 3-16-89	93 3-16-89	

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY_
CHECKED BY___

F-307

CH2M HILL Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 9, 1989

BEN [redacted] Brian mB
TRACY

DUE DATE;03-31-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 2
DATE OF SAMPLE;03-08-89
DATE EXTRACTED;
DATE ANALYZED :
Test Methods; EPA-601-8010
Extraction method; EPA 5030

REFERENCE NUMBER;SP 22622
PAGE OF
DATE;
PHONE;
SAMPLED BY; MONTEITH
DATE RECEIVED;03-09-89

( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg

	detect LIMIT	method Blank	1.0481			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloroethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-16-89	104 3-16-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST JW APPROVED BY M

COMPLETED BY
CHECKED BY

F-308

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 10, 1989

LAWRY FANDY FFED MIKE
TRACY

DUE DATE:04-01-89

REPORT TO:PEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 14359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER-SITE 6
DATE OF SAMPLE:03-09-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SF 22643
PAGE OF
DATE;
PHONE;
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;03-10-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	Method Blank	1.0483	2.0484	3.0485	4.0486
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene			<1			
Toluene			2			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS;		109% 3-16-89	113 3-16-89	116 3-16-89	112 3-16-89	111 3-16-89

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY _____
CHECKED BY _____

CHEM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 10, 1989

BEN RICHARD mB BRIAN
TRACY

REPORT TO;PEALE AIR FORCE BASE
CHEM HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-SITE 6
DATE OF SAMPLE;03-09-89
DATE EXTRACTED;
DATE ANALYZED :
Test Methods; EPA-601-8010
Extraction method; EPA 5030

DUE DATE:04-01-89

REFERENCE NUMBER;SP 22643
PAGE OF
DATE;
PHONE;
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;03-10-89

( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg

	detect LIMIT	Method Blank	1.0483	2.0484	3.0485	4.0486
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodiflurcmethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1.1.1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1.3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1.3-Dicholoropropene						
Bromoform						
1.1.2.2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1.2-Dichlorobenzene						
1.4-Dichlorobenzene						
Bromochloroethane SS		100% 3-16-89	148 3-16-89	131 (*) 3-16-89	131 3-16-89	133 3-16-89

COMMENTS:SS-Surrogate standard reported as percent recovery

(*) Matrix Interference resulted in high Surrogate Recovery

ANALYST J.W. APPROVED BY

COMPLETED BY
CHECKED BY
P22

Confirmed ... a. Lisk

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 10, 1989

BEN RICH MARYBETH BRIAN
TRACT

DUE DATE:04-01-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE FEARCE
SAMPLE DESCRIPTION:WATER-SITE 19
DATE OF SAMPLE:03-09-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SF 22644
PAGE OF
DATE;
PHONE;
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;03-10-89

Test Methods; EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	Method Blank	487 1.0847			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS:		100%	118			
		3-16-89	3-16-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST: [signature] APPROVED BY: [signature]

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 10, 1989

Page 2

BEN RICHARD
TRACY

DUE DATE;04-01-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-SITE #19
DATE OF SAMPLE;03-09-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22644
PAGE OF
DATE;
PHONE:
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;03-10-89

Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	Method Blank	1.~~0847~~ 487			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	~~14~~ 15			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100 3-16-89	~~118~~ 120 ~~3-16-89~~ 3-17-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
Confirmation on back
copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 13, 1989

BEN RICHARD
TRACY

DUE DATE;04-03-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 21
DATE OF SAMPLE;03-10-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22659
PAGE OF
DATE;
PHONE;
SAMPLED BY; CRIS CORLEY
DATE RECEIVED;03-13-89

Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	Method Blank	1.0482			
Chloromethane	1	<1	<1			
Bromomethane	1	1	1			
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-23-89	103* 3-23-89			

COMMENTS;SS-Surrogate standard reported as percent recovery

*Surrogate calculated by External Standard Method

copy to:

ANALYST J.N APPROVED

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 13, 1989

BEN RICHARD
TRACY

DUE DATE;04-03-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.PI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE ~~7.5~~
DATE OF SAMPLE;03-20-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22660
PAGE OF
DATE;
PHONE;
SAMPLED BY; CRIS CORLEY
DATE RECEIVED;03-13-89

Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	Method Blank 1.0488				
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-23-89	135% 107% 3-23-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
*Surrogate calculated by External Standard Method
copy to:

ANALYST [signature] APPROVED [signature]

F-314

COMPLETED BY
CHECKED BY [signature]

RANDY LARRY FRED MIKE
TRACY

DUE DATE:03-27-89

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 14, 1989

BEN RICHARD
TRACY

DUE DATE;04-04-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 5
DATE OF SAMPLE;03-13-89
DATE EXTRACTED;
DATE ANALYZED :
Test Methods; EPA-601-8010
Extraction method; EPA 5030

REFERENCE NUMBER;sp 22674
PAGE OF
DATE;
PHONE;
SAMPLED BY; chris corley
DATE RECEIVED;03-14-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	detect LIMIT	method Blank 1.0489				
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-23-89	107 * 3-23-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
* Surrogate calculated by External Standard method

copy to:

ANALYST JW APPROVED BY

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 15, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE;04-05-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 16
DATE OF SAMPLE;03-14-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SP 22683
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;03-15-89

Test Methods; EPA-602-8020 ( )mg/l (~~4~~ ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	Method Blank 1.0490				
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100% 3-23-89	116 3-24-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JW APPROVED BY

COMPLETED BY
CHECKED BY TMD

F-316

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 15, 1989

BEN RICHARD
TRACY

DUE DATE;04-05-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;SP 22683
PAGE OF
DATE;
PHONE;

ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 16
DATE OF SAMPLE:03-14-89

SAMPLED BY; CORLEY
DATE RECEIVED:03-15-89

DATE EXTRACTED;
DATE ANALYZED :
Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	Method Blank	1.0490				
Chloromethane	1	<1	<1				
Bromomethane							
Dichlorodifluromethane							
Vinyl Chloride							
Chloroethane							
Methylene chloride	5	<5					
Trichlorofluoromethane	1	<1	<1				
1,1-Dichloroethene							
1,1-Dichloroethane							
trans-1,2-Dichloroethene							
Chloroform							
1,2-Dichloroethane							
1,1,1-Trichloroethane							
Carbon Tetrachloride							
Bromodichloromethane							
1,2-Dichloropropane							
cis-1,3-Dichloropropene							
Trichloroethene							
Dibromochloromethane							
1,1,2-Trichloroethane							
trans-1,3-Dicholoropropene							
Bromoform							
1,1,2,2-Tetrachloroethan							
Tetrachloroethene							
Chlorobenzene							
1,3-Dichlorobenzene							
1,2-Dichlorobenzene							
1,4-Dichlorobenzene							
Bromochloromethane SS		100%	*102				
		3-23-89	3-24-89				

COMMENTS;SS-Surrogate standard reported as percent recovery

* Surrogate calculated by External Standard method

copy to;

ANALYST (Jim) APPROVED : F-317

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 18, 1989

BEN RICHARD
TRACY

DUE DATE:04-06-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER 1
DATE OF SAMPLE:03-16-89
DATE EXTRACTED;
DATE ANALYZED :
Test Methods; EPA-601-8010
Extraction method: EPA 5030

REFERENCE NUMBER;SF 22738
PAGE OF
DATE;
PHONE;
SAMPLED BY: CORLEY
DATE RECEIVED;03-17-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	detect LIMIT	method Blank	1.0491	2.0492	3.0493	4.0494
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodiflurometh ane						
Vinyl Chloride						
Chlorcethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichlorcethene				2 <1		
Chloroform				<1		
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene				2	8	7
Dibromochloromethane				<1	<1	<1
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-30-89	111 3-30-89	122 3-30-89	106 3-30-89	124 3-30-89

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to:

ANALYST _____ APPROVED _____

F-318

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F22

4/14

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 18, 1989

BEN RICH MR BRIAN
TRACY

DUE DATE;04-06-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;SP 22738
PAGE OF
DATE;
PHONE;

ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 1
DATE OF SAMPLE;03-16-89
DATE EXTRACTED:
DATE ANALYZED:

SAMPLED BY; CORLEY
DATE RECEIVED;03-17-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	method Blank	1.0491	2.0492	3.0493	4.0494
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene			<1	<1		
Toluene			1	<1		
Chlorobenzene			<1	<1		
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100%	101	106	101	113
		3-30-89	3-30-89	3-30-89	3-30-89	3-30-89

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST J.D. APPROVED BY

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CHECKED BY_____

F-319

CHZM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 18, 1989

LAWRY FRED MIKE RANDY
TRACY

DUE DATE;04-07-89

REPORT TO;BEALE AIR FORCE BASE
CHZM HILL/SAC
SAC 24359.FI.04

REFERENCE NUMBER;SP 22739
PAGE OF
DATE;

ATTENTION;WAYNE FEARCE
SAMPLE DESCRIPTION;WATER 1 ~~C-SSW~~
DATE OF SAMPLE;03-17-89
DATE EXTRACTED:
DATE ANALYZED:

PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;03-18-89

Test Methods; EPA-602-8020 ( )mg/l (✓ ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	Method Blank	1.0495	2.0496	3.0497	4.0498
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene					<1	
Toluene					2	
Chlorobenzene					<1	
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS		100%	104	102	103	89
		3-31-89	3-31-89	3-31-89	3-31-89	3-31-89

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST _____ APPROVED BY _____

F-320

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CHECKED BY_____

CHZM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 18, 1989

BEN RICHARD
TRACY

DUE DATE;04-07-89

REPORT TO;BEALE AIR FORCE BASE
CHZM HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 1
DATE OF SAMPLE;03-17-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SF 22739
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;03-18-89

Test Methods; EPA-601-8010 ( )mg/l (✓ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	Method Blank	1.0495	2.0496	3.0497	4.0498
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						3
Dibromochloromethane						<1
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 3-31-89	93 3-31-89	93 3-31-89	93 3-31-89	121 3-31-89

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST _____ APPROVED _____

F-321

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CHECKED BY_____

4/14

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 21, 1989

Page 1

LARRY RANDY FRED MIKE
TRAC:

DUE DATE;04-11-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.PI.04
ATTENTION;WAYNE FEARCE
SAMPLE DESCRIPTION;WATER-SITE 1
DATE OF SAMPLE;03-20-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SP 22760
PAGE OF
DATE:
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;03-21-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

DETECT LIMIT 1.0499

		Method Blank				
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	////	100% 4-3-89	95. 4-3-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST J.W APPROVED BY [signature]

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CHECKED BY

F-322

CHEM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 21, 1989

BEN RICHARD
TRACY

DUE DATE:04-11-89

REPORT TO:SEALE AIR FORCE BASE
CHEM HILL/SAC
SAC 24368.81.04
ATTENTION:DAVE PEARCE

REFERENCE NUMBER:SF 22760
PAGE OF
DATE:
PHONE:

SAMPLE DESCRIPTION;WATER-SITE 1
DATE OF SAMPLE:03-20-89
DATE EXTRACTED:
DATE ANALYZED :

SAMPLED BY: CORLEY
DATE RECEIVED:03-21-89

Test Method: EPA-601-8010 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	method Blank 1.0499				
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	/////	100% 4-3-89	95 4-3-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST J.W APPROVED BY

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CHECKED BY

F-323

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

BEN RICHARD
TRACY

DUE DATE:

REPORT TO:BEALE AIR FORCE BASE
SECOND COLUMN CONFIRMATION
VOCOL CAPILLARY

REFERENCE NUMBER; 2276 I
PAGE OF
DATE:
PHONE;
SAMPLED BY;
DATE RECEIVED;

ATTENTION;
SAMPLE DESCRIPTION:
DATE OF SAMPLE:
DATE EXTRACTED;
DATE ANALYZED :
Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	.0500					
Chloromethane							
Bromomethane							
Dichlorodifluromethane							
Vinyl Chloride							
Chloroethane							
Methylene chloride							
Trichlorofluoromethane							
1,1-Dichloroethene							
1,1-Dichloroethane							
trans-1,2-Dichloroethene							
Chloroform							
1,2-Dichloroethane							
1,1,1-Trichloroethane							
Carbon Tetrachloride							
Bromodichloromethane							
1,2-Dichloropropane							
cis-1,3-Dichloropropene							
Trichloroethene				28			
Dibromochloromethane							
1,1,2-Trichloroethane							
trans-1,3-Dicholoropropene							
Bromoform							
1,1,2,2-Tetrachloroethan							
Tetrachloroethene							
Chlorobenzene							
1,3-Dichlorobenzene							
1,2-Dichlorobenzene							
1,4-Dichlorobenzene							
Bromochloromethane SS				4-4-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST [signature] APPROVED BY [signature]

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CHECKED BY

CHEM Hill Laboratory
2818 Railroad Avenue, Redding, CA 96001

Mar. 21, 1989

BEN RICHARD
TRACY

DUE DATE;04-11-89

REPORT TO;BCALE AIR FORCE BASE
CHEM HILL/SAC
SAC 24359.PI.04
ATTENTION;WAYNE FEARCE
SAMPLE DESCRIPTION;WATER-SITE 10
DATE OF SAMPLE;03-20-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SF 22761
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;03-21-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	Method Blank	1.0500			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene		30 <1	30			
Dibromochloromethane		<1	<1			
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 4-3-89	97 4-3-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVE

F-325

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 22, 1989

Page 1

RAND: LAWR: FRED MIKE
TRACY

DUE DATE:04-12-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.FI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 13
DATE OF SAMPLE:03-22-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-602-8020
Extraction method: EPA 5030

REFERENCE NUMBER:SP 22792
PAGE OF
DATE;
PHONE;
SAMPLED BY; PEXTON
DATE RECEIVED;03-22-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	DETECT LIMIT	Method Blank	1.502	2.503	3.501	
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	//////	100% 4-4-89	107 4-4-89	110 4-4-89	100 4-4-89	

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST Jw APPROVED BY [signature]

COMPLETED BY
CHECKED BY [signature]

F-326

CHECKED BY [illegible]

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 22, 1989

Page 2

BEN [illegible]
TRACY

DUE DATE:04-12-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 243:[illegible].RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 1[illegible]
DATE OF SAMPLE:03-22-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER;SP 22792
PAGE OF
DATE;
PHONE;
SAMPLED BY; PEXTON
DATE RECEIVED;03-22-89

	detect LIMIT	Method Blank	1.502	2.503	3.501	
Chloromethane	1	<1	<1	<1	<1	
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane				(J) ~~<5~~ <1		
Methylene chloride	5	<5	<5	<5	<5	
Trichlorofluoromethane	1	<1	<1	<1		
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene			(J) ~~5~~ 4			
Dibromochloromethane			<1		6	
1,1,2-Trichloroethane					<1	
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 4-4-89	96 4-4-89	85 4-4-89	92 4-4-89	

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to:

ANALYST [illegible] APPROVED BY [illegible]

F-327

COMPLETED BY
CHECKED BY [illegible]

CHECKED BY _____

CHEM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 24, 1989

BEN FICH MAFFBETH BRIAN
TRACY

DUE DATE;04-14-89

REPORT TO;BEALE AIR FORCE BASE
CHEM HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 6
DATE OF SAMPLE;03-22-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SF 22814
PAGE OF
DATE;
PHONE;
SAMPLED BY; CLIENT
DATE RECEIVED;03-23-89

Test Methods; EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	Method Blank 1.0504				
tert-Butyl Methyl Ether	1	<1	<1			
Benzene			<1			
Toluene			3			
Chlorobenzene			<1			
Ethyl Benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS;		100% 4-4-89	82 4-4-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to;

ANALYST J.W APPROVED BY W

COMPLETED BY____
CHECKED BY____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 24, 1989

BEN RICHARD
TRACY

DUE DATE;04-14-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.R1.04

REFERENCE NUMBER;SP 22814
PAGE OF
DATE;
PHONE;

ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 6
DATE OF SAMPLE;03-22-89

SAMPLED BY; CLIENT
DATE RECEIVED;03-23-89

DATE EXTRACTED;
DATE ANALYZED :
Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	Method Blank	1.0504			
Chloromethane	<1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chlorgethane						
Methylene chloride	<5	<5	<5			
Trichlorofluoromethane	<1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropene						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS		100% 4-4-89	95 4-4-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPRO: P-329 W

COMPLETED BY _____.

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 24, 1989

Page 1

RANDY LAURY FRED MIKE
TRACY

DUE DATE:04-17-89

REPORT TO:BERGE AIR FORCE BASE
CH2M HILL/FAC
BAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 6
DATE OF SAMPLE:03-23-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-602-8020
Extraction method: EPA 5030

REFERENCE NUMBER:SP 22817
PAGE OF
DATE:
PHONE:
SAMPLED BY: PEXTON
DATE RECEIVED:03-24-89

( )mg/l (✓) ug/l ( ) mg/kg ( ) ug/kg

	DETECT LIMIT	Method Blank	1.505	2.506	3.507	4.508
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	102	85	101	98
		4-5-89	4-5-89	4-5-89	4-5-89	

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY _____
CHECKED BY _____

F-330

CH2M Hill Laboratory
2213 Railroad Avenue, Redding, CA 96[illegible]

Mar. 24, 1989

Page 1

B&N RICHARD
TRACK

DUE DATE:03-17-89

REPORT TO:DEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 6
DATE OF SAMPLE:03-23-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-[illegible]-8.10 ( )mg/l (✓) ug/l ( ) mg/kg ( ) ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER:SP 20317
PAGE OF
DATE:
PHONE:
SAMPLED BY: PEXTON
DATE RECEIVED:03-24-89

	date LIMIT	Method Blank	1.505	2.506	3.507	4.508
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 4-5-89	124 4-5-89	98 4-5-89	120 4-5-89	130 4-5-89

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVE [illegible]

F-331

COMPLETED BY
CHECKED BY
RI.

CH2M Hill Laboratory
2018 Railroad Avenue, Redding, CA 96001

Mar. 30, 1989

BEN Rich
TRACY

DUE DATE:04-21-89

REPORT TO:TRACY AIR FORCE BASE
CH2M HILL/SAC
SAC DATA.AT.C4
ATTENTION:DAVE PEARCE
SAMPLE DESCRIPTION:WATER SITE 15
DATE OF SAMPLE:03-29-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:SP 22849
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:03-30-89

Test Methods: EPA-600-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT					
	Method Blank 1.0510					
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	102	107			
		4-12-89	4-12-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to;

ANALYST Jim APPROVED BY

-89

COMPLETED BY:
CHECKED BY:

RANDY FRED MIKE Jim
TRACY

F-332
DATE:04-21-89

CH2M Hill Laboratory
2213 Railroad Avenue, Redding, CA 96001

Mar. 30, 1989

89- PICPASD
TRACY

DUE DATE:04-21-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 04059.R1.04
ATTENTION:WAYNE FEARCE
SAMPLE DESCRIPTION:WATER SITE 15
DATE OF SAMPLE:03-29-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER:SF 22849
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS COPLEY
DATE RECEIVED:03-30-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	Method Blank 1.0510				
Chloromethane	1	<1	<1			
Bromomethane	↓	↓	↓			
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene	↓	↓	↓			
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Benzene						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 4-12-89	122 4-12-89			

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVED BY

COMPLETED BY
CHECKED BY

F-333

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 30, 1989

Page 1

RANDY JIM FRED MIKE
TRACY

DUE DATE:04-21-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 3
DATE OF SAMPLE:03-19-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-602-8020
Extraction method: EPA 5030

REFERENCE NUMBER:SP 22948
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:03-20-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

DETECT Method Blank 1.0511

LIMIT						
tert-Butyl Methyl Ether	1	<1	<1			
Benzene			<1			
Toluene			4			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	101			
		4-12-89	4-12-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JW APPROVED BY [signature]

COMPLETED BY_____
CHECKED BY_____

F-334

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 30, 1989

Page 1

BEN RICHARD
TRAC:

DUE DATE:04-21-89

REF. TO:BEALE AIR FORCE BASE
CH2M HILL, SAC
SAC 04[illegible]
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 3
DATE OF SAMPLE:03-[illegible]-89
DATE EXTRACTED: 29
DATE ANALYZED:
Test Methods: EPA-601-8010
Extraction method: EPA 5030

REFERENCE NUMBER:SP 22848
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS COPLEY
DATE RECEIVED:03-30-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/g

detect LIMIT method Blank 1.0511

Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 9-12-89	112 4-12-89			

COMMENTS: SS-Surrogate standard reported as percent recovery
copy to:

ANALYST J.W. APPROVED BY [signature]

COMPLETED BY
CHECKED BY

F-335

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 31, 1989

Page 1

SANDY JIM FRED MIKE
TRACY

DUE DATE;04-24-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24059.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 3
DATE OF SAMPLE;03-31-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-602-8020
Extraction method: EPA 5030

REFERENCE NUMBER;SP 22870
PAGE OF
DATE:
PHONE;
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;03-31-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	DETECT LIMIT	Method Blank	1.0513			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene			<1			
Toluene			<1			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 4-12-89	102 4-12-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JD APPROVED BY [signature]

COMPLETED BY
CHECKED BY [signature]

F-336

CHEM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Mar. 31, 1989

ERIC RICHARD
TRACT

DUE DATE:04-14-89

REPORT TO:BEALE AIR FORCE BASE
CHEM HILL/SAC
SAC 24357.81.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE C
DATE OF SAMPLE;03-31-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 22870
PAGE OF
DATE;
PHONE;
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED;03-31-89

Test Methods: EPA-601-8010 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	method Blank	1.0513				
Chloromethane	1	<1	<1				
Bromomethane							
Dichlorodifluoromethane							
Vinyl Chloride							
Chloroethane							
Methylene chloride	5	<5	<5				
Trichlorofluoromethane	1	<1	<1				
1,1-Dichloroethene							
1,1-Dichloroethane							
trans-1,2-Dichloroethene							
Chloroform							
1,2-Dichloroethane							
1,1,1-Trichloroethane							
Carbon Tetrachloride							
Bromodichloromethane							
1,2-Dichloropropane							
cis-1,3-Dichloropropene							
Trichloroethene							
Dibromochloromethane							
1,1,2-Trichloroethane							
trans-1,3-Dicholoropropene							
Bromoform							
1,1,2,2-Tetrachloroethan							
Tetrachloroethene							
Chlorobenzene							
1,3-Dichlorobenzene							
1,2-Dichlorobenzene							
1,4-Dichlorobenzene							
Bromochloroethane SS	—	100% 4-12-89	105 * 4-12-89				

COMMENTS:SS-Surrogate standard reported as percent recovery

* surrogate calculated by External Standard Method.

copy to:

ANALYST JD APPROVED BY

COMPLETED BY:
CHECKED BY:

2218 Railroad Avenue, Redding, CA 96001

Mar. 31, 1989

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 15
DATE OF SAMPLE;03-30-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SP 22871
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;03-31-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	method Blank	1.0512	2.0514	3.0515	
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	
Benzene				<1		
Toluene				<1		
Chlorobenzene				<1		
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	89	112	111	
		4-12-89	4-12-89	4-12-89	4-12-89	

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JV APPROVED BY

COMPLETED BY_____
CHECKED BY_____

CHEM Hill Laborat:-
2218 Railroad Avenue, Redd:-: CA 96[illegible]

Mar. 31, 1989

BEN RICHARD
TRACY

DUE DATE:04-24-89

REPORT To;BLALE AIR FORCE BASE
CHEM HILL/SAC
SAC 24359.P1.04

REFERENCE NUMBER:SP 22871
PAGE OF
DATE:
PHONE:

ATTENTION;WAINE FEARCE
SAMPLE DESCRIPTION;WATER SITE 15
DATE OF SAMPLE:03-30-89
DATE EXTRACTED:
DATE ANALYZED :

SAMPLED BY; COPLEY
DATE RECEIVED:03-31-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg g/kg
Extraction method: EPA 5030

	detect LIMIT	Method Blank	1.0512	2.0514	3.[illegible]
Chloromethane	1	<1	<1	<1	<
Bromomethane	↓	↓	↓	↓	↓
Dichlorodifluoromethane					
Vinyl Chloride					
Chloroethane	↓	↓	↓	↓	↓
Methylene chloride	5	<5	<5	<5	<=
Trichlorofluoromethane	1	<1	<1	<1	<
1,1-Dichloroethene	↓	↓	↓	↓	
1,1-Dichloroethane					
trans-1,2-Dichloroethene					
Chloroform					
1,2-Dichloroethane					
1,1,1-Trichloroethane					
Carbon Tetrachloride					
Bromodichloroethene					
1,2-Dichloropropane					
cis-1,3-Dichloropropene					
Trichloroethene					
Dibromochloromethane					
1,1,2-Trichloroethane					
trans-1,3-Dicholoropropene					
Bromoform					
1,1,2,2-Tetrachloroethan					
Tetrachloroethene					
Chlorobenzene					
1,3-Dichlorobenzene					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					
Bromochloromethane SS	—	100% * 4-12-89	[illegible]% * 4-12-89	96 *	1[illegible]% *

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

* CALCULATED BY EXTERNAL STANDARD METHOD

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY:
CHECKED BY [signature]

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Apr. 3, 1989

Page 1

PEN RICHARD
TRAC:

DUE DATE:04-11-89

REPORT TO:REALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24357.RI.01
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 3
DATE OF SAMPLE:03-31-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-601-8010 ( ) mg/l (✓) ug/l ( ) mg/kg ( ) ug/kg
Extraction Method: EPA 5030

REFERENCE NUMBER:SF 22890
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS CIRLEY
DATE RECEIVED:04-13-89

METHOD
detect BLANK 1.0518

	LIMIT					
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	10090 4-12-89	97 * 4-13-89			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;
* Surrogate calculated by External Standard Method.

ANALYST J. APPROVED BY [signature]

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Apr. 3, 1989

Page 2

BEN RICH MB BRIAN
TRACY

DUE DATE:04-21-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 1[illegible].04
ATTENTION:WAYNE PEARLE
SAMPLE DESCRIPTION;WATER SITE 3
DATE OF SAMPLE:03-21-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods; EPA-[illegible]
Extraction method; EPA 5070

REFERENCE NUMBER;SPA 22890
PAGE OF
DATE;
PHONE:
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED:04-03-89

	DETECT LIMIT	METHOD BLANK	1.0518			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	1.1			
		4-12-89	4-13-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY _____
CHECKED BY _____

RANDY FRED MIKE JIM

F-341

CHEM HILL Laboratory
2117 Railroad Avenue, Redding, CA 96001

Apr. 3, 1989

SE: WIC-ARB
TO:

DUE BY 3:00 4-7-89

FOR CF ELIGIBLE WTR FOR TCE BASE
14 DAY TAT
EXT LACTS, TLOD
RUSH TURNAROUND RESULTS
SAMPLE DESCRIPT.. WATER SLUG 19
DATE OF SMP: 3/30/89
DATE EXTRACTED:
DATE ANALYZED :
Test Method: [illegible]
Extraction Method: Env 5030

REFERENCE # 7SEP;BP, 22691
SITE ID
DATE:
TIME:
SAMPLED BY: CRAIG DOPLE:
DATE RECEIVED: 4-03-89

	METHOD detect LIMIT	BLANK	1.0317	2.0816		
Chloromethane	1	<1	<1	<1		
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene Chloride	5	<5	<5	<5		
Trichlorofluoromethane	1	<1	<1	<1		
1,1-Dichloroethene						
1,1-Dichloroethene						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 4-12-89	98 * 4-13-89	122 * 4-13-89		

COMMENTS;SS-Surrogate standard reported as percent recovery

copy to:

* Surrogate calculated by External Standard method.

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY
CHECKED BY [signature]

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Apr. 3, 1989

Page 3

TRACY

DUE DATE;04-21-89

REPORT TO;DEALE AIR FORCE BASE
[illegible]
[illegible]
ATTENTION;[illegible]
SAMPLE DESCRIPTION;WATER SITE 19
DATE OF SAMPLE;[illegible]-21-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction Method: EPA 5030

REFERENCE NUMBER;[illegible]
PAGE OF
DATE:
PHONE:
SAMPLED BY; CHRIS CORLEY
DATE RECEIVED;04-03-89

	DETECT LIMIT	METHOD BLANK	1.0517	2.0516		
tert-Butyl Methyl Ether	1	<1	<1	<1		
Benzene	↓	↓	↓	↓		
Toluene	↓	↓	↓	↓		
Chlorobenzene	↓	↓	↓	↓		
Ethyl benzene	↓	↓	↓	↓		
Total Xylenes	↓	↓	↓	↓		
1,3-Dichlorobenzene	↓	↓	↓	↓		
1,2-Dichlorobenzene	↓	↓	↓	↓		
1,4-Dichlorobenzene	↓	↓	↓	↓		
Trifluorotoluene SS	—	100	114	123		
		4-12-89	4-13-89	4-13-89		

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY
CHECKED BY [signature]

BEN RICH MB BRIAN
TRACY

F-343 DUE DATE:04-21-89

Apr. 4, 1989

F-3[illegible]

[illegible]

RE: AIC-AFB

Dear

RE: E.P.A. [illegible]

REPORT TO: SE-LE AIR FORCE BASE
CHUCK MILL BA.
BAI [illegible]

REFERENCE NUMBER: [illegible]
PAGE #:
DATE:
P.O.#:
[illegible]
DATE RECEIVED: [illegible]

[illegible]

	Method Blank					
	Detect Limit		1.0319	2.0320	3.0321	4.0321
Dichlorodifluoromethane	1	<1	<1	<1	<1	<1
Chloromethane						
Bromomethane						
Vinyl Chloride						
Chloroethane						
Methylene Chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethane						
1,1-Dichloroethene						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 4-14-89	99 4-14-89	101 4-14-89	120 4-14-89	127 4-14-89

COMMENTS: SS-Surrogate standard reported as percent recover/

cop/ to:

ANALYST [signature] APPRO BY [signature]

COMPLETED BY: _____

CHECKED BY: _____

P22

[illegible]

Apr 3, 1989

[illegible]

[illegible]

[illegible]

CH2M Hill Laboratory
2318 Railroad Avenue, Redding, Ca 96001

Apr. 5, 1989

[illegible]

[illegible]

[illegible]

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Apr. 5, 1989

Page 1

REPORT TO: BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.FI.04
ATTENTION: WAYNE FRANKE
SAMPLE DESCRIPTION: WATER SITE 11
DATE OF SAMPLE: 04-04-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-8 [illegible]
Extraction method: EPA 3030

REFERENCE NUMBER: SP [illegible]
PAGE OF
DATE:
PHONE:
SAMPLED BY: CLIENT
DATE RECEIVED: 04-05-89

	DETECT LIMIT	METHOD BLANK	1.0 [illegible]			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene			<1			
Toluene			1			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	128			
		4-18-89	4-18-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST J.W. APPROVED BY [signature]

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

May 30, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE:06-19-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:SP 23325
PAGE OF
DATE:
PHONE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 15
DATE OF SAMPLE:
DATE EXTRACTED:
DATE ANALYZED :

SAMPLED BY: ELLIOT
DATE RECEIVED:05-30-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK	1.0550	2.0551	3.0552	4.0553
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-5-89	100% 6-5-89	105% 6-5-89	99% 6-6-89	103 6-6-89

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVED BY

COMPLETED BY MJ
CHECKED BY
P22

F-348

6/14

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

May 30, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE:06-19-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER:SP 23325
PAGE OF
DATE:

ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 15
DATE OF SAMPLE:
DATE EXTRACTED:
DATE ANALYZED:

PHONE:
SAMPLED BY: ELLIOT
DATE RECEIVED:05-30-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0550	2.0551	3.0352	4.0553
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene			<1	<1	<1	<1
Toluene			1	1	2	1
Chlorobenzene			<1	<1	<1	<1
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 6-5-89	95% 6-5-89	90% 6-5-89	89 6-6-89	96 6-6-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

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COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 1. 1989

LAWRY BEN BRAIN MB RICH
TRACY

DUE DATE:06-19-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER-SITE1
DATE OF SAMPLE:05-30-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER:SP 23357
PAGE OF
DATE:
PHONE:
SAMPLED BY: KROOK
DATE RECEIVED:05-31-89

Test Methods: EPA-601-8010 ( )mg/l (~~x~~ ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK	1.0556			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-13-89	94 6-13-89			

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVED BY W

COMPLETED BY
CHECKED BY RJ

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 1, 1989

LAWRY FRED RANDY BJ JIM
TRACY

DUE DATE;06-19-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-SITE1
DATE OF SAMPLE:05-30-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SP 23357
PAGE OF
DATE;
PHONE;
SAMPLED BY; KROOK
DATE RECEIVED;05-31-89

Test Methods; EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0556			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	95			

6-13-89 6-13-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST (J.W.) APPROVED BY (W)

COMPLETED BY
CHECKED BY (W)

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 1, 1989

LAWRY RICH MI BRAIN BEN
TRACY

DUE DATE;06-19-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-BACKGROUND
DATE OF SAMPLE;05-30-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;SP 23358
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;05-31-89

Test Methods: EPA-601-8010 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK	1.0555	2.0554		
Chloromethane	1	<1	<1	<1		
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5		
Trichlorofluoromethane	1	<1	<1	<1		
1,1-Dichloroethene	1					
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloroethane						
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100%	104%	104%		
		6-13-89	6-13-89	6-13-89		

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST J.W APPROVED BY

COMPLETED BY
CHECKED BY MJ

F-352

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 1, 1989

LAWRY RICH MB BRAIN BEN
TRACY

DUE DATE:06-19-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION;WATER-BACKGROUND
DATE OF SAMPLE:05-30-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;SP 23358
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY
DATE RECEIVED;05-31-89

Test Methods; EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0555	2.0554		
tert-Butyl Methyl Ether	1	<1	<1	<1		
Benzene			<1			
Toluene			<1			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS;	—	100% 6-13-89	81% 6-13-89	123 6-13-89		

;S- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY
CHECKED BY [signature]

TRACY

DUE DATE;

REPORT TO;BEALE AIR FORCE BASE

REFERENCE NUMBER; 23358
PAGE OF
DATE;
PHONE; 2nd Col Confirmation
SAMPLED BY;
DATE RECEIVED; on Bentone

ATTENTION:
SAMPLE DESCRIPTION;
DATE OF SAMPLE:
DATE EXTRACTED:
DATE ANALYZED:
Test Methods; EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	Blank	1.0555	~~2.0554~~ Pres		
tert-Butyl Methyl Ether						
Benzene		~~<1~~				
Toluene		<1	<1	~~<1~~		
Chlorobenzene						
Ethyl benzene				~~<1~~		
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS						

SS- Surrogate Standard reported as percent recovery

COMMENTS;

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ANALYST [signature] APPROVED BY

COMPLETED BY
CHECKED BY

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TRACY

DUE DATE;

REPORT TO;BEALE AIR FORCE BASE F-354 RENCE NUMBER;

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 1. 1989

BEN RICH MB BRIAN
TRACY

DUE DATE:06-20-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 1
DATE OF SAMPLE:05-31-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER:S 23372
PAGE OF
DATE:
PHONE:
SAMPLED BY: CLIENT
DATE RECEIVED:06-01-89

Test Methods: EPA-601-8010 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK	1.0557	2.0558	3.0559	4.0560
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene				66		
Chloroform				<1		
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene				19	3	
Dibromochloromethane				<1	<1	
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-13-89	108% 6-13-89	116% 6-13-89	126% 6-13-89	6-14-89

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVED BY

COMPLETED BY
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CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 1, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE;06-20-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 1
DATE OF SAMPLE;05-31-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;S 23372
PAGE OF
DATE;
PHONE;
SAMPLED BY; CLIENT
DATE RECEIVED;06-01-89

Test Methods; EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0557	2.0558	3.0559	4.0560
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene				<1		
Toluene				2		
Chlorobenzene				<1		
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	89%	86%	86%	
		6-13-89	6-13-89	6-13-89	6-13-89	6-13-89

14

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST (J.W.) APPROVED BY

COMPLETED BY_____
CHECKED BY_____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 2, 1989

LAWRY MB RICH BEN BRAIN
TRACY

DUE DATE:06-02-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 13
DATE OF SAMPLE:06-01-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;S 23375
PAGE OF
DATE;
PHONE;
SAMPLED BY; CLIENT
DATE RECEIVED;06-02-89

Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK	1.0561	2.0562	3.0563	4.0564
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene	1	1				
1,1-Dichloroethane						4
trans-1,2-Dichloroethene						<1
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene			37	8	11	69
Dibromochloromethane			<1	<1	<1	21
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						2
Bromoform			1			
1,1,2,2-Tetrachloroethan						
Tetrachloroethene			<1			<1
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	106% 6-14-89	92% 6-14-89	97% 6-14-89	109% 6-14-89	6-14-89

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST J.W APPROVED BY

F-357

COMPLETED BY MJ
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 2, 1989

LAWRY MB RICH BEN BRAIN
TRACY

DUE DATE:06-02-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 13
DATE OF SAMPLE:06-01-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 23375
PAGE OF
DATE:
PHONE:
SAMPLED BY: CLIENT
DATE RECEIVED:06-02-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0561	2.0562	3.0563	4.0564
tert-Butyl Methyl Ether	1	< 1	< 1	< 1	< 1	< 1
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 6-14-89	100% 6-14-89	100% 6-14-89	108% 6-14-89	98% 6-14-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JW APPROVED BY

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 5, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE:06-23-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;S 23397
PAGE OF
DATE;
PHONE;

ATTENTION:WAYNE FEARCE
SAMPLE DESCRIPTION:WATER SITE 13
DATE OF SAMPLE:06-02-89
DATE EXTRACTED:
DATE ANALYZED :

SAMPLED BY; CLIENT
DATE RECEIVED;06-05-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK	1.0568	2.0570	3.0567	4.0569
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane	1					
Dichlorodifluromethane	1					
Vinyl Chloride	1					
Chloroethane	1					
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene	1					
1,1-Dichloroethane	1					
trans-1,2-Dichloroethene	1		80	94		
Chloroform	1		1	1	3	3
1,2-Dichloroethane	1		<1	<1	<1	<1
1,1,1-Trichloroethane	1					
Carbon Tetrachloride	1					
Bromodichloromethane	1					
1,2-Dichloropropane	1					
cis-1,3-Dichloropropene	1					
Trichloroethene	1		880	1000		
Dibromochloromethane	1		21	21		
1,1,2-Trichloroethane	1					
trans-1,3-Dicholoropropene	1					
Bromoform	1		<1	<1		
1,1,2,2-Tetrachloroethan	1		16	16		
Tetrachloroethene	1					
Chlorobenzene	1		<1	<1		
1,3-Dichlorobenzene	1					
1,2-Dichlorobenzene	1					
1,4-Dichlorobenzene	1					
Bromochloromethane SS	—	100% 6-15-89	101% 6-15-89	102% 6-15-89	100% 6-15-89	108% 6-15-89

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST_____ APPROVED BY_____

COMPLETED BY MJ
CHECKED BY_____
PEER

F-359

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 5, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE:06-23-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 13
DATE OF SAMPLE:06-02-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER;S 23397
PAGE OF
DATE;
PHONE;
SAMPLED BY; CLIENT
DATE RECEIVED;06-05-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0568	2.0570	3.0567	4.0569
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene		<1	<1	<1	<1	<1
Toluene			20	4	2	2
Chlorobenzene			<1	<1	<1	<1
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	99%	101%	103%	102%
		6-15-89	6-15-89	6-15-89	6-15-89	6-15-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

F-360

LAWRY FRED RANDY BJ JIM

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 5, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE:06-23-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-02-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER:S 23398
PAGE OF
DATE;
PHONE;
SAMPLED BY; CLIENT
DATE RECEIVED;06-05-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK	1.TBLANK	2.0571		
Chloromethane	1	<1	<1	<1		
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5		
Trichlorofluoromethane	1	<1	5	<1		
1,1-Dichloroethene			4			
1,1-Dichloroethane			5			
trans-1,2-Dichloroethene			<1			
Chloroform			1			
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene			<1			
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-14-89	131% 6-14-89	99% 6-14-89		

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 5, 1989

TRACY

DUE DATE:06-23-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-02-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 23398
PAGE OF
DATE:
PHONE:
SAMPLED BY: CLIENT
DATE RECEIVED:06-05-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.TBLANK	2.0571		
tert-Butyl Methyl Ether	1	<1	<1	<1		
Benzene				<1		
Toluene				3		
Chlorobenzene				<1		
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	122%	83 119		
		6-14-89	6-14-89	6-14-89		

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST [signature] APPROVED BY_____

COMPLETED BY [signature]
CHECKED BY [signature]

BEN RICH MB BRIAN
TRACY

F-362

DATE:06-23-89

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 6, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE:06-23-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 1
DATE OF SAMPLE:06-05-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER;S 23417
PAGE OF
DATE:
PHONE:
SAMPLED BY: JONES
DATE RECEIVED:06-06-89

Test Methods: EPA-601-8010 ( )mg/l (✓ ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK	1.0576			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene			<1			
1,1-Dichloroethane			8 <1			
trans-1,2-Dichloroethene			8			
Chloroform			<1			
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene			4			
Dibromochloromethane			<1			
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100%	90%			

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST _____ APPROVED BY _____

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 6, 1989

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 1
DATE OF SAMPLE:06-05-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 23417
PAGE OF
DATE:
PHONE:
SAMPLED BY: JONES
DATE RECEIVED:06-06-89

Test Methods: EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0576			
tert-Butyl Methyl Ether	<1	<1	<1			
Benzene			<1			
Toluene			2	<1 *		
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	102%	90%			

* Second column confirmation by GC/MS

6/16/89 (Jw)

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST (Jw) APPROVED BY

COMPLETED BY
CHECKED BY

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 6, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE;06-23-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04

REFERENCE NUMBER;S 23418
PAGE OF
DATE;
PHONE;

ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 2
DATE OF SAMPLE;06-05-89
DATE EXTRACTED;
DATE ANALYZED :

SAMPLED BY; KROOK
DATE RECEIVED;06-06-89

Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK	1.0572	2.0573	3.0574	4.0575
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene	1					
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform					3	3
1,2-Dichloroethane					<1	<1
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-19-89	102% 6-19-89	104% 6-19-89	125% 6-19-89	118% 6-19-89

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST JW APPROVED BY lw

COMPLETED BY
CHECKED BY
P22

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 6, 1989

TRACY

DUE DATE;06-23-89

REPORT TO;BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION;WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 2
DATE OF SAMPLE;06-05-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods; EPA-602-8020
Extraction method; EPA 5030

REFERENCE NUMBER;S 23418
PAGE OF
DATE;
PHONE;
SAMPLED BY; KROOK
DATE RECEIVED;06-06-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	DETECT LIMIT	METHOD BLANK	1.0572	2.0573	3.0574	4.0575
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene						<1
Toluene						6
Chlorobenzene						<1
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	102%	103%	105%	110%
		6-19-89	6-19-89	6-19-89	6-19-89	6-19-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST (T.W.) APPROVED BY

COMPLETED BY
CHECKED BY

BEN RICH MB BRIAN
TRACY

T-366 ; DATE;06-23-89

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 95001

Jun. 8, 1989

Page 4

BEN RICH MR BRIAN
TRACY

DUE DATE:06-27-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAI 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 16
DATE OF SAMPLE:06-07-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER;S 23442
PAGE OF
DATE:
PHONE;
SAMPLED BY: CORLEY
DATE RECEIVED;06-08-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK	1.ACC 0577	2.0577		
Chloromethane	1	<1	<1	<1		
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5		
Trichlorofluoromethane	1	<1	<1	<1		
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-21-89	98% 6-21-89	101% 6-21-89		

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY
[illegible]

CH2M Hill Laboratory
2018 Railroad Avenue, Redding, CA 96001

Jun. 9, 1989

TEAT:

DUE DATE:06-27-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 16
DATE OF SAMPLE:06-07-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 22442
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-08-89

Test Methods: EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.ACC 0577	2.0577		
tert-Butyl Methyl Ether	1	<1	<1	<1		
Benzene						
Toluene						
Chlorobenzene						
Etnyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS:	—	100% 6-21-89	95% 6-21-89	96% 6-21-89		

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY_____
CHECKED BY_____

[illegible] Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun 8, 1989

BEN [illegible] MR BRIAN
TRACY

DUE DATE:06-27-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 19
DATE OF SAMPLE:06-07-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010
Extraction method: EPA 5030

REFERENCE NUMBER:s 23443
PAGE OF
DATE;
PHONE;
SAMPLED BY: corley
DATE RECEIVED;06-08-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	detect LIMIT	METHOD BLANK	1.ACC TB 0578	2.0578	3.0579	
Chloromethane	1	<1	<1	<1	<1	
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	
Trichlorofluoromethane	1	<1	<1	<1	<1	
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene					3	
Dibromochloromethane					<1	
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-21-89	114% 6-21-89	102% 6-21-89	111% 6-21-89	

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST J.W. APPROVED BY [signature]

COMPLETED BY _____
CHECKED BY _____

CHDM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 8, 1989

BEN RICH MB BRIAN
TRAC:

DUE DATE:06-27-89

REPORT TO:BEALE AIR FORCE BASE
CHDM HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 19
DATE OF SAMPLE:06-07-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:s 2344D
PAGE OF
DATE:
PHONE:
SAMPLED BY; corley
DATE RECEIVED;06-08-89

Test Methods: EPA-602-8020 ( )mg/l (✓ ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.ACC 0578	2.0578	3.0579	
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	
Benzene	↓	↓	↓	<1	<1	
Toluene				8	2	
Chlorobenzene				<1	<1	
Ethyl benzene				↓	↓	
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene	↓	↓	↓	↓	↓	
Trifluorotoluene SS	—	100% 6-21-89	102% 6-21-89	94 100% 6-21-89	99% 6-21-89	

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST JW APPROVED BY

COMPLETED BY_____
CHECKED BY_____

Typed by: Jo Lowry

CHEM Hill Laboratory
2219 Railroad Avenue, Redding, CA 96001

Jun. 9, 1989

BEN RICH
TRACY

DUE DATE:06-28-89

REPORT TO:BEALE AIR FORCE BASE
CHEM HILL/SAC
SAC 24389.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 19
DATE OF SAMPLE:06-08-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER:S 2345
PAGE OF
DATE:
PHONE:
SAMPLED BY; KROOK
DATE RECEIVED:06-09-89

Test Methods; EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method; EPA 5030

	detect LIMIT	METHOD BLANK	1.0580	2.0581	3.0582	4.0583
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane	1	1	1	1	1	1
Dichlorodifluromethane	1	1	1	1	1	1
Vinyl Chloride	1	1	1	1	1	1
Chloroethane	1	1	1	1	1	1
Methylene chloride	5	<5	<5	<5	13	10
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene	1	1	1	1	1	1
1,1-Dichloroethane	1	1	1	1	1	1
trans-1,2-Dichloroethene	1	1	1	1	1	1
Chloroform	1	1	1	1	3	3
1,2-Dichloroethane	1	1	1	1	<1	<1
1,1,1-Trichloroethane	1	1	1	1	1	1
Carbon Tetrachloride	1	1	1	1	1	1
Bromodichloromethane	1	1	1	1	1	1
1,2-Dichloropropane	1	1	1	1	1	1
cis-1,3-Dichloropropene	1	1	1	1	1	1
Trichloroethene	1	1	1	1	1	1
Dibromochloromethane	1	1	1	1	1	1
1,1,2-Trichloroethane	1	1	1	1	1	1
trans-1,3-Dicholoropropene	1	1	1	1	1	1
Bromoform	1	1	1	1	1	1
1,1,2,2-Tetrachloroethan	1	1	1	1	1	1
Tetrachloroethene	1	1	1	1	1	1
Chlorobenzene	1	1	1	1	1	1
1,3-Dichlorobenzene	1	1	1	1	1	1
1,2-Dichlorobenzene	1	1	1	1	1	1
1,4-Dichlorobenzene	1	1	1	1	1	1
Bromochloromethane SS	—	100% 6-21-89	107% 6-21-89	108% 6-21-89	98% 6-21-89	97% 6-2-89

COMMENTS;SS-Surrogate standard reported as percent recovery
copy to;

ANALYST (FW) APPROVED BY

COMPLETED BY
CHECKED BY

F-371

[illegible]
[illegible] Avenue [illegible]

Jun. 9, 1989

Page 2

BEN RICH ~~MS~~ ~~[illegible]~~AN
TRACY

DUE DATE:06-28-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 19
DATE OF SAMPLE:06-08-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 23454
PAGE OF
DATE:
PHONE:
SAMPLED BY: KROOK
DATE RECEIVED:06-09-89

Test Methods: EPA-602-8020 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0580	2.0581	3.0582	4.0583
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene				<1	<1	<1
Toluene				4	7	8
Chlorobenzene				<1	<1	<1
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	100%	88%	113%	117%
		6-21-89	6-21-89	6-21-89	6-21-89	6-21-89

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST JW APPROVED BY W

COMPLETED BY _____
CHECKED BY _____

[illegible] 2M Hill Area Study
2118 Fairfield Avenue, Redding, CA [illegible]

[illegible] Dec 1989

[illegible] R/C- MF BAINN
Tm-Cr

DUE DATE: De-30-89

REPORT TO: REALE AIR FORCE PASE
CHICO HILL-SAC
SAC 04059.RI.04
ATTENTION: WAYNE PEARCE
SAMPLE DESCRIPTION: WATER SITE 6
DATE OF SAMPLE: De-06-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010 ( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER: S 03402
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED: De-12-89

	detect LIMIT	METHOD BLANK	1.0585			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	6			
Trichlorofluoromethane	1	<1	[illegible] 1			
1,1-Dichloroethene			<1			
1,1-Dichloroethane						
rans-1,2-Dichloroethene						
Chloroform			<1			
1,2-Dichloroethane			<1			
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-23-89	93% 6-23-89			

COMMENTS: SS-Surrogate standard reported as percent recovery
copy to:

[illegible] APPROVED BY [illegible]

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 12, 1989

Page 5

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24259.R1.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 6
DATE OF SAMPLE:06-09-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER:S 23468
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-12-89

	DETECT LIMIT	METHOD BLANK	1.0585			
tert-butyl methyl Ether	1	<1	<1			
Benzene			<1			
Toluene			1			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 6-23-89	94% 6-23-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST JW APPROVED BY [signature]

COMPLETED BY _____
CHECKED BY _____

BEN RICH MB BRIAN
TRACY

DATE:06-20-89

F-374

REPORT TO:BEALE AIR FORCE BASE REFERENCE NUMBER:S 23468

CH2M Hill Laboratory
[illegible] Avenue, Redding, CA [illegible]

Jun. 12 [illegible]

Page [illegible]

BEN [illegible]
TRAC

DUE DATE:06-[illegible]-89

REPORT TO:[illegible] FORCE BASE
CH2M [illegible]
SAT [illegible]
ATTENTION:[illegible]
SAMPLE DESCRIPTION:WATER SITE [illegible]
DATE OF SAMPLE:[illegible]
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER:S 23469
PAGE OF
DATE:
PHONE:
SAMPLED BY: KROOK
DATE RECEIVED:06-12-89

Test Methods: EPA [illegible] ( ) mg/l (✓) ug/l ( ) mg/kg ( ) ug/kg
Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK	1.0586			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	9			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,[illegible] chloropropene						
Trichloroethene			3			
Dibromochloromethane			<1			
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethane						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-23-89	92% 6-23-89			

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST [signature] APPROVED BY [signature]

F-375

[illegible]

CHEM Hill Laboratory
2219 Railroad Avenue, Redding, CA 96001

Jun. 12, 1989

Page -

REPORT TO:TRAVIS AIR FORCE BASE
CHEM HILL/SAC
SAC 24CEP.FI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 1
DATE OF SAMPLE:06-09-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 2346
PAGE OF
DATE:
PHONE;
SAMPLED BY; KROOK
DATE RECEIVED:06-12-89

Test Method: EPA-SW-8020 ( ) ug/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0586			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 6-23-89	90% 6-23-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST J.W. APPROVED BY m

COMPLETED BY_____
CHECKED BY_____

LAB: FRED WANG & JIM
TEST

F-376

DATE:06-23-89

[illegible]

[illegible]

[illegible]

Page 3

REF [illegible]
TRA[illegible]

DUE DATE:06-3[illegible]-89

REPORT TO:BEALE AIR FORCE BASE
CHOW HILL/SAC
SAC 24359.R1.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-09-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010
Extraction Method: EPA 5030

REFERENCE NUMBER:S 23470
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-12-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	detect LIMIT	METHOD BLANK	1.0587			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	6			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	~~80%~~ JW 100% 6-23-89	80% 6-23-89			

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to;

ANALYST JW APPROVED BY [illegible]

COMPLETED BY _____
CHECKED BY _____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding CA 96001

[illegible]

Page 2

TRACK: DUE DATE:06-30-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-09-89
DATE EXTRACTED:
DATE ANALYZED:
Test Methods: EPA-602-8020
Extraction method: EPA 5030

REFERENCE NUMBER:S 23470
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-12-89

( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg

	DETECT LIMIT	METHOD BLANK	1.0567			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 6-23-89	80% 6-23-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY
CHECKED BY

PENNFISH MR BRIAN
TRACK

F-378

DATE:06-30-89

CHEM-TECH Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 13, 1989

BEN PICK MR BRIAN
TRACY

DUE DATE:06-30-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.R1.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-12-89
DATE EXTRACTED;
DATE ANALYZED :

REFERENCE NUMBER;S 23480
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED;06-13-89

Test Methods: EPA-501-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK	1.0588			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-24-89	112% 6-24-89			

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to;

ANALYST JW APPROVED BY MW

COMPLETED BY_____
CHECKED BY_____

CHOM Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 13, 1989

BEN FICK NB BRIAN
/RACY

DUE DATE:06-30-89

REPORT TO:BEALE AIR FORCE BASE
CHOM HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-12-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 23483
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-13-89

Test Methods: EPA-602-8020 ( )mg/l (✓ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0588			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene			<1			
Toluene			3			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 6-24-89	103% 6-24-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST JW APPROVED BY mc

COMPLETED BY_____
CHECKED BY_____

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 13, 1989

Page 1

SEN RICH MI [illegible]
TRAC:

DUE DATE:06-30-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 13
DATE OF SAMPLE:06-12-89
DATE EXTRACTED:
DATE ANALYZED :

REFERENCE NUMBER:S 23485
PAGE OF
DATE:
PHONE: -
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:06-13-89

Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	detect LIMIT	METHOD BLANK	1.0590	2.0591	3.0592	4.0593
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	130	170
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-24-89	114% 6-24-89	117% 6-24-89	108% 6-24-89	103% 6-24-89

COMMENTS:SS-Surr date standard reported as percent recovery
copy to:

ANALYST J.W APPROVED BY [signature]

[illegible]

F-381

CH2M Hill Laboratory
2219 Railroad Avenue, Redding, CA 96001

Jun. 13, 1989

BEN FICr MS BRIAN
TRAIN

DUE DATE:06-30-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24039.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 13
DATE OF SAMPLE:06-12-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 23485
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:06-13-89

Test Methods: EPA-602-8020 ( )mg/l (✓ ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0590	2.0591	3.0592	4.0593
tert-Butyl Methyl Etner	1	<1	<1	<1	<1	<1
Benzene			<1			
Toluene			1			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS.	—	100% 6-24-89	106% 6-24-89	114% 6-24-89	90 6-24-89	122% 6-24-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST JTW APPROVED BY

COMPLETED BY
SIGNED

F-382

[illegible] Page [illegible]

[illegible] File #: [illegible]
TPH:

DUE DATE: 06-30-89

[illegible] PLEASE [illegible] FOR DE 6-88
CHEM HILL ENG
SAC [illegible]
ATTENTION: WAYNE PEARCE
SAMPLE DESCRIPTION: WATER SITE X
DATE OF SAMPLE: 06-12-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER: E [illegible]
PAGE 0F
DATE:
PHONE:
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED: 06-13-89

Test Methods: EPA-601-8010 ( ) mg/l (✓) ug/l ( ) mg/kg ( ) ug/kg
Extraction method: EPA 5030

	METHOD Detect LIMIT	BLANK	1.0589	2. TBlank		
Chloromethane	1	<1	<1	<1		
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5		
Trichlorofluoromethane	1	<1	<1	1		
1,1-Dichloroethene				<1		
1,1-Dichloroethene						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dichloropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-24-89	105% 6-24-89	103% 6-24-89		

COMMENTS: SS-Surrogate standard reported as percent recovery
copy to:

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY: _____
CHECKED BY: _____

F-383

CH2M Hill Laboratory
2510 Railroad Avenue, Redding, CA 96001

Jun 13, 1989

TPLC

DUE DATE:06-20-89

REPORT TO:BLAZE AIR FORCE BASE
CH2M HILL/SAC
SAC 24795.R1.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-12-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:6 20486
PAGE OF
DATE:
PHONE:
SAMPLED BY: CHRIS CORLEY
DATE RECEIVED:06-13-89

Test Methods: EPA-8020 ( )mg/l (✓ug/l ( ) mg/kg ( )ug/kg
Extraction Method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0589	2.TBLANK		
tert-Butyl Methyl Ether	1	<1	<1	<1		
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS.	—	100% 6-24-89	123% 6-24-89	86% 6-24-89		

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST (JW) APPROVED BY

COMPLETED BY:
CHECKED BY:

F-384

[illegible]
[illegible] Avenue, Redding, CA [illegible]

[illegible]

Page 2

[illegible]

DUE DATE:07-[illegible]-89

REPORT TO [illegible] AIR FORCE BASE
[illegible]
[illegible]
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 19
DATE OF SAMPLE:06-13-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

REFERENCE NUMBER:[illegible]
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-14-89

	detect LIMIT	METHOD BLANK	1.0595	2.0596	3.0597	4.0598
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene					<1	
1,1-Dichloroethane					<1	
trans-1,2-Dichloroethene					<1	
Chloroform					4	3
1,2-Dichloroethane					<1	<1
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-26-89	102% 6-26-89	105% 6-26-89	110% 6-26-89	111% 6-26-89

COMMENTS:SS-surrogate standard reported as percent recovery
Fragrant Sample!
copy to:

ANALYST _____ APPROVED BY [signature]

COMPLETED BY _____
CHECKED BY _____
[illegible]

F-385

[illegible] Hill Laboratory
[illegible] Railroad Avenue, Redding CA 96001

Jun. 14, 1989

Page 2

MD [illegible] BEN LAWRY
TRACY

DUE DATE:07-03-89

REPORT TO:BEALE AIR FORCE BASE
[illegible] HILL/SAC
SAC 24[illegible].[illegible].04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 19
DATE OF SAMPLE:06-13-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 23500
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED;06-14-89

Test Methods: EPA-602-8020 ( )mg/l (✓) ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0595	2.0596	3.0597	4.0598
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene			<1	<1		<1
Toluene			1	2		1
Chlorobenzene			<1	<1		<1
Ethyl benzene			2	2		
Total Xylenes			5	5		
1,3-Dichlorobenzene			<1	<1		
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100%	82%	92%	105%	105%
		6-26-89	6-26-89	6-26-89	6-26-89	6-26-89

Fragrant Sample

SS- Surrogate Standard reported as percent recovery

COMMENTS:

copy to:

ANALYST J.W. APPROVED BY [illegible]

COMPLETED BY _____
CHECKED BY _____

[illegible]

CHEM Hill Laboratory
2210 Railroad Avenue, Redding, CA 96001

Jun. 14, 1989

BEALE AIR FORCE BASE
TRAK:

DUE DATE:07-03-89

REPORT TO:BEALE AIR FORCE BASE
CHEM HILL/EAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-13-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010
Extraction method: EPA 5030

REFERENCE NUMBER:S 23501
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-14-89

( )mg/l (✓)ug/l ( ) mg/kg ( )ug/kg

	METHOD detect LIMIT	BLANK	1.0594			
Chloromethane	1	<1	<1			
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5			
Trichlorofluoromethane	1	<1	<1			
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-26-89	117% 6-26-89			

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to:

ANALYST JW APPROVED BY W

COMPLETED BY TMJ
CHECKED BY

F-387

CHOM Hill Laboratory
2010 Railroad Avenue, Redding, CA 96001

Jun. 14, 1989

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24039.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 2
DATE OF SAMPLE:06-13-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 20501
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-14-89

Test Methods; EPA-602-8020 ( )mg/l (~~✓~~ ug/l ( ) mg/kg ( )ug/kg
Extraction method: EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0594			
tert-Butyl Methyl Ether	1	<1	<1			
Benzene			<1			
Toluene			38			
Chlorobenzene			<1			
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 6-26-89	97% 6-26-89			

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST [signature] APPROVED BY [signature]

COMPLETED BY [signature]
CHECKED BY [signature]

CH2M Hill Laboratory
2318 Railroad Avenue, Redding, CA 96001

Jun. 15, 1989

BEN RICH MB BRIAN
TRAC/

REPORT TO:SEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION;WATER SITE 1
DATE OF SAMPLE;06-14-89
DATE EXTRACTED:
DATE ANALYZED :
Test Methods: EPA-601-8010
Extraction method: EPA 5030

DUE DATE;07-03-89

REFERENCE NUMBER;S 23521
PAGE OF
DATE;
PHONE;
SAMPLED BY; CORLEY -
DATE RECEIVED;06-15-89

( )mg/l (~~u~~ ug/l ( ) mg/kg ( )ug/kg

	METHOD detect LIMIT	BLANK	1.0599	2.0600	3.0601	4.0602
Chloromethane	1	<1	<1	<1	<1	<1
Bromomethane						
Dichlorodifluoromethane						
Vinyl Chloride						
Chloroethane						
Methylene chloride	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	1	<1	<1	<1	<1	<1
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloromethane						
1,2-Dichloropropane						
cis-1,3-Dichloropropene						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
trans-1,3-Dicholoropropene						
Bromoform						
1,1,2,2-Tetrachloroethan						
Tetrachloroethene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Bromochloromethane SS	—	100% 6-26-89	104% 6-26-89	103% 6-26-89	94% 6-26-89	100% 6-26-89

COMMENTS:SS-Surrogate standard reported as percent recovery
copy to;

ANALYST J.W. APPROVED BY W

COMPILED BY
CHECKED BY

F-389

CH2M Hill Laboratory
2218 Railroad Avenue, Redding, CA 96001

Jun. 15, 1989

BEN RICH MB BRIAN
TRACY

DUE DATE:07-03-89

REPORT TO:BEALE AIR FORCE BASE
CH2M HILL/SAC
SAC 24359.RI.04
ATTENTION:WAYNE PEARCE
SAMPLE DESCRIPTION:WATER SITE 1
DATE OF SAMPLE:06-14-89
DATE EXTRACTED:
DATE ANALYZED:

REFERENCE NUMBER:S 23521
PAGE OF
DATE:
PHONE:
SAMPLED BY: CORLEY
DATE RECEIVED:06-15-89

Test Methods; EPA-602-8020 ( )mg/l (✓)ug/l ( )mg/kg ( )ug/kg
Extraction method; EPA 5030

	DETECT LIMIT	METHOD BLANK	1.0599	2.0600	3.0601	4.0602
tert-Butyl Methyl Ether	1	<1	<1	<1	<1	<1
Benzene						
Toluene						
Chlorobenzene						
Ethyl benzene						
Total Xylenes						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						
Trifluorotoluene SS	—	100% 6-26-89	105% 6-26-89	105% 6-26-89	109% 6-26-89	93% 6-26-89

SS- Surrogate Standard reported as percent recovery

COMMENTS;

copy to;

ANALYST VJ APPROVED BY W

COMPLETED BY:_____
CHECKED BY:_____

F-390

CH2M HILL Engineers Economists Scientists

METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale AFB
Client Sample ID: 0603

Reference No: 24158-1

Sample Matrix: Water

Date Sampled: 8-25-1989
Date Received: 8-28-1989
Date Analyzed: 9-6-1989

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	92

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Lamont J. Tyson

Engineers
Planners
Economists
Scientists

METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale AFB
Client Sample ID: 0603

Sample Matrix: Water

Reference No: 24158-1

Date Sampled: 8-25-1989
Date Received: 8-28-1989
Date Analyzed: 9-6-1989

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	<1	<1
Benzene	1	<1	<1
Toluene	1	<1	<1
Chlorobenzene	1	<1	<1
Ethyl benzene	1	<1	<1
Total Xylenes	1	<1	<1
1,3-Dichlorobenzene	1	<1	<1
1,2-Dichlorobenzene	1	<1	<1
1,4-Dichlorobenzene	1	<1	<1
Surrogate (SS)		100	106

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Bennett J Tyson

Engineers
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METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale AFB
Client Sample ID: 0606

Reference No: 24185-1

Sample Matrix: Water

Date Sampled: 8-28-1989
Date Received: 8-30-1989
Date Analyzed: 9-6-1989

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	91

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Bennett J Tyson

000001

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METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale AFB
Client Sample ID: 0606

Sample matrix: water

Reference No: 24185-1

Date Sampled: 8-28-1989
Date Received: 8-30-1989
Date Analyzed: 9-6-1989

Compounds	Detection Limit	Method Blank	Sample Result	Second Column Confirmation
tert-butyl methyl ether	1	<1	<1	
Benzene	1	<1	<1	
Toluene	1	<1	1	2
Chlorobenzene	1	<1	<1	
Ethyl benzene	1	<1	<1	
Total Xylenes	1	<1	<1	
1,3-Dichlorobenzene	1	<1	<1	
1,2-Dichlorobenzene	1	<1	<1	
1,4-Dichlorobenzene	1	<1	<1	
Surrogate (SS)		100	113	

Results reported as ug/L

Comments: Second column confirmation from Carbowax Megabore Column.
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Greg Jones

000005

CH2M HILL Redding Environmental Laboratory, 5090 F-394 Road, Redding, California 96003 916.244 5227

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METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale AFB
Client Sample ID: 0614

Reference No: 24191-1

Sample Matrix: Water

Date Sampled: 8-30-1989
Date Received: 8-31-1989
Date Analyzed: 9-7-1989

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	105

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Samuel J. Tyson

000043

Engineers
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Scientists

METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale AFB
Client Sample ID: 0614

Sample matrix: water

Reference No: 24191-1

Date Sampled: 8-30-1989
Date Received: 8-31-1989
Date Analyzed: 9-7-1989

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	<1	<1
Benzene	1	<1	<1
Toluene	1	<1	<1
Chlorobenzene	1	<1	<1
Ethyl benzene	1	<1	<1
Total Xylenes	1	<1	<1
1,3-Dichlorobenzene	1	<1	<1
1,2-Dichlorobenzene	1	<1	<1
1,4-Dichlorobenzene	1	<1	<1
Surrogate (SS)		100	78

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Bennett J. Tyson

000044

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METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale AFB
Client Sample ID: Travel blank

Reference No: 24202-1

Sample Matrix: Water

Date Sampled: 8-31-1989
Date Received: 9-1-1989
Date Analyzed: 9-8-1989

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	107

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Bennett J Tyson

000004

CH2M Hill Redding Environmental Laboratory, 50 Road, Redding, California 96003 916 244 5227

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METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale AFB
Client Sample ID: Travel blank

Sample matrix: water

Reference No: 24202-1

Date Sampled: 8-31-1989
Date Received: 9-1-1989
Date Analyzed: 9-8-1989

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	<1	<1
Benzene	1	<1	<1
Toluene	1	<1	<1
Chlorobenzene	1	<1	<1
Ethyl benzene	1	<1	<1
Total Xylenes	1	<1	<1
1,3-Dichlorobenzene	1	<1	<1
1,2-Dichlorobenzene	1	<1	<1
1,4-Dichlorobenzene	1	<1	<1
Surrogate (SS)		100	111

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Bennett J Tyson

000005

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METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale AFB
Client Sample ID: 0628 ~~0628~~

Reference No: 24246-2

Sample Matrix: Water

Date Sampled: 9-7-1989
Date Received: 9-8-1989
Date Analyzed: 9-9-1989

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	112

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Bennett J Tyson

CH2M HILL Engineers Planners Economists Scientists

METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale AFB
Client Sample ID: ~~0628~~ 629

Sample matrix: water

Reference No: 24246-2

Date Sampled: 9-7-1989
Date Received: 9-8-1989
Date Analyzed: 9-9-1989

Compounds	Detection Limit	Method Blank	Sample Result	Second Column Confirmation
tert-butyl methyl ether	1	<1	<1	
Benzene	1	<1	<1	
Toluene	1	<1	1	<1
Chlorobenzene	1	<1	<1	
Ethyl benzene	1	<1	<1	
Total Xylenes	1	<1	<1	
1,3-Dichlorobenzene	1	<1	<1	
1,2-Dichlorobenzene	1	<1	<1	
1,4-Dichlorobenzene	1	<1	<1	
Surrogate (SS)		100	104	

Results reported as ug/L

Comments: Second column confirmation from Carbowax megabore column.
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Gary Jonkers

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METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale AFB
Client Sample ID: Travel blank

Reference No: 24242-1

Sample Matrix: Water

Date Sampled: 9-6-1989
Date Received: 9-7-1989
Date Analyzed: 9-8-1989

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	99

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Samuel J Tyson

Engineers
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METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale AFB
Client Sample ID: Travel blank

Sample matrix: water

Reference No: 24242-1

Date Sampled: 9-6-1989
Date Received: 9-7-1989
Date Analyzed: 9-8-1989

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	<1	<1
Benzene	1	<1	<1
Toluene	1	<1	<1
Chlorobenzene	1	<1	<1
Ethyl benzene	1	<1	<1
Total Xylenes	1	<1	<1
1,3-Dichlorobenzene	1	<1	<1
1,2-Dichlorobenzene	1	<1	<1
1,4-Dichlorobenzene	1	<1	<1
Surrogate (SS)		100	87

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Bennett J Tyson

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METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale AFB
Client Sample ID: BAFB0631

Reference No: 24265-1

Sample Matrix: Water

Date Sampled: 9-8-1989
Date Received: 9-11-1989
Date Analyzed: 9-19-1989

Compounds	Detection Limit	Method Blank	Sample Result	Second Column Confirmation
Chloromethane	1	< 1	< 1	
Bromomethane	1	< 1	< 1	
Dichlorodifluoromethane	1	< 1	< 1	
Vinyl chloride	1	< 1	< 1	
Chloroethane	1	< 1	< 1	
Methylene chloride	5	< 5	< 5	
Trichlorofluoromethane	1	< 1	< 1	
1,1-Dichloroethene	1	< 1	< 1	
1,1-Dichloroethane	1	< 1	< 1	
trans-1,2-Dichloroethene	1	< 1	< 1	
Chloroform	1	< 1	< 1	
1,2-Dichloroethane	1	< 1	< 1	
1,1,1-Trichloroethane	1	< 1	< 1	
Carbon tetrachloride	1	< 1	< 1	
Bromodichloromethane	1	< 1	< 1	
1,2-Dichloropropane	1	< 1	< 1	
cis-1,3-Dichloropropene	1	< 1	< 1	
Trichloroethene	1	< 1	3	3
Dibromochloromethane	1	< 1	< 1	
1,1,2-Trichloroethane	1	< 1	< 1	
trans-1,3-Dichloropropene	1	< 1	< 1	
Bromoform	1	< 1	< 1	
1,1,2,2-Tetrachloroethane	1	< 1	< 1	
Tetrachloroethene	1	< 1	< 1	
Chlorobenzene	1	< 1	< 1	
1,3-Dichlorobenzene	1	< 1	< 1	
1,2-Dichlorobenzene	1	< 1	< 1	
1,4-Dichlorobenzene	1	< 1	< 1	
Surrogate (SS)		100	109	

Results reported as ug/L

Comments: Second column confirmation by VOCOL megabore.
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Greg Joseph

Engineers
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Scientists

METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale AFB
Client Sample ID: BAFB0631

Sample Matrix: Water

Reference No: 24265-1

Date Sampled: 9-8-1989
Date Received: 9-11-1989
Date Analyzed: 9-19-1989

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	<1	<1
Benzene	1	<1	<1
Toluene	1	<1	<1
Chlorobenzene	1	<1	<1
Ethyl benzene	1	<1	<1
Total Xylenes	1	<1	<1
1,3-Dichlorobenzene	1	<1	<1
1,2-Dichlorobenzene	1	<1	<1
1,4-Dichlorobenzene	1	<1	<1
Surrogate (SS)		100	94

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Greg Jones

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METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale AFB
Client Sample ID: Travel blank

Reference No: 24272-1

Sample Matrix: Water

Date Sampled: 9-11-1989
Date Received: 9-12-1989
Date Analyzed: 9-20-1989

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	98

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Gary Jones

000022

Engineers
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Scientists

METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale AFB
Client Sample ID: Travel blank

Sample Matrix: Water

Reference No: 24272-1

Date Sampled: 9-11-1989
Date Received: 9-12-1989
Date Analyzed: 9-20-1989

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	<1	<1
Benzene	1	<1	<1
Toluene	1	<1	<1
Chlorobenzene	1	<1	<1
Ethyl benzene	1	<1	<1
Total Xylenes	1	<1	<1
1,3-Dichlorobenzene	1	<1	<1
1,2-Dichlorobenzene	1	<1	<1
1,4-Dichlorobenzene	1	<1	<1
Surrogate (SS)		100	96

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Gary Jonker

000023

Engineers
Planners
Economists
Scientists

METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale Air Force Base
Client Sample ID: BAFB0636

Reference No: 24304-1

Sample Matrix: Water

Date Sampled: 9-12-89
Date Received: 9-13-89
Date Analyzed: 9-25-89

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		113	117

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Greg Franklin

Engineers
Planners
Economists
Scientists

METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale Air Force Base
Client Sample ID: BAFB0636

Sample Matrix: Water

Reference No: 24304-1

Date Sampled: 9-12-89
Date Received: 9-13-89
Date Analyzed: 9-25-89

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	< 1	< 1
Benzene	1	< 1	< 1
Toluene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
Ethyl benzene	1	< 1	< 1
Total Xylenes	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	105

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Gray Jonlh

Engineers
Planners
Economists
Scientists

METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale Air Force Base
Client Sample ID: BAFB0642

Reference No: 24331-1

Sample Matrix: Water

Date Sampled: 9-14-89
Date Received: 9-15-89
Date Analyzed: 9-25-89

Compounds	Detection Limit	Method Blank	Sample Result	Second Column Confirm.
Chloromethane	1	< 1	< 1	
Bromomethane	1	< 1	< 1	
Dichlorodifluoromethane	1	< 1	< 1	
Vinyl chloride	1	< 1	< 1	
Chloroethane	1	< 1	< 1	
Methylene chloride	5	< 5	< 5	
Trichlorofluoromethane	1	< 1	< 1	
1,1-Dichloroethene	1	< 1	< 1	
1,1-Dichloroethane	1	< 1	< 1	
trans-1,2-Dichloroethene	1	< 1	5	<1
Chloroform	1	< 1	<.1	
1,2-Dichloroethane	1	< 1	< 1	
1,1,1-Trichloroethane	1	< 1	< 1	
Carbon tetrachloride	1	< 1	< 1	
Bromodichloromethane	1	< 1	< 1	
1,2-Dichloropropane	1	< 1	< 1	
cis-1,3-Dichloropropene	1	< 1	< 1	
Trichloroethene	1	< 1	3	2
Dibromochloromethane	1	< 1	< 1	
1,1,2-Trichloroethane	1	< 1	< 1	
trans-1,3-Dichloropropene	1	< 1	< 1	
Bromoform	1	< 1	< 1	
1,1,2,2-Tetrachloroethane	1	< 1	< 1	
Tetrachloroethene	1	< 1	< 1	
Chlorobenzene	1	< 1	< 1	
1,3-Dichlorobenzene	1	< 1	< 1	
1,2-Dichlorobenzene	1	< 1	< 1	
1,4-Dichlorobenzene	1	< 1	< 1	
Surrogate (SS)		100	92	

Results reported as ug/L

Comments: Second column confirmation by Vocol Megabore.
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Greg Jourden

Engineers
Planners
CH2M HILL Economists
Scientists

METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale Air Force Base
Client Sample ID: BAFB0642

Sample Matrix: Water

Reference No: 24331-1

Date Sampled: 9-14-89
Date Received: 9-15-89
Date Analyzed: 9-25-89

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	< 1	< 1
Benzene	1	< 1	< 1
Toluene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
Ethyl benzene	1	< 1	< 1
Total Xylenes	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	70

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Grey Jonker

CH2M HILL Redding Environmental Laboratory, ... Road, Redding, California 96003 916 244 5227

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METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 9-6-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: BJT

Engineers
Planners
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Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 9-7-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloroethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoroethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloroethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloroethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: BJT

Engineers
Planners
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Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 9-8-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloroethane	1	<1
Bromoethane	1	<1
Dichlorodifluoroethane	1	<1
Vinyl chloride		<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoroethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: _____

Engineers
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METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale Air Force Base
Client Sample ID: BAFB0646

Reference No: 24337-1

Sample Matrix: Water

Date Sampled: 9-15-89
Date Received: 9-18-89
Date Analyzed: 9-26-89

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	102

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Greg Jonlin

CH2M HILL Redding Environmental Laboratory, 5 ir Road, Redding, California 96003 916.244 5227

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Engineers
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METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale Air Force Base
Client Sample ID: BAFB0646

Reference No: 24337-1

Sample Matrix: Water

Date Sampled: 9-15-89
Date Received: 9-18-89
Date Analyzed: 9-26-89

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	< 1	< 1
Benzene	1	< 1	< 1
Toluene	1	< 1	1
Chlorobenzene	1	< 1	< 1
Ethyl benzene	1	< 1	< 1
Total Xylenes	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	98

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Greg Jones

Engineers
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Scientists

METHOD: 601/8010 (Volatile Halocarbons)

Client: Beale Air Force Base
Client Sample ID: BAFB0649

Reference No: 24350-1

Sample Matrix: Water

Date Sampled: 9-18-89
Date Received: 9-19-89
Date Analyzed: 9-26-89

Compounds	Detection Limit	Method Blank	Sample Result
Chloromethane	1	< 1	< 1
Bromomethane	1	< 1	< 1
Dichlorodifluoromethane	1	< 1	< 1
Vinyl chloride	1	< 1	< 1
Chloroethane	1	< 1	< 1
Methylene chloride	5	< 5	< 5
Trichlorofluoromethane	1	< 1	< 1
1,1-Dichloroethene	1	< 1	< 1
1,1-Dichloroethane	1	< 1	< 1
trans-1,2-Dichloroethene	1	< 1	< 1
Chloroform	1	< 1	< 1
1,2-Dichloroethane	1	< 1	< 1
1,1,1-Trichloroethane	1	< 1	< 1
Carbon tetrachloride	1	< 1	< 1
Bromodichloromethane	1	< 1	< 1
1,2-Dichloropropane	1	< 1	< 1
cis-1,3-Dichloropropene	1	< 1	< 1
Trichloroethene	1	< 1	< 1
Dibromochloromethane	1	< 1	< 1
1,1,2-Trichloroethane	1	< 1	< 1
trans-1,3-Dichloropropene	1	< 1	< 1
Bromoform	1	< 1	< 1
1,1,2,2-Tetrachloroethane	1	< 1	< 1
Tetrachloroethene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	105

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Bromochloromethane used as surrogate standard.

Approved By: Greg Jordan

000004

Engineers
Planners
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Scientists

METHOD: EPA 602/8020 (Volatile Aromatics)

Client: Beale Air Force Base
Client Sample ID: BAFB0649

Sample Matrix: Water

Reference No: 24350-1

Date Sampled: 9-18-89
Date Received: 9-19-89
Date Analyzed: 9-26-89

Compounds	Detection Limit	Method Blank	Sample Result
tert-butyl methyl ether	1	< 1	< 1
Benzene	1	< 1	< 1
Toluene	1	< 1	< 1
Chlorobenzene	1	< 1	< 1
Ethyl benzene	1	< 1	< 1
Total Xylenes	1	< 1	< 1
1,3-Dichlorobenzene	1	< 1	< 1
1,2-Dichlorobenzene	1	< 1	< 1
1,4-Dichlorobenzene	1	< 1	< 1
Surrogate (SS)		100	82

Results reported as ug/L

Comments:
SS - Surrogate Standard reported as percent recovery.
Trifluorotoluene used as surrogate standard.

Approved By: Greg Foulk

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Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 10-3-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloroethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: Judy Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 10-4-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloroethane	1	<1
Bromoethane	1	<1
Dichlorodifluoroethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: Gary Jones

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 10-5-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloroethane	1	<1
Bromoethane	1	<1
Dichlorodifluoroethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: _____

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 11-22-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	20	< 20
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jones

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 11-23-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	20	< 20
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Franklin

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 11-23-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	20	<20
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: Jeff Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/80

Date Tested: 11-22-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by:

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 11-30-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	20	< 20
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-01-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	20	< 20
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jonker

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-01-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	20	< 20
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Grey Joulin

Engineers

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-04-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	20	< 20
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-04-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroetnane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	20	< 20
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-04-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Tricnloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
		< 1
tert Butyl Methyl Ether	20	< 20
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
		< 1

Comments:

Approved by: Greg Jones

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/80

Date Tested: 12-09-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
		< 1
tert Butyl Methyl Ether	1	
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
		< 1

Comments:

Approved by:

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-09-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	1	< 1
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Gary Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/80

Date Tested: 12-12-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	1	< 1
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Fowler

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-11-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	1	< 1
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by:

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-12-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: Greg Jonker

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-13-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: Jeff Jones

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-14-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	1	< 1
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Gary Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-14-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	1	< 1
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-15-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by: Judy Jonker

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-18-1989

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	<1
Bromoethane	1	<1
Dichlorodifluoromethane	1	<1
Vinyl chloride	1	<1
Chloroethane	1	<1
Methylene chloride	5	<5
Trichlorofluoromethane	1	<1
1,1-Dichloroethene	1	<1
1,1-Dichloroethane	1	<1
trans-1,2-Dichloroethene	1	<1
Chloroform	1	<1
1,2-Dichloroethane	1	<1
1,1,1-Trichloroethane	1	<1
Carbon Tetrachloride	1	<1
Bromodichloromethane	1	<1
1,2-Dichloropropane	1	<1
cis-1,3-Dichloropropene	1	<1
Trichloroethene	1	<1
Dibromochloromethane	1	<1
1,1,2-Trichloroethane	1	<1
trans-1,3-Dichloropropene	1	<1
Bromoform	1	<1
1,1,2,2-Tetrachloroethane	1	<1
Tetrachloroethene	1	<1
Chlorobenzene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1
tert Butyl Methyl Ether	1	<1
Benzene	1	<1
Toluene	1	<1
Chlorobenzene	1	<1
Ethyl Benzene	1	<1
meta-Xylene	1	<1
ortho & para Xylene	1	<1
1,3-Dichlorobenzene	1	<1
1,2-Dichlorobenzene	1	<1
1,4-Dichlorobenzene	1	<1

Comments:

Approved by:

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601/8020,602

Date Tested: 12-19-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1
tert Butyl Methyl Ether	1	< 1
Benzene	1	< 1
Toluene	1	< 1
Chlorobenzene	1	< 1
Ethyl Benzene	1	< 1
meta-Xylene	1	< 1
ortho & para Xylene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601

Date Tested: 12-23-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jordan

Engineers
Planners
Economists
Scientists

METHOD BLANK SUMMARY

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA 8010,601

Date Tested: 12-23-89

Compound	Detection Limit (PPB)	Method Blank Result (PPB)
Chloromethane	1	< 1
Bromoethane	1	< 1
Dichlorodifluoromethane	1	< 1
Vinyl chloride	1	< 1
Chloroethane	1	< 1
Methylene chloride	5	< 5
Trichlorofluoromethane	1	< 1
1,1-Dichloroethene	1	< 1
1,1-Dichloroethane	1	< 1
trans-1,2-Dichloroethene	1	< 1
Chloroform	1	< 1
1,2-Dichloroethane	1	< 1
1,1,1-Trichloroethane	1	< 1
Carbon Tetrachloride	1	< 1
Bromodichloromethane	1	< 1
1,2-Dichloropropane	1	< 1
cis-1,3-Dichloropropene	1	< 1
Trichloroethene	1	< 1
Dibromochloromethane	1	< 1
1,1,2-Trichloroethane	1	< 1
trans-1,3-Dichloropropene	1	< 1
Bromoform	1	< 1
1,1,2,2-Tetrachloroethane	1	< 1
Tetrachloroethene	1	< 1
Chlorobenzene	1	< 1
1,3-Dichlorobenzene	1	< 1
1,2-Dichlorobenzene	1	< 1
1,4-Dichlorobenzene	1	< 1

Comments:

Approved by: Greg Jordan

METHOD BLANKS

Volatile Organic Compounds (SW8240)

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 11-18-88
CLIENT SAMPLE ID : METHOD BLANK 11-18-88
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 11-18-88

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
18	methylene chloride	10U	2-chloroethyl vinyl ether
10J	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	89	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	108	toluene-d8 (SS2)
5U	trichloroethene	91	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Hess

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: A11238B2
Client Sample ID: VBLKSM2

Concentration: MED
Sample Matrix: SOIL
Percent Moisture: 0.0

Date Extracted:
Date Analyzed: 11/23/
Dilution Factor: 130

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	1300	U
74-83-9	Bromomethane	1300	U
75-01-4	Vinyl Chloride	1300	U
75-00-3	Chloroethane	1300	U
75-09-2	Methylene Chloride	2800	
67-64-1	Acetone	1300	U
75-15-0	Carbon Disulfide	630	U
75-35-4	1,1-Dichloroethene	630	U
75-34-3	1,1-Dichloroethane	630	U
540-59-0	1,2-Dichloroethene (total)	630	U
67-66-3	Chloroform	630	U
107-06-2	1,2-Dichloroethane	630	U
78-93-3	2-Butanone	1300	U
71-55-6	1,1,1-Trichloroethane	630	U
56-23-5	Carbon Tetrachloride	630	U
108-05-4	Vinyl Acetate	1300	U
75-27-4	Bromodichloromethane	630	U
78-87-5	1,2-Dichloropropane	630	U
10061-01-5	cis-1,3-Dichloropropene	630	U
79-01-6	Trichloroethene	630	U
124-48-1	Dibromochloromethane	630	U
79-00-5	1,1,2-Trichloroethane	630	U

CAS Number		ug/Kg	
71-43-2	Benzene	630	U
10061-02-6	trans-1,3-Dichloropropene	630	U
110-75-8	2-Chloroethylvinylether	1300	U
75-25-2	Bromoform	630	U
591-78-6	2-Hexanone	1300	U
108-10-1	4-Methyl-2-Pentanone	1300	U
127-18-4	Tetrachloroethene	630	U
79-34-5	1,1,2,2-Tetrachloroethane	630	U
108-88-3	Toluene	630	U
108-90-7	Chlorobenzene	630	U
100-41-4	Ethylbenzene	630	U
100-42-5	Styrene	630	U
1330-20-7	Xylenes (total)	630	U

	Toluene-d8 - SS	93	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	120	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 11-26-88
CLIENT SAMPLE ID : METHOD BLANK 11-26-88
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 11-26-88

1300U	chloroethane	630U	dibromochloromethane
1300U	bromomethane	630U	1,1,2-trichloroethane
1300U	vinyl chloride	630U	benzene
1300U	chloroethane	630U	trans-1,3-dichloropropene
470J	methylene chloride	1300U	2-chloroethyl vinyl ether
860J	acetone	630U	bromoform
630U	carbon disulfide	1300U	4-methyl-2-pentanone
630U	1,1-dichloroethene	1300U	2-hexanone
630U	1,1-dichloroethane	630U	1,1,2,2-tetrachloroethane
630U	trans-1,2-dichloroethene	630U	tetrachloroethene
630U	chloroform	630U	toluene
630U	1,2-dichloroethane	630U	chlorobenzene
1300U	2-butanone	630U	ethylbenzene
630U	1,1,1-trichloroethane	630U	styrene
630U	carbon tetrachloride	630U	xylenes (o+m)
1300U	vinyl acetate	630U	xylene (p)
630U	bromodichloromethane		SURROGATE % RECOVERY
630U	1,2-dichloropropane	90	1,2-dichloroethane-d4 (SS1)
630U	cis-1,3-dichloropropene	93	toluene-d8 (SS2)
630U	trichloroethene	105	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Hall

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHCM HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-241-1715

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 11-28-88
CLIENT SAMPLE ID : METHOD BLANK 11-28-88
REPORT DATE : 12-09-1988

CLIENT NAME : BEALE AFB
SAMPLE RECEIVED : N A
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : N/A
DATE EXTRACTED : 11-28-88
DATE ANALYSED : 11-29-88

10U	chloroethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5J	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5J	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	96	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	81	toluene-d8 (SS2)
5U	trichloroethene	92	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 11-29-88
CLIENT SAMPLE ID : METHOD BLANK 11-29-88
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 11-29-88

1300U	chloroethane	630U	dibromochloroethane
1300U	bromoethane	630U	1,1,2-trichloroethane
1300U	vinyl chloride	630U	benzene
1300U	chloroethane	630U	trans-1,3-dichloropropene
740	methylene chloride	1300U	2-chloroethyl vinyl ether
780J	acetone	630U	bromoform
630U	carbon disulfide	1300U	4-methyl-2-pentanone
630U	1,1-dichloroethene	1300U	2-hexanone
630U	1,1-dichloroethane	630U	1,1,2,2-tetrachloroethane
630U	trans-1,2-dichloroethene	630U	tetrachloroethene
630U	chloroform	630U	toluene
630U	1,2-dichloroethane	630U	chlorobenzene
1300U	2-butanone	630U	ethylbenzene
630U	1,1,1-trichloroethane	630U	styrene
630U	carbon tetrachloride	630U	xylenes (o+m)
1300U	vinyl acetate	630U	xylene (p)
630U	bromodichloromethane		SURROGATE % RECOVERY
630U	1,2-dichloropropane	107	1,2-dichloroethane-d4 (SS1)
630U	cis-1,3-dichloropropene	114	toluene-d8 (SS2)
630U	trichloroethene	131	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Allen

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

Engineers
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Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: B1130882
Client Sample ID: VBLKS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: 0.0

Date Extracted: _____
Date Analyzed: 11/30/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	97	
	1,4-Bromofluorobenzene - SS	110	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

C-CH HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-241-1703

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : R3 11-30-88
CLIENT SAMPLE ID : METHOD BLANK 11-30-88
REPORT DATE : 12-13-1988

CLIENT NAME : BEALE AFB
SAMPLE RECEIVED : 11-22-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-21-88
DATE EXTRACTED : 11-26-88
DATE ANALYSED : 11-30-88

1300U	chloroethane	630U	dibromochloromethane
1300U	bromomethane	630U	1,1,2-trichloroethane
1300U	vinyl chloride	630U	benzene
1300U	chloroethane	630U	trans-1,3-dichloropropene
1300	methylene chloride	1300U	2-chloroethyl vinyl ether
1300U	acetone	630U	bromoform
630U	carbon disulfide	1300U	4-methyl-2-pentanone
630U	1,1-dichloroethene	1300U	2-hexanone
630U	1,1-dichloroethane	630U	1,1,2,2-tetrachloroethene
630U	trans-1,2-dichloroethene	630U	tetrachloroethene
630U	chloroform	630U	toluene
630U	1,2-dichloroethane	630U	chlorobenzene
1300U	2-butanone	630U	ethylbenzene
630U	1,1,1-trichloroethane	630U	styrene
630U	carbon tetrachloride	630U	xylenes (o+m)
1300U	vinyl acetate	630U	xylene (p)
630U	bromodichloromethane		SURROGATE % RECOVER:
630U	1,2-dichloropropane	115	1,2-dichloroethane-d4 (SSI)
630U	cis-1,3-dichloropropene	84	toluene-d8 (SSC)
630U	trichloroethene	94	bromofluorobenzene (SSC)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-1-88
CLIENT SAMPLE ID : METHOD BLANK 12-1-88
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 12-1-88

1300U	chloroethane	630U	dibromochloroethane
1300U	bromoethane	630U	1,1,2-trichloroethane
1300U	vinyl chloride	630U	benzene
1300U	chloroethane	630U	trans-1,3-dichloropropene
610J	methylene chloride	1300U	2-chloroethyl vinyl ether
1300U	acetone	630U	bromoform
630U	carbon disulfide	1300U	4-methyl-2-pentanone
630U	1,1-dichloroethene	1300U	2-hexanone
630U	1,1-dichloroethane	630U	1,1,2,2-tetrachloroethane
630U	trans-1,2-dichloroethene	630U	tetrachloroethene
630U	chloroform	630U	toluene
630U	1,2-dichloroethane	630U	chlorobenzene
1300U	2-butanone	630U	ethylbenzene
630U	1,1,1-trichloroethane	630U	styrene
630U	carbon tetrachloride	630U	xylenes (o+m)
1300U	vinyl acetate	630U	xylene (p)
630U	bromodichloromethane		SURROGATE % RECOVERY
630U	1,2-dichloropropane	87	1,2-dichloroethane-d4 (SS1)
630U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
630U	trichloroethene	99	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Koss

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Sample ID: B12058B1
Client Sample ID: VBLKS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/05/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U	71-43-2	Benzene	5	U
74-83-9	Bromomethane	10	U	10061-02-6	trans-1,3-Dichloropropene	5	U
75-01-4	Vinyl Chloride	10	U	110-75-8	2-Chloroethylvinylether	10	U
75-00-3	Chloroethane	10	U	75-25-2	Bromoform	5	U
75-09-2	Methylene Chloride	8	B	591-78-6	2-Hexanone	10	U
67-64-1	Acetone	23	B	108-10-1	4-Methyl-2-Pentanone	10	U
75-15-0	Carbon Disulfide	5	U	127-18-4	Tetrachloroethene	5	U
75-69-4	Trichlorofluoromethane	5	U	79-34-5	1,1,2,2-Tetrachloroethane	10	U
75-35-4	1,1-Dichloroethene	5	U	108-88-3	Toluene	5	U
75-34-3	1,1-Dichloroethane	5	U	108-90-7	Chlorobenzene	5	U
540-59-0	1,2-Dichloroethene (total)	5	U	100-41-4	Ethylbenzene	5	U
67-66-3	Chloroform	5	U	100-42-5	Styrene	5	U
107-06-2	1,2-Dichloroethane	5	U	1330-20-7	Xylenes (total)	5	U
78-93-3	2-Butanone	10	U	541-73-1	1,3-Dichlorobenzene	5	U
71-55-6	1,1,1-Trichloroethane	5	U	106-46-7	1,4-Dichlorobenzene	5	U
56-23-5	Carbon Tetrachloride	5	U	95-50-1	1,2-Dichlorobenzene	5	U
108-05-4	Vinyl Acetate	10	U	107-02-8	Acrolein	100	U
75-27-4	Bromodichloromethane	5	U	107-13-1	Acrylonitrile	100	U
78-87-5	1,2-Dichloropropane	5	U		---		
10061-01-5	cis-1,3-Dichloropropene	5	U		Toluene-d8 - SS	100	
79-01-6	Trichloroethene	5	U		1,4-Bromofluorobenzene - SS	100	
124-48-1	Dibromochloromethane	5	U		1,2-Dichloroethane-d4 - SS	100	
79-00-5	1,1,2-Trichloroethane	5	U				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: B12058B1
Client Sample ID: VBLKS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 12/05/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U	71-43-2	Benzene	5	U
74-83-9	Bromomethane	10	U	10061-02-6	trans-1,3-Dichloropropene	5	U
75-01-4	Vinyl Chloride	10	U	110-75-8	2-Chloroethylvinylether	10	U
75-00-3	Chloroethane	10	U	75-25-2	Bromoform	5	U
75-09-2	Methylene Chloride	8		591-78-6	2-Hexanone	10	U
67-64-1	Acetone	23		108-10-1	4-Methyl-2-Pentanone	10	U
75-15-0	Carbon Disulfide	5	U	127-18-4	Tetrachloroethene	5	U
75-35-4	1,1-Dichloroethene	5	U	79-34-5	1,1,2,2-Tetrachloroethane	5	U
75-34-3	1,1-Dichloroethane	5	U	108-88-3	Toluene	5	U
540-59-0	1,2-Dichloroethene (total)	5	U	108-90-7	Chlorobenzene	5	U
67-66-3	Chloroform	5	U	100-41-4	Ethylbenzene	5	U
107-06-2	1,2-Dichloroethane	5	U	100-42-5	Styrene	5	U
78-93-3	2-Butanone	10	U	1330-20-7	Xylenes (total)	5	U
71-55-6	1,1,1-Trichloroethane	5	U		----------		
56-23-5	Carbon Tetrachloride	5	U		Toluene-d8 - SS	100	
108-05-4	Vinyl Acetate	10	U		1,4-Bromofluorobenzene - SS	100	
75-27-4	Bromodichloromethane	5	U		1,2-Dichloroethane-d4 - SS	100	
78-87-5	1,2-Dichloropropane	5	U				
10061-01-5	cis-1,3-Dichloropropene	5	U				
79-01-6	Trichloroethene	5	U				
124-48-1	Dibromochloromethane	5	U				
79-00-5	1,1,2-Trichloroethane	5	U				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Redding
Environmental Laboratory
Railroad Avenue P O Box 2088
Redding California 96001
916 243 583

CHEM HILL ENVIRONMENTAL LABORATORY — GC/MS VOLATILE ORGANICS ANALYSIS — LAB REFERENCE NUMBER : RB 12-5-88
2.18 RAILROAD AVENUE — CLIENT SAMPLE ID : METHOD BLANK
REDDING CA 96001 916-241-1705 — REPORT DATE : 12-13-1988

CLIENT NAME : BERLE PFP — DATE SAMPLED : N/A
SAMPLE RECEIVED : N A — DATE EXTRACTED : 11-26-88
SAMPLE TYPE : SOIL/SEDIMENT.SOLIDS — DATE ANALYSED : 12-5-88

13000U	chloroethane	630U	dibromochloromethane
1300U	bromoethane	630U	1,1,2-trichloroethane
1300U	vinyl chloride	630U	benzene
1300U	chloroethane	630U	trans-1,3-dichloropropene
630U	methylene chloride	1300U	2-chloroethyl vinyl ether
1300U	acetone	630U	bromoform
630U	carbon disulfide	1300U	4-methyl-2-pentanone
630U	1,1-dichloroethene	1300U	2-hexanone
630U	1,1-dichloroethane	630U	1,1,2,2-tetrachloroethane
630U	trans-1,2-dichloroethene	630U	tetrachloroethene
630U	chloroform	630U	toluene
630U	1,2-dichloroethane	630U	chlorobenzene
1300U	2-butanone	630U	ethylbenzene
630U	1,1,1-trichloroethane	630U	styrene
630U	carbon tetrachloride	630U	xylenes (o+m)
1300U	vinyl acetate	630U	xylene (p)
630U	bromodichloromethane		SURROGATE % RECOVERY
630U	1,2-dichloropropane	93	1,2-dichloroethane-d4 (SS1)
630U	cis-1,3-dichloropropene	98	toluene-d8 (SS2)
630U	trichloroethene	87	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2718 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-5-88 2
CLIENT SAMPLE ID : METHOD BLANK 12-5-88 2
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 12-5-88

1300U	chloroethane	630U	dibromochloromethane
1300U	bromomethane	630U	1,1,2-trichloroethane
1300U	vinyl chloride	630U	benzene
1300U	chloroethane	630U	trans-1,3-dichloropropene
610J	methylene chloride	1300U	2-chloroethyl vinyl ether
1300U	acetone	630U	bromoform
630U	carbon disulfide	1300U	4-methyl-2-pentanone
630U	1,1-dichloroethene	1300U	2-hexanone
630U	1,1-dichloroethane	630U	1,1,2,2-tetrachloroethane
630U	trans-1,2-dichloroethene	630U	tetrachloroethene
630U	chloroform	630U	toluene
630U	1,2-dichloroethane	630U	chlorobenzene
1300U	2-butanone	630U	ethylbenzene
630U	1,1,1-trichloroethane	630U	styrene
630U	carbon tetrachloride	630U	xylenes (o+m)
1300U	vinyl acetate	630U	xylene (p)
630U	bromodichloromethane		SURROGATE % RECOVERY
630U	1,2-dichloropropane	91	1,2-dichloroethane-d4 (SS1)
630U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
630U	trichloroethene	88	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Glass

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

Engineers
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Scientists

ORGANICS ANALYSIS DATA SHEET

ratory Name: CH2M Hill
Lab Sample ID: Bi207881
Client Sample ID: VOLKS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/07/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	16	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	97	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	110	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS2

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: V12396 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: B12088B1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ABV0001910

Level: (low/med) LOW Date Received: 12/08/88

% Moisture: not dec. 0 Date Analyzed: 12/08/88

Column: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	BJ
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

87 Rev. RS

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: B1209881
Client Sample ID: VBLKS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 12/09/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	19	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	100	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	95	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

BE

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-14-88
CLIENT SAMPLE ID : METHOD BLANK 12-14-88
REPORT DATE : 01-22-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-1-88
SAMPLE TYPE : WATER

DATE SAMPLED : 11-30-88
DATE EXTRACTED :
DATE ANALYSED : 12-14-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
6	methylene chloride	10U	2-chloroethyl vinyl ether
7J	acetone	5U	bromoform
4J	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	97	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
5U	trichloroethene	100	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : PB 12-15-88
CLIENT SAMPLE ID : METHOD BLANK 12-15-88
REPORT DATE : 01-27-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : N/A
SAMPLE TYPE : WATER

DATE SAMPLED : N/A
DATE EXTRACTED : N/A
DATE ANALYSED : 12-15-88

10U	chloroethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
7	methylene chloride	10U	2-chloroethyl vinyl ether
6J	acetone	5U	bromoform
3J	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
15	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (total)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	99	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
5U	trichloroethene	97	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHZM HILL ENVIRONMENTAL LABORATORY
2219 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-16-88
CLIENT SAMPLE ID : METHOD BLANK 12-16-88
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CHZM HILL/SAC
SAMPLE RECEIVED : 12-9-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-16-88

10U	chloroethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	93	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	98	toluene-d8 (SS2)
5U	trichloroethene	101	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHZM HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-16-88
CLIENT SAMPLE ID : METHOD BLANK 12-16-88
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-8-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-16-88

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
3J	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	92	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	98	toluene-d8 (SS2)
5U	trichloroethene	97	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2213 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-16-88
CLIENT SAMPLE ID : METHOD BLANK 12-16-88
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-6-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-18-88

10U chloroethane	5U dibromochloromethane
10U bromomethane	5U 1,1,2-trichloroethane
10U vinyl chloride	5U benzene
10U chloroethane	5U trans-1,3-dichloropropene
5U methylene chloride	10U 2-chloroethyl vinyl ether
10U acetone	5U bromoform
5U carbon disulfide	10U 4-methyl-2-pentanone
5U 1,1-dichloroethene	10U 2-hexanone
5U 1,1-dichloroethane	5U 1,1,2,2-tetrachloroethane
5U trans-1,2-dichloroethene	5U tetrachloroethene
5U chloroform	5U toluene
5U 1,2-dichloroethane	5U chlorobenzene
10U 2-butanone	5U ethylbenzene
5U 1,1,1-trichloroethane	5U styrene
5U carbon tetrachloride	5U xylenes (o+m)
10U vinyl acetate	5U xylene (p)
5U bromodichloromethane	SURROGATE % RECOVERY
5U 1,2-dichloropropane	94 1,2-dichloroethane-d4 (SS1)
5U cis-1,3-dichloropropene	98 toluene-d8 (SS2)
5U trichloroethene	98 bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHCM HILL ENVIRONMENTAL LABORATORY
2216 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-19-88
CLIENT SAMPLE ID : METHOD BLANK 12-19-88
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CHCM HILL/S4C
SAMPLE RECEIVED : 12-9-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-8-88
DATE EXTRACTED :
DATE ANALYSED : 12-19-88

10U	chloroethane
10U	bromoethane
10U	vinyl chloride
10U	chloroethane
3J	methylene chloride
9J	acetone
5U	carbon disulfide
5U	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
10U	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
5U	trichloroethene
5U	dibromochloromethane
5U	1,1,2-trichloroethane
5U	benzene
5U	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-methyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
5U	toluene
5U	chlorobenzene
5U	ethylbenzene
5U	styrene
5U	xylenes (o+m)
5U	xylene (p)

SURROGATE % RECOVERY

93	1,2-dichloroethane-d4 (SS1)
95	toluene-d8 (SS2)
94	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1725

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-19-88
CLIENT SAMPLE ID : METHOD BLANK 12-19-88
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CHEM HILL/SAC
SAMPLE RECEIVED : 12-9-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-8-88
DATE EXTRACTED :
DATE ANALYSED : 12-19-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
13	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+s)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	96	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	94	toluene-d8 (SS2)
5U	trichloroethene	98	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-20-88
CLIENT SAMPLE ID : METHOD BLANK 12-20-88
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-8-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-20-88

10U	chloroethane
2J	bromoethane
10U	vinyl chloride
10U	chloroethane
5U	methylene chloride
10U	acetone
3J	carbon disulfide
5U	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
10U	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
5U	trichloroethene
5U	dibromochloromethane
5U	1,1,2-trichloroethane
5U	benzene
5U	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-methyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
5U	toluene
5U	chlorobenzene
5U	ethylbenzene
5U	styrene
5U	xylenes (o+m)
5U	xylene (p)

SURROGATE I RECOVERY

87	1,2-dichloroethane-d4 (SS1)
95	toluene-d8 (SS2)
92	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : EB 12-21-89
CLIENT SAMPLE ID : METHOD BLANK 12-21-89
REPORT DATE : 01-23-1990

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-10-89
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-9-89
DATE EXTRACTED :
DATE ANALYSED : 12-21-89

10U	chloroethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethene
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
3J	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	97	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	106	toluene-d8 (SS2)
5U	trichloroethene	99	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-22-88
CLIENT SAMPLE ID : METHOD BLANK 12-22-88
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-10-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-8-88
DATE EXTRACTED :
DATE ANALYSED : 12-22-88

10U	chloroethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
4J	methylene chloride	10U	2-chloroethyl vinyl ether
6J	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10J	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (o)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	107	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	104	Toluene-d8 (SS2)
5U	trichloroethene	103	Bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-23-88
CLIENT SAMPLE ID : METHOD BLANK 12-23-88
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CHEM HILL/SAC
SAMPLE RECEIVED : 12-14-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-13-88
DATE EXTRACTED :
DATE ANALYSED : 12-23-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	95	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	102	toluene-d8 (SS2)
5U	trichloroethene	100	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograss per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-243-1705

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : BB 12-27-88
CLIENT SAMPLE ID : METHOD BLANK 12-27-88
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CHEM HILL/S4C
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 12-27-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
8J	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+a)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloroethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	97	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	95	toluene-d8 (SS2)
5U	trichloroethene	98	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (microgram per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2319 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-29-88
CLIENT SAMPLE ID : METHOD BLANK 12-29-88
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 12-29-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
8	methylene chloride	10U	2-chloroethyl vinyl ether
18	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	7J	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
12	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	93	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	98	toluene-d8 (SS2)
5U	trichloroethene	92	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-241-1705

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-29-88
CLIENT SAMPLE ID : METHOD BLANK 12-29-88
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 12-29-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	83	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	94	toluene-d8 (SS2)
5U	trichloroethene	100	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY — GC/MS VOLATILE ORGANICS ANALYSIS — LAB REFERENCE NUMBER : RB 12-30-88
2019 RAILROAD AVENUE — CLIENT SAMPLE ID : METHOD BLANK 12-[illegible]-88
REDDING CA 96001 916-243-1735 — REPORT DATE : 01-25-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC — DATE SAMPLED :
SAMPLE RECEIVED : — DATE EXTRACTED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS — DATE ANAL/SED : 12-29-88

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	84	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	106	toluene-d8 (SS2)
5U	trichloroethene	120	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
' = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: LO1049B1
Client Sample ID: VBLKSL

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 01/04/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	99	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: Y0109981
Client Sample ID: VBLKSM

Concentration: MED
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 01/09/89
Dilution Factor: 130

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	1300	U
74-83-9	Bromomethane	1300	U
75-01-4	Vinyl Chloride	1300	U
75-00-3	Chloroethane	1300	U
75-09-2	Methylene Chloride	630	U
67-64-1	Acetone	1300	U
75-15-0	Carbon Disulfide	630	U
75-35-4	1,1-Dichloroethene	630	U
75-34-3	1,1-Dichloroethane	630	U
540-59-0	1,2-Dichloroethene (total)	630	U
67-66-3	Chloroform	630	U
107-06-2	1,2-Dichloroethane	630	U
78-93-3	2-Butanone	1300	U
71-55-6	1,1,1-Trichloroethane	630	U
56-23-5	Carbon Tetrachloride	630	U
108-05-4	Vinyl Acetate	1300	U
75-27-4	Bromodichloromethane	630	U
78-87-5	1,2-Dichloropropane	630	U
10061-01-5	cis-1,3-Dichloropropene	630	U
79-01-6	Trichloroethene	630	U
124-48-1	Dibromochloromethane	630	U
79-00-5	1,1,2-Trichloroethane	630	U

CAS Number		ug/Kg	
71-43-2	Benzene	630	U
10061-02-6	trans-1,3-Dichloropropene	630	U
110-75-8	2-Chloroethylvinylether	1300	U
75-25-2	Bromoform	630	U
591-78-6	2-Hexanone	1300	U
108-10-1	4-Methyl-2-Pentanone	1300	U
127-18-4	Tetrachloroethene	630	U
79-34-5	1,1,2,2-Tetrachloroethane	630	U
108-88-3	Toluene	630	U
108-90-7	Chlorobenzene	630	U
100-41-4	Ethylbenzene	630	U
100-42-5	Styrene	630	U
1330-20-7	Xylenes (total)	630	U

	Toluene-d8 - SS	110	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 1-11-89
CLIENT SAMPLE ID : METHOD BLANK 1-11-89
REPORT DATE : 01-12-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : N/A
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : N/A
DATE EXTRACTED : N/A
DATE ANALYSED : 1-11-89

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	99	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
5U	trichloroethene	101	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 9B 1-17-89
CLIENT SAMPLE ID : METHOD BLANK 1-17-89
REPORT DATE : 01-25-1989

CLIENT NAME : BEALE AFB CHEM HILL-BAC
SAMPLE RECEIVED :
SAMPLE TYPE : WATER

DATE SAMPLED :
DATE EXPECTED :
DATE ANALYSED : 1-17-89

10U	chloroethane	5U	dibromochloromethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
10	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (o)
5U	bromodichloromethane	SURROGATE % RECOVERY	
5U	1,2-dichloropropane	95	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	102	toluene-d8 (SS2)
4J	trichloroethene	101	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2213 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 1-15-89
CLIENT SAMPLE ID : METHOD BLANK 1-15-89
REPORT DATE : 01-25-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 1-11-89
SAMPLE TYPE : WATER

DATE SAMPLED : 1-10-89
DATE EXTRACTED :
DATE ANALYSED : 1-15-89

10U	chloroethane	5U	dibromochloroethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
9	methylene chloride	10U	2-chloroethyl vinyl ether
12	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (ote)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloroethane		SURROGATE I RECOVERY
5U	1,2-dichloropropane	92	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	95	toluene-d8 (SS2)
5U	trichloroethene	99	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ ___ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: Y01179B1
Client Sample ID: VBLKS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 01/17/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	95	
	1,4-Bromofluorobenzene - SS	98	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

BE

CH2M HILL Engineers Planners Economists Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: Y0117982
Client Sample ID: VBLKS2

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 01/17/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
[illegible]01-6	Trichloroethene	5	U
48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	95	
	1,4-Bromofluorobenzene - SS	95	
	1,2-Dichloroethane-d4 - SS	110	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

CH2M HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-241-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 89 1-17-89
CLIENT SAMPLE ID : METHOD BLANK 1-17-89
REPORT DATE : 01-26-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYZED : 1-17-89

10 U	chloroethane	5U	dibromochloromethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
9	methylene chloride	10U	2-chloroethyl vinyl ether
11	acetone	5U	bromoform
43	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (m+p)
10U	vinyl acetate	5U	xylene (o)
5U	bromodichloromethane	SURROGATE % RECOVERY	
5U	1,2-dichloropropane	96	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
5U	trichloroethene	104	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2319 RAILROAD AVENUE
REDDING CA 96001 916-247-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RR 1-19-87
CLIENT SAMPLE ID : METHOD BLANK 1-19-87
REPORT DATE : 01-26-1987

CLIENT NAME : BEALE AFB CHEM HILL/S&C
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 1-19-87

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	94	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
5U	trichloroethene	103	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKS

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: V12589 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: Y01199B2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: CBV0003115

Level: (low/med) LOW Date Received: 01/19/89

% Moisture: not dec. 0 Date Analyzed: 01/19/89

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	14	B
67-64-1	Acetone	3	BJ
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
110-75-8	2-Chloroethylvinyl ether	10	U

NO.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 1-24-89
CLIENT SAMPLE ID : METHOD BLANK 1-24-89
REPORT DATE : 01-26-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : WATER

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 1-24-89

10U	chloroethane	5U	dibromochloromethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
22	methylene chloride	10U	2-chloroethyl vinyl ether
20	acetone	5U	bromoform
3J	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
8J	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	99	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
3J	trichloroethene	105	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

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Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID:- RB-01-26-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 01/26/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		UG/KG	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	B
67-64-1	Acetone	10	BU
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		UG/KG	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	99	
	1,4-Bromofluorobenzene - SS	110	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

CH2M HILL Redding Environmental Laboratory Railroad Avenue, P.O. Box 2088 Redding, California 96001 916.243.5831

Engineers
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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB-05-15-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 05/15/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	4	BJ
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10[illegible]-01-5	cis-1,3-Dichloropropene	5	U
7[illegible]-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	94	
	1,4-Bromofluorobenzene - SS	97	
	1,2-Dichloroethane-d4 - SS	98	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB-05-16-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 05/16/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/L	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/L	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	90	
	1,4-Bromofluorobenzene - SS	94	
	1,2-Dichloroethane-d4 - SS	93	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

L[illegible]atory Name:	CH2M Hill	Concentration:	LOW	Date Extracted:	
L[illegible] Sample ID:	RB-05-17-89	Sample Matrix:	SOIL	Date Analyzed:	05/17/89
Client Sample ID:	METHOD-BLANK	Percent-Moisture:		Dilution Factor:	1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U	71-43-2	Benzene	5	U
74-83-9	Bromomethane	10	U	10061-02-6	trans-1,3-Dichloropropene	5	U
75-01-4	Vinyl Chloride	10	U	110-75-8	2-Chloroethylvinylether	10	U
75-00-3	Chloroethane	10	U	75-25-2	Bromoform	5	U
75-09-2	Methylene Chloride	5	U	591-78-6	2-Hexanone	10	U
67-64-1	Acetone	11		108-10-1	4-Methyl-2-Pentanone	10	U
75-15-0	Carbon Disulfide	5	U	127-18-4	Tetrachloroethene	5	U
75-35-4	1,1-Dichloroethene	5	U	79-34-5	1,1,2,2-Tetrachloroethane	5	U
75-34-3	1,1-Dichloroethane	5	U	108-88-3	Toluene	5	U
540-59-0	1,2-Dichloroethene (total)	5	U	108-90-7	Chlorobenzene	5	U
67-66-3	Chloroform	5	U	100-41-4	Ethylbenzene	5	U
107-06-2	1,2-Dichloroethane	5	U	100-42-5	Styrene	5	U
78-93-3	2-Butanone	6	J	1330-20-7	Xylenes (total)	5	U
71-55-6	1,1,1-Trichloroethane	5	U				
56-23-5	Carbon Tetrachloride	5	U		Toluene-d8 - SS	100	
108-05-4	Vinyl Acetate	10	U		1,4-Bromofluorobenzene - SS	100	
75-27-4	Bromodichloromethane	5	U		1,2-Dichloroethane-d4 - SS	88	
78-87-5	1,2-Dichloropropane	5	U				
10[illegible]-01-5	cis-1,3-Dichloropropene	5	U				
7[illegible]-6	Trichloroethene	5	U				
124-48-1	Dibromochloromethane	5	U				
79-00-5	1,1,2-Trichloroethane	5	U				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: A12058B1
Clicnt Sample ID: VBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 12/05/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/L	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/L	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	98	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

CH2M HILL Redding Environmental Laboratory
...ilroad Avenue, P O Box 2088
...g, California 96001
916 243 5831

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : WATER BLANK (12/14/88)
REPORT DATE : 12-28-1988

CLIENT NAME : .
METHOD : 624
BLANK ID : 88M2V01981
SAMPLE TYPE : WATER

DATE SAMPLED : .
DATE RECEIVED : .
DATE EXTRACTED :
DATE ANALYSED : 12/14/88

10	U	chloromethane	5	U	dibromochloromethane
10	U	bromomethane	5	U	1,1,2-trichloroethane
10	U	vinyl chloride	5	U	benzene
10	U	chloroethane	5	U	trans-1,3-dichloropropene
14		methylene chloride	10	U	2-chloroethyl vinyl ether
3	J	acetone	5	U	bromoform
5	U	carbon disulfide	10	U	4-methyl-2-pentanone
5	U	1,1-dichloroethene	10	U	2-hexanone
5	U	1,1-dichloroethane	5	U	1,1,2,2-tetrachloroethane
5	U	1,2-dichloroethene (total)	5	U	tetrachloroethene
5	U	chloroform	1	J	toluene
5	U	1,2-dichloroethane	5	U	chlorobenzene
10	U	2-butanone	5	U	ethylbenzene
5	U	1,1,1-trichloroethane	5	U	styrene
5	U	carbon tetrachloride	5	U	xylenes (o+m)
10	U	vinyl acetate	5	U	xylene (p)
5	U	bromodichloromethane	SURROGATE % RECOVERY		
5	U	1,2-dichloropropane	91		1,2-dichloroethane-d4 (SS1)
5	U	cis-1,3-dichloropropene	101		toluene-d8 (SS2)
5	U	trichloroethene	101		bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
. = indicates an estimated trace value.

ANALYST : [signature]

APPROVED BY : G.F. Lawley

#ESTCH ANALYTICS
**2C LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : WATER BLANK (12/15/88)
REPORT DATE : 12-28-1988

CLIENT NAME : .
METHOD : 624
BLANK ID : 88M2VQ1993
SAMPLE TYPE : WATER

DATE SAMPLED : .
DATE RECEIVED : .
DATE EXTRACTED :
DATE ANALYSED : 12/15/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
3 J	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	95	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
5 U	trichloroethene	97	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
. : indicates an estimated trace value.

ANALYST : _____

APPROVED BY : R.F. Cawley

"33 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

CLIENT SAMPLE ID : WATER BLANK
REPORT DATE : 01-10-1989

CLIENT NAME : CH2M HILL
METHOD : 8240
ID : 88M2V02017
SAMPLE TYPE : WATER

DATE SAMPLED : N/A
DATE RECEIVED : N/A
DATE EXTRACTED : N/A
DATE ANALYSED : 12/16/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
1 J	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	97	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
5 U	trichloroethene	99	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

J = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
. = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : R. F. Carney

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : WATER BLANK
REPORT DATE : 01-10-1989

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 88M2V02038
SAMPLE TYPE : WATER

DATE SAMPLED : N/A
DATE RECEIVED : N/A
DATE EXTRACTED : N/A
DATE ANALYSED : 12/19/88

10 U	chloroethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
1 J	methylene chloride	10 U	2-chloroethyl vinyl ether
4 J	acetone	5 U	bromoform
5 U	carbon disulfide	2 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	7 J	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	87	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
5 U	trichloroethene	98	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : C.F. Cawley

[illegible] ON ANALYTICS
[illegible] 20 LORRAINE AV. #105
[illegible]OCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/18 BLANK
REPORT DATE : 12-31-1988

CLIENT NAME : -
[illegible]MOD : 8240
[illegible] ID : -
SAMPLE [illegible] : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/18/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
5 U	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5	1,2-dichloropropane	109	1,2-dichloroethane-d4 (SS1)
5	trans-1,3-dichloropropene	95	toluene-d8 (SS2)
5 U	trichloroethene	93	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R.F. Carney

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/19 BLANK
REPORT DATE : 12-31-1988

CLIENT NAME : -
METHOD : 8240
BLANK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/19/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
1 J	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	111	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	98	toluene-d8 (SS2)
5 U	trichloroethene	99	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : ALI

APPROVED BY : R.F. Carney

ESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : WATER BLANK
REPORT DATE : 01-10-1989

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 88M2V02038
SAMPLE TYPE : WATER

DATE SAMPLED : N/A
DATE RECEIVED : N/A
DATE EXTRACTED : N/A
DATE ANALYSED : 12/19/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
1 J	methylene chloride	10 U	2-chloroethyl vinyl ether
4 J	acetone	5 U	bromoform
5 U	carbon disulfide	2 J	4-methyl-2-pentanone
5 U	1,1-dichloroethene	7 J	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	87	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
5 U	trichloroethene	98	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : R. F. Lawley

ESTON ANALYTICS
720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/19 BLANK
REPORT DATE : 12-30-1988

CLIENT NAME : -
METHOD : 8240
BLANK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/19/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
5 U	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	111	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	98	toluene-d8 (SS2)
5 U	trichloroethene	89	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : ALI

APPROVED BY : R.F. Cawley

KESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/20 BLANK
REPORT DATE : 12-30-1988

CLIENT NAME : -
METHOD : 8240
BLANK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/20/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
5 U	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	112	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
5 U	trichloroethene	98	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
! - indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R.F. Carney

WESTON ANALYTICS
7339 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/20 BLANK
REPORT DATE : 01-13-1989

CLIENT NAME : -
METHOD : 8240
BLANK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/20/88

10	U	chloroethane	5 U dibromochloroethane
10	U	bromoethane	5 U 1,1,2-trichloroethane
10	U	vinyl chloride	5 U benzene
10	U	chloroethane	5 U trans-1,3-dichloropropene
5	U	methylene chloride	10 U 2-chloroethyl vinyl ether
10	U	acetone	5 U bromoform
5	U	carbon disulfide	10 U 4-methyl-2-pentanone
5	U	1,1-dichloroethene	10 U 2-hexanone
5	U	1,1-dichloroethane	5 U 1,1,2,2-tetrachloroethane
5	U	1,2-dichloroethene (total)	5 U tetrachloroethene
5	U	chloroform	5 U toluene
5	U	1,2-dichloroethane	5 U chlorobenzene
10	U	2-butanone	5 U ethylbenzene
5	U	1,1,1-trichloroethane	5 U styrene
5	U	carbon tetrachloride	5 U xylenes (o-m,
10	U	vinyl acetate	5 U xylene (p)
5	U	bromodichloromethane	SURROGATE % RECOVERY
5	U	1,2-dichloropropane	102 1,2-dichloroethane-d4 (SS1)
5	U	cis-1,3-dichloropropene	101 toluene-d8 (SS2)
5	U	trichloroethene	99 bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R.F. Causey

[illegible] ORGANICS ANALYSIS

[illegible] LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

LAB REFERENCE NUMBER WATER BLANK
CLIENT SAMPLE ID : 12.21 BLANK
REPORT DATE : 01-13-1989

CLIENT NAME : -
METHOD : 8240
[illegible]K ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/21/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
2 J	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	104	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	95	toluene-d8 (SS2)
5 U	trichloroethene	95	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R.F. Carney

WESTON ANALYTICS
2030 LORRAINE AV. #105
STOCKTON CA 95210 209 957-2405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : WATER BLANK (12/21/88)
REPORT DATE : 01-13-1989

CLIENT NAME :
METHOD : 624
BLANK ID : 88N2V02071
SAMPLE TYPE : WATER

DATE SAMPLED :
DATE RECEIVED :
DATE EXTRACTED :
DATE ANALYSED : 12/21/88

10 U	chloroethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
5	methylene chloride	10 U	2-chloroethyl vinyl ether
6 J	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	90	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
5 U	trichloroethene	97	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : _____

APPROVED BY : R. F. Cawley

7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/27 BLANK
REPORT DATE : 01-08-1989

CLIENT NAME : -
METHOD : 8240
WK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/27/88

10	U	chloromethane	
10	U	bromomethane	
10	U	vinyl chloride	
10	U	chloroethane	
5	U	methylene chloride	
6	J	acetone	
5	U	carbon disulfide	
5	U	1,1-dichloroethene	
5	U	1,1-dichloroethane	
5	U	1,2-dichloroethene (total)	
5	U	chloroform	
5	U	1,2-dichloroethane	
10	U	2-butanone	
5	U	1,1,1-trichloroethane	
5	U	carbon tetrachloride	
10	U	vinyl acetate	
5	U	bromodichloromethane	
5	U	1,2-dichloropropane	
5	U	cis-1,3-dichloropropene	
5	U	trichloroethene	
5	U	dibromochloromethane	
5	U	1,1,2-trichloroethane	
5	U	benzene	
5	U	trans-1,3-dichloropropene	
10	U	2-chloroethyl vinyl ether	
5	U	bromoform	
10	U	4-methyl-2-pentanone	
10	U	2-hexanone	
5	U	1,1,2,2-tetrachloroethane	
5	U	tetrachloroethene	
5	U	toluene	
5	U	chlorobenzene	
5	U	ethylbenzene	
5	U	styrene	
5	U	xylenes (total)	
5	U	xylene (p)	

SURROGATE % RECOVERY

96	1,2-dichloroethane-d4 (SS1)
100	toluene-d8 (SS2)
99	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R. F. Cawley

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/29 BLANK
REPORT DATE : 01-13-1989

CLIENT NAME : -
METHOD : 8240
BLANK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/29/88

10	U	chloromethane	5	U	dibromochloromethane
10	U	bromomethane	5	U	1,1,2-trichloroethane
10	U	vinyl chloride	5	U	benzene
10	U	chloroethane	5	U	trans-1,3-dichloropropene
13		methylene chloride	10	U	2-chloroethyl vinyl ether
10	U	acetone	5	U	bromoform
5	U	carbon disulfide	10	U	4-methyl-2-pentanone
5	U	1,1-dichloroethene	10	U	2-hexanone
5	U	1,1-dichloroethane	5	U	1,1,2,2-tetrachloroethane
5	.	1,2-dichloroethene (total)	5	U	tetrachloroethene
5	.	chloroform	5	U	toluene
5	U	1,2-dichloroethane	5	U	chlorobenzene
10	U	2-butanone	5	U	ethylbenzene
5	U	1,1,1-trichloroethane	5	U	styrene
5	U	carbon tetrachloride	5	U	xylenes (o-m
10	U	vinyl acetate	5	U	xylene (p)
5	U	bromodichloromethane	SURROGATE % RECOVERY		
5	U	1,2-dichloropropane	86		1,2-dichloroethane-d4 (SS1)
5	U	cis-1,3-dichloropropene	96		toluene-d8 (SS2)
5	U	trichloroethene	94		bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
. = indicates an estimated trace value.

ANALYST : ALI

APPROVED BY : R F. Lowry

REGION ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/30 BLANK
REPORT DATE : 01-06-1989

CLIENT NAME : -
METHOD : 8240
BANK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/30/88

10 U	chloroethane	5 U	dibromochloroethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
5 U	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (total)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	92	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
5 U	trichloroethene	96	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Ali

APPROVED BY : C. F. Lawley

WESTON ANALYTICS
2720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 12/31 BLANK
REPORT DATE : 01-13-1989

CLIENT NAME : -
METHOD : 8240
BLANK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 12/31/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
3 J	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o-m-
10 U	vinyl acetate	5 U	xylene (p
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	82	1,2-dichloroethane-d4 (SS1
5 U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
5 U	trichloroethene	86	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : Ali

APPROVED BY : R.F. Carney

WESTON ANALYTICS
7720 LORRAINE AVE. SUITE 102
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 01/03 BLANK
REPORT DATE : 01-14-1989

NT NAME :
PLYMOD : 8240
BLANK ID :
SAMPLE TYPE : WATER

DATE SAMPLED :
DATE RECEIVED :
DATE EXTRACTED :
DATE ANALYSED : 01/03/89

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
5 U	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o-m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	75 %	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	96	toluene-d8 (SS2)
5 U	trichloroethene	100	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : ALI

APPROVED BY : R.F. Carney

KESTON ANALYTICS
7720 LORRAINE AVE. SUITE 102
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : WATER BLANK
CLIENT SAMPLE ID : 01/04 BLANK
REPORT DATE : 01-14-1989

CLIENT NAME : -
METHOD : 8240
BLANK ID : -
SAMPLE TYPE : WATER

DATE SAMPLED : -
DATE RECEIVED : -
DATE EXTRACTED : -
DATE ANALYSED : 01/04/89

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
2 J	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (tot
10 U	vinyl acetate	SURROGATE % RECOVERY	
5 U	bromodichloromethane	88	1,2-dichloroethane-d4 88%
5 U	1,2-dichloropropane	96	toluene-d8 (982)
5 U	cis-1,3-dichloropropene	93	bromofluorobenzene (93%
5 U	trichloroethene		

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST _____

APPROVED BY : R. F. Caney

METHOD BLANKS

Semivolatile Organic Compounds (SW8270)

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-13-88
CLIENT SAMPLE ID : SOIL METHOD BLANK
REPORT DATE : 12-30-1988

IT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 12-13-88
DATE ANALYSED : 12-27-88

330U	n-nitroso-diethylamine	330U	dibenzofuran
330U	phenol	330U	2,4-dinitrotoluene
330U	aniline	330U	2,6-dinitrotoluene
330U	bis(2-chloroethyl) ether	330U	diethyl phthalate
330U	2-chlorophenol	330U	4-chlorophenyl phenyl ether
330U	1,3-dichlorobenzene	330U	fluorene
330U	1,4-dichlorobenzene	1600U	4-nitroaniline
330U	benzyl alcohol	1600U	4,6-dinitro-2-methylphenol
330U	1,2-dichlorobenzene	330U	n-nitrosodiphenylamine
330U	2-methylphenol	330U	4-bromophenyl phenyl ether
330U	bis(2-chloroisopropyl) ether	330U	hexachlorobenzene
330U	4-methylphenol	1600U	pentachlorophenol
330U	n-nitroso-di-n-propylamine	330U	phenanthrene
330U	hexachloroethane	330U	anthracene
330U	nitrobenzene	330U	di-n-butyl phthalate
330U	isophorone	330U	fluoranthene
330U	2-nitrophenol	1600U	benzidine
330U	2,4-dimethylphenol	330U	pyrene
1600U	benzoic acid	330U	butyl benzyl phthalate
330U	bis(2-chloroethoxy) methane	660U	3,3'-dichlorobenzidine
330U	2,4-dichlorophenol	330U	benzo(a)anthracene
330U	1,2,4-trichlorobenzene	330U	bis(2-ethylhexyl)phthalate
330U	naphthalene	330U	chrysene
330U	4-chloroaniline	330U	di-n-octyl phthalate
330U	hexachlorobutadiene	330U	benzo(b)fluoranthene
330U	4-chloro-3-methylphenol	330U	benzo(k)fluoranthene
330U	2-methylnaphthalene	330U	benzo(a)pyrene
330U	hexachlorocyclopentadiene	330U	indeno(1,2,3-cd)pyrene
330U	2,4,6-trichlorophenol	330U	dibenz(a,h)anthracene
1600U	2,4,5-trichlorophenol	330U	benzo(g,h,i)perylene
330U	2-chloronaphthalene		SURROGATE % RECOVERY
1600U	2-nitroaniline	54	2-fluorophenol (SS1)
330U	dimethyl phthalate	81	phenol-d5 (SS2)
330U	acenaphthylene	73	nitrobenzene-d5 (SS3)
1600U	3-nitroaniline	73	2-fluorobiphenyl
330U	acenaphthene	55	2,4,6-tribromophenol (SS5)
1600U	2,4-dinitrophenol	78	p-terphenyl-d14 (SS6)
1600U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

1/12/89

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Rollo F-508 APPROVED BY : _____

The information shown on this sheet is test data only, [illegible]ysis or interpretation is intended or implied.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MCM Concentration: LOW Date Extracted: 12/20/88

CH2M HILL ENVIRONMENTAL LAPORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 11-29-88
CLIENT SAMPLE ID : SOIL METHOD BLANK
REPORT DATE : 01-04-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 11-29-88
DATE ANALYSED : 12-29-88

330U	n-nitroso-diethylamine	330U	dibenzofuran
1200	phenol	330U	2,4-dinitrotoluene
330U	aniline	330U	2,6-dinitrotoluene
330U	bis(2-chloroethyl) ether	330U	diethyl phthalate
330U	2-chlorophenol	330U	4-chlorophenyl phenyl ether
330U	1,3-dichlorobenzene	330U	fluorene
330U	1,4-dichlorobenzene	1600U	4-nitroaniline
330U	benzyl alcohol	1600U	4,6-dinitro-2-methylphenol
330U	1,2-dichlorobenzene	330U	n-nitrosodiphenylamine
330U	2-methylphenol	330U	4-bromophenyl phenyl ether
330U	bis(2-chloroisopropyl) ether	330U	hexachlorobenzene
330U	4-methylphenol	1600U	pentachlorophenol
330U	n-nitroso-di-n-propylamine	330U	phenanthrene
330U	hexachloroethane	330U	anthracene
330U	nitrobenzene	330U	di-n-butyl phthalate
330U	isophorone	330U	fluoranthene
330U	2-nitrophenol	1600U	benzidine
330U	2,4-dimethylphenol	330U	pyrene
1600U	benzoic acid	330U	butyl benzyl phthalate
330U	bis(2-chloroethoxy) methane	660U	3,3'-dichlorobenzidine
330U	2,4-dichlorophenol	330U	benzo(a)anthracene
330U	1,2,4-trichlorobenzene	330U	bis(2-ethylhexyl)phthalate
330U	naphthalene	330U	chrysene
330U	4-chloroaniline	330U	di-n-octyl phthalate
330U	hexachlorobutadiene	330U	benzo(b)fluoranthene
330U	4-chloro-3-methylphenol	330U	benzo(k)fluoranthene
330U	2-methylnaphthalene	330U	benzo(a)pyrene
330U	hexachlorocyclopentadiene	330U	indeno(1,2,3-cd)pyrene
330U	2,4,6-trichlorophenol	330U	dibenz(a,h)anthracene
1600U	2,4,5-trichlorophenol	330U	benzo(g,h,i)perylene
330U	2-chloronaphthalene		SURROGATE % RECOVERY
1600U	2-nitroaniline	35	2-fluorophenol (SS1)
330U	dimethyl phthalate	47	phenol-d5 (SS2)
330U	acenaphthylene	45	nitrobenzene-d5 (SS3)
1600U	3-nitroaniline	52	2-fluorobiphenyl
330U	acenaphthene	39	2,4,6-tribromophenol (SS5)
1600U	2,4-dinitrophenol	59	p-terphenyl-d14 (SS6)
1600U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Susan Ellis F-509 APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 11-29-88
CLIENT SAMPLE ID : SOIL METHOD BLANK
REPORT DATE : 01-04-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 11-29-88
DATE ANALYSED : 12-29-88

330U	n-nitroso-dimethylamine	330U	dibenzofuran
1200	phenol	330U	2,4-dinitrotoluene
330U	aniline	330U	2,6-dinitrotoluene
330U	bis(2-chloroethyl) ether	330U	diethyl phthalate
330U	2-chlorophenol	330U	4-chlorophenyl phenyl ether
330U	1,3-dichlorobenzene	330U	fluorene
330U	1,4-dichlorobenzene	1600U	4-nitroaniline
330U	benzyl alcohol	1600U	4,6-dinitro-2-methylphenol
330U	1,2-dichlorobenzene	330U	n-nitrosodiphenylamine
330U	2-methylphenol	330U	4-bromophenyl phenyl ether
330U	bis(2-chloroisopropyl) ether	330U	hexachlorobenzene
330U	4-methylphenol	1600U	pentachlorophenol
330U	n-nitroso-di-n-propylamine	330U	phenanthrene
330U	hexachloroethane	330U	anthracene
330U	nitrobenzene	330U	di-n-butyl phthalate
330U	isophorone	330U	fluoranthene
330U	2-nitrophenol	1600U	benzidine
330U	2,4-dimethylphenol	330U	pyrene
1600U	benzoic acid	330U	butyl benzyl phthalate
330U	bis(2-chloroethoxy) methane	660U	3,3'-dichlorobenzidine
330U	2,4-dichlorophenol	330U	benzo(a)anthracene
330U	1,2,4-trichlorobenzene	330U	bis(2-ethylhexyl)phthalate
330U	naphthalene	330U	chrysene
330U	4-chloroaniline	330U	di-n-octyl phthalate
330U	hexachlorobutadiene	330U	benzo(b)fluoranthene
330U	4-chloro-3-methylphenol	330U	benzo(k)fluoranthene
330U	2-methylnaphthalene	330U	benzo(a)pyrene
330U	hexachlorocyclopentadiene	330U	indeno(1,2,3-cd)pyrene
330U	2,4,6-trichlorophenol	330U	dibenz(a,h)anthracene
1600U	2,4,5-trichlorophenol	330U	benzo(g,h,i)perylene
330U	2-chloronaphthalene		SURROGATE % RECOVERY
1600U	2-nitroaniline	35	2-fluorophenol (SS1)
330U	dimethyl phthalate	47	phenol-d5 (SS2)
330U	acenaphthylene	45	nitrobenzene-d5 (SS3)
1600U	3-nitroaniline	52	2-fluorobiphenyl
330U	acenaphthene	39	2,4,6-tribromophenol (SS5)
1600U	2,4-dinitrophenol	59	p-terphenyl-d14 (SS6)
1600U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
* = indicates an estimated trace value.

ANALYST : Brian Hess

APPROVED BY : _____

The information shown on this sheet is test data ... analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 11-29-88
CLIENT SAMPLE ID : SOIL METHOD BLANK
REPORT DATE : 12-30-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 11-29-88
DATE ANALYSED : 12-29-88

330U	n-nitroso-dimethylamine
1200	phenol
330U	aniline
330U	bis(2-chloroethyl) ether
330U	2-chlorophenol
330U	1,3-dichlorobenzene
330U	1,4-dichlorobenzene
330U	benzyl alcohol
330U	1,2-dichlorobenzene
330U	2-methylphenol
330U	bis(2-chloroisopropyl) ether
330U	4-methylphenol
330U	n-nitroso-di-n-propylamine
330U	hexachloroethane
330U	nitrobenzene
330U	isophorone
330U	2-nitrophenol
330U	2,4-dimethylphenol
1600U	benzoic acid
330U	bis(2-chloroethoxy) methane
330U	2,4-dichlorophenol
330U	1,2,4-trichlorobenzene
330U	naphthalene
330U	4-chloroaniline
330U	hexachlorobutadiene
330U	4-chloro-3-methylphenol
330U	2-methylnaphthalene
330U	hexachlorocyclopentadiene
330U	2,4,6-trichlorophenol
1600U	2,4,5-trichlorophenol
330U	2-chloronaphthalene
1600U	2-nitroaniline
330U	dimethyl phthalate
330U	acenaphthylene
1600U	3-nitroaniline
330U	acenaphthene
1600U	2,4-dinitrophenol
1600U	4-nitrophenol
330U	dibenzofuran
330U	2,4-dinitrotoluene
330U	2,6-dinitrotoluene
330U	diethyl phthalate
330U	4-chlorophenyl phenyl ether
330U	fluorene
1600U	4-nitroaniline
1600U	4,6-dinitro-2-methylphenol
330U	n-nitrosodiphenylamine
330U	4-bromophenyl phenyl ether
330U	hexachlorobenzene
1600U	pentachlorophenol
330U	phenanthrene
330U	anthracene
330U	di-n-butyl phthalate
330U	fluoranthene
1600U	benzidine
330U	pyrene
330U	butyl benzyl phthalate
660U	3,3'-dichlorobenzidine
330U	benzo(a)anthracene
330U	bis(2-ethylhexyl)phthalate
330U	chrysene
330U	di-n-octyl phthalate
330U	benzo(b)fluoranthene
330U	benzo(k)fluoranthene
330U	benzo(a)pyrene
330U	indeno(1,2,3-cd)pyrene
330U	dibenz(a,h)anthracene
330U	benzo(g,h,i)perylene

SURROGATE % RECOVERY

35	2-fluorophenol (SS1)
47	phenol-d5 (SS2)
45	nitrobenzene-d5 (SS3)
52	2-fluorobiphenyl
39	2,4,6-tribromophenol (SS5)
59	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Goins

F-511

APPROVED BY : _____

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CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

SC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-1-88
CLIENT SAMPLE ID : METHOD BLANK
REPORT DATE : 01-11-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
AMPLE RECEIVED :
AMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 12-1-88
DATE ANALYSED : 1-5-89

330U	n-nitroso-diaethylaaine	330U	dibenzofuran
1300	phenol	330U	2,4-dinitrotoluene
330U	aniline	330U	2,6-dinitrotoluene
330U	bis(2-chloroethyl) ether	330U	diethyl phthalate
330U	2-chlorophenol	330U	4-chlorophenyl phenyl ether
330U	1,3-dichlorobenzene	330U	fluorene
330U	1,4-dichlorobenzene	1600U	4-nitroaniline
330U	benzyl alcohol	1600U	4,6-dinitro-2-aethylphenol
330U	1,2-dichlorobenzene	330U	n-nitrosodiphenylaaine
330U	2-aethylphenol	330U	4-broaophenyl phenyl ether
330U	bis(2-chloroisopropyl) ether	330U	hexachlorobenzene
330U	4-aethylphenol	1600U	pentachlorophenol
330U	n-nitroso-di-n-propylaaine	330U	phenanthrene
330U	hexachloroethane	330U	anthracene
330U	nitrobenzene	330U	di-n-butyl phthalate
330U	isophorone	330U	fluoranthene
330U	2-nitrophenol	1600U	benzidine
330U	2,4-diaethylphenol	330U	pyrene
1600U	benzoic acid	330U	butyl benzyl phthalate
330U	bis(2-chloroethoxy) aethane	660U	3,3'-dichlorobenzidine
330U	2,4-dichlorophenol	330U	benzo(a)anthracene
330U	1,2,4-trichlorobenzene	330U	bis(2-ethylhexyl)phthalate
330U	naphthalene	330U	chrysene
330U	4-chloroaniline	330U	di-n-octyl phthalate
330U	hexachlorobutadiene	330U	benzo(b)fluoranthene
330U	4-chloro-3-aethylphenol	330U	benzo(k)fluoranthene
330U	2-aethylnaphthalene	330U	benzo(a)pyrene
330U	hexachlorocyclopentadiene	330U	indeno(1,2,3-cd)pyrene
330U	2,4,6-trichlorophenol	330U	dibenz(a,h)anthracene
1600U	2,4,5-trichlorophenol	330U	benzo(g,h,i)perylene
330U	2-chloronaphthalene		SURROGATE % RECOVERY
1600U	2-nitroaniline	53	2-fluorophenol (SS1)
330U	dimethyl phthalate	70	phenol-d5 (SS2)
330U	acenaphthylene	63	nitrobenzene-d5 (SS3)
1600U	3-nitroaniline	70	2-fluorobiphenyl
330U	acenaphthene	55	2,4,6-tribroaophenol (SS5)
1600U	2,4-dinitrophenol	95	p-terphenyl-d14 (SS6)
1600U	4-nitrophenol		

RESULT UNITS : ug/kg (aicrograas per kilograa)

U = indicates the coapound was analysed for, but not detected.
The nuaerical value preceeding 'U' is the limit of detection for that coapound, based on dilution.
J = indicates an estiaated trace value.

ANALYST : Brian Holms

APPROVED BY : _____

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CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-3-88
CLIENT SAMPLE ID : METHOD BLANK
REPORT DATE : 01-12-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 12-3-88
DATE ANALYSED : 1-6-89

330U	n-nitroso-diaethylaaine	330U	dibenzofuran
1600	phenol	330U	2,4-dinitrotoluene
330U	aniline	330U	2,6-dinitrotoluene
330U	bis(2-chloroethyl) ether	330U	diethyl phthalate
330U	2-chlorophenol	330U	4-chlorophenyl phenyl ether
330U	1,3-dichlorobenzene	330U	fluorene
330U	1,4-dichlorobenzene	1600U	4-nitroaniline
330U	benzyl alcohol	1600U	4,6-dinitro-2-aethylphenol
330U	1,2-dichlorobenzene	330U	n-nitrosodiphenylaaine
330U	2-aethylphenol	330U	4-broaophenyl phenyl ether
330U	bis(2-chloroisopropyl) ether	330U	hexachlorobenzene
330U	4-aethylphenol	1600U	pentachlorophenol
330U	n-nitroso-di-n-propylaaine	330U	phenanthrene
330U	hexachloroethane	330U	anthracene
330U	nitrobenzene	330U	di-n-butyl phthalate
330U	isophorone	330U	fluoranthene
330U	2-nitrophenol	1600U	benzidine
330U	2,4-diaethylphenol	330U	pyrene
1600U	benzoic acid	330U	butyl benzyl phthalate
330U	bis(2-chloroethoxy) aethane	660U	3,3'-dichlorobenzidine
330U	2,4-dichlorophenol	330U	benzo(a)anthracene
330U	1,2,4-trichlorobenzene	330U	bis(2-ethylhexyl)phthalate
330U	naphthalene	330U	chrysene
330U	4-chloroaniline	330U	di-n-octyl phthalate
330U	hexachlorobutadiene	330U	benzo(b)fluoranthene
330U	4-chloro-3-aethylphenol	330U	benzo(k)fluoranthene
330U	2-aethylnaphthalene	330U	benzo(a)pyrene
330U	hexachlorocyclopentadiene	330U	indeno(1,2,3-cd)pyrene
330U	2,4,6-trichlorophenol	330U	dibenz(a,h)anthracene
1600U	2,4,5-trichlorophenol	330U	benzo(g,h,i)perylene
330U	2-chloronaphthalene		SURROGATE % RECOVERY
1600U	2-nitroaniline	56	2-fluorophenol (SS1)
330U	dimethyl phthalate	74	phenol-d5 (SS2)
330U	acenaphthylene	71	nitrobenzene-d5 (SS3)
1600U	3-nitroaniline	74	2-fluorobiphenyl
330U	acenaphthene	57	2,4,6-tribromophenol (SS5)
1600U	2,4-dinitrophenol	81	p-terphenyl-d14 (SS6)
1600U	4-nitrophenol		

RESULT UNITS : ug/kg (aicrograas per kilograa)

jw 1/12/89

U = indicates the coapound was analysed for, but not detected.
The nuaerical value preceeding 'U' is the liait of detection for that coapound, based on dilution.
J = indicates an estiaated trace value.

ANALYST : Brian Gelus

APPROVED BY : _____

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CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-8-88
CLIENT SAMPLE ID : METHOD BLANK 12-8-88
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 12-6-88
DATE ANALYSED : 1-7-89

330U	n-nitroso-diethylamine	330U	dibenzofuran
1400	phenol	330U	2,4-dinitrotoluene
330U	aniline	330U	2,6-dinitrotoluene
330U	bis(2-chloroethyl) ether	330U	diethyl phthalate
330U	2-chlorophenol	330U	4-chlorophenyl phenyl ether
330U	1,3-dichlorobenzene	330U	fluorene
330U	1,4-dichlorobenzene	1600U	4-nitroaniline
330U	benzyl alcohol	1600U	4,6-dinitro-2-methylphenol
330U	1,2-dichlorobenzene	330U	n-nitrosodiphenylamine
330U	2-methylphenol	330U	4-bromophenyl phenyl ether
330U	bis(2-chloroisopropyl) ether	330U	hexachlorobenzene
330U	4-methylphenol	1600U	pentachlorophenol
330U	n-nitroso-di-n-propylamine	330U	phenanthrene
330U	hexachloroethane	330U	anthracene
330U	nitrobenzene	330U	di-n-butyl phthalate
330U	isophorone	330U	fluoranthene
330U	2-nitrophenol	1600U	benzidine
330U	2,4-dimethylphenol	330U	pyrene
1600U	benzoic acid	330U	butyl benzyl phthalate
330U	bis(2-chloroethoxy) methane	660U	3,3'-dichlorobenzidine
330U	2,4-dichlorophenol	330U	benzo(a)anthracene
330U	1,2,4-trichlorobenzene	330U	bis(2-ethylhexyl)phthalate
330U	naphthalene	330U	chrysene
330U	4-chloroaniline	330U	di-n-octyl phthalate
330U	hexachlorobutadiene	330U	benzo(b)fluoranthene
330U	4-chloro-3-methylphenol	330U	benzo(k)fluoranthene
330U	2-methylnaphthalene	330U	benzo(a)pyrene
330U	hexachlorocyclopentadiene	330U	indeno(1,2,3-cd)pyrene
330U	2,4,6-trichlorophenol	330U	dibenz(a,h)anthracene
1600U	2,4,5-trichlorophenol	330U	benzo(g,h,i)perylene
330U	2-chloronaphthalene		SURROGATE % RECOVERY
1600U	2-nitroaniline	56	2-fluorophenol (SS1)
330U	dimethyl phthalate	70	phenol-d5 (SS2)
330U	acenaphthylene	70	nitrobenzene-d5 (SS3)
1600U	3-nitroaniline	78	2-fluorobiphenyl
330U	acenaphthene	48	2,4,6-tribromophenol (SS5)
1600U	2,4-dinitrophenol	101	p-terphenyl-d14 (SS6)
1600U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Wells

APPROVED BY : _____

The information shown on this sheet is test data

analysis or interpretation is intended

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-8-88
CLIENT SAMPLE ID : METHOD BLANK 12-8-88
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 12-8-88
DATE ANALYSED : 1-10-89

330U	n-nitroso-diethylamine	330U	dibenzofuran
1600	phenol	330U	2,4-dinitrotoluene
330U	aniline	330U	2,6-dinitrotoluene
330U	bis(2-chloroethyl) ether	330U	diethyl phthalate
330U	2-chlorophenol	330U	4-chlorophenyl phenyl ether
330U	1,3-dichlorobenzene	330U	fluorene
330U	1,4-dichlorobenzene	1600U	4-nitroaniline
330U	benzyl alcohol	1600U	4,6-dinitro-2-methylphenol
330U	1,2-dichlorobenzene	330U	n-nitrosodiphenylamine
330U	2-methylphenol	330U	4-bromophenyl phenyl ether
330U	bis(2-chloroisopropyl) ether	330U	hexachlorobenzene
330U	4-methylphenol	1600U	pentachlorophenol
330U	n-nitroso-di-n-propylamine	330U	phenanthrene
330U	hexachloroethane	330U	anthracene
330U	nitrobenzene	330U	di-n-butyl phthalate
330U	isophorone	330U	fluoranthene
330U	2-nitrophenol	1600U	benzidine
330U	2,4-dimethylphenol	330U	pyrene
1600U	benzoic acid	330U	butyl benzyl phthalate
330U	bis(2-chloroethoxy) methane	660U	3,3'-dichlorobenzidine
330U	2,4-dichlorophenol	330U	benzo(a)anthracene
330U	1,2,4-trichlorobenzene	330U	bis(2-ethylhexyl)phthalate
330U	naphthalene	330U	chrysene
330U	4-chloroaniline	330U	di-n-octyl phthalate
330U	hexachlorobutadiene	330U	benzo(b)fluoranthene
330U	4-chloro-3-methylphenol	330U	benzo(k)fluoranthene
330U	2-methylnaphthalene	330U	benzo(a)pyrene
330U	hexachlorocyclopentadiene	330U	indeno(1,2,3-cd)pyrene
330U	2,4,6-trichlorophenol	330U	dibenz(a,h)anthracene
1600U	2,4,5-trichlorophenol	330U	benzo(g,h,i)perylene
330U	2-chloronaphthalene		SURROGATE % RECOVERY
1600U	2-nitroaniline	44	2-fluorophenol (SS1)
330U	dimethyl phthalate	59	phenol-d5 (SS2)
330U	acenaphthylene	70	nitrobenzene-d5 (SS3)
1600U	3-nitroaniline	78	2-fluorobiphenyl
330U	acenaphthene	53	2,4,6-tribromophenol (SS5)
1600U	2,4-dinitrophenol	117	p-terphenyl-d14 (SS6)
1600U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Ross

APPROVED BY : _____

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CH2M HILL ENVIRONMENTAL LABORATORY
3218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-23-88
CLIENT SAMPLE ID : METHOD BLANK 12-23-88
REPORT DATE : 01-24-1989

T NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 12-23-88
DATE ANALYSED : 1-20-89

330U	n-nitroso-dimethylamine
1700	phenol
330U	aniline
330U	bis(2-chloroethyl) ether
330U	2-chlorophenol
330U	1,3-dichlorobenzene
330U	1,4-dichlorobenzene
330U	benzyl alcohol
330U	1,2-dichlorobenzene
330U	2-methylphenol
330U	bis(2-chloroisopropyl) ether
330U	4-methylphenol
330U	n-nitroso-di-n-propylamine
330U	hexachloroethane
330U	nitrobenzene
330U	isophorone
330U	2-nitrophenol
330U	2,4-dimethylphenol
1600U	benzoic acid
330U	bis(2-chloroethoxy) methane
330U	2,4-dichlorophenol
330U	1,2,4-trichlorobenzene
330U	naphthalene
330U	4-chloroaniline
330U	hexachlorobutadiene
330U	4-chloro-3-methylphenol
330U	2-methylnaphthalene
330U	hexachlorocyclopentadiene
330U	2,4,6-trichlorophenol
1600U	2,4,5-trichlorophenol
330U	2-chloronaphthalene
1600U	2-nitroaniline
330U	dimethyl phthalate
330U	acenaphthylene
1600U	3-nitroaniline
330U	acenaphthene
1600U	2,4-dinitrophenol
1600U	4-nitrophenol
330U	dibenzofuran
330U	2,4-dinitrotoluene
330U	2,6-dinitrotoluene
330U	diethyl phthalate
330U	4-chlorophenyl phenyl ether
330U	fluorene
1600U	4-nitroaniline
1600U	4,6-dinitro-2-methylphenol
330U	n-nitrosodiphenylamine
330U	4-bromophenyl phenyl ether
330U	hexachlorobenzene
1600U	pentachlorophenol
330U	phenanthrene
330U	anthracene
330U	di-n-butyl phthalate
330U	fluoranthene
1600U	benzidine
330U	pyrene
330U	butyl benzyl phthalate
660U	3,3'-dichlorobenzidine
330U	benzo(a)anthracene
330U	bis(2-ethylhexyl)phthalate
330U	chrysene
330U	di-n-octyl phthalate
330U	benzo(b)fluoranthene
330U	benzo(k)fluoranthene
330U	benzo(a)pyrene
330U	indeno(1,2,3-cd)pyrene
330U	dibenz(a,h)anthracene
330U	benzo(g,h,i)perylene

SURROGATE % RECOVERY

0U	2-fluorophenol (SS1)
0U	phenol-d5 (SS2)
0U	nitrobenzene-d5 (SS3)
0U	2-fluorobiphenyl
0U	2,4,6-tribromophenol (SS5)
0J	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : [signature]

APPROVED BY : _____

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CHEM HILL ENVIRONMENTAL LABORATORY
2319 RAILROAD AVENUE
REDDING CA 96001 916-243-1725

GC MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : RB 12-27-88
CLIENT SAMPLE ID : METHOD BLANK 12-27-88
REPORT DATE : 01-26-1989

CLIENT NAME : BEALE AFB CHEM HILL/SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED : 12-27-88
DATE ANALYSED : 1-24-89

330U	n-nitroso-diethylamine
1600U	phenol
330U	aniline
330U	bis(2-chloroethyl) ether
330U	2-chlorophenol
330U	1,3-dichlorobenzene
330U	1,4-dichlorobenzene
330U	benzyl alcohol
330U	1,2-dichlorobenzene
330U	2-methylphenol
330U	bis(2-chloroisopropyl) ether
330U	4-methylphenol
330U	n-nitroso-di-n-propylamine
330U	hexachloroethane
330U	nitrobenzene
330U	isophorone
330U	2-nitrophenol
330U	2,4-dimethylphenol
1600U	benzoic acid
330U	bis(2-chloroethoxy) methane
330U	2,4-dichlorophenol
330U	1,2,4-trichlorobenzene
330U	naphthalene
330U	4-chloroaniline
330U	hexachlorobutadiene
330U	4-chloro-3-methylphenol
330U	2-methylnaphthalene
330U	hexachlorocyclopentadiene
330U	2,4,6-trichlorophenol
1600U	2,4,5-trichlorophenol
330U	2-chloronaphthalene
1600U	2-nitroaniline
330U	dimethyl phthalate
330U	acenaphthylene
1600U	3-nitroaniline
330U	acenaphthene
1600U	2,4-dinitrophenol
1600U	4-nitrophenol
330J	dibenzofuran
330U	2,4-dinitrotoluene
330U	2,6-dinitrotoluene
330U	diethyl phthalate
330U	4-chlorophenyl phenyl ether
330U	fluorene
1600U	4-nitroaniline
1600U	4,6-dinitro-2-methylphenol
330U	n-nitrosodiphenylamine
330U	4-bromophenyl phenyl ether
330U	hexachlorobenzene
1600U	pentachlorophenol
330U	phenanthrene
330U	anthracene
330U	di-n-butyl phthalate
330U	fluoranthene
1600U	benzidine
330U	pyrene
330U	butyl benzyl phthalate
660U	3,3'-dichlorobenzidine
330U	benzo(a)anthracene
330U	bis(2-ethylhexyl)phthalate
330U	chrysene
330U	di-n-octyl phthalate
330U	benzo(b)fluoranthene
330U	benzo(k)fluoranthene
330U	benzo(a)pyrene
330U	indeno(1,2,3-cd)pyrene
330U	dibenz(a,h)anthracene
330U	benzo(g,h,i)perylene

SURROGATE	% RECOVERY
53	2-fluorophenol (SS1)
76	phenol-d5 (SS2)
70	nitrobenzene-d5 (SS3)
70	2-fluorobiphenyl
54	2,4,6-tribromophenol (SS5)
85	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on o. ation.
J = indicates an estimated trace value.

ANALYST : Brian Gross

APPROVED BY : _____

F-517

The information shown on this sheet is test data only s.s or interpretation is intended or is,

ORGANICS ANALYSIS DATA SHEET

L itory Name: CH2M Hill
Lab Sample ID: RB-01-18-89
Client Sample ID: METHOD BLANK

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: 01/18/89
Date Analyzed: 02/08/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/KG		CAS Number		UG/KG	
62-75-9	N-Nitrosodimethylamine . .	330	U	51-28-5	2,4-Dinitrophenol	1600	U
108-95-2	Phenol	330	U	100-02-7	4-Nitrophenol	1600	U
62-53-3	Aniline	330	U	132-64-9	Dibenzofuran	330	U
111-44-4	bis(2-Chloroethyl)Ether .	330	U	121-14-2	2,4-Dinitrotoluene	330	U
95-57-8	2-Chlorophenol	330	U	84-66-2	Diethylphthalate	550	B
541-73-1	1,3-Dichlorobenzene . . .	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
106-46-7	1,4-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
100-51-6	Benzyl Alcohol	330	U	100-01-6	4-Nitroaniline	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-48-7	2-Methylphenol	330	U	86-30-6	N-Nitrosodiphenylamine (1)	83	BJ
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
106-44-5	4-Methylphenol	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	118-74-1	Hexachlorobenzene	330	U
67-72-1	Hexachloroethane	330	U	87-86-5	Pentachlorophenol	330	U
98-95-3	Nitrobenzene	330	U	85-01-8	Phenanthrene	330	U
78-59-1	Isophorone	330	U	120-12-7	Anthracene	330	U
88-75-5	2-Nitrophenol	330	U	84-74-2	Di-n-Butylphthalate . . .	35	BJ
105-67-9	2,4-Dimethylphenol	330	U	206-44-0	Fluoranthene	330	U
65 0	Benzoic Acid	1600	U	129-00-0	Pyrene	330	U
11. .-1	bis(2-Chloroethoxy)Methane	330	U	85-68-7	Butylbenzylphthalate . . .	330	U
120-83-2	2,4-Dichlorophenol	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-82-1	1,2,4-Trichlorobenzene . .	330	U	56-55-3	Benzo(a)anthracene	330	U
91-20-3	Naphthalene	330	U	218-01-9	Chrysene	330	U
106-47-8	4-Chloroaniline	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	85	BJ
87-68-3	Hexachlorobutadiene . . .	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	207-08-9	Benzo(k)fluoranthene . . .	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	50-32-8	Benzo(a)pyrene	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
88-74-4	2-Nitroaniline	1600	U		----------		
131-11-3	Dimethyl Phthalate	330	U		Nitrobenzene-d5 - SS . . .	75	
208-96-8	Acenaphthylene	330	U		2-Fluorobiphenyl - SS . .	85	
606-20-2	2,6-Dinitrotoluene	330	U		Terphenyl-d14 - SS	130	
99-09-2	3-Nitroaniline	1600	U		Phenol-d5 - SS	64	
83-32-9	Acenaphthene	330	U		2-Fluorophenol - SS . . .	61	
					2,4,6-Tribromophenol - SS	66	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
Reported value less than quantitation limit.
Surrogate Standard reported as percent recovery.

BG

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB-01-19-89
Client Sample ID: METHOD BLANK

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 01/19/89
Date Analyzed: 02/16/
Dilution Factor: _____

SEMIVOLATILE COMPOUNDS

CAS Number		UG/KG		CAS Number		UG/KG	
62-75-9	N-Nitrosodimethylamine	330	U	51-28-5	2,4-Dinitrophenol	1600	U
108-95-2	Phenol	330	U	100-02-7	4-Nitrophenol	1600	U
62-53-3	Aniline	330	U	132-64-9	Dibenzofuran	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U	121-14-2	2,4-Dinitrotoluene	330	U
95-57-8	2-Chlorophenol	330	U	84-66-2	Diethylphthalate	330	U
541-73-1	1,3-Dichlorobenzene	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
106-46-7	1,4-Dichlorobenzene	330	U	86-73-7	Fluorene	330	U
100-51-6	Benzyl Alcohol	330	U	100-01-6	4-Nitroaniline	1600	U
95-50-1	1,2-Dichlorobenzene	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-48-7	2-Methylphenol	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	122-66-7	1,2-Diphenylhydrazine	330	U
106-44-5	4-Methylphenol	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	118-74-1	Hexachlorobenzene	330	U
67-72-1	Hexachloroethane	330	U	87-86-5	Pentachlorophenol	330	U
98-95-3	Nitrobenzene	330	U	85-01-8	Phenanthrene	330	U
78-59-1	Isophorone	330	U	120-12-7	Anthracene	330	U
88-75-5	2-Nitrophenol	330	U	84-74-2	Di-n-Butylphthalate	57	BJ
105-67-9	2,4-Dimethylphenol	330	U	206-44-0	Fluoranthene	330	U
65-85-0	Benzoic Acid	1600	U	129-00-0	Pyrene	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	85-68-7	Butylbenzylphthalate	330	U
120-83-2	2,4-Dichlorophenol	330	U	91-94-1	3,3'-Dichlorobenzidine	660	
120-82-1	1,2,4-Trichlorobenzene	330	U	56-55-3	Benzo(a)anthracene	330	U
91-20-3	Naphthalene	330	U	218-01-9	Chrysene	330	U
106-47-8	4-Chloroaniline	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	72	BJ
87-68-3	Hexachlorobutadiene	330	U	117-84-0	Di-n-octylphthalate	330	U
59-50-7	4-Chloro-3-methylphenol	330	U	205-99-2	Benzo(b)fluoranthene	330	U
91-57-6	2-Methylnaphthalene	330	U	207-08-9	Benzo(k)fluoranthene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	50-32-8	Benzo(a)pyrene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U	53-70-3	Dibenz(a,h)Anthracene	330	U
91-58-7	2-Chloronaphthalene	330	U	191-24-2	Benzo(g,h,i)perylene	330	U
88-74-4	2-Nitroaniline	1600	U				
131-11-3	Dimethyl Phthalate	330	U		Nitrobenzene-d5 - SS	65	
208-96-8	Acenaphthylene	330	U		2-Fluorobiphenyl - SS	73	
606-20-2	2,6-Dinitrotoluene	330	U		Terphenyl-d14 - SS	100	
99-09-2	3-Nitroaniline	1600	U		Phenol-d5 - SS	76	
83-32-9	Acenaphthene	330	U		2-Fluorophenol - SS	68	
					2,4,6-Tribromophenol - SS	73	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: SB051289B1
Client Sample ID: SBLKS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 05/12/89
Date Analyzed: 05/19/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	51-28-5	2,4-Dinitrophenol	1600	U
108-95-2	Phenol	330	U	100-02-7	4-Nitrophenol	1600	U
62-53-3	Aniline	330	U	132-64-9	Dibenzofuran	330	U
111-44-4	bis(2-Chloroethyl)Ether .	330	U	121-14-2	2,4-Dinitrotoluene	330	U
95-57-8	2-Chlorophenol	330	U	84-66-2	Diethylphthalate	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
106-46-7	1,4-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
100-51-6	Benzyl Alcohol	330	U	100-01-6	4-Nitroaniline	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-48-7	2-Methylphenol	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
39638-32-9	bis(2-Chloroisopropyl)Ether	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
106-44-5	4-Methylphenol	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	118-74-1	Hexachlorobenzene	330	U
67-72-1	Hexachloroethane	330	U	87-86-5	Pentachlorophenol	330	U
98-95-3	Nitrobenzene	330	U	85-01-8	Phenanthrene	330	U
78-59-1	Isophorone	330	U	120-12-7	Anthracene	330	U
88-75-5	2-Nitrophenol	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
105-67-9	2,4-Dimethylphenol	330	U	206-44-0	Fluoranthene	330	U
65-85-0	Benzoic Acid	1600	U	129-00-0	Pyrene	330	U
[illegible]1-1	bis(2-Chloroethoxy)Methane	330	U	85-68-7	Butylbenzylphthalate . . .	330	U
[illegible]d3-2	2,4-Dichlorophenol	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-82-1	1,2,4-Trichlorobenzene . .	330	U	56-55-3	Benzo(a)anthracene	330	U
91-20-3	Naphthalene	330	U	218-01-9	Chrysene	330	U
106-47-8	4-Chloroaniline	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	207-08-9	Benzo(k)fluoranthene . . .	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	50-32-8	Benzo(a)pyrene	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
88-74-4	2-Nitroaniline	1600	U		----------		
131-11-3	Dimethyl Phthalate	330	U		Nitrobenzene-d5 - SS . . .	34	
208-96-8	Acenaphthylene	330	U		2-Fluorobiphenyl - SS . .	38	
606-20-2	2,6-Dinitrotoluene	330	U		Terphenyl-d14 - SS	70	
99-09-2	3-Nitroaniline	1600	U		Phenol-d5 - SS	50	
83-32-9	Acenaphthene	330	U		2-Fluorophenol - SS . . .	36	
					2,4,6-Tribromophenol - SS	55	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
** - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory 2485 Railroad Avenue, P.O. Box 2088 Redding California 96001 916 243 5831

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: SB051289B1
Client Sample ID: SOIL-BLANK

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 05/12/89
Date Analyzed: 05/19/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	51-28-5	2,4-Dinitrophenol	1600	U
108-95-2	Phenol	330	U	100-02-7	4-Nitrophenol	1600	U
62-53-3	Aniline	330	U	132-64-9	Dibenzofuran	330	U
111-44-4	bis(2-Chloroethyl)Ether .	330	U	121-14-2	2,4-Dinitrotoluene	330	U
95-57-8	2-Chlorophenol	330	U	84-66-2	Diethylphthalate	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
106-46-7	1,4-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
100-51-6	Benzyl Alcohol	330	U	100-01-6	4-Nitroaniline	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-48-7	2-Methylphenol	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
39638-32-9	bis(2-Chloroisopropyl)Ether	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
106-44-5	4-Methylphenol	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	118-74-1	Hexachlorobenzene	330	U
67-72-1	Hexachloroethane	330	U	87-86-5	Pentachlorophenol	330	U
98-95-3	Nitrobenzene	330	U	85-01-8	Phenanthrene	330	U
78-59-1	Isophorone	330	U	120-12-7	Anthracene	330	U
88-75-5	2-Nitrophenol	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
105-67-9	2,4-Dimethylphenol	330	U	206-44-0	Fluoranthene	330	U
65-85-0	Benzoic Acid	1600	U	129-00-0	Pyrene	330	
111-91-1	bis(2-Chloroethoxy)Methane	330	U	85-68-7	Butylbenzylphthalate . . .	330	U
120-83-2	2,4-Dichlorophenol	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-82-1	1,2,4-Trichlorobenzene . .	330	U	56-55-3	Benzo(a)anthracene	330	U
91-20-3	Naphthalene	330	U	218-01-9	Chrysene	330	U
106-47-8	4-Chloroaniline	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	207-08-9	Benzo(k)fluoranthene . . .	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	50-32-8	Benzo(a)pyrene	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
88-74-4	2-Nitroaniline	1600	U				
131-11-3	Dimethyl Phthalate	330	U		Nitrobenzene-d5 - SS . . .	34	
208-96-8	Acenaphthylene	330	U		2-Fluorobiphenyl - SS . .	38	
606-20-2	2,6-Dinitrotoluene	330	U		Terphenyl-d14 - SS	70	
99-09-2	3-Nitroaniline	1600	U		Phenol-d5 - SS	50	
83-32-9	Acenaphthene	330	U		2-Fluorophenol - SS . . .	36	
					2,4,6-Tribromophenol - SS	55	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 12538001
Client Sample ID: EXTRACT BLAN

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: 12/20/88
Date Analyzed: 01/19/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	100-02-7	4-Nitrophenol	1600	U
108-95-2	Phenol	330	U	132-64-9	Dibenzofuran	330	U
62-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	330	U
111-44-4	bis(2-Chloroethyl)Ether .	330	U	84-66-2	Diethylphthalate	330	U
95-57-8	2-Chlorophenol	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
106-46-7	1,4-Dichlorobenzene . . .	330	U	100-01-6	4-Nitroaniline	1600	U
100-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
95-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
106-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U	87-86-5	Pentachlorophenol	330	U
67-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
98-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
78-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
88-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
105-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	330	U
65-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate . . .	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
120-82-1	1,2,4-Trichlorobenzene . .	330	U	218-01-9	Chrysene	330	U
[illegible]20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	330	U	207-08-9	Benzo(k)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	50-32-8	Benzo(a)pyrene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U		----------		
88-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS . . .	97	
131-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS . .	72	
208-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	94	
606-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	94	
99-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS . . .	78	
83-32-9	Acenaphthene	330	U		2,4,6-Tribromophenol - SS	67	
51-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M HILL/MGM
ab Sample ID: 12538Q01
lient Sample IU: EXTRACTS BLAN

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 12/20/88
Date Analyzed: 01/19/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/Kg		CAS Number		ug/Kg	
2-75-9	N-Nitrosodimethylamine . .	330	U	100-02-7	4-Nitrophenol	1600	U
08-95-2	Phenol	330	U	132-64-9	Dibenzofuran	330	U
2-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	330	U
11-44-4	bis(2-Chloroethyl)Ether .	330	U	84-66-2	Diethylphthalate	330	U
5-57-8	2-Chlorophenol	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
41-73-1	1,3-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
06-46-7	1,4-Dichlorobenzene . . .	330	U	100-01-6	4-Nitroaniline	1600	U
00-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
5-50-1	1,2-Dichlorobenzene . . .	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
5-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
08-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
06-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
21-64-7	N-Nitroso-Di-n-Propylamine	330	U	87-86-5	Pentachlorophenol	330	U
7-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
3-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
3-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
3-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
05-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	330	U
5-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate . . .	330	U
11-91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
20-83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
20-82-1	1,2,4-Trichlorobenzene . .	330	U	218-01-9	Chrysene	330	U
1-20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
06-47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
7-68-3	Hexachlorobutadiene . . .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
9-50-7	4-Chloro-3-methylphenol .	330	U	207-08-9	Benzo(k)fluoranthene . . .	330	U
1-57-6	2-Methylnaphthalene . . .	330	U	50-32-8	Benzo(a)pyrene	330	U
7-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
3-06-2	2,4,6-Trichlorophenol . .	330	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
5-95-4	2,4,5-Trichlorophenol . .	1600	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
1-58-7	2-Chloronaphthalene . . .	330	U		----------		
3-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS . . .	97	
31-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS . .	72	
08-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	94	
06-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	94	
9-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS . . .	78	
3-32-9	Acenaphthene	330	U		2,4,6-Tribromophenol - SS	67	
1-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Montgomery Environmental Laboratory ...e Drive, P.O. Box 230548, Montgomery, Alabama 36116 205 271 1444

...1

...ESTER ANALYTICS
...20 LORRAINE AV. #105
...

...MS SEMI-VOLATILE ORGANICS ANALYSIS

...AB REFERENCE NUMBER: 8901S038-0...
...LIENT SAMPLE ID : 88-12-21
...

Engineers
Planners
CH2M HILL Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Sample ID: 12538001
Client Sample ID: EXTRACTS BLAN

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 12/20/88
Date Analyzed: 01/19/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	100-02-7	4-Nitrophenol	1600	U
108-95-2	Phenol	330	U	132-64-9	Dibenzofuran	330	U
62-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	330	U
111-44-4	bis(2-Chloroethyl)Ether .	330	U	84-66-2	Diethylphthalate	330	U
95-57-8	2-Chlorophenol	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
106-46-7	1,4-Dichlorobenzene . . .	330	U	100-01-6	4-Nitroaniline	1600	U
100-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
95-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
106-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	87-86-5	Pentachlorophenol	330	U
67-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
98-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
78-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
88-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
105-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	330	U
65-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate . . .	330	U
91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
120-82-1	1,2,4-Trichlorobenzene . .	330	U	218-01-9	Chrysene	330	U
91-20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
106-47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	330	U	207-08-9	Benzo(k)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	50-32-8	Benzo(a)pyrene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U		----------		
88-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS . . .	97	
131-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS . .	72	
208-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	94	
606-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	94	
99-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS . . .	78	
83-32-9	Acenaphthene	330	U		2,4,6-Tribromophenol - SS	67	
51-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
` - Surrogate Standard reported as percent recovery.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RB_12-28

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S12719 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12719001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA002656

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec. 0 dec. ____ Date Extracted: 12/28/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/31/89

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	1500	B
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl Alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	1600	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

RS

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RB_12-28

b Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S12719 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12719001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA002656

Level: (low/med) LOW Date Received: 12/28/88

% Moisture: not dec. 0 dec. _____ Date Extracted: 12/28/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/31/89

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
122-66-7	1,2-Diphenylhydrazine	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	330	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	110	BJ
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	100	BJ
117-84-0	Di-n-octylphthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from lamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RB-12-29

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S12719 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12719002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA002657

Level: (low/med) LOW Date Received: 12/29/88

% Moisture: not dec. 0 dec. _____ Date Extracted: 12/29/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/31/89

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl Alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	1600	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RB-12-29

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S12719 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12719002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA002657

Level: (low/med) LOW Date Received: 12/29/88

% Moisture: not dec. 0 dec. _____ Date Extracted: 12/29/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/31/89

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
122-66-7	1,2-Diphenylhydrazine	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	330	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	170	BJ
117-84-0	Di-n-octylphthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from amine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RB_12_30

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S12719 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12719003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA002658

Level: (low/med) LOW Date Received: 12/30/88

% Moisture: not dec. 0 dec. _____ Date Extracted: 12/30/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/31/89

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl Alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	1600	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	1600	U
95-95-4	2,4,5-Trichlorophenol	330	U
91-58-7	2-Chloronaphthalene	1600	U
88-74-4	2-Nitroaniline	330	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RB_12_30

Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: S12719 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 12719003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A1BA002658

Level: (low/med) LOW Date Received: 12/30/88

% Moisture: not dec. 0 dec. _____ Date Extracted: 12/30/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/31/89

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
122-66-7	1,2-Diphenylhydrazine	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	330	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	70	BJ
117-84-0	Di-n-octylphthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

KDD21859

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12719001
Client Sample ID: RB 12-28

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: 0.0

Date Extracted: 12/28/8'
Date Analyzed: 01/31/8
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine	330	U	51-28-5	2,4-Dinitrophenol	1600	U
108-95-2	Phenol	1500		100-02-7	4-Nitrophenol	1600	U
62-53-3	Aniline	330	U	132-64-9	Dibenzofuran	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U	121-14-2	2,4-Dinitrotoluene	330	U
95-57-8	2-Chlorophenol	330	U	84-66-2	Diethylphthalate	330	U
541-73-1	1,3-Dichlorobenzene	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
106-46-7	1,4-Dichlorobenzene	330	U	86-73-7	Fluorene	330	U
100-51-6	Benzyl Alcohol	330	U	100-01-6	4-Nitroaniline	1600	U
95-50-1	1,2-Dichlorobenzene	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-48-7	2-Methylphenol	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
39638-32-9	bis(2-Chloroisopropyl)Ether	330	U	122-66-7	1,2-Diphenylhydrazine	330	U
106-44-5	4-Methylphenol	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	118-74-1	Hexachlorobenzene	330	U
67-72-1	Hexachloroethane	330	U	87-86-5	Pentachlorophenol	330	U
98-95-3	Nitrobenzene	330	U	85-01-8	Phenanthrene	330	U
78-59-1	Isophorone	330	U	120-12-7	Anthracene	330	U
88-75-5	2-Nitrophenol	330	U	84-74-2	Di-n-Butylphthalate	110	J
105-67-9	2,4-Dimethylphenol	330	U	206-44-0	Fluoranthene	330	U
65-85-0	Benzoic Acid	1600	U	129-00-0	Pyrene	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	85-68-7	Butylbenzylphthalate	330	
120-83-2	2,4-Dichlorophenol	330	U	91-94-1	3,3'-Dichlorobenzidine	660	U
120-82-1	1,2,4-Trichlorobenzene	330	U	56-55-3	Benzo(a)anthracene	330	U
91-20-3	Naphthalene	330	U	218-01-9	Chrysene	330	U
106-47-8	4-Chloroaniline	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	100	J
87-68-3	Hexachlorobutadiene	330	U	117-84-0	Di-n-octylphthalate	330	U
59-50-7	4-Chloro-3-methylphenol	330	U	205-99-2	Benzo(b)fluoranthene	330	U
91-57-6	2-Methylnaphthalene	330	U	207-08-9	Benzo(k)fluoranthene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	50-32-8	Benzo(a)pyrene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U	53-70-3	Dibenz(a,h)Anthracene	330	U
91-58-7	2-Chloronaphthalene	330	U	191-24-2	Benzo(g,h,i)perylene	330	U
88-74-4	2-Nitroaniline	1600	U				
131-11-3	Dimethyl Phthalate	330	U		Nitrobenzene-d5 - SS	75	
208-96-8	Acenaphthylene	330	U		2-Fluorobiphenyl - SS	77	
606-20-2	2,6-Dinitrotoluene	330	U		Terphenyl-d14 - SS	90	
99-09-2	3-Nitroaniline	1600	U		Phenol-d5 - SS	68	
83-32-9	Acenaphthene	330	U		2-Fluorophenol - SS	49	
					2,4,6-Tribromophenol - SS	71	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

ratory Name: CH2M Hill
Lab Sample ID: 12774005
Client Sample ID: RB-1-4

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: 01/04/89
Date Analyzed: 02/13/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	51-28-5	2,4-Dinitrophenol	1600	U
108-95-2	Phenol	330	U	100-02-7	4-Nitrophenol	1600	U
62-53-3	Aniline	330	U	132-64-9	Dibenzofuran	330	U
111-44-4	bis(2-Chloroethyl)Ether .	330	U	121-14-2	2,4-Dinitrotoluene	330	U
95-57-8	2-Chlorophenol	330	U	84-66-2	Diethylphthalate	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	7005-72-3	4-Chlorophenyl-phenylether	330	U
106-46-7	1,4-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
100-51-6	Benzyl Alcohol	330	U	100-01-6	4-Nitroaniline	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-48-7	2-Methylphenol	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
39638-32-9	bis(2-Chloroisopropyl)Ether	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
106-44-5	4-Methylphenol	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	118-74-1	Hexachlorobenzene	330	U
67-72-1	Hexachloroethane	330	U	87-86-5	Pentachlorophenol	330	U
98-95-3	Nitrobenzene	330	U	85-01-8	Phenanthrene	330	U
78-59-1	Isophorone	330	U	120-12-7	Anthracene	330	U
88-75-5	2-Nitrophenol	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
105-67-9	2,4-Dimethylphenol	330	U	206-44-0	Fluoranthene	330	U
65-0	Benzoic Acid	1600	U	129-00-0	Pyrene	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	85-68-7	Butylbenzylphthalate . . .	330	U
120-83-2	2,4-Dichlorophenol	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-82-1	1,2,4-Trichlorobenzene . .	330	U	56-55-3	Benzo(a)anthracene	330	U
91-20-3	Naphthalene	330	U	218-01-9	Chrysene	330	U
106-47-8	4-Chloroaniline	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	207-08-9	Benzo(k)fluoranthene . . .	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	50-32-8	Benzo(a)pyrene	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
88-74-4	2-Nitroaniline	1600	U		----------		
131-11-3	Dimethyl Phthalate	330	U		Nitrobenzene-d5 - SS . . .	48	
208-96-8	Acenaphthylene	330	U		2-Fluorobiphenyl - SS . .	68	
606-20-2	2,6-Dinitrotoluene	330	U		Terphenyl-d14 - SS	96	
99-09-2	3-Nitroaniline	1600	U		Phenol-d5 - SS	55	
83-32-9	Acenaphthene	330	U		2-Fluorophenol - SS . . .	40	
					2,4,6-Tribromophenol - SS	66	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
- Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

Redding
Environmental Laboratory
Railroad Avenue P.O. Box 2088
Redding, California 96001
916 243 5831

WESTON ANALYTICS
7720 LORRAINE AVE. SUITE 100
STOCKTON CA 95210 209 957-0405

UC MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER 89013005-04
CLIENT SAMPLE ID : RB-12-13 BLK FOR 01S005
REPORT DATE : 01-20-1989

CLIENT NAME : CH2M HILL
FILE ID : 89M2BN0183
BLANK ID : 89M2BN0183
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01/13/89
DATE EXTRACTED : .
DATE ANALYSED : 01/20/89

330 U	n-nitroso-dimethylamine	330 U	dibenzofuran
330 U	phenol	330 U	2,4-dinitrotoluene
330 U	aniline	330 U	2,6-dinitrotoluene
330 U	bis 2-chloroethyl ether	330 U	diethyl phthalate
330 U	2-chlorophenol	330 U	4-chlorophenyl phenyl ether
330 U	1,3-dichlorobenzene	330 U	fluorene
330 U	1,4-dichlorobenzene	1600 U	4-nitroaniline
330 U	benzyl alcohol	1600 U	4,6-dinitro-2-methylphenol
330 U	1,2-dichlorobenzene	330 U	n-nitrosodiphenylamine
330 U	2-methylphenol	330 U	4-bromophenyl phenyl ether
330 U	bis 2-chloroisopropyl ether	330 U	hexachlorobenzene
330 U	4-methylphenol	1600 U	pentachlorophenol
330 U	n-nitroso-di-n-propylamine	330 U	phenanthrene
330 U	hexachloroethane	330 U	anthracene
330 U	nitrobenzene	120 U	di-n-butyl phthalate
330 U	isophorone	330 U	fluoranthene
330 U	2-nitrophenol	1600 U	benzidine
330 U	2,4-dimethylphenol	330 U	pyrene
1600 U	benzoic acid	330 U	butyl benzyl phthalate
330 U	bis 2-chloroethoxy methane	660 U	3,3-dichlorobenzidine
330 U	2,4-dichlorophenol	330 U	benzo a anthracene
330 U	1,2,4-trichlorobenzene	45 U	bis 2-ethylhexyl phthalate
330 U	naphthalene	330 U	chrysene
330 U	4-chloroaniline	330 U	di-n-octyl phthalate
330 U	hexachlorobutadiene	330 U	benzo b fluoranthene
330 U	4-chloro-3-methylphenol	330 U	benzo k fluoranthene
330 U	2-methylnaphthalene	330 U	benzo a pyrene
330 U	hexachlorocyclopentadiene	330 U	indeno 1,2,3-cd pyrene
330 U	2,4,6-trichlorophenol	330 U	dibenz a,h anthracene
1600 U	2,4,5-trichlorophenol	330 U	benzo g,h,i perylene
330 U	2-chloronaphthalene	SURROGATE % RECOVERY	
1600 U	2-nitroaniline	32	2-fluorophenol (SS1)
330 U	dimethyl phthalate	52	phenol-d5 (SS2)
330 U	acenaphthylene	27	nitrobenzene-d5 (SS3)
1600 U	3-nitroaniline	29	2-fluorobiphenyl
330 U	acenaphthene	57	2,4,6-tribromophenol (SS5)
1600 U	2,4-dinitrophenol	34	p-terphenyl-d14 (SS6)
1600 U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U = indicates the compound was analysed for but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST _____

APPROVED BY : R. F. Cauley

WESTON ANALYTICS
7720 LORRAINE AVE. SUITE 102
STOCKTON CA 95210 209 957-3405

CC MC SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER [illegible]
CLIENT SAMPLE ID [illegible]
REPORT DATE [illegible]

CLIENT NAME : CH2M HILL
JOB : 8270
BLANK ID : 93M2BN0152
SAMPLE TYPE : SOIL/SEDIMENT SOLIDS

DATE SAMPLED : 12/08/88
DATE RECEIVED : 01/17/89
DATE EXTRACTED : 12/13/88
DATE ANALYSED : 01/17/89

330 U	n-nitroso-dimethylamine	330 U	dibenzofuran
330 U	phenol	330 U	2,4-dinitrotoluene
330 U	aniline	330 U	2,6-dinitrotoluene
330 U	bis(2-chloroethyl) ether	330 U	diethyl phthalate
330 U	2-chlorophenol	330 U	4-chlorophenyl phenyl ether
330 U	1,3-dichlorobenzene	330 U	fluorene
330 U	1,4-dichlorobenzene	1500 U	4-nitroaniline
330 U	benzyl alcohol	1500 U	4,6-dinitro-2-methylphenol
330 U	1,2-dichlorobenzene	330 U	n-nitrosodiphenylamine
330 U	2-methylphenol	330 U	4-bromophenyl phenyl ether
330 U	bis(2-chloroisopropyl) ether	330 U	hexachlorobenzene
330 U	4-methylphenol	1500 U	pentachlorophenol
330 U	n-nitroso-di-n-propylamine	330 U	phenanthrene
330 U	hexachloroethane	330 U	anthracene
330 U	nitrobenzene	150 U	di-n-butyl phthalate
330 U	isophorone	330 U	fluoranthene
330 U	2-nitrophenol	1500 U	benzidine
330 U	2,4-dimethylphenol	330 U	pyrene
1500 U	benzoic acid	330 U	butyl benzyl phthalate
330 U	bis(2-chloroethoxy) methane	650 U	3,3'-dichlorobenzidine
330 U	2,4-dichlorophenol	330 U	benzo a anthracene
330 U	1,2,4-trichlorobenzene	330 U	bis(2-ethylhexyl) phthalate
330 U	naphthalene	330 U	chrysene
330 U	4-chloroaniline	330 U	di-n-octyl phthalate
330 U	hexachlorobutadiene	330 U	benzo b fluoranthene
330 U	4-chloro-3-methylphenol	330 U	benzo k fluoranthene
330 U	2-methylnaphthalene	330 U	benzo a pyrene
330 U	hexachlorocyclopentadiene	330 U	indeno,1,2,3-cd pyrene
330 U	2,4,6-trichlorophenol	330 U	dibenz,a,h,anthracene
1500 U	2,4,5-trichlorophenol	330 U	benzo g,h,i perylene
330 U	2-chloronaphthalene	SURROGATE % RECOVERY	
1500 U	2-nitroaniline	71	2-fluorophenol (SS1)
330 U	dimethyl phthalate	103	phenol-d5 (SS2)
330 U	acenaphthylene	67	nitrobenzene-d5 (SS3)
1600 U	3-nitroaniline	68	2-fluorobiphenyl
330 U	acenaphthene	73	2,4,6-tribromophenol (SS5)
1600 U	2,4-dinitrophenol	53	p-terphenyl-d14 (SS6)
1600 U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
indicates an estimated trace value.

ANALYST [signature]

APPROVED BY [signature]

WESTON ANALYTICS
7720 LORRAINE AVE. SUITE 100
STOCKTON CA 95210 209 957-3405

GC MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER 8901S006-02
CLIENT SAMPLE ID : PB-12-16
REPORT DATE : 01-31-1989

CLIENT NAME : CH2M HILL
FILE ID 89M2BN0189
BLANK ID
SAMPLE TYPE SOIL SEDIMENT SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01 13.89
DATE EXTRACTED :
DATE ANALYSED : 01/20/89

330 U	n-nitroso-dimethylamine	330 U	dibenzofuran
330 U	phenol	330 U	2,4-dinitrotoluene
330 U	aniline	330 U	2,6-dinitrotoluene
330 U	bis 2-chloroethyl ether	330 U	diethyl phthalate
330 U	2-chlorophenol	330 U	4-chlorophenyl phenyl ether
330 U	1,3-dichlorobenzene	330 U	fluorene
330 U	1,4-dichlorobenzene	1600 U	4-nitroaniline
330 U	benzyl alcohol	1600 U	4,6-dinitro-2-methylphenol
330 U	1,2-dichlorobenzene	330 U	n-nitrosodiphenylamine
330 U	2-methylphenol	330 U	4-bromophenyl phenyl ether
330 U	bis 2-chloroisopropyl ether	330 U	hexachlorobenzene
330 U	4-methylphenol	1600 U	pentachlorophenol
330 U	n-nitroso-di-n-propylamine	330 U	phenanthrene
330 U	hexachloroethane	330 U	anthracene
330 U	nitrobenzene	45 U	di-n-butyl phthalate
330 U	isophorone	330 U	fluoranthene
330 U	2-nitrophenol	1600 U	benzidine
330 U	2,4-dimethylphenol	330 U	pyrene
1600 U	benzoic acid	330 U	butyl benzyl phthalate
330 U	bis 2-chloroethoxy methane	660 U	3,3'-dichlorobenzidine
330 U	2,4-dichlorophenol	330 U	benzo a anthracene
330 U	1,2,4-trichlorobenzene	330 U	bis 2-ethylhexyl phthalate
330 U	naphthalene	330 U	chrysene
330 U	4-chloroaniline	330 U	di-n-octyl phthalate
330 U	hexachlorobutadiene	330 U	benzo b fluoranthene
330 U	4-chloro-3-methylphenol	330 U	benzo k fluoranthene
330 U	2-methylnaphthalene	330 U	benzo a pyrene
330 U	hexachlorocyclopentadiene	330 U	indeno 1,2,3-cd pyrene
330 U	2,4,6-trichlorophenol	330 U	dibenz a,h,anthracene
1600 U	2,4,5-trichlorophenol	330 U	benzo g,h,i perylene
330 U	2-chloronaphthalene	SURROGATE & RECOVERY	
1600 U	2-nitroaniline	74	2-fluorophenol (SS1)
330 U	dimethyl phthalate	75	phenol-d5 (SS2)
330 U	acenaphthylene	60	nitrobenzene-d5 (SS3)
1600 U	3-nitroaniline	55	2-fluorobiphenyl
330 U	acenaphthene	60	2,4,6-tribromophenol (SS5)
1600 U	2,4-dinitrophenol	55	p-terphenyl-d14 (SS6)
1600 U	4-nitrophenol		

RESULT UNITS ug/kg (micrograms per kilogram.
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST ym

F-535

APPROVED BY R.F. Carney

CH2M HILL Engineers Planners Economists

(CANICS ANALYSIS DATA SHEET

AESTON ANALYTICS
7720 LORRAINE AVE. SUITE 102
STOCKTON CA 95210 209 957-3405

GC MS SEMI-VO TILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER . 8901S037-05
CLIENT SAMPLE ID : RB-12-19
REPORT DATE : 02-01-1989

CLIENT NAME : CH2M HILL
. ID : 89M3BN0187
BLANK ID : 89M3BN0187
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01/19/89
DATE EXTRACTED .
DATE ANALYSED : 01/21/89

330 U	n-nitroso-dimethylamine	330 U	dibenzofuran
330 U	phenol	330 U	2,4-dinitrotoluene
330 U	aniline	330 U	2,6-dinitrotoluene
330 U	bis(2-chloroethyl) ether	330 U	diethyl phthalate
330 U	2-chlorophenol	330 U	4-chlorophenyl phenyl ether
330 U	1,3-dichlorobenzene	330 U	fluorene
330 U	1,4-dichlorobenzene	1600 U	4-nitroaniline
330 U	benzyl alcohol	1600 U	4,6-dinitro-2-methylphenol
330 U	1,2-dichlorobenzene	330 U	n-nitrosodiphenylamine
330 U	2-methylphenol	330 U	4-bromophenyl phenyl ether
330 U	bis(2-chloroisopropyl) ether	330 U	hexachlorobenzene
330 U	4-methylphenol	1600 U	pentachlorophenol
330 U	n-nitroso-di-n-propylamine	330 U	phenanthrene
330 U	hexachloroethane	330 U	anthracene
330 U	nitrobenzene	330 U	di-n-butyl phthalate
330 U	isophorone	330 U	fluoranthene
330 U	2-nitrophenol	1600 U	benzidine
330 U	2,4-dimethylphenol	330 U	pyrene
1600 U	benzoic acid	330 U	butyl benzyl phthalate
330 U	bis(2-chloroethoxy) methane	660 U	3,3'-dichlorobenzidine
330 U	2,4-dichlorophenol	330 U	benzo(a)anthracene
330 U	1,2,4-trichlorobenzene	330 U	bis(2-ethylhexyl)phthalate
330 U	naphthalene	330 U	chrysene
330 U	4-chloroaniline	330 U	di-n-octyl phthalate
330 U	hexachlorobutadiene	330 U	benzo(b)fluoranthene
330 U	4-chloro-3-methylphenol	330 U	benzo(k)fluoranthene
330 U	2-methylnaphthalene	330 U	benzo(a)pyrene
330 U	hexachlorocyclopentadiene	330 U	indeno(1,2,3-cd)pyrene
330 U	2,4,6-trichlorophenol	330 U	dibenz(a,h)anthracene
1600 U	2,4,5-trichlorophenol	330 U	benzo(g,h,i)perylene
330 U	2-chloronaphthalene	SURROGATE % RECOVERY	
1600 U	2-nitroaniline	100	2-fluorophenol (SS1)
330 U	dimethyl phthalate	98	phenol-d5 (SS2)
330 U	acenaphthylene	80	nitrobenzene-d5 (SS3)
1600 U	3-nitroaniline	73	2-fluorobiphenyl
330 U	acenaphthene	52	2,4,6-tribromophenol (SS5)
1600 U	2,4-dinitrophenol	99	p-terphenyl-d14 (SS6)
1600 U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
indicates an estimated trace value.

ANALYST : _____

APPROVED BY : R.F. Conley

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 9901S032-01
CLIENT SAMPLE ID : 98-12-21
REPORT DATE : 01-30-1989

CLIENT NAME : CH2M HILL
FILE ID : 89N30N0195
BLANK ID : ;
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01/19/89
DATE EXTRACTED : 12/21/88
DATE ANALYSED : 01/22/89

330 U	n-nitroso-dimethylamine	330 U	dibenzofuran
1400	phenol	330 U	2,4-dinitrotoluene
330 U	aniline	330 U	2,6-dinitrotoluene
330 U	bis(2-chloroethyl) ether	61 J	diethyl phthalate
330 U	2-chlorophenol	330 U	4-chlorophenyl phenyl ether
330 U	1,3-dichlorobenzene	330 U	fluorene
330 U	1,4-dichlorobenzene	1600 U	4-nitroaniline
330 U	benzyl alcohol	1600 U	4,6-dinitro-2-methylphenol
330 U	1,2-dichlorobenzene	330 U	n-nitrosodiphenylamine
330 U	2-methylphenol	330 U	4-bromophenyl phenyl ether
330 U	bis(2-chloroisopropyl) ether	56 J	hexachlorobenzene
330 U	4-methylphenol	1500 U	pentachlorophenol
330 U	n-nitroso-di-n-propylamine	40 J	phenanthrene
330 U	hexachloroethane	330 U	anthracene
330 U	nitrobenzene	59 J	di-n-butyl phthalate
330 U	isophorone	36 J	fluoranthene
330 U	2-nitrophenol	1600 U	benzidine
330 U	2,4-dimethylphenol	330 U	pyrene
1600 U	benzoic acid	330 U	butyl benzyl phthalate
330 U	bis(2-chloroethoxy) methane	660 U	3,3'-dichlorobenzidine
330 U	2,4-dichlorophenol	330 U	benzo(a)anthracene
330 U	1,2,4-trichlorobenzene	190 J	bis(2-ethylhexyl)phthalate
330 U	naphthalene	330 U	chrysene
330 U	4-chloroaniline	330 U	di-n-octyl phthalate
330 U	hexachlorobutadiene	330 U	benzo(b)fluoranthene
330 U	4-chloro-3-methylphenol	330 U	benzo(k)fluoranthene
330 U	2-methylnaphthalene	330 U	benzo(a)pyrene
330 U	hexachlorocyclopentadiene	330 U	indeno(1,2,3-cd)pyrene
330 U	2,4,6-trichlorophenol	330 U	dibenz(a,h)anthracene
1600 U	2,4,5-trichlorophenol	330 U	benzo(g,h,i)perylene
330 U	2-chloronaphthalene	SURROGATE % RECOVERY	
1600 U	2-nitroaniline	71	2-fluorophenol (SS1)
330 U	dimethyl phthalate	56	phenol-d5 (SS2)
330 U	acenaphthylene	48	nitrobenzene-d5 (SS3)
1600 U	3-nitroaniline	56	2-fluorobiphenyl
330 U	acenaphthene	79	2,4,6-tribromophenol (SS5)
1600 U	2,4-dinitrophenol	97	p-terphenyl-d14 (SS6)
1600 U	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

REVIEWED BY : R.F. Cawley

ORGANICS ANALYSIS DATA SHEET

·atory Name:	CH2M Hill	Concentration:	LOW	Date Extracted:	02/23/89
Lab Sample ID:	RB-02-23-89	Sample Matrix:	WATER	Date Analyzed:	03/08/89
Client Sample ID:	METHOD-BLANK	Percent Moisture:		Dilution Factor:	1.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/L		CAS Number		UG/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
[illegible]5-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
[illegible]91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		---		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	75	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	76	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	86	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	79	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	67	
					2,4,6-Tribromophenol - SS	65	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
` - Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: RB-02-27-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 02/27/89
Date Analyzed: 03/13/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
08-60-1	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
3-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
3-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
7-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
1-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
7-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
9-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
5-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
1-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
9-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	58	
08-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	64	
06-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	91	
9-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	64	
3-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	62	
					2,4,6-Tribromophenol - SS	72	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

86

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ORGANICS ANALYSIS DATA SHEET

.a atory Name: CH2M Hill
.ab Sample ID: RB-03-03-89
:lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 03/03/89
Date Analyzed: 03/20/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
2i-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
8-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
8-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
8-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5)	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	69	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	66	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	77	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	52	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	40	
					2,4,6-Tribromophenol - SS	62	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
Reported value less than quantitation limit.
S - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: RB-03-13-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 03/13/89
Date Analyzed: 03/21/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
8-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
8-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
8-75-5	2-Nitroph[illegible]	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
7-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
1-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
7-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
8-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
5-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
1-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
8-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	120	
08-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	130	
06-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	190	
8-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	48	
3-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	49	
					2,4,6-Tribromophenol - SS	70	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: RB-03-08-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 03/08/89
Date Analyzed: 03/22/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/L		CAS Number		UG/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11[illegible]-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
2[illegible]-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	61	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	68	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	92	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	110	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	87	
					2,4,6-Tribromophenol - SS	81	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

BL

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: RB-03-~~08~~-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 03/16/89
Date Analyzed: 03/28/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
3-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
3-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
0-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
0-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
-74-4	2-Nitroaniline	50	U		----------		
1-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	78	
8-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	78	
6-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	95	
-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	69	
-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	78	
					2,4,6-Tribromophenol - SS	74	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

ab tory Name: CH2M Hill
ab ample ID: RB-03-20-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 03/20/89
Date Analyzed: 03/28/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
3-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
3-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11 1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
.-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
7-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
7-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
2-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
.-74-4	2-Nitroaniline	50	U		----------		
1-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	52	
8-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	61	
6-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	89	
9-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	110	
.-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	100	
					2,4,6-Tribromophenol - SS	83	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J Reported value less than quantitation limit.
S Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory F-544 Avenue, P O Box 2088 lornia 96001 916 243 5831

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: RB-03-22-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 03/22/89
Date Analyzed: 03/27/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
11-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
0-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
1638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
5-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
1-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
0-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
0-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
6-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
-74-4	2-Nitroaniline	50	U		----------		
1-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	71	
9-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	74	
6-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	72	
-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	70	
-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	63	
					2,4,6-Tribromophenol - SS	50	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB-03-28-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 03/28/89
Date Analyzed: 04/06/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65 0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	77	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	81	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	88	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	87	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	71	
					2,4,6-Tribromophenol - SS	78	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: 22817-1MS
lient Sample ID: 505

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 03/28/8.
Date Analyzed: 04/06/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	150		100-02-7	4-Nitrophenol	170	
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	86	
5-57-8	2-Chlorophenol	160		84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	79		86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
3638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	63		118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	170	
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
3-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
3-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	'
5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	99	
1-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
0-82-1	1,2,4-Trichlorobenzene . .	78		56-55-3	Benzo(a)anthracene	10	U
-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
6-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	150		205-99-2	Benzo(b)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
-74-4	2-Nitroaniline	50	U		----------		
1-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	83	
8-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	84	
6-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	90	
-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	97	
-32-9	Acenaphthene	89			2-Fluorophenol - SS . . .	75	
					2,4,6-Tribromophenol - SS	84	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: RB-03-30-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 03/30/89
Date Analyzed: 04/12/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
8-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
8-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
8-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
0[illegible]-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5 0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
6-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
3-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
3-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
3-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	80	
8-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	82	
6-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	100	
-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	76	
32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	58	
					2,4,6-Tribromopheno' - SS	58	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B Compound was detected in QC blank.
Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB-04-06-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/06/89
Date Analyzed: 04/15
Dilution Factor: _____

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	47	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	56	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	72	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	91	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	74	
					2,4,6-Tribromophenol - SS	70	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

4

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ORGANICS ANALYSIS DATA SHEET

atory Name: CH2M Hill
ab Sample ID: RB-04-06-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/06/89
Date Analyzed: 04/15/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
8-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
8-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
8-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
7-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
1-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
7-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
8-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
5-95-4	2,4,5-Trichlorophenol .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
1-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
8-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	47	
08-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	56	
06-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	72	
9-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	91	
3-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	74	
					2,4,6-Tribromophenol - SS	70	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
· Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: RB-04-20-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/20/89
Date Analyzed: 04/25/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	2	BJ
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
8-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
8-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	
5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	4	BJ
'-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
)-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
'-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
3-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
)-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
1-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
3-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	61	
08-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	68	
06-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	80	
9-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	47	
3-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	40	
					2,4,6-Tribromophenol - SS	67	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory 3rd Avenue P O Box 2088 Redding California 96001 916 243 5831

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Scientists

ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: RB-04-25-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/25/89
Date Analyzed: 04/25/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	3	BJ
0638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
3-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
1-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	3	BJ
9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
1-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
0-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
0-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
6-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
-74-4	2-Nitroaniline	50	U		---		
1-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	58	
8-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	70	
6-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	98	
-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	67	
-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	61	
					2,4,6-Tribromophenol - SS	82	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
- Compound was detected in QC blank.
- Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory 2485 Railroad Avenue P O Box 2088 Redding California 96001 916 243 5831

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: RB-04-24-89
lient Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/24/89
Date Analyzed: 04/25/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
5-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	3	BJ
3638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
3-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
3-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
7-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
1-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
1-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
1-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
1-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
1-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
3-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	65	
08-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	65	
06-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	85	
9-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	62	
3-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	57	
					2,4,6-Tribromophenol - SS	73	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory ·lroad Avenue P O Box 2088 Redding California 96001 916 243 5831

Engineers
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ORGANICS ANALYSIS DATA SHEET

·atory Name: CH2M Hill
Lab Sample ID: RB-05-30-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 05/30/89
Date Analyzed: 06/09/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	J
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
[illegible]5-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
[illegible]91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	74	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	77	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	87	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS		
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .		
					2,4,6-Tribromophenol - SS		

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
' - Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

RS

CH2M HILL Engineers Planners Economists Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 5-31-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 05/31/89
Date Analyzed: 06/12/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	J
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
11 -91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	72	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	73	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	83	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	58	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	51	
					2,4,6-Tribromophenol - SS	43	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Engineers, Economists, Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-2-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/02/89
Date Analyzed: 06/13/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
[illegible]67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
[illegible]-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	58	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	62	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	81	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	78	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	67	
					2,4,6-Tribromophenol - SS	89	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

R.S

CH2M HILL engineers, planners, economists, scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-2-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/02/89
Date Analyzed: 06/13/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine	20	U
120-82-1	1,2,4-Trichlorobenzene	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene	10	U	117-84-0	Di-n-octylphthalate	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	205-99-2	Benzo(b)fluoranthene	10	U
91-57-6	2-Methylnaphthalene	10	U	207-08-9	Benzo(k)fluoranthene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
95-95-4	2,4,5-Trichlorophenol	50	U	53-70-3	Dibenz(a,h)Anthracene	10	U
91-58-7	2-Chloronaphthalene	10	U	191-24-2	Benzo(g,h,i)perylene	10	U
88-74-4	2-Nitroaniline	50	U		---		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS	58	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS	62	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	81	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	78	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS	67	
					2,4,6-Tribromophenol - SS	89	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Redding Environmental Laboratory
Railroad Avenue P O Box 2088 Redding California 96001
916 243 5831

RS

CH2M HILL Engineers Planners Economists Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-6-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 06/06/89
Date Analyzed: 06/13/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	J
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
. .-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	59	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	61	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	82	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	78	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	67	
					2,4,6-Tribromophenol - SS	90	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
` - Reported value less than quantitation limit.
. - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-6-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/06/89
Date Analyzed: 06/14/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
[illegible]75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
[illegible]8-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
[illegible]-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
[illegible]1-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
[illegible]-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
[illegible]41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
[illegible]06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
[illegible]00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
[illegible]5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
[illegible]5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	J
[illegible]9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
[illegible]06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
[illegible]21-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
[illegible]7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
[illegible]3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
[illegible]8-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
[illegible]8-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
[illegible]05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
[illegible]5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
[illegible]1-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
[illegible]0-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
[illegible]1-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
[illegible]20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
[illegible]8-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
[illegible]63-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
[illegible]50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
[illegible]-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
[illegible]7-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
[illegible]06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
[illegible]95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
[illegible]8-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
[illegible]4-4	2-Nitroaniline	50	U		----------		
[illegible]1-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	59	
[illegible]-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	61	
[illegible]-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	82	
[illegible]-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	78	
[illegible]32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	67	
					2,4,6-Tribromophenol - SS	90	

[illegible]) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
S - Surrogate Standard reported as percent recovery.

[illegible] Road Avenue P O Box 2068 [illegible]
[illegible] California 9660[illegible]

CH2M HILL

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-6-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/06/89
Date Analyzed: 06/14/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	BJ
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine	20	U
120-82-1	1,2,4-Trichlorobenzene	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene	10	U	117-84-0	Di-n-octylphthalate	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	205-99-2	Benzo(b)fluoranthene	10	U
91-57-6	2-Methylnaphthalene	10	U	207-08-9	Benzo(k)fluoranthene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
95-95-4	2,4,5-Trichlorophenol	50	U	53-70-3	Dibenz(a,h)Anthracene	10	U
91-58-7	2-Chloronaphthalene	10	U	191-24-2	Benzo(g,h,i)perylene	10	U
88-74-4	2-Nitroaniline	50	U		---		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS	59	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS	61	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	82	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	78	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS	67	
					2,4,6-Tribromophenol - SS	90	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
S - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-7-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/07/89
Date Analyzed: 06/16/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	BJ
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	47	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	49	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	110	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	57	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	62	
					2,4,6-Tribromophenol - SS	130	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL

ORGANICS ANALYSIS DATA SHEET

ratory Name: CH2M Hill
Lab Sample ID: RB 6-7-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 06/07/89
Date Analyzed: 06/15/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	BJ
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
[illegible]-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
[illegible]-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
[illegible]-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
[illegible] 68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
[illegible]-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
[illegible]-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
[illegible]-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	47	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	49	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	110	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	57	
[illegible]-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	62	
					2,4,6-Tribromophenol - SS	130	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
Surrogate Standard reported as percent recovery.

RD

CH2M HILL

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: R8-06-09-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 06/09/8
Date Analyzed: 06/09/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	BJ
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol . . .	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	70	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	71	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	80	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	55	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	59	
					2,4,6-Tribromophenol - SS	66	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Environmental Chemistry
2883 Bayview Road Avenue P O Box 2088
Walnut Creek California 94601
916 243 5831

RS

CH2MHILL

ORGANICS ANALYSIS DATA SHEET

ratory Name: CH2M Hill
Lab Sample ID: RB-06-09-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 06/09/89
Date Analyzed: 06/09/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100 02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	BJ
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso Di-n-Propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	10	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59 50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	70	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	71	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	80	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	55	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	59	
					2,4,6-Tribromophenol - SS	66	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

CH2M HILL

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-13-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/13/89
Date Analyzed: 06/20/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene . . .	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	9	BJ
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	50	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	2	
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	67	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	66	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	88	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	77	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	62	
					2,4,6-Tribromophenol - SS	92	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as perce ery.

Redding Environmental Laboratory
[illegible] Railroad Avenue, P.O. Box 2088 916 243 583

RS

CH2M HILL

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-13-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/13/89
Date Analyzed: 06/20/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	9	BJ
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	50	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	2	J
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	67	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	66	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	88	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	77	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	62	
					2,4,6-Tribromophenol - SS	92	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

RS

CH2M HILL

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-14-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/14/89
Date Analyzed: 06/21/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	10	U	100-02-7	4-Nitrophenol	50	U
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	10	U
95-57-8	2-Chlorophenol	10	U	84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	J
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	50	U
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		---		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	62	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	62	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	81	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	75	
83-32-9	Acenaphthene	10	U		2-Fluorophenol - SS . . .	58	
					2,4,6-Tribromophenol - SS	81	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
S - Surrogate Standard reported as percent recovery.

CH2M HILL Engineers Planners Economists Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-14-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 06/14/89
Date Analyzed: 06/22/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	9	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	1	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	54	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	57	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	64	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	72	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	59	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	66	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Region 9 Environmental Laboratory
1 Harbor Road Avenue P.O. Box 2088 Long Beach, CA 90801-2088
916 243 5831

RS

CH2M HILL

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: RB 6-16-89
Client Sample ID: METHOD-BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 06/16/89
Date Analyzed: 06/27/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate	10	U
87-68-3	Hexachlorobutadiene	10	U	205-99-2	Benzo(b)fluoranthene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	207-08-9	Benzo(k)fluoranthene	10	U
91-57-6	2-Methylnaphthalene	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	53-70-3	Dibenz(a,h)Anthracene	10	U
95-95-4	2,4,5-Trichlorophenol	50	U	191-24-2	Benzo(g,h,i)perylene	10	U
91-58-7	2-Chloronaphthalene	10	U		---		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS	64	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS	68	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	80	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	45	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS	31	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	73	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Ca not be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

oratory Name: CH2M Hill
Lab Sample ID: 2415882
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 08/30/89
Date Analyzed: 09/09/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U
91-58-7	2-Chloronaphthalene . . .	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U

CAS Number		ug/L	
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	7	BJ
122-66-7	1,2-Diphenylhydrazine . .	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate . . .	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate . . .	10	U
91-94-1	3,3'-Dichlorobenzidine . .	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-octylphthalate . . .	10	U
205-99-2	Benzo(b)fluoranthene . . .	10	U
207-08-9	Benzo(k)fluoranthene . . .	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
53-70-3	Dibenz(a,h)Anthracene . .	10	U
191-24-2	Benzo(g,h,i)perylene . . .	10	U

	Nitrobenzene-d5 - SS . . .	77	
	2-Fluorobiphenyl - SS . .	72	
	Terphenyl-d14 - SS	94	
	Phenol-d5 - SS	39	
	2-Fluorophenol - SS . . .	44	
	2,4,6-Tribromophenol - SS	70	

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
S - Surrogate Standard reported as percent recovery.

Form I

CH2M HILL
Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 24185B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 09/01/89
Date Analyzed: 09/22/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene . . .	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	83	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS .	81	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	43	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	45	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	90	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M Hill
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ORGANICS ANALYSIS DATA SHEET

ratory Name: CH2M Hill
Sample ID: 24191B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 09/05/89
Date Analyzed: 09/23/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	61	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	59	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	96	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	74	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . .	73	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	78	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 24202B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/05/89
Date Analyzed: 09/23/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	61	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	59	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	96	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	74	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	73	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	78	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

ratory Name: CH2M Hill
Lab Sample ID: 24246B2
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/14/89
Date Analyzed: 09/27/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . .	67	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	64	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	78	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	77	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	76	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

Form 1

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 24265B2
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/14/89
Date Analyzed: 09/27/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate	10	U
87-68-3	Hexachlorobutadiene	10	U	205-99-2	Benzo(b)fluoranthene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	207-08-9	Benzo(k)fluoranthene	10	U
91-57-6	2-Methylnaphthalene	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	53-70-3	Dibenz(a,h)Anthracene	10	U
95-95-4	2,4,5-Trichlorophenol	50	U	191-24-2	Benzo(g,h,i)perylene	10	U
91-58-7	2-Chloronaphthalene	10	U		---		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS	67	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS	64	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	78	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS	77	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	76	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

oratory Name: CH2M Hill
Lab Sample ID: 24272B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/18/89
Date Analyzed: 10/02/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
35-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
. .-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	92	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	82	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	43	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	41	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	[illegible]	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit
[illegible] reported at zero recovery

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 24304B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/18/89
Date Analyzed: 10/02/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate	10	U
87-68-3	Hexachlorobutadiene	10	U	205-99-2	Benzo(b)fluoranthene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	207-08-9	Benzo(k)fluoranthene	10	U
91-57-6	2-Methylnaphthalene	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	53-70-3	Dibenz(a,h)Anthracene	10	U
95-95-4	2,4,5-Trichlorophenol	50	U	191-24-2	Benzo(g,h,i)perylene	10	U
91-58-7	2-Chloronaphthalene	10	U		---		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS	92	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS	82	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	43	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS	41	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	72	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

oratory Name: CH2M Hill
Lab Sample ID: 24313B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 09/20/89
Date Analyzed: 10/03/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
5-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
. .-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	98	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	84	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	140	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	100	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	94	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	110	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
' - Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 24331B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/20/89
Date Analyzed: 10/03/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	98	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	84	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	140	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	100	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	94	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	110	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory, 5090 Caterpillar Road, Redding, California 96003 916.244.5227

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ORGANICS ANALYSIS DATA SHEET

Labor[redacted]mes Science CH2M HILL/LRD
Lab Sample ID: 24337B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/22/89
Date Analyzed: 10/05/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	90	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	78	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,5-Dinitrotoluene	10	U		Phenol-d5 - SS	93	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	90	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	99	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

CH2M Planners Economists

ORGANICS ANALYSIS DATA SHEET

Laboratory: CH2M HILL/LRD
Lab Sample ID: 24350B1
Client Sample ID: SBLKW

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 09/22/89
Date Analyzed: 10/05/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate	10	U
87-68-3	Hexachlorobutadiene	10	U	205-99-2	Benzo(b)fluoranthene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	207-08-9	Benzo(k)fluoranthene	10	U
91-57-6	2-Methylnaphthalene	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	53-70-3	Dibenz(a,h)Anthracene	10	U
95-95-4	2,4,5-Trichlorophenol	50	U	191-24-2	Benzo(g,h,i)perylene	10	U
91-58-7	2-Chloronaphthalene	10	U				
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS	90	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS	78	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	93	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS	90	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	99	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Labor[redacted]mes Scie[redacted] CH2M HILL/LRD
Lab Sample ID: 24372B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/26/89
Date Analyzed: 10/11/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U
91-58-7	2-Chloronaphthalene . . .	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U

CAS Number		ug/L	
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine . .	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate . . .	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate . . .	10	U
91-94-1	3,3'-Dichlorobenzidine . .	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	6	BJ
117-84-0	Di-n-octylphthalate . . .	10	U
205-99-2	Benzo(b)fluoranthene . . .	10	U
207-08-9	Benzo(k)fluoranthene . . .	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
53-70-3	Dibenz(a,h)Anthracene . .	10	U
191-24-2	Benzo(g,h,i)perylene . . .	10	U

	Nitrobenzene-d5 - SS . . .	75	
	2-Fluorobiphenyl - SS . .	81	
	Terphenyl-d14 - SS	110	
	Phenol-d5 - SS	44	
	2-Fluorophenol - SS . . .	51	
	2,4,6-Tribromophenol - SS	69	

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Labor[redacted]mes Scie[redacted] CH2M HILL/LRD
Lab Sample ID: 24387B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/26/89
Date Analyzed: 10/11/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	6	BJ
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U				
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	75	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	81	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	44	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	51	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	69	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24400B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/28/89
Date Analyzed: 10/17/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
92-1	1,2,4-Trichlorobenzene	10	U	218-01-9	Chrysene	10	U
J-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate	10	U
87-68-3	Hexachlorobutadiene	10	U	205-99-2	Benzo(b)fluoranthene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	207-08-9	Benzo(k)fluoranthene	10	U
91-57-6	2-Methylnaphthalene	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	53-70-3	Dibenz(a,h)Anthracene	10	U
95-95-4	2,4,5-Trichlorophenol	50	U	191-24-2	Benzo(g,h,i)perylene	10	U
91-58-7	2-Chloronaphthalene	10	U				
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS	92	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS	87	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	70	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS	65	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	73	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24406B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/28/89
Date Analyzed: 10/17/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate	10	U
87-68-3	Hexachlorobutadiene	10	U	205-99-2	Benzo(b)fluoranthene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	207-08-9	Benzo(k)fluoranthene	10	U
91-57-6	2-Methylnaphthalene	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	53-70-3	Dibenz(a,h)Anthracene	10	U
95-95-4	2,4,5-Trichlorophenol	50	U	191-24-2	Benzo(g,h,i)perylene	10	U
91-58-7	2-Chloronaphthalene	10	U				
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS	92	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS	87	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	70	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS	65	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	73	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 2445181
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 10/03/89
Date Analyzed: 10/17/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	50	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	59	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	66	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	58	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	64	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	70	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24868B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 11/16/89
Date Analyzed: 11/22/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	10	U
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	10	U
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	10	U
86-30-6	N-Nitrosodiphenylamine (1)	15	B
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	6	BJ
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U
	Nitrobenzene-d5 - SS	66	
	2-Fluorobiphenyl - SS	67	
	Terphenyl-d14 - SS	110	
	Phenol-d5 - SS	67	
	2-Fluorophenol - SS	69	
	2,4,6-Tribromophenol - SS	66	

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24898B1
nt Sample ID: SBLKW1
Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____
Date Extracted: 11/16/89
Date Analyzed: 12/05/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	5	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
[illegible]-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	76	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	80	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	83	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	78	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	64	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24925B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 11/20/89
Date Analyzed: 12/06/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-[illegible]	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-[illegible]	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	[illegible]	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	15	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	27	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	78	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	46	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	47	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	39	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24934B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 11/20/89
Date Analyzed: 12/06/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	56-55-3	Benzo(a)anthracene	10	U
120-83-2	2,4-Dichlorophenol	10	U	218-01-9	Chrysene	10	U
82-1	1,2,4-Trichlorobenzene . .	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
[illegible]0-3	Naphthalene	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
106-47-8	4-Chloroaniline	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	50-32-8	Benzo(a)pyrene	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U		----------		
91-58-7	2-Chloronaphthalene . . .	10	U		Nitrobenzene-d5 - SS . . .	15	
88-74-4	2-Nitroaniline	50	U		2-Fluorobiphenyl - SS . .	27	
131-11-3	Dimethyl Phthalate	10	U		Terphenyl-d14 - SS	78	
208-96-8	Acenaphthylene	10	U		Phenol-d5 - SS	46	
606-20-2	2,6-Dinitrotoluene	10	U		2-Fluorophenol - SS . . .	47	
99-09-2	3-Nitroaniline	50	U		2,4,6-Tribromophenol - SS	39	
83-32-9	Acenaphthene	10	U				
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24939B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 11/22/89
Date Analyzed: 12/14/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	29	B
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	13	B
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	20	B
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	56-55-3	Benzo(a)anthracene	10	U
120-83-2	2,4-Dichlorophenol	10	U	218-01-9	Chrysene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
91-20-3	Naphthalene	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
106-47-8	4-Chloroaniline	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	50-32-8	Benzo(a)pyrene	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U		----------		
91-58-7	2-Chloronaphthalene . . .	10	U		Nitrobenzene-d5 - SS . . .	65	
88-74-4	2-Nitroaniline	50	U		2-Fluorobiphenyl - SS . .	68	
131-11-3	Dimethyl Phthalate	10	U		Terphenyl-d14 - SS	96	
208-96-8	Acenaphthylene	10	U		Phenol-d5 - SS	78	
606-20-2	2,6-Dinitrotoluene	10	U		2-Fluorophenol - SS . . .	74	
99-09-2	3-Nitroaniline	50	U		2,4,6-Tribromophenol - SS	68	
83-32-9	Acenaphthene	10	U				
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24954B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 11/27/89
Date Analyzed: 12/14/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	8	BJ
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	B
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	8	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	56-55-3	Benzo(a)anthracene	10	U
83-2	2,4-Dichlorophenol	10	U	218-01-9	Chrysene	10	U
82-1	1,2,4-Trichlorobenzene . .	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
91-20-3	Naphthalene	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
106-47-8	4-Chloroaniline	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	50-32-8	Benzo(a)pyrene	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U		----------		
91-58-7	2-Chloronaphthalene . . .	10	U		Nitrobenzene-d5 - SS . . .	65	
88-74-4	2-Nitroaniline	50	U		2-Fluorobiphenyl - SS . .	65	
131-11-3	Dimethyl Phthalate	10	U		Terphenyl-d14 - SS	96	
208-96-8	Acenaphthylene	10	U		Phenol-d5 - SS	36	
606-20-2	2,6-Dinitrotoluene	10	U		2-Fluorophenol - SS . . .	34	
99-09-2	3-Nitroaniline	50	U		2,4,6-Tribromophenol - SS	30	
83-32-9	Acenaphthene	10	U				
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24957B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 11/27/89
Date Analyzed: 12/14/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	8	BJ
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	B
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propy . . .	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	8	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	56-55-3	Benzo(a)anthracene	10	U
120-83-2	2,4-Dichlorophenol	10	U	218-01-9	Chrysene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
91-20-3	Naphthalene	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
106-47-8	4-Chloroaniline	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	50-32-8	Benzo(a)pyrene	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U		----------		
91-58-7	2-Chloronaphthalene . . .	10	U		Nitrobenzene-d5 - SS . . .	65	
88-74-4	2-Nitroaniline	50	U		2-Fluorobiphenyl - SS . .	65	
131-11-3	Dimethyl Phthalate	10	U		Terphenyl-d14 - SS	96	
208-96-8	Acenaphthylene	10	U		Phenol-d5 - SS	36	
606-20-2	2,6-Dinitrotoluene	10	U		2-Fluorophenol - SS . . .	34	
99-09-2	3-Nitroaniline	50	U		2,4,6-Tribromophenol - SS	30	
83-32-9	Acenaphthene	10	U				
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 25000B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 11/30/89
Date Analyzed: 12/20/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene . . .	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	5	BJ
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	B
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	B
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
92-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
.. 20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	72	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	66	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	100	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	65	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	58	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	59	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 25020B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 11/30/89
Date Analyzed: 12/20/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	5	BJ
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	B
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	B
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	72	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	66	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	100	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	65	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	58	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	59	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 25010B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 11/30/89
Date Analyzed: 12/20/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	5	BJ
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	B
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	B
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
92-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	72	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	66	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	100	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	65	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	58	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	59	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24939B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 11/22/89
Date Analyzed: 12/14/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U	84-66-2	Diethylphthalate	29	B
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene	10	U	86-30-6	N-Nitrosodiphenylamine (1)	13	B
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate	20	B
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	56-55-3	Benzo(a)anthracene	10	U
120-83-2	2,4-Dichlorophenol	10	U	218-01-9	Chrysene	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
91-20-3	Naphthalene	10	U	117-84-0	Di-n-octylphthalate	10	U
106-47-8	4-Chloroaniline	10	U	205-99-2	Benzo(b)fluoranthene	10	U
87-68-3	Hexachlorobutadiene	10	U	207-08-9	Benzo(k)fluoranthene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U	50-32-8	Benzo(a)pyrene	10	U
91-57-6	2-Methylnaphthalene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	53-70-3	Dibenz(a,h)Anthracene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U	191-24-2	Benzo(g,h,i)perylene	10	U
95-95-4	2,4,5-Trichlorophenol	10	U				
91-58-7	2-Chloronaphthalene	10	U		Nitrobenzene-d5 - SS	65	
88-74-4	2-Nitroaniline	50	U		2-Fluorobiphenyl - SS	68	
131-11-3	Dimethyl Phthalate	10	U		Terphenyl-d14 - SS	96	
208-96-8	Acenaphthylene	10	U		Phenol-d5 - SS	78	
606-20-2	2,6-Dinitrotoluene	10	U		2-Fluorophenol - SS	74	
99-09-2	3-Nitroaniline	50	U		2,4,6-Tribromophenol - SS	68	
83-32-9	Acenaphthene	10	U				
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 25059B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 12/04/89
Date Analyzed: 12/26/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	9	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	36	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	57	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	100	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	65	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	69	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	71	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

boratory Name: CH2M HILL/LRD
b Sample ID: 25088B1
ient Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 12/06/8[illegible]
Date Analyzed: 01/13/90
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

S Number		ug/L		CAS Number		ug/L	
-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
8-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
1-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
1-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
6-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
0-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	8	BJ
-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
8-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
6-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
1-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	6	BJ
-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
5-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
1-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
0-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
0-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
6-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
-58-7	2-Chloronaphthalene . . .	10	U		----------		
-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	51	
1-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	55	
3-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	100	
6-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	42	
-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	32	
-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	52	
-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 25118B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 12/11/89
Date Analyzed: 01/15/90
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	7	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	48	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	52	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	84	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	50	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	29	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	41	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 25151B1
Client Sample ID: SBLKW1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 12/11/89
Date Analyzed: 01/15/90
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	.-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	7	J
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	48	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	52	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	84	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	50	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	29	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	41	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

METHOD BLANKS

Dioxins/Furans (SW8280)

DIOXIN/FURAN _VIEW SHEET

(Higher Molecular Wt. Ion used in Calculations)

Analysis: C14 - C18
LR/HR: HR
Client Name: CH2M Hill
CAL Project No.: CALLAB-[illegible]
Client Sample ID: METHOD BLANK
Enseco Sample ID: 79472
Date Sampled: 22 NOV 88
Date Authorized: 30 NOV 88
Date Analyzed: 20 DEC 88
Sample Wt./Vol.: 10.0G
RRF's from: MS881220
Units: pg/g
A = Amount added to the sample

CAL Sample Number.: 0001-MB

Matrix: SOIL
Date Received: 30 NOV 88
Date Extracted: 07 DEC 88
GC Column: DB-5
Percent Moisture: NA

Data Prepared by: MMAIER

FURANS	SCANS	TOTAL AREA	TOTAL AREA	DL HEIGHT	AREA RATIO	RRF	AMOUNT FOUND	DETECTION LIMIT	PERCENT RECOVERY
13C-2378-TCDF	12.37	10510	14140	4558	0.74	1.50	2500 (A)		57.37
tra (total)				25		0.65	ND	2.1	
(2378)				25		0.65	ND	2.1	
nta (total)				114		2.33	ND	7.3	
(12378)	ND			114		2.33	ND	7.3	
(23478)	ND			114		2.33	ND	7.3	
Hexa (total)				58		1.47	ND	4.3	
(123478)	ND			58		1.47	ND	4.3	
(123678)	ND			58		1.47	ND	4.3	
(234678)	ND			58		1.47	ND	4.3	
(123789)	ND			58		1.47	ND	4.3	
Hepta (total)				29		1.16	ND	3.7	
(1234678)	ND			29		1.16	ND	3.7	
(1234789)	ND			29		1.16	ND	3.7	
Octa (total)				105		1.11	ND	22	

DIOXIN/FURAN REVIEW SHEET

(Higher Molecular Wt. Ion used in Calculations)

Analysis: C14 - C18
LR/HR: LR
Client Name: CH2M Hill
CAL Project No.: CALLAB-044627
Client Sample ID: METHOD BLANK
Enseco Sample ID: 79472
Date Sampled: 22 NOV 88
Date Authorized: 30 NOV 88
Date Analyzed: 12 JAN 89
Sample Wt./Vol.: 10.0G
RRF's from: F-13 CURVE 6/22/88
Units: NG/G
A = Amount added to the sample

CAL Sample Number.: 0001-MB

Matrix: SOIL
Date Received: 30 NOV 88
Date Extracted: 07 DEC 88
GC Column: DB-5
Percent Moisture: NA

Data Prepared by: MBECHTHOLD

	SCANS	TOTAL AREA	TOTAL AREA	DL HEIGHT	AREA RATIO	RRF	AMOUNT FOUND		DETECTION LIMIT	PERCENT RECOVERY
FURANS										
2,3,7,8-TCDF	752	59629	75992	19240	0.78	2.06	10	(A)		
2,3,7,8-TCDF							2.5	(A)		49.29
Tetra (total)				488		0.98	ND		0.0065	
Penta (total)				864		1.99	ND		0.020	
Hexa (total)				272		1.49	ND		0.0045	
Hepta (total)				292		1.65	ND		0.0079	
Octa (total)				240		0.77	ND		0.017	

E-603

DIOXIN/FURAN VIEW SHEET

(Higher Molecular Wt. Ion used in Calculations)

Analysis: C14 - C18
LR/HR: HR
Client Name: CH2M Hill
CAL Project No.: CALLAB-044761
Client Sample ID: Method Blank
Enseco Sample ID: 80753
Date Sampled:
Date Authorized: 08 DEC 88
Date Analyzed: 05 JAN 88
Sample Wt./Vol.: 10.0G
RRF's from: MS890105
Units: pg/g
A = Amount added to the sample

CAL Sample Number.: 0001-MB

Matrix: SOIL
Date Received: 07 DEC 88
Date Extracted: 15 DEC 88
GC Column: DB-5
Percent Moisture: NA

Data Prepared by: MMAIER

FURANS	SCANS	TOTAL AREA	TOTAL AREA	DL HEIGHT	AREA RATIO	RRF	AMOUNT FOUND		DETECTION LIMIT	PERCENT RECOVERY
13C-2378-TCDF	12.03	40770	51560	16867	0.79	1.75	2500	(A)		114.11
Tetra (total)				20		0.71	ND		0.42	
(2378)				20		0.71	ND		0.42	
enta (total)				30		2.44	ND		0.58	
(12378)				30		2.44	ND		0.58	
(23478)				30		2.44	ND		0.58	
Hexa (total)				20		2.13	ND		0.34	
(123478)				20		2.13	ND		0.34	
(123678)				20		2.13	ND		0.34	
(234678)				20		2.13	ND		0.34	
(123789)				20		2.13	ND		0.34	
Hepta (total)				17		1.27	ND		0.59	
(1234678)				17		1.27	ND		0.59	
(1234789)				17		1.27	ND		0.59	
Octa (total)				18		1.10	ND		1.1	

TRIP BLANKS

TRIP BLANKS

Volatile Organic Compounds (SW8240)

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 12360006
nt Sample ID: TRAVEL BLA

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/05/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/L	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	12	B
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-69-4	Trichlorofluoromethane	12	
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/L	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
541-73-1	1,3-Dichlorobenzene	5	U
106-46-7	1,4-Dichlorobenzene	5	U
95-50-1	1,2-Dichlorobenzene	5	U
107-02-8	Acrolein	100	U
107-13-1	Acrylonitrile	100	U
	Toluene-d8 - SS	95	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	110	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12346001
Client Sample ID: TRIP BLANK

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/05/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/L	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/L	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	96	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	110	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12346007
Client Sample ID: TRIP BLANK 2

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/06/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/L	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
8 5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/L	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	97	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRAVEL_BLA

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No.: V12396 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 12396008

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1VO001892

Level: (low/med) LOW Date Received: 12/06/88

% Moisture: not dec. ____ Date Analyzed: 12/07/88

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

1/87 Rev.

CH2M HILL ENVIRONMENTAL LABORATORY
2318 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21716-1
CLIENT SAMPLE ID : TB 127-132
REPORT DATE : 01-22-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-1-88
SAMPLE TYPE : WATER

DATE SAMPLED : 11-30-88
DATE EXTRACTED :
DATE ANALYSED : 12-14-88

10U	chloroaethane
10U	bromoaethane
10U	vinyl chloride
10U	chloroethane
3J	aethylene chloride
10J	acetone
5U	carbon disulfide
5U	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
10U	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
5U	trichloroethene
5U	dibromochloroaethane
5U	1,1,2-trichloroethane
5U	benzene
5U	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-aethyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
5U	toluene
5U	chlorobenzene
5U	ethylbenzene
5U	styrene
5U	xylenes (o+m)
5U	xylene (p)

SURROGATE % RECOVERY

94	1,2-dichloroethane-d4 (SS1)
100	toluene-d8 (SS2)
99	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 9812S048-01
CLIENT SAMPLE ID : 21717-1T-BLANK
REPORT DATE : 12-28-1988

CLIENT NAME : CH2M HILL
METHOD : 624
BLANK ID : 89M2V01981
SAMPLE TYPE : WATER

DATE SAMPLED : 11/30/88
DATE RECEIVED : 12/13/88
DATE EXTRACTED :
DATE ANALYSED : 12/14/88

10	U	chloroethane	5	U	dibromochloromethane
10	U	bromomethane	5	U	1,1,2-trichloroethane
10	U	vinyl chloride	5	U	benzene
10	U	chloroethane	5	U	trans-1,3-dichloropropene
11	B	methylene chloride	10	U	2-chloroethyl vinyl ether
10	U	acetone	5	U	bromoform
5	U	carbon disulfide	10	U	4-methyl-2-pentanone
5	U	1,1-dichloroethene	10	U	2-hexanone
5	U	1,1-dichloroethane	5	U	1,1,2,2-tetrachloroethane
5	U	1,2-dichloroethene (total)	5	U	tetrachloroethene
5	U	chloroform	5	U	toluene
5	U	1,2-dichloroethane	5	U	chlorobenzene
10	U	2-butanone	5	U	ethylbenzene
5	U	1,1,1-trichloroethane	5	U	styrene
5	U	carbon tetrachloride	5	U	xylenes (o+m)
10	U	vinyl acetate	5	U	xylene (p)
5	U	bromodichloromethane	SURROGATE % RECOVERY		
5	U	1,2-dichloropropane	90		1,2-dichloroethane-d4 (SS1)
5	U	cis-1,3-dichloropropene	101		toluene-d8 (SS2)
5	U	trichloroethene	100		bromofluorobenzene (SS3)

RESULT UNITS ug/l (micrograms per litre)

DILUTION FACTOR : 1

. : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
. : indicates an estimated trace value.

ANALYST

APPROVED BY : R. F. Cawley

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21771-1
CLIENT SAMPLE ID : T BLANK
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-8-88
SAMPLE TYPE : WATER

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-15-88

10U	chloroethane	5U	dibromochloromethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
10	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	92	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
5U	trichloroethene	96	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2319 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21774-1
CLIENT SAMPLE ID : T-BLANK
REPORT DATE . 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-8-88
SAMPLE TYPE : WATER

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-15-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5J	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
6	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5	toluene
5U	1,2-dichloroethane	5J	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+e)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	98	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	103	toluene-d8 (SS2)
5	trichloroethene	98	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

BAFB - TB

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S068-01
CLIENT SAMPLE ID : 21740-1
REPORT DATE : 12-31-1988

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 88M1V03506
SAMPLE TYPE : WATER

DATE SAMPLED : 12/05/88
DATE RECEIVED : 12/15/88
DATE EXTRACTED : NA
DATE ANALYSED : 12/18/88

10 U	chloromethane	5 U	dibromochloromethane
10 U	bromomethane	5 U	1,1,2-trichloroethane
10 U	vinyl chloride	5 U	benzene
10 U	chloroethane	5 U	trans-1,3-dichloropropene
2 J	methylene chloride	10 U	2-chloroethyl vinyl ether
10 U	acetone	5 U	bromoform
5 U	carbon disulfide	10 U	4-methyl-2-pentanone
5 U	1,1-dichloroethene	10 U	2-hexanone
5 U	1,1-dichloroethane	5 U	1,1,2,2-tetrachloroethane
5 U	1,2-dichloroethene (total)	5 U	tetrachloroethene
5 U	chloroform	5 U	toluene
5 U	1,2-dichloroethane	5 U	chlorobenzene
10 U	2-butanone	5 U	ethylbenzene
5 U	1,1,1-trichloroethane	5 U	styrene
5 U	carbon tetrachloride	5 U	xylenes (o+m)
10 U	vinyl acetate	5 U	xylene (p)
5 U	bromodichloromethane	SURROGATE % RECOVERY	
5 U	1,2-dichloropropane	106	1,2-dichloroethane-d4 (SS1)
5 U	cis-1,3-dichloropropene	93	toluene-d8 (SS2)
5 U	trichloroethene	96	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value

ANALYST ALI

APPROVED BY R.F. Carney

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21775-1
CLIENT SAMPLE ID : T-BLANK
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-8-88
SAMPLE TYPE : WATER

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-20-88

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
18	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
6J	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	100	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	108	toluene-d8 (SS2)
5U	trichloroethene	106	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY — GC/MS VOLATILE ORGANICS ANALYSIS — LAB REFERENCE NUMBER : 22479-1

2218 FAIRFAX AVENUE — CLIENT SAMPLE ID : T-BLANK

REDDING CA 96001 916-243-1775 — REPORT DATE : 01-26-1989

CLIENT NAME : BEALE AFB CHEM HILL/SAC — DATE SAMPLED : 1-12-89

SAMPLE RECEIVED : 1-13-89 — DATE EXTRACTED :

SAMPLE TYPE : WATER — DATE ANALYSED : 1-18-89

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
7	methylene chloride	10U	2-chloroethyl vinyl ether
8J	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+p)
10U	vinyl acetate	5U	xylene (o)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	95	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	100	toluene-d9 (SS2)
20	trichloroethene	102	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2318 RAILROAD AVENUE
REDDING CA 96001 916-241-1735

GC MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 22087-1
CLIENT SAMPLE ID : T-BLANK
REPORT DATE : 01-25-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 1-16-89
SAMPLE TYPE : WATER

DATE SAMPLED : 1-13-89
DATE EXTRACTED :
DATE ANALYSED : 1-24-89

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,,2-trichloroethane
10U	vinyl chloride	5U	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
15	methylene chloride	10U	2-chloroethyl vinyl ether
14	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	5U	toluene
5U	1,2-dichloroethane	5U	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	96	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
3J	trichloroethene	101	bromofluorobenzene (SS3)

RESULT UNITS : ug/l (micrograms per litre)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 23114-1
Client Sample ID: TRIP BLANK

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 05/16/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	89	
	1,4-Bromofluorobenzene - SS	92	
	1,2-Dichloroethane-d4 - SS	98	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Wet Chemistry

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	T	% R	C	%R
Alkalinity	3-10-89	<1	22542-2	55.3	55.3	0.0				0.05	0.056	112		

F-618

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recoverr = 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
Chloride	2-24-89	<1	22333-2	69.5	69.6	0.14	70	137	96.4	1000	980	98.0		
	2-24-89	<1	22382-1	33.8	33.8	0.0	30	63.7	99.7	1000	992	99.2		
	2-27-89	<1	22383-2	21.4	21.4	0.0	20	42.3	104	1000	1000	100		
	3-14-89	<1	22421-4	14.0	14.0	0.0	14.0	28.9	107	1000	1008	101		
	3-14-89	<1	22455	81.8	76.8	6.3	80	157	94.0	1000	1008	101		
	3-24-89	<1.0	22505	49.0	49.0	0.0	50	101	104	1000	1003	100		
	3-27-89	<1	22660	10.9	10.9	0.0	10.0	20.8	99.0	1000	999.6	100		
	3-27-89	<1	22674	9.90	8.91	10.5	10.0	19.8	98.9	1000	999.6	100		
	4-6-89	<1	22768	50.5	51.5	2.0	50	101	101	52.1			50.3	96.5
	4-14-89	<1	22849	10.2	10.3	1.0	100	113	103	1000	1003	100		
	4-18-89	<1	22915	11.4	11.5	0.9	100	111.1	99.7	1000	1014	101		

E-619

unit: mg/liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

rm 004

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
Chloride	6-16-89	<1.0	23306	5.4	5.4	0.0	10.0	14.8	94.0	1000	980	98.0		
	6-23-89	<1.0	233254	23.4	22.9	2.2	20.0	41.8	92.0	1000	985	98.5		
	6-27-89	<1.0	234183	<1.0	<1.0	N.C.	20.0	20.4	102	1000	980	98.0		
	6-27-89	<1.0	23486-1	29.1	28.9	0.7	30.0	58.7	98.7	1000	970	97.0		
	7-6-89	<1.0	235214	52.0	52.0	0.1	100	153	101	1000	9907	99.1		

F-620

unit: mg/liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recoverr = 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

orm

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
Fluoride	3-2-89	<0.05	22345-2	0.23	0.25	8.3	0.20	0.47	120	0.11			0.10	90.9
	3-2-89	<0.05	22421-5	0.12	0.12	0.0	0.20	0.32	105	0.11			0.10	90.9
	3-2-89	<0.05	22428-4	<0.05	<0.05	NC	0.10	0.10	100	0.40	0.40	100		
	3-17-89	<0.10	22622-1	0.15	0.17	12.5	0.15	0.32	113	0.11			0.13	95
	3-17-89	<0.10	22674	0.30	0.30	0.0	0.10	0.42	120	0.40	0.45	112		
	3-30-89	<0.10	22683	0.11	0.10	9.5	0.20	0.28	85	0.11			0.12	109
	3-30-89	<0.10	22737-3	<0.10	<0.10	NC	0.20	0.15	77.3	0.11			0.12	109
	3-30-89	<0.10	22738-4	0.22	0.23	4.4	0.20	0.43	105	0.40	0.37	93.0		
	4-12-89	<0.10	22817	<0.1	<0.1	NC	0.20	0.24	120	0.40	0.41	103		
	4-12-89	<0.10	22890	0.26	0.27	3.8	0.10	0.36	100	0.40	0.41	103		
	4-12-89	<0.10	22906-5	0.24	0.25	4.1	0.10	0.34	96.6	0.40	0.40	100		

F-621

unit: mg/liter

QA Criteria

1. Method Blank : ± Detection Limit (DL)
2. Duplicates RPD : ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery : 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check : ± 20% of True Value or within EPA range

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
Fluoride	6-16-89	<0.05	23306	0.17	0.17	0.0	0.20	0.37	100	0.40	0.37	92.5		
	6-27-89	<0.05	23372-1	0.19	0.19	0.0	0.20	0.42	115	0.40	0.42	105		
	6-27-89	<0.05	23501-1	0.14	0.14	0.0	0.20	0.34	100	0.40	0.44	110		
	6-27-89	—	23521-4	0.24	0.24	0.0	0.20	0.48	120	0.40	0.42	105		

F-622

units: mg/liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
Sulfate	2-21-89	<1.0	22345-2	29.4	29.4	0.0	22.2	52.5	104	20.0	20.7	104		
	3-01-89	<1.0	20405	48.8	48.8	0.0	50	104	110	20.0	20.7	103		
	3-15-89	<1.0	20401-5	5.8	5.4	7.1	5.0	10.9	102	20.0	20.8	104		
	3-15-89	<1.0	22542-2	4.4	4.5	2.2	10.0	14.6	102	20.0	20.8	104		
	3-28-89	<1.0	22622	30.5	28.6	6.4	40.	71.3	102	20.0	21.5	108		
	3-29-89	<1.0	22633	<1.0	<1.0	NC	5.0	4.5	89.6	20.0	21.3	106		
	4-03-89	<1.0	22683	12.9	13.1	1.5	12.0	24.4	95.8	20.0	19.3	96.3		
	4-10-89	<1.0	22761	15.6	15.3	1.9	15.0	31.6	107	20.0	19.8	99.0		
	4-10-89	<1.0	22782-3	13.8	13.6	1.4	14.0	28.4	105	20.0	19.8	99.0		
	4-10-89	<1.0	22817-5	7.5	6.4	15.8	7.0	13.6	87.1	20.0	19.1	95.7		
	4-17-89	<1.0	22870	15.2	14.5	4.7	15.0	31.2	107	20.0	19.0	94.9		
	4-18-89	<1.0	22906-6	8.7	8.2	5.9	8.0	17.2	106	20.0	19.5	97.5		
	4-18-89	<1.0	22914	3.8	3.7	2.7	4.0	7.7	98.5	20.0	19.5	97.5		

unit: mg/Liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations > 5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations < 4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
Sulfate	6-15-89	<1.0	23306	11.7	10.9	7.1	12.0	21.8	84.2	20.0	22.3	112		
	6-29-89	<1.0	23324	131	152	14.8	100	236	105	20.0	21.2	106		
	6-29-89	<1.0	23483	28.6	27.0	5.8	50.0	76.2	95.0	20.0	21.5	108		
	6-29-89	—	23486-1	48.7	50.0	2.6	100	147	98.3	20.0	21.2	106		
	7-7-89	<1.0	23501	15.7	16.0	1.9	5.00	19.7	80.0	20.0	21.6	108		
	7-7-89	—	23528-4	12.6	12.8	1.6	10.0	22.1	95.0	20.0	21.3	106		

F-624

unit: mg/Liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

Form

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
NO_3/NO_2	3-03-89	<.03	22333-2	2.25	2.22	1.3	2.0	4.12	93.5	7.66	X		7.07	92.2
	3-03-89	<0.03	22375-3	5.29	515	2.7	2.0	7.19	95.0	7.66			7.07	92.2
	3-08-89	0.03	22398-2	4.50	4.46	0.89	2.5	7.12	105	7.66			7.53	98.3
	3-0889	0.03	22405	5.72	5.45	4.8	2.5	8.29	103	7.66			7.55	98.6
	3-16-89	<0.03	22455-1	2.82	2.40	16.1	3.0	5.53	90.3	7.66			7.19	93.8
	3-23-89	<0.03	22622	3.72	3.30	12.0	3.0	6.52	93.3	7.66			7.27	95.0
	3-31-89	<0.03	22674	2.22	2.23	0.50	0.50	2.68	92.0	7.66			7.58	98.9
	4-05-89	<0.03	22739-1	<0.03	<0.03	NC	0.40	0.43	108	7.66			8.24	108
	4-5-89	<0.03	22792-1	1.12	1.08	3.6	1.0	2.34	122	7.66			8.34	109
	4-05-89	<0.03	22817-5	5.36	6.14	4.2	10.0	16.88	115	7.66			8.34	.09
	4-13-89	<0.03	22870	1.44	1.48	2.7	1.0	2.67	123	0.80	0.78	97.2		
	4-13-89	<0.03	22891-2	4.46	4.59	2.9	5.0	10.43	119	0.80	0.78	97.2		
	4-13-89	<0.03	22906-5	1.28	1.24	3.2	1.0	2.44	116	0.80	0.77	95.0		

F-625

unit: mg/Liter

QA Criteria,

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations)5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations (4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

Form 004

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
NO_3/NO_2	6-13-89	<.03	23306	5.26	5.17	1.7	5.00	9.84	91.6	0.80	0.79	98.8		
	6-28-89	<0.03	23357	0.88	0.88	0.0	1.00	1.80	92.0	0.80	0.80	100		
	6-28-89	—	234545	4.22	4.43	4.8	5.00	9.58	107	0.80	0.79	98.8		
	6-28-89	—	23486	6.58	6.04	8.6	5.00	12.6	120	0.80	0.88	110		
	7-6-89	<0.03	23501-1	4.40	4.24	3.7	5.00	10.48	122	0.80	0.77	96.2		
	7-6-89	<0.03	23521-4	0.30	0.33	9.5	0.40	0.77	118	0.80	0.77	96.3		

F-626

unit: mg/Liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations)5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recoverr = 75-125% for sample concentrations (4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

Form

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
TCN	3-2-89	<0.01	223983	<0.01	<0.01	NC	1.00	0.95	94.6	0.40	0.38	95.2		
1	3-21-89	<0.01	22601-3	<0.01	<0.01	NC	1.00	0.832	83.2	0.40	0.39	98.5		

F-627

L

unit: mg/liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations)5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recoverr = 75-125% for sample concentrations (4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
TCN	6-15-89	<0.01	23398-2	0.04	0.04	0.0	0.5	0.50	92.0	0.40	0.36	90.0		
	6-22-89	<0.01	23418-1	<0.01	<0.01	NC	1.00	0.91	91.0	0.40	0.40	100		
	6-23-89	<0.01	23470	<0.01	<0.01	NC	1.00	0.94	94.0	0.40	0.37	92.5		
	6-27-89	<0.01	23501	0.02	0.01	66.7	1.00	0.84	84.0	0.40	0.38	95.0		

F-628

unit: mg/Liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

For

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
COD	2-23-89	<7	22383-2	19.7	23.2	16.3	100	120.5	101	218			214	98.4
"	3-14-89	<7	22455	20.6	21.4	3.8	100	122.2	102	218			206	94.5
"	4-04-89	<7	22814	7.3	<7	NC	100	102.4	95.1	218			194	88.8
"	4-14-89	<7	22891-2	<7	<7	NC	100	[illegible]	99.6	218			204.4	93.8

F-629

unit: mg/Liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

F[illegible]04

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
COD	6-15-89	<7	23306	<7	<7	N.C.	50.0	53.0	106	75.0	78.2	104		
"	7-3-89	<7	234433	<7	<7	N.C.	100	118.4	118.4	75.0	82.0	109.3		
"	7-3-89	<7	235003	<7	7.9	NC	100	108.3	108.3	75.0	82.4	109.9		

F-630

units mg/Liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations)5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations (4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

Form 00

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
TDS	2-16-89	—	22345-2	335	331	0.3				429			380	88.6
	2-20-89	—	*223143	1560	1580	1.3				429			382	89.0
	2-22-89	—	22405-1	292	285	2.4				429			403	93.9
	2-27-89	—	22484-5	162	159	1.9				429			396	92.3
	3-01-89	—	22506	280	290	3.5				429			430	100.2
	3-03-89	—	22505	353	344	2.6				429			389	90.7
	3-07-89	—	*223782	440	446	1.4				429			408	95.1
	3-13-89	—	22622	216	212	1.9				429			370	86.3
	3-14-89	—	*22623	1090	1090	0.0				429			362	84.4
	3-16-89	—	*22626	68	60	12.5				429			342	79.7
	3-20-89	—	22683	216	229	5.8				414			408	98.6
	3-21-89	—	227394	194	198	2.0				414			388	90.4
—	3-24-89	—	22782-3	265	263	0.8				429			402	93.7

UNIT: MG/LITER * INDICATES NON-BEALE REFERENCE NUMBERS.

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

rm 004

F-631

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
TDS	3-24-89	—	*22765-2	6830	6990	2.3				429			399	93.0
	3-28-89	—	22814	284	279	1.8				429			365	85.1
	3-29-89	—	22817-5	236	223	5.7				429			398	92.8
	4-3-89	—	*22860	1120	1130	0.9				429			417	97.2
	4-5-89	—	*22873-6	167	156	6.8				429			401	93.5
	4-6-89	—	*22902	167	166	0.6				429			443	103
	4-7-89	—	*22926-2	7160	7430	3.7				429			386	90.0
	4-10-89	—	*22907-3	1100	1070	2.8				429			410	95.6

Units: mg/Liter * INDICATES NON-SEQUENCE REFERENCE NUMBERS.

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations >5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recovery = 75-125% for sample concentrations < 4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

-m 004

F-632

QA/QC REPORT

Test	Date	Method Blank	Ref. No.	Duplicates			Spike				Lab QC Check		EPA QC Check	
				SR	D	RPD	True	SSR	% R	True	C	% R	C	%R
TDS	5-3-89		23306	160	176	9.5				286			280	97.9
	6-1-89		233254	244	236	3.3				286			258	90.2
	6-6-89		23372-4	322	376	15.5				286			272	95.1
	6-8-89		233755	366	388	5.8				286			302	106.
	6-9-89		233774	514	498	3.2				429			374	87.2
	6-9-89		23417	237	232	2.1				429			374	87.2
	6-14-89		234543	33	27	20.0				429			398	92.8
	6-19-89		23486-1	277	285	2.9				429			348	81.1
	6-20-89		23501	263	300	13.1				429			380	88.6
	6-21-89		235214	315	290	8.3				429			333	77.6

3339-33

units mg/Liter

QA Criteria

1. Method Blank = ± Detection Limit (DL)
2. Duplicates RPD = ± 20% for concentrations)5 times DL or ± DL for concentrations ≤ 5 times DL
3. Spike % Recoverr = 75-125% for sample concentrations (4 times the spike concentrations
4. QC Check = ± 20% of True Value or within EPA range

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QA/QC SUMMARY

DP#: BAFB3

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	DUPLICATES D	DUPLICATES RPD	SPIKE TV	SPIKE SSR	SPIKE % R	LCS TV	LCS RESULT	LCS % R	LCS SOURCE
TDS	08-31-89	mg/l	3	24158-3		263	258	1.9				508	492	96.8	LAB
TDS	09-01-89	mg/l	3	24185-8		251	240	4.5				508	522	103	LAB
TDS	09-01-89	mg/l	3	24191-3		336	335	0.3				508	506	99.6	LAB
TDS	09-06-89	mg/l	3	24202-6		203	1999	2.0				508	499	98.2	LAB
TDS	09-13-89	mg/l	3	24242-7		254	248	2.4				508	560	110	LAB
TDS	09-14-89	mg/l	3	24246-3		228	225	1.3							
TDS	09-14-89	mg/l	3	24265-3		244	250	2.4				508	484	95.3	LAB
TDS	09-18-89	mg/l	3	24272-3		247	244	1.2				575	569	99.0	LAB
TDS	09-19-89	mg/l	3	24304-3		284	283	0.4				575	567	98.6	LAB
TDS	09-20-89	mg/l	3	24337-3		347	363	4.5				575	5882	102	LAB
TDS	09-25-89	mg/l	3	24387-4		385	368	4.5				575	572	99.5	LAB
TDS	09-27-89	mg/l	3	24406-4		359	364	1.4							
TDS	10-02-89	mg/l	3	24451-1		460	457	0.7				575	563	97.9	LAB
Chloride	09-15-89	mg/l	1	24185-8	<1.0	16.8	17.5	4.1	20.0	38.1	106	1000	1008	101	LAB
Chloride	09-20-89	mg/l	1	24202-6	<1.0	10.8	11.2	3.6	20.0	30.5	98.5	1000	976	97.6	LAB
Chloride	09-22-89	mg/l	1	24246-3	<1.0	24.8	25.2	1.6	20.0	44.8	100	1000	982	98.2	LAB
Chloride	09-22-89	mg/l	1	24265-3	<1.0	43.7	43.7	0.0	20.0	64.1	102	1000	983	98.3	LAB
Chloride	10-10-89	mg/l	1	24451-1	<1.0	45.7	45.6	0.2	40.0	86.4	102	1000	999	99.9	LAB
Fluoride	09-15-89	mg/l	0.05	24202-6	<0.05	0.27	0.29	7.1	0.20	0.51	120	0.42	0.44	105	EPA-Ci
Fluoride	09-15-89	mg/l	0.05	24185-8	<0.05	0.24	0.27	11.8	0.20	0.45	105	0.40	0.43	108	LAB
Fluoride	09-20-89	mg/l	0.05	24242-6	<0.05	0.18	0.19	5.4	0.20	0.34	80.0	0.42	0.36	85.7	EPA-Cl
Fluoride	09-20-89	mg/l	0.05	24337-1	<0.05	0.14	0.13	7.4	0.20	0.29	75.0	0.42	0.38	90.5	EPA-Cl
Fluoride	10-13-89	mg/l	0.05	24451-1	<0.05	0.23	0.23	0.0	0.10	0.33	100	0.40	0.41	102	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

* Not a BAFB sample.

FORM 004

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

QA/QC SUMMARY

DP#: BAFB3

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES			SPIKE			LCS			LCS SOURCE
						SR	D	RPD	TV	SSR	% R	TV	RESULT	% R	
Sulfate	09-16-89	mg/l	1	24185-3	<1	<1	<1	NC	5.00	5.7	114	20.0	21.9	110	LAB
Sulfate	09-16-89	mg/l	1	24202-4	<1	<1	<1	NC	5.00	5.2	104	20.0	22.2	111	LAB
Sulfate	09-21-89	mg/l	1	24230-16 *	<1	11.7	11.7	0.0	10.0	22.8	111	20.0	21.5	108	LAB
Sulfate	09-21-89	mg/l	1	24242-7	<1	6.0	6.0	0.0	10.0	15.4	94.0	20.0	21.2	106	LAB
Sulfate	10-11-89	mg/l	1	24451-1	<1	7.9	7.7	2.6	5.00	12.3	87.6	20.0	19.8	99.0	LAB
Nitrate-Nitrite a NO3	09-18-89	mg/l	0.13	24202-6	<0.13	10.14	9.79	3.6	11.1	23.0	116	8.86	10.1	114	EPA-CI
Nitrate-Nitrite a NO3	09-27-89	mg/l	0.13	24242-7	<0.13	11.4	11.7	2.6	4.4	16.6	117	8.86	8.82	99.5	EPA-CI
Nitrate-Nitrite a NO3	10-09-89	mg/l	0.13	24451-1	<0.13	0.22	0.22	0.0	0.89	1.20	110	3.54	3.90	110	LAB
COD	09-08-89	mg/l	7.0	24158-3	<7	<7	<7	NC	100	107	107	75.0	76.5	102	LAB
COD	09-11-89	mg/l	7.0	24087-2 *	<7	19.0	20.4	7.0	100	121	102	75.0	75.6	101	LAB
COD	09-28-89	mg/l	7.0	24265-1	<7	<7	<7	NC	100	108	108	75.0	75.9	101	LAB
Total Cyanide	09-26-89	mg/l	0.01	24304-1	<0.01	<0.01	<0.01	NC	0.100	0.111	111	0.094	0.108	115	EPA-LV

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

* Not a BAFB sample.

FORM 004

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

Engineers
Planners
Economists
Scientists

QA/QC SUMMARY

DP#: BAF248

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	DUPLICATES D	DUPLICATES RPD	SPIKE TV	SPIKE SSR	SPIKE % R	LCS TV	LCS RESULT	LCS % R	LCS SOURCE
Chem. Oxygen Demand	11-17-89	mg/L	7.0	24887-4	<7.0	<7.0	<7.0	NC				75	80.7	108%	LAB
Chem. Orygen Demand	11-17-89	mg/L	7.0	24887-4	<7.0	<14.0			100	94.2	94.2				
Chem. Oxygen Demand	11-27-89	mg/L	7.0	24898-2	<7.0	<7.0	<7.0	NC				75	85.1	113	LAB
Chem. Oxygen Demand	11-27-89	mg/L	7.0	24898-2	<7.0	<14.0			100	95 6	95.6				
Total Dissolved Solids	11-15-89	mg/L	3.0	24868-2	----	389	372	4.5				575	549	95.5	LAB
Total Dissolved Solids	11-20-89	mg/L	3.0	24887-3	----	241	233	3.3				575	497	86.4	LAB
Total Dissolved Solids	11-20-89	mg/L	3.0	24898-3	----	316	307	2.9				575	560	97.4	LAB
Chloride	11-29-89	mg/L	1.0	24898-3	<1.0	34.2	34.8	1.7	100	140		1000	1076	108	LAB
Chloride	11-29-89	mg/L	1.0		<1.0							1000	1075	108	LAB
Fluoride	12-01-89	mg/L	0.10	24868-2	<0.10	0.15	0.15	0.0	0.10	0.25	100	0.40	0.42	105	LAB
Sulfate	11-27-89	mg/L	1.0	24898-1	<1.0	14.8	14.8	0.0	5.0	19.1	86.0	20.0	18.0	90.0	LAB
Nitrate/Nitrite @NO3	11-28-89	mg/L	0.13	24898-3	<0.13	9.13	8.77	4.0	11.1	21.3	110	0.80 *	0.84	105	LAB
Alkalinity	11-15-89	mg/L	1	24868-2	<1	115	114	0.7				0.05 **	0.51	102	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

Comments: * LCS for NITRATE/NITRITE listed here is as N, not NO3.
** The units for LCS is normality for the ALKALINITY test.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

CH2MHILL Engineers Planners Economists Scientists

QA/QC SUMMARY

DP#: BAF249

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	DUPLICATES D	DUPLICATES RPD	SPIKE TV	SPIKE SSR	SPIKE % R	LCS TV	LCS RESULT	LCS % R	LCS SOURCE
Chemical Oxygen Demand	11-27-89	mg/L	7.0	24898-2 *	<7.0	<7.0	<7.0	NC				75	85.1	113	LAB
Chemical Oxygen Demand	11-27-89	mg/L	7.0	24898-2 *	<7.0	<14.0			100	95.6	95.6				
Chemical Oxygen Demand	12-04-89	mg/L	7.0	24954-1	<7.0	<7.0	<7.0	NC				75	77.0	103	LAB
Chemical Oxygen Demand	12-04-89	mg/L	7.0	24954-1	<7.0	<14.0			100	93.7	93.7				
Total Dissolved Solids	11-21-89	mg/L	3	24934	----	263	252	4.3				575	577	100	LAB
Total Dissolved Solids	11-22-89	mg/L	3	24939-3	----	278	266	4.4				575	540	93.9	LAB
Total Dissolved Solids	11-27-89	mg/L	3	24957-4	----	252	251	0.4				575	585	102	LAB
Chloride	12-08-89	mg/L	1.0	24939-1	<1.0	9.6	8.8	8.7	20.0	29.5	99.5	1000	996	99.6	LAB
Chloride	12-08-89	mg/L	1.0	24939-3	<1.0	37.4	38.5	2.9	20.0	56.3	94.5	1000	991	99.1	LAB
Chloride	12-08-89	mg/L	1.0	24957-4	<1.0	12.2	11.5	5.9	20.0	32.3	100	1000	989	98.9	LAB
Fluoride	12-08-89	mg/L	0.10	24939-3	<0.10	0.16	0.15	6.5	0.20	0.36	100	0.40	0.42	105	LAB
Fluoride	12-08-89	mg/L	0.10	24934	<0.10	0.55	0.55	0.0	2.0	2.51	98.0	6.0	6.16	103	LAB
Sulfate	12-08-89	mg/L	1.0	24957-4	<1.0	11.9	11.9	0.0	5.0	16.0	82.0	2.0	18.0	90.8	LAB
Nitrate/Nitrite @NO3	12-07-89	mg/L	0.13	24939-3	<0.13	3.32	3.19	4.1	0.89	4.39	120	0.80 **	0.86	108	LAB
Nitrate/Nitrite @NO3	12-07-89	mg/L	0.13	24957-4	<0.13	4.08	4.47	9.3	8.86	13.5	106	0.80 **	0.86	108	LAB
Total Alkalinity @CaCO3	11-22-89	mg/L	1	24954-1	<1	132	133	0.8				0.05***	0.05	100	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

* This Beale Sample is reported in data package BAF248 and is used here for QC purposes only.
** The LCS for Nitrate/Nitrite is reported @N.
*** The LCS for Alkalinity is reported in units of Normality.

Engineers
Planners
Economists
Scientists

QA/QC SUMMARY

DP#: BAF250

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	DUPLICATES D	DUPLICATES RPD	SPIKE TV	SPIKE SSR	SPIKE % R	LCS TV	LCS RESULT	LCS % R	LCS SOURCE
COD	12-04-89	mg/L	7.0	24954-1 *	<7.0	<7.0	<7.0	NC				75	77	103	LAB
COD	12-04-89	mg/L	7.0	24954-1 *	<7.0	<14.0			100	93.7	93.7				
COD	12-13-89	mg/L	7.0	25118-2	<7.0	77.9	83.3	6.7				75	78.9	105	LAB
COD	12-13-89	mg/L	7.0	25118-2	<7.0	88.4			100	180	91.6				
Total Dissolved Solids	12-04-89	mg/L	3	25010-2	----	259	254	1.9				575	558	97.0	LAB
Total Dissolved Solids	12-06-89	mg/L	3	25059-4	----	245	250	2.0				575	573	99.7	LAB
Total Dissolved Solids	12-11-89	mg/L	3	25088-3	----	12	12	0.0				575	464	80.7	LAB
Chloride	12-12-89	mg/L	1.0	25118-2	<1.0	24.8	27.9	11.8	100	126	101	1000	1020	102	LAB
Fluoride	12-12-89	mg/L	0.10	25118-2	<0.10	0.28	0.28	0.0	0.20	0.49	105	0.40	0.42	105	LAB
Sulfate	12-14-89	mg/L	1.0	25118-2	<1.0	320	315	1.6	100	428	108	20.0	19.1	95.5	LAB
Nitrate/Nitrite @NO3	12-15-89	mg/L	0.13	25020-5	<0.13	23.1	23.1	0.0	22.2	48.3	114	0.80 **	0.87	109	LAB
Nitrate/Nitrite @NO3	12-15-89	mg/L	0.13	25059-4	<0.13	18.1	18.2	0.5	22.2	43.5	115	0.80 **	0.89	111	LAB
Nitrate/Nitrite @NO3	12-15-89	mg/L	0.13	25118-2	<0.13	6.20	6.11	1.4	8.86	15.8	108	0.80 **	0.86	108	LAB
Total Cyanide	12-11-89	ug/L	10	25010-1	<10	<10	<10	NC	100	103	103	94	101	107	EPA
Total Cyanide	12-12-89	ug/L	10	25059-2	<10	<10	<10	NC	100	87.6	87.6	94	103	110	EPA
Total Cyanide	12-12-89	ug/L	10	25059-3	<10	<10	<10	NC	100	87.0	87.0	94	101	107	EPA

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

* This Beale sample is reported in Data Package #BAF249 and is listed here for QC purposes only.

** The LCS for Nitrate/Nitrite is reported @N.

FORM 004

CH2M HILL Redding Environmental Laboratory 3090 Caterpillar Road Redding California 96003 916 244 5227

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES SR	D	RPD	SPIKE TV	SSR	% R	LCS TV	LCS RESULT	LCS % R	LCS SOURCE
Total Dissolved Solids	12-11-89	mg/L	3	25151 5	---	219	242	10 0				575	532	92.5	LAB
Chloride	12-19-89	mg/L	1.0	25151-5	<1.0	47.2	48.0	1.7	20	68.2	105	1000	1040	104	LAB
Fluoride	12-20-89	mg/L	0.10	25151-5	<0.10	0.40	0.40	0.0	0.10	0.49	90.0	0.40	0.42	105	LAB
Sulfate	12-22-89	mg/L	1.0	25151 5	<1.0	5.2	5.2	0 0	5.0	9.8	92.0	20.0	19.8	99.0	LAB
Nitrate/Nitrite QNO3	12-21-89	mg/L	0.13	25151-5	<0.13	0 22	0 27	18 2	1.77	2.30	118	0.80 *	0.81	101	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

* The LCS for Nitrate/Nitrite is reported as N.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

FORM 004

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

TFH-Diesel (CA Method)

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21582-4MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-23-88

Compound	Concentration Spiked (~~PPB~~ ppb)	Sample Result (~~PPB~~ ppb)	Spike Result (~~PPB~~ ppb)	Duplicate Spike Result (~~PPB~~ ppb)	RPD	Spike Percent Recovery	
TFH Diesel wet	100	2100	2700	3324	20.7	912	*
TFH Diesel Dry Wt. Basis	100	2600	3300	4064	20.7	1082	*

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: * - Spiking solution was diluted out of samples in 1 to 100 dilutions. BB

F-6(1)

RR

CH2M HILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21621-21MS ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 11-30-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH Diesel	100	19	136	138	1.46	118

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS:

Analyst B.B.

CH2M HILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21629-11 MS ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 12-14-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH	100	55	122	127	4.0	70
	100	72	158	165	4.3	90

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS:

Analyst BB

CH2M HILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21685-2MS (21654) ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 12-15-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH	100	410	694	462	40.1	168 *

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS: *-Results are reported on a dry weight basis. High spike recovery ~~and~~ RPD is due to high hydrocarbon matrix in sample and 1:10 dilution.

Analyst BB

CRMHILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21656-6 MS ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 12-19-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH	100	<1	105	140	28.6	113

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS: Spike Results Reported on dry weight basis,

Analyst BB

CH2M HILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21657-4MS ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 12-20-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH	100	<1	80	60	28.6	70

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS: spike results are based on dry weight basis.

Analyst BB

CH2M HILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21656-6MS (21658) ANALYSIS: TFH Diesel MATRIX: SOIL

DATE TESTED: 12-22-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVER.
TFH	100	< 1	80	60	28.6	80

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS:

Analyst BB

CKM HILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21659-6MS ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 12-23-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH	100	<1	100	90	10.5	95

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS:

CH2MHILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21677-4MS ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 12-27-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH	100	330	390	670	52.8	200 *

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS:
*- High RPD and Spike percent recovery are due to the high hydrocarbon content of the sample which was spiked as well as the 1 to 10 dilution of spiked samples. BB

Analyst BB

CH2MHILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21717-GMS (21716) ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 12-29-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH	100	<1	150		6.4	155

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS:

Analyst BB

CRMHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21734-845 Analysis: TFH Diesel Matrix: Soil

Date Tested: 12-30-88

Compound	Concentration Spiked (PPB) ppm	Sample Result (PPB) ppm	Spike Result (PPB) ppm	Duplicate Spike Result (PPB) ppm	RPD	Spike Percent Recovery
TFH	100	44	114	111	2.7	112

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Tinalyst BB

CH2MHILL

MATRIX SPIKE RESULTS

LABORATORY NO.: 21727-7MS ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 12-31-88

COMPOUND	CONCENTRATION SPIKED (PPM)	SAMPLE RESULT (PPM)	SPIKE RESULT (PPM)	DUPLICATE SPIKE RESULT (PPM)	RPD	SPIKE PERCENT RECOVERY
TFH	100	2400	1900	1500	23.5	— *

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spike}} \times 100$$

COMMENTS: * High target analyte concentration in the sample made spike recoveries unreproducible.

BB

MATRIX SPIKE RESULTS

Laboratory No.: 21739-245 Analysis: TPH Diesel Matrix: SO, 1

Date Tested: 1-4-88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	100	<2	72	82	12.98	77

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

MATRIX SPIKE RESULTS

Laboratory No.: 21740-9MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-5-88 BB

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	<5	100	122	36.1	111

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CRM HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21757-7MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-6-88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	< 4	113	115	1.8	114

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Analyst BB

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21758-445 Analysis: TPH Diesel Matrix: Soil

Date Tested: 1-6-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	100	<4	124	125	1.3	124

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Results of PR

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21774-2MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-6-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	180	< 4	123	122	0.82	122

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Analyst BB

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21771-4MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-10-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	<4	116	114	1.7	115

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Analyst BB

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21775-2MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-10-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	<4	110	102	7.5	106

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Analyst: BB

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21786-2 MS (21789)
Date Tested: 1-10-89

Analysis: TFH DIESEL

Matrix: SOIL

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	<5	124	118	4.96	121

1/11
1/. 89

Precision:

$$\text{RPD} = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Analyst RR

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21803-2 MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-20-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	180	271	285	5	98

pw 1/24/89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: 8B

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21806-2 Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-21-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	1	100	98	2.02	98

pw 1/24/89

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: BB

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21831-8 MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-24-89

Compound	Concentration Spiked (~~PPB~~) ppb	Sample Result (~~PPB~~) ppb	Spike Result (~~PPB~~) ppb	Duplicate Spike Result (~~PPB~~) ppb	RPD	Spike Percent Recovery
TFH	100	<1	87	97	10.9	92

1/24/89

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

BB

MATRIX SPIKE RESULTS

Laboratory No.: 21846-2 MS (21848) Analysis: TFH Diesel Matrix: Soil

Date Tested: 1/25/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	<1	86	98	13.0	92

1w 1/30/89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

analyst BB

MATRIX SPIKE RESULTS

Laboratory No.: 21872-2MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 1-28-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	<1	101	91	10.4	96

1/30/89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

MATRIX SPIKE RESULTS

Laboratory No.: 21879-2 MS + MSD Analysis: TPH-Diesel Matrix: Soil

Date Tested: 1/28/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	100	<1	106	109	2.8	108

Rec 1/30/89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21899 MS+MSD Analysis: TFH-Diesel Matrix: Soil

Date Tested: 11/30/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	100	41	89	89	0	89

12/1/89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21919-2MS Analysis: TFH Diesel Matrix: Soil

Date Tested: 2-1-89

Compound	Concentration Spiked (~~ppb~~)	Sample Result (~~ppb~~)	Spike Result (~~ppb~~)	Duplicate Spike Result (~~ppb~~)	RPD	Spike Percent Recovery
~~ppb~~	~~ppb~~	~~ppb~~	~~ppb~~	~~ppb~~		
TFH						
	100	21	130	150	14.3	140

2/1/89

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21931-2 MS + MSD Analysis: TFH Diesel Matrix: Soil

Date Tested: 2/2/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
	ppm	ppm	ppm	ppm		
TFH	100	<1	120	112	6.9	116.2%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

2-8-89 BB

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21991-2 MS+MSD Analysis: TFH Diesel Matrix: Soil

Date Tested: 2/8/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
	ppm	ppm	ppm	ppm		
TFH	100	<1	152	153	1	85%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

2-8-8 F-669

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22002-2 Analysis: TFH Diesel Matrix: Soil

Date Tested: 2/13/89 MS+MSD

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	180	1300	1600	360	*	*

* High target analyte result, made it necessary to dilute sample and spikes 1/100. Therefore, spiking solution was diluted out. RPD and Spike percent recovery are not able to be calculated.

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

2-14-89 BD

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22042-2MS & MSD Analysis: TFH - Diesel Matrix: Soil

Date Tested: 2/13/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	180	<1	148	151	2.0	83%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

2-14-89 RB

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22070-2 MS+MSD Analysis: TFH Diesel Matrix: Soil

Date Tested: 2/15/89

Compound	Concentration Spiked ~~(PPB)~~ ppm	Sample Result ~~(PPB)~~ ppm	Spike Result ~~(PPB)~~ ppm	Duplicate Spike Result ~~(PPB)~~ ppm	RPD	Spike Percent Recovery
TFH	180	13	132	133	1	74%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

BB 2-21-89

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22087-3MS+MSD Analysis: TFH Diesel Matrix: Soil

Date Tested: 2/15/89

Compound	Concentration Spiked ~~(PPB)~~ ppm	Sample Result ~~(PPB)~~ ppm	Spike Result ~~(PPB)~~ ppm	Duplicate Spike Result ~~(PPB)~~ ppm	RPD	Spike Percent Recovery
TFH	180	<1	114	123	8	66%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: RD 2-21-89

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22142-2 MS+MSD Analysis: TFH Diesel Matrix: Soil

Date Tested: 2/17/89

Compound	Concentration Spiked ~~(PPB)~~	Sample Result ~~(PPB)~~	Spike Result ~~(PPB)~~	Duplicate Spike Result ~~(PPB)~~	RPD	Spike Percent Recovery
	ppm	ppm	ppm	ppm		
TFH	180	<1	122	128	4.8	69%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: 2-24-89 DB

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22333-2MS + MSD Analysis: TFH Diesel Matrix: Water

Date Tested: 2/22/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	5000	<50	2916	2863	1.8	58%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

2-24-89 BB

CHMHILL

MATRIX SPIKE RESULTS

Laboratory No.: DI Analysis: Matrix:

Date Tested: 2/23/89

Compound	Concentration Spiked ~~(PPB)~~	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH GAS	1.199 mg/l	0	1.091 (93%)	0.985 (84%)	5%	89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

2-24-89 DB

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22421 DIMS + DIMSD Analysis: TFH Diesel Matrix: Water

Date Tested: 2/24/89

Compound		Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	22421	5000	<50	3614	3540	2.1	72%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

2-24-89 BJ

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: DI Spike

Analysis:

Matrix:

Date Tested: 2/25/85

Contour	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	1.14 ppm	~~[illegible]~~	1.142	—	—	100

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

2-27-84 [illegible]

New Data System

MATRIX SPIKE RESULTS

22428, 22553

Laboratory No.: 22542 DI MS & DI MSD Analysis: TFH Diesel Matrix: Water

Date Tested: 3/21/89

Compound	Concentration Spiked (PPB) ppm	Sample Result (PPB) ppm	Spike Result (PPB) ppm	Duplicate Spike Result (PPB) ppm	RPD	Spike Percent Recovery
TFH	5.0	<0.05	4.2	4.2	0	84%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22643, 644, 651, 659, 660, 22674 Analysis: TFH Diesel Matrix: Water

Date Tested: 3/22/89

Compound	Concentration Spiked (PPB) ppm	Sample Result (PPB) ppm	Spike Result (PPB) ppm	Duplicate Spike Result (PPB) ppm	RPD	Spike Percent Recovery
TFH	5.0	<0.05	1.4	1.4	0	30%

DLC 3/24/89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: DI

Analysis:

Matrix:

Date Tested: 4/4/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	1.14 mg/l	0	1.1 96%	1.3 112%	6	104

9M 4-6-89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22738-1 Analysis: TPH DIESEL Matrix: WATER

Date Tested: 4-5-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	5.2	30.05	2.1	2.4	13.3	45%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: DIMS 22739, 22760 22738 22683 Analysis: TPH DIESEL Matrix: WATER

Date Tested: 4-6-89

Compound	Concentration Spiked ppm	Sample Result ppm	Spike Result ppm	Duplicate Spike Result ppm	RPD	Spike Percent Recovery
TPH	5.0	N/A	5.2	4.7	19.2	99

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

DI MS + DI MSD
22890

Laboratory No.: 22891 Analysis: TFH Diesel Matrix: Water

Date Tested: 4/12/89

Compound	Concentration Spiked ~~(PPB)~~ ppm	Sample Result ~~(PPB)~~ ppm	Spike Result ~~(PPB)~~ ppm	Duplicate Spike Result ~~(PPB)~~ ppm	RPD	Spike Percent Recovery
TFH	5.0	N/A	3.4	3.2	3.7	66%

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Spectra Physic

23114-5 MS + MSD

Laboratory No.: 23118 Analysis: TFH Diesel Matrix: Soil

Date Tested: 5/11/89

Compound	Concentration Spiked ~~(ppb)~~ ppm	Sample Result ~~(ppb)~~ ppm	Spike Result ~~(ppb)~~ ppm	Duplicate Spike Result ~~(ppb)~~ ppm	RPD	Spike Percent Recovery
TFH	170	<1	142	170	179	92%

$$1.7 \text{ mls} \times 5.0 \text{ mg/ml} = \frac{8.5 \text{ mg}}{.05 \text{ kg}} = 170 \text{ ppm}$$

Precision:

$$\text{RPD} = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

MATRIX SPIKE RESULTS

Laboratory No.: D1 445

Date Tested: 5/30

Analysis:

Matrix:

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	1.14 PPm	0	1.04 / 94%	1.04 / 91%	.3	92.5%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

QM
6-2-89

CHMHILL

MATRIX SPIKE RESULTS

Laboratory No.: 23306 MS + MSD Analysis: TFH Diesel Matrix: Water

Date Tested: 6/2/89

Compound	Concentration Spiked (PPB) ppm	Sample Result (PPB) ppm	Spike Result (PPB) ppm	Duplicate Spike Result (PPB) ppm	RPD	Spike Percent Recovery
TFH	2.5	<0.05	1.64	1.76	7.0	68%

$$0.5\,ml \times \frac{5\,mg}{ml} = \frac{2.5\,mg}{1\,l} = 2.5\,mg/l$$

QM 6-5-89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 10$$

Comments:

MATRIX SPIKE RESULTS

Laboratory No.: 23357 23358 23372 23361

Analysis: Matrix:

Date Tested: 6/5/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH Diesel	1.14	< 1	1.001/88%	.958/84%	2%	86% qm
23361	1.14	4.62	8.731	25.58		

23361.1
excessive background on
qm 6-8-89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

23357, 23358 23372
2341

Laboratory No.: DIMS+MSD 17 Analysis: TFH Diesel Matrix: Water

Date Tested: 6/7/89

Compound	Concentration Spiked (PPB) ppm	Sample Result (PPB) ppm	Spike Result (PPB) ppm	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	2.5	N/A	2.05	2.14	4.3	84%

$$0.5\,ml \times \frac{5\,mg}{ml} = \frac{2.5\,mg}{1\,l} = 2.5\,mg/l$$

Concentration Spiked.

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike R}}{\text{Spike Result + Duplicate Spike R}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: Analysis: Matrix:

Date Tested: 6/14

Compound		Concentration Spiked (~~PPB~~)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	Di	1.14	<1	.9798/86%	1.0158/89%	3.4 gm	~~[illegible]~~ 87
	23473	1.14	9.8	.86/76%	1.01/89%	15.5 gm	82 gm

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: DIMS

Analysis:

Matrix:

Date Tested: 6/15

Compound	Concentration Spiked ~~(PPB)~~	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFM	1.14 mg/l	~~0~~ 82%	.934	1.11 97%	90	7%

CAM 6-20-89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2MHILL

MATRIX SPIKE RESULTS

23521 23454 23469
23500 23468

Laboratory No.: 23510 Sand MS + MSD Analysis: TFH Diesel Matrix: Soil

Date Tested: 6/21/89

Compound	Concentration Spiked (~~PPB~~) ppm	Sample Result (~~PPB~~) ppm	Spike Result (~~PPB~~) ppm	Duplicate Spike Result (~~PPB~~) ppm	RPD	Spike Percent Recovery
TFH	50	N/A	30	34	12.5	64%

x 100

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24158, 24195, 24191, 24202

Sample Matrix: Water
Instrument ID: 3700-0400
Column ID: SPB-1
Test Methods: TPH DIESEL

Date Analyzed: 9/09/89
Analyst: C. Stonich

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery	QC Limits Recovery
DI MS/MSD 8/31/89	2.5	N/A	1.17	46.8	70 - 130
24158 MS/MSD	2.5	<0.05	1.23	49.2	70 - 130
SAND MS/MSD	50	N/A	29.6	59.2	70 - 130

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Recovery
DI MS/MSD 8/31/89	2.5	0.87	34.8	29.4	30	70 - 130
24158 MS/MSD	2.5	0.63	25.2	64.5	30	70 - 130
SAND MS/MSD	50	25	50	16.8	30	70 - 130

Results reported as mg/L.

RPD: 1 out of 3 outside limits
Spike Recovery: 6 out of 6 outside limits

Comments:

Analyst: [signature] for CS

Reviewed By: [signature]

000009

Engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24242-3

Sample Matrix: Water

Date Analyzed: 9/28/89

Instrument ID: Varian 3700

Analyst: J. Hargis

Column ID: DB-5

Test Methods: TFH Diesel

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery	QC Limits Recovery
TFH Diesel	5.00	0	5.800	120	70 - 130

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Recovery
TFH Diesel	5.00	4.700	94	17.[illegible]	30	70 - 130

Results reported as mg/L.

Comments:

Analyst: J.H. /[illegible]

Reviewed By: Grey Jordan

000125

CH2M HILL Redding Environmental Laboratory, 5 F-694 ir Road, Redding, California 96003 916 244 5227

Engineers
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MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24350

Sample Matrix: Water

Date Analyzed: 10-28-89

Instrument ID: Varian 3700

Analyst: J. Hargis

Column ID: DB-5

Test Methods: TFH Diesel

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery
TFH Diesel	5.00	0	2.7	54

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD
TFH Diesel	5.00	2.600	52	3.8

Results reported as mg/L.

Comments: Deionized water used as spike sample

Analyst: Jace Hargis / [illegible]

Reviewed By: [illegible]

000273

Engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24372-1

Sample Matrix: Water
Instrument ID: 3700-4423
Column ID: DB-5
Test Methods: TFH Diesel

Date Analyzed: 10/29/89
Analyst: J. Hargis

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery
TFH Diesel	2.500	N/A	1.52	61

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD
TFH Diesel	2.500	1.46	58	5.0

Results reported as ug/L.

Comments:

Analyst: J.H./[illegible]

Reviewed By: [illegible]

000296

Engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24898

Sample Matrix: Water
Instrument ID: Varian 3700
Column ID: DB-5
Test Methods: TFH Diesel

Date Analyzed: 12-14-89
Analyst: M. Sevier

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery
TFH Diesel	2.50	0.12	1.230	44

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD
TFH Diesel	2.50	2.730	104	81

Results reported as mg/L.

Comments:

Approved By Greg Jonker

Engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 25020-5

Sample Matrix: Water
Instrument ID: Varian 3700
Column ID: DB-5
Test Methods: TFH Diesel

Date Analyzed: 12-16-89
Analyst: M. Sevier

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery
TFH Diesel	2.50	0.06	2.13	83

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD
TFH Diesel	2.50	1.750	68	20

Results reported as mg/L.

Comments:

Approved By Cindy Jones

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

TFH-Gasoline (CA Method)

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21621-21 Analysis: Gasoline Matrix: Soil

Date Tested: 12-1-88

Compound	Concentration Spiked ~~[illegible]~~	Sample Result ~~[illegible]~~	Spike Result ~~[illegible]~~	Duplicate Spike Result ~~[illegible]~~	RPD	Spike Percent Recovery
TPH/Gas	20,000	50	20,000	18,000	8.44	95.2

$$\text{Precision: RPD} = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

$$\text{Accuracy: Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

12/1/88

Comments: Results in parts per million.
Analyzed by SG

F-699

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21629-11 Analysis: Gasoline Matrix: Soil

Date Tested: 12-2-88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	20,000	240	25,000	19000	19.6	107.5

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 1$$

Comments: Results in parts per million.
Analyzed by GMS

12/7/88

MATRIX SPIKE RESULTS

Laboratory No.: 21574-2 Analysis: Gasoline Matrix: Soil

Date Tested: 1-24-88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	20000	450	19337	20481	4.06	99.5

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

1/27/88

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21659-4, 8 Analysis: Gasoline Matrix: Soil

Date Tested: 12/6/88

Compound		Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	21659-4	20,000	<50	16,000	17,000	2.02	81.7
	21659-8	20,000	<50	23,000	24,000	3.15	115

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 1$$

Comments: Results in parts per million.

Analyst: [signature]

12/7/88

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21770 Analysis: Gasoline Matrix: soil

Date Tested: 12/8,9/88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	20,000	110	19563	20849	4.5	100

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

4/7/89

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21717-5 Analysis: Gasoline Matrix: Soil

Date Tested: 12/9/88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	20,000	<50	20000	23000	871	107.3

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 1$$

Comments: Results in parts per million.

Analyst: [signature]

12/12/88

CRM HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21734-10 Analysis: Gasoline Matrix: soil

Date Tested: 12-13-88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	20000	<50	19,000	17,000	6.37	88.9

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 1$$

Comments: Results in parts per million.

GW

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21740-9, 21757-2, 21771-3 Analysis: Gasoline Matrix: Soil

Date Tested: 12-18-88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas 21740-9	20,000		22000	22000	1.0	111
21771-3	20,000		21000	20000	1.5	103
21757-2	20,000		22000	23000	0.63	112

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 10$$

Comments: Results in parts per million.

F-706

CH2MHILL

MATRIX SPIKE RESULTS

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No. 21775, 21789, 21803 Analysis: Gasoline Matrix: Soil

Date Tested: 12/21/88

Compound		Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	21775-8	20000	<50	22000	20000	5.95	104
	21789-5	~~1944~~ 20000	65	19000	21000	5.20	100
	21803-6	20000	140	17000	17000	~~0.00~~	83.7

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

GW

CH2M HILL

MATRIX SPIKE RESULTS

MATRIX SPIKE RESULTS

Laboratory No.: 21832-6 Analysis: Gasoline Matrix: Soil

Date Tested: 12-23-88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	5000	<1300	5100	5900	2.36	90.4

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

GW

F-708

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21831-8 Analysis: Gasoline Matrix:

Date Tested: 12/23/88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	5000	450	5400	5400	0.29	108

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21883 Analysis: Gasoline Matrix: Soil

Date Tested: 12/27/88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	5000	1000	6045	5505	6.61	95.5

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

SMY

1/17/89

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: Analysis: Matrix: Soil

Date Tested: 12-28-84

Compound		Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Mean Spike Percent Recovery
TPH	21848-8	90 ppm	~~60~~ 150 ppm	~~17~~ 60 ppm	77 ppm	65%	48.5
	21872-8	90 ppm	45 ppm	74 ppm	67 ppm	28%	65

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 12-29-88 Analysis: Matrix: Soil

Date Tested:

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH 21899-9	90 ppm	620 ppm	118%	145%	10	132

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21919-7 Analysis: Gasoline Matrix: soil

Date Tested: 12/30/88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	5000	<50	6200	5800	4.40	120

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21923-4 Analysis: Gasoline Matrix: soil

Date Tested: 1/4/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	5000	<50	5400	4900	6.43	102

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

GW

1/14/89

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: Analysis: Matrix:

Date Tested: 1/18 1/4/85

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFM 21931-4	90 ppm	110 ppm	111%	102%	6%	102%

BB 1-16-85

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: Analysis: Matrix:

Date Tested: 1/6/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH 21991-2	40ppm	4ppm	83%	77%	5%	85%

1-16-89
BB

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: Analysis: Matrix: Soil

Date Tested: 11:3189

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	90ppm	<20ppm	100ppm	100ppm	0	111%

1-E-2

Sample

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22087-3 Analysis: Matrix:

Date Tested: 1/17/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	90 ppm	~~79.78 ppm~~ 50 ppm	79.78 ppm/88%	89.637/100%	6%	84.7 $\bar{x}$

1-19-89 BB

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

22070-3 MATRIX SPIKE RESULTS

Laboratory No.: 1/19/89 Analysis: Matrix:

Date Tested:

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	90	47	162/12%	150/114%	6%	121%

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: BB 1-20-89

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22080-2 Analysis: Matrix:

Date Tested: 1/23/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	90	<10	107	102	~~3%~~ 105	~~5%~~ 117

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: 1-30-89 BD

CHMHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21847-L Analysis: Matrix: Soil

Date Tested: 1/26/88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH	180 ppm	1.20 ppm	153 ppm	144 ppm	3%	82.5

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 2311-4 Soil

Analysis: Matrix:

Date Tested: 5/9/89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	51 mg/kg	4.5	53/102%	55/96%	9.9	3

5-11-89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 0$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 21662 Analysis: Gasoline Matrix: water

Date Tested: 12-3,4-88

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	400	41	320	350	6.33	84

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

F-723

ENGINEERS

MATRIX SPIKE RESULTS

Laboratory No.: 21905-1 Analysis: Gasoline Matrix: water

Date Tested: 1-4-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH/Gas	100	<1	101	98	2.13	99.5

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments: Results in parts per million.

CMJ

1/27/89

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 21925-2 Analysis: Gasoline Matrix: water

Date Tested: 1-4-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TPH/Gas	100	<1	95	~~90~~ 91	3.04	93.0

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 10^{\prime}$$

Comments: Results in parts per million.

CHMHILL

MATRIX SPIKE RESULTS

Laboratory No.: 22542, 22674, 22643, 22683 Analysis: TFH-GAS Matrix: water

Date Tested: 3/16/87

DI MS

Compound	Concentration Spiked (PPB) ppm	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	1.14	N/A	0.93	1.09	15.8	89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2MHILL

MATRIX SPIKE RESULTS

Laboratory No.: 22738 22739 22760

Analysis: TFH GAS

Matrix: water

Date Tested: 3-22-89

Compound	Concentration Spiked (~~PPB~~ ppm)	Sample Result (~~PPB~~)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	1.14	.089	~~1.2~~ 1.091	1.355	4%	108

1.19 = 104%

1.27 = 111

9M 3-28-89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Soil 22790-2

Laboratory No.: H_2O 22817-1 Analysis: Matrix:

Date Tested: 3/28

Compound		Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	22817-1	1.14	~~.98~~ <.01	.98 (86%)	1.09 (95%)	4.5	90
	22790-2	1.14	<0.1	.89 (76%)	.94 (82%)	3	79%

DB 3-31-89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

CH2M HILL

MATRIX SPIKE RESULTS

Laboratory No.: 22906-1 Analysis: Matrix:

Date Tested: 22925 Apr 7

Compound		Concentration Spiked ~~(PPB)~~	Sample Result ~~(PPB)~~	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
TFH	22906-1	2.85 ~~1.14~~	<.1	2.019/71%	1.769 62	~~[illegible]~~ 7	67%
	22925	1.10	<	1.11/97%	.992/87%	<	92

JM 4-10-89

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24158

Sample Matrix: Water
Instrument ID: Tracor
Column ID: Carbowax
Test Methods: TFH Gas

Date Analyzed: 08/29/89
Analyst: R. Craven

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery	QC Limits Recovery
TH Gas	3	0	2. .	96	70 - 130

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Recovery
TFH Gas	3.08	2.903	94	2.1	30	70 - 130

Results reported as mg/l
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

Comments: Spikes prepared in laboratory pure water due to limited sample.

Analyst: Bennett J Tyson Reviewed By: [illegible]

F-730

000021

CH2MHILL

Engineers
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Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24185, 24191

Date Analyzed: 9/5/89

Analyst: R. Craven

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery	QC Limits Recovery
TPH Gas	3.08	0	2.998	97	70 - 130

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Recovery
TPH Gas	3.08	2.952	96	0.7	30	70 - 130

Results reported as mg/L.
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits
Comments: Spikes prepared in laboratory pure water due to limited sample.

Analyst: RAC/[illegible]

Reviewed By: [illegible]

000058

CH2M HILL Redding Environmental Laboratory 5[illegible] Road Redding California 96003 916 244 5222

CH2M HILL Engineers Planners Economists Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24202, 24242, 24246, 24265

Sample Matrix: Water

Date Analyzed: 9/12/89

Instrument ID: Tracor

Analyst: R. Craven

Column ID: Carbowax

Test Methods: TFH Gas

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery	QC Limits Recovery
TFH Gas	3.08	0	2.7[illegible]	89	70 - 130

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Recovery
TFH Gas	3.08	2.511	85	3.2	30	70 - 130

Results reported as mg/L.

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

Comments: Spikes prepared in laboratory pure water due to limited sample.

Analyst: RAC/[illegible]

Reviewed By: Grey Jordan

000112

engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB
Reference Number: 24272

Sample Matrix: Water
Date Analyzed: 9/13/89
Instrument ID: Tracor
Anal,st: R. Craven
Column ID: Carbowax
Test Method: TPH Gas

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery	QC Limits Recovery
TPH Gas	3.08	0	2.880	94	70 - 130

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Recovery
TPH Gas	3.08	2.800	92	1.5	30	70 - 130

Results reported as mg/L.
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits
Comments: Spikes prepared in laboratory pure water due to limited sample.

Analyst: RAC/jmy
Reviewed By: Greg Jones

000193

Engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24304, 24313

Sample Matrix: Water
Instrument ID: Tracor
Column ID: Carbowax
Test Methods: TPH Gas

Date Analyzed: 9/19/89
Analyst: R. Craven

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery	QC Limits Recovery
TPH Gas	3.08	0	3.120	101	70 - 130

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Recovery
TPH Gas	3.08	3.01	98	2.1	30	70 - 130

Results reported as mg/L.
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits
Comments: Spikes prepared in laboratory pure water due to limited sample.

Analyst: RAC/gmg

Reviewed By: Greg Jonker

G00216

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Engineers
Planners
Economists
Scientists

MATRIX SPIKE/ MATRIX SPIKE DUPLICATE RESULTS

Client: Beale AFB

Reference Number: 24331, 24350, 24372

Sample Matrix: Water
Instrument ID: Tracor
Column ID: Carbowax
Test Methods: TPH Gas

Date Analyzed: 9/25/89
Analyst: B. Tyson

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery	QC Limits Recovery
TPH Gas	3.08	0	2.970	96	70 - 130

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD	QC Limits RPD	QC Limits Recovery
TPH Gas	3.08	2.860	97	3.17	30	70 - 130

Results reported as mg/L
RPD: 0 out of outside limits

Comments: Deionized water used as spik sample.

Analyst: BJT

Reviewed By:

000200

Engineers
Planners
Economists
Scientists

DI MATRIX SPIKE/DI MATRIX SPIKE DUPLICATE RESULTS

Client: Beale Air Force Base

Reference Number: 24898, 24454

Sample Matrix: Water
Instrument ID: Tracor
Column ID: Carbowax
Test Method: TFM Gas

Date Analyzed: 11-30-89
Analyst: G. Jordan

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery
TFM Gas	2.91	0	2.890	99

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD
TFM Gas	2.91	2.860	98	1.04

Results reported as mg/L.

Comments: Deionized water used as spike sample.

Approved By: Gary Jordan

Engineers
Planners
Economists
Scientists

DI MATRIX SPIKE/DI MATRIX SPIKE DUPLICATE RESULTS

Client: Beale Air Force Base

Reference Number: 24925, 24934, 24931, 24957

Sample Matrix: Water
Instrument ID: Tracor
Column ID: Carbowax
Test Methods: TFH Gas

Date Analyzed: 11-30-89
Analyst: G. Jordan

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery
TFH Gas	2.91	0	2.410	83

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD
TFH Gas	2.91	2.390	82	.83

Results reported as mg/L.

Comments: Deionized water used as spike sample.

Approved By: Gray Jordan

Engineers
Planners
Economists
Scientists

DI MATRIX SPIKE/DI MATRIX SPIKE DUPLICATE RESULTS

Client: Beale Air Force Base

Reference Number: 25020,25115, 25151

Sample Matrix: Water
Instrument ID: Tracor
Column ID: Carbowax
Test Methods: TFH Gas

Date Analyzed: 12-14-89
Analyst: M. Sevier

Compound	Spike Added	Sample Concentration	MS Concentration	MS% Recovery
TFH Gas	2.91	0	2.410	83

Compound	Spike Added	MSD Concentration	MSD % Recovery	% RPD
TFH Gas	2.91	2.400	82	0.4

Results reported as mg/L.

Comments: Deionized water used as spike sample.

Approved By: Greg Jordan

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

ICP Metals (SW6010)

MATRIX SPIKE MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22333-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2015	2043	1.4	P
Antimony	395.9	406.8	2.7	P
Arsenic	2076	2115	1.9	P
Barium	2004	2045	2.0	P
Beryllium	51.1	52.3	2.3	P
Cadmium	34.7	34.4	0.9	P
Calcium	23770	24080	1.3	P
Chromium	207.8	211.2	1.6	P
Cobalt	512.9	524.5	2.2	P
Copper	237.7	251.1	5.5	P
Iron	1055	1075	1.9	P
Lead	492.4	503.2	2.2	P
Magnesium	12760	12920	1.2	P
Manganese	507.9	517.3	1.8	P
Mercury				NR
Nickel	549.7	567.3	3.2	P
Potassium	6569	6435	2.1	P
Selenium	1927	1997	3.6	P
Silver	48.9	49.6	1.4	P
Sodium	68990	69660	1.0	P
Thallium	2106	2154	2.2	P
Vanadium	504.8	515.3	2.1	P
Zinc	520.5	537.6	3.2	P
MOLYBDENUM	489.8	498.9	1.8	P

ICP RUN 2-27-89 22333

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22333-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	16.5	16.8	1.8	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

P6-GF-228-89
22333

SVPHSMSD

MATRIX SPIKE MATRIX SPIKE DUPLICATE

Lab Name CH2M HILL Contract BALE AFB

Matrix (soil/water). WATER Reference No: 22345-2

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2038	2084	2.2	P
Antimony	390.4	388.4	0.5	P
Arsenic	2044	2014	0.1	P
Barium	2051	2027	1.2	P
Beryllium	53.8	53.3	0.9	P
Cadmium	34.7	37.4	7.5	P
Calcium	26940	26680	1.0	P
Chromium	210.3	208.2	10.0	P
Cobalt	509.2	509.0	0.0	P
Copper	254.5	251.2	1.3	P
Iron	1115	1115	0.0	P
Lead	504.4	525.5	4.1	P
Magnesium	15470	15290	1.2	P
Manganese	539.7	534.8	0.9	P
Mercury				NR
Nickel	547.3	540.3	1.4	P
Potassium	7038	6929	1.6	P
Selenium	1951	1951	0.0	P
Silver	53.3	50.5	5.4	P
Sodium	62330	61650	1.1	P
Thallium	2216	2205	0.5	P
Vanadium	510.5	505.0	1.1	P
Zinc	530.9	536.9	1.1	P
MOLYBDENUM	504.7	501.5	0.6	P

ICP 3-2-89 22345-2
22375-2,3
22363-1,2

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CHAM HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22345-2

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	20.9	24.1	14.2	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

PB - GF 3-9-89
22345-2
22345-2,3
22303-1,2
22398-1,2
DUPMSMSD 22465

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name CH2M HILL Contract: BEALE AFB

Matrix (soil/water) WATER Reference No: 22383-2

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	1.94	2.02	3.0	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Hg-cv 3-1-89 22382-3
22383-1,2
22390-1,2,3
22405-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22398-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2098	2126	1.3	P
Antimony	424.4	424.4	0.0	P
Arsenic	2049	2032	0.6	P
Barium	2035	2028	0.3	P
Beryllium	53.5	52.9	1.1	P
Cadmium	39.1	40.1	2.5	P
Calcium	27750	27200	2.0	P
Chromium	216.0	213.5	1.2	P
Cobalt	521.8	512.6	1.8	P
Copper	258.3	256.8	0.6	P
Iron	1114	1109	0.4	P
Lead	513.3	512.4	0.2	P
Magnesium	20860	20530	1.5	P
Manganese	517.8	514.5	0.6	P
Mercury				NR
Nickel	510.8	506.0	0.9	P
Potassium	5460	5471	0.2	P
Selenium	1963	1936	1.4	P
Silver	53.4	52.7	1.3	P
Sodium	17160	17000	0.9	P
Thallium	2241	2225	0.7	P
Vanadium	520.8	517.6	6.2	P
Zinc	522.8	519.7	0.6	P
MOLYBDENUM	503.6	501.8	0.4	P

ICP 3-3-89
22398-1,2,3
22405-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CHEM HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22398-1

Units (ug/l or mg/kg dry weigh): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic	44.2	43.9	0.7	F
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	18.0*	17.8**	1.1	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium	75.5*	76.5**	1.3	F
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR
				NR

PB - GP 3-13-89
22382
22394

AS GP 3-15-89
22382 22505
22383 22455
22398
22405
22445

C - GP 3-16-89
.2382
.2383
.2398
22405
22445

* POSTSPIKE
** DUPLICATE POSTSPIKE

F-745

DI CMSMSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name CH2M HILL Contract: BEALE AFB

Matrix (soil/water). WATER Reference No: 22428-4

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	1991	2075	4.1	P
Antimony	364.5	375.0	2.9	P
Arsenic	1878	1937	3.1	P
Barium	1985	2034	2.4	P
Beryllium	48.6	50.2	3.2	P
Cadmium	40.3	42.1	4.4	P
Calcium	4871	4945	1.5	P
Chromium	200.0	203.7	18.3	P
Cobalt	467.0	479.0	2.5	P
Copper	249.3	253.2	3.2	P
Iron	1124	1010	10.7	P
Lead	460.7	478.0	3.7	F
Magnesium	4883	4925	0.9	P
Manganese	475.2	488.9	2.8	P
Mercury				NR
Nickel	474.5	490.7	3.4	P
Potassium	5039	4953	1.7	P
Selenium	1865	1891	1.4	P
Silver	46.3	47.7	3.0	P
Sodium	5291	5454	3.0	P
Thallium	1947	19	2.5	P
Vanadium	469.2	481.1	2.5	P
Zinc	494.8	507.2	2.5	P
MOLYBDENUM	450.7	461.1	2.3	P

ICP 3-8-89
22421
22423
22425
22455

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22428-4

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	22.9	22.5	1.8	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No 2445-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	2.20	2.19	0.5	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Hg-CV-3-3-87
22445
22455

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22445-1

Units (ug/l or mg/kg dry weight): ug/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	2.11	2.2	6.0	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22494-3

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	1999	2017	0.9	P
Antimony	403.1	80.6	0.2	P
Arsenic	2097	2108	0.5	P
Barium	2061	2083	1.1	P
Beryllium	51.7	52.4	1.3	P
Cadmium	44.6	43.7	2.0	P
Calcium	10470	10570	0.9	P
Chromium	211.1	212.2	0.5	P
Cobalt	505.0	509.8	0.9	P
Copper	254.8	254.5	0.1	P
Iron	1045	1040	0.5	P
Lead	515.3	515.0	0 1	P
Magnesium	9198	9274	0.8	P
Manganese	511.5	515.3	0.7	P
Mercury				NR
Nickel	513.1	522.5	1.8	P
Potassium	6117	6134	0.3	P
Selenium	2009	2019	0.5	P
Silver	52.1	51.9	0.4	P
Sodium	15790	15940	1.0	P
Thallium	2111	2145	1.6	P
Vanadium	563.4	568.0	0.8	P
Zinc	538.5	536.1	0.4	P
MOLYBDENUM	521.7	523.1	0.3	P

ICP 3-14-89 22302-1,3
22505-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22512-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2108	2070	1.8	P
Antimony	427.3	418.1	2.2	P
Arsenic	2074	2043	1.5	P
Barium	2080	2062	0.9	P
Beryllium	53.0	52.7	0.6	P
Cadmium	46.2	46.1	0.2	P
Calcium	44400	44360	0.1	P
Chromium	211.1	207.1	1.9	P
Cobalt	521.5	516.4	1.0	P
Copper	262.4	257.6	1.8	P
Iron	1053	1049	0.4	P
Lead	537.6	522.2	2.9	P
Magnesium	31770	31710	0.2	P
Manganese	524.4	520.1	0.8	P
Mercury				NR
Nickel	519.6	510.0	1.9	P
Potassium	6012	6093	1.3	P
Selenium	2063	2010	2.6	P
Silver	48.7	48.7	0.0	P
Sodium	20910	20750	0.8	P
Thallium	2103	2098	0.2	P
Vanadium	523.8	520.2	0.7	P
Zinc	563.6	537.0	4.8	P
MOLYBDENUM	478.2	480.6	0.5	P

ICP - 3-16-89
22512
22542
22601
22622

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22512-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic	38	38.1	0.3	F
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	19.6	19.2	4.1	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium	75.5*	75.0**	0.7	F
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Pb GF 3-18-91
22455
22429
22505
22512

As GF 3-29-91
22512
22505

GF 3-24-91
22512
22505

* POSTSPIKE
** DUPLICATE POSTSPIKE

DUPMSMSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22622-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	2.38	2.32	2.6	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Hg-CV - 3-29-89
22601
22622
22643
22644
22693
[illegible]

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22643-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic	40.0	40.6	1.0	F
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	23.5	21.3	10.7	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium	9.6	10.0	4.1	F
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

D6-GFAA-3-30-89 AS-GFAA-3-30-89 S 1-89

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22643-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2236	2291	2.4	P
Antimony	435.5	420.2	3.6	P
Arsenic	2150	2136	0.6	P
Barium	2125	2 :1	0.8	P
Beryllium	50.3	50.1	0.4	P
Cadmium	45.8	44.7	2.4	P
Calcium	12950	13120	1.3	P
Chromium	214.1	213.9	0.1	P
Cobalt	551.4	546.1	1.0	P
Copper	270.5	273.2	1.0	P
Iron	1287	1299	0.8	P
Lead	502.4	500.5	0.4	P
Magnesium	9951	10060	1.1	P
Manganese	503.2	499.9	0.7	P
Mercury				NR
Nickel	535.9	540.7	0.9	P
Potassium	5801	5930	2.2	P
Selenium	1998	1981	0.8	P
Silver	54.7	53.7	1.8	P
Sodium	10030	10220	1.9	P
Thallium	2143	2158	0.7	P
Vanadium	529.1	530.2	0.2	P
Zinc	525.8	530.5	0.9	P
MOLYBDENUM	515.3	516.7	0.3	P

ICP - 3-29-89
22643-1,2,3
22644-1
22659-1
22660-1
22693-1
MS/MSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22674-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	1986	1990	0.2	P
Antimony	408.6	416.4	1.9	P
Arsenic	1942	1944	0.1	P
Barium	1997	2010	0.6	P
Beryllium	48.9	49.3	0.8	P
Cadmium	57.9	57.2	1.2	P
Calcium	15050	15340	1.9	P
Chromium	202.0	201.8	0.1	P
Cobalt	495.5	497.1	0.3	P
Copper	249.1	250.7	0.6	P
Iron	1009	1021	1.2	P
Lead	479.7	472.7	1.5	P
Magnesium	10330	10520	1.8	P
Manganese	488.5	489.8	0.3	P
Mercury				NR
Nickel	489.1	497.5	1.7	P
Potassium	6045	6424	6.1	P
Selenium	1941	1972	1.6	P
Silver	48.2	48.9	1.4	P
Sodium	20510	20800	1.4	P
Thallium	1883	1893	0.5	P
Vanadium	504.6	506.6	0.4	P
Zinc	515.6	517.7	0.4	P
MOLYBDENUM	470.8	474.0	0.7	P

ICP - 3-30-89
22674-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE A=B

Matrix (soil/water): WATER Reference No: 22603-1

Units (ug/l or mg/kg dry weight): ug/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	2.18	2.28	4.5	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Cv - 5-23-95
22601
22602
22603
22604
22605

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22938-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2021	2050	1.4	P
Antimony	410.5	423.5	1.6	P
Arsenic	1989	2036	2.3	P
Barium	2045	2077	1.6	P
Beryllium	49.3	50.6	2.6	P
Cadmium	56.8	55.9	1.6	P
Calcium	15950	16180	1.4	P
Chromium	207.4	210.2	1.3	P
Cobalt	501.5	520.0	3.6	P
Copper	253.3	257.5	1.6	P
Iron	994.6	1015	2.0	P
Lead	19.9	19.2	3.4	F
Magnesium	10940	11030	1.0	P
Manganese	484.4	494.0	2.0	P
Mercury				NR
Nickel	502.3	525.1	4.4	P
Potassium	6138	6251	1.8	P
Selenium	1955	1981	1.3	P
Silver	48.7	52.3	7.1	P
Sodium	22800	23070	1.2	P
Thallium	1965	2053	4.4	P
Vanadium	520.3	530.8	2.0	P
Zinc	505.7	511.3	1.1	P
MOLYBDENUM	487.0	493.1	1.2	P

ICP 5-31-89
22938-1,2,3,4
22939-1,3,4

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22768-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2259	2289	1.3	P
Antimony	425.6	423.3	0.5	P
Arsenic	2223	2239	0.7	P
Barium	2238	2257	0.8	P
Beryllium	55.8	56.6	1.4	P
Cadmium	51.6	52.1	1.0	P
Calcium	20340	20440	0.5	P
Chromium	226.2	226.3	0.0	P
Cobalt	540.1	549.0	1.6	P
Copper	281.4	283.4	0.7	P
Iron	1302	1326	1.8	P
Lead	504.1	523.9	3.8	P
Magnesium	16730	16830	0.6	P
Manganese	514.2	516.5	0.4	P
Mercury				NR
Nickel	547.1	556.7	1.7	P
Potassium	6552	6829	4.1	P
Selenium	2174	2232	2.6	P
Silver	53.4	53.4	0.0	P
Sodium	18810	18990	1.0	P
Thallium	2149	2163	0.6	P
Vanadium	569.8	574.0	0.7	P
Zinc	580.7	595.6	2.5	P
MOLYBDENUM	520.1	523.8	0.3	P

CF 4-3-89
22760-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22776-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	30380	28110	7.8	P
Antimony	437.7	460.7	5.1	P
Arsenic	2263	2216	2.1	P
Barium	1924	1869	2.9	P
Beryllium	57.5	55.0	4.4	P
Cadmium	47.6	47.7	0.2	P
Calcium	5692	5438	4.6	P
Chromium	208.8	205.7	1.5	P
Cobalt	503.0	487.6	3.1	P
Copper	357.3	343.3	4.0	P
Iron	1672	1592	4.9	P
Lead	442.5	451.0	1.9	P
Magnesium	5162	4984	3.5	P
Manganese	477.2	461.5	3.4	P
Mercury				NR
Nickel	727.7	716.3	1.6	P
Potassium	25010000	24670000	1.4	P
Selenium	2039	2023	0.8	P
Silver	55.5	56.8	2.3	P
Sodium	323500	309400	4.5	P
Thallium	2293	2236	2.5	P
Vanadium	5411	5227	3.5	P
Zinc	528.6	514.2	2.8	P
MOLYBDENUM	16470	15850	3.8	P

ICP # 7-89
22961-
22792-1 & 3

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22792-3

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	1.94	2.02	4.0	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22817-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2094	2069	1.2	P
Antimony	419.2	422.1	0.7	P
Arsenic	2034	2030	0.2	P
Barium	2075	2069	0.3	P
Beryllium	51.2	50.9	0.4	P
Cadmium	47.5	47.4	0.2	P
Calcium	5773	5749	0.4	P
Chromium	211.5	210.6	0.4	P
Cobalt	525.8	521.7	0.8	P
Copper	263.2	262.2	0.4	P
Iron	1015	1023	0.8	P
Lead	526.3	496.9	5.8	P
Magnesium	5396	5370	0.5	P
Manganese	497.7	493.5	0.8.	P
Mercury				NR
Nickel	524.7	520.2	0.9	P
Potassium	5397	5262	2.5	P
Selenium	2020	2034	0.7	P
Silver	51.7	538	0.3	P
Sodium	5946	5817	2.2	P
Thallium	2133	2135	0.1	P
Vanadium	508.7	507.5	0.2	P
Zinc	521.1	519.3	0.4	P
MOLYBDENUM	500	498.6	0.3	P

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22817-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic	39.3	39.8	1.2	F
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	18.4	18.1	1.6	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium	9.4	9.5	1.0	F
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

AS GFP 4-10-89 Se GF 4-9

22817-1, 3-5
22761-1
22700-1
22792-1-3
22814-1

F-763

DUPMSMSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): _____ Reference No: 22848-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	17.3	17.1	0.6	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium	9.2	9.8	6.4	F
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Pb-GF 4-19-89
22848-1
22849-1
22819-1,2,4,5

Se-GF-4-19-89
22848-1
22849-1

DUPMSMSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22884-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	2.08	2.12	1.9	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

HG 4-11-89
22814-1
22819-1,3-5

DUPMSMSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22890-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2126	2108	0.8	P
Antimony	403.8	402.0	0.4	P
Arsenic	2133	2133	0.0	P
Barium	2182	2169	0.6	P
Beryllium	53.8	53.6	0.4	P
Cadmium	44.6	45.8	2.6	P
Calcium	25820	25910	0.4	P
Chromium	215.2	216.9	0.5	P
Cobalt	531.7	530.6	0.2	P
Copper	262.8	262.3	0.2	P
Iron	1062	1061	0.0	P
Lead	525.8	528.2	0.5	P
Magnesium	14500	14480	1.4	P
Manganese	502.9	501.2	0.3	P
Mercury				NR
Nickel	532.4	531.9	0.1	P
Potassium	6640	7124	7.0	P
Selenium	2067	2076	0.4	P
Silver	54.0	55.6	2.9	P
Sodium	27650	27610	0.1	P
Thallium	2143	2141	0.1	P
Vanadium	528.7	526.9	0.3	P
Zinc	533.7	530.7	0.6	P
MOLYBDENUM	502.6	502.5	0.0	P

ICP 7-20-89
22890-1
22891-1,2,3
22896-1
22897-1,2
22906-1,3-6
DUPMSMSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M Hill Contract: Beale AFB

Matrix (soil/water): water Reference No: 22890-1

Units (ug/l or mg/kg dry weight): ug/l

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic	39.2	39.3	0.2	F
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	22.4	22.6	1.0	F
Magnesium				NR
Manganese				NR
Mercury	2.4	2.3	6.0	CV
Nickel				NR
Potassium				NR
Selenium	8.3	8.2	1.2	F
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Hg 4-20-89
22849-1
22849-1
22850-1
22851-1-3
22891-1,2
AS-
89
22906-3,5,6
Pb-GF 4-18-89
22890-1
22891-1-3
22890-1
22891-1
22906-1, 3-6
Se-GF 4-20-89
22890-1
22891-1-3
22890-1
22891-1
22906-3,5,6

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22890-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic	41.4	41.5	0.2	F
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

AS GF 4-21-89
22891-3

DUPMSMSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22983-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2121	2124	0.1	P
Antimony	409.8	418.9	2.2	P
Arsenic	2078	2092	0.7	P
Barium	2105	2110	0.2	P
Beryllium	52.4	53.0	1.1	P
Cadmium	44.0	44.7	1.6	P
Calcium	33640	34070	1.2	P
Chromium	210.8	213.3	1.2	P
Cobalt	506.5	514.2	1.5	P
Copper	254.6	256.8	0.9	P
Iron	1233	1256	1.8	P
Lead	519.1	530.8	2.2	P
Magnesium	18630	18690	0.3	P
Manganese	583.7	588.9	0.9	P
Mercury				NR
Nickel	537.4	547.3	1.8	P
Potassium	10770	11220	4.1	P
Selenium	2026	2063	1.8	P
Silver	50.6	52.0	2.7	P
Sodium	38260	38190	0.2	P
Thallium	2129	2153	1.1	P
Vanadium	497.1	502.1	1.0	P
Zinc	534.6	547.5	2.4	P
MOLYBDENUM	480.7	486.1	1.1	P

ICP 4-18-89
22948-1
22949-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 22915-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2054	2067	0.6	P
Antimony	414.4	407.4	1.7	P
Arsenic	2071	2051	1.0	P
Barium	1978	2009	1.5	P
Beryllium	51.2	51.5	0.6	P
Cadmium	48.0	47.4	1.3	P
Calcium	15990	16040	0.3	P
Chromium	205.4	205.9	0.2	P
Cobalt	497.4	496.5	0.2	P
Copper	248.3	251.6	1.3	P
Iron	1014	1079	6.2	P
Lead	504.1	478.3	5.2	P
Magnesium	9369	9440	0.8	P
Manganese	483.4	482.9	0.1	P
Mercury				NR
Nickel	519.4	527.0	1.4	P
Potassium	6126	5725	7.0	P
Selenium	2035	2002	1.6	P
Silver	50.3	50.0	0.6	P
Sodium	33720	34480	2.2	P
Thallium	2118	2113	0.2	P
Vanadium	490.4	490.5	0.0	P
Zinc	522.7	528.3	1.1	P
MOLYBDENUM	491.2	496.4	1.0	P

ICP 4-21-89
22914-1
22915-1

DUPMSMSD

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: S23442-2

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	1.85	1.86	0.5	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Hg 6-23-89
23442-2
443-2,3
459-1,2,3,5
460-1
[illegible]

23483-1
485-1,2,3
486-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 523454-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2024	2037	0.6	P
Antimony	389.7	401.4	3.0	P
-Arsenic	1998	-2001	0.2	P
Barium	2044	2041	0.2	P
Beryllium	52.6	52.6	0.0	P
Cadmium	39.2	39.5	0.8	P
Calcium	21700	21790	0.4	P
Chromium	207.2	210.0	1.3	P
Cobalt	501.1	502.2	0.2	P
Copper	246.1	246.8	0.3	P
Iron	986.5	987.3	0.1	P
Lead	525.7	524.7	0.2	P
Magnesium	15890	15960	0.4	P
Manganese	483.4	482.9	0.1	P
Mercury				NR
Nickel	511.1	515.7	0.9	P
Potassium	5640	5869	4.0	P
Selenium	1995	1996	0.0	P
Silver	49.5	51.0	3.0	P
Sodium	34510	34240	0.8	P
Thallium	1866	1882	0.8	P
Vanadium	499.4	500.7	0.3	P
Zinc	507.7	511.9	0.8	P
MOLYBDENUM	497.3	498.9	0.3	P

ICP 6-22-99
523454-1,2,3,5

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 523454-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic	41.5	42.9	3.3	F
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	20.1	20.7	2.9	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium	10.2	8.9	13.6	F
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Pb-GP 2-26-89
23357-1
397-1,2,3,5
398-2
417-1

23418-1 & 3
442-2
443-2,3
454-1,2,3,5

Se-GP 2-26-89
23399-1,2,3,5
398-2
418-1 & 3
442-2
443-2,3

6-29-89
154-1,2,3,6
442-2
443-2,3
460-1
469-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 523486-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum	2009	2014	0.2	P
Antimony	382.8	379.0	1.0	P
Arsenic	2094	2066	1.4	P
Barium	1978	1955	1.2	P
Beryllium	51.2	50.3	1.8	P
Cadmium	35.8	35.6	0.6	P
Calcium	32560	32320	0.7	P
Chromium	205.4	202.0	1.7	P
Cobalt	502.7	492.4	2.1	P
Copper	244.5	241.2	1.4	P
Iron	995.5	982.6	1.3	P
Lead	507.5	487.9	3.9	P
Magnesium	23990	23940	0.2	P
Manganese	474.0	466.3	2.5	P
Mercury				NR
Nickel	516.4	501.0	3.0	P
Potassium	7432	7364	0.9	P
Selenium	1976	1909	3.4	P
Silver	50.6	50.2	0.8	P
Sodium	18270	18320	0.3	P
Thallium	1901	1881	1.1	P
Vanadium	499.0	491.4	1.5	P
Zinc	501.6	493.4	1.6	P
MOLYBDENUM	495.7	485.3	2.1	P

ICP 6-23-89
23496-1
23500-1→3
23501-1

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 523486-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic	37.6	37.0	1.6	F
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead	19.9	19.6	1.5	F
Magnesium				NR
Manganese				NR
Mercury				NR
Nickel				NR
Potassium				NR
Selenium	9.6	9.2	4.2	F
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Pb-GF 7-9-89
23403-1
405-1→3
406-1
520-1→3

Se-GF 7-6-89 ← SAME

GF - 7-7-89 SAME

F-775

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Lab Name: CH2M HILL Contract: BEALE AFB

Matrix (soil/water): WATER Reference No: 523500-1

Units (ug/l or mg/kg dry weight): UG/L

Analyte	MS	MSD	% RPD	M
Aluminum				NR
Antimony				NR
Arsenic				NR
Barium				NR
Beryllium				NR
Cadmium				NR
Calcium				NR
Chromium				NR
Cobalt				NR
Copper				NR
Iron				NR
Lead				NR
Magnesium				NR
Manganese				NR
Mercury	1.53	1.48	3.3	CV
Nickel				NR
Potassium				NR
Selenium				NR
Silver				NR
Sodium				NR
Thallium				NR
Vanadium				NR
Zinc				NR

Mg 7-7-89
23500-1→3
23501-1

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

0606 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB1

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2001.4000		200.0000	U	2000.0	100.1		P
Antimony	75-125	490.5000		300.0000	U	500.0	98.1		P
Arsenic	75-125	2037.3000		300.0000	U	2000.0	101.8		P
Barium	75-125	2036.2000		100.0000	U	2000.0	101.8		P
Beryllium	75-125	52 [illegible]		5.0000	U	50.0	104.2		P
Cadmium	75-125	47.1000		10.0000	U	50.0	94.2		P
Calcium		5008 [illegible]000		44627.7000					NR
Chromium	75-125	20[illegible].3000		30.0000	U	200.0	100.6		P
Cobalt	75-125	496.8000		40.0000	U	500.0	99.4		P
Copper	75-125	242.2000		30.0000	U	250.0	96.9		P
Iron	75-125	981.5000		100.0000	U	1000.0	98.2		P
Lead	75-125	480.0000		200.0000	U	500.0	96.0		P
[illegible]gnesium		27361.5000		22006.8000					NR
nganese	75-125	567.0000		76.0000		500.0	98.2		P
Molybdenu	75-125	490.6000		40.0000	U	500.0	98.1		P
Nickel	75-125	509.5000		40.0000	U	500.0	101.9		P
Potassium		5776.8000		1000.0000	U				NR
Selenium	75-125	1982.0000		5.0000	U	2000.0	99.1		P
Silver	75-125	43.2000		30.0000	U	50.0	86.4		P
Sodium		27048.5000		21452.6000					NR
Thallium	75-125	1796.0000		500.0000	U	2000.0	89.8		P
Vanadium	75-125	485.5000		40.0000	U	500.0	97.1		P
Zinc	75-125	503.1000		20.0000	U	500.0	100.6		P

Comments:

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

0606 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB1

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	40.6000		5.0000	U	40.0	101.5		F
Lead	75-125	22.2000		5.0000	U	20.0	111.0		F
Mercury	75-125	0.9000		0.5000	U	1.0	90.0		CV
Selenium	75-125	7.5000		5.0000	U	10.0	75.0		F

6
DUPLICATES

EPA SAMPLE NO.

0606 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB1

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0 % Solids for Duplicate: 0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		200.0000	U	200.0000	U			P
Antimony		300.0000	U	300.0000	U			P
Arsenic		300.0000	U	300.0000	U			P
Barium		100.0000	U	100.0000	U			P
Beryllium		5.0000	U	5.0000	U			P
Cadmium		10.0000	U	10.0000	U			P
Calcium		44630.0000		45290.0000		1.5		P
Chromium		30.0000	U	30.0000	U			P
Cobalt		40.0000	U	40.0000	U			P
Copper		30.0000	U	30.0000	U			P
Iron		100.0000	U	100.0000	U			P
Lead		200.0000	U	200.0000	U			P
Magnesium		22010.0000		22270.0000		1.2		P
Manganese		15.0000	U	15.0000	U			P
Mercury		0.5000	U	0.5000	U			CV
Nickel		40.0000	U	40.0000	U			P
Potassium		1000.0000	U	1000.0000	U			P
Selenium		400.0000	U	400.0000	U			P
Silver		30.0000	U	30.0000	U			P
Sodium		21450.0000		21710.0000		1.2		P
Thallium		500.0000	U	500.0000	U			P
Vanadium		40.0000	U	40.0000	U			P
Zinc		20.0000	U	20.0000	U			P

6
DUPLICATES

EPA SAMPLE NO.

0606 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: _____ SAS No.: _____ SDG No.: BAFB1

Matrix (soil/water): WATER Level (low/med): _____

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		5.0000	U	5.0000	U		-	F
Lead		5.0000	U	5.0000	U		-	F
Mercury		0.5000	U	0.5000	U		-	CV
Selenium		5.0000	U	5.0000	U		-	F
			-		-		-	-
			-		-		-	-
			-		-		-	-

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0631 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: _____ SAS No.: _____ SDG No.: BAFB2

Matrix (soil/water): WATER Level (low/med): _____

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1959.4000		200.0000	U	2000.0	98.0		P
Antimony	75-125	453.9000		300.0000	U	500.0	90.8		P
Arsenic	75-125	1973.1000		300.0000	U	2000.0	98.7		P
Barium	75-125	1959.8000		100.0000	U	2000.0	98.0		P
Beryllium	75-125	50.6000		5.0000	U	50.0	101.2		P
Cadmium	75-125	50.5000		10.0000	U	50.0	101.0		P
Calcium		22078.8000		17524.2000					NR
Chromium	75-125	201.4000		30.0000	U	200.0	100.7		P
Cobalt	75-125	496.1000		40.0000	U	500.0	99.2		P
Copper	75-125	245.6000		30.0000	U	250.0	98.2		P
Iron	75-125	976.8000		100.0000	U	1000.0	97.7		P
Lead	75-125	487.8000		200.0000	U	500.0	97.6		P
Magnesium		14810.6000		10253.4000					NR
Manganese	75-125	497.1000		15.0000	U	500.0	99.4		P
Molybdenum	75-125	467.3000		40.0000	U	500.0	93.5		P
Nickel	75-125	491.1000		40.0000	U	500.0	98.2		P
Potassium		5405.6000		1000.0000	U				NR
Selenium	75-125	1872.6000		400.0000	U	2000.0	93.6		P
Silver	75-125	46.3000		30.0000	U	50.0	92.6		P
Sodium		25648.0000		21138.5000					NR
Thallium	75-125	1821.0000		500.0000	U	2000.0	91.0		P
Vanadium	75-125	487.9000		40.0000	U	500.0	97.6		P
Zinc	75-125	496.7000		20.0000	U	500.0	99.3		P

Comments:

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0631 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: ____ SAS No.: ____ SDG No.: BAFB2

Matrix (soil/water): WATER Level (low/med): ____

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	39.3000		5.0000	U	40.0	98.2		F
Lead	75-125	20.7000		5.0000	U	20.0	103.5		F
Mercury	75-125	1.0000		0.5000	U	1.0	100.0		CV
Selenium	75-125	7.6000		5.0000	U	10.0	76.0		F

Comments:

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SPIKE SAMPLE RECOVERY

SAMPLE NO.

0631 S

Lab Name: CH2MHILL Contract: BAFB

Code: LRD Case No.: ____ SAS No.: ____ SDG No.: BAFB2

Matrix (soil/water): WATER Level (low/med): ____

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	37.6000		5.0000	U	40.0	94.0		F
Lead									NR
Mercury									NR
Selenium	75-125	7.8000		5.0000	U	10.0	78.0		F

Comments: --

6
DUPLICATES

SAMPLE NO.

0631 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: ____ SAS No.: ____ SDG No.: BAFB2

Matrix (soil/water): WATER Level (low/med): ____

% Solids for Sample: ____ % Solids for Duplicate: ____

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		200.0000	U	200.0000	U			P
Antimony		300.0000	U	300.0000	U			P
Arsenic		300.0000	U	300.0000	U			P
Barium		100.0000	U	100.0000	U			P
Beryllium		5.0000	U	5.0000	U			P
Cadmium		10.0000	U	10.0000	U			P
Calcium		17520.0000		17440.0000		0.5		P
Chromium		30.0000	U	30.0000	U			P
Cobalt		40.0000	U	40.0000	U			P
Copper		30.0000	U	30.0000	U			P
Iron		100.0000	U	100.0000	U			P
Lead		200.0000	U	200.0000	U			P
Magnesium		10250.0000		10150.0000		1.0		P
Manganese		15.0000	U	15.0000	U			P
Mercury								NR
Nickel		40.0000	U	40.0000	U			P
Potassium		1000.0000	U	1000.0000	U			P
Selenium		400.0000	U	400.0000	U			P
Silver		30.0000	U	30.0000	U			P
Sodium		21140.0000		20820.0000		1.5		P
Thallium		500.0000	U	500.0000	U			P
Vanadium		40.0000	U	40.0000	U			P
Zinc		20.0000	U	20.0000	U			P

U.S. EPA - CLP

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DUPLICATES

SAMPLE NO.

0631 D

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB2_

Matrix (soil/water): WATER Level (low/med): _____

% Solids for Sample: __0.0 % Solids for Duplicate: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		5.0000	U	5.0000	U			F
Lead		5.0000	U	5.0000	U			F
Mercury		0.5000	U	0.5000	U			CV
Selenium		5.0000	U	5.0000	U			P

6
DUPLICATES

SAMPLE NO.
0631 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB2

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		5.0000	U	5.0000	U		-	F
Lead			-		-		-	NR
Mercury			-		-		-	NR
Selenium		5.0000	U	5.0000	U		-	F
			-		-		-	-
			-		-		-	-
			-		-		-	-
			-		-		-	-
			-		-		-	-
			-		-		-	-
			-		-		-	-
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			-		-		-	-
			-		-		-	-
			-		-		-	-
			-		-		-	-
			-		-		-	-
			-		-		-	-
			-		-		-	-

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0639 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB3

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1953.0000		200.0000	U	2000.0	97.6		P
Antimony	75-125	486.0000		300.0000	U	500.0	97.2		P
Arsenic	75-125	1999.0000		300.0000	U	2000.0	100.0		P
Barium	75-125	1952.0000		100.0000	U	2000.0	97.6		P
Beryllium	75-125	49.4000		5.0000	U	50.0	98.8		P
Cadmium	75-125	49.9000		10.0000	U	50.0	99.8		P
Calcium		33320.0000		28900.0000					NR
Chromium	75-125	196.6000		30.0000	U	200.0	98.3		P
Cobalt	75-125	482.2000		40.0000	U	500.0	96.4		P
Copper	75-125	235.6000		30.0000	U	250.0	94.2		P
Iron	75-125	930.6000		100.0000	U	1000.0	93.1		P
Lead	75-125	493.7000		200.0000	U	500.0	98.7		P
gnesium		16800.0000		12110.0000					NR
nganese	75-125	475.8000		15.0000	U	500.0	95.2		P
Molybdenu	75-125	474.8000		40.0000	U	500.0	95.0		P
Nickel	75-125	488.4000		40.0000	U	500.0	97.7		P
Potassium		7133.0000		2500.0000					NR
Selenium	75-125	1898.0000		400.0000	U	2000.0	94.9		P
Silver	75-125	47.5000		30.0000	U	50.0	95.0		P
Sodium		34320.0000		29690.0000					NR
Thallium	75-125	1734.0000		500.0000	U	2000.0	86.7		P
Vanadium	75-125	493.8000		40.0000	U	500.0	98.8		P
Zinc	75-125	483.4000		20.0000	U	500.0	96.7		P

Comments:

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SPIKE SAMPLE RECOVERY

SAMPLE NO.

0639 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB3

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	48.5000		11.9000		40.0	91.5		F
Lead	75-125	16.5000		5.0000	U	20.0	82.5		F
Mercury	75-125	1.3000		0.5000	U	1.0	100.8		CV
Selenium	75-125	9.0000		5.0000	U	10.0	90.0		F

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0639 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: ____ SAS No.: ____ SDG No.: BAFB3

Matrix (soil/water): WATER Level (low/med): ____

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic									NR
Lead									NR
Mercury									NR
Selenium	75-125	9.3000		5.0000	U	10.0	93.0		F

6
DUPLICATES

SAMPLE NO.

0630 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB3

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: % Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		200.0000	U	200.0000	U			P
Antimony		300.0000	U	300.0000	U			P
Arsenic		300.0000	U	300.0000	U			P
Barium		100.0000	U	100.0000	U			P
Beryllium		5.0000	U	5.0000	U			P
Cadmium		10.0000	U	10.0000	U			P
Calcium		28900.0000		28690.0000		0.7		P
Chromium		30.0000	U	30.0000	U			P
Cobalt		40.0000	U	40.0000	U			P
Copper		30.0000	U	30.0000	U			P
Iron		100.0000	U	100.0000	U			P
Lead		200.0000	U	200.0000	U			P
Magnesium		12110.0000		11970.0000		1.2		P
Manganese		15.0000	U	15.0000	U			P
Mercury								NR
Nickel		40.0000	U	40.0000	U			P
Potassium		2452.0000		2260.0000		8.2		P
Selenium		400.0000	U	400.0000	U			P
Silver		30.0000	U	30.0000	U			P
Sodium		29690.0000		29340.0000		1.2		P
Thallium		500.0000	U	500.0000	U			P
Vanadium		40.0000	U	40.0000	U			P
Zinc		20.0000	U	20.0000	U			P

6
DUPLICATES

SAMPLE NO.

0639 D

b Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: Sas No.: SDG No.: BAFB3

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		11.9000		11.2000		6.1		F
Lead		5.0000	U	5.0000	U			F
Mercury		0.5000	U	0.5000	U			CV
Selenium		5.0000	U	5.0000	U			F

6
DUPLICATES

SAMPLE NO.

0639 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB3

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic								NR
Lead								NR
Mercury								NR
Selenium		5.0000	U	5.0000	U			F

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5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0660 S

Lab Name: CH2MHILL Contract: BAFB

Code: LRD Case No.: SAS No.: SDG No.: BAFB4

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2035.3000		200.0000	U	2000.0	101.8		P
Antimony	75-125	478.1000		300.0000	U	500.0	95.6		P
Arsenic	75-125	2009.2000		300.0000	U	2000.0	100.5		P
Barium	75-125	2064.8000		100.0000	U	2000.0	103.2		P
Beryllium	75-125	51.7000		5.0000	U	50.0	103.4		P
Cadmium	75-125	42.2000		10.0000	U	50.0	84.4		P
Calcium		33742.9000		28956.1000					NR
Chromium	75-125	206.9000		30.0000	U	200.0	103.4		P
Cobalt	75-125	505.1000		40.0000	U	500.0	101.0		P
Copper	75-125	236.4000		30.0000	U	250.0	94.6		P
Iron	75-125	973.4000		100.0000	U	1000.0	97.3		P
Lead	75-125	542.7000		200.0000	U	500.0	108.5		P
Magnesium		24483.6000		19150.2000					NR
nganese	75-125	476.1000		15.0000	U	500.0	95.2		P
lybdenu	75-125	486.7000		40.0000	U	500.0	97.3		P
Nickel	75-125	517.4000		40.0000	U	500.0	103.5		P
Potassium		5526.6000		1000.0000	U				NR
Selenium	75-125	1975.7000		400.0000	U	2000.0	98.8		P
Silver	75-125	46.7000		30.0000	U	50.0	93.4		P
Sodium		20148.3000		14389.4000					NR
Thallium	75-125	1974.2000		500.0000	U	2000.0	98.7		P
Vanadium	75-125	490.2000		40.0000	U	500.0	98.0		P
Zinc	75-125	497.2000		20.0000	U	500.0	99.4		P

Comments:

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

0660 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: _____ SAS No.: _____ SDG No.: BAFB4

Matrix (soil/water): WATER Level (low/med): _____

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	43.9000		5.0000	U	40.0	109.8		F
Lead	75-125	20.9000		5.0000	U	20.0	104.5		F
Mercury	75-125	1.5000		0.5000	U	1.0	117.1		CV
Selenium	75-125	10.0000	U	10.0000	U	10.0	0.0	N	F

5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

0660 A

Lab Name: CH2MHILL Contract: BAFB

Code: LRD Case No.: SAS No.: SDG No.: BAFB4

Matrix (soil/water): WATER Level (low/med):

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic									NR
Lead									NR
Mercury									NR
Selenium		16.20		10.00	U	20.0	81.0		F

6
DUPLICATES

SAMPLE NO.

0660 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: Sas No.: SDG No.: BAFB4

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		200.0000	U	200.0000	U			P
Antimony		300.0000	U	300.0000	U			P
Arsenic		300.0000	U	300.0000	U			P
Barium		100.0000	U	100.0000	U			P
Beryllium		5.0000	U	5.0000	U			P
Cadmium		10.0000	U	10.0000	U			P
Calcium		28956.1000		28736.9000		0.8		P
Chromium		30.0000	U	30.0000	U			P
Cobalt		40.0000	U	40.0000	U			P
Copper		30.0000	U	30.0000	U			P
Iron		100.0000	U	100.0000	U			P
Lead		200.0000	U	200.0000	U			P
Magnesium		19150.2000		18994.0000		0.8		P
Manganese		15.0000	U	15.0000	U			P
Molybdenu		40.0000	U	40.0000	U			P
Nickel		40.0000	U	40.0000	U			P
Potassium		1000.0000	U	1000.0000	U			P
Selenium		400.0000	U	400.0000	U			P
Silver		30.0000	U	30.0000	U			P
Sodium		14389.4000		14129.8000		1.8		P
Thallium		500.0000	U	500.0000	U			P
Vanadium		40.0000	U	40.0000	U			P
Zinc		20.0000	U	20.0000	U			P

6
DUPLICATES

SAMPLE NO.

0660 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB4

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		5.0000	U	5.0000	U			F
Lead		5.0000	U	5.0000	U			F
Mercury		0.5000	U	0.5000	U			CV
Selenium		10.0000	U	10.0000	U			F

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.
680 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB5

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2210.8000		200.0000	U	2000.0	110.5		P
Antimony	75-125	506.2000		300.0000	U	500.0	101.2		P
Arsenic	75-125	2070.3000		300.0000	U	2000.0	103.5		P
Barium	75-125	2163.3000		103.2000		2000.0	103.0		P
Beryllium	75-125	52.9000		5.0000	U	50.0	105.8		P
Cadmium	75-125	55.7000		10.0000	U	50.0	111.4		P
Calcium		16793.9000		11352.9000					NR
Chromium	75-125	229.0000		30.0000	U	200.0	114.5		P
Cobalt	75-125	536.6000		40.0000	U	500.0	107.3		P
Copper	75-125	242.3000		30.0000	U	250.0	96.9		P
Iron	75-125	1132.7000		100.0000	U	1000.0	113.3		P
Lead	75-125	505.5000		200.0000	U	500.0	101.1		P
Magnesium		12445.7000		7283.3000					NR
Manganese	75-125	544.7000		18.3000		500.0	105.3		P
Molybdenu	75-125	502.8000		40.0000	U	500.0	100.6		P
Nickel	75-125	510.9000		40.0000	U	500.0	102.2		P
Potassium		6034.5000		1000.0000	U				NR
Selenium	75-125	2047.0000		400.0000	U	2000.0	102.4		P
Silver	75-125	51.3000		30.0000	U	50.0	102.6		P
Sodium		17371.0000		11677.3000					NR
Thallium	75-125	1844.3000		500.0000	U	2000.0	92.2		P
Vanadium	75-125	515.3000		40.0000	U	500.0	103.1		P
Zinc	75-125	555.8000		40.4000		500.0	103.1		P

Comments:

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

0680 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB5

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	39.0000		5.0000	U	40.0	97.5		F
Lead	75-125	21.5000		5.0000	U	20.0	107.5		F
Mercury									NR
Selenium	75-125	8.8000		5.0000	U	10.0	88.0		F

6
DUPLICATES

EPA SAMPLE NO.
0680 D

Lab Name: CH2MHILL Contract: EAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB5

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum	200.0	200.0000	U	200.0000	U			P
Antimony	60.0	300.0000	U	300.0000	U			P
Arsenic	10.0	300.0000	U	300.0000	U			P
Barium	100.0	103.2000		100.0000	U	200.0		P
Beryllium	5.0	5.0000	U	5.0000	U			P
Cadmium	5.0	10.0000	U	10.0000	U			P
Calcium	5000.0	11352.9000		11262.8000		0.8		P
Chromium	10.0	30.0000	U	30.0000	U			P
Cobalt	50.0	40.0000	U	40.0000	U			P
Copper	25.0	30.0000	U	30.0000	U			P
Iron	100.0	100.0000	U	100.0000	U			P
Lead	5.0	200.0000	U	200.0000	U			P
Magnesium	5000.0	7283.3000		7191.5000		1.3		P
Manganese	15.0	18.3000		18.2000		0.5		P
Molybdenu		40.0000	U	40.0000	U			P
Nickel	40.0	40.0000	U	40.0000	U			P
Potassium	5000.0	1000.0000	U	1000.0000	U			P
Selenium	5.0	400.0000	U	400.0000	U			P
Silver	10.0	30.0000	U	30.0000	U			P
Sodium	5000.0	11677.3000		11466.1000		1.8		P
Thallium	10.0	500.0000	U	500.0000	U			P
Vanadium	50.0	40.0000	U	40.0000	U			P
Zinc	20.0	40.4000		38.3000		5.3		P

6

DUPLICATES

SAMPLE NO.

0680 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB5

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		300.0000	U	300.0000	U			
Lead		200.0000	U	200.0000	U			P
Mercury		0.5000	U	0.5000	U			P
Selenium		400.0000	U	400.0000	U			CV
								P

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BLANKS

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB5_

Preparation Bla..k Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Arsenic	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	F
Lead	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	F
Mercury	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	CV
Selenium	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	F

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB5_

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Arsenic			5.0	U							F
Lead			5.0	U							F
Mercury											NR
Selenium			5.0	U							F

BLANKS

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB5_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	200.0	U	200.0	U	200.0	U	200.0	U	200.0	U	P
Antimony	300.0	U	300.0	U	300.0	U	300.0	U	300.0	U	P
Arsenic	300.0	U	300.0	U	300.0	U	300.0	U	300.0	U	P
Barium	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	P
Beryllium	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	P
Cadmium	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Calcium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Chromium	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	P
Cobalt	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Copper	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	P
Iron	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	P
Lead	200.0	U	200.0	U	200.0	U	200.0	U	200.0	U	P
Magnesium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Manganese	15.0	U	15.0	U	15.0	U	15.0	U	15.0	U	P
Molybdenu	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Nickel	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Selenium	400.0	U	400.0	U	400.0	U	400.0	U	400.0	U	P
Silver	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	P
Sodium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	P
Thallium	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	P
Vanadium	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Zinc	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	P

6
DUPLICATES

SAMPLE NO.

0700 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB6

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		200.0000	U	200.0000	U			P
Antimony		300.0000	U	300.0000	U			P
Arsenic		300.0000	U	300.0000	U			P
Barium		100.0000	U	100.0000	U			P
Beryllium		5.0000	U	5.0000	U			P
Cadmium		10.0000	U	10.0000	U			P
Calcium	5000.0	14868.7000		14807.1000		0.4		P
Chromium		30.0000	U	30.0000	U			P
Cobalt		40.0000	U	40.0000	U			P
Copper		30.0000	U	30.0000	U			P
Iron		100.0000	U	100.0000	U			P
Lead		200.0000	U	200.0000	U			P
Magnesium		4747.9000		4726.2000		0.5		P
Manganese		15.0000	U	15.0000	U			P
Molybdenu		40.0000	U	40.0000	U			P
Nickel		40.0000	U	40.0000	U			P
Potassium		1964.4000		1953.5000		0.6		P
Selenium		400.0000	U	400.0000	U			P
Silver		30.0000	U	30.0000	U			P
Sodium	5000.0	26981.1000		26854.2000		0.5		P
Thallium		500.0000	U	500.0000	U			P
Vanadium		40.0000	U	40.0000	U			P
Zinc		20.0000	U	20.0000	U			P

6
DUPLICATES

SAMPLE NO.

0700 D

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB6_

Matrix (soil/water): WATER Level (low/med): _____

% Solids for Sample: __0.0 % Solids for Duplicate: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		5.0000	U	5.0000	U			F
Lead		5.0000	U	5.0000	U			F
Mercury		0.5000	U	0.5000	U			CV
Selenium		5.0000	U	5.0000	U			F

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0700 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB6

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2024.0000		200.0000	U	2000.0	101.2		P
Antimony	75-125	457.4000		300.0000	U	500.0	91.5		P
Arsenic	75-125	1987.0000		300.0000	U	2000.0	99.4		P
Barium	75-125	2046.3000		100.0000	U	2000.0	102.3		P
Beryllium	75-125	52.0000		5.0000	U	50.0	104.0		P
Cadmium	75-125	39.4000		10.0000	U	50.0	78.8		P
Calcium		19371.2000		14868.7000					NR
Chromium	75-125	217.0000		30.0000	U	200.0	108.5		P
Cobalt	75-125	517.1000		40.0000	U	500.0	103.4		P
Copper	75-125	238.4000		30.0000	U	250.0	95.4		P
Iron	75-125	1159.4000		100.0000	U	1000.0	115.9		P
Lead	75-125	524.3000		200.0000	U	500.0	104.9		P
Magnesium		9505.8000		4747.9000					NR
Manganese	75-125	468.2000		15.0000	U	500.0	93.6		P
Molybdenum	75-125	472.8000		40.0000	U	500.0	94.6		P
Nickel	75-125	499.7000		40.0000	U	500.0	99.9		P
Potassium		7099.3000		1964.4000					NR
Selenium	75-125	1944.2000		400.0000	U	2000.0	97.2		P
Silver	75-125	48.8000		30.0000	U	50.0	97.6		P
Sodium		32385.9000		26981.1000					NR
Thallium	75-125	1921.3000		500.0000	U	2000.0	96.1		P
Vanadium	75-125	508.3000		40.0000	U	500.0	101.7		P
Zinc	75-125	500.2000		20.0000	U	500.0	100.0		P

Comments:

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0700 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: ____ SAS No.: ____ SDG No.: BAFB6

Matrix (soil/water): WATER Level (low/med): ____

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	35.9000		5.0000	U	40.0	89.8		F
Lead	75-125	22.2000		5.0000	U	20.0	111.0		F
Mercury	75-125	1.1000		0.5000	U	1.0	110.0		CV
Selenium	75-125	9.3000		5.0000	U	10.0	93.0		F

Comments:

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6
DUPLICATES

SAMPLE NO.

0700 D

Lab Name: CH2MHILL Contract: BAFB

Code: LRD Case No.: SAS No.: SDG No.: BAFB6

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		200.0000	U	200.0000	U			P
Antimony		300.0000	U	300.0000	U			P
Arsenic		300.0000	U	300.0000	U			P
Barium		100.0000	U	100.0000	U			P
Beryllium		5.0000	U	5.0000	U			P
Cadmium		10.0000	U	10.0000	U			P
Calcium	5000.0	14868.7000		14807.1000		0.4		P
Chromium		30.0000	U	30.0000	U			P
Cobalt		40.0000	U	40.0000	U			P
Copper		30.0000	U	30.0000	U			P
Iron		100.0000	U	100.0000	U			P
Lead		200.0000	U	200.0000	U			P
Magnesium		4747.9000		4726.2000		0.5		P
Manganese		15.0000	U	15.0000	U			P
Molybdenu		40.0000	U	40.0000	U			P
Nickel		40.0000	U	40.0000	U			P
Potassium		1964.4000		1953.5000		0.6		P
Selenium		400.0000	U	400.0000	U			P
Silver		30.0000	U	30.0000	U			P
Sodium	5000.0	26981.1000		26854.2000		0.5		P
Thallium		500.0000	U	500.0000	U			P
Vanadium		40.0000	U	40.0000	U			P
Zinc		20.0000	U	20.0000	U			P

6
DUPLICATES

SAMPLE NO.

G700 D

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB6_

Matrix (soil/water): WATER Level (low/med): _____

% Solids for Sample: __0.0 % Solids for Duplicate: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		5.0000	U	5.0000	U			F
Lead		5.0000	U	5.0000	U			F
Mercury		0.5000	U	0.5000	U			CV
Selenium		5.0000	U	5.0000	U			P

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0722 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB7

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2083.1000		200.0000	U	2000.0	104.2		P
Antimony	75-125	480.2000		300.0000	U	500.0	96.0		P
Arsenic	75-125	1946.9000		300.0000	U	2000.0	97.3		P
Barium	75-125	1997.9000		100.0000	U	2000.0	99.9		P
Beryllium	75-125	50.2000		5.0000	U	50.0	100.4		P
Cadmium	75-125	49.2000		10.0000	U	50.0	98.4		P
Calcium		34927.2000		30782.3000					NR
Chromium	75-125	212.1000		30.0000	U	200.0	106.0		P
Cobalt	75-125	501.7000		40.0000	U	500.0	100.3		P
Copper	75-125	247.0000		30.0000	U	250.0	98.8		P
Iron	75-125	1050.2000		100.0000	U	1000.0	105.0		P
Lead	75-125	511.8000		200.0000	U	500.0	102.4		P
gnesium		23600.3000		19347.2000					NR
nganese	75-125	485.2000		15.0000	U	500.0	97.0		P
Molybdenu	75-125	477.0000		40.0000	U	500.0	95.4		P
Nickel	75-125	494.2000		40.0000	U	500.0	98.8		P
Potassium		6892.6000		1562.6000					NR
Selenium	75-125	1973.8000		400.0000	U	2000.0	98.7		P
Silver	75-125	48.4000		30.0000	U	50.0	96.8		P
Sodium		18622.3000		13830.2000					NR
Thallium	75-125	1829.7000		500.0000	U	2000.0	91.5		P
Vanadium	75-125	503.1000		40.0000	U	500.0	100.6		P
Zinc	75-125	508.4000		20.0000	U	500.0	101.7		P

Comments:

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0722 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: _____ SAS No.: _____ SDG No.: BAFB7_

Matrix (soil/water): WATER Level (low/med): _____

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	33.6000		5.0000	U	40.0	84.0		F
Lead	75-125	15.7000		5.0000	U	20.0	78.5		F
Mercury	75-125	1.0000		0.5000	U	1.0	100.0		CV
Selenium	75-125	9.7000		5.0000	U	10.0	97.0		F

6
DUPLICATES

SAMPLE NO.

0722 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB7

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		200.0000	U	200.0000	U			P
Antimony		300.0000	U	300.0000	U			P
Arsenic		300.0000	U	300.0000	U			P
Barium		100.0000	U	100.0000	U			P
Beryllium		5.0000	U	5.0000	U			P
Cadmium		10.0000	U	10.0000	U			P
Calcium		30782.3000		30942.1000		0.5		P
Chromium		30.0000	U	30.0000	U			P
Cobalt		40.0000	U	40.0000	U			P
Copper		30.0000	U	30.0000	U			P
Iron		100.0000	U	100.0000	U			P
Lead		200.0000	U	200.0000	U			P
Magnesium	5000.0	19347.2000		19337.8000		0.0		P
Manganese		15.0000	U	15.0000	U			P
Molybdenu		40.0000	U	40.0000	U			P
Nickel		40.0000	U	40.0000	U			P
Potassium	5000.0	1562.6000		1778.5000		12.9		P
Selenium		400.0000	U	400.0000	U			P
Silver		30.0000	U	30.0000	U			P
Sodium	5000.0	13830.2000		13766.8000		0.5		P
Thallium		500.0000	U	500.0000	U			P
Vanadium		40.0000	U	40.0000	U			P
Zinc		20.0000	U	20.0000	U			P

6
DUPLICATES

SAMPLE NO.

0722 D

Lab Name: CH2MHILL_____ Contract: BAFB_____

Lab Code: LRD___ Case No.: _____ SAS No.: _____ SDG No.: BAFB7_

Matrix (soil/water): WATER Level (low/med): _____

% Solids for Sample: __0.0 % Solids for Duplicate: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		5.0000	U	5.0000	U			F
Lead		5.0000	U	5.0000	U			F
Mercury		0.5000	U	0.5000	U			CV
Selenium		5.0000	U	5.0000	U			F

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0722 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB7

Matrix (soil/water): WATER Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2083.1000		200.0000	U	2000.0	104.2		P
Antimony	75-125	480.2000		300.0000	U	500.0	96.0		P
Arsenic	75-125	1946.9000		300.0000	U	2000.0	97.3		P
Barium	75-125	1997.9000		100.0000	U	2000.0	99.9		P
Beryllium	75-125	50.2000		5.0000	U	50.0	100.4		P
Cadmium	75-125	49.2000		10.0000	U	50.0	98.4		P
Calcium		34927.2000		30782.3000					NR
Chromium	75-125	212.1000		30.0000	U	200.0	106.0		P
Cobalt	75-125	501.7000		40.0000	U	500.0	100.3		P
Copper	75-125	247.0000		30.0000	U	250.0	98.8		P
Iron	75-125	1050.2000		100.0000	U	1000.0	105.0		P
Lead	75-125	511.8000		200.0000	U	500.0	102.4		P
Magnesium		23600.3000		19347.2000					NR
Manganese	75-125	485.2000		15.0000	U	500.0	97.0		P
Molybdenu	75-125	477.0000		40.0000	U	500.0	95.4		P
Nickel	75-125	494.2000		40.0000	U	500.0	98.8		P
Potassium		6892.6000		1562.6000					NR
Selenium	75-125	1973.8000		400.0000	U	2000.0	98.7		P
Silver	75-125	48.4000		30.0000	U	50.0	96.8		P
Sodium		18622.3000		13830.2000					NR
Thallium	75-125	1829.7000		500.0000	U	2000.0	91.5		P
Vanadium	75-125	503.1000		40.0000	U	500.0	100.6		P
Zinc	75-125	508.4000		20.0000	U	500.0	101.7		P

Comments:

FORM V (PART 1) - IN 7/87

5A
SPIKE SAMPLE RECOVERY

SAMPLE NO.

0722 S

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: _____ SAS No.: _____ SDG No.: BAFB7_

Matrix (soil/water): WATER Level (low/med): _____

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	33.6000		5.0000	U	40.0	84.0		F
Lead	75-125	15.7000		5.0000	U	20.0	78.5		F
Mercury	75-125	1.0000		0.5000	U	1.0	100.0		CV
Selenium	75-125	9.7000		5.0000	U	10.0	97.0		F

6
DUPLICATES

SAMPLE NO.

0722 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: SAS No.: SDG No.: BAFB7

Matrix (soil/water): WATER Level (low/med):

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		200.0000	U	200.0000	U			P
Antimony		300.0000	U	300.0000	U			P
Arsenic		300.0000	U	300.0000	U			P
Barium		100.0000	U	100.0000	U			P
Beryllium		5.0000	U	5.0000	U			P
Cadmium		10.0000	U	10.0000	U			P
Calcium		30782.3000		30942.1000		0.5		P
Chromium		30.0000	U	30.0000	U			P
Cobalt		40.0000	U	40.0000	U			P
Copper		30.0000	U	30.0000	U			P
Iron		100.0000	U	100.0000	U			P
Lead		200.0000	U	200.0000	U			P
Magnesium	5000.0	19347.2000		19337.6000		0.0		P
Manganese		15.0000	U	15.0000	U			P
Molybdenu		40.0000	U	40.0000	U			P
Nickel		40.0000	U	40.0000	U			P
Potassium	5000.0	1562.6000		1778.5000		12.9		P
Selenium		400.0000	U	400.0000	U			P
Silver		30.0000	U	30.0000	U			P
Sodium	5000.0	13830.2000		13766.8000		0.5		P
Thallium		500.0000	U	500.0000	U			P
Vanadium		40.0000	U	40.0000	U			P
Zinc		20.0000	U	20.0000	U			P

6
DUPLICATES

SAMPLE NO.

0722 D

Lab Name: CH2MHILL Contract: BAFB

Lab Code: LRD Case No.: _____ SAS No.: _____ SDG No.: BAFB7_

Matrix (soil/water): WATER Level (low/med): _____

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		5.0000	U	5.0000	U			F
Lead		5.0000	U	5.0000	U			F
Mercury		0.5000	U	0.5000	U			CV
Selenium		5.0000	U	5.0000	U			F

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Pesticides and PCBs (SW8080)

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH_2M HILL ENVIRONMENTAL LAB Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____ Level: (low/med) _____

21805-2

COMPOUND	SPIKE ADDED (ug/Kg) DUP	SAMPLE CONCENTRATION (ug/Kg) DUP	MS CONCENTRATION (ug/Kg) DUP	MS % REC #	QC LIMITS REC.
Lindane	0.0067	<0.01	0.0069	103	46-127
Heptachlor	0.0067	<0.01	0.0070	104	35-130
Aldrin	0.0067	<0.01	0.0067	100	34-132
Dieldrin	0.0167	<0.02	0.0172	103	31-134
Endrin	0.0167	<0.02	0.0217	130	42-139
4,4' DDT	0.0167	<0.02	0.0174	104	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Lindane	0.0067	0.0069	103	0	50	46-127
Heptachlor	0.0067	0.0063	94	10.1	31	35-130
Aldrin	0.0067	0.0066	99	10	43	34-132
Dieldrin	0.0167	0.0171	102	0.9	38	31-134
Endrin	0.0167	0.0210	126	3.1	45	42-139
4,4' DDT	0.0167	0.0168	101	2.9	50	23-134

f Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

jw 11/5/89

COMMENTS: DB-17 COLUMN

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Herbicides (SW8150)

HERBICIDE SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE SUMMARY

Lab Name: CH2M HILL/MGM Contract: _____

Lab Code: _____ Case No. 12735 SAS No. _____ SDG No.: _____

Matrix Spike - EPA Sample No.: 12735001

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONC (UG/KG)	MS CONC (UG/KG)	MS % REC
2,4-D	50	0	46.50	93
Silvex	10	0	8.54	85
2,4,5-T	10	0	9.00	90

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONC (UG/KG)	MSD % REC	% RPD
2,4-D	50	45.26	90	3
Silvex	10	9.10	91	-7
2,4,5-T	10	9.78	98	-8

Comments:

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Purgeable Halocarbons (SW8010)
Purgeable Aromatics (SW8020)

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 22644 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 3-23-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloroethane	20	< 1	27.6	29.1	5.29	141.75
Bromoethane	20	< 1	25.4	22.4	12.55	119.50
Dichlorodifluoromethane	20	< 1	20.9	21.8	4.22	106.75
Vinyl chloride	20	< 1	20.9	21.8	4.22	106.75
Chloroethane	20	< 1	22.7	23.3	2.61	115.00
Methylene chloride	20	15	64.6	56.2	13.91	227.00
Trichlorofluoromethane	20	< 1	28.1	28.3	0.71	141.00
1,1-Dichloroethene	20	< 1	27.2	27.7	1.82	137.25
1,1-Dichloroethane	20	< 1	26.6	26.2	1.52	132.00
trans-1,2-Dichloroethene	20	< 1	25.6	25.5	0.39	127.75
Chloroform	20	< 1	26.1	25.8	1.16	129.75
1,2-Dichloroethane	20	< 1	24.4	24.4	0.00	122.00
1,1,1-Trichloroethane	20	< 1	25.2	26.3	4.27	128.75
Carbon Tetrachloride	20	< 1	24.1	24.8	2.86	122.25
Bromodichloromethane	20	< 1	24.3	24.5	0.82	122.00
1,2-Dichloropropane	20	< 1	24.8	27.0	8.49	129.50
cis-1,3-Dichloropropene	20	< 1	20.5	20.1	1.97	101.50
Trichloroethene	20	< 1	23.7	24.3	2.50	120.00
Dibromochloromethane	20	< 1	22.4	23.6	5.22	115.00
1,1,2-Trichloroethane	20	< 1	22.4	23.6	5.22	115.00
trans-1,3-Dichloropropene	20	< 1	22.4	23.6	5.22	115.00
Bromoform	20	< 1	19.3	20.3	5.05	99.00
1,1,2,2-Tetrachloroethane	20	< 1	23.2	24.5	5.45	119.25
Tetrachloroethene	20	< 1	23.2	24.5	5.45	119.25
Chlorobenzene	20	< 1	21.3	21.7	1.86	107.50
1,3-Dichlorobenzene	20	< 1	19.8	21.0	5.88	102.00
1,2-Dichlorobenzene	20	< 1	19.8	20.6	3.96	101.00
1,4-Dichlorobenzene	20	< 1	19.9	21.2	6.33	102.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 22644 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 3-23-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	25.8	20.7	10.64	136.25
Benzene	20	< 1	24.9	26.6	6.60	120.75
Toluene	20	< 1	24.3	25.2	3.64	123.75
Ethyl benzene	20	< 1	23.0	23.7	3.00	116.75
Xylene	60	< 1	69.1	70.5	2.01	116.33
Chlorobenzene	20	< 1	23.1	23.3	0.86	116.00
1,4-Dichlorobenzene	20	< 1	19.5	21.2	8.35	101.75
1,3-Dichlorobenzene	20	< 1	20.2	21.5	6.24	104.25
1,2-Dichlorobenzene	20	< 1	20.5	21.4	4.30	104.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 22739-4 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 3-31-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloroethane	20	< 1	4.3	6.7	43.64	27.50
Bromoethane	20	< 1	14.1	19.6	32.64	84.25
Dichlorodifluoroethane	20	< 1	10.6	14.1	28.34	61.75
Vinyl chloride	20	< 1	10.6	14.1	28.34	61.75
Chloroethane	20	< 1	11.4	15.5	30.48	67.25
Methylene chloride	20	< 5	20.8	29.7	35.25	126.25
Trichlorofluoromethane	20	< 1	18.0	24.2	29.38	105.50
1,1-Dichloroethene	20	< 1	16.7	22.2	28.28	97.25
1,1-Dichloroethane	20	< 1	16.8	22.1	27.25	97.25
trans-1,2-Dichloroethene	20	< 1	22.5	29.3	26.25	129.50
Chloroform	20	< 1	21.9	23.9	8.73	114.50
1,2-Dichloroethane	20	< 1	15.8	20.9	27.79	91.75
1,1,1-Trichloroethane	20	< 1	20.1	26.3	26.72	116.00
Carbon Tetrachloride	20	< 1	19.1	24.1	23.15	100.00
Bromodichloromethane	20	< 1	18.6	23.7	24.11	105.75
1,2-Dichloropropane	20	< 1	15.5	21.0	30.14	91.25
cis-1,3-Dichloropropene	20	< 1	16.5	22.2	29.46	96.75
Trichloroethene	20	< 1	20.1	24.6	20.13	111.75
Dibromochloromethane	20	< 1	15.1	20.4	29.86	88.75
1,1,2-Trichloroethane	20	< 1	15.1	20.4	29.86	88.75
trans-1,3-Dichloropropene	20	< 1	15.1	20.4	29.86	88.75
Bromoform	20	< 1	23.6	29.8	23.22	133.50
1,1,2,2-Tetrachloroethane	20	< 1	16.4	18.8	13.64	88.00
Tetrachloroethene	20	< 1	16.4	18.8	13.64	88.00
Chlorobenzene	20	< 1	18.9	19.7	4.15	96.50
1,3-Dichlorobenzene	20	< 1	15.5	17.8	9.23	81.25
1,2-Dichlorobenzene	20	< 1	14.9	16.8	11.99	79.25
1,4-Dichlorobenzene	20	< 1	14.5	16.1	10.46	76.50

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 22739-4 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 3-31-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	19.7	23.9	19.27	109.20
Benzene	20	< 1	21.7	23.3	7.11	112.50
Toluene	20	< 1	22.6	23.1	2.19	114.25
Ethyl benzene	20	< 1	22.0	22.0	0.00	110.00
Xylene	60	< 1	61.7	65.1	5.36	105.67
Chlorobenzene	20	< 1	22.1	22.2	0.45	110.75
1,4-Dichlorobenzene	20	< 1	21.1	23.0	8.62	110.25
1,3-Dichlorobenzene	20	< 1	21.5	23.8	10.15	113.25
1,2-Dichlorobenzene	20	< 1	20.8	23.6	12.61	111.00

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 22814 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 4-4-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloroethane	20	< 1	7.9	4.6	52.80	31.25
Bromoethane	20	< 1	26.8	24.8	7.75	129.00
Dichlorodifluoromethane	20	< 1	24.4	20.4	17.86	112.00
Vinyl chloride	20	< 1	24.4	20.4	17.86	112.00
Chloroethane	20	< 1	16.9	13.2	24.36	75.33
Methylene chloride	20	< 5	30.9	27.4	12.81	145.75
Trichlorofluoromethane	20	< 1	29.9	23.0	26.09	132.25
1,1-Dichloroethene	20	< 1	27.5	22.2	21.33	124.25
1,1-Dichloroethane	20	< 1	25.5	21.9	15.19	118.50
trans-1,2-Dichloroethene	20	< 1	25.3	21.7	15.32	117.50
Chloroform	20	< 1	25.4	22.8	10.79	120.50
1,2-Dichloroethane	20	< 1	23.5	21.7	7.96	113.00
1,1,1-Trichloroethane	20	< 1	30.4	21.6	33.85	130.00
Carbon Tetrachloride	20	< 1	28.0	30.8	9.52	147.00
Bromodichloromethane	20	< 1	25.6	24.5	4.39	125.25
1,2-Dichloropropane	20	< 1	25.3	24.0	5.27	123.25
cis-1,3-Dichloropropene	20	< 1	28.4	28.0	1.42	141.00
Trichloroethene	20	< 1	23.6	22.6	4.33	115.50
Dibromochloromethane	20	< 1	24.0	24.6	2.47	121.50
1,1,2-Trichloroethane	20	< 1	24.0	24.6	2.47	121.50
trans-1,3-Dichloropropene	20	< 1	24.0	24.6	2.47	121.50
Bromoform	20	< 1	36.6	37.7	2.96	185.75
1,1,2,2-Tetrachloroethane	20	< 1	23.1	23.8	2.99	117.25
Tetrachloroethene	20	< 1	23.1	23.8	2.99	117.25
Chlorobenzene	20	< 1	22.9	23.8	3.85	116.75
1,3-Dichlorobenzene	20	< 1	21.6	21.5	0.46	107.75
1,2-Dichlorobenzene	20	< 1	21.8	21.7	0.46	108.75
1,4-Dichlorobenzene	20	< 1	21.7	21.5	0.93	108.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 22814 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 4-4-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	25.8	23.2	10.61	122.50
Benzene	20	< 1	25.4	22.5	12.11	119.75
Toluene	20	3	27.3	25.4	7.21	116.75
Ethyl benzene	20	< 1	23.5	23.2	1.28	116.75
Xylene	60	< 1	70.7	67.8	4.19	115.42
Chlorobenzene	20	< 1	24.0	23.4	2.53	118.50
1,4-Dichlorobenzene	20	< 1	21.9	22.5	2.75	110.98
1,3-Dichlorobenzene	20	< 1	23.0	23.7	3.00	116.75
1,2-Dichlorobenzene	20	< 1	23.9	24.6	2.89	121.25

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 1$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 22891-2 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 4-12-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloroethane	20	< 1	8.2	17.2	70.87	63.50
Bromoethane	20	< 1	22.7	18.6	19.85	103.25
Dichlorodifluoroethane	20	< 1	24.3	19.0	24.48	100.25
Vinyl chloride	20	< 1	24.3	19.0	24.48	100.25
Chloroethane	20	< 1	20.0	16.0	22.22	90.00
Methylene chloride	20	< 5	22.3	21.0	6.00	100.25
Trichlorofluoroethane	20	< 1	25.6	21.7	16.49	110.25
1,1-Dichloroethene	20	< 1	24.5	21.1	14.91	114.00
1,1-Dichloroethane	20	< 1	23.2	20.9	10.43	110.25
trans-1,2-Dichloroethene	20	< 1	22.7	20.6	9.70	100.25
Chloroform	20	< 1	23.0	21.0	9.09	110.00
1,2-Dichloroethane	20	< 1	21.4	19.0	7.77	103.00
1,1,1-Trichloroethane	20	< 1	23.3	20.0	11.34	110.25
Carbon tetrachloride	20	< 1	23.0	21.2	8.14	110.50
Bromodichloromethane	20	< 1	21.1	19.0	6.36	102.25
1,2-Dichloropropane	20	< 1	23.4	21.5	8.46	112.25
cis-1,3-Dichloropropene	20	< 1	18.3	18.4	0.54	91.75
Trichloroethene	20	< 1	23.0	22.1	3.99	112.75
Dibromochloroethane	20	< 1	20.2	19.9	1.50	100.25
1,1,2-Trichloroethane	20	< 1	20.2	19.9	1.50	100.25
trans-1,3-Dichloropropene	20	< 1	20.2	19.9	1.50	100.25
Bromoform	20	< 1	16.7	17.7	5.81	86.00
1,1,2,2-Tetrachloroethane	20	< 1	21.2	21.6	1.87	107.00
Tetrachloroethene	20	< 1	21.2	21.6	1.87	107.00
Chlorobenzene	20	< 1	20.0	22.1	6.06	107.25
1,3-Dichlorobenzene	20	< 1	22.1	21.2	4.16	108.25
1,2-Dichlorobenzene	20	< 1	21.9	20.0	5.02	106.68
1,4-Dichlorobenzene	20	< 1	22.0	21.2	3.70	108.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 22891-2 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 4-12-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	22.6	21.1	6.86	109.25
Benzene	20	< 1	21.3	19.8	7.30	102.75
Toluene	20	< 1	24.3	23.5	3.35	119.50
Ethyl benzene	20	< 1	21.9	18.7	15.76	101,50
Xylene	60	< 1	65.7	66.1	0.61	109.83
Chlorobenzene	20	< 1	21.8	21.9	0.46	109.25
1,4-Dichlorobenzene	20	< 1	15.2	16.2	6.37	78.50
1,3-Dichlorobenzene	20	< 1	19.7	30.7	43.65	126.00
1,2-Dichlorobenzene	20	< 1	18.7	19.8	5.71	96.25

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 10$$

Comments:

Approved by: _____

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 22986-6 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 4-14-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	3.4	3.3	2.99	16.75
Bromomethane	20	< 1	20.5	21.7	5.69	105.50
Dichlorodifluoromethane	20	< 1	17.3	18.3	5.62	89.00
Vinyl chloride	20	< 1	17.3	18.3	5.62	89.00
Chloroethane	20	< 1	15.5	15.6	0.64	77.75
Methylene chloride	20	< 5	27.9	26.6	4.77	136.25
Trichlorofluoromethane	20	< 1	24.9	25.3	1.59	125.50
1,1-Dichloroethene	20	< 1	25.0	24.9	0.40	124.75
1,1-Dichloroethane	20	< 1	25.0	24.3	5.99	125.25
trans-1,2-Dichloroethene	20	< 1	24.3	23.6	3.74	120.25
Chloroform	20	< 1	28.0	25.6	8.96	134.00
1,2-Dichloroethane	20	< 1	23.1	19.8	15.38	107.25
1,1,1-Trichloroethane	20	< 1	24.6	23.4	5.00	120.00
Carbon Tetrachloride	20	< 1	23.8	23.3	2.12	117.75
Bromodichloromethane	20	< 1	24.5	21.9	11.21	116.00
1,2-Dichloropropane	20	< 1	24.0	21.6	10.53	114.00
cis-1,3-Dichloropropene	20	< 1	20.4	18.4	10.31	97.00
Trichloroethene	20	< 1	22.8	22.3	2.22	112.75
Dibromochloromethane	20	< 1	22.1	20.1	9.48	105.50
1,1,2-Trichloroethane	20	< 1	22.1	20.1	9.48	105.50
trans-1,3-Dichloropropene	20	< 1	22.1	20.1	9.48	105.50
Bromoform	20	< 1	21.8	21.1	3.26	107.25
1,1,2,2-Tetrachloroethane	20	< 1	20.0	20.4	1.98	101.00
Tetrachloroethene	20	< 1	20.0	20.4	1.98	101.00
Chlorobenzene	20	< 1	21.5	21.5	0.00	107.50
1,3-Dichlorobenzene	20	< 1	21.5	22.2	3.20	109.25
1,2-Dichlorobenzene	20	< 1	21.5	21.5	0.00	107.50
1,4-Dichlorobenzene	20	< 1	21.4	21.4	0.00	107.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 22986-6 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 4-14-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	24.5	22.6	8.07	117.75
Benzene	20	< 1	23.0	22.8	0.87	114.50
Toluene	20	< 1	23.1	23.6	2.14	116.75
Ethyl benzene	20	< 1	21.1	22.3	5.53	100.50
Xylene	60	< 1	65.5	67.4	2.86	110.75
Chlorobenzene	20	< 1	22.2	22.7	2.23	112.25
1,4-Dichlorobenzene	20	< 1	29.7	29.2	1.70	147.25
1,3-Dichlorobenzene	20	< 1	23.3	23.3	0.00	116.50
1,2-Dichlorobenzene	20	< 1	25.0	24.6	1.61	124.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 1$$

Comments:

Approved by: _____

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 23324-2 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 6-6-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	18.7	18.7	0.00	93.50
Bromomethane	20	< 1	20.1	19.5	3.03	99.00
Dichlorodifluoromethane	20	< 1	18.6	18.5	0.54	92.75
Vinyl chloride	20	< 1	18.6	18.5	0.54	92.75
Chloroethane	20	< 1	17.8	18.2	2.22	90.00
Methylene chloride	20	< 5	20.4	20.8	1.94	103.00
Trichlorofluoromethane	20	< 1	21.2	21.3	0.47	106.25
1,1-Dichloroethene	20	< 1	21.2	21.7	2.33	107.25
1,1-Dichloroethane	20	< 1	20.9	21.1	0.95	105.00
trans-1,2-Dichloroethene	20	< 1	21.0	21.5	2.35	106.25
Chloroform	20	< 1	21.0	21.0	0.00	105.00
1,2-Dichloroethane	20	< 1	20.6	21.1	2.40	104.25
1,1,1-Trichloroethane	20	< 1	20.9	21.8	4.22	106.75
Carbon Tetrachloride	20	< 1	21.2	20.8	1.90	105.00
Bromodichloromethane	20	< 1	20.6	20.5	0.49	102.75
1,2-Dichloropropane	20	< 1	22.5	21.3	5.48	109.50
cis-1,3-Dichloropropene	20	< 1	17.8	20.1	12.14	94.75
Trichloroethene	20	< 1	21.0	21.3	1.42	105.75
Dibromochloromethane	20	< 1	19.6	21.2	7.84	102.00
1,1,2-Trichloroethane	20	< 1	19.6	21.2	7.84	102.00
trans-1,3-Dichloropropene	20	< 1	19.6	21.2	7.84	102.00
Bromoform	20	< 1	18.9	20.9	10.05	99.50
1,1,2,2-Tetrachloroethane	20	< 1	21.1	22.6	6.86	109.25
Tetrachloroethene	20	< 1	21.1	22.6	6.86	109.25
Chlorobenzene	20	< 1	20.9	20.8	0.48	104.25
1,3-Dichlorobenzene	20	< 1	20.4	21.2	3.85	104.00
1,2-Dichlorobenzene	20	< 1	20.6	21.0	1.92	104.00
1,4-Dichlorobenzene	20	< 1	20.6	21.2	2.87	104.50

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23324-2 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 6-6-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	19.3	19.9	3.06	98.00
Benzene	20	< 1	19.4	19.8	2.04	98.00
Toluene	20	< 1	20.4	20.3	0.49	101.75
Ethyl benzene	20	1	19.4	19.3	0.52	91.75
Xylene	60	< 1	63.5	63.1	0.63	105.50
Chlorobenzene	20	< 1	20.1	20.1	0.00	100.50
1,4-Dichlorobenzene	20	< 1	21.9	21.9	0.05	109.48
1,3-Dichlorobenzene	20	< 1	21.4	21.7	1.39	107.75
1,2-Dichlorobenzene	20	< 1	21.9	21.9	0.00	109.50

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 1$$

Comments:

Approved by: _____

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 23372-4 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 6-14-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloroethane	20	< 1	16.9	20.1	17.30	92.50
Bromomethane	20	< 1	19.1	19.8	0.52	95.25
Dichlorodifluoromethane	20	< 1	18.9	19.7	4.15	96.50
Vinyl chloride	20	< 1	18.9	19.7	4.15	96.50
Chloroethane	20	< 1	20.5	22.4	8.86	107.25
Methylene chloride	20	< 5	13.3	14.1	5.84	68.50
Trichlorofluoromethane	20	< 1	20.4	22.1	8.00	106.25
1,1-Dichloroethene	20	< 1	20.3	21.5	5.74	104.50
1,1-Dichloroethane	20	< 1	20.2	21.3	5.30	103.75
trans-1,2-Dichloroethene	20	< 1	20.1	20.7	2.94	102.00
Chloroform	20	< 1	20.0	20.5	2.47	101.25
1,2-Dichloroethane	20	< 1	19.1	19.6	2.58	96.75
1,1,1-Trichloroethane	20	< 1	21.1	22.5	6.42	109.00
Carbon Tetrachloride	20	< 1	21.5	23.3	8.04	112.00
Bromodichloromethane	20	< 1	19.4	20.2	4.04	99.00
1,2-Dichloropropane	20	< 1	20.2	21.3	5.30	103.75
cis-1,3-Dichloropropene	20	< 1	23.1	25.4	9.48	121.25
Trichloroethene	20	< 1	20.8	21.3	2.38	105.25
Dibromochloromethane	20	< 1	19.3	20.7	7.00	100.00
1,1,2-Trichloroethane	20	< 1	19.3	20.7	7.00	100.00
trans-1,3-Dichloropropene	20	< 1	19.3	20.7	7.00	100.00
Bromoform	20	< 1	20.1	22.1	9.48	105.50
1,1,2,2-Tetrachloroethane	20	< 1	20.1	22.3	10.38	106.00
Tetrachloroethene	20	< 1	20.1	22.3	10.38	106.00
Chlorobenzene	20	< 1	20.5	21.1	2.88	104.00
1,3-Dichlorobenzene	20	< 1	21.2	21.1	0.47	105.75
1,2-Dichlorobenzene	20	< 1	21.0	21.2	0.95	105.50
1,4-Dichlorobenzene	20	< 1	21.0	21.2	0.95	105.50

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23372-4 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 6-14-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	20.8	34.8	50.36	139.00
Benzene	20	< 1	20.1	22.0	9.03	105.25
Toluene	20	< 1	21.3	21.3	0.00	106.50
Ethyl benzene	20	< 1	27.1	26.5	2.24	134.00
Xylene	60	< 1	69.6	72.8	4.49	118.67
Chlorobenzene	20	< 1	22.8	22.3	2.22	112.75
1,4-Dichlorobenzene	20	< 1	22.3	20.0	10.87	105.75
1,3-Dichlorobenzene	20	< 1	22.8	23.4	2.60	115.50
1,2-Dichlorobenzene	20	< 1	22.3	20.0	10.87	105.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 1$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23398-2 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 6-14-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	23.5	19.5	18.27	107.53
Bromomethane	20	< 1	35.0	30.0	15.44	162.29
Dichlorodifluoromethane	20	< 1	23.4	19.4	18.81	107.13
Vinyl chloride	20	< 1	23.4	19.4	18.81	107.13
Chloroethane	20	< 1	26.3	26.3	0.00	131.50
Methylene chloride	20	< 5	23.1	18.5	22.00	104.10
Trichlorofluoromethane	20	< 1	32.7	27.1	18.81	149.63
1,1-Dichloroethene	20	< 1	27.5	25.7	6.77	132.85
1,1-Dichloroethane	20	< 1	29.3	29.3	0.07	146.45
trans-1,2-Dichloroethene	20	< 1	28.5	28.0	1.81	141.08
Chloroform	20	< 1	28.6	28.0	2.01	141.63
1,2-Dichloroethane	20	< 1	28.8	27.0	6.41	139.63
1,1,1-Trichloroethane	20	< 1	29.6	28.5	3.76	145.45
Carbon Tetrachloride	20	< 1	29.5	29.4	0.37	147.28
Bromodichloromethane	20	< 1	26.4	25.9	1.68	130.70
1,2-Dichloropropane	20	< 1	29.8	28.2	5.48	145.13
cis-1,3-Dichloropropene	20	< 1	28.7	23.0	22.02	129.18
Trichloroethene	20	< 1	26.1	26.0	0.58	130.33
Dibromochloromethane	20	< 1	27.6	26.0	6.09	133.83
1,1,2-Trichloroethane	20	< 1	27.6	26.0	6.09	133.83
trans-1,3-Dichloropropene	20	< 1	27.6	26.0	6.09	133.83
Bromoform	20	< 1	28.8	26.1	10.06	137.15
1,1,2,2-Tetrachloroethane	20	< 1	26.6	25.5	3.95	130.28
Tetrachloroethene	20	< 1	26.6	25.5	3.95	130.28
Chlorobenzene	20	< 1	22.8	23.5	3.33	115.68
1,3-Dichlorobenzene	20	< 1	20.7	19.9	4.19	101.48
1,2-Dichlorobenzene	20	< 1	21.1	20.0	5.36	102.55
1,4-Dichlorobenzene	20	< 1	20.6	19.6	4.58	100.45

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23398-2 Analysis: [X] 502 or [ ] 8020 Matrix: Water

Date Tested: 6-14-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	39.2	33.2	16.57	181.00
Benzene	20	< 1	27.5	24.8	10.33	130.75
Toluene	20	< 1	26.1	22.6	14.37	121.75
Ethyl benzene	20	< 1	27.8	29.2	4.91	142.50
Xylene	60	< 1	72.0	71.7	0.42	119.75
Chlorobenzene	20	< 1	24.6	25.2	2.41	124.50
1,4-Dichlorobenzene	20	< 1	27.1	25.2	7.27	130.75
1,3-Dichlorobenzene	20	< 1	21.8	20.6	5.66	106.00
1,2-Dichlorobenzene	20	< 1	27.1	25.2	7.27	130.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23417 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 6-15-1990

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	11.6	12.8	9.84	61.00
Bromomethane	20	< 1	21.3	24.3	13.16	114.00
Dichlorodifluoromethane	20	< 1	12.7	15.4	19.22	70.25
Vinyl chloride	20	< 1	12.7	15.4	19.22	70.25
Chloroethane	20	< 1	25.2	24.3	3.64	123.75
Methylene chloride	20	< 5	17.9	19.8	10.08	94.25
Trichlorofluoromethane	20	< 1	18.5	24.2	26.70	106.75
1,1-Dichloroethene	20	< 1	19.2	24.0	22.22	108.00
1,1-Dichloroethane	20	< 1	21.2	24.5	14.44	114.25
trans-1,2-Dichloroethene	20	8	28.8	34.4	17.72	118.00
Chloroform	20	< 1	21.4	25.0	15.52	110.00
1,2-Dichloroethane	20	< 1	21.0	23.6	11.66	111.50
1,1,1-Trichloroethane	20	< 1	21.9	26.3	18.26	120.50
Carbon Tetrachloride	20	< 1	21.3	26.7	22.50	120.00
Bromodichloromethane	20	< 1	21.1	23.6	11.19	111.75
1,2-Dichloropropane	20	< 1	22.6	24.7	8.88	118.25
cis-1,3-Dichloropropene	20	< 1	27.4	24.7	10.36	130.25
Trichloroethene	20	4	26.8	30.9	14.21	124.25
Dibromochloromethane	20	< 1	21.4	23.1	7.64	111.25
1,1,2-Trichloroethane	20	< 1	21.4	23.1	7.64	111.25
trans-1,3-Dichloropropene	20	< 1	21.4	23.1	7.64	111.25
Bromoform	20	< 1	22.6	24.9	9.68	118.75
1,1,2,2-Tetrachloroethane	20	< 1	22.1	25.1	12.71	118.00
Tetrachloroethene	20	< 1	22.1	25.1	12.71	118.00
Chlorobenzene	20	< 1	21.9	23.6	7.47	113.75
1,3-Dichlorobenzene	20	< 1	21.8	21.5	1.39	108.25
1,2-Dichlorobenzene	20	< 1	21.1	21.3	0.94	106.00
1,4-Dichlorobenzene	20	< 1	21.1	21.3	0.94	106.00

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23417 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 6-15-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	27.6	31.7	13.83	148.25
Benzene	20	< 1	22.4	25.5	12.94	119.75
Toluene	20	< 1	22.9	25.1	9.17	120.00
Ethyl benzene	20	< 1	25.6	27.3	8.60	133.75
Xylene	60	< 1	73.0	75.9	3.90	124.08
Chlorobenzene	20	< 1	24.0	24.9	3.68	122.25
1,4-Dichlorobenzene	20	< 1	27.1	26.9	0.74	135.00
1,3-Dichlorobenzene	20	< 1	23.6	22.9	3.01	116.25
1,2-Dichlorobenzene	20	< 1	27.1	26.9	0.74	135.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 10$$

Comments:

Approved by: _____

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 23418-4 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 6-19-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	11.3	16.5	37.41	69.50
Bromomethane	20	< 1	12.6	18.3	36.89	77.25
Dichlorodifluoromethane	20	< 1	13.5	16.2	42.70	66.75
Vinyl chloride	20	< 1	13.5	16.2	42.70	66.75
Chloroethane	20	< 1	16.4	23.7	36.41	100.25
Methylene chloride	20	< 5	24.0	32.7	30.69	141.75
Trichlorofluoromethane	20	< 1	14.2	24.9	54.73	97.75
1,1-Dichloroethene	20	< 1	14.6	22.3	41.73	92.25
1,1-Dichloroethane	20	< 1	20.5	29.7	36.65	125.50
trans-1,2-Dichloroethene	20	< 1	17.6	24.4	32.38	105.00
Chloroform	20	< 1	24.0	32.1	28.88	140.25
1,2-Dichloroethane	20	< 1	23.1	28.1	19.53	120.00
1,1,1-Trichloroethane	20	< 1	16.7	24.1	36.27	102.00
Carbon Tetrachloride	20	< 1	14.6	22.1	40.87	91.75
Bromodichloromethane	20	< 1	17.2	21.4	21.62	96.43
1,2-Dichloropropane	20	< 1	15.9	16.3	2.48	80.50
cis-1,3-Dichloropropene	20	< 1	15.9	16.3	2.48	80.50
Trichloroethene	20	< 1	18.2	23.4	25.00	104.00
Dibromochloromethane	20	< 1	19.8	24.8	22.42	111.50
1,1,2-Trichloroethane	20	< 1	19.8	24.8	22.42	111.50
trans-1,3-Dichloropropene	20	< 1	19.8	24.8	22.42	111.50
Bromoform	20	< 1	9.4	11.8	15.69	51.00
1,1,2,2-Tetrachloroethane	20	< 1	19.8	24.4	20.81	110.50
Tetrachloroethene	20	< 1	19.8	24.4	20.81	110.50
Chlorobenzene	20	< 1	18.8	21.5	13.40	100.75
1,3-Dichlorobenzene	20	< 1	21.4	19.9	7.26	103.25
1,2-Dichlorobenzene	20	< 1	19.6	21.5	9.25	102.75
1,4-Dichlorobenzene	20	< 1	21.4	21.4	0.00	107.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23418-4 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 6-19-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	24.1	29.3	19.48	133.50
Benzene	20	< 1	21.4	26.2	20.17	119.00
Toluene	20	< 1	25.9	30.3	15.66	140.50
Ethyl benzene	20	< 1	22.7	25.6	12.01	120.75
Xylene	60	< 1	62.8	68.1	8.10	109.00
Chlorobenzene	20	< 1	22.4	24.3	8.14	116.75
1,4-Dichlorobenzene	20	< 1	22.1	22.3	0.90	111.00
1,3-Dichlorobenzene	20	< 1	20.4	20.6	0.98	102.50
1,2-Dichlorobenzene	20	< 1	22.1	22.3	0.90	111.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 10$$

Comments:

Approved by: _____

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 23478 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 6-23-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloroethane	20	< 1	12.1	15.4	24.00	60.75
Bromoethane	20	< 1	25.3	32.7	25.52	145.00
Dichlorodifluoromethane	20	< 1	20.2	26.5	26.98	116.75
Vinyl chloride	20	< 1	20.2	26.5	26.98	116.75
Chloroethane	20	< 1	20.8	26.2	22.98	117.50
Methylene chloride	20	< 5	40.3	33.6	18.13	184.75
Trichlorofluoromethane	20	< 1	24.9	30.2	19.24	137.75
1,1-Dichloroethene	20	< 1	20.5	26.4	23.73	110.00
1,1-Dichloroethane	20	< 1	21.8	27.4	22.76	123.00
trans-1,2-Dichloroethene	20	< 1	21.0	26.3	22.51	118.25
Chloroform	20	< 1	22.8	27.1	17.23	124.75
1,2-Dichloroethane	20	< 1	21.6	26.1	18.87	119.25
1,1,1-Trichloroethane	20	< 1	22.9	28.1	20.39	127.50
Carbon Tetrachloride	20	< 1	21.9	26.9	20.49	122.00
Bromodichloromethane	20	< 1	22.3	26.6	17.59	122.25
1,2-Dichloropropane	20	< 1	22.0	26.5	18.56	121.25
cis-1,3-Dichloropropene	20	< 1	19.8	23.6	17.51	108.50
Trichloroethene	20	< 1	21.6	24.9	14.19	116.25
Dibromochloromethane	20	< 1	22.1	25.7	15.06	119.50
1,1,2-Trichloroethane	20	< 1	22.1	25.7	15.06	119.50
trans-1,3-Dichloropropene	20	< 1	22.1	25.7	15.06	119.50
Bromoform	20	< 1	22.5	26.0	14.43	121.25
1,1,2,2-Tetrachloroethane	20	< 1	21.8	24.0	9.61	114.50
Tetrachloroethene	20	< 1	21.8	24.0	9.61	114.50
Chlorobenzene	20	< 1	21.8	23.3	6.65	112.75
1,3-Dichlorobenzene	20	< 1	20.9	21.6	3.29	106.25
1,2-Dichlorobenzene	20	< 1	20.9	21.8	4.22	106.75
1,4-Dichlorobenzene	20	< 1	21.1	21.5	1.88	106.50

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy.

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23479 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 6-23-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	22.9	27.4	17.89	125.75
Benzene	20	< 1	21.0	24.6	15.79	[illegible]
Toluene	20	< 1	19.8	23.0	14.95	[illegible]
Ethyl benzene	20	< 1	21.8	23.0	5.36	[illegible]
Xylene	60	< 1	63.5	66.7	4.92	108.50
Chlorobenzene	20	< 1	20.2	21.5	6.24	104.25
1,4-Dichlorobenzene	20	< 1	21.8	24.1	10.02	114.75
1,3-Dichlorobenzene	20	< 1	20.9	23.1	10.00	110.00
1,2-Dichlorobenzene	20	< 1	21.8	24.1	10.02	114.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 10$$

Comments:

Approved by: _____

s16.66H

MATRIX SPIKE RESULTS

Laboratory No.: 23521-3 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 6-27-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	4.1	3.9	5.00	20.00
Bromomethane	20	< 1	22.8	22.4	1.77	113.00
Dichlorodifluoromethane	20	< 1	22.9	21.3	7.24	110.50
Vinyl chloride	20	< 1	22.9	21.3	7.24	110.50
Chloroethane	20	< 1	17.8	16.9	5.19	86.75
Methylene chloride	20	< 5	25.6	25.3	1.18	127.25
Trichlorofluoromethane	20	< 1	28.1	27.4	2.52	138.75
1,1-Dichloroethene	20	< 1	24.6	24.3	1.23	122.25
1,1-Dichloroethane	20	< 1	25.4	25.3	0.39	126.75
trans-1,2-Dichloroethene	20	< 1	23.8	23.8	0.00	119.00
Chloroform	20	< 1	24.8	24.9	0.40	124.25
1,2-Dichloroethane	20	< 1	24.0	23.9	0.42	119.75
1,1,1-Trichloroethane	20	< 1	25.2	25.5	1.18	126.75
Carbon Tetrachloride	20	< 1	23.7	23.6	0.42	118.25
Bromodichloromethane	20	< 1	23.5	23.6	0.42	117.75
1,2-Dichloropropane	20	< 1	21.1	21.1	0.00	105.50
cis-1,3-Dichloropropene	20	< 1	16.7	17.2	2.95	84.75
Trichloroethene	20	< 1	22.8	22.7	0.44	113.75
Dibromochloromethane	20	< 1	22.9	23.1	0.87	115.00
1,1,2-Trichloroethane	20	< 1	22.9	23.1	0.87	115.00
trans-1,3-Dichloropropene	20	< 1	22.9	23.1	0.87	115.00
Bromoform	20	< 1	23.0	22.9	0.44	114.75
1,1,2,2-Tetrachloroethane	20	< 1	22.3	22.4	0.45	111.75
Tetrachloroethene	20	< 1	22.3	22.4	0.45	111.75
Chlorobenzene	20	< 1	18.1	18.2	0.55	90.75
1,3-Dichlorobenzene	20	< 1	15.4	15.8	2.56	78.00
1,2-Dichlorobenzene	20	< 1	15.9	16.0	0.63	79.75
1,4-Dichlorobenzene	20	< 1	15.5	16.0	3.17	78.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

MATRIX SPIKE RESULTS

Laboratory No.: 23521-3 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 6-27-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	26.6	26.0	2.28	131.50
Benzene	20	< 1	25.1	24.0	4.48	122.75
Toluene	20	< 1	19.4	18.0	7.49	93.50
Ethyl benzene	20	< 1	21.9	18.3	15.23	101.75
Xylene	60	< 1	57.9	52.9	9.03	92.33
Chlorobenzene	20	< 1	18.0	16.0	6.90	87.00
1,4-Dichlorobenzene	20	< 1	18.7	16.6	11.90	88.25
1,3-Dichlorobenzene	20	< 1	19.5	16.3	17.88	89.50
1,2-Dichlorobenzene	20	< 1	18.7	16.6	11.90	88.25

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

CH2M HILL Engineers Planners Economists Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 24195-8 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 8-7-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloroethane	20	< 1	16.1	12.5	25.17	71.50
Bromoethane	20	< 1	22.3	19.9	11.37	105.50
Dichlorodifluoroethane ‡	40	< 1	44.3	34.8	24.02	98.88
Chloroethane	20	< 1	20.7	17.5	16.75	95.50
Methylene chloride	20	< 5	22.9	21.8	4.92	111.75
Trichlorofluoromethane	20	< 1	27.2	21.1	25.26	120.75
1,1-Dichloroethene	20	< 1	26.0	20.3	24.62	115.75
1,1-Dichloroethane	20	< 1	23.8	21.4	10.62	113.00
trans-1,2-Dichloroethene	20	< 1	24.3	20.8	15.52	112.75
Chloroform	20	< 1	23.3	21.7	6.19	113.00
1,2-Dichloroethane	20	< 1	22.3	22.3	0.00	111.50
1,1,1-Trichloroethane	20	< 1	26.0	21.9	17.57	119.50
Carbon Tetrachloride	20	< 1	26.6	21.4	21.67	120.00
Bromodichloromethane	20	< 1	19.9	19.6	1.52	98.75
1,2-Dichloropropane	20	< 1	24.0	23.3	2.96	118.25
cis-1,3-Dichloropropene	20	< 1	28.7	22.1	6.54	107.00
Trichloroethene	20	< 1	24.7	22.3	10.21	117.50
Dibromochloroethane ‡‡	60	< 1	69.9	71.5	2.26	117.93
Bromoform	20	< 1	17.5	18.1	3.37	89.00
1,1,2,2-Tetrachloroethane ‡‡‡	40	< 1	51.5	46.3	10.63	122.25
Chlorobenzene	20	< 1	24.7	23.8	7.13	119.25
1,3-Dichlorobenzene	20	< 1	25.5	23.9	6.48	123.50
1,2-Dichlorobenzene	20	< 1	24.6	23.6	4.15	120.50
1,4-Dichlorobenzene	20	< 1	25.3	24.8	5.27	123.25

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

‡ Coelutes with vinyl chloride

‡‡ Coelutes with 1,1,2-trichloroethane and trans-1,3-Dichloropropene

‡‡‡ Coelutes with Tetrachloroethene

CH2M HILL Redding Environmental Laboratory Waterworks Road California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 24195-8 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 9-7-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	21.5	21.2	1.41	106.75
Benzene	20	< 1	21.0	19.2	8.96	100.50
Toluene	20	< 1	26.0	21.5	18.95	118.75
Ethyl benzene	20	< 1	28.6	26.6	7.25	138.00
Xylene	60	< 1	70.4	64.8	8.[illegible]	[illegible]
Chlorobenzene	20	< 1	23.5	22.1	6	[illegible]00
1,4-Dichlorobenzene	20	< 1	21.8	20.5	[illegible]	[illegible].75
1,3-Dichlorobenzene	20	< 1	26.1	25.0	[illegible]	[illegible]7.75
1,2-Dichlorobenzene	20	< 1	27.4	26.3	[illegible]	134.25

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 10$$

Comments:

Approved by: [signature]

CH2MHILL Engineers Planners Economists Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 24242-7 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 9-9-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloroethane	20	< 1	11.1	11.8	6.11	57.25
Bromoethane	20	< 1	16.5	18.2	9.80	86.75
Dichlorodifluoromethane ‡	40	< 1	31.5	32.1	1.89	79.50
Chloroethane	20	< 1	17.2	17.2	0.00	86.00
Methylene chloride	20	< 5	17.9	19.1	6.49	92.50
Trichlorofluoromethane	20	< 1	21.3	22.0	3.23	108.25
1,1-Dichloroethene	20	< 1	20.4	21.6	5.71	105.00
1,1-Dichloroethane	20	< 1	19.3	20.4	5.54	99.25
trans-1,2-Dichloroethene	20	< 1	19.5	20.8	6.45	100.75
Chloroform	20	< 1	22.5	21.0	6.90	108.75
1,2-Dichloroethane	20	< 1	17.6	19.7	11.26	93.25
1,1,1-Trichloroethane	20	< 1	22.3	22.8	2.22	112.75
Carbon Tetrachloride	20	< 1	23.6	23.4	0.85	117.50
Bromodichloromethane	20	< 1	17.3	18.0	3.97	88.25
1,2-Dichloropropane	20	< 1	20.0	20.7	3.44	101.75
cis-1,3-Dichloropropene	20	< 1	16.2	19.3	12.17	86.25
Trichloroethene	20	< 1	21.6	22.6	4.52	110.50
Dibromochloromethane ‡‡	60	< 1	50.9	60.5	17.24	92.83
Bromoform	20	< 1	21.6	26.3	19.62	119.75
1,1,2,2-Tetrachloroethane ‡‡‡	40	< 1	42.8	45.8	6.77	110.75
Chlorobenzene	20	< 1	22.8	22.6	2.69	111.50
1,3-Dichlorobenzene	20	< 1	24.8	24.6	0.81	123.50
1,2-Dichlorobenzene	20	< 1	22.8	23.6	3.45	116.00
1,4-Dichlorobenzene	20	< 1	24.2	24.3	0.41	121.25

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: _____

‡ Coelutes with vinyl chloride
‡‡ Coelutes with 1,1,2-trichloroethane and trans-1,3-Dichloropropene
‡‡‡ Coelutes with Tetrachloroethene

Redding Environmental Laboratory
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MATRIX SPIKE RESULTS

Laboratory No.: 24242-7 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 9-9-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Tert Butyl Methyl Ether	20	< 1	15.8	20.5	25.98	90.75
Benzene	20	< 1	19.3	20.5	6.03	99.50
Toluene	20	< 1	22.8	31.7	32.66	136.25
Ethyl benzene	20	< 1	22.1	22.4	1.35	111.25
Xylene	60	< 1	70.8	70.7	1.[illegible]	117.25
Chlorobenzene	20	< 1	21.5	21.8	1.	108.25
1,4-Dichlorobenzene	20	< 1	24.2	22.7	6.	117.25
1,3-Dichlorobenzene	20	< 1	27.5	27.7	0.[illegible]	138.00
1,2-Dichlorobenzene	20	< 1	26.5	28.0	5.52	133.25

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 1.$$

Comments:

Approved by: [signature]

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MATRIX SPIKE RESULTS

Laboratory No.: 24358-7 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 4-27-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	8.3	2.6	173.83	22.25
Bromomethane	20	< 1	16.9	17.4	2.92	95.75
Dichlorodifluoromethane ‡	40	< 1	32.0	33.7	5.18	92.13
Chloroethane	20	< 1	15.4	16.5	6.90	79.75
Methylene chloride	20	< 5	18.7	19.0	1.59	94.25
Trichlorofluoromethane	20	< 1	18.0	19.2	6.45	93.00
1,1-Dichloroethene	20	< 1	18.2	19.1	4.83	93.25
1,1-Dichloroethane	20	< 1	18.7	19.4	3.67	95.25
trans-1,2-Dichloroethene	20	< 1	17.8	18.7	4.93	91.25
Chloroform	20	< 1	22.3	20.5	8.41	107.00
1,2-Dichloroethane	20	< 1	18.7	19.0	1.59	94.25
1,1,1-Trichloroethane	20	< 1	19.5	20.0	2.53	98.75
Carbon Tetrachloride	20	< 1	20.2	20.5	1.47	101.75
Bromodichloromethane	20	< 1	18.3	18.7	2.16	92.50
1,2-Dichloropropane	20	< 1	18.5	19.3	4.23	94.50
cis-1,3-Dichloropropene	20	< 1	17.3	19.4	11.44	91.75
Trichloroethene	20	< 1	20.2	20.2	0.00	101.00
Dibromochloroethane ‡‡	60	< 1	56.7	57.6	1.57	95.25
Bromoform	20	< 1	16.9	15.7	7.36	81.50
1,1,2,2-Tetrachloroethane ‡‡‡	40	< 1	43.9	43.4	1.15	109.13
Chlorobenzene	20	< 1	19.8	19.4	2.08	96.00
1,3-Dichlorobenzene	20	< 1	22.8	21.8	4.48	111.50
1,2-Dichlorobenzene	20	< 1	23.3	22.5	3.49	114.50
1,4-Dichlorobenzene	20	< 1	24.1	23.0	4.67	117.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Gary Jonker

‡ Coelutes with vinyl chloride
‡‡ Coelutes with 1,1,2-trichloroethane and trans-1,3-Dichloropropene
‡‡‡ Coelutes with Tetrachloroethene

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MATRIX SPIKE RESULTS

Laboratory No.: 243250-7 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 9-27-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
tert Butyl Methyl Ether	20	< 1	21.1	18.3	[illegible].21	98.50
Benzene	20	< 1	22.2	19.9	[illegible]3	105.25
Toluene	20	< 1	24.3	21.7	11.[illegible]0	115.00
Ethyl benzene	20	< 1	21.8	24.1	10.02	114.75
Xylene	60	< 1	71.0	67.4	5.20	115.33
Chlorobenzene	20	< 1	22.0	21.0	4.65	107.50
1,4-Dichlorobenzene	20	< 1	25.3	22.5	11.72	119.50
1,3-Dichlorobenzene	20	< 1	23.9	22.9	4.27	117.00
1,2-Dichlorobenzene	20	< 1	22.0	21.9	0.46	109.75

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Jonker

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MATRIX SPIKE RESULTS

Laboratory No.: 24372-4 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 10-4-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	18.6	16.7	10.76	88.25
Bromomethane	20	< 1	20.4	20.7	1.46	102.75
Dichlorodifluoromethane *	40	< 1	35.3	34.7	1.71	87.50
Chloroethane	20	< 1	20.3	19.8	2.49	100.25
Methylene chloride	20	< 5	25.5	22.5	12.50	120.00
Trichlorofluoromethane	20	< 1	22.0	21.3	3.23	108.25
1,1-Dichloroethene	20	< 1	21.1	21.2	0.47	105.75
1,1-Dichloroethane	20	< 1	21.1	21.2	0.47	105.75
trans-1,2-Dichloroethene	20	< 1	21.0	21.5	2.35	106.25
Chloroform	20	< 1	24.9	20.8	17.94	114.25
1,2-Dichloroethane	20	< 1	21.5	21.0	2.35	106.25
1,1,1-Trichloroethane	20	< 1	21.3	21.4	0.47	106.75
Carbon Tetrachloride	20	< 1	21.2	20.7	2.39	104.75
Bromodichloromethane	20	< 1	20.3	20.7	1.95	102.50
1,2-Dichloropropane	20	< 1	19.9	20.9	4.90	102.00
cis-1,3-Dichloropropene	20	< 1	18.0	19.3	6.97	93.25
Trichloroethene	20	62	89.4	78.5	12.98	109.75
Dibromochloromethane **	60	< 1	56.3	57.0	1.24	94.42
Bromoform	20	< 1	20.7	20.0	3.44	101.75
1,1,2,2-Tetrachloroethane ***	40	4	37.0	39.9	7.54	86.13
Chlorobenzene	20	< 1	15.0	17.3	14.24	80.75
1,3-Dichlorobenzene	20	< 1	12.2	15.9	26.33	70.25
1,2-Dichlorobenzene	20	< 1	12.3	16.0	26.15	70.75
1,4-Dichlorobenzene	20	< 1	12.3	15.9	25.53	70.50

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Jordan

* Coelutes with vinyl chloride

** Coelutes with 1,1,2-trichloroethane and trans-1,3-Dichloropropene

*** Coelutes with Tetrachloroethene

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MATRIX SPIKE RESULTS

Laboratory No.: 24372-4 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 10-4-1989

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
tert Butyl Methyl Ether	20	< 1	25.8	24.5	5.17	125.75
Benzene	20	< 1	21.2	21.4	0.94	106.50
Toluene	20	< 1	20.9	22.7	8.26	109.00
Ethyl benzene	20	< 1	26.8	28.2	5.09	137.50
Xylene	60	< 1	84.8	93.2	9.44	148.33
Chlorobenzene	20	< 1	22.7	24.9	9.24	119.00
1,4-Dichlorobenzene	20	< 1	24.5	26.8	8.97	128.25
1,3-Dichlorobenzene	20	< 1	26.8	29.9	10.93	141.75
1,2-Dichlorobenzene	20	< 1	20.9	24.3	15.04	113.00

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 10$$

Comments:

Approved by: Grey Jonker

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MATRIX SPIKE RESULTS

Laboratory No.: 24868-1 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 11-23-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	9.6	11.7	19.72	53.25
Bromomethane	20	< 1	16.0	19.7	20.73	89.25
Dichlorodifluoromethane	40	< 1	4.0	4.6	13.95	10.75
Vinyl Chloride	20	< 1	11.6	14.5	22.22	65.25
Chloroethane	20	< 1	17.1	22.2	25.95	98.25
Methylene chloride	20	< 5	24.2	31.4	25.90	139.00
Trichlorofluoromethane	20	< 1	17.4	22.4	25.13	99.50
1,1-Dichloroethene	20	< 1	18.8	25.6	30.63	111.00
1,1-Dichloroethane	20	< 1	22.9	27.9	19.69	127.00
trans-1,2-Dichloroethene	20	< 1	21.6	26.1	18.87	119.25
Chloroform	20	< 1	23.9	29.2	19.96	132.75
1,2-Dichloroethane	20	< 1	26.2	31.7	19.00	144.75
1,1,1-Trichloroethane	20	< 1	22.1	27.4	21.41	123.75
Carbon Tetrachloride	20	< 1	21.9	26.9	20.49	122.00
Bromodichloromethane	20	< 1	24.9	29.1	15.56	135.00
1,2-Dichloropropane	20	< 1	24.1	30.2	22.47	135.75
cis-1,3-Dichloropropene	20	< 1	24.0	26.9	11.39	127.25
Trichloroethene	20	4	28.3	31.6	11.02	129.75
Dibromochloromethane	60	< 1	25.3	30.9	19.93	46.83
1,1,2-Trichloroethane	20	< 1	26.3	31.1	16.72	143.50
cis-1,3-dichloropropene	20	< 1	23.8	27.7	15.15	128.75
Bromoform	20	< 1	27.8	32.0	14.05	149.50
1,1,2,2-Tetrachloroethane	40	< 1	27.0	33.0	20.00	75.00
Tetrachloroethene	20	< 1	21.0	23.3	10.38	110.75
Chlorobenzene	20	< 1	21.2	23.6	10.71	112.00
1,3-Dichlorobenzene	20	< 1	21.5	21.4	0.47	107.25
1,2-Dichlorobenzene	20	< 1	22.7	23.1	1.75	114.50
1,4-Dichloroberzene	20	< 1	22.3	22.9	2.65	113.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Franklin

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MATRIX SPIKE RESULTS

Laboratory No.: 24868-1 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 11-23-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
tert Butyl Methyl Ether	20	<20	--	--	ERR	0.00
Benzene	20	<1	29.9	34.8	15.15	161.75
Toluene	20	<1	22.8	28.4	21.87	128.00
Ethyl benzene	20	<1	21.6	23.6	8.85	113.00
Xylene	60	<1	65.0	70.0	7.41	112.50
Chlorobenzene	20	<1	23.3	24.0	2.96	118.25
1,4-Dichlorobenzene	20	<1	20.9	23.6	12.13	111.25
1,3-Dichlorobenzene	20	<1	21.0	23.0	9.09	110.00
1,2-Dichlorobenzene	20	<1	21.5	25.6	17.41	117.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Gary Foulk

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MATRIX SPIKE RESULTS

Laboratory No.: 24925-2

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 12-01-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	15.8	19.7	21.97	88.75
Bromomethane	20	< 1	21.8	22.8	4.48	111.50
Dichlorodifluoromethane	40	< 1	14.9	16.9	12.58	39.75
Vinyl Chloride	20	< 1	17.8	20.2	12.63	95.00
Chloroethane	20	< 1	20.0	21.2	5.83	103.00
Methylene chloride	20	< 5	20.2	23.1	13.39	108.25
Trichlorofluoromethane	20	< 1	20.2	21.7	7.16	104.75
1,1-Dichloroethene	20	< 1	21.6	23.7	9.27	113.25
1,1-Dichloroethane	20	< 1	20.8	23.0	10.05	109.50
trans-1,2-Dichloroethene	20	< 1	19.7	23.3	16.74	107.50
Chloroform	20	< 1	20.4	21.8	6.64	105.50
1,2-Dichloroethane	20	< 1	21.9	21.8	0.46	109.25
1,1,1-Trichloroethane	20	< 1	18.7	20.0	6.72	96.75
Carbon Tetrachloride	20	< 1	20.4	21.0	2.90	103.50
Bromodichloromethane	20	< 1	21.1	22.3	5.53	108.50
1,2-Dichloropropane	20	< 1	21.2	22.3	5.06	108.75
cis-1,3-Dichloropropene	20	< 1	20.6	22.8	10.14	108.50
Trichloroethene	20	< 1	20.4	21.0	2.90	103.50
Dibromochloromethane	60	< 1	22.0	24.1	9.11	38.42
1,1,2-Trichloroethane	20	< 1	21.8	24.2	10.43	115.00
Trans-1,3-Dichloropropene	20	< 1	21.6	23.8	9.69	113.50
Bromoform	20	< 1	24.5	24.1	1.65	121.50
1,1,2,2-Tetrachloroethane	40	< 1	23.2	24.1	3.81	59.13
Tetrachloroethene	20	< 1	21.7	22.8	4.94	111.25
Chlorobenzene	20	< 1	20.6	22.4	8.37	107.50
1,3-Dichlorobenzene	20	< 1	21.3	22.6	5.92	109.75
1,2-Dichlorobenzene	20	< 1	21.0	22.9	8.66	109.75
1,4-Dichlorobenzene	20	< 1	21.4	22.7	5.90	110.25

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Jonsen

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MATRIX SPIKE RESULTS

Laboratory No.: 24925-2 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 12-01-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
tert Butyl Methyl Ether	20	< 20	---	---	ERR	0.00
Benzene	20	< 1	19.6	19.9	1.52	98.75
Toluene	20	< 1	20.7	20.8	0.48	103.75
Ethyl benzene	20	< 1	20.8	20.9	0.48	104.25
Xylene	60	< 1	62.8	62.4	0.64	104.33
Chlorobenzene	20	< 1	20.5	20.9	1.93	103.50
1,4-Dichlorobenzene	20	< 1	19.8	20.6	3.96	101.00
1,3-Dichlorobenzene	20	< 1	20.3	20.5	0.98	102.00
1,2-Dichlorobenzene	20	< 1	19.9	20.8	4.42	101.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Jonklin

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MATRIX SPIKE RESULTS

Laboratory No.: 25010-3 Analysis: [X] 601 or [ ] 8010 Matrix: Water

Date Tested: 12-09-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	24.6	21.1	15.32	114.25
Bromomethane	20	< 1	26.7	22.8	15.76	123.75
Dichlorodifluoromethane	40	< 1	21.4	19.6	8.78	51.25
Vinyl Chloride	20	< 1	21.4	19.4	9.80	102.00
Chloroethane	20	< 1	26.0	23.2	11.38	123.00
Methylene chloride	20	< 5	30.4	27.5	10.02	144.75
Trichlorofluoromethane	20	< 1	24.3	22.2	9.03	116.25
1,1-Dichloroethene	20	< 1	22.3	20.2	9.88	106.25
1,1-Dichloroethane	20	< 1	28.4	25.9	9.21	135.75
trans-1,2-Dichloroethene	20	< 1	27.1	23.5	14.23	126.50
Chloroform	20	< 1	24.3	23.0	5.50	118.25
1,2-Dichloroethane	20	< 1	41.6	41.6	0.00	208.00
1,1,1-Trichloroethane	20	< 1	22.3	21.4	4.12	109.25
Carbon Tetrachloride	20	< 1	25.3	21.7	15.32	117.50
Bromodichloromethane	20	< 1	29.4	27.7	5.95	142.75
1,2-Dichloropropane	20	< 1	26.5	25.0	5.83	128.75
cis-1,3-Dichloropropene	20	< 1	21.6	20.9	3.29	106.25
Trichloroethene	20	< 1	29.5	28.2	4.51	144.25
Dibromochloromethane	60	< 1	27.8	27.2	2.18	45.83
1,1,2-Trichloroethane	20	< 1	28.5	29.6	3.79	145.25
cis-1,3-dichloropropene	20	< 1	23.4	22.0	6.17	113.50
Bromoform	20	< 1	30.4	29.7	2.33	150.25
1,1,2,2-Tetrachloroethane	40	< 1	29.7	31.3	5.25	76.25
Tetrachloroethene	20	< 1	22.1	20.6	7.03	106.75
Chlorobenzene	20	< 1	23.9	21.8	9.19	114.25
1,3-Dichlorobenzene	20	< 1	17.7	18.2	2.79	89.75
1,2-Dichlorobenzene	20	< 1	18.8	20.1	6.68	97.25
1,4-Dichlorobenzene	20	< 1	19.1	20.0	4.60	97.75

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Fowler

Engineers
Planners
Economists
Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 25010-3 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 12-09-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
tert Butyl Methyl Ether	20	<1	20.6	19.6	4.98	100.50
Benzene	20	<1	20.1	19.4	3.54	98.75
Toluene	20	<1	23.2	22.1	4.86	113.25
Ethyl benzene	20	<1	20.8	20.2	2.93	102.50
Xylene	60	<1	62.2	61.5	1.13	103.08
Chlorobenzene	20	<1	22.0	21.7	1.37	109.25
1,4-Dichlorobenzene	20	<1	20.9	21.0	0.48	104.75
1,3-Dichlorobenzene	20	<1	20.6	21.8	5.66	106.00
1,2-Dichlorobenzene	20	<1	20.8	22.0	5.61	107.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Fowler

CH2M HILL Engineers Planners Economists Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 25059-3

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 12-14-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	17.1	16.0	6.65	82.75
Bromomethane	20	< 1	20.3	19.9	1.99	100.50
Dichlorodifluoromethane	40	< 1	21.9	19.9	9.57	52.25
Vinyl Chloride	20	< 1	19.2	17.7	8.13	92.25
Chloroethane	20	< 1	20.5	20.1	1.97	101.50
Methylene chloride	20	< 5	19.4	17.9	8.04	93.25
Trichlorofluoromethane	20	< 1	21.1	20.2	4.36	103.25
1,1-Dichloroethene	20	< 1	20.6	19.2	7.04	99.50
1,1-Dichloroethane	20	< 1	23.0	21.5	6.74	111.25
trans-1,2-Dichloroethene	20	< 1	20.6	20.0	2.96	101.50
Chloroform	20	< 1	21.1	19.3	8.91	101.00
1,2-Dichloroethane	20	< 1	24.1	24.0	0.42	120.25
1,1,1-Trichloroethane	20	< 1	20.7	18.8	9.62	98.75
Carbon Tetrachloride	20	< 1	20.7	20.5	0.97	103.00
Bromodichloromethane	20	< 1	21.3	20.4	4.32	104.25
1,2-Dichloropropane	20	< 1	21.6	20.3	6.21	104.75
cis-1,3-Dichloropropene	20	< 1	19.7	19.7	0.00	98.50
Trichloroethene	20	< 1	22.8	21.0	8.22	109.50
Dibromochloromethane	60	< 1	20.3	20.2	0.49	33.75
1,1,2-Trichloroethane	20	< 1	21.7	20.5	5.69	105.50
Trans-1,3-Dichloropropene	20	< 1	20.5	19.6	4.49	100.25
Bromoform	20	< 1	22.7	22.4	1.33	112.75
1,1,2,2-Tetrachloroethane	40	< 1	21.1	21.6	2.34	53.38
Tetrachloroethene	20	< 1	21.3	20.0	6.30	103.25
Chlorobenzene	20	< 1	20.5	20.7	0.97	103.00
1,3-Dichlorobenzene	20	< 1	19.2	18.7	2.64	94.75
1,2-Dichlorobenzene	20	< 1	20.2	19.2	5.08	98.50
1,4-Dichlorobenzene	20	< 1	20.3	19.0	6.62	98.25

Precision:

$$RPD = \frac{\text{Spike Result} - \text{Duplicate Spike Result}}{\text{Spike Result} + \text{Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result} - \text{Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Jordan

CH2M HILL
Planners
Economists
Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 25059-3 Analysis: [X] 602 or [ ] 8020 Matrix: Water

Date Tested: 12-14-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
tert Butyl Methyl Ether	20	<1	18.2	19.7	7.92	94.75
Benzene	20	<1	19.0	19.8	4.12	97.00
Toluene	20	<1	19.5	20.3	4.02	99.50
Ethyl benzene	20	<1	19.5	19.9	2.03	98.50
Xylene	60	<1	57.5	59.0	2.58	97.08
Chlorobenzene	20	<1	18.5	19.2	3.71	94.25
1,4-Dichlorobenzene	20	<1	20.0	19.2	4.08	98.00
1,3-Dichlorobenzene	20	<1	19.1	18.9	1.05	95.00
1,2-Dichlorobenzene	20	<1	19.3	19.9	3.06	98.00

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Greg Jones

Engineers
Planners
Economists
Scientists

MATRIX SPIKE RESULTS

Laboratory No.: 25189-2 Analysis: [ ] 601 or [X] 8010 Matrix: Water

Date Tested: 12-23-89

Compound	Concentration Spiked (PPB)	Sample Result (PPB)	Spike Result (PPB)	Duplicate Spike Result (PPB)	RPD	Spike Percent Recovery
Chloromethane	20	< 1	16.0	15.2	5.13	78.00
Bromomethane	20	< 1	19.6	17.8	9.63	93.50
Dichlorodifluoromethane	40	< 1	17.7	15.5	13.25	41.50
Vinyl Chloride	20	< 1	16.8	15.6	7.41	81.00
Chloroethane	20	< 1	20.6	19.1	7.56	99.25
Methylene chloride	20	< 5	18.8	18.3	2.70	92.75
Trichlorofluoromethane	20	< 1	22.0	20.5	7.06	106.25
1,1-Dichloroethene	20	< 1	22.4	20.1	10.82	106.25
1,1-Dichloroethane	20	< 1	22.6	21.7	4.06	110.75
trans-1,2-Dichloroethene	20	< 1	22.0	21.0	4.65	107.50
Chloroform	20	< 1	22.2	19.6	12.44	104.50
1,2-Dichloroethane	20	< 1	23.8	20.8	13.45	111.50
1,1,1-Trichloroethane	20	< 1	21.5	18.3	16.08	99.50
Carbon Tetrachloride	20	< 1	21.7	19.2	12.22	102.25
Bromodichloromethane	20	< 1	22.9	20.6	10.57	108.75
1,2-Dichloropropane	20	< 1	23.8	21.3	11.09	112.75
cis-1,3-Dichloropropene	20	< 1	18.2	16.5	9.80	86.75
Trichloroethene	20	< 1	24.1	20.9	14.22	112.50
Dibromochloromethane	60	< 1	22.6	20.2	11.21	35.67
1,1,2-Trichloroethane	20	< 1	22.7	20.1	12.15	107.00
Trans-1,3-Dichloropropene	20	< 1	18.6	17.6	5.52	90.50
Bromoform	20	< 1	23.0	22.9	0.44	114.75
1,1,2,2-Tetrachloroethane	40	< 1	22.7	24.4	7.22	58.88
Tetrachloroethene	20	< 1	22.7	19.9	13.15	106.50
Chlorobenzene	20	< 1	23.5	20.6	13.15	110.25
1,3-Dichlorobenzene	20	< 1	20.7	21.2	2.39	104.75
1,2-Dichlorobenzene	20	< 1	20.9	21.5	2.83	106.00
1,4-Dichlorobenzene	20	< 1	20.0	20.2	1.00	100.50

Precision:

$$RPD = \frac{\text{Spike Result - Duplicate Spike Result}}{\text{Spike Result + Duplicate Spike Result}} \times 200$$

Accuracy:

$$\text{Percent Recovery} = \frac{\text{Mean Spike Result - Sample Result}}{\text{Concentration Spiked}} \times 100$$

Comments:

Approved by: Gary Jonker

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Volatile Organic Compounds (SW8240)

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21582-4MS
CLIENT SAMPLE ID : BAFB-0004-18-C-4SS
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-16-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-15-88
DATE EXTRACTED :
DATE ANALYSED : 11-18-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	38	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
25	methylene chloride	10U	2-chloroethyl vinyl ether
28	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
36	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	43	toluene
5U	1,2-dichloroethane	42	chlorobenzene
10U	2-butanone	4J	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	35	xylenes (o+m)
10U	vinyl acetate	30	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	97	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	98	toluene-d8 (SS2)
36	trichloroethene	110	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Hess

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21582-4MSD
CLIENT SAMPLE ID : BAFB-0004-18-C-4SS
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-16-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-15-88
DATE EXTRACTED :
DATE ANALYSED : 11-18-88

10U	chloroethane
10U	bromoethane
10U	vinyl chloride
10U	chloroethane
29	methylene chloride
31	acetone
5U	carbon disulfide
37	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
10U	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
37	trichloroethene
5U	dibromochloromethane
5U	1,1,2-trichloroethane
40	benzene
5U	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-methyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
62	toluene
48	chlorobenzene
7	ethylbenzene
5U	styrene
5U	xylenes (o+m)
5U	xylene (p)

SURROGATE % RECOVERY

102	1,2-dichloroethane-d4 (SS1)
113	toluene-d8 (SS2)
151	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Hess

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

D
C-4SS

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21621-12MS
CLIENT SAMPLE ID : BAFB-0016
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-18-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-17-88
DATE EXTRACTED : 11-26-88
DATE ANALYSED : 11-28-88

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	45	benzene
10U	chloroethane	3J	trans-1,3-dichloropropene
7	methylene chloride	10U	2-chloroethyl vinyl ether
8J	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
40	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	56	toluene
5U	1,2-dichloroethane	46	chlorobenzene
6J	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	87	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
48	trichloroethene	150	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : [signature]

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
22 RAILROAD AVENUE
ROSEVILLE CA 95001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21621-12MSD
CLIENT SAMPLE ID : BAFB-0016
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-18-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-17-88
DATE EXTRACTED : 11-26-88
DATE ANALYSED : 11-28-88

10U	chloroethane	5U	dibromochloromethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	7	benzene
10U	chloroethane	3J	trans-1,3-dichloropropene
4J	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
44	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	58	toluene
5U	1,2-dichloroethane	46	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	89	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	103	toluene-d8 (SS2)
43	trichloroethene	150	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : [signature]

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2219 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21645-4MS
CLIENT SAMPLE ID : BAFB-0043-18-C-29SS
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-22-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-21-88
DATE EXTRACTED : 11-26-88
DATE ANALYSED : 11-29-88

10U	chloroethane
10U	bromomethane
10U	vinyl chloride
10U	chloroethane
4J	methylene chloride
10U	acetone
5U	carbon disulfide
47	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
10U	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
34	trichloroethene
5U	dibromochloromethane
5U	1,1,2-trichloroethane
34	benzene
5U	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-methyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
49	toluene
50	chlorobenzene
12	ethylbenzene
5U	styrene
20	xylenes (o+m)
9	xylene (p)

SURROGATE % RECOVERY

86	1,2-dichloroethane-d4 (SS1)
102	toluene-d8 (SS2)
126	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Ross

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21645-4MSD
CLIENT SAMPLE ID : BAFB-0043-18-C-2955
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-22-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-21-88
DATE EXTRACTED : 11-26-88
DATE ANALYSED : 11-29-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	36	benzene
10U	chloroethane	3J	trans-1,3-dichloropropene
5J	methylene chloride	10U	2-chloroethyl vinyl ether
10J	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
52	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	53	toluene
5U	1,2-dichloroethane	52	chlorobenzene
10U	2-butanone	12	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	15	xylenes (o+m)
10U	vinyl acetate	7	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	89	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	[illegible]	toluene-d8 (SS2)
36	trichloroethene		bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Glass

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

2955

CHOM HILL ENVIRONMENTAL LABORATORY
2319 RAILROAD AVENUE
REDDING CA 96001 916-243-1775

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21654-3MS
CLIENT SAMPLE ID : 9AFB-0052-18-C-3655
REPORT DATE : 12-13-1988

CLIENT NAME : BEALE AFB
SAMPLE RECEIVED : 11-22-88
SAMPLE TYPE : SOIL/SEDIMENT SOLIDS

DATE SAMPLED : 11-21-88
DATE EXTRACTED : 11-26-88
DATE ANALYSED : 111-30-88

12U	chloroethane	6U	dibromochloromethane
12U	bromomethane	6U	1,1,2-trichloroethane
12U	vinyl chloride	42	benzene
12U	chloroethane	6U	trans-1,3-dichloropropene
9	methylene chloride	12U	2-chloroethyl vinyl ether
12U	acetone	6U	bromoform
6U	carbon disulfide	12U	4-methyl-2-pentanone
46	1,1-dichloroethene	12U	2-hexanone
6U	1,1-dichloroethane	6U	1,1,2,2-tetrachloroethane
6U	trans-1,2-dichloroethene	6U	tetrachloroethene
6U	chloroform	53	toluene
6U	1,2-dichloroethane	58	chlorobenzene
12U	2-butanone	6U	ethylbenzene
6U	1,1,1-trichloroethane	6U	styrene
6U	carbon tetrachloride	6U	xylenes (o+m)
12U	vinyl acetate	6U	xylene (p)
6U	bromodichloromethane		SURROGATE % RECOVERY
6U	1,2-dichloropropane	98	1,2-dichloroethane-d4 (SS1)
6U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
57	trichloroethene	78	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2319 RAILROAD AVENUE
REDDING CA 96001 916-243-1725

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21654-SMSD
CLIENT SAMPLE ID : BAFB-0052-18-C-3835
REPORT DATE : 12-13-1988

CLIENT NAME : BEALE AFB
SAMPLE RECEIVED : 11-22-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-21-88
DATE EXTRACTED : 11-26-88
DATE ANALYSED : 11-30-88

120	chloroethane
120	bromoethane
120	vinyl chloride
120	chloroethane
12	methylene chloride
120	acetone
60	carbon disulfide
51	1,1-dichloroethene
60	1,1-dichloroethane
60	trans-1,2-dichloroethene
60	chloroform
60	1,2-dichloroethane
120	2-butanone
60	1,1,1-trichloroethane
60	carbon tetrachloride
120	vinyl acetate
60	bromodichloromethane
60	1,2-dichloropropane
60	cis-1,3-dichloropropene
63	trichloroethene
60	dibromochloromethane
60	1,1,2-trichloroethane
51	benzene
43	trans-1,3-dichloropropene
120	2-chloroethyl vinyl ether
60	bromoform
120	4-methyl-2-pentanone
120	2-hexanone
60	1,1,2,2-tetrachloroethane
60	tetrachloroethene
57	toluene
61	chlorobenzene
60	ethylbenzene
60	styrene
60	xylenes (o+m)
60	xylene (p)

SURROGATE % RECOVERY

97	1,2-dichloroethane-d4 (SS1)
102	toluene-d8 (SS2)
93	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

- = indicates the compound was analysed for, but not detected.
  The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21659-8MS
CLIENT SAMPLE ID : BAFB-0063-2-C-6SS
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-23-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-22-88
DATE EXTRACTED : 1-26-88
DATE ANALYSED : 12-5-88

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	41	benzene
10U	chloroethane	3J	trans-1,3-dichloropropene
4J	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
41	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	43	toluene
5U	1,2-dichloroethane	46	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	90	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	93	toluene-d8 (SS2)
52	trichloroethene	79	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Meers

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21659-0MSD
CLIENT SAMPLE ID : BAFB-0063-2-C-6SS
REPORT DATE : 12-17-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-23-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-22-88
DATE EXTRACTED : 11-26-88
DATE ANALYSED : 12-5-88

10U	chloroethane
10U	bromoethane
10U	vinyl chloride
10U	chloroethane
4J	methylene chloride
10U	acetone
5U	carbon disulfide
41	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
10U	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
52	trichloroethene
5U	dibromochloromethane
5U	1,1,2-trichloroethane
41	benzene
3J	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-methyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
52	toluene
47	chlorobenzene
5U	ethylbenzene
5U	styrene
5U	xylenes (o+m)
5U	xylene (p)

SURROGATE % RECOVERY

104	1,2-dichloroethane-d4 (SS1)
113	toluene-d8 (SS2)
96	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Adams

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21716-7MS
CLIENT SAMPLE ID : 0132 C3LSS
REPORT DATE : 01-22-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-1-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-30-88
DATE EXTRACTED :
DATE ANALYSED : 12-14-88

10U	chloroethane
10U	bromoethane
10U	vinyl chloride
10U	chloroethane
8	methylene chloride
10U	acetone
3J	carbon disulfide
35	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
7J	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
47	trichloroethene
5U	dibromochloromethane
5U	1,1,2-trichloroethane
44	benzene
5U	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-methyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
47	toluene
49	chlorobenzene
5U	ethylbenzene
5U	styrene
5U	xylenes (o+m)
5U	xylene (p)

SURROGATE % RECOVERY

96	1,2-dichloroethane-d4 (SS1)
101	toluene-d8 (SS2)
98	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21716-7MSD
CLIENT SAMPLE ID : 0132 C3LSS
REPORT DATE : 01-22-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-1-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-30-88
DATE EXTRACTED :
DATE ANALYSED : 12-14-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	43	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
8	methylene chloride	10U	2-chloroethyl vinyl ether
10U	acetone	5U	bromoform
3J	carbon disulfide	10U	4-methyl-2-pentanone
34	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	44	toluene
5U	1,2-dichloroethane	47	chlorobenzene
6J	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	95	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
45	trichloroethene	98	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2216 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21771-2MS
CLIENT SAMPLE ID : 0111
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-8-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-15-88

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	46	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
22	methylene chloride	10U	2-chloroethyl vinyl ether
410	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
58	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	64	toluene
5U	1,2-dichloroethane	50	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	91	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	108	toluene-d8 (SS2)
48	trichloroethene	91	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2219 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21771-2MSD
CLIENT SAMPLE ID : 0111
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-8-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-15-89

10U	chloroethane	5U	dibromochloroethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	44	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
13	methylene chloride	10U	2-chloroethyl vinyl ether
130	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
37	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	60	toluene
5U	1,2-dichloroethane	49	chlorobenzene
10U	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVE
5U	1,2-dichloropropane	96	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	109	toluene-d8 (SS2)
46	trichloroethene	87	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21786-3MS
CLIENT SAMPLE ID : 0124
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CHEM HILL/SSC
SAMPLE RECEIVED : 12-9-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-8-88
DATE EXTRACTED :
DATE ANALYSED : 12-19-88

10U	chloroethane	5U	dibromochloroethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	46	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
7	methylene chloride	10U	2-chloroethyl vinyl ether
28	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
5U	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	46	toluene
5U	1,2-dichloroethane	46	chlorobenzene
12	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	133	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	103	toluene-d8 (SS2)
40	trichloroethene	146	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
3218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21786-3MSD
CLIENT SAMPLE ID : 0124
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/BAC
SAMPLE RECEIVED : 12-9-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-8-88
DATE EXTRACTED :
DATE ANALYSED : 12-19-88

10U	chloroethane		dibromochloroethane
10U	bromomethane		1,1,2-trichloroethane
10U	vinyl chloride		benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
4J	methylene chloride	10U	2-chloroethyl vinyl ether
19	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
33	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	45	toluene
5U	1,2-dichloroethane	45	chlorobenzene
10J	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	96	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
43	trichloroethene	92	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21789-SMS
CLIENT SAMPLE ID : 0168
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-9-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-7-88
DATE EXTRACTED :
DATE ANALYSED : 12-19-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	35	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
58	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
31	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	41	toluene
5U	1,2-dichloroethane	40	chlorobenzene
14	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloroethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	90	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
37	trichloroethene	90	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHEM HILL ENVIRONMENTAL LABORATORY
2219 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 12789-SMSD
CLIENT SAMPLE ID : 0168
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CHEM HILL/S4C
SAMPLE RECEIVED : 12-9-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-9-88
DATE EXTRACTED :
DATE ANALYSED : 12-19-88

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	40	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
5U	methylene chloride	10U	2-chloroethyl vinyl ether
55	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
33	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	45	toluene
5U	1,2-dichloroethane	44	chlorobenzene
13	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	91	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
43	trichloroethene	91	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2219 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21847-7MS
CLIENT SAMPLE ID : 0266
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-14-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-13-88
DATE EXTRACTED :
DATE ANALYSED : 12-22-88

50U	chloroethane
50U	bromoethane
50U	vinyl chloride
50U	chloroethane
27	methylene chloride
95	acetone
25U	carbon disulfide
180	1,1-dichloroethene
25U	1,1-dichloroethane
25U	trans-1,2-dichloroethene
25U	chloroform
25U	1,2-dichloroethane
55	2-butanone
25U	1,1,1-trichloroethane
25U	carbon tetrachloride
50U	vinyl acetate
25U	bromodichloromethane
25U	1,2-dichloropropane
25U	cis-1,3-dichloropropene
230	trichloroethene
25U	dibromochloromethane
25U	1,1,2-trichloroethane
230	benzene
25U	trans-1,3-dichloropropene
50U	2-chloroethyl vinyl ether
25U	bromoform
50U	4-methyl-2-pentanone
50U	2-hexanone
25U	1,1,2,2-tetrachloroethane
25U	tetrachloroethene
260	toluene
240	chlorobenzene
25U	ethylbenzene
25U	styrene
25U	xylenes (o+m)
25U	xylene (p)

SURROGATE % RECOVERY

103	1,2-dichloroethane-d4 (SS1)
100	toluene-d8 (SS2)
98	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

KESTON ANALYTICS
2120 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S073-02MS
CLIENT SAMPLE ID : 21848-3(MS)
REPORT DATE : 01-13-1989

CLIENT NAME : CH2M HILL
FILE ID : 88M1VO3548
BLANK ID : 88M1VO3542
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/13/88
DATE RECEIVED : 12/20/88
DATE EXTRACTED : NA
DATE ANALYSED : 12/29/88

13 U	chloromethane	7 U	dibromochloromethane
13 U	bromomethane	7 U	1,1,2-trichloroethane
13 U	vinyl chloride	54	benzene
13 U	chloroethane	7 U	trans-1,3-dichloropropene
10	methylene chloride	13 U	2-chloroethyl vinyl ether
30	acetone	7 U	bromoform
7 U	carbon disulfide	13 U	4-methyl-2-pentanone
21	1,1-dichloroethene	13 U	2-hexanone
7 U	1,1-dichloroethane	7 U	1,1,2,2-tetrachloroethane
7 U	1,2-dichloroethene (total)	7 U	tetrachloroethene
7 U	chloroform	89	toluene
7 U	1,2-dichloroethane	57	chlorobenzene
13 U	2-butanone	7 U	ethylbenzene
7 U	1,1,1-trichloroethane	7 U	styrene
7 U	carbon tetrachloride	7 U	xylenes (o+m)
13 U	vinyl acetate	7 U	xylene (p)
7 U	bromodichloromethane	SURROGATE % RECOVERY	
7 U	1,2-dichloropropane	79	1,2-dichloroethane-d4 (SS1)
7 U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
62	trichloroethene	88	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 24

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R.F. Carney

F-881

WESTON ANALYTICS
2720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812SQ72-02MSD
CLIENT SAMPLE ID : 21948-3(MSD)
REPORT DATE : 01-13-1989

T NAME : CH2M HILL
...E ID : 88M1V03549
BLANK ID : 88M1V03542
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/13/88
DATE RECEIVED : 12/20/88
DATE EXTRACTED : NA
DATE ANALYSED : 12/20/88

13	U	chloroethane	7	U	dibromochloroethane
13	U	bromomethane	7	U	1,1,2-trichloroethane
13	U	vinyl chloride	51		benzene
13	U	chloroethane	7	U	trans-1,3-dichloropropene
110		methylene chloride	13	U	2-chloroethyl vinyl ether
17		acetone	7	U	bromoform
7	U	carbon disulfide	13	U	4-methyl-2-pentanone
79		1,1-dichloroethene	13	U	2-hexanone
7	U	1,1-dichloroethane	7	U	1,1,2,2-tetrachloroethane
7	U	1,2-dichloroethene (total)	7	U	tetrachloroethene
7	U	chloroform	80		toluene
7	U	1,2-dichloroethane	57		chlorobenzene
13	U	2-butanone	7	U	ethylbenzene
7	U	1,1,1-trichloroethane	7	U	styrene
7	U	carbon tetrachloride	7	U	xylenes (o-)
13	U	vinyl acetate	7	U	xylene (p,
7	U	bromodichloromethane	SURROGATE % RECOVERY		
7	U	1,2-dichloropropane	93		1,2-dichloroethane-d4 (SS1) ✔
7	U	cis-1,3-dichloropropene	99		toluene-d8 (SS2)
51		trichloroethene	92		bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 24

U = Indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = Indicates an estimated trace value.

ANALYST : ALI

APPROVED BY : R.F. Carney

WESTON ANALYTICS
2820 LORRAINE AVE, SUITE 102
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8901S003-0MS
CLIENT SAMPLE ID : 21920-7MS
REPORT DATE : 01-14-1989

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 89M1V0003
SAMPLE TYPE : SOIL/SEDIMENT SOLIDS

DATE SAMPLED : 12/20/89
DATE RECEIVED : 01/03/89
DATE EXTRACTED : NA
DATE ANALYSED : 01/03/89

13 U	chloromethane	6 U	dibromochloromethane
13 U	bromomethane	6 U	1,1,2-trichloroethane
13 U	vinyl chloride	57	benzene
13 U	chloroethane	6 U	trans-1,3-dichloropropene
53	methylene chloride	13 U	2-chloroethyl vinyl ether
18	acetone	6 U	bromoform
6 U	carbon disulfide	13 U	4-methyl-2-pentanone
63	1,1-dichloroethene	13 U	2-hexanone
6 U	1,1-dichloroethane	6 U	1,1,2,2-tetrachloroethane
6 U	1,2-dichloroethene (total)	6 U	tetrachloroethene
6 U	chloroform	56	toluene
6 U	1,2-dichloroethane	52	chlorobenzene
13 U	2-butanone	6 U	ethylbenzene
6 U	1,1,1-trichloroethane	6 U	styrene
6 U	carbon tetrachloride	6 U	xylenes (tot)
13 U	vinyl acetate	6 U	xylene (p)
6 U	bromodichloromethane	SURROGATE % RECOVERY	
6 U	1,2-dichloropropane	97	1,2-dichloroethane-d4 (SS1)
6 U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
54	trichloroethene	114	bromofluorobenzene SS3

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 21

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST: ALI

APPROVED BY: P.F. Carey

WESTON ANALYTICS
2820 LORRAINE AVE. SUITE 102
STOCKTON CA 95210 209 957-3405

GC MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8901SC03-01MSD
CLIENT SAMPLE ID : 21920-7/01SD
REPORT DATE : 01-14-1989

CLIENT NAME : CH2M HILL
WET-CD : 8240
BLANK ID : 89mlvo003
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/20/88
DATE RECEIVED : 01/03/89
DATE EXTRACTED : NA
DATE ANALYSED : 01/03/89

13	U	chloromethane	6	U	dibromochloromethane
13	U	bromomethane	6	U	1,1,2-trichloroethane
13	U	vinyl chloride	59		benzene
13	U	chloroethane	6	U	trans-1,3-dichloropropene
55		methylene chloride	13	U	2-chloroethyl vinyl ether
9	J	acetone	6	U	bromoform
6	U	carbon disulfide	13	U	4-methyl-2-pentanone
68		1,1-dichloroethene	13	U	2-hexanone
6	U	1,1-dichloroethane	6	U	1,1,2,2-tetrachloroethane
6	U	1,2-dichloroethene (total)	6	U	tetrachloroethene
6	J	chloroform	67		toluene
6	U	1,2-dichloroethane	52		chlorobenzene
13	U	2-butanone	6	U	ethylbenzene
6	J	1,1,1-trichloroethane	6	J	styrene
6	J	carbon tetrachloride	6	J	xylenes (o+m
13	U	vinyl acetate	6	U	xylene (p)
6	U	bromodichloromethane	SURROGATE % RECOVERY		
6	U	1,2-dichloropropane	90		1,2-dichloroethane-d4 (SS1)
6	U	cis-1,3-dichloropropene	88		toluene-d8 (SS2)
52		trichloroethene	107		bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 21

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R. F. Carney

CH2M HILL ENVIRONMENTAL LABORATORY
2018 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21847-7MSD
CLIENT SAMPLE ID : 0266
REPORT DATE : 01-23-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-14-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-13-88
DATE EXTRACTED :
DATE ANALYSED : 12-22-88

50U	chloroethane	25U	dibromochloroethane
50U	bromoethane	25U	1,1,2-trichloroethane
50U	vinyl chloride	210	benzene
50U	chloroethane	25U	trans-1,3-dichloropropene
21J	methylene chloride	50U	2-chloroethyl vinyl ether
62	acetone	25U	bromoform
25U	carbon disulfide	50U	4-methyl-2-pentanone
180	1,1-dichloroethene	50U	2-hexanone
25U	1,1-dichloroethane	25U	1,1,2,2-tetrachloroethane
25U	trans-1,2-dichloroethene	25U	tetrachloroethene
25U	chloroform	260	toluene
25U	1,2-dichloroethane	250	chlorobenzene
27J	2-butanone	25U	ethylbenzene
25U	1,1,1-trichloroethane	25U	styrene
25U	carbon tetrachloride	25U	xylenes (o+m)
50U	vinyl acetate	25U	xylene (p)
25U	bromodichloromethane		SURROGATE % RECOVERY
25U	1,2-dichloropropane	104	1,2-dichloroethane-d4 (SS1)
25U	cis-1,3-dichloropropene	102	toluene-d8 (SS2)
220	trichloroethene	103	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

C-CH HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21872-12MS
CLIENT SAMPLE ID : 0257-13
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-16-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-15-88
DATE EXTRACTED :
DATE ANALYSED : 12-29-88

10U	chloroethane
10U	bromoethane
10U	vinyl chloride
10U	chloroethane
13	methylene chloride
10U	acetone
5U	carbon disulfide
68	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
6J	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
53	trichloroethene
5U	dibromochloromethane
5U	1,1,2-trichloroethane
55	benzene
5U	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-methyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
55	toluene
53	chlorobenzene
5U	ethylbenzene
5U	styrene
5U	xylenes (o+m)
5U	xylene (p)

SURROGATE % RECOVERY

120	1,2-dichloroethane-d4 (SS1)
107	toluene-d8 (SS2)
131	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHOM HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-241-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21972-1CMSD
CLIENT SAMPLE ID : 0257-13
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CHOM HILL/SAC
SAMPLE RECEIVED : 12-16-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-15-88
DATE EXTRACTED :
DATE ANALYSED : 12-29-88

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	49	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
10	methylene chloride	10U	2-chloroethyl vinyl ether
11	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
55	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	48	toluene
5U	1,2-dichloroethane	46	chlorobenzene
53	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (total)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromet		SURROGATE % RECOVERY
5U	1,2-dichloropro	108	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichlor ene	100	toluene-d8 (SS2)
45	trichloroethene	106	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : ER 1-12-89
CLIENT SAMPLE ID : METHOD BLANK 1-12-89
REPORT DATE : 01-25-1989

CLIENT NAME : BEALE AFB CH2M HILL SAC
SAMPLE RECEIVED :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE EXTRACTED :
DATE ANALYSED : 1-12-89

10U	chloroethane
10U	bromoethane
10U	vinyl chloride
10U	chloroethane
16	methylene chloride
42	acetone
4J	carbon disulfide
5U	1,1-dichloroethene
5U	1,1-dichloroethane
5U	trans-1,2-dichloroethene
5U	chloroform
5U	1,2-dichloroethane
10U	2-butanone
5U	1,1,1-trichloroethane
5U	carbon tetrachloride
10U	vinyl acetate
5U	bromodichloromethane
5U	1,2-dichloropropane
5U	cis-1,3-dichloropropene
5J	trichloroethene
5U	dibromochloromethane
5U	1,1,2-trichloroethane
5U	benzene
5U	trans-1,3-dichloropropene
10U	2-chloroethyl vinyl ether
5U	bromoform
10U	4-methyl-2-pentanone
10U	2-hexanone
5U	1,1,2,2-tetrachloroethane
5U	tetrachloroethene
5U	toluene
5U	chlorobenzene
5U	ethylbenzene
5U	styrene
5U	xylenes (ote)
5U	xylene (p)

SURROGATE % RECOVERY

96	1,2-dichloroethane-d4 (SS1)
100	toluene-d8 (SS2)
101	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CHCM HILL ENVIRONMENTAL LABORATORY
2219 RAILROAD AVENUE
REDDING CA 96001 916-243-1725

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21[illegible]-1-MS
CLIENT SAMPLE ID : [illegible]
REPORT DATE : 01-25-1989

CLIENT NAME : BEALE AFB CHCM HILL,SAC
SAMPLE RECEIVED : 1-4-89
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 1-[illegible]-89
DATE EXTRACTED : 1-11-89
DATE ANALYSED : 1-12-89

1300U	chloromethane	630U	dibromochloromethane
1300U	bromomethane	630U	1,1,2-trichloroethane
1300U	vinyl chloride	6500	benzene
1300U	chloroethane	630U	trans-1,3-dichloropropene
5100	methylene chloride	1300U	2-chloroethyl vinyl ether
2900	acetone	630U	bromoform
440J	carbon disulfide	1300U	4-methyl-2-pentanone
6500	1,1-dichloroethene	1300U	2-hexanone
630U	1,1-dichloroethane	630U	1,1,2-tetrachloroethane
630U	trans-1,2-dichloroethene	630U	tetrachloroethene
630U	chloroform	6700	toluene
630U	1,2-dichloroethane	6400	chlorobenzene
1600	2-butanone	630U	ethylbenzene
630U	1,1,1-trichloroethane	630U	styrene
630U	carbon tetrachloride	630U	xylenes (o+m)
1300U	vinyl acetate	630U	xylene (p)
630U	bromodichloromethane		SURROGATE % RECOVERY
630U	1,2-dichloropropane	99	1,2-dichloroethane-d4 (SS1)
630U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
6100	trichloroethene	110	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21979-10[illegible]
CLIENT SAMPLE ID : 0361
REPORT DATE : 01-25-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 1-4-89
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 1-[illegible]-89
DATE EXTRACTED : 1-11-89
DATE ANALYSED : 1-12-89

1300U	chloromethane	630U	dibromochloromethane
1300U	bromomethane	630U	1,1,2-trichloroethane
1300U	vinyl chloride	6500	benzene
1300U	chloroethane	630U	trans-1,3-dichloropropene
4700	methylene chloride	1300U	2-chloroethyl vinyl ether
2300	acetone	630U	bromoform
500J	carbon disulfide	1300U	4-methyl-2-pentanone
6500	1,1-dichloroethene	1300U	2-hexanone
630U	1,1-dichloroethane	630U	1,1,2,2-tetrachloroethane
630U	trans-1,2-dichloroethene	630U	tetrachloroethene
630U	chloroform	6600	toluene
630U	1,2-dichloroethane	6300	chlorobenzene
1300	2-butanone	630U	ethylbenzene
630U	1,1,1-trichloroethane	630U	styrene
630U	carbon tetrachloride	630U	xylenes (o+m)
1300U	vinyl acetate	630U	xylene (p)
630U	bromodichloromethane		SURROGATE % RECOVERY
630U	1,2-dichloropropane	100	1,2-dichloroethane-d4 (SS1)
630U	cis-1,3-dichloropropene	99	toluene-d8 (SS2)
5900	trichloroethene	109	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2215 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 22052-7MS
CLIENT SAMPLE ID : 0321
REPORT DATE : 01-26-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 1-11-89
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 1-10-89
DATE EXTRACTED :
DATE ANALYSED : 1-17-89

10U	chloromethane	5U	dibromochloromethane
10U	bromomethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	47	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
18	methylene chloride	10U	2-chloroethyl vinyl ether
38	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
49	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	66	toluene
5U	1,2-dichloroethane	48	chlorobenzene
20	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+m)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	93	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
47	trichloroethene	100	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2019 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 22053-2M2D
CLIENT SAMPLE ID : 0521
REPORT DATE : 01-26-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 1-11-89
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 1-[illegible]-89
DATE EXTRACTED :
DATE ANALYSED : 1-17-89

10U	chloroethane	5U	dibromochloroethane
10U	bromoethane	5U	1,1,2-trichloroethane
10U	vinyl chloride	32	benzene
10U	chloroethane	5U	trans-1,3-dichloropropene
12	methylene chloride	10U	2-chloroethyl vinyl ether
24	acetone	5U	bromoform
5U	carbon disulfide	10U	4-methyl-2-pentanone
54	1,1-dichloroethene	10U	2-hexanone
5U	1,1-dichloroethane	5U	1,1,2,2-tetrachloroethane
5U	trans-1,2-dichloroethene	5U	tetrachloroethene
5U	chloroform	67	toluene
5U	1,2-dichloroethane	54	chlorobenzene
17	2-butanone	5U	ethylbenzene
5U	1,1,1-trichloroethane	5U	styrene
5U	carbon tetrachloride	5U	xylenes (o+e)
10U	vinyl acetate	5U	xylene (p)
5U	bromodichloromethane		SURROGATE % RECOVERY
5U	1,2-dichloropropane	93	1,2-dichloroethane-d4 (SS1)
5U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
52	trichloroethene	107	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analyzed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S046-02MS
CLIENT SAMPLE ID : 21717-2 0002MS
REPORT DATE : 12-28-1988

CLIENT NAME : CH2M HILL
METHOD : 3240
BLANK ID : 88M2V01981
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11/30/88
DATE RECEIVED : 12/13/88
DATE EXTRACTED :
DATE ANALYSED : 12/14/88

11	U	chloromethane	6	U	dibromochloromethane
11	U	bromomethane	6	U	1,1,2-trichloroethane
11	U	vinyl chloride	50		benzene 91%
11	U	chloroethane	6	U	trans-1,3-dichloropropene
18	B	methylene chloride	11	U	2-chloroethyl vinyl ether
34	B	acetone	6	U	bromoform
6	U	carbon disulfide	11	U	4-methyl-2-pentanone
54		1,1-dichloroethene 98%	11	U	2-hexanone
6	U	1,1-dichloroethane	6	U	1,1,2,2-tetrachloroethane
6	U	1,2-dichloroethene (total)	6	U	tetrachloroethene
6	U	chloroform	57		toluene 82%
6	U	1,2-dichloroethane	49		chlorobenzene 88%
11	U	2-butanone	6	U	ethylbenzene
6	U	1,1,1-trichloroethane	6	U	styrene
6	U	carbon tetrachloride	6	U	xylenes (o+m)
11	U	vinyl acetate	6	U	xylene (p)
6	U	bromodichloromethane	SURROGATE % RECOVERY		
6	U	1,2-dichloropropane	88		1,2-dichloroethane-d4 (SS1)
6	U	cis-1,3-dichloropropene	103		toluene-d8 (SS2)
43		trichloroethene 77%	102		bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 9.1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : [signature]

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APPROVED BY : R.F. Causey

21739-3MS

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S048-02MSD
CLIENT SAMPLE ID : 21717-2 0082MSD
REPORT DATE : 12-28-1988

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 88M2V01981
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11/30/88
DATE RECEIVED : 12/13/88
DATE EXTRACTED :
DATE ANALYSED : 12/14/88

11 U	chloromethane	6 U	dibromochloromethane
11 U	bromomethane	6 U	1,1,2-trichloroethane
11 U	vinyl chloride	✓51	benzene 92%
11 U	chloroethane	6 U	trans-1,3-dichloropropene
✓20 B	methylene chloride	11 U	2-chloroethyl vinyl ether
✓47 B	acetone	6 U	bromoform
6 U	carbon disulfide	11 U	4-methyl-2-pentanone
✓55	1,1-dichloroethene 100%	11 U	2-hexanone
6 U	1,1-dichloroethane	6 U	1,1,2,2-tetrachloroethane
6 U	1,2-dichloroethene (total)	6 U	tetrachloroethene
6 U	chloroform	✓58	toluene 84%
6 U	1,2-dichloroethane	✓50	chlorobenzene 91%
11 U	2-butanone	6 U	ethylbenzene
6 U	1,1,1-trichloroethane	6 U	styrene
6 U	carbon tetrachloride	6 U	xylenes (o+m)
11 U	vinyl acetate	6 U	xylene (p)
6 U	bromodichloromethane	SURROGATE % RECOVERY	
6 U	1,2-dichloropropane	89	1,2-dichloroethane-d4 (SS1)
6 U	cis-1,3-dichloropropene	102	toluene-d8 (SS2)
✓44	trichloroethene 80%	104	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 9.1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
= indicates an estimated trace value.

ANALYST : [signature]

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PROVED BY : [signature]

3MS

21739.3MS

[redacted] ANALYTICAL
[redacted] LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S056-12MS
CLIENT SAMPLE ID : 21734-2MS
REPORT DATE : 01-10-1989

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 88M2V02038
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/02/88
DATE RECEIVED : 12/15/88
DATE EXTRACTED : N/A
DATE ANALYSED : 12/19/88

51 U	chloromethane	30 U	dibromochloromethane
61 U	bromomethane	30 U	1,1,2-trichloroethane
61 U	vinyl chloride	290	benzene
61 U	chloroethane	30 U	trans-1,3-dichloropropene
43	methylene chloride	51 U	2-chloroethyl vinyl ether
370	acetone	30 U	bromoform
260	carbon disulfide	61 U	4-methyl-2-pentanone
30 U	1,1-dichloroethene	61 U	2-hexanone
30 U	1,1-dichloroethane	30 U	1,1,2,2-tetrachloroethane
30 U	1,2-dichloroethene (total)	30 U	tetrachloroethene
30 U	chloroform	270	toluene
30 U	1,2-dichloroethane	270	chlorobenzene
61 U	2-butanone	30 U	ethylbenzene
30 U	1,1,1-trichloroethane	30 U	styrene
30 U	carbon tetrachloride	30 U	xylenes (m+p)
61 U	vinyl acetate	30 U	xylene (o)
30 U	bromodichloromethane		SURROGATE % RECOVERY
30 U	1,2-dichloropropane	93	1,2-dichloroethane-d4 (SS1)
30 U	cis-1,3-dichloropropene	101	toluene-d8 (SS2)
260	trichloroethene	103	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 18

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : _____

APPROVED BY : _____

IRD21930-3MS

U-11

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S056-12MSD
CLIENT SAMPLE ID : 21734-7MSD
REPORT DATE : 01-16-1989

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 88M2V02038
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/02/88
DATE RECEIVED : 12/15/88
DATE EXTRACTED : N/A
DATE ANALYSED : 12/19/88

61	U	chloroethane	
61	U	bromoethane	
61	U	vinyl chloride	
61	U	chloroethane	
30		methylene chloride	
300		acetone	
30	U	carbon disulfide	
290		1,1-dichloroethene	
30	U	1,1-dichloroethane	
30	U	1,2-dichloroethene (total)	
30	U	chloroform	
30	U	1,2-dichloroethane	
61	U	2-butanone	
30	U	1,1,1-trichloroethane	
30	U	carbon tetrachloride	
61	U	vinyl acetate	
30	U	bromodichloromethane	
30	U	1,2-dichloropropane	
30	U	cis-1,3-dichloropropene	
260		trichloroethene	
30	U	dibromochloromethane	
30	U	1,1,2-trichloroethane	
290		benzene	
30	U	trans-1,3-dichloropropene	
61	U	2-chloroethyl vinyl ether	
30	U	bromoform	
61	U	4-methyl-2-pentanone	
61	U	2-hexanone	
30	U	1,1,2,2-tetrachloroethane	
30	U	tetrachloroethene	
280		toluene	
280		chlorobenzene	
30	U	ethylbenzene	
30	U	styrene	
36	U	xylenes (o+m)	
30	U	xylene (p)	

SURROGATE % RECOVERY

91	1,2-dichloroethane-d4 (SS1)
101	toluene-d8 (SS2)
102	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 5
% MOISTURE : 19

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : _____

APPROVED BY : _____

F-896

LRD 21930-205

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WESTON ANALYTICS
2720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S058-09MS
CLIENT SAMPLE ID : 21740-9-MS
REPORT DATE : 12-29-1988

CLIENT NAME : CH2M HILL
FILE ID : 88M1V03529
BLANK ID : 88M1V03522
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/05/88
DATE RECEIVED : 12/15/88
DATE EXTRACTED : NA
DATE ANALYSED : 12/19/88

11 U	chloromethane	6 U	dibromochloromethane
11 U	bromomethane	6 U	1,1,2-trichloroethane
11 U	vinyl chloride	42	benzene
11 U	chloroethane	6 U	trans-1,3-dichloropropene
9	methylene chloride	11 U	2-chloroethyl vinyl ether
52	acetone	6 U	bromoform
6 U	carbon disulfide	11 U	4-methyl-2-pentanone
63	1,1-dichloroethene	11 U	2-hexanone
6 U	1,1-dichloroethane	6 U	1,1,2,2-tetrachloroethane
6 U	1,2-dichloroethene (total)	6 U	tetrachloroethene
6 U	chloroform	48	toluene
6 U	1,2-dichloroethane	48	chlorobenzene
11 U	2-butanone	6 U	ethylbenzene
6 U	1,1,1-trichloroethane	6 U	styrene
6 U	carbon tetrachloride	6 U	xylenes (o+m)
11 U	vinyl acetate	6 U	xylene (p)
6 U	bromodichloromethane	SURROGATE % RECOVERY	
6 U	1,2-dichloropropane	104	1,2-dichloroethane-d4 (SS1)
6 U	cis-1,3-dichloropropene	100	toluene-d8 (SS2)
50	trichloroethene	88	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 10

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : A Li

APPROVED BY : R. F. Cauney

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S058-09MSD
CLIENT SAMPLE ID : 21740-9-MSD
REPORT DATE : 12-29-1988

CLIENT NAME : CH2M HILL
CASE ID : 88M1V03531
BLANK ID : 88M1V03522
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/05/88
DATE RECEIVED : 12/15/88
DATE EXTRACTED : NA
DATE ANALYSED : 12/19/88

11 U	chloromethane	6 U	dibromochloromethane
11 U	bromomethane	6 U	1,1,2-trichloroethane
11 U	vinyl chloride	40	benzene
11 U	chloroethane	6 U	trans-1,3-dichloropropene
56	methylene chloride	11 U	2-chloroethyl vinyl ether
24	acetone	6 U	bromoform
6 U	carbon disulfide	11 U	4-methyl-2-pentanone
62	1,1-dichloroethene	11 U	2-hexanone
6 U	1,1-dichloroethane	6 U	1,1,2,2-tetrachloroethane
6 U	1,2-dichloroethene (total)	6 U	tetrachloroethene
6 U	chloroform	45	toluene
6 U	1,2-dichloroethane	48	chlorobenzene
11 U	2-butanone	6 U	ethylbenzene
6 U	1,1,1-trichloroethane	6 U	styrene
6 U	carbon tetrachloride	6 U	xylenes (o+m)
11 U	vinyl acetate	6 U	xylene (p)
6 U	bromodichloromethane	SURROGATE % RECOVERY	
6 U	1,2-dichloropropane	87	1,2-dichloroethane-d4 (SS1)
6 U	cis-1,3-dichloropropene	97	toluene-d8 (SS2)
53	trichloroethene	88	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 10

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R.F. Carney

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S084-04MS
CLIENT SAMPLE ID : 21831-5(MS)
REPORT DATE : 01-06-1989

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 88M1V03598
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/12/88
DATE RECEIVED : 12/15/88
DATE EXTRACTED : NA
DATE ANALYSED : 12/30/88

11 U	chloromethane
11 U	bromomethane
U	vinyl chloride
11 U	chloroethane
10	methylene chloride
17	acetone
6 U	carbon disulfide
58	1,1-dichloroethene 105%
6 U	1,1-dichloroethane
6 U	1,2-dichloroethene (total)
6 U	chloroform
6 U	1,2-dichloroethane
11 U	2-butanone
6 U	1,1,1-trichloroethane
6 U	carbon tetrachloride
11 U	vinyl acetate
6 U	bromodichloromethane
6 U	1,2-dichloropropane
6 U	cis-1,3-dichloropropene
41	trichloroethene 72%
6 U	dibromochloromethane
6 U	1,1,2-trichloroethane
41	benzene 74%
6 U	trans-1,3-dichloropropene
11 U	2-chloroethyl vinyl ether
6 U	bromoform
11 U	4-methyl-2-pentanone
11 U	2-hexanone
6 U	1,1,2,2-tetrachloroethane
6 U	tetrachloroethene
47	toluene 80%
41	chlorobenzene 75%
6 U	ethylbenzene
6 U	styrene
6 U	xylenes (o+m)
6 U	xylene (p)

SURROGATE % RECOVERY

90	1,2-dichloroethane-d4 (SS1)
108	toluene-d8 (SS2)
92	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 10

U = Indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = Indicates an estimated trace value.

ANALYST : ALi

APPROVED BY : R.F. Carney

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8812S064-04MSD
CLIENT SAMPLE ID : 21831-5(MSD)
REPORT DATE : 01-06-1989

CLIENT NAME : CH2M HILL
METHOD : 8240
BLANK ID : 88M1V03598
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/12/88
DATE RECEIVED : 12/15/88
DATE EXTRACTED : NA
DATE ANALYSED : 12/30/88

11 U	chloromethane	
11 U	bromomethane	
11 U	vinyl chloride	
11 U	chloroethane	
9	methylene chloride	
13	acetone	
6 U	carbon disulfide	
61	1,1-dichloroethene 11%	
6 U	1,1-dichloroethane	
6 U	1,2-dichloroethene (total)	
6 U	chloroform	
6 U	1,2-dichloroethane	
11 U	2-butanone	
6 U	1,1,1-trichloroethane	
6 U	carbon tetrachloride	
11 U	vinyl acetate	
6 U	bromodichloromethane	
6 U	1,2-dichloropropane	
6 U	cis-1,3-dichloropropene	
46	trichloroethene 80%	
6 U	dibromochloromethane	
6 U	1,1,2-trichloroethane	
47	benzene 34%	
6 U	trans-1,3-dichloropropene	
11 U	2-chloroethyl vinyl ether	
6 U	bromoform	
11 U	4-methyl-2-pentanone	
11 U	2-hexanone	
6 U	1,1,2,2-tetrachloroethane	
6 U	tetrachloroethene	
53	toluene 91%	
45	chlorobenzene 81%	
6 U	ethylbenzene	
6 U	styrene	
6 U	xylenes (o+m)	
6 U	xylene (p)	

SURROGATE % RECOVERY

112	1,2-dichloroethane-d4 (SS1)
103	toluene-d8 (SS2)
100	bromofluorobenzene (SS3)

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a dry weight basis.

DILUTION FACTOR : 1
% MOISTURE : 10

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : AL

APPROVED BY : P. F. Carney

ORGANICS ANALYSIS DATA SHEET

ɔratory Name:	CH2M Hill	Concentration:	MED	Date Extracted:	
Lab Sample ID:	12320011MS	Sample Matrix:	SOIL	Date Analyzed:	11/28/8x
Client Sample ID:	BAFB 0027 RMS	Percent Moisture:		Dilution Factor:	130

VOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
74-87-3	Chloromethane	1300	U	71-43-2	Benzene	4700	
74-83-9	Bromomethane	1300	U	10061-02-6	trans-1,3-Dichloropropene	630	U
75-01-4	Vinyl Chloride	1300	U	110-75-8	2-Chloroethylvinylether .	1300	U
75-00-3	Chloroethane	1300	U	75-25-2	Bromoform	630	U
75-09-2	Methylene Chloride	6000		591-78-6	2-Hexanone	1300	U
67-64-1	Acetone	1300	U	108-10-1	4-Methyl-2-Pentanone . . .	1300	U
75-15-0	Carbon Disulfide	630	U	127-18-4	Tetrachloroethene	630	U
75-35-4	1,1-Dichloroethene	6400		79-34-5	1,1,2,2-Tetrachloroethane	630	U
75-34-3	1,1-Dichloroethane	630	U	108-88-3	Toluene	5500	
540-59-0	1,2-Dichloroethene (total)	630	U	108-90-7	Chlorobenzene	5500	
67-66-3	Chloroform	630	U	100-41-4	Ethylbenzene	630	U
107-06-2	1,2-Dichloroethane	630	U	100-42-5	Styrene	630	U
78-93-3	2-Butanone	1300	U	1330-20-7	Xylenes (total)	630	U
71-55-6	1,1,1-Trichloroethane . .	630	U		----------		
56-23-5	Carbon Tetrachloride . . .	630	U		Toluene-d8 - SS	98	
108-05-4	Vinyl Acetate	1300	U		1,4-Bromofluorobenzene - SS	100	
75-27-4	Bromodichloromethane . . .	630	U		1,2-Dichloroethane-d4 - SS	93	
78-87-5	1,2-Dichloropropane . . .	630	U				
10061-01-5	cis-1,3-Dichloropropene .	630	U				
79-01-6	Trichloroethene	5600					
124-48-1	Dibromochloromethane . . .	630	U				
79-00-5	1,1,2-Trichloroethane . .	630	U				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

86

ORGANICS ANALYSIS DATA SHEET

Laboratory Name:	CH2M Hill	Concentration:	MED	Date Extracted:	
Sample ID:	12320011MSD	Sample Matrix:	SOIL	Date Analyzed:	11/28/88
Client Sample ID:	BAFB0027_RMSD	Percent Moisture:		Dilution Factor:	130

VOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
74-87-3	Chloromethane	1300	U	71-43-2	Benzene	6400	
74-83-9	Bromomethane	1300	U	10061-02-6	trans-1,3-Dichloropropene	630	U
75-01-4	Vinyl Chloride	1300	U	110-75-8	2-Chloroethylvinylether	1300	U
75-00-3	Chloroethane	1300	U	75-25-2	Bromoform	630	U
75-09-2	Methylene Chloride	4500		591-78-6	2-Hexanone	1300	U
67-64-1	Acetone	1300	U	108-10-1	4-Methyl-2-Pentanone	1300	U
75-15-0	Carbon Disulfide	630	U	127-18-4	Tetrachloroethene	630	U
75-35-4	1,1-Dichloroethene	7300		79-34-5	1,1,2,2-Tetrachloroethane	630	U
75-34-3	1,1-Dichloroethane	630	U	108-88-3	Toluene	5600	
540-59-0	1,2-Dichloroethene (total)	630	U	108-90-7	Chlorobenzene	5900	
67-66-3	Chloroform	630	U	100-41-4	Ethylbenzene	630	U
107-06-2	1,2-Dichloroethane	630	U	100-42-5	Styrene	630	U
78-93-3	2-Butanone	1300	U	1330-20-7	Xylenes (total)	630	U
71-55-6	1,1,1-Trichloroethane	630	U		---		
56-23-5	Carbon Tetrachloride	630	U		Toluene-d8 - SS	91	
108-05-4	Vinyl Acetate	1300	U		1,4-Bromofluorobenzene - SS	100	
75-27-4	Bromodichloromethane	630	U		1,2-Dichloroethane-d4 - SS	90	
78-87-5	1,2-Dichloropropane	630	U				
10061-01-5	cis-1,3-Dichloropropene	630	U				
1-6	Trichloroethene	7300					
-48-1	Dibromochloromethane	630	U				
79-00-5	1,1,2-Trichloroethane	630	U				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

~~21677-3~~
21677-2MS

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12346M08
Client Sample ID: BAFB_0078_MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/06/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	7	
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	71	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	48	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	50	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	--	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	48	
108-90-7	Chlorobenzene	47	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	98	
	1,4-Bromofluorobenzene - SS	99	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

~~21677-4~~
21677-2MSD

S

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12346D08
Client Sample ID: BAFB 0078 MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture:

Date Extracted:
Date Analyzed: 12/06/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U	71-43-2	Benzene	53	
74-83-9	Bromomethane	10	U	10061-02-6	trans-1,3-Dichloropropene	5	U
75-01-4	Vinyl Chloride	10	U	110-75-8	2-Chloroethylvinylether	10	U
75-00-3	Chloroethane	10	U	75-25-2	Bromoform	5	U
75-09-2	Methylene Chloride	6		591-78-6	2-Hexanone	10	U
67-64-1	Acetone	10	U	108-10-1	4-Methyl-2-Pentanone	10	U
75-15-0	Carbon Disulfide	5	U	127-18-4	Tetrachloroethene	5	U
75-35-4	1,1-Dichloroethene	71		79-34-5	1,1,2,2-Tetrachloroethane	5	U
75-34-3	1,1-Dichloroethane	5	U	108-88-3	Toluene	50	
540-59-0	1,2-Dichloroethene (total)	5	U	108-90-7	Chlorobenzene	48	
67-66-3	Chloroform	5	U	100-41-4	Ethylbenzene	5	U
107-06-2	1,2-Dichloroethane	5	U	100-42-5	Styrene	5	U
78-93-3	2-Butanone	10	U	1330-20-7	Xylenes (total)	5	U
71-55-6	1,1,1-Trichloroethane	5	U				
56-23-5	Carbon Tetrachloride	5	U		Toluene-d8 - SS	98	
108-05-4	Vinyl Acetate	10	U		1,4-Bromofluorobenzene - SS	97	
75-27-4	Bromodichloromethane	5	U		1,2-Dichloroethane-d4 - SS	98	
[illegible]-7-5	1,2-Dichloropropane	5	U				
[illegible]-01-5	cis-1,3-Dichloropropene	5	U				
79-01-6	Trichloroethene	48					
124-48-1	Dibromochloromethane	5	U				
79-00-5	1,1,2-Trichloroethane	5	U				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

LKU21125-5M

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12396M02
Client Sample ID: BAFB 0088 MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/07/[illegible]
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	29	
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	86	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	46	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	47	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	
75-25-2	Bromoform	5	
591-78-6	2-Hexanone	10	
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	63	
108-90-7	Chlorobenzene	46	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	100	
	1,4-Bromofluorobenzene - SS	110	
	1,2-Dichloroethane-d4 - SS	110	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Engineers
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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: 12396D02
Client Sample ID: BAFB_0088_MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/07/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	29	
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	86	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	43	
8-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	47	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	62	
108-90-7	Chlorobenzene	45	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	110	
	1,4-Bromofluorobenzene - SS	110	
	1,2-Dichloroethane-d4 - SS	110	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

CH2M HILL Redding Environmental Laboratory 2218 Railroad Avenue, P O Box 2038 Redding, California 96001 916 243 5831

21739-3MS

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12416M02
Client Sample ID: BAFR 0146 MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/09
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	42	
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	110	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	55	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	61	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	90	
108-90-7	Chlorobenzene	58	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	93	
	1,4-Bromofluorobenzene - SS	92	
	1,2-Dichloroethane-d4 - SS	110	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

21739-3MS

3MS

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: 12416D02
Client Sample ID: BAFB 0146MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 12/09/88
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	37	
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	93	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	49	
[illegible]8-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	55	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	63	
108-90-7	Chlorobenzene	51	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	90	
	1,4-Bromofluorobenzene - SS	95	
	1,2-Dichloroethane-d4 - SS	110	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

LRD21930-3MS

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12543M06
Client Sample ID: BAFB 0345 MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 01/04/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	2	J
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	13	
67-64-1	Acetone	19	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	45	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	94	
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	44	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	50	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	7	
108-90-7	Chlorobenzene	5	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	100	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

LRD 21930-3MS.

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: 12543D06
Client Sample ID: BAFB 0345 MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 01/04/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U	71-43-2	Benzene	54	
74-83-9	Bromomethane	10	U	10061-02-6	trans-1,3-Dichloropropene	5	U
75-01-4	Vinyl Chloride	10	U	110-75-8	2-Chloroethylvinylether	10	U
75-00-3	Chloroethane	10	U	75-25-2	Bromoform	5	U
75-09-2	Methylene Chloride	6		591-78-6	2-Hexanone	10	U
67-64-1	Acetone	13		108-10-1	4-Methyl-2-Pentanone	10	U
75-15-0	Carbon Disulfide	5	U	127-18-4	Tetrachloroethene	5	U
75-35-4	1,1-Dichloroethene	40		79-34-5	1,1,2,2-Tetrachloroethane	5	U
75-34-3	1,1-Dichloroethane	5	U	108-88-3	Toluene	63	
540-59-0	1,2-Dichloroethene (total)	5	U	108-90-7	Chlorobenzene	51	
67-66-3	Chloroform	5	U	100-41-4	Ethylbenzene	5	U
107-06-2	1,2-Dichloroethane	5	U	100-42-5	Styrene	5	U
78-93-3	2-Butanone	81		1330-20-7	Xylenes (total)	5	U
71-55-6	1,1,1-Trichloroethane	5	U		----------		
56-23-5	Carbon Tetrachloride	5	U		Toluene-d8 - SS	100	
108-05-4	Vinyl Acetate	10	U		1,4-Bromofluorobenzene - SS	97	
75-27-4	Bromodichloromethane	5	U		1,2-Dichloroethane-d4 - SS	89	
78-87-5	1,2-Dichloropropane	5	U				
10061-01-5	cis-1,3-Dichloropropene	5	U				
1-6	Trichloroethene	48					
48-1	Dibromochloromethane	5	U				
79-00-5	1,1,2-Trichloroethane	5	U				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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LRD21657-2m

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12543M02
Client Sample ID: BAFB_0070_MS

Concentration: MED
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 01/09/89
Dilution Factor: 130

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	1300	U
74-83-9	Bromomethane	1300	U
75-01-4	Vinyl Chloride	1300	U
75-00-3	Chloroethane	1300	U
75-09-2	Methylene Chloride	630	U
67-64-1	Acetone	1300	U
75-15-0	Carbon Disulfide	630	U
75-35-4	1,1-Dichloroethene	6500	
75-34-3	1,1-Dichloroethane	630	U
540-59-0	1,2-Dichloroethene (total)	630	U
67-66-3	Chloroform	630	U
107-06-2	1,2-Dichloroethane	630	U
78-93-3	2-Butanone	1300	U
71-55-6	1,1,1-Trichloroethane	630	U
56-23-5	Carbon Tetrachloride	630	U
108-05-4	Vinyl Acetate	1300	U
75-27-4	Bromodichloromethane	630	U
78-87-5	1,2-Dichloropropane	630	U
10061-01-5	cis-1,3-Dichloropropene	630	U
79-01-6	Trichloroethene	6300	
124-48-1	Dibromochloromethane	630	U
79-00-5	1,1,2-Trichloroethane	630	U

CAS Number		ug/Kg	
71-43-2	Benzene	6800	
10061-02-6	trans-1,3-Dichloropropene	630	U
110-75-8	2-Chloroethylvinylether	1300	U
75-25-2	Bromoform	630	U
591-78-6	2-Hexanone	1300	U
108-10-1	4-Methyl-2-Pentanone	1300	U
127-18-4	Tetrachloroethene	630	U
79-34-5	1,1,2,2-Tetrachloroethane	630	U
108-88-3	Toluene	7100	
108-90-7	Chlorobenzene	6400	
100-41-4	Ethylbenzene	630	U
100-42-5	Styrene	630	U
1330-20-7	Xylenes (total)	630	U

	Toluene-d8 - SS	110	
	1,4-Bromofluorobenzene - SS	96	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

LRD 21657-2R

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: 12543D02
Client Sample ID: BAFB 0070 MSD

Concentration: MED
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 01/09/89
Dilution Factor: 130

VOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
74-87-3	Chloromethane	1300	U	71-43-2	Benzene	7400	
74-83-9	Bromomethane	1300	U	10061-02-6	trans-1,3-Dichloropropene	630	U
75-01-4	Vinyl Chloride	1300	U	110-75-8	2-Chloroethylvinylether	1300	U
75-00-3	Chloroethane	1300	U	75-25-2	Bromoform	630	U
75-09-2	Methylene Chloride	630	U	591-78-6	2-Hexanone	1300	U
67-64-1	Acetone	1300	U	108-10-1	4-Methyl-2-Pentanone	1300	U
75-15-0	Carbon Disulfide	630	U	127-18-4	Tetrachloroethene	630	U
75-35-4	1,1-Dichloroethene	6300		79-34-5	1,1,2,2-Tetrachloroethane	630	U
75-34-3	1,1-Dichloroethane	630	U	108-88-3	Toluene	7700	
540-59-0	1,2-Dichloroethene (total)	630	U	108-90-7	Chlorobenzene	6900	
67-66-3	Chloroform	630	U	100-41-4	Ethylbenzene	630	U
107-06-2	1,2-Dichloroethane	630	U	100-42-5	Styrene	630	U
78-93-3	2-Butanone	1300	U	1330-20-7	Xylenes (total)	630	U
71-55-6	1,1,1-Trichloroethane	630	U				
56-23-5	Carbon Tetrachloride	630	U		Toluene-d8 - SS	120	
108-05-4	Vinyl Acetate	1300	U		1,4-Bromofluorobenzene - SS	100	
75-27-4	Bromodichloromethane	630	U		1,2-Dichloroethane-d4 - SS	100	
78-87-5	1,2-Dichloropropane	630	U				
10061-01-5	cis-1,3-Dichloropropene	630	U				
)1-6	Trichloroethene	6500					
..+-48-1	Dibromochloromethane	630	U				
79-00-5	1,1,2-Trichloroethane	630	U				

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 12564M03
Client Sample ID: BAFB 0305 MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 01/17/8
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	45	
67-64-1	Acetone	13	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	53	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	51	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	56	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	48	
108-90-7	Chlorobenzene	47	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	100	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: 12564D03
ent Sample ID: BAFB 0305 MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 01/17/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	23	
67-64-1	Acetone	12	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	60	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	46	
48-1	Dibromochloromethane	5	U
00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	57	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	49	
108-90-7	Chlorobenzene	49	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	100	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	120	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 22087-4-MS
Client Sample ID: BAFB 0417 MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: ____
Date Analyzed: 01/26/8>
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		UG/KG	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	7	B
67-64-1	Acetone	20	B
75-15-0	Carbon Disulfide	2	J
75-35-4	1,1-Dichloroethene	41	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	9	J
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	47	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		UG/KG	
71-43-2	Benzene	45	
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	73	
108-90-7	Chlorobenzene	49	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U

	Toluene-d8 - SS	97	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	99	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

ratory Name: CH2M Hill
Lab Sample ID: 22087-4-MSD
Client Sample ID: BAFB_0417_MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 01/26/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		UG/KG	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	7	B
67-64-1	Acetone	31	B
75-15-0	Carbon Disulfide	2	J
75-35-4	1,1-Dichloroethene	46	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	12	
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	48	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		UG/KG	
71-43-2	Benzene	48	
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	61	
108-90-7	Chlorobenzene	52	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	98	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	99	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 23114-5MS
Client Sample ID: BAFB 0538 MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 05/16/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	13	
67-64-1	Acetone	27	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	37	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	26	
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	50	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U

CAS Number		ug/Kg	
71-43-2	Benzene	46	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	180	
108-90-7	Chlorobenzene	43	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	90	
	1,4-Bromofluorobenzene - SS	100	
	1,2-Dichloroethane-d4 - SS	100	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

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ORGANICS ANALYSIS DATA SHEET

-atory Name: CH2M Hill
Lab Sample ID: 23114-5MSD
Client Sample ID: BAFB 0538 MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 05/16/89
Dilution Factor: 1.0

VOLATILE COMPOUNDS

CAS Number		ug/Kg	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	17	
67-64-1	Acetone	48	
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	41	
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	30	
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10[illegible]-01-5	cis-1,3-Dichloropropene	5	U
[illegible]-6	Trichloroethene	51	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	46	
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethylvinylether	10	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	260	
108-90-7	Chlorobenzene	49	
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	4	J
1330-20-7	Xylenes (total)	5	U
	Toluene-d8 - SS	110	
	1,4-Bromofluorobenzene - SS	95	
	1,2-Dichloroethane-d4 - SS	93	

U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Semivolatile Organic Compounds (SW8270)

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21654-3M5
CLIENT SAMPLE ID : BAFB-0054-20-C-1SS
REPORT DATE : 12-30-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-22-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-21-88
DATE EXTRACTED : 11-29-88
DATE ANALYSED : 12-29-88

660U	n-nitroso-dimethylamine	660U	dibenzofuran
6900	phenol	2900	2,4-dinitrotoluene
660U	aniline	660U	2,6-dinitrotoluene
660U	bis(2-chloroethyl) ether	660U	diethyl phthalate
5700	2-chlorophenol	660U	4-chlorophenyl phenyl ether
660U	1,3-dichlorobenzene	660U	fluorene
2600	1,4-dichlorobenzene	3200U	4-nitroaniline
660U	benzyl alcohol	3200U	4,6-dinitro-2-methylphenol
660U	1,2-dichlorobenzene	660U	n-nitrosodiphenylamine
660U	2-methylphenol	660U	4-bromophenyl phenyl ether
660U	bis(2-chloroisopropyl) ether	660U	hexachlorobenzene
660U	4-methylphenol	6900	pentachlorophenol
2400	n-nitroso-di-n-propylamine	660U	phenanthrene
660U	hexachloroethane	660U	anthracene
660U	nitrobenzene	660U	di-n-butyl phthalate
660U	isophorone	660U	fluoranthene
660U	2-nitrophenol	3200U	benzidine
660U	2,4-dimethylphenol	3000	pyrene
3200U	benzoic acid	660U	butyl benzyl phthalate
660U	bis(2-chloroethoxy) methane	1300U	3,3'-dichlorobenzidine
660U	2,4-dichlorophenol	660U	benzo(a)anthracene
2900	1,2,4-trichlorobenzene	450J	bis(2-ethylhexyl)phthalate
660U	naphthalene	660U	chrysene
660U	4-chloroaniline	660U	di-n-octyl phthalate
660U	hexachlorobutadiene	660U	benzo(b)fluoranthene
5600	4-chloro-3-methylphenol	660U	benzo(k)fluoranthene
660U	2-methylnaphthalene	660U	benzo(a)pyrene
660U	hexachlorocyclopentadiene	660U	indeno(1,2,3-cd)pyrene
660U	2,4,6-trichlorophenol	660U	dibenz(a,h)anthracene
3200U	2,4,5-trichlorophenol	660U	benzo(g,h,i)perylene
660U	2-chloronaphthalene		SURROGATE % RECOVERY
3200U	2-nitroaniline	59	2-fluorophenol (SS1)
660U	dimethyl phthalate	76	phenol-d5 (SS2)
660U	acenaphthylene	77	nitrobenzene-d5 (SS3)
3200U	3-nitroaniline	83	2-fluorobiphenyl
2800	acenaphthene	72	2,4,6-tribromophenol (SS5)
3200U	2,4-dinitrophenol	82	p-terphenyl-d14 (SS6)
7000	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

1/12/89

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : _____

The information shown on this sheet is test data analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21654-SMSD
CLIENT SAMPLE ID : BAFB-0054-20-C-1SS
REPORT DATE : 12-30-1988

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-22-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-21-88
DATE EXTRACTED : 11-29-88
DATE ANALYSED : 12-29-88

660U	n-nitroso-diethylamine	660U	dibenzofuran
7400	phenol	3200	2,4-dinitrotoluene
660U	aniline	660U	2,6-dinitrotoluene
660U	bis(2-chloroethyl) ether	660U	diethyl phthalate
6300	2-chlorophenol	660U	4-chlorophenyl phenyl ether
660U	1,3-dichlorobenzene	660U	fluorene
2900	1,4-dichlorobenzene	3200U	4-nitroaniline
660U	benzyl alcohol	3200U	4,6-dinitro-2-methylphenol
660U	1,2-dichlorobenzene	660U	n-nitrosodiphenylamine
660U	2-methylphenol	660U	4-bromophenyl phenyl ether
660U	bis(2 chloroisopropyl) ether	660U	hexachlorobenzene
660U	4-methylphenol	7300	pentachlorophenol
2700	n-nitroso-di-n-propylamine	660U	phenanthrene
660U	hexachloroethane	660U	anthracene
660U	nitrobenzene	660U	di-n-butyl phthalate
660U	isophorone	660U	fluoranthene
660U	2-nitrophenol	3200U	benzidine
660U	2,4-dimethylphenol	3300	pyrene
3200U	benzoic acid	660U	butyl benzyl phthalate
660U	bis(2-chloroethoxy) methane	1300U	3,3'-dichlorobenzidine
660U	2,4-dichlorophenol	660U	benzo(a)anthracene
3200	1,2,4-trichlorobenzene	510J	bis(2-ethylhexyl)phthalate
660U	naphthalene	660U	chrysene
660U	4-chloroaniline	660U	di-n-octyl phthalate
660U	hexachlorobutadiene	660U	benzo(b)fluoranthene
6300	4-chloro-3-methylphenol	660U	benzo(k)fluoranthene
660U	2-methylnaphthalene	660U	benzo(a)pyrene
660U	hexachlorocyclopentadiene	660U	indeno(1,2,3-cd)pyrene
660U	2,4,6-trichlorophenol	660U	dibenz(a,h)anthracene
3200U	2,4,5-trichlorophenol	660U	benzo(g,h,i)perylene
660U	2-chloronaphthalene		SURROGATE % RECOVERY
3200U	2-nitroaniline	65	2-fluorophenol (SS1)
660U	dimethyl phthalate	85	phenol-d5 (SS2)
660U	acenaphthylene	85	nitrobenzene-d5 (SS3)
3200U	3-nitroaniline	92	2-fluorobiphenyl
3000	acenaphthene	61	2,4,6-tribromophenol (SS5)
3200U	2,4-dinitrophenol	95	p-terphenyl-d14 (SS6)
8200	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

12/12/88

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____ APPROVED BY : _____

F 02

The information shown on this sheet is test data ... or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21659-6MS
CLIENT SAMPLE ID : BAFB-0061-2-C-4SS
REPORT DATE : 01-11-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-23-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-22-88
DATE EXTRACTED : 12-1-88
DATE ANALYSED : 1-5-89

660U	n-nitroso-dimethylamine	660U	dibenzofuran
6100	phenol	2500	2,4-dinitrotoluene
660U	aniline	660U	2,6-dinitrotoluene
660U	bis(2-chloroethyl) ether	660U	diethyl phthalate
5300	2-chlorophenol	660U	4-chlorophenyl phenyl ether
660U	1,3-dichlorobenzene	660U	fluorene
2700	1,4-dichlorobenzene	3200U	4-nitroaniline
660U	benzyl alcohol	3200U	4,6-dinitro-2-methylphenol
660U	1,2-dichlorobenzene	660U	n-nitrosodiphenylamine
660U	2-methylphenol	660U	4-bromophenyl phenyl ether
660U	bis(2-chloroisopropyl) ether	660U	hexachlorobenzene
660U	4-methylphenol	7100	pentachlorophenol
2600	n-nitroso-di-n-propylamine	660U	phenanthrene
660U	hexachloroethane	660U	anthracene
660U	nitrobenzene	660U	di-n-butyl phthalate
660U	isophorone	660U	fluoranthene
660U	2-nitrophenol	3200U	benzidine
660U	2,4-dimethylphenol	3700	pyrene
3200U	benzoic acid	660U	butyl benzyl phthalate
660U	bis(2-chloroethoxy) methane	1300U	3,3'-dichlorobenzidine
660U	2,4-dichlorophenol	660U	benzo(a)anthracene
2900	1,2,4-trichlorobenzene	660U	bis(2-ethylhexyl)phthalate
660U	naphthalene	660U	chrysene
660U	4-chloroaniline	660U	di-n-octyl phthalate
660U	hexachlorobutadiene	660U	benzo(b)fluoranthene
4900	4-chloro-3-methylphenol	660U	benzo(k)fluoranthene
660U	2-methylnaphthalene	660U	benzo(a)pyrene
660U	hexachlorocyclopentadiene	660U	indeno(1,2,3-cd)pyrene
660U	2,4,6-trichlorophenol	660U	dibenz(a,h)anthracene
3200U	2,4,5-trichlorophenol	660U	benzo(g,h,i)perylene
660U	2-chloronaphthalene		SURROGATE % RECOVERY
3200U	2-nitroaniline	72	2-fluorophenol (SS1)
660U	dimethyl phthalate	94	phenol-d5 (SS2)
660U	acenaphthylene	90	nitrobenzene-d5 (SS3)
3200U	3-nitroaniline	97	2-fluorobiphenyl
2700	acenaphthene	93	2,4,6-tribromophenol (SS5)
3200U	2,4-dinitrophenol	126	p-terphenyl-d14 (SS6)
5100	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

1/12/89

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : [signature]

APPROVED BY : _____

F-921

The information shown on this sheet is test data [illegible] or interpretation is intended or implied.

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS
LAB REFERENCE NUMBER 880 5003-6MS
CLIENT SAMPLE ID 21734-9 MS

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21659-6MSD
CLIENT SAMPLE ID : BAFB-0061-2-C-4SS
REPORT DATE : 01-11-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-23-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-22-88
DATE EXTRACTED : 12-1-88
DATE ANALYSED : 1-5-89

660U	n-nitroso-dimethylamine
5500	phenol
660U	aniline
660U	bis(2-chloroethyl) ether
4500	2-chlorophenol
660U	1,3-dichlorobenzene
1800	1,4-dichlorobenzene
660U	benzyl alcohol
660U	1,2-dichlorobenzene
660U	2-methylphenol
660U	bis(2-chloroisopropyl) ether
660U	4-methylphenol
2400	n-nitroso-di-n-propylamine
660U	hexachloroethane
660U	nitrobenzene
660U	isophorone
660U	2-nitrophenol
660U	2,4-dimethylphenol
3200U	benzoic acid
660U	bis(2-chloroethoxy) methane
660U	2,4-dichlorophenol
2400	1,2,4-trichlorobenzene
660U	naphthalene
660U	4-chloroaniline
660U	hexachlorobutadiene
5400	4-chloro-3-methylphenol
660U	2-methylnaphthalene
660U	hexachlorocyclopentadiene
660U	2,4,6-trichlorophenol
3200U	2,4,5-trichlorophenol
660U	2-chloronaphthalene
3200U	2-nitroaniline
660U	dimethyl phthalate
660U	acenaphthylene
3200U	3-nitroaniline
3100	acenaphthene
3200U	2,4-dinitrophenol
7000	4-nitrophenol
660U	dibenzofuran
2800	2,4-dinitrotoluene
660U	2,6-dinitrotoluene
660U	diethyl phthalate
660U	4-chlorophenyl phenyl ether
660U	fluorene
3200U	4-nitroaniline
3200U	4,6-dinitro-2-methylphenol
660U	n-nitrosodiphenylamine
660U	4-bromophenyl phenyl ether
660U	hexachlorobenzene
8900	pentachlorophenol
660U	phenanthrene
660U	anthracene
660U	di-n-butyl phthalate
660U	fluoranthene
3200U	benzidine
4100	pyrene
660U	butyl benzyl phthalate
1300U	3,3'-dichlorobenzidine
660U	benzo(a)anthracene
660U	bis(2-ethylhexyl)phthalate
660U	chrysene
660U	di-n-octyl phthalate
660U	benzo(b)fluoranthene
660U	benzo(k)fluoranthene
660U	benzo(a)pyrene
660U	indeno(1,2,3-cd)pyrene
660U	dibenz(a,h)anthracene
660U	benzo(g,h,i)perylene

SURROGATE % RECOVERY

52	2-fluorophenol (SS1)
81	phenol-d5 (SS2)
72	nitrobenzene-d5 (SS3)
90	2-fluorobiphenyl
103	2,4,6-tribromophenol (SS5)
127	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Davis

APPROVED BY : _____

F-922

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CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21677-4MS
CLIENT SAMPLE ID : BAFB-0080 19-C-1USS
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-23-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-23-88
DATE EXTRACTED : 12-5-88
DATE ANALYSED : 1-7-89

660U	n-nitroso-dimethylamine
4000	phenol
660U	aniline
660U	bis(2-chloroethyl) ether
3400	2-chlorophenol
660U	1,3-dichlorobenzene
1300	1,4-dichlorobenzene
660U	benzyl alcohol
660U	1,2-dichlorobenzene
660U	2-methylphenol
660U	bis(2-chloroisopropyl) ether
660U	4-methylphenol
1600	n-nitroso-di-n-propylamine
660U	hexachloroethane
660U	nitrobenzene
660U	isophorone
660U	2-nitrophenol
660U	2,4-dimethylphenol
3200U	benzoic acid
660U	bis(2-chloroethoxy) methane
660U	2,4-dichlorophenol
1300	1,2,4-trichlorobenzene
660U	naphthalene
660U	4-chloroaniline
660U	hexachlorobutadiene
3100	4-chloro-3-methylphenol
660U	2-methylnaphthalene
660U	hexachlorocyclopentadiene
660U	2,4,6-trichlorophenol
3200U	2,4,5-trichlorophenol
660U	2-chloronaphthalene
3200U	2-nitroaniline
660U	dimethyl phthalate
660U	acenaphthylene
3200U	3-nitroaniline
1800	acenaphthene
3200U	2,4-dinitrophenol
3800	4-nitrophenol
660U	dibenzofuran
1300	2,4-dinitrotoluene
660U	2,6-dinitrotoluene
660U	diethyl phthalate
660U	4-chlorophenyl phenyl ether
660U	fluorene
3200U	4-nitroaniline
3200U	4,6-dinitro-2-methylphenol
660U	n-nitrosodiphenylamine
660U	4-bromophenyl phenyl ether
660U	hexachlorobenzene
4700	pentachlorophenol
660U	phenanthrene
660U	anthracene
660U	di-n-butyl phthalate
520J	fluoranthene
3200U	benzidine
1700	pyrene
660U	butyl benzyl phthalate
1300U	3,3'-dichlorobenzidine
660U	benzo(a)anthracene
960	bis(2-ethylhexyl)phthalate
660U	chrysene
660U	di-n-octyl phthalate
660U	benzo(b)fluoranthene
660U	benzo(k)fluoranthene
660U	benzo(a)pyrene
660U	indeno(1,2,3-cd)pyrene
660U	dibenz(a,h)anthracene
660U	benzo(g,h,i)perylene

SURROGATE % RECOVERY

45	2-fluorophenol (SS1)
55	phenol-d5 (SS2)
54	nitrobenzene-d5 (SS3)
57	2-fluorobiphenyl
57	2,4,6-tribromophenol (SS5)
55	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding "U" is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Wells

APPROVED BY : _____

The information shown on this sheet is test data F-923 or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21677-4MSD
CLIENT SAMPLE ID : BAFB-0060 19-C-1USS
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 11-23-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-23-88
DATE EXTRACTED : 12-5-88
DATE ANALYSED : 1-7-89

660U	n-nitroso-dimethylamine	660U	dibenzofuran
4100	phenol	1900	2,4-dinitrotoluene
660U	aniline	660U	2,6-dinitrotoluene
660U	bis 2-chloroethyl) ether	660U	diethyl phthalate
1500	2-chlorophenol	660U	4-chlorophenyl phenyl ether
660U	1,3-dichlorobenzene	660U	fluorene
1700	1,4-dichlorobenzene	3200U	4-nitroaniline
660U	benzyl alcohol	3200U	4,6-dinitro-2-methylphenol
660U	1,2-dichlorobenzene	660U	n-nitrosodiphenylamine
660U	2-methylphenol	660U	4-bromophenyl phenyl ether
660U	bis(2-chloroisopropyl) ether	660U	hexachlorobenzene
660U	4-methylphenol	4700	pentachlorophenol
1500	n-nitroso-di-n-propylamine	660U	phenanthrene
660U	hexachloroethane	660U	anthracene
660U	nitrobenzene	660U	di-n-butyl phthalate
660U	isophorone	600J	fluoranthene
660U	2-nitrophenol	3200U	benzidine
660U	2,4-dimethylphenol	1900	pyrene
3200U	benzoic acid	660U	butyl benzyl phthalate
660U	bis(2-chloroethoxy) methane	1300U	3,3'-dichlorobenzidine
660U	2,4-dichlorophenol	660U	benzo(a)anthracene
1900	1,2,4-trichlorobenzene	1100	bis(2-ethylhexyl)phthalate
660U	naphthalene	660U	chrysene
660U	4-chloroaniline	660U	di-n-octyl phthalate
660U	hexachlorobutadiene	660U	benzo(b)fluoranthene
3200	4-chloro-3-methylphenol	660U	benzo(k)fluoranthene
660U	2-methylnaphthalene	660U	benzo(a)pyrene
660U	hexachlorocyclopentadiene	660U	indeno(1,2,3-cd)pyrene
660U	2,4,6-trichlorophenol	660U	dibenz(a,h)anthracene
3200U	2,4,5-trichlorophenol	660U	benzo(g,h,i)perylene
660U	2-chloronaphthalene		SURROGATE % RECOVERY
3200U	2-nitroaniline	45	2-fluorophenol (SS1)
660U	dimethyl phthalate	57	phenol-d5 (SS2)
660U	acenaphthylene	54	nitrobenzene-d5 (SS3)
3200U	3-nitroaniline	61	2-fluorobiphenyl
1900	acenaphthene	56	2,4,6-tribromophenol (SS5)
3200U	2,4-dinitrophenol	57	p-terphenyl-d14 (SS6)
3600	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Gilbert

APPROVED BY : _____

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CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21717-6MS
CLIENT SAMPLE ID : 0086 C55B
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-1-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-30-88
DATE EXTRACTED : 12-8-88
DATE ANALYSED : 1-10-89

660U	n-nitroso-dimethylamine
6200	phenol
660U	aniline
660U	bis(2-chloroethyl) ether
5200	2-chlorophenol
660U	1,3-dichlorobenzene
2700	1,4-dichlorobenzene
660U	benzyl alcohol
660U	1,2-dichlorobenzene
660U	2-methylphenol
660U	bis(2-chloroisopropyl) ether
660U	4-methylphenol
2200	n-nitroso-di-n-propylamine
660U	hexachloroethane
660U	nitrobenzene
660U	isophorone
660U	2-nitrophenol
660U	2,4-dimethylphenol
3200U	benzoic acid
660U	bis(2-chloroethoxy) methane
660U	2,4-dichlorophenol
2900	1,2,4-trichlorobenzene
660U	naphthalene
660U	4-chloroaniline
660U	hexachlorobutadiene
4400	4-chloro-3-methylphenol
660U	2-methylnaphthalene
660U	hexachlorocyclopentadiene
660U	2,4,6-trichlorophenol
3200U	2,4,5-trichlorophenol
660U	2-chloronaphthalene
3200U	2-nitroaniline
660U	dimethyl phthalate
660U	acenaphthylene
3200U	3-nitroaniline
2700	acenaphthene
3200U	2,4-dinitrophenol
4400	4-nitrophenol
660U	dibenzofuran
2500	2,4-dinitrotoluene
660U	2,6-dinitrotoluene
660U	diethyl phthalate
660U	4-chlorophenyl phenyl ether
660U	fluorene
3200U	4-nitroaniline
3200U	4,6-dinitro-2-methylphenol
660U	n-nitrosodiphenylamine
660U	4-bromophenyl phenyl ether
660U	hexachlorobenzene
6100	pentachlorophenol
660U	phenanthrene
660U	anthracene
660U	di-n-butyl phthalate
660U	fluoranthene
3200U	benzidine
3400	pyrene
660U	butyl benzyl phthalate
1300U	3,3'-dichlorobenzidine
660U	benzo(a)anthracene
660U	bis(2-ethylhexyl)phthalate
660U	chrysene
660U	di-n-octyl phthalate
660U	benzo(b)fluoranthene
660U	benzo(k)fluoranthene
660U	benzo(a)pyrene
660U	indeno(1,2,3-cd)pyrene
660U	dibenz(a,h)anthracene
660U	benzo(g,h,i)perylene

SURROGATE % RECOVERY

54	2-fluorophenol (SS1)
68	phenol-d5 (SS2)
87	nitrobenzene-d5 (SS3)
91	2-fluorobiphenyl
51	2,4,6-tribromophenol (SS5)
111	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Gelis

APPROVED BY : _____

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CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21717-6MSD
CLIENT SAMPLE ID : 0086 C558
REPORT DATE : 01-24-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-1-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 11-30-88
DATE EXTRACTED : 12-8-88
DATE ANALYSED : 1-10-89

660U	n-nitroso-diaethylamine
2100	phenol
660U	aniline
660U	bis(2-chloroethyl) ether
4300	2-chlorophenol
660U	1,3-dichlorobenzene
1300	1,4-dichlorobenzene
660U	benzyl alcohol
660U	1,2-dichlorobenzene
660U	2-methylphenol
660U	bis(2-chloroisopropyl) ether
660U	4-methylphenol
1500	n-nitroso-di-n-propylamine
660U	hexachloroethane
660U	nitrobenzene
660U	isophorone
660U	2-nitrophenol
660U	2,4-dimethylphenol
3200U	benzoic acid
660U	bis(2-chloroethoxy) methane
660U	2,4-dichlorophenol
2100	1,2,4-trichlorobenzene
660U	naphthalene
660U	4-chloroaniline
660U	hexachlorobutadiene
5100	4-chloro-3-methylphenol
660U	2-methylnaphthalene
660U	hexachlorocyclopentadiene
660U	2,4,6-trichlorophenol
3200U	2,4,5-trichlorophenol
660U	2-chloronaphthalene
3200U	2-nitroaniline
660U	dimethyl phthalate
660U	acenaphthylene
3200U	3-nitroaniline
2500	acenaphthene
3200U	2,4-dinitrophenol
5000	4-nitrophenol
660U	dibenzofuran
2500	2,4-dinitrotoluene
660U	2,6-dinitrotoluene
660U	diethyl phthalate
660U	4-chlorophenyl phenyl ether
660U	fluorene
3200U	4-nitroaniline
3200U	4,6-dinitro-2-methylphenol
660U	n-nitrosodiphenylamine
660U	4-bromophenyl phenyl ether
660U	hexachlorobenzene
6700	pentachlorophenol
660U	phenanthrene
660U	anthracene
660U	di-n-butyl phthalate
660U	fluoranthene
3200U	benzidine
3500	pyrene
660U	butyl benzyl phthalate
1300U	3,3'-dichlorobenzidine
660U	benzo(a)anthracene
660U	bis(2-ethylhexyl)phthalate
660U	chrysene
660U	di-n-octyl phthalate
660U	benzo(b)fluoranthene
660U	benzo(k)fluoranthene
660U	benzo(a)pyrene
660U	indeno(1,2,3-cd)pyrene
660U	dibenz(a,h)anthracene
660U	benzo(g,h,i)perylene

SURROGATE % RECOVERY

43	2-fluorophenol (SS1)
61	phenol-d5 (SS2)
65	nitrobenzene-d5 (SS3)
76	2-fluorobiphenyl
63	2,4,6-tribromophenol (SS5)
111	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Akers

APPROVED BY : _____

The information shown on this sheet is test data o

or interpretation is intended ...

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 12538009
Client Sample ID: 21774-8MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 12/20/88
Date Analyzed: 01/19/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine	330	U	100-02-7	4-Nitrophenol	140	J
108-95-2	Phenol	180	J	132-64-9	Dibenzofuran	330	U
62-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	93	J
111-44-4	bis(2-Chloroethyl)Ether	330	U	84-66-2	Diethylphthalate	330	U
95-57-8	2-Chlorophenol	150	J	7005-72-3	4-Chlorophenyl-phenylether	330	U
541-73-1	1,3-Dichlorobenzene	330	U	86-73-7	Fluorene	330	U
106-46-7	1,4-Dichlorobenzene	65	J	100-01-6	4-Nitroaniline	1600	U
100-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-50-1	1,2-Dichlorobenzene	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
95-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
106-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
621-64-7	N-Nitroso-di-n-propylamine	48	J	87-86-5	Pentachlorophenol	150	J
67-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
98-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
78-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate	330	U
88-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
105-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	93	J
65-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine	660	U
120-83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
120-82-1	1,2,4-Trichlorobenzene	79	J	218-01-9	Chrysene	330	U
91-20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
106-47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate	330	U
87-68-3	Hexachlorobutadiene	330	U	205-99-2	Benzo(b)fluoranthene	330	U
59-50-7	4-Chloro-3-methylphenol	170	J	207-08-9	Benzo(k)fluoranthene	330	U
91-57-6	2-Methylnaphthalene	330	U	50-32-8	Benzo(a)pyrene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U	53-70-3	Dibenz(a,h)Anthracene	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U	191-24-2	Benzo(g,h,i)perylene	330	U
91-58-7	2-Chloronaphthalene	330	U		----------		
88-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS	100	
131-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS	90	
208-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	87	
606-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	120	
99-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS	92	
83-32-9	Acenaphthene	83	J		2,4,6-Tribromophenol - SS	68	
51-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 12538010
Client Sample ID: 21774-8MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 12/20/88
Date Analyzed: 01/19/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	100-02-7	4-Nitrophenol	140	J
108-95-2	Phenol	140	J	132-64-9	Dibenzofuran	330	U
62-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	92	J
111-44-4	bis(2-Chloroethyl)Ether .	330	U	84-66-2	Diethylphthalate	330	U
95-57-8	2-Chlorophenol	120	J	7005-72-3	4-Chlorophenyl-phenylether	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
106-46-7	1,4-Dichlorobenzene . . .	49	J	100-01-6	4-Nitroaniline	1600	U
100-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
95-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
106-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
621-64-7	N-Nitroso-di-n-propylamine	38	J	87-86-5	Pentachlorophenol	130	J
67-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
98-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
78-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
88-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
105-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	87	J
65-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate . . .	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
120-82-1	1,2,4-Trichlorobenzene . .	61	J	218-01-9	Chrysene	330	U
91-20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
106-47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	160	J	207-08-9	Benzo(k)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	50-32-8	Benzo(a)pyrene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U		----------		
88-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS . . .	80	
131-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS . .	74	
208-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	88	
606-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	90	
99-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS . . .	70	
83-32-9	Acenaphthene	82	J		2,4,6-Tribromophenol - SS	69	
51-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 12538012
ent Sample ID: 21775-2MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 12/20/88
Date Analyzed: 01/19/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	100-02-7	4-Nitrophenol	66	J
108-95-2	Phenol	170	J	132-64-9	Dibenzofuran	330	U
62-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	93	J
111-44-4	bis(2-Chloroethyl)Ether .	330	U	84-66-2	Diethylphthalate	330	U
95-57-8	2-Chlorophenol	140	J	7005-72-3	4-Chlorophenyl-phenylether	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
106-46-7	1,4-Dichlorobenzene . . .	57	J	100-01-6	4-Nitroaniline	1600	U
100-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
95-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
106-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
621-64-7	N-Nitroso-di-n-propylamine	45	J	87-86-5	Pentachlorophenol	120	J
67-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
98-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
78-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
88-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
105-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	89	J
65-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate . . .	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
82-1	1,2,4-Trichlorobenzene . .	74	J	218-01-9	Chrysene	330	U
20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
106-47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	170	J	207-08-9	Benzo(k)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	50-32-8	Benzo(a)pyrene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U		----------		
88-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS . . .	100	
31-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS . .	78	
208-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	91	
606-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	110	
99-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS . . .	83	
83-32-9	Acenaphthene	94	J		2,4,6-Tribromophenol - SS	63	
51-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 12538013
Client Sample ID: 21775-2MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 12/20/88
Date Analyzed: 01/19/89
Dilution Factor: 1.

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	100-02-7	4-Nitrophenol	150	J
108-95-2	Phenol	190	J	132-64-9	Dibenzofuran	330	U
62-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	100	J
111-44-4	bis(2-Chloroethyl)Ether .	330	U	84-66-2	Diethylphthalate	330	U
95-57-8	2-Chlorophenol	160	J	7005-72-3	4-Chlorophenyl-phenylether	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
106-46-7	1,4-Dichlorobenzene . . .	69	J	100-01-6	4-Nitroaniline	1600	U
100-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
95-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
106-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
621-64-7	N-Nitroso-di-n-propylamine	51	J	87-86-5	Pentachlorophenol	130	J
67-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
98-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
78-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
88-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
105-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	95	J
65-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate . . .	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
120-82-1	1,2,4-Trichlorobenzene . .	78	J	218-01-9	Chrysene	330	U
91-20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
106-47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	160	J	207-08-9	Benzo(k)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	50-32-8	Benzo(a)pyrene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U		----------		
88-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS . . .	110	
131-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS . .	83	
208-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	94	
606-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	120	
99-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS . . .	98	
83-32-9	Acenaphthene	91	J		2,4,6-Tribromophenol - SS	70	
51-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 12538028
Client Sample ID: 21787-2MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: ____

Date Extracted: 12/20/88
Date Analyzed: 01/20/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	100-02-7	4-Nitrophenol	140	J
108-95-2	Phenol	130	J	132-64-9	Dibenzofuran	330	U
62-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	77	J
111-44-4	bis(2-Chloroethyl)Ether .	330	U	84-66-2	Diethylphthalate	330	U
95-57-8	2-Chlorophenol	140	J	7005-72-3	4-Chlorophenyl-phenylether	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
106-46-7	1,4-Dichlorobenzene . . .	62	J	100-01-6	4 Nitroaniline	1600	U
100-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
95-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
106-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
621-64-7	N-Nitroso-di-n-propylamine	48	J	87-86-5	Pentachlorophenol	130	J
67-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
98-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
78-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate . . .	6	J
88-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
105-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	89	J
65-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate . . .	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
120-82-1	1,2,4-Trichlorobenzene . .	73	J	218-01-9	Chrysene	330	U
[illegible]20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
[illegible]-47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	140	J	207-08-9	Benzo(k)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	50-32-8	Benzo(a)pyrene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U		----------		
88-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS . . .	82	
131-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS . .	85	
208-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	92	
606-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	85	
99-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS . . .	73	
83-32-9	Acenaphthene	80	J		2,4,6-Tribromophenol - SS	89	
51-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/MGM
Lab Sample ID: 12538029
Client Sample ID: 21787-2MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 12/20/88
Date Analyzed: 01/20/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/Kg		CAS Number		ug/Kg	
62-75-9	N-Nitrosodimethylamine . .	330	U	100-02-7	4-Nitrophenol	120	J
108-95-2	Phenol	130	J	132-64-9	Dibenzofuran	330	U
62-53-3	Aniline	330	U	121-14-2	2,4-Dinitrotoluene	72	J
111-44-4	bis(2-Chloroethyl)Ether .	330	U	84-66-2	Diethylphthalate	330	U
95-57-8	2-Chlorophenol	130	J	7005-72-3	4-Chlorophenyl-phenylether	330	U
541-73-1	1,3-Dichlorobenzene . . .	330	U	86-73-7	Fluorene	330	U
106-46-7	1,4-Dichlorobenzene . . .	61	J	100-01-6	4-Nitroaniline	1600	U
100-51-6	Benzyl Alcohol	330	U	534-52-1	4,6-Dinitro-2-methylphenol	1600	U
95-50-1	1,2-Dichlorobenzene . . .	330	U	86-30-6	N-Nitrosodiphenylamine (1)	330	U
95-48-7	2-Methylphenol	330	U	122-66-7	1,2-Diphenylhydrazine . .	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U	101-55-3	4-Bromophenyl-phenylether	330	U
106-44-5	4-Methylphenol	330	U	118-74-1	Hexachlorobenzene	330	U
621-64-7	N-Nitroso-di-n-propylamine	45	J	87-86-5	Pentachlorophenol	120	J
67-72-1	Hexachloroethane	330	U	85-01-8	Phenanthrene	330	U
98-95-3	Nitrobenzene	330	U	120-12-7	Anthracene	330	U
78-59-1	Isophorone	330	U	84-74-2	Di-n-Butylphthalate . . .	330	U
88-75-5	2-Nitrophenol	330	U	206-44-0	Fluoranthene	330	U
105-67-9	2,4-Dimethylphenol	330	U	129-00-0	Pyrene	90	J
65-85-0	Benzoic Acid	1600	U	85-68-7	Butylbenzylphthalate . . .	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U	91-94-1	3,3'-Dichlorobenzidine . .	660	U
120-83-2	2,4-Dichlorophenol	330	U	56-55-3	Benzo(a)anthracene	330	U
120-82-1	1,2,4-Trichlorobenzene . .	73	J	218-01-9	Chrysene	330	U
91-20-3	Naphthalene	330	U	117-81-7	bis(2-Ethylhexyl)Phthalate	330	
106-47-8	4-Chloroaniline	330	U	117-84-0	Di-n-octylphthalate . . .	330	U
87-68-3	Hexachlorobutadiene . . .	330	U	205-99-2	Benzo(b)fluoranthene . . .	330	U
59-50-7	4-Chloro-3-methylphenol .	140	J	207-08-9	Benzo(k)fluoranthene . . .	330	U
91-57-6	2-Methylnaphthalene . . .	330	U	50-32-8	Benzo(a)pyrene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	330	U
88-06-2	2,4,6-Trichlorophenol . .	330	U	53-70-3	Dibenz(a,h)Anthracene . .	330	U
95-95-4	2,4,5-Trichlorophenol . .	1600	U	191-24-2	Benzo(g,h,i)perylene . . .	330	U
91-58-7	2-Chloronaphthalene . . .	330	U		----------		
88-74-4	2-Nitroaniline	1600	U		Nitrobenzene-d5 - SS . . .	80	
131-11-3	Dimethyl Phthalate	330	U		2-Fluorobiphenyl - SS . .	74	
208-96-8	Acenaphthylene	330	U		Terphenyl-d14 - SS	87	
606-20-2	2,6-Dinitrotoluene	330	U		Phenol-d5 - SS	79	
99-09-2	3-Nitroaniline	1600	U		2-Fluorophenol - SS . . .	69	
83-32-9	Acenaphthene	76	J		2,4,6-Tribromophenol - SS	81	
51-28-5	2,4-Dinitrophenol	1600	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

WESTON ANALYTICS
7720 LORRAINE AVE. SUITE 103
STOCKTON CA 95210 209 957-3405

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8901S035-02
CLIENT SAMPLE ID : 21733-5 MS
REPORT DATE : 01-20-1989

CLIENT NAME : CH2M HILL
SAMPLE ID : 89M2BN0185
BLANK ID : 89M2BN0183
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01/19/89
DATE EXTRACTED :
DATE ANALYSED : 01/20/89

330	U	n-nitroso-dimethylamine	330	U	dibenzofuran
4300		phenol	3400		2,4-dinitrotoluene
330	U	aniline	52	J	2,6-dinitrotoluene
330	U	bis(2-chloroethyl) ether	330	U	diethyl phthalate
4500		2-chlorophenol	330	U	4-chlorophenyl phenyl ether
330	U	1,3-dichlorobenzene	330	U	fluorene
2400		1,4-dichlorobenzene	1600	U	4-nitroaniline
330	U	benzyl alcohol	1600	U	4,6-dinitro-2-methylphenol
2500		1,2-dichlorobenzene	75	J	n-nitrosodiphenylamine
330	U	2-methylphenol	330	U	4-bromophenyl phenyl ether
330	U	bis(2-chloroisopropyl) ether	330	U	hexachlorobenzene
330	U	4-methylphenol	6300		pentachlorophenol
2600		n-nitroso-di-n-propylamine	330	U	phenanthrene
330	U	hexachloroethane	330	U	anthracene
330	U	nitrobenzene	97	J	di-n-butyl phthalate
330	U	isophorone	250	J	fluoranthene
370	J	2-nitrophenol	1600	U	benzidine
330	U	2,4-dimethylphenol	3300		pyrene
1600	J	benzoic acid	330	U	butyl benzyl phthalate
330	U	bis(2-chloroethoxy) methane	660	U	3,3'-dichlorobenzidine
330	U	2,4-dichlorophenol	330	U	benzo(a)anthracene
3300		1,2,4-trichlorobenzene	330	U	bis(2-ethylhexyl) phthalate
330	U	naphthalene	330	U	chrysene
330	U	4-chloroaniline	330	U	di-n-octyl phthalate
330	U	hexachlorobutadiene	330	U	benzo(b)fluoranthene
5900		4-chloro-3-methylphenol	330	U	benzo(k)fluoranthene
61	J	2-methylnaphthalene	330	U	benzo(a)pyrene
330	U	hexachlorocyclopentadiene	330	U	indeno(1,2,3-cd)pyrene
330	U	2,4,6-trichlorophenol	330	U	dibenz(a,h)anthracene
1600	U	2,4,5-trichlorophenol	330	U	benzo(g,h,i)perylene
330	U	2-chloronaphthalene			SURROGATE % RECOVERY
1600	U	2-nitroaniline	53		2-fluorophenol (SS1)
330	U	dimethyl phthalate	69		phenol-d5 (SS2)
35	J	acenaphthylene	86		nitrobenzene-d5 (SS3)
1600	U	3-nitroaniline	97		2-fluorobiphenyl
2500		acenaphthene	69		2,4,6-tribromophenol (SS5)
1600	U	2,4-dinitrophenol	95		p-terphenyl-d14 (SS6)
8300		4-nitrophenol			

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

. = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
indicates an estimated trace value.

ANALYST : _____

REVIEWED BY : C.F. Carney

WESTON ANALYTICS
7720 LORRAINE AVE. SUITE 102
STOCKTON CA 95210 209 957-3405

GC MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8901S035-03
CLIENT SAMPLE ID : 21733-5 MSD
REPORT DATE : 01-20-1989

CLIENT NAME : CH2M HILL
FILE ID : 89M2BN0186
BLANK ID : 89M2BN0183
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01/19/89
DATE EXTRACTED :
DATE ANALYSED : 01/20/89

330	U	n-nitroso-dimethylamine	330	U	dibenzofuran
4400		phenol	3400		2,4-dinitrotoluene
330	U	aniline	43	J	2,6-dinitrotoluene
330	U	bis(2-chloroethyl) ether	330	U	diethyl phthalate
4700		2-chlorophenol	330	U	4-chlorophenyl phenyl ether
330	U	1,3-dichlorobenzene	330	U	fluorene
2100		1,4-dichlorobenzene	1600	U	4-nitroaniline
330	U	benzyl alcohol	1600	U	4,6-dinitro-2-methylphenol
2200		1,2-dichlorobenzene	330	U	n-nitrosodiphenylamine
330	U	2-methylphenol	330	U	4-bromophenyl phenyl ether
330	U	bis(2-chloroisopropyl) ether	330	U	hexachlorobenzene
330	U	4-methylphenol	5300		pentachlorophenol
2400		n-nitroso-di-n-propylamine	330	U	phenanthrene
330	U	hexachloroethane	330	U	anthracene
330	U	nitrobenzene	130	J	di-n-butyl phthalate
330	U	isophorone	240	J	fluoranthene
300	J	2-nitrophenol	1600	J	benzidine
330	U	2,4-dimethylphenol	3200		pyrene
1600	U	benzoic acid	330	U	butyl benzyl phthalate
330	U	bis(2-chloroethoxy) methane	560	J	3,3'-dichlorobenzidine
330	U	2,4-dichlorophenol	330	U	benzo(a)anthracene
2400		1,2,4-trichlorobenzene	330	U	bis(2-ethylhexyl)phthalate
330	U	naphthalene	330	U	chrysene
330	U	4-chloroaniline	330	U	di-n-octyl phthalate
330	U	hexachlorobutadiene	330	U	benzo(b)fluoranthene
5600		4-chloro-3-methylphenol	330	U	benzo(k)fluoranthene
72	J	2-methylnaphthalene	330	U	benzo(a)pyrene
330	U	hexachlorocyclopentadiene	330	U	indeno(1,2,3-cd)pyrene
330	U	2,4,6-trichlorophenol	330	U	dibenz(a,h)anthracene
1600	U	2,4,5-trichlorophenol	330	U	benzo(g,h,i)perylene
330	U	2-chloronaphthalene			SURROGATE % RECOVERY
1600	U	2-nitroaniline	51		2-fluorophenol (SS1)
330	U	dimethyl phthalate	86		phenol-d5 (SS2)
33	J	acenaphthylene	58		nitrobenzene-d5 (SS3)
1600	U	3-nitroaniline	69		2-fluorobiphenyl
2700		acenaphthene	72		2,4,6-tribromophenol (SS5)
1600	U	2,4-dinitrophenol	89		p-terphenyl-d14 (SS6)
8900		4-nitrophenol			

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

Indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
Indicates an estimated trace value.

CVLD BY : C. F. Carney

0143

WESTON ANALYTICS
7720 LORRAINE AVE. SUITE 102
STOCKTON CA 95210 209 957-3405

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8901S023-6MS
CLIENT SAMPLE ID : 21734-9 MS
REPORT DATE : 01-20-1989

CLIENT NAME : CH2M HILL
FILE ID : 89M2BN0153
BLANK ID : 89M2BN0152
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/08/88
DATE RECEIVED : 01/17/89
DATE EXTRACTED : 12/13/88
DATE ANALYSED : 01/18/89

330	U	n-nitroso-dimethylamine	330	U	dibenzofuran
4600		phenol	3100		2,4-dinitrotoluene
330	U	aniline	35	J	2,6-dinitrotoluene
330	U	bis(2-chloroethyl) ether	330	U	diethyl phthalate
5400		2-chlorophenol	330	U	4-chlorophenyl phenyl ether
330	U	1,3-dichlorobenzene	330	U	fluorene
2400		1,4-dichlorobenzene	1600	U	4-nitroaniline
330	U	benzyl alcohol	1600	U	4,6-dinitro-2-methylphenol
330	U	1,2-dichlorobenzene	330	U	n-nitrosodiphenylamine
330	U	2-methylphenol	330	U	4-bromophenyl phenyl ether
330	U	bis(2-chloroisopropyl) ether	330	U	hexachlorobenzene
330	U	4-methylphenol	9400		pentachlorophenol
3900		n-nitroso-di-n-propylamine	330	U	phenanthrene
330	U	hexachloroethane	330	U	anthracene
330	U	nitrobenzene	440		di-n-butyl phthalate
330	U	isophorone	330	U	fluoranthene
330	U	2-nitrophenol	1600	U	benzidine
330	U	2,4-dimethylphenol	2400		pyrene
1600	U	benzoic acid	330	U	butyl benzyl phthalate
330	U	bis(2-chloroethoxy) methane	660	U	3,3'-dichlorobenzidine
330	U	2,4-dichlorophenol	330	U	benzo(a)anthracene
2600		1,2,4-trichlorobenzene	330	U	bis(2-ethylhexyl) phthalate
330	U	naphthalene	330	U	chrysene
330	U	4-chloroaniline	330	U	di-n-octyl phthalate
330	U	hexachlorobutadiene	330	U	benzo(b)fluoranthene
5900		4-chloro-3-methylphenol	330	U	benzo(k)fluoranthene
330	U	2-methylnaphthalene	330	U	benzo(a)pyrene
330	U	hexachlorocyclopentadiene	330	U	indeno(1,2,3-cd)pyrene
330	U	2,4,6-trichlorophenol	330	U	dibenz(a,h)anthracene
1600	U	2,4,5-trichlorophenol	330	U	benzo(g,h,i)perylene
330	U	2-chloronaphthalene	SURROGATE % RECOVERY		
1600	U	2-nitroaniline	60		2-fluorophenol (SS1)
330	U	dimethyl phthalate	87		phenol-d5 (SS2)
330	U	acenaphthylene	67		nitrobenzene-d5 (SS3)
1600	U	3-nitroaniline	58		2-fluorobiphenyl
2400		acenaphthene	69		2,4,6-tribromophenol (SS5)
1600	U	2,4-dinitrophenol	70		p-terphenyl-d14 (SS6)
7100		4-nitrophenol			

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
indicates an estimated trace value.

ANALYST : [signature]

APPROVED BY : R. F. Carney

WESTON ANALYTICS
2720 LORRAINE AVE. SUITE 102
STOCKTON CA 95210 209 957-3485

SCIMS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8901S029-9MSD
CLIENT SAMPLE ID : 21734-8 MSD
REPORT DATE : 01-20-1989

CLIENT NAME : CH2M HILL
FILE ID : 89M28N0154
BLANK ID : 89M28N0152
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12/30/88
DATE RECEIVED : 01/17/89
DATE EXTRACTED : 12/13/88
DATE ANALYSED : 01/16/89

330	U	n-nitroso-dimethylamine	330	U	dibenzofuran
4900		phenol	2900		2,4-dinitrotoluene
330	U	aniline	33	J	2,6-dinitrotoluene
330	U	bis(2-chloroethyl) ether	330	U	diethyl phthalate
5400		2-chlorophenol	330	U	4-chlorophenyl phenyl ether
330	U	1,3-dichlorobenzene	330	U	fluorene
2300		1,4-dichlorobenzene	1600	U	4-nitroaniline
330	U	benzyl alcohol	1600	U	4,6-dinitro-2-methylphenol
330	U	1,2-dichlorobenzene	330	U	n-nitrosodiphenylamine
330	U	2-methylphenol	330	U	4-bromophenyl phenyl ether
330	U	bis(2-chloroisopropyl) ether	330	U	hexachlorobenzene
330	U	4-methylphenol	4000		pentachlorophenol
1900		n-nitroso-di-n-propylamine	330	U	phenanthrene
330	U	hexachloroethane	330	U	anthracene
330	U	nitrobenzene	330		di-n-butyl phthalate
330	U	isophorone	330	U	fluoranthene
330	U	2-nitrophenol	1600	U	benzidine
330	U	2,4-dimethylphenol	2400		pyrene
1600	J	benzoic acid	330	U	butyl benzyl phthalate
330	U	bis(2-chloroethoxy) methane	660	U	3,3'-dichlorobenzidine
330	U	2,4-dichlorophenol	330	U	benzo(a)anthracene
2600		1,2,4-trichlorobenzene	330	J	bis(2-ethylhexyl) phthalate
330	U	naphthalene	330	U	chrysene
330	U	4-chloroaniline	330	U	di-n-octyl phthalate
330	U	hexachlorobutadiene	330	U	benzo(b)fluoranthene
6100		4-chloro-3-methylphenol	330	U	benzo(k)fluoranthene
330	U	2-methylnaphthalene	330	U	benzo(a)pyrene
330	U	hexachlorocyclopentadiene	330	U	indeno(1,2,3-cd)pyrene
330	U	2,4,6-trichlorophenol	330	U	dibenz(a,h)anthracene
1600	U	2,4,5-trichlorophenol	330	U	benzo(g,h,i)perylene
330	U	2-chloronaphthalene	SURROGATE % RECOVERY		
1600	U	2-nitroaniline	52		2-fluorophenol (SS1)
330	U	dimethyl phthalate	59		phenol-d5 (SS2)
330	U	acenaphthylene	65		nitrobenzene-d5 (SS3)
1600	U	3-nitroaniline	65		2-fluorobiphenyl
2300		acenaphthene	66		2,4,6-tribromophenol (SS5)
1500	U	2,4-dinitrophenol	73		p-terphenyl-d14 (SS6)
7700		4-nitrophenol			

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : _____

APPROVED BY : R.F. Causey

C-CH HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21802-2MS
CLIENT SAMPLE ID : 0226-6
REPORT DATE : 01-25-1989

CLIENT NAME : BECHTEL SFE CHEM HILL/SAC
SAMPLE RECEIVED : 12-15-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-12-88
DATE EXTRACTED : 12-23-88
DATE ANALYSED : 1-23-89

660U	n-nitroso-diethylamine	660U	dibenzofuran
5900	phenol	2900	2,4-dinitrotoluene
660U	aniline	660U	2,6-dinitrotoluene
660U	bis(2-chloroethyl) ether	660U	diethyl phthalate
4600	2-chlorophenol	660U	4-chlorophenyl phenyl ether
660U	1,3-dichlorobenzene	660U	fluorene
1900	1,4-dichlorobenzene	3200U	4-nitroaniline
660U	benzyl alcohol	3200U	4,6-dinitro-2-methylphenol
660U	1,2-dichlorobenzene	660U	n-nitrosodiphenylamine
660U	2-methylphenol	660U	4-bromophenyl phenyl ether
660U	bis(2-chloroisopropyl) ether	660U	hexachlorobenzene
660U	4-methylphenol	5800	pentachlorophenol
1900	n-nitroso-di-n-propylamine	660U	phenanthrene
660U	hexachloroethane	660U	anthracene
660U	nitrobenzene	660U	di-n-butyl phthalate
660U	isophorone	660U	fluoranthene
660U	2-nitrophenol	3200U	benzidine
660U	2,4-dimethylphenol	3200	pyrene
3200U	benzoic acid	660U	butyl benzyl phthalate
660U	bis(2-chloroethoxy) methane	1300U	3,3'-dichlorobenzidine
660U	2,4-dichlorophenol	660U	benzo(a)anthracene
2200	1,2,4-trichlorobenzene	660U	bis(2-ethylhexyl)phthalate
660U	naphthalene	660U	chrysene
660U	4-chloroaniline	660U	di-n-octyl phthalate
660U	hexachlorobutadiene	660U	benzo(b)fluoranthene
4300	4-chloro-3-methylphenol	660U	benzo(k)fluoranthene
660U	2-methylnaphthalene	660U	benzo(a)pyrene
660U	hexachlorocyclopentadiene	660U	indeno(1,2,3-cd)pyrene
660U	2,4,6-trichlorophenol	660U	dibenz(a,h)anthracene
3200U	2,4,5-trichlorophenol	660U	benzo(g,h,i)perylene
660U	2-chloronaphthalene		SURROGATE % RECOVERY
3200U	2-nitroaniline	51	2-fluorophenol (SS1)
660U	dimethyl phthalate	71	phenol-d5 (SS2)
660U	acenaphthylene	70	nitrobenzene-d5 (SS3)
3200U	3-nitroaniline	77	2-fluorobiphenyl
2500	acenaphthene	85	2,4,6-tribromophenol (SS5)
3200U	2,4-dinitrophenol	94	p-terphenyl-d14 (SS6)
4700	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
indicates an estimated trace value.

ANALYST : Brian Glass

F-937

WED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2319 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21833-2MSD
CLIENT SAMPLE ID : 0225-6
REPORT DATE : 01-25-1989

CLIENT NAME : BEALE AFB CHOM HILL/SAC
SAMPLE RECEIVED : 12-13-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-12-88
DATE EXTRACTED : 12-22-88
DATE ANALYSED : 1-22-89

660U	n-nitroso-diethylamine	660U	dibenzofuran
6400	phenol	2900	2,4-dinitrotoluene
660U	aniline	660U	2,6-dinitrotoluene
660U	bis(2-chloroethyl) ether	660U	diethyl phthalate
5000	2-chlorophenol	660U	4-chlorophenyl phenyl ether
660U	1,3-dichlorobenzene	660U	fluorene
2400	1,4-dichlorobenzene	3200U	4-nitroaniline
660U	benzyl alcohol	3200U	4,6-dinitro-2-methylphenol
660U	1,2-dichlorobenzene	660U	n-nitrosodiphenylamine
660U	2-methylphenol	660U	4-bromophenyl phenyl ether
660U	bis(2-chloroisopropyl) ether	660U	hexachlorobenzene
660U	4-methylphenol	5600	pentachlorophenol
2000	n-nitroso-di-n-propylamine	660U	phenanthrene
660U	hexachloroethane	660U	anthracene
660U	nitrobenzene	660U	di-n-butyl phthalate
660U	isophorone	660U	fluoranthene
660U	2-nitrophenol	3200U	benzidine
660U	2,4-dimethylphenol	3200	pyrene
3200U	benzoic acid	660U	butyl benzyl phthalate
660U	bis(2-chloroethoxy) methane	1300U	3,3'-dichlorobenzidine
660U	2,4-dichlorophenol	660U	benzo(a)anthracene
2500	1,2,4-trichlorobenzene	660U	bis(2-ethylhexyl)phthalate
660U	naphthalene	660U	chrysene
660U	4-chloroaniline	660U	di-n-octyl phthalate
660U	hexachlorobutadiene	660U	benzo(b)fluoranthene
4600	4-chloro-3-methylphenol	660U	benzo(k)fluoranthene
660U	2-methylnaphthalene	660U	benzo(a)pyrene
660U	hexachlorocyclopentadiene	660U	indeno(1,2,3-cd)pyrene
660U	2,4,6-trichlorophenol	660U	dibenz(a,h)anthracene
1200U	2,4,5-trichlorophenol	660U	benzo(g,h,i)perylene
660U	2-chloronaphthalene		SURROGATE % RECOVERY
3200U	2-nitroaniline	56	2-fluorophenol (SS1)
660U	dimethyl phthalate	77	phenol-d5 (SS2)
660U	acenaphthylene	90	nitrobenzene-d5 (SS3)
1200U	3-nitroaniline	80	2-fluorobiphenyl
2600	acenaphthene	59	2,4,6-tribromophenol (SS5)
1200U	2,4-dinitrophenol	99	p-terphenyl-d14 (SS6)
4400	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Ellis

F-938

ED BY : _____

The information shown on this sheet is test data only, and no analysis or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2319 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 2184s-CMS
CLIENT SAMPLE ID : 0030
REPORT DATE : 01-26-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-14-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-13-88
DATE EXTRACTED : 12-27-88
DATE ANALYSED : 1-24-89

660U	n-nitroso-diethylamine
7200	phenol
660U	aniline
660U	bis(2-chloroethyl) ether
5900	2-chlorophenol
660U	1,3-dichlorobenzene
2600	1,4-dichlorobenzene
660U	benzyl alcohol
660U	1,2-dichlorobenzene
660U	2-methylphenol
660U	bis(2-chloroisopropyl) ether
660U	4-methylphenol
2000	n-nitroso-di-n-propylamine
660U	hexachloroethane
660U	nitrobenzene
660U	isophorone
660U	2-nitrophenol
660U	2,4-dimethylphenol
32000U	benzoic acid
660U	bis(2-chloroethoxy) methane
660U	2,4-dichlorophenol
2600	1,2,4-trichlorobenzene
660U	naphthalene
660U	4-chloroaniline
660U	hexachlorobutadiene
4900	4-chloro-3-methylphenol
660U	2-methylnaphthalene
660U	hexachlorocyclopentadiene
660U	2,4,6-trichlorophenol
32000U	2,4,5-trichlorophenol
660U	2-chloronaphthalene
32000U	2-nitroaniline
660U	dimethyl phthalate
660U	acenaphthylene
32000U	3-nitroaniline
2800	acenaphthene
32000U	2,4-dinitrophenol
5900	4-nitrophenol
660U	dibenzofuran
7100	2,4-dinitrotoluene
660U	2,6-dinitrotoluene
660U	diethyl phthalate
660U	4-chlorophenyl phenyl ether
660U	fluorene
32000U	4-nitroaniline
32000U	4,6-dinitro-2-methylphenol
660U	n-nitrosodiphenylamine
660U	4-bromophenyl phenyl ether
660U	hexachlorobenzene
5200	pentachlorophenol
660U	phenanthrene
660U	anthracene
500J	di-n-butyl phthalate
660U	fluoranthene
32000U	benzidine
3700	pyrene
660U	butyl benzyl phthalate
17000U	3,3'-dichlorobenzidine
660U	benzo(a)anthracene
660U	bis(2-ethylhexyl)phthalate
660U	chrysene
660U	di-n-octyl phthalate
660U	benzo(b)fluoranthene
660U	benzo(k)fluoranthene
660U	benzo(a)pyrene
660U	indeno(1,2,3-cd)pyrene
660U	dibenz(a,h)anthracene
660U	benzo(g,h,i)perylene

SURROGATE % RECOVERY

70	2-fluorophenol (SS1)
92	phenol-d5 (SS2)
91	nitrobenzene-d5 (SS3)
93	2-fluorobiphenyl
81	2,4,6-tribromophenol (SS5)
106	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for; but not detected.
The numerical value preceding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Allen

APPROVED BY : _____

The information shown on this sheet is test data only. No opinion or interpretation is intended or implied.

CH2M HILL ENVIRONMENTAL LABORATORY
2218 RAILROAD AVENUE
REDDING CA 96001 916-243-1735

SC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 21846-2MSD
CLIENT SAMPLE ID : 0230
REPORT DATE : 01-26-1989

CLIENT NAME : BEALE AFB CH2M HILL/SAC
SAMPLE RECEIVED : 12-14-88
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED : 12-13-88
DATE EXTRACTED : 12-27-88
DATE ANALYSED : 1-24-89

660U	n-nitroso-dimethylamine
660U	phenol
660U	aniline
660U	bis(2-chloroethyl) ether
5100	2-chlorophenol
660U	1,3-dichlorobenzene
2300	1,4-dichlorobenzene
660U	benzyl alcohol
660U	1,2-dichlorobenzene
660U	2-methylphenol
660U	bis(2-chloroisopropyl) ether
660U	4-methylphenol
1800	n-nitroso-di-n-propylamine
660U	hexachloroethane
660U	nitrobenzene
660U	isophorone
660U	2-nitrophenol
660U	2,4-dimethylphenol
3200U	benzoic acid
660U	bis(2-chloroethoxy) methane
660U	2,4-dichlorophenol
2300	1,2,4-trichlorobenzene
660U	naphthalene
660U	4-chloroaniline
660U	hexachlorobutadiene
4400	4-chloro-3-methylphenol
660U	2-methylnaphthalene
660U	hexachlorocyclopentadiene
660U	2,4,6-trichlorophenol
3200U	2,4,5-trichlorophenol
660U	2-chloronaphthalene
3200U	2-nitroaniline
660U	dimethyl phthalate
660U	acenaphthylene
3200U	3-nitroaniline
2500	acenaphthene
3200U	2,4-dinitrophenol
5400	4-nitrophenol
660U	dibenzofuran
2800	2,4-dinitrotoluene
660U	2,6-dinitrotoluene
660U	diethyl phthalate
660U	4-chlorophenyl phenyl ether
660U	fluorene
3200U	4-nitroaniline
3200U	4,6-dinitro-2-methylphenol
660U	n-nitrosodiphenylamine
660U	4-bromophenyl phenyl ether
660U	hexachlorobenzene
4700	pentachlorophenol
660U	phenanthrene
660U	anthracene
360J	di-n-butyl phthalate
660U	fluoranthene
3200U	benzidine
3200	pyrene
660U	butyl benzyl phthalate
1300U	3,3'-dichlorobenzidine
660U	benzo(a)anthracene
660U	bis(2-ethylhexyl)phthalate
660U	chrysene
660U	di-n-octyl phthalate
660U	benzo(b)fluoranthene
660U	benzo(k)fluoranthene
660U	benzo(a)pyrene
660U	indeno(1,2,3-cd)pyrene
660U	dibenz(a,h)anthracene
660U	benzo(g,h,i)perylene

SURROGATE % RECOVERY

60	2-fluorophenol (SS1)
79	phenol-d5 (SS2)
76	nitrobenzene-d5 (SS3)
81	2-fluorobiphenyl
66	2,4,6-tribromophenol (SS5)
89	p-terphenyl-d14 (SS6)

RESULT UNITS : ug/kg (micrograms per kilogram)

U = indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J = indicates an estimated trace value.

ANALYST : Brian Gelms

APPROVED BY : _____

The information shown on this sheet is test data or interpretation is intended or i

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: 21991-2MS
ent Sample ID: SOILSB_0303MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 01/18/89
Date Analyzed: 02/08/89
Dilution Factor: 2.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/KG		CAS Number		UG/KG	
62-75-9	N-Nitrosodimethylamine . .	660	U	51-28-5	2,4-Dinitrophenol	3200	U
108-95-2	Phenol	2800		100-02-7	4-Nitrophenol	2000	J
62-53-3	Aniline	660	U	132-64-9	Dibenzofuran	660	U
111-44-4	bis(2-Chloroethyl)Ether .	660	U	121-14-2	2,4-Dinitrotoluene	1800	
95-57-8	2-Chlorophenol	2900		84-66-2	Diethylphthalate	660	BU
541-73-1	1,3-Dichlorobenzene . . .	660	U	7005-72-3	4-Chlorophenyl-phenylether	660	U
106-46-7	1,4-Dichlorobenzene . . .	960		86-73-7	Fluorene	660	U
100-51-6	Benzyl Alcohol	660	U	100-01-6	4-Nitroaniline	3200	U
95-50-1	1,2-Dichlorobenzene . . .	660	U	534-52-1	4,6-Dinitro-2-methylphenol	3200	U
95-48-7	2-Methylphenol	660	U	86-30-6	N-Nitrosodiphenylamine (1)	660	BU
108-60-1	bis(2-Chloroisopropyl)Ether	660	U	122-66-7	1,2-Diphenylhydrazine . .	660	U
106-44-5	4-Methylphenol	660	U	101-55-3	4-Bromophenyl-phenylether	660	U
621-64-7	N-Nitroso-Di-n-Propylamine	930		118-74-1	Hexachlorobenzene	660	U
67-72-1	Hexachloroethane	660	U	87-86-5	Pentachlorophenol	2400	
98-95-3	Nitrobenzene	660	U	85-01-8	Phenanthrene	660	U
78-59-1	Isophorone	660	U	120-12-7	Anthracene	660	U
88-75-5	2-Nitrophenol	660	U	84-74-2	Di-n-Butylphthalate . . .	95	BJ
105-67-9	2,4-Dimethylphenol	660	U	206-44-0	Fluoranthene	660	U
65-85-0	Benzoic Acid	3200	U	129-00-0	Pyrene	2200	
111-91-1	bis(2-Chloroethoxy)Methane	660	U	85-68-7	Butylbenzylphthalate . . .	660	U
83-2	2,4-Dichlorophenol	660	U	91-94-1	3,3'-Dichlorobenzidine . .	1300	U
82-1	1,2,4-Trichlorobenzene . .	1100		56-55-3	Benzo(a)anthracene	660	U
91-20-3	Naphthalene	660	U	218-01-9	Chrysene	660	U
106-47-8	4-Chloroaniline	660	U	117-81-7	bis(2-Ethylhexyl)Phthalate	660	BU
87-68-3	Hexachlorobutadiene . . .	660	U	117-84-0	Di-n-octylphthalate . . .	660	U
59-50-7	4-Chloro-3-methylphenol .	2400		205-99-2	Benzo(b)fluoranthene . . .	660	U
91-57-6	2-Methylnaphthalene . . .	660	U	207-08-9	Benzo(k)fluoranthene . . .	660	U
77-47-4	Hexachlorocyclopentadiene	660	U	50-32-8	Benzo(a)pyrene	660	U
88-06-2	2,4,6-Trichlorophenol . .	660	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	660	U
95-95-4	2,4,5-Trichlorophenol . .	3200	U	53-70-3	Dibenz(a,h)Anthracene . .	660	U
91-58-7	2-Chloronaphthalene . . .	660	U	191-24-2	Benzo(g,h,i)perylene . . .	660	U
88-74-4	2-Nitroaniline	3200	U		----------		
131-11-3	Dimethyl Phthalate	660	U		Nitrobenzene-d5 - SS . . .	83	
208-96-8	Acenaphthylene	660	U		2-Fluorobiphenyl - SS . .	99	
606-20-2	2,6-Dinitrotoluene	660	U		Terphenyl-d14 - SS	130	
99-09-2	3-Nitroaniline	3200	U		Phenol-d5 - SS	71	
83-32-9	Acenaphthene	1500			2-Fluorophenol - SS . . .	130	
					2,4,6-Tribromophenol - SS	75	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

06

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 21991-2MSD
Client Sample ID: SOIL 0303MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 01/18/89
Date Analyzed: 02/08/
Dilution Factor: 2

SEMIVOLATILE COMPOUNDS

CAS Number		UG/KG		CAS Number		UG/KG	
62-75-9	N-Nitrosodimethylamine	660	U	51-28-5	2,4-Dinitrophenol	3200	U
108-95-2	Phenol	2500		100-02-7	4-Nitrophenol	2300	J
62-53-3	Aniline	660	U	132-64-9	Dibenzofuran	660	U
111-44-4	bis(2-Chloroethyl)Ether	660	U	121-14-2	2,4-Dinitrotoluene	1700	
95-57-8	2-Chlorophenol	2600		84-66-2	Diethylphthalate	660	BU
541-73-1	1,3-Dichlorobenzene	660	U	7005-72-3	4-Chlorophenyl-phenylether	660	U
106-46-7	1,4-Dichlorobenzene	1000		86-73-7	Fluorene	660	U
100-51-6	Benzyl Alcohol	660	U	100-01-6	4-Nitroaniline	3200	U
95-50-1	1,2-Dichlorobenzene	660	U	534-52-1	4,6-Dinitro-2-methylphenol	3200	U
95-48-7	2-Methylphenol	660	U	86-30-6	N-Nitrosodiphenylamine (1)	6[illegible]	BU
108-60-1	bis(2-Chloroisopropyl)Ether	660	U	122-66-7	1,2-Diphenylhydrazine	66	U
106-44-5	4-Methylphenol	660	U	101-55-3	4-Bromophenyl-phenylether	660	U
621-64-7	N-Nitroso-Di-n-Propylamine	780		118-74-1	Hexachlorobenzene	660	U
67-72-1	Hexachloroethane	660	U	87-86-5	Pentachlorophenol	2100	
98-95-3	Nitrobenzene	660	U	85-01-8	Phenanthrene	660	U
78-59-1	Isophorone	660	U	120-12-7	Anthracene	660	U
88-75-5	2-Nitrophenol	660	U	84-74-2	Di-n-Butylphthalate	160	BJ
105-67-9	2,4-Dimethylphenol	660	U	206-44-0	Fluoranthene	660	U
65-85-0	Benzoic Acid	3200	U	129-00-0	Pyrene	1700	
111-91-1	bis(2-Chloroethoxy)Methane	660	U	85-68-7	Butylbenzylphthalate	660	U
120-83-2	2,4-Dichlorophenol	660	U	91-94-1	3,3'-Dichlorobenzidine	1300	
120-82-1	1,2,4-Trichlorobenzene	1000		56-55-3	Benzo(a)anthracene	660	U
91-20-3	Naphthalene	660	U	218-01-9	Chrysene	660	U
106-47-8	4-Chloroaniline	660	U	117-81-7	bis(2-Ethylhexyl)Phthalate	660	BU
87-68-3	Hexachlorobutadiene	660	U	117-84-0	Di-n-octylphthalate	660	U
59-50-7	4-Chloro-3-methylphenol	2000		205-99-2	Benzo(b)fluoranthene	6[illegible]	
91-57-6	2-Methylnaphthalene	660	U	207-08-9	Benzo(k)fluoranthene	6[illegible]	
77-47-4	Hexachlorocyclopentadiene	660	U	50-32-8	Benzo(a)pyrene	66[illegible]	
88-06-2	2,4,6-Trichlorophenol	660	U	193-39-5	Indeno(1,2,3-cd)Pyrene	660	U
95-95-4	2,4,5-Trichlorophenol	3200	U	53-70-3	Dibenz(a,h)Anthracene	660	U
91-58-7	2-Chloronaphthalene	660	U	191-24-2	Benzo(g,h,i)perylene	660	U
88-74-4	2-Nitroaniline	3200	U				
131-11-3	Dimethyl Phthalate	660	U		Nitrobenzene-d5 - SS	71	
208-96-8	Acenaphthylene	660	U		2-Fluorobiphenyl - SS	82	
606-20-2	2,6-Dinitrotoluene	660	U		Terphenyl-d14 - SS	110	
99-09-2	3-Nitroaniline	3200	U		Phenol-d5 - SS	60	
83-32-9	Acenaphthene	1400			2-Fluorophenol - SS	55	
					2,4,6-Tribromophenol - SS	57	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
b Sample ID: 22002-2MS
.ient Sample ID: SOILS8-0369-3

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 01/19/89
Date Analyzed: 02/20/89
Dilution Factor: 2.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/KG		CAS Number		UG/KG	
62-75-9	N-Nitrosodimethylamine . .	660	U	51-28-5	2,4-Dinitrophenol	3200	U
108-95-2	Phenol	4500		100-02-7	4-Nitrophenol	4600	
62-53-3	Aniline	660	U	132-64-9	Dibenzofuran	660	U
111-44-4	bis(2-Chloroethyl)Ether .	660	U	121-14-2	2,4-Dinitrotoluene	2500	
95-57-8	2-Chlorophenol	4700		84-66-2	Diethylphthalate	660	U
541-73-1	1,3-Dichlorobenzene . . .	660	U	7005-72-3	4-Chlorophenyl-phenylether	660	U
106-46-7	1,4-Dichlorobenzene . . .	890		86-73-7	Fluorene	660	U
100-51-6	Benzyl Alcohol	660	U	100-01-6	4-Nitroaniline	3200	U
95-50-1	1,2-Dichlorobenzene . . .	660	U	534-52-1	4,6-Dinitro-2-methylphenol	3200	U
95-48-7	2-Methylphenol	660	U	86-30-6	N-Nitrosodiphenylamine (1)	660	U
108-60-1	bis(2-Chloroisopropyl)Ether	660	U	122-66-7	1,2-Diphenylhydrazine . .	660	U
106-44-5	4-Methylphenol	660	U	101-55-3	4-Bromophenyl-phenylether	660	U
621-64-7	N-Nitroso-Di-n-Propylamine	1800		118-74-1	Hexachlorobenzene	660	U
67-72-1	Hexachloroethane	660	U	87-86-5	Pentachlorophenol	4700	
98-95-3	Nitrobenzene	660	U	85-01-8	Phenanthrene	660	U
78-59-1	Isophorone	660	U	120-12-7	Anthracene	660	U
88-75-5	2-Nitrophenol	660	U	84-74-2	Di-n-Butylphthalate . . .	660	BU
105-67-9	2,4-Dimethylphenol	660	U	206-44-0	Fluoranthene	660	U
65-85-0	Benzoic Acid	3200	U	129-00-0	Pyrene	3400	
111-91-1	bis(2-Chloroethoxy)Methane	660	U	85-68-7	Butylbenzylphthalate . . .	660	U
)-83-2	2,4-Dichlorophenol	660	U	91-94-1	3,3'-Dichlorobenzidine . .	1300	U
120-82-1	1,2,4-Trichlorobenzene . .	1400		56-55-3	Benzo(a)anthracene	660	U
91-20-3	Naphthalene	660	U	218-01-9	Chrysene	660	U
106-47-8	4-Chloroaniline	660	U	117-81-7	bis(2-Ethylhexyl)Phthalate	660	BU
87-68-3	Hexachlorobutadiene . . .	660	U	117-84-0	Di-n-octylphthalate . . .	660	U
59-50-7	4-Chloro-3-methylphenol .	4500		205-99-2	Benzo(b)fluoranthene . . .	660	U
91-57-6	2-Methylnaphthalene . . .	660	U	207-08-9	Benzo(k)fluoranthene . . .	660	U
77-47-4	Hexachlorocyclopentadiene	660	U	50-32-8	Benzo(a)pyrene	660	U
88-06-2	2,4,6-Trichlorophenol . .	660	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	660	U
95-95-4	2,4,5-Trichlorophenol . .	3200	U	53-70-3	Dibenz(a,h)Anthracene . .	660	U
91-58-7	2-Chloronaphthalene . . .	660	U	191-24-2	Benzo(g,h,i)perylene . . .	660	U
88-74-4	2-Nitroaniline	3200	U		----------		
131-11-3	Dimethyl Phthalate	660	U		Nitrobenzene-d5 - SS . . .	62	
208-96-8	Acenaphthylene	660	U		2-Fluorobiphenyl - SS . .	68	
606-20-2	2,6-Dinitrotoluene	660	U		Terphenyl-d14 - SS	98	
99-09-2	3-Nitroaniline	3200	U		Phenol-d5 - SS	68	
83-32-9	Acenaphthene	2500			2-Fluorophenol - SS . . .	58	
					2,4,6-Tribromophenol - SS	66	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

86

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 22002-2MSD
Client Sample ID: SOILSB-0369-3

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 01/19/90
Date Analyzed: 02/20
Dilution Factor: 2

SEMIVOLATILE COMPOUNDS

CAS Number		UG/KG		CAS Number		UG/KG	
62-75-9	N-Nitrosodimethylamine	660	U	51-28-5	2,4-Dinitrophenol	3200	U
108-95-2	Phenol	4900		100-02-7	4-Nitrophenol	5200	
62-53-3	Aniline	660	U	132-64-9	Dibenzofuran	660	U
111-44-4	bis(2-Chloroethyl)Ether	660	U	121-14-2	2,4-Dinitrotoluene	2600	-
95-57-8	2-Chlorophenol	5200		84-66-2	Diethylphthalate	660	U
541-73-1	1,3-Dichlorobenzene	660	U	7005-72-3	4-Chlorophenyl-phenyl	660	U
106-46-7	1,4-Dichlorobenzene	1600		86-73-7	Fluorene	660	U
100-51-6	Benzyl Alcohol	660	U	100-01-6	4-Nitroaniline	3200	U
95-50-1	1,2-Dichlorobenzene	660	U	534-52-1	4,6-Dinitro-2-methylphenol	3200	U
95-48-7	2-Methylphenol	660	U	86-30-6	N-Nitrosodiphenylamine (1)	660	U
108-60-1	bis(2-Chloroisopropyl)Ether	660	U	122-66-7	1,2-Diphenylhydrazine	660	U
106-44-5	4-Methylphenol	660	U	101-55-3	4-Bromophenyl-phenylether	660	U
621-64-7	N-Nitroso-Di-n-Propylamine	1800		118-74-1	Hexachlorobenzene	660	U
67-72-1	Hexachloroethane	660	U	87-86-5	Pentachlorophenol	4900	
98-95-3	Nitrobenzene	660	U	85-01-8	Phenanthrene	660	U
78-59-1	Isophorone	660	U	120-12-7	Anthracene	660	U
88-75-5	2-Nitrophenol	660	U	84-74-2	Di-n-Butylphthalate	660	BU
105-67-9	2,4-Dimethylphenol	660	U	206-44-0	Fluoranthene	660	U
65-85-0	Benzoic Acid	3200	U	129-00-0	Pyrene	3000	
111-91-1	bis(2-Chloroethoxy)Methane	660	U	85-68-7	Butylbenzylphthalate	660	
120-83-2	2,4-Dichlorophenol	660	U	91-94-1	3,3'-Dichlorobenzidine	1300	
120-82-1	1,2,4-Trichlorobenzene	2000		56-55-3	Benzo(a)anthracene	660	U
91-20-3	Naphthalene	660	U	218-01-9	Chrysene	660	U
106-47-8	4-Chloroaniline	660	U	117-81-7	bis(2-Ethylhexyl)Phthalate	660	BU
87-68-3	Hexachlorobutadiene	660	U	117-84-0	Di-n-octylphthalate	660	U
59-50-7	4-Chloro-3-methylphenol	4700		205-99-2	Benzo(b)fluoranthene	660	U
91-57-6	2-Methylnaphthalene	660	U	207-08-9	Benzo(k)fluoranthene	660	U
77-47-4	Hexachlorocyclopentadiene	660	U	50-32-8	Benzo(a)pyrene	660	U
88-06-2	2,4,6-Trichlorophenol	660	U	193-39-5	Indeno(1,2,3-cd)Pyrene	660	U
95-95-4	2,4,5-Trichlorophenol	3200	U	53-70-3	Dibenz(a,h)Anthracene	660	U
91-58-7	2-Chloronaphthalene	660	U	191-24-2	Benzo(g,h,i)perylene	660	U
88-74-4	2-Nitroaniline	3200	U				
131-11-3	Dimethyl Phthalate	660	U		Nitrobenzene-d5 - SS	71	
208-96-8	Acenaphthylene	660	U		2-Fluorobiphenyl - SS	69	
606-20-2	2,6-Dinitrotoluene	660	U		Terphenyl-d14 - SS	86	
99-09-2	3-Nitroaniline	3200	U		Phenol-d5 - SS	72	
83-32-9	Acenaphthene	2600			2-Fluorophenol - SS	61	
					2,4,6-Tribromophenol - SS	62	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 22144-5MS
Client Sample ID: SOIL-0423MS

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 01/26/89
Date Analyzed: 02/23/89
Dilution Factor: 2.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/KG		CAS Number		UG/KG	
62-75-9	N-Nitrosodimethylamine	660	U	51-28-5	2,4-Dinitrophenol	3200	U
108-95-2	Phenol	2200		100-02-7	4-Nitrophenol	2300	J
62-53-3	Aniline	660	U	132-64-9	Dibenzofuran	660	U
111-44-4	bis(2-Chloroethyl)Ether	660	U	121-14-2	2,4-Dinitrotoluene	1200	
95-57-8	2-Chlorophenol	2200		84-66-2	Diethylphthalate	660	U
541-73-1	1,3-Dichlorobenzene	660	U	7005-72-3	4-Chlorophenyl-phenylether	660	U
106-46-7	1,4-Dichlorobenzene	940		86-73-7	Fluorene	660	U
100-51-6	Benzyl Alcohol	660	U	100-01-6	4-Nitroaniline	3200	U
95-50-1	1,2-Dichlorobenzene	660	U	534-52-1	4,6-Dinitro-2-methylphenol	3200	U
95-48-7	2-Methylphenol	660	U	86-30-6	N-Nitrosodiphenylamine (1)	660	BU
108-60-1	bis(2-Chloroisopropyl)Ether	660	U	122-66-7	1,2-Diphenylhydrazine	660	U
106-44-5	4-Methylphenol	660	U	101-55-3	4-Bromophenyl-phenylether	660	U
621-64-7	N-Nitroso-Di-n-Propylamine	690		118-74-1	Hexachlorobenzene	660	U
67-72-1	Hexachloroethane	660	U	87-86-5	Pentachlorophenol	2100	
98-95-3	Nitrobenzene	660	U	85-01-8	Phenanthrene	660	U
78-59-1	Isophorone	660	U	120-12-7	Anthracene	660	U
88-75-5	2-Nitrophenol	660	U	84-74-2	Di-n-Butylphthalate	660	U
105-67-9	2,4-Dimethylphenol	660	U	206-44-0	Fluoranthene	660	U
65-85-0	Benzoic Acid	3200	U	129-00-0	Pyrene	1400	
111-91-1	bis(2-Chloroethoxy)Methane	660	U	85-68-7	Butylbenzylphthalate	660	U
120-83-2	2,4-Dichlorophenol	660	U	91-94-1	3,3'-Dichlorobenzidine	1300	U
120-82-1	1,2,4-Trichlorobenzene	930		56-55-3	Benzo(a)anthracene	660	U
91-20-3	Naphthalene	660	U	218-01-9	Chrysene	660	U
106-47-8	4-Chloroaniline	660	U	117-81-7	bis(2-Ethylhexyl)Phthalate	660	U
87-68-3	Hexachlorobutadiene	660	U	117-84-0	Di-n-octylphthalate	660	U
59-50-7	4-Chloro-3-methylphenol	2100		205-99-2	Benzo(b)fluoranthene	660	U
91-57-6	2-Methylnaphthalene	660	U	207-08-9	Benzo(k)fluoranthene	660	U
77-47-4	Hexachlorocyclopentadiene	660	U	50-32-8	Benzo(a)pyrene	660	U
88-06-2	2,4,6-Trichlorophenol	660	U	193-39-5	Indeno(1,2,3-cd)Pyrene	660	U
95-95-4	2,4,5-Trichlorophenol	3200	U	53-70-3	Dibenz(a,h)Anthracene	660	U
91-58-7	2-Chloronaphthalene	660	U	191-24-2	Benzo(g,h,i)perylene	660	U
88-74-4	2-Nitroaniline	3200	U				
131-11-3	Dimethyl Phthalate	660	U		Nitrobenzene-d5 - SS	59	
208-96-8	Acenaphthylene	660	U		2-Fluorobiphenyl - SS	64	
606-20-2	2,6-Dinitrotoluene	660	U		Terphenyl-d14 - SS	75	
99-09-2	3-Nitroaniline	3200	U		Phenol-d5 - SS	63	
83-32-9	Acenaphthene	1100			2-Fluorophenol - SS	55	
					2,4,6-Tribromophenol - SS	57	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

B6

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 22144-5MSD
Client Sample ID: SOIL-0423MSD

Concentration: LOW
Sample Matrix: SOIL
Percent Moisture: _____

Date Extracted: 01/26/89
Date Analyzed: 02/23/
Dilution Factor: 2

SEMIVOLATILE COMPOUNDS

CAS Number		UG/KG		CAS Number		UG/KG	
62-75-9	N-Nitrosodimethylamine	660	U	51-28-5	2,4-Dinitrophenol	3200	U
108-95-2	Phenol	2500		100-02-7	4-Nitrophenol	2600	J
62-53-3	Aniline	660	U	132-64-9	Dibenzofuran	660	U
111-44-4	bis(2-Chloroethyl)Ether	660	U	121-14-2	2,4-Dinitrotoluene	1300	
95-57-8	2-Chlorophenol	2700		84-66-2	Diethylphthalate	660	U
541-73-1	1,3-Dichlorobenzene	660	U	7005-72-3	4-Chlorophenyl-phenylether	660	U
106-46-7	1,4-Dichlorobenzene	1100		86-73-7	Fluorene	660	U
100-51-6	Benzyl Alcohol	660	U	100-01-6	4-Nitroaniline	3200	U
95-50-1	1,2-Dichlorobenzene	660	U	534-52-1	4,6-Dinitro-2-methylphenol	3200	U
95-48-7	2-Methylphenol	660	U	86-30-6	N-Nitrosodiphenylamine (1)	660	BU
108-60-1	bis(2-Chloroisopropyl)Ether	660	U	122-66-7	1,2-Diphenylhydrazine	660	U
106-44-5	4-Methylphenol	660	U	101-55-3	4-Bromophenyl-phenylether	660	U
621-64-7	N-Nitroso-Di-n-Propylamine	820		118-74-1	Hexachlorobenzene	660	U
67-72-1	Hexachloroethane	660	U	87-86-5	Pentachlorophenol	2300	
98-95-3	Nitrobenzene	660	U	85-01-8	Phenanthrene	660	U
78-59-1	Isophorone	660	U	120-12-7	Anthracene	660	U
88-75-5	2-Nitrophenol	660	U	84-74-2	Di-n-Butylphthalate	660	U
105-67-9	2,4-Dimethylphenol	660	U	206-44-0	Fluoranthene	660	U
65-85-0	Benzoic Acid	3200	U	129-00-0	Pyrene	1400	
111-91-1	bis(2-Chloroethoxy)Methane	660	U	85-68-7	Butylbenzylphthalate	660	"
120-83-2	2,4-Dichlorophenol	660	U	91-94-1	3,3'-Dichlorobenzidine	1300	
120-82-1	1,2,4-Trichlorobenzene	1100		56-55-3	Benzo(a)anthracene	660	
91-20-3	Naphthalene	660	U	218-01-9	Chrysene	660	U
106-47-8	4-Chloroaniline	660	U	117-81-7	bis(2-Ethylhexyl)Phthalate	660	U
87-68-3	Hexachlorobutadiene	660	U	117-84-0	Di-n-octylphthalate	660	U
59-50-7	4-Chloro-3-methylphenol	2400		205-99-2	Benzo(b)fluoranthene	660	U
91-57-6	2-Methylnaphthalene	660	U	207-08-9	Benzo(k)fluoranthene	660	U
77-47-4	Hexachlorocyclopentadiene	660	U	50-32-8	Benzo(a)pyrene	660	U
88-06-2	2,4,6-Trichlorophenol	660	U	193-39-5	Indeno(1,2,3-cd)Pyrene	660	U
95-95-4	2,4,5-Trichlorophenol	3200	U	53-70-3	Dibenz(a,h)Anthracene	660	U
91-58-7	2-Chloronaphthalene	660	U	191-24-2	Benzo(g,h,i)perylene	660	U
88-74-4	2-Nitroaniline	3200					
131-11-3	Dimethyl Phthalate	660	J		Nitrobenzene-d5 - SS	70	
208-96-8	Acenaphthylene	660	U		2-Fluorobiphenyl - SS	72	
606-20-2	2,6-Dinitrotoluene	660	U		Terphenyl-d14 - SS	81	
99-09-2	3-Nitroaniline	3200	U		Phenol-d5 - SS	72	
83-32-9	Acenaphthene	1200			2-Fluorophenol - SS	67	
					2,4,6-Tribromophenol - SS	63	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER 890'SC16-13
CLIENT SAMPLE ID 21740-9 MS
REPORT DATE 01-27-1989

CLIENT NAME . CH2M HILL
FILE ID . 89M28N0211
BLANK ID
SAMPLE TYPE SOIL/SEDIMENT SOLIDS

DATE SAMPLED
DATE RECEIVED 01/30/89
DATE EXTRACTED
DATE ANALYSED 01/23/89

330	U	n-nitrosodimethylamine	330	U	dibenzofuran
4700		phenol	3900		2,4-dinitrotoluene
330	U	aniline	330	U	2,6-dinitrotoluene
330	U	bis(2-chloroethyl) ether	330	U	diethyl phthalate
4400		2-chlorophenol	330	U	4-chlorophenyl phenyl ether
330	U	1,3-dichlorobenzene	330	U	fluorene
2400		1,4-dichlorobenzene	1600	U	4-nitroaniline
330	U	benzyl alcohol	1600	U	4,6-dinitro-2-methylphenol
330	U	1,2-dichlorobenzene	330	U	n-nitrosodiphenylamine
330	U	2-methylphenol	330	U	4-bromophenyl phenyl ether
330	U	bis(2-chloroisopropyl) ether	330	U	hexachlorobenzene
330	U	4-methylphenol	8200		pentachlorophenol
2000		n-nitroso-di-n-propylamine	330	U	phenanthrene
330	U	hexachloroethane	330	U	anthracene
330	U	nitrobenzene	81	U	di-n-butyl phthalate
330	U	isophorone	330	U	fluoranthene
330	U	2-nitrophenol	1600	U	benzidine
330	U	2,4-dimethylphenol	2600		pyrene
1600	U	benzoic acid	330	U	butyl benzyl phthalate
330	U	bis(2-chloroethoxy) methane	660	U	3,3'-dichlorobenzidine
330	U	2,4-dichlorophenol	330	U	benzo(a) anthracene
3200		1,2,4-trichlorobenzene	120	U	bis(2-ethylhexyl) phthalate
330	U	naphthalene	330	U	chrysene
330	U	4-chloroaniline	330	U	di-n-octyl phthalate
330	U	hexachlorobutadiene	330	U	benzo(b)fluoranthene
5400		4-chloro-3-methylphenol	330	U	benzo(k)fluoranthene
330	U	2-methylnaphthalene	330	U	benzo(a)pyrene
330	U	hexachlorocyclopentadiene	330	U	indeno(1,2,3-cd)pyrene
330	U	2,4,6-trichlorophenol	330	U	dibenz(a,h)anthracene
1600	U	2,4,5-trichlorophenol	330	U	benzo(g,h,i)perylene
330	U	2-chloronaphthalene	SURROGATE % RECOVERY		
1600	U	2-nitroaniline	72		2-fluorophenol (SS1)
330	U	dimethyl phthalate	76		phenol-d5 (SS2)
330	U	acenaphthylene	75		nitrobenzene-d5 (SS3)
1600	U	3-nitroaniline	63		2-fluorobiphenyl
2600		acenaphthene	97		2,4,6-tribromophenol (SS5)
1600	U	2,4-dinitrophenol	75		p-terphenyl-d14 (SS6)
7000		4-nitrophenol			

RESULT UNITS ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR 1

U : Indicates the compound was analysed for, but not detected.
The numerical value preceeding "U" is the limit of detection for that compound, based on dilution.
J indicates an estimated trace value

ANALYST [signature]

APPROVED BY R.F. Comley

0150

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 9901S036-20
CLIENT SAMPLE ID : 21740-9XSD
REPORT DATE : 01-27-1989

CLIENT NAME : CH2M HILL
FILE ID : 89M28N0212
BLANK ID :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01/19/89
DATE EXTRACTED :
DATE ANALYSED : 01/23/89

330	U	n-nitroso-dimethylamine	330	U	dibenzofuran
4400		phenol	3700		2,4-dinitrotoluene
330	U	aniline	330	U	2,6-dinitrotoluene
330	U	bis(2-chloroethyl) ether	330	U	diethyl phthalate
4500		2-chlorophenol	330	U	4-chlorophenyl phenyl ether
330	U	1,3-dichlorobenzene	330	U	fluorene
2400		1,4-dichlorobenzene	1600	U	4-nitroaniline
330	U	benzyl alcohol	1600	U	4,6-dinitro-2-methylphenol
330	U	1,2-dichlorobenzene	330	U	n-nitrosodiphenylamine
330	U	2-methylphenol	330	U	4-bromophenyl phenyl ether
330	U	bis(2-chloroisopropyl) ether	330	U	hexachlorobenzene
330	U	4-methylphenol	8000		pentachlorophenol
2000		n-nitroso-di-n-propylamine	330	U	phenanthrene
330	U	hexachloroethane	330	U	anthracene
330	U	nitrobenzene	170	J	di-n-butyl phthalate
330	U	isophorone	330	U	fluoranthene
330	U	2-nitrophenol	1600	U	benzidine
330	U	2,4-dimethylphenol	2300		pyrene
1600	U	benzoic acid	330	U	butyl benzyl phthalate
330	U	bis(2-chloroethoxy) methane	660	U	3,3'-dichlorobenzidine
330	U	2,4-dichlorophenol	330	U	benzo(a)anthracene
3000		1,2,4-trichlorobenzene	140	J	bis(2-ethylhexyl) phthalate
330	U	naphthalene	330	U	chrysene
330	U	4-chloroaniline	330	U	di-n-octyl phthalate
330	U	hexachlorobutadiene	330	U	benzo(b)fluoranthene
6400		4-chloro-3-methylphenol	330	U	benzo(k)fluoranthene
330	U	2-methylnaphthalene	330	U	benzo(a)pyrene
330	U	hexachlorocyclopentadiene	330	U	indeno(1,2,3-cd)pyrene
330	U	2,4,6-trichlorophenol	330	U	dibenz(a,h)anthracene
1600	U	2,4,5-trichlorophenol	330	U	benzo(g,h,i)perylene
330	U	2-chloronaphthalene	SURROGATE % RECOVERY		
1600	U	2-nitroaniline	76		2-fluorophenol (SS1)
330	U	dimethyl phthalate	82		phenol-d5 (SS2)
330	U	acenaphthylene	73		nitrobenzene-d5 (SS3)
1600	U	3-nitroaniline	69		2-fluorobiphenyl
2600		acenaphthene	82		2,4,6-tribromophenol (SS5)
1600	U	2,4-dinitrophenol	67		p-terphenyl-d14 (SS6)
7100		4-nitrophenol			

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : _____ F-948 QVSD BY : R. F. Caney

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 9901S030-19
CLIENT SAMPLE ID : 21005-6 MS
REPORT DATE : 01-30-1989

CLIENT NAME : CH2M HILL
FILE ID : 89M30N0210
BLANK ID :
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01/19/89
DATE EXTRACTED : 12/21/88
DATE ANALYSED : 01/23/89

330	U	n-nitroso-diethylamine	330	U	dibenzofuran
6400		phenol	2400		2,4-dinitrotoluene
330	U	aniline	330	U	2,6-dinitrotoluene
330	U	bis(2-chloroethyl) ether	330	U	diethyl phthalate
4600		2-chlorophenol	330	U	4-chlorophenyl phenyl ether
330	U	1,3-dichlorobenzene	330	U	fluorene
1700		1,4-dichlorobenzene	1600	U	4-nitroaniline
330	U	benzyl alcohol	1600	U	4,6-dinitro-2-methylphenol
330	U	1,2-dichlorobenzene	330	U	n-nitrosodiphenylamine
330	U	2-methylphenol	330	U	4-bromophenyl phenyl ether
330	U	bis(2-chloroisopropyl) ether	330	U	hexachlorobenzene
330	U	4-methylphenol	4600		pentachlorophenol
1300		n-nitroso-di-n-propylamine	330	U	phenanthrene
330	U	hexachloroethane	330	U	anthracene
330	U	nitrobenzene	81	J	di-n-butyl phthalate
330	U	isophorone	330	U	fluoranthene
330	U	2-nitrophenol	1600	U	benzidine
330	U	2,4-dimethylphenol	3000		pyrene
1600	U	benzoic acid	330	U	butyl benzyl phthalate
330	U	bis(2-chloroethoxy) methane	660	U	3,3'-dichlorobenzidine
330	U	2,4-dichlorophenol	330	U	benzo(a)anthracene
1900		1,2,4-trichlorobenzene	130	J	bis(2-ethylhexyl)phthalate
330	U	naphthalene	330	U	chrysene
330	U	4-chloroaniline	330	U	di-n-octyl phthalate
330	U	hexachlorobutadiene	330	U	benzo(b)fluoranthene
5000		4-chloro-3-methylphenol	330	U	benzo(k)fluoranthene
330	U	2-methylnaphthalene	330	U	benzo(a)pyrene
330	U	hexachlorocyclopentadiene	330	U	indeno(1,2,3-cd)pyrene
330	U	2,4,6-trichlorophenol	330	U	dibenz(a,h)anthracene
1600	U	2,4,5-trichlorophenol	330	U	benzo(g,h,i)perylene
330	U	2-chloronaphthalene	SURROGATE % RECOVERY		
1600	U	2-nitroaniline	70		2-fluorophenol (SS1)
330	U	dimethyl phthalate	69		phenol-d5 (SS2)
330	U	acenaphthylene	55		nitrobenzene-d5 (SS3)
1600	U	3-nitroaniline	61		2-fluorobiphenyl
2500		acenaphthene	80		2,4,6-tribromophenol (SS5)
1600	U	2,4-dinitrophenol	87		p-terphenyl-d14 (SS6)
3900		4-nitrophenol			

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
indicates an estimated trace value.

ANALYST : _____ F-949 R.F. Carney

WESTON ANALYTICS
7720 LORRAINE AV. #105
STOCKTON CA 95210 209 957-3405

GC/MS SEMI-VOLATILE ORGANICS ANALYSIS

LAB REFERENCE NUMBER : 8901S038-~~15~~20
CLIENT SAMPLE ID : 21005-0 MSD
REPORT DATE : 01-30-1989

02/04/89
BC

CLIENT NAME : CH2M HILL
FILE ID : 99M38N0211
BLANK ID : .
SAMPLE TYPE : SOIL/SEDIMENT/SOLIDS

DATE SAMPLED :
DATE RECEIVED : 01/19/89
DATE EXTRACTED : 12/21/88
DATE ANALYSED : 01/23/89

330 U	n-nitroso-dimethylamine	330 U	dibenzofuran
5900	phenol	2200	2,4-dinitrotoluene
330 U	aniline	330 U	2,6-dinitrotoluene
330 U	bis(2-chloroethyl) ether	330 U	diethyl phthalate
4200	2-chlorophenol	330 U	4-chlorophenyl phenyl ether
330 U	1,3-dichlorobenzene	330 U	fluorene
1500	1,4-dichlorobenzene	1600 U	4-nitroaniline
330 U	benzyl alcohol	1600 U	4,6-dinitro-2-methylphenol
330 U	1,2-dichlorobenzene	330 U	n-nitrosodiphenylamine
330 U	2-methylphenol	330 U	4-bromophenyl phenyl ether
330 U	bis(2-chloroisopropyl) ether	330 U	hexachlorobenzene
330 U	4-methylphenol	4200	pentachlorophenol
1300	n-nitroso-di-n-propylamine	330 U	phenanthrene
330 U	hexachloroethane	330 U	anthracene
330 U	nitrobenzene	63 J	di-n-butyl phthalate
330 U	isophorone	330 U	fluoranthene
330 U	2-nitrophenol	1600 U	benzidine
330 U	2,4-dimethylphenol	2700	pyrene
1600 U	benzoic acid	330 U	butyl benzyl phthalate
330 U	bis(2-chloroethoxy) methane	660 U	3,3'-dichlorobenzidine
330 U	2,4-dichlorophenol	330 U	benzo(a)anthracene
1700	1,2,4-trichlorobenzene	120 J	bis(2-ethylhexyl)phthalate
330 U	naphthalene	330 U	chrysene
330 U	4-chloroaniline	330 U	di-n-octyl phthalate
330 U	hexachlorobutadiene	330 U	benzo(b)fluoranthene
4500	4-chloro-3-methylphenol	330 U	benzo(k)fluoranthene
330 U	2-methylnaphthalene	330 U	benzo(a)pyrene
330 U	hexachlorocyclopentadiene	330 U	indeno(1,2,3-cd)pyrene
330 U	2,4,6-trichlorophenol	330 U	dibenz(a,h)anthracene
1600 U	2,4,5-trichlorophenol	330 U	benzo(g,h,i)perylene
330 U	2-chloronaphthalene		SURROGATE % RECOVERY
1600 U	2-nitroaniline	58	2-fluorophenol (SS1)
330 U	dimethyl phthalate	60	phenol-d5 (SS2)
330 U	acenaphthylene	47	nitrobenzene-d5 (SS3)
1600 U	3-nitroaniline	54	2-fluorobiphenyl
2300	acenaphthene	73	2,4,6-tribromophenol (SS5)
1600 U	2,4-dinitrophenol	76	p-terphenyl-d14 (SS6)
3900	4-nitrophenol		

RESULT UNITS : ug/kg (micrograms per kilogram)
Results reported on a wet weight basis.

DILUTION FACTOR : 1

U : indicates the compound was analysed for, but not detected.
The numerical value preceeding 'U' is the limit of detection for that compound, based on dilution.
J : indicates an estimated trace value.

ANALYST : [signature]

F-950

[signature]

ORGANICS ANALYSIS DATA SHEET

oratory Name: CH2M Hill
Sample ID: 22421-2-MS
Client Sample ID: 0442-MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 02/23/89
Date Analyzed: 03/08/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/L		CAS Number		UG/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	100		100-02-7	4-Nitrophenol	160	
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	62	
95-57-8	2-Chlorophenol	110		84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	48		86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	38		118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	150	
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	71	
-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	49		56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	130		205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	53	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	57	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	67	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	49	
83-32-9	Acenaphthene	60			2-Fluorophenol - SS . . .	38	
					2,4,6-Tribromophenol - SS	61	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
- Surrogate Standard reported as percent recovery.

BL

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 22421-2-MSD
Client Sample ID: 0442-MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 02/23/8°
Date Analyzed: 03/08/8
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/L		CAS Number		UG/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	120		100-02-7	4-Nitrophenol	180	
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	79	
95-57-8	2-Chlorophenol	120		84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	70		86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	43		118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	150	
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	78	
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	66		56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	140		205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	73	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	70	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	61	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	54	
83-32-9	Acenaphthene	73			2-Fluorophenol - SS . . .	43	
					2,4,6-Tribromophenol - SS	60	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

UG

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

atory Name: CH2M Hill
ab Sample ID: 22601-1MS
lient Sample ID: 0476-MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 03/13/89
Date Analyzed: 03/21/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		UG/L		CAS Number		UG/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	120	-	100-02-7	4-Nitrophenol	130	
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	71	
5-57-8	2-Chlorophenol	140		84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	71		7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	55		118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	160	
8-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
8-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
8-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5 0	Benzoic Acid	50	U	129-00-0	Pyrene	95	
1 1-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	67		56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	6	J
7-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	130		205-99-2	Benzo(b)fluoranthene . . .	10	U
1-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
7-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
3-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
5-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
1-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
3-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	66	
08-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	67	
06-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	87	
9-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	67	
3-32-9	Acenaphthene	72			2-Fluorophenol - SS . . .	63	
					2,4,6-Tribromophenol - SS	76	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
Reported value less than quantitation limit.
Surrogate Standard reported as percent recovery.

CH2MHILL Redding Environmental Laboratory F-953 Avenue, P O Box 2088 916 243 5831

Engineers
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Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 22601-1MSD
Client Sample ID: 0476-MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 03/13/8
Date Analyzed: 03/21/8
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		UG/L		CAS Number		UG/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
108-95-2	Phenol	100		100-02-7	4-Nitrophenol	97	
62-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	70	
95-57-8	2-Chlorophenol	110		84-66-2	Diethylphthalate	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
106-46-7	1,4-Dichlorobenzene . . .	67		86-73-7	Fluorene	10	U
100-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
39638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
106-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	51		118-74-1	Hexachlorobenzene	10	U
67-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	110	
98-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
78-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
88-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
105-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
65-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	95	
111-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
120-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-82-1	1,2,4-Trichlorobenzene . .	67		56-55-3	Benzo(a)anthracene	10	U
91-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
106-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	6	J
77-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	100		205-99-2	Benzo(b)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
88-74-4	2-Nitroaniline	50	U		----------		
131-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	64	
208-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	66	
606-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	80	
99-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	58	
83-32-9	Acenaphthene	71			2-Fluorophenol - SS . . .	50	
					2,4,6-Tribromophenol - SS	60	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory [illegible] Road Avenue, P.O. Box 2088 California 96001 916.243.5831

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ORGANICS ANALYSIS DATA SHEET

'atory Name: CH2M Hill
Sample ID: 22683-1MS
lient Sample ID: 0490-MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 03/16/89
Date Analyzed: 03/28/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	69		100-02-7	4-Nitrophenol	85	
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	90	
5-57-8	2-Chlorophenol	120		84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	60		86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	48		118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	160	
8-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
8-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
8-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5 [illegible]-0	Benzoic Acid	50	U	129-00-0	Pyrene	95	
1-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	65		56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
[illegible]-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	140		205-99-2	Benzo(b)fluoranthene . . .	10	U
1-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
7-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
8-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
5-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
1-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
8-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	77	
08-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	79	
06-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	85	
9-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	89	
3-32-9	Acenaphthene	79			2-Fluorophenol - SS . . .	94	
					2,4,6-Tribromophenol - SS	81	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: 22683-1MSD
lient Sample ID: 0490-MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 03/16/89
Date Analyzed: 03/28/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	100		100-02-7	4-Nitrophenol	130	
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	90	
5-57-8	2-Chlorophenol	160		84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	55		86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-7	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	40		118-74-1	Hexachlorobenzene	10	U
-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	160	
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
3-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
3-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
05-67-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
5-85-0	Benzoic Acid	50	U	129-00-0	Pyrene	87	
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	60		56-55-3	Benzo(a)anthracene	10	U
-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
1-50-7	4-Chloro-3-methylphenol .	150		205-99-2	Benzo(b)fluoranthene . . .	10	U
-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
-74-4	2-Nitroaniline	50	U				
1-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	72	
8-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . .	81	
6-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	78	
-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	69	
-32-9	Acenaphthene	78			2-Fluorophenol - SS . . .	71	
					2,4,6-Tribromophenol - SS	89	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: 22817-1MSD
lient Sample ID: BAFB_0505MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 03/30/89
Date Analyzed: 04/13/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L		CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	10	U	51-28-5	2,4-Dinitrophenol	50	U
08-95-2	Phenol	140		100-02-7	4-Nitrophenol	160	
2-53-3	Aniline	10	U	132-64-9	Dibenzofuran	10	U
11-44-4	bis(2-Chloroethyl)Ether .	10	U	121-14-2	2,4-Dinitrotoluene	85	
5-57-8	2-Chlorophenol	150		84-66-2	Diethylphthalate	10	U
41-73-1	1,3-Dichlorobenzene . . .	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
06-46-7	1,4-Dichlorobenzene . . .	78		86-73-7	Fluorene	10	U
00-51-6	Benzyl Alcohol	10	U	100-01-6	4-Nitroaniline	50	U
5-50-1	1,2-Dichlorobenzene . . .	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
5-48-	2-Methylphenol	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
9638-32-9	bis(2-Chloroisopropyl)Ether	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
06-44-5	4-Methylphenol	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
21-64-7	N-Nitroso-Di-n-Propylamine	49		118-74-1	Hexachlorobenzene	10	U
7-72-1	Hexachloroethane	10	U	87-86-5	Pentachlorophenol	170	
3-95-3	Nitrobenzene	10	U	85-01-8	Phenanthrene	10	U
3-59-1	Isophorone	10	U	120-12-7	Anthracene	10	U
3-75-5	2-Nitrophenol	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
7-9	2,4-Dimethylphenol	10	U	206-44-0	Fluoranthene	10	U
-0	Benzoic Acid	50	U	129-00-0	Pyrene	100	
11-91-1	bis(2-Chloroethoxy)Methane	10	U	85-68-7	Butylbenzylphthalate . . .	10	U
20-83-2	2,4-Dichlorophenol	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
20-82-1	1,2,4-Trichlorobenzene . .	75		56-55-3	Benzo(a)anthracene	10	U
1-20-3	Naphthalene	10	U	218-01-9	Chrysene	10	U
06-47-8	4-Chloroaniline	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
7-68-3	Hexachlorobutadiene . . .	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
9-50-7	4-Chloro-3-methylphenol .	140		205-99-2	Benzo(b)fluoranthene . . .	10	U
1-57-6	2-Methylnaphthalene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
7-47-4	Hexachlorocyclopentadiene	10	U	50-32-8	Benzo(a)pyrene	10	U
3-06-2	2,4,6-Trichlorophenol . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
5-95-4	2,4,5-Trichlorophenol . .	50	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
1-58-7	2-Chloronaphthalene . . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
3-74-4	2-Nitroaniline	50	U		----------		
31-11-3	Dimethyl Phthalate	10	U		Nitrobenzene-d5 - SS . . .	83	
08-96-8	Acenaphthylene	10	U		2-Fluorobiphenyl - SS . . .	84	
06-20-2	2,6-Dinitrotoluene	10	U		Terphenyl-d14 - SS	110	
09-09-2	3-Nitroaniline	50	U		Phenol-d5 - SS	96	
3-32-9	Acenaphthene	86			2-Fluorophenol - SS . . .	64	
					2,4,6-Tribromophenol - SS	83	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
- Compound was detected in QC blank.
. Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

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ORGANICS ANALYSIS DATA SHEET

aboratory Name: CH2M Hill
ab Sample ID: 22906-4-MS
lient Sample ID: BAFB 0522 MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/06/89
Date Analyzed: 04/24/89
Dilution Factor: 2.0

SEMIVOLATILE COMPOUNDS

AS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	20	U
08-95-2	Phenol	20	U
2-53-3	Aniline	20	U
11-44-4	bis(2-Chloroethyl)Ether .	20	U
5-57-8	2-Chlorophenol	130	
41-73-1	1,3-Dichlorobenzene . . .	20	U
06-46-7	1,4-Dichlorobenzene . . .	37	
00-51-6	Benzyl Alcohol	20	U
5-50-1	1,2-Dichlorobenzene . . .	20	U
5-48-7	2-Methylphenol	20	U
9638-32-9	bis(2-Chloroisopropyl)Ether	20	U
06-44-5	4-Methylphenol	20	U
21-64-7	N-Nitroso-Di-n-Propylamine	27	
7-72-1	Hexachloroethane	20	U
8-95-3	Nitrobenzene	20	U
8-59-1	Isophorone	20	U
8-75-5	2-Nitrophenol	20	U
05-67-9	2,4-Dimethylphenol	20	U
5-85-0	Benzoic Acid	100	U
11-91-1	bis(2-Chloroethoxy)Methane	20	U
20-83-2	2,4-Dichlorophenol	20	U
20-82-1	1,2,4-Trichlorobenzene . .	45	
1-20-3	Naphthalene	20	U
06-47-8	4-Chloroaniline	20	U
7-68-3	Hexachlorobutadiene . . .	20	U
9-50-7	4-Chloro-3-methylphenol .	110	
1-57-6	2-Methylnaphthalene . . .	20	U
7-47-4	Hexachlorocyclopentadiene	20	U
8-06-2	2,4,6-Trichlorophenol . .	20	U
5-95-4	2,4,5-Trichlorophenol . .	100	U
1-58-7	2-Chloronaphthalene . . .	20	U
8-74-4	2-Nitroaniline	100	U
31-11-3	Dimethyl Phthalate	20	U
08-96-8	Acenaphthylene	1	J
06-20-2	2,6-Dinitrotoluene	20	U
9-09-2	3-Nitroaniline	100	U
3-32-9	Acenaphthene	49	

CAS Number		ug/L	
51-28-5	2,4-Dinitrophenol	100	U
100-02-7	4-Nitrophenol	86	J
132-64-9	Dibenzofuran	20	U
121-14-2	2,4-Dinitrotoluene	63	
84-66-2	Diethylphthalate	20	U
7005-72-3	4-Chlorophenyl-phenylether	20	U
86-73-7	Fluorene	20	U
100-01-6	4-Nitroaniline	100	U
534-52-1	4,6-Dinitro-2-methylphenol	100	U
86-30-6	N-Nitrosodiphenylamine (1)	20	U
122-66-7	1,2-Diphenylhydrazine . .	20	U
101-55-3	4-Bromophenyl-phenylether	20	U
118-74-1	Hexachlorobenzene	20	U
87-86-5	Pentachlorophenol	120	
85-01-8	Phenanthrene	20	U
120-12-7	Anthracene	20	U
84-74-2	Di-n-Butylphthalate . . .	20	U
206-44-0	Fluoranthene	20	
129-00-0	Pyrene	76	
85-68-7	Butylbenzylphthalate . . .	20	U
91-94-1	3,3'-Dichlorobenzidine . .	40	U
56-55-3	Benzo(a)anthracene	20	U
218-01-9	Chrysene	20	U
117-81-7	bis(2-Ethylhexyl)Phthalate	20	U
117-84-0	Di-n-octylphthalate . . .	20	U
205-99-2	Benzo(b)fluoranthene . . .	20	U
207-08-9	Benzo(k)fluoranthene . . .	20	U
50-32-8	Benzo(a)pyrene	20	U
193-39-5	Indeno(1,2,3-cd)Pyrene . .	20	U
53-70-3	Dibenz(a,h)Anthracene . .	20	U
191-24-2	Benzo(g,h,i)perylene . . .	20	U

	Nitrobenzene-d5 - SS . . .	38	
	2-Fluorobiphenyl - SS . .	46	
	Terphenyl-d14 - SS	72	
	Phenol-d5 - SS	71	
	2-Fluorophenol - SS . . .	55	
	2,4,6-Tribromophenol - SS	81	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory
venue, P O Box 2088 Redding, California 96001
916 243 5831

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 22906-4-MSD
Client Sample ID: BAFB_0522_MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/06/89
Date Analyzed: 04/25/89
Dilution Factor: 2.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L	
2-75-9	N-Nitrosodimethylamine . .	20	U
08-95-2	Phenol	130	
2-53-3	Aniline	20	U
11-44-4	bis(2-Chloroethyl)Ether .	20	U
5-57-8	2-Chlorophenol	140	
41-73-1	1,3-Dichlorobenzene . . .	20	U
06-46-7	1,4-Dichlorobenzene . . .	79	
00-51-6	Benzyl Alcohol	20	U
5-50-1	1,2-Dichlorobenzene . . .	20	U
5-48-7	2-Methylphenol	20	U
9638-32-9	bis(2-Chloroisopropyl)Ether	20	U
06-44-5	4-Methylphenol	20	U
21-64-7	N-Nitroso-Di-n-Propylamine	52	
7-72-1	Hexachloroethane	20	U
8-95-3	Nitrobenzene	20	U
8-59-1	Isophorone	20	U
8-75-5	2-Nitrophenol	20	U
0[illegible]7-9	2,4-Dimethylphenol	20	U
[illegible]-0	Benzoic Acid	100	U
11-91-1	bis(2-Chloroethoxy)Methane	20	U
20-83-2	2,4-Dichlorophenol	20	U
20-82-1	1,2,4-Trichlorobenzene . .	70	
1-20-3	Naphthalene	20	U
06-47-8	4-Chloroaniline	20	U
7-68-3	Hexachlorobutadiene . . .	20	U
9-50-7	4-Chloro-3-methylphenol .	98	
1-57-6	2-Methylnaphthalene . . .	20	U
7-47-4	Hexachlorocyclopentadiene	20	U
8-06-2	2,4,6-Trichlorophenol . .	20	U
5-95-4	2,4,5-Trichlorophenol . .	100	U
1-58-7	2-Chloronaphthalene . . .	20	U
8-74-4	2-Nitroaniline	100	U
31-11-3	Dimethyl Phthalate	20	U
08-96-8	Acenaphthylene	20	U
06-20-2	2,6-Dinitrotoluene	20	U
9-09-2	3-Nitroaniline	100	U
3-32-9	Acenaphthene	71	

CAS Number		ug/L	
51-28-5	2,4-Dinitrophenol	100	U
100-02-7	4-Nitrophenol	91	J
132-64-9	Dibenzofuran	20	U
121-14-2	2,4-Dinitrotoluene	74	
84-66-2	Diethylphthalate	20	U
7005-72-3	4-Chlorophenyl-phenylether	20	U
86-73-7	Fluorene	20	U
100-01-6	4-Nitroaniline	100	U
534-52-1	4,6-Dinitro-2-methylphenol	100	U
86-30-6	N-Nitrosodiphenylamine (1)	2	J
122-66-7	1,2-Diphenylhydrazine . .	20	U
101-55-3	4-Bromophenyl-phenylether	20	U
118-74-1	Hexachlorobenzene	20	U
87-86-5	Pentachlorophenol	110	
85-01-8	Phenanthrene	20	U
120-12-7	Anthracene	20	U
84-74-2	Di-n-Butylphthalate . . .	20	U
206-44-0	Fluoranthene	20	U
129-00-0	Pyrene	75	
85-68-7	Butylbenzylphthalate . . .	20	U
91-94-1	3,3'-Dichlorobenzidine . .	40	U
56-55-3	Benzo(a)anthracene	20	U
218-01-9	Chrysene	20	U
117-81-7	bis(2-Ethylhexyl)Phthalate	20	U
117-84-0	Di-n-octylphthalate . . .	20	U
205-99-2	Benzo(b)fluoranthene . . .	20	U
207-08-9	Benzo(k)fluoranthene . . .	20	U
50-32-8	Benzo(a)pyrene	20	U
193-39-5	Indeno(1,2,3-cd)Pyrene . .	20	U
53-70-3	Dibenz(a,h)Anthracene . .	20	U
191-24-2	Benzo(g,h,i)perylene . . .	20	U

	Nitrobenzene-d5 - SS . . .	61	
	2-Fluorobiphenyl - SS . .	67	
	Terphenyl-d14 - SS	61	
	Phenol-d5 - SS	79	
	2-Fluorophenol - SS . . .	61	
	2,4,6-Tribromophenol - SS	87	

(1) - Cannot be separated from diphenylamine
U - Compound analyzed for but not detected.
B Compound was detected in QC blank.
J Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory [illegible] venue, P O Box 2088 [illegible] 96001 916 243 5831

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ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 24185M01
Client Sample ID: 0606MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/01/8
Date Analyzed: 09/23/8.
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U
108-95-2	Phenol	100	
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U
95-57-8	2-Chlorophenol	150	
541-73-1	1,3-Dichlorobenzene . . .	10	U
106-46-7	1,4-Dichlorobenzene . . .	68	
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U
95-48-7	2-Methylphenol	10	U
108 60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	67	
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78 59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene . .	69	
91-20-3	Naphthalene	10	U
106-47 8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	140	
91-57-6	2-Methylnaphthalene . . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U
91-58-7	2-Chloronaphthalene . . .	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	79	
51-28-5	2,4-Dinitrophenol	50	U

CAS Number		ug/L	
100-02-7	4-Nitrophenol	120	
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	82	
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534 52 1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122 66-7	1,2-Diphenylhydrazine . .	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	190	
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate . . .	10	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	92	
85-68-7	Butylbenzylphthalate . . .	10	U
91-94-1	3,3'-Dichlorobenzidine . .	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-octylphthalate . . .	10	U
205-99-2	Benzo(b)fluoranthene . . .	10	U
207-08-9	Benzo(k)fluoranthene . . .	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
53-70-3	Dibenz(a,h)Anthracene . .	10	U
191-24-2	Benzo(g,h,i)perylene . . .	10	U

	Nitrobenzene-d5 - SS . . .	85	
	2-Fluorobiphenyl - SS . .	84	
	Terphenyl-d14 - SS	110	
	Phenol-d5 - SS	54	
	2-Fluorophenol - SS . . .	61	
	2,4,6-Tribromophenol - SS	85	

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Engineers
Planners
Economists
Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Sample ID: 24185D01
Client Sample ID: 0606MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted: 09/01/89
Date Analyzed: 09/23/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	120	
108-95-2	Phenol	100		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	81	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	150		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	56		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	62		87-86-5	Pentachlorophenol	180	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	88	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	55		218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	140		207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	74	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	78	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	55	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	62	
83-32-9	Acenaphthene	75			2,4,6-Tribromophenol - SS	83	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

CH2M HILL Redding Environmental Laboratory, 50 Road, Redding, California 96003 916 244 5227

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL Contract: S23306

Lab Code: _____ Case No.: S23306 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0547

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	115	58	12- 89
2-Chlorophenol	200	0	125	63	27-123
1,4-Dichlorobenzene	100	0	52.4	52	36 97
N-Nitroso-di-n-prop.(1)	100	0	55.6	56	41 116
1,2,4-Trichlorobenzene	100	0	54.4	54	39 98
4-Chloro-3-methylphenol	200	0	141	71	23 97
Acenaphthene	100	0	80.6	81	46-118
4-Nitrophenol	200	0	149	75	10- 80
2,4-Dinitrotoluene	100	0	84.4	84	24- 96
Pentachlorophenol	200	0	165	83	9-103
Pyrene	100	0	110	110	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	149	75	-26	42	12- 89
2-Chlorophenol	200	152	76	-19	40	27-123
1,4-Dichlorobenzene	100	82.8	83	-46 *	28	36 97
N-Nitroso-di-n-prop.(1)	100	72.4	72	-25	38	41 116
1,2,4-Trichlorobenzene	100	81.2	81	-40 *	28	39 98
4-Chloro-3-methylphenol	200	164	82	-14	42	23 97
Acenaphthene	100	92.8	93	-14	31	46-118
4-Nitrophenol	200	172	86 *	-14	50	10- 80
2,4-Dinitrotoluene	100	90.2	90	-7	38	24- 96
Pentachlorophenol	200	184	92	-10	50	9-103
Pyrene	100	115	115	-4	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 2 out of 11 outside limits
Spike Recovery: 1 out of 22 outside limits

COMMENTS: CLP,23306,,0547,L,W,001,S,,
BN

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL Contract: S23397

Code: _____ Case No.: S23397 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0570

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	128	64	12- 89
2-Chlorophenol	200	0	135	68	27-123
1,4-Dichlorobenzene	100	0	70.4	70	36 97
N-Nitroso-di-n-prop.(1)	100	0	68.2	68	41 116
1,2,4-Trichlorobenzene	100	0	70.4	70	39 98
4-Chloro-3-methylphenol	200	0	145	73	23 97
Acenaphthene	100	0	81.2	81	46-118
4-Nitrophenol	200	0	148	74	10- 80
2,4-Dinitrotoluene	100	0	86.0	86	24- 96
Pentachlorophenol	200	0	157	79	9-103
Pyrene	100	0	102	102	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	124	62	3	42	12- 89
2-Chlorophenol	200	127	64	6	40	27-123
1,4-Dichlorobenzene	100	77.8	78	-11	28	36 97
N-Nitroso-di-n-prop.(1)	100	68.6	69	-1	38	41 116
1,2,4-Trichlorobenzene	100	77.8	78	-11	28	39 98
4-Chloro-3-methylphenol	200	151	76	-4	42	23 97
Acenaphthene	100	84.8	85	-5	31	46-118
4-Nitrophenol	200	160	80	-8	50	10- 80
2,4-Dinitrotoluene	100	86.8	87	-1	38	24- 96
Pentachlorophenol	200	171	86	-8	50	9-103
Pyrene	100	107	107	-5	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: CLP,23397,,0570,L,W,002,S,,
BN

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL Contract: S23417

Lab Code: _____ Case No.: S23417 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: METHOD-BLANK

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	91.0	46	12- 89
2-Chlorophenol	200	0	132	66	27-123
1,4-Dichlorobenzene	100	0	67.4	67	36 97
N-Nitroso-di-n-prop.(1)	100	0	68.2	68	41 116
1,2,4-Trichlorobenzene	100	0	66.6	67	39 98
4-Chloro-3-methylphenol	200	0	149	75	23 97
Acenaphthene	100	0	84.2	84	46-118
4-Nitrophenol	200	0	94.8	47	10- 80
2,4-Dinitrotoluene	[illegible]	0	86.0	86	24- 96
Pentachlorophenol	200	0	170	85	9-103
Pyrene	200	0	144	144 *	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	98.8	49	-6	42	12- 89
2-Chlorophenol	200	137	69	-4	40	27-123
1,4-Dichlorobenzene	100	44.2	44	41 *	28	36 97
N-Nitroso-di-n-prop.(1)	100	48.6	49	32	38	41 116
1,2,4-Trichlorobenzene	100	47.0	47	35 *	28	39 98
4-Chloro-3-methylphenol	200	148	74	1	42	23 97
Acenaphthene	100	75.2	75	11	31	46-118
4-Nitrophenol	200	105	53	-12	50	10- 80
2,4-Dinitrotoluene	100	83.4	83	4	38	24- 96
Pentachlorophenol	200	179	90	-6	50	9-103
Pyrene	100	143	143 *	1	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 2 out of 11 outside limits
Spike Recovery: 2 out of 22 outside limits

COMMENTS: CLP,,,SBLKW,L,W,RB 6-7-89,S,BLANK,
BN

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL Contract: S23485

Code: _____ Case No.: S23485 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0592

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	113	57	12- 89
2-Chlorophenol	200	0	131	66	27-123
1,4-Dichlorobenzene	100	0	63.8	64	36 97
N-Nitroso-di-n-prop.(1)	100	0	54.6	55	41 116
1,2,4-Trichlorobenzene	100	0	62.2	62	39 98
4-Chloro-3-methylphenol	200	0	119	60	23 97
Acenaphthene	100	0	73.8	74	46-118
4-Nitrophenol	200	0	117	59	10- 80
2,4-Dinitrotoluene	100	0	73.0	73	24- 96
Pentachlorophenol	200	0	131	66	9-103
Pyrene	100	0	79.0	79	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	116	58	-2	42	12- 89
2-Chlorophenol	200	140	70	-6	40	27-123
1,4-Dichlorobenzene	100	54.4	54	17	28	36 97
N-Nitroso-di-n-prop.(1)	100	51.6	52	6	38	41 116
1,2,4-Trichlorobenzene	100	55.8	56	10	28	39 98
4-Chloro-3-methylphenol	200	131	66	-10	42	23 97
Acenaphthene	100	69.8	70	6	31	46-118
4-Nitrophenol	200	139	70	-17	50	10- 80
2,4-Dinitrotoluene	100	70.6	71	3	38	24- 96
Pentachlorophenol	200	155	78	-17	50	9-103
Pyrene	100	75.8	76	4	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: CLP,23485,,0592,L,W,003,S,,
BN

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL Contract: S24185

Lab Code: _____ Case No.: S24185 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: 0606

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	104	52	12- 89
2-Chlorophenol	200	0	152	76	27-123
1,4-Dichlorobenzene	100	0	68	68	36 97
N-Nitroso-di-n-prop.(1)	100	0	67	68	41 116
1,2,4-Trichlorobenzene	100	0	63	64	39 98
4-Chloro-3-methylphenol	200	0	142	71	23 97
Acenaphthene	100	0	79	79	46-118
4-Nitrophenol	200	0	122	61	10- 80
2,4-Dinitrotoluene	100	0	82	82	24- 96
Pentachlorophenol	200	0	192	96	9-103
Pyrene	100	0	91	92	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	102	51	2	42	12- 89
2-Chlorophenol	200	145	73	4	40	27-123
1,4-Dichlorobenzene	100	55	56	19	28	36 97
N-Nitroso-di-n-prop.(1)	100	61	62	9	38	41 116
1,2,4-Trichlorobenzene	100	55	55	15	28	39 98
4-Chloro-3-methylphenol	200	135	68	4	42	23 97
Acenaphthene	100	75	75	5	31	46-118
4-Nitrophenol	200	122	61	0	50	10- 80
2,4-Dinitrotoluene	100	81	81	1	38	24- 96
Pentachlorophenol	200	183	92	4	50	9-103
Pyrene	100	88	88	4	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: CLP, S24185,, 0606, L, W, 24185001, S,,
BNA

Engineers
Planners
Economists

ORGANICS ANALYSIS DATA SHEET

Labor[redacted]mes Scie CH2M HILL/LRD
Lab Sample ID: 2440GM01
Client Sample ID: BAFB_0667MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/28/89
Date Analyzed: 10/17/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	180	
108-95-2	Phenol	120		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	89	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	35		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	75		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	J
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	73		87-86-5	Pentachlorophenol	200	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	95	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	74		218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	110		207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	91	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	88	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	62	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	30	
83-32-9	Acenaphthene	87			2,4,6-Tribromophenol - SS	45	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Engineers
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CH2M HILL

ORGANICS ANALYSIS DATA SHEET

Labor[redacted] CH2M HILL/LRD
Lab Sample ID: 2440601
Client Sample ID: BAFB 0667MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/28/89
Date Analyzed: 10/17/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	170	
108-95-2	Phenol	110		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	83	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	55		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	64		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	J
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	64		87-86-5	Pentachlorophenol	180	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	88	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	65		218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	95		207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	83	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	79	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	55	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	27	
83-32-9	Acenaphthene	77			2,4,6-Tribromophenol - SS	40	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/LRD Contract: S24406

Code: _____ Case No.: S24406 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0667

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	123	62	12- 89
2-Chlorophenol	200	0	35.2	18 *	27-123
1,4-Dichlorobenzene	100	0	75.4	75	36 97
N-Nitroso-di-n-prop.(1)	100	0	73.2	73	41 116
1,2,4-Trichlorobenzene	100	0	73.6	74	39 98
4-Chloro-3-methylphenol	200	0	106	53	23 97
Acenaphthene	100	0	87.4	87	46-118
4-Nitrophenol	200	0	179	90 *	10- 80
2,4-Dinitrotoluene	100	0	89.2	89	24- 96
Pentachlorophenol	200	0	198	99	9-103
Pyrene	100	0	94.8	95	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	113	56	10	42	12- 89
2-Chlorophenol	200	54.8	27	-40	40	27-123
1,4-Dichlorobenzene	100	63.8	64	16	28	36 97
N-Nitroso-di-n-prop.(1)	100	64.4	64	13	38	41 116
1,2,4-Trichlorobenzene	100	65.4	65	13	28	39 98
4-Chloro-3-methylphenol	200	94.8	47	12	42	23 97
Acenaphthene	100	77.4	77	12	31	46-118
4-Nitrophenol	200	167	84 *	7	50	10- 80
2,4-Dinitrotoluene	100	83.4	83	7	38	24- 96
Pentachlorophenol	200	183	92	7	50	9-103
Pyrene	100	88.0	88	8	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 3 out of 22 outside limits

COMMENTS: CLP,S24406,,BAFB 0667,L,W,24406001,S,EPA,
BN

Engineers
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ORGANICS ANALYSIS DATA SHEET

Labor[redacted]ne Scie: CH2M HILL/LRD
Lab Sample ID: 24350M05
Client Sample ID: BAFB_0654MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/22/89
Date Analyzed: 10/[illegible]/89
Dilution Factor: [illegible]

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	130	
108-95-2	Phenol	150		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	92	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	160		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	63		86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	60		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	62		87-86-5	Pentachlorophenol	160	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	110	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	64		218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	7	J
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	150		207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	89	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	96	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	150	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	87	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	82	
83-32-9	Acenaphthene	89			2,4,6-Tribromophenol - SS	95	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

Engineers
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Economists

ORGANICS ANALYSIS DATA SHEET

Labor[redacted]he Sci: CH2M HILL/LRD
Lab Sample ID: 24350005
Client Sample ID: BAFB 0654MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 09/22/89
Date Analyzed: 10/11/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	110	
108-95-2	Phenol	120		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	96	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	130		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	82		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	J
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	70		87-86-5	Pentachlorophenol	150	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	120	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	83		218-01-9	Chrysene	10	U
)-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	140		207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	93	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	100	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	140	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	61	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	56	
83-32-9	Acenaphthene	97			2,4,6-Tribromophenol - SS	88	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/LRD Contract: S24350

Lab Code: _____ Case No.: S24350 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0654

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	153	76	12- 89
2-Chlorophenol	200	0	163	82	27-123
1,4-Dichlorobenzene	100	0	59.6	60	36 97
N-Nitroso-di-n-prop.(1)	100	0	61.6	62	41 116
1,2,4-Trichlorobenzene	100	0	64.0	64	39 98
4-Chloro-3-methylphenol	200	0	149	74	23 97
Acenaphthene	100	0	86.8	89	46-118
4-Nitrophenol	200	0	128	64	10- 80
2,4-Dinitrotoluene	100	0	91.8	92	24- 96
Pentachlorophenol	200	0	165	82	9-103
Pyrene	100	0	111	111	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	115	58	27	42	12- 89
2-Chlorophenol	200	131	66	22	40	27-123
1,4-Dichlorobenzene	100	81.6	82	-31 *	28	36 97
N-Nitroso-di-n-prop.(1)	100	70.4	70	-12	38	41 116
1,2,4-Trichlorobenzene	100	83.2	83	-26	28	39 98
4-Chloro-3-methylphenol	200	136	68	8	42	23 97
Acenaphthene	100	96.6	97	-9	31	46-118
4-Nitrophenol	200	105	52	21	50	10- 80
2,4-Dinitrotoluene	100	95.8	96	-4	38	24- 96
Pentachlorophenol	200	152	76	8	50	9-103
Pyrene	100	117	117	-5	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: CLP,S24350,,BAFB 0654,L,W,24350005,S,EPA,
BNA

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ORGANICS ANALYSIS DATA SHEET

oratory Name: CH2M Hill
. Sample ID: 24304M02
Client Sample ID: BAFB 637MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted: 09/18/89
Date Analyzed: 10/02/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	130	
108-95-2	Phenol	120		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	85	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	130		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	78		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	50	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	10	U
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	73		87-86-5	Pentachlorophenol	120	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	96	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	71		218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	98		207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	50	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	93	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	87	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	120	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	65	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	61	
83-32-9	Acenaphthene	82			2,4,6-Tribromophenol - SS	42	
51-28-5	2,4-Dinitrophenol	50	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
S - Surrogate Standard reported as percent recovery.

Form I

CH2M HILL Engineers Planners Economists Scientists

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M Hill
Lab Sample ID: 24304D02
Client Sample ID: BAFB 0637MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 09/18/8
Date Analyzed: 10/02/8
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine	10	U
108-95-2	Phenol	130	
62-53-3	Aniline	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	140	
541-73-1	1,3-Dichlorobenzene	[illegible]	U
106-46-7	1,4-Dichlorobenzene	76	
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	71	
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	69	
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	95	
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	80	
51-28-5	2,4-Dinitrophenol	50	U

CAS Number		ug/L	
100-02-7	4-Nitrophenol	150	
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	85	
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
122-66-7	1,2-Diphenylhydrazine	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	120	
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	90	
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

	Nitrobenzene-d5 - SS	88	
	2-Fluorobiphenyl - SS	80	
	Terphenyl-d14 - SS	110	
	Phenol-d5 - SS	69	
	2-Fluorophenol - SS	64	
	2,4,6-Tribromophenol - SS	35	

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC Blank.
J Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL Contract: S24304

Code: _____ Case No.: S24304 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB_0637

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	115	58	12- 89
2-Chlorophenol	200	0	131	66	27-123
1,4-Dichlorobenzene	100	0	78.2	78	36 97
N-Nitroso-di-n-prop.(1)	100	0	73.0	73	41 116
1,2,4-Trichlorobenzene	100	0	71.4	71	39 98
4-Chloro-3-methylphenol	200	0	98.0	49	23 97
Acenaphthene	100	0	81.6	82	46-118
4-Nitrophenol	200	0	132	66	10- 80
2,4-Dinitrotoluene	100	0	85.6	86	24- 96
Pentachlorophenol	200	0	121	61	9-103
Pyrene	100	0	96.2	96	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	127	64	-10	42	12- 89
2-Chlorophenol	200	141	71	-7	40	27-123
1,4-Dichlorobenzene	100	75.8	76	3	28	36 97
N-Nitroso-di-n-prop.(1)	100	70.6	71	3	38	41 116
1,2,4-Trichlorobenzene	100	69.2	69	3	28	39 98
4-Chloro-3-methylphenol	200	95.0	48	2	42	23 97
Acenaphthene	100	80.0	80	2	31	46-118
4-Nitrophenol	200	149	75	-13	50	10- 80
2,4-Dinitrotoluene	100	84.8	85	1	38	24- 96
Pentachlorophenol	200	116	58	5	50	9-103
Pyrene	100	90.2	90	6	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: CLP, S24304,, 0637, L, W, 24304002, S,,
BNA

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24868M01
Client Sample ID: BAFB 0680MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 11/16/89
Date Analyzed: 11/22/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	190	
108-95-2	Phenol	160		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	70	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	180		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	48		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	7	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	52		87-86-5	Pentachlorophenol	190	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	87	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	51		218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	11	B
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	150		207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	64	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	65	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	91	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	71	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	71	
83-32-9	Acenaphthene	70			2,4,6-Tribromophenol - SS	70	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24868D01
ent Sample ID: BAFB_0680MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 11/16/89
Date Analyzed: 11/22/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	190	
108-95-2	Phenol	190		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	87	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	210		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	50		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	7	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	68		87-86-5	Pentachlorophenol	200	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	10	U
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	100	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
82-1	1,2,4-Trichlorobenzene . .	54		218-01-9	Chrysene	10	U
..-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	14	B
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	180		207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	67	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	72	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	79	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	77	
83-32-9	Acenaphthene	82			2,4,6-Tribromophenol - SS	70	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/LRD Contract: S24868

Lab Code: _____ Case No.: S24868 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0680

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	164	82	12- 89
2-Chlorophenol	200	0	180	90	27-123
1,4-Dichlorobenzene	100	0	48.2	48	36 97
N-Nitroso-di-n-prop.(1)	100	0	52.0	52	41 116
1,2,4-Trichlorobenzene	100	0	51.2	51	39 98
4-Chloro-3-methylphenol	200	0	154	77	23 97
Acenaphthene	100	0	70.4	70	46-118
4-Nitrophenol	200	0	186	93 *	10- 80
2,4-Dinitrotoluene	100	0	69.6	70	24- 96
Pentachlorophenol	200	0	187	94	9-103
Pyrene	100	0	87.2	87	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	187	94 *	-14	42	12- 89
2-Chlorophenol	200	206	103	-13	40	27-123
1,4-Dichlorobenzene	100	49.8	50	-4	28	36 97
N-Nitroso-di-n-prop.(1)	100	67.8	68	-27	38	41 116
1,2,4-Trichlorobenzene	100	53.8	54	-6	28	39 98
4-Chloro-3-methylphenol	200	181	90	-16	42	23 97
Acenaphthene	100	82.0	82	-16	31	46-118
4-Nitrophenol	200	188	94 *	-1	50	10- 80
2,4-Dinitrotoluene	100	87.4	87	-22	38	24- 96
Pentachlorophenol	200	204	102	-8	50	9-103
Pyrene	100	105	105	-19	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 3 out of 22 outside limits

COMMENTS: CLP,S24868,,0680,L,W,24868001,S,EPA,
BN

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/LRD Contract: S24939

Code: _____ Case No.: S24939 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB_0702

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	168	84	12- 89
2-Chlorophenol	200	0	181	90	27-123
1,4-Dichlorobenzene	100	0	53.8	54	36 97
N-Nitroso-di-n-prop.(1)	100	0	61.8	62	41 116
1,2,4-Trichlorobenzene	100	0	58.0	58	39 98
4-Chloro-3-methylphenol	200	0	175	88	23 97
Acenaphthene	100	0	78.8	79	46-118
4-Nitrophenol	200	0	189	94 *	10- 80
2,4-Dinitrotoluene	100	0	86.8	87	24- 96
Pentachlorophenol	200	0	204	102	9-103
Pyrene	100	0	105	105	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	185	92 *	-9	42	12- 89
2-Chlorophenol	200	199	100	-11	40	27-123
1,4-Dichlorobenzene	100	52.6	53	2	28	36 97
N-Nitroso-di-n-prop.(1)	100	72.2	72	-15	38	41 116
1,2,4-Trichlorobenzene	100	61.6	62	-7	28	39 98
4-Chloro-3-methylphenol	200	192	96	-9	42	23 97
Acenaphthene	100	87.8	88	-11	31	46-118
4-Nitrophenol	200	222	111 *	-17	50	10- 80
2,4-Dinitrotoluene	100	96.6	97 *	-11	38	24- 96
Pentachlorophenol	200	220	110 *	-8	50	9-103
Pyrene	100	110	110	-5	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 5 out of 22 outside limits

COMMENTS: CLP,S24939,,0702,L,W,24939003,S,EPA,
BN

RS

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/LRD Contract: S24934

Lab Code: _____ Case No.: S24934 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0699

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	#	QC LIMITS REC.
Phenol	200	0	150	75		12- 89
2-Chlorophenol	200	0	166	83		27-123
1,4-Dichlorobenzene	100	0	45.6	46		36 97
N-Nitroso-di-n-prop.(1)	100	0	61.8	62		41 116
1,2,4-Trichlorobenzene	100	0	61.2	61		39 98
4-Chloro-3-methylphenol	200	0	155	78		23 97
Acenaphthene	100	0	90.6	91		46-118
4-Nitrophenol	200	0	165	82	*	10- 80
2,4-Dinitrotoluene	100	0	94.0	94		24- 96
Pentachlorophenol	200	0	185	92		9-103
Pyrene	100	0	112	112		26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	#	% RPD	#	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	126	63		17		42	12- 89
2-Chlorophenol	200	125	62		29		40	27-123
1,4-Dichlorobenzene	100	57.0	57		-21		28	36 97
N-Nitroso-di-n-prop.(1)	100	64.2	64		-3		38	41 116
1,2,4-Trichlorobenzene	100	66.8	67		-9		28	39 98
4-Chloro-3-methylphenol	200	168	84		-7		42	23 97
Acenaphthene	100	89.4	89		2		31	46-118
4-Nitrophenol	200	234	117	*	-35		50	10- 80
2,4-Dinitrotoluene	100	96.8	97	*	-3		38	24- 96
Pentachlorophenol	200	240	120	*	-26		50	9-103
Pyrene	100	109	109		3		31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

COMMENTS: CLP,S24934,,BAFB 0699,L,W,23934001,S,EPA,
BN

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/LRD Contract: S24934

Lab Code: _____ Case No.: S24934 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0699

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	150	75	12- 89
2-Chlorophenol	200	0	166	83	27-123
1,4-Dichlorobenzene	100	0	45.6	46	36 97
N-Nitroso-di-n-prop.(1)	100	0	61.8	62	41 116
1,2,4-Trichlorobenzene	100	0	61.2	61	39 98
4-Chloro-3-methylphenol	200	0	155	78	23 97
Acenaphthene	100	0	90.6	91	46-118
4-Nitrophenol	200	0	165	82 *	10- 80
2,4-Dinitrotoluene	100	0	94.0	94	24- 96
Pentachlorophenol	200	0	185	92	9-103
Pyrene	100	0	112	112	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	126	63	17	42	12- 89
2-Chlorophenol	200	125	62	29	40	27-123
1,4-Dichlorobenzene	100	57.0	57	-21	28	36 97
N-Nitroso-di-n-prop.(1)	100	64.2	64	-3	38	41 116
1,2,4-Trichlorobenzene	100	66.8	67	-9	28	39 98
4-Chloro-3-methylphenol	200	168	84	-7	42	23 97
Acenaphthene	100	89.4	89	2	31	46-118
4-Nitrophenol	200	234	117 *	-35	50	10- 80
2,4-Dinitrotoluene	100	96.8	97 *	-3	38	24- 96
Pentachlorophenol	200	240	120 *	-26	50	9-103
Pyrene	100	109	109	3	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

COMMENTS: CLP,S24934,,BAFB 0699,L,W,23934001,S,EPA,
BN

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24939M03
Client Sample ID: BAFB 0702 MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 11/22/89
Date Analyzed: 12/14/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	190	
108-95-2	Phenol	170		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	87	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	9	BJ
95-57-8	2-Chlorophenol	180		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	54		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	8	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	62		87-86-5	Pentachlorophenol	200	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	6	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	100	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	56-55-3	Benzo(a)anthracene	10	U
120-83-2	2,4-Dichlorophenol	10	U	218-01-9	Chrysene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	58		117-81-7	bis(2-Ethylhexyl)Phthalate	7	J
91-20-3	Naphthalene	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
106-47-8	4-Chloroaniline	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	180		50-32-8	Benzo(a)pyrene	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U				
91-58-7	2-Chloronaphthalene . . .	10	U		Nitrobenzene-d5 - SS . . .	66	
88-74-4	2-Nitroaniline	50	U		2-Fluorobiphenyl - SS . .	71	
131-11-3	Dimethyl Phthalate	10	U		Terphenyl-d14 - SS	110	
208-96-8	Acenaphthylene	10	U		Phenol-d5 - SS	62	
606-20-2	2,6-Dinitrotoluene	10	U		2-Fluorophenol - SS . . .	57	
99-09-2	3-Nitroaniline	50	U		2,4,6-Tribromophenol - SS	61	
83-32-9	Acenaphthene	79					
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 24939D03
Client Sample ID: BAFB 0702 MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: ____

Date Extracted: 11/22/89
Date Analyzed: 12/14/89
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	220	
108-95-2	Phenol	180		132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	97	
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	6	BJ
95-57-8	2-Chlorophenol	200		7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	53		100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	6	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	72		87-86-5	Pentachlorophenol	220	
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	5	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	110	
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	56-55-3	Benzo(a)anthracene	10	U
120-83-2	2,4-Dichlorophenol	10	U	218-01-9	Chrysene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	62		117-81-7	bis(2-Ethylhexyl)Phthalate	9	J
91-20-3	Naphthalene	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
106-47-8	4-Chloroaniline	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	190		50-32-8	Benzo(a)pyrene	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U		----------		
91-58-7	2-Chloronaphthalene . . .	10	U		Nitrobenzene-d5 - SS . . .	73	
88-74-4	2-Nitroaniline	50	U		2-Fluorobiphenyl - SS . .	76	
131-11-3	Dimethyl Phthalate	10	U		Terphenyl-d14 - SS	110	
208-96-8	Acenaphthylene	10	U		Phenol-d5 - SS	65	
606-20-2	2,6-Dinitrotoluene	10	U		2-Fluorophenol - SS . . .	60	
99-09-2	3-Nitroaniline	50	U		2,4,6-Tribromophenol - SS	64	
83-32-9	Acenaphthene	88					
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/LRD Contract: S24939

Lab Code: _____ Case No.: S24939 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB_0702

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	#	QC LIMITS REC.
Phenol	200	0	168	84		12- 89
2-Chlorophenol	200	0	181	90		27-123
1,4-Dichlorobenzene	100	0	53.8	54		36 97
N-Nitroso-di-n-prop.(1)	100	0	61.8	62		41 116
1,2,4-Trichlorobenzene	100	0	58.0	58		39 98
4-Chloro-3-methylphenol	200	0	175	88		23 97
Acenaphthene	100	0	78.8	79		46-118
4-Nitrophenol	200	0	189	94	*	10- 80
2,4-Dinitrotoluene	100	0	86.8	87		24- 96
Pentachlorophenol	200	0	204	102		9-103
Pyrene	100	0	105	105		26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	#	% RPD	#	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	185	92	*	-9		42	12- 89
2-Chlorophenol	200	199	100		-11		40	27-123
1,4-Dichlorobenzene	100	52.6	53		2		28	36 97
N-Nitroso-di-n-prop.(1)	100	72.2	72		-15		38	41 116
1,2,4-Trichlorobenzene	100	61.6	62		-7		28	39 98
4-Chloro-3-methylphenol	200	192	96		-9		42	23 97
Acenaphthene	100	87.8	88		-11		31	46-118
4-Nitrophenol	200	222	111	*	-17		50	10- 80
2,4-Dinitrotoluene	100	96.6	97	*	-11		38	24- 96
Pentachlorophenol	200	220	110	*	-8		50	9-103
Pyrene	100	110	110		-5		31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 5 out of 22 outside limits

COMMENTS: CLP,S24939,,0702,L,W,24939003,S,EPA,
BN

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Sample ID: 25088M02
Client Sample ID: BAFB 0727MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 12/06/89
Date Analyzed: 01/17/90
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichloroben...ne . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	11	B
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	7	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
13-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	7	J
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	63	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	74	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	54	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	51	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	80	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: CH2M HILL/LRD
Lab Sample ID: 25088D02
Client Sample ID: BAFB 0727MSD

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 12/06/89
Date Analyzed: 01/17/90
Dilution Factor: 1.0

SEMIVOLATILE COMPOUNDS

CAS Number		ug/L		CAS Number		ug/L	
62-75-9	N-Nitrosodimethylamine . .	10	U	100-02-7	4-Nitrophenol	10	U
108-95-2	Phenol	10	U	132-64-9	Dibenzofuran	10	U
62-53-3	Aniline	10	U	121-14-2	2,4-Dinitrotoluene	10	U
111-44-4	bis(2-Chloroethyl)Ether .	10	U	84-66-2	Diethylphthalate	10	U
95-57-8	2-Chlorophenol	10	U	7005-72-3	4-Chlorophenyl-phenylether	10	U
541-73-1	1,3-Dichlorobenzene . . .	10	U	86-73-7	Fluorene	10	U
106-46-7	1,4-Dichlorobenzene . . .	10	U	100-01-6	4-Nitroaniline	50	U
100-51-6	Benzyl Alcohol	10	U	534-52-1	4,6-Dinitro-2-methylphenol	10	U
95-50-1	1,2-Dichlorobenzene . . .	10	U	86-30-6	N-Nitrosodiphenylamine (1)	8	BJ
95-48-7	2-Methylphenol	10	U	122-66-7	1,2-Diphenylhydrazine . .	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U	101-55-3	4-Bromophenyl-phenylether	10	U
106-44-5	4-Methylphenol	10	U	118-74-1	Hexachlorobenzene	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U	87-86-5	Pentachlorophenol	50	U
67-72-1	Hexachloroethane	10	U	85-01-8	Phenanthrene	10	U
98-95-3	Nitrobenzene	10	U	120-12-7	Anthracene	10	U
78-59-1	Isophorone	10	U	84-74-2	Di-n-Butylphthalate . . .	6	BJ
88-75-5	2-Nitrophenol	10	U	206-44-0	Fluoranthene	10	U
105-67-9	2,4-Dimethylphenol	10	U	129-00-0	Pyrene	10	U
65-85-0	Benzoic Acid	50	U	85-68-7	Butylbenzylphthalate . . .	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U	91-94-1	3,3'-Dichlorobenzidine . .	20	U
120-83-2	2,4-Dichlorophenol	10	U	56-55-3	Benzo(a)anthracene	10	U
120-82-1	1,2,4-Trichlorobenzene . .	10	U	218-01-9	Chrysene	10	U
91-20-3	Naphthalene	10	U	117-81-7	bis(2-Ethylhexyl)Phthalate	9	J
106-47-8	4-Chloroaniline	10	U	117-84-0	Di-n-octylphthalate . . .	10	U
87-68-3	Hexachlorobutadiene . . .	10	U	205-99-2	Benzo(b)fluoranthene . . .	10	U
59-50-7	4-Chloro-3-methylphenol .	10	U	207-08-9	Benzo(k)fluoranthene . . .	10	U
91-57-6	2-Methylnaphthalene . . .	10	U	50-32-8	Benzo(a)pyrene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U	193-39-5	Indeno(1,2,3-cd)Pyrene . .	10	U
88-06-2	2,4,6-Trichlorophenol . .	10	U	53-70-3	Dibenz(a,h)Anthracene . .	10	U
95-95-4	2,4,5-Trichlorophenol . .	10	U	191-24-2	Benzo(g,h,i)perylene . . .	10	U
91-58-7	2-Chloronaphthalene . . .	10	U		----------		
88-74-4	2-Nitroaniline	50	U		Nitrobenzene-d5 - SS . . .	62	
131-11-3	Dimethyl Phthalate	10	U		2-Fluorobiphenyl - SS . .	72	
208-96-8	Acenaphthylene	10	U		Terphenyl-d14 - SS	110	
606-20-2	2,6-Dinitrotoluene	10	U		Phenol-d5 - SS	38	
99-09-2	3-Nitroaniline	50	U		2-Fluorophenol - SS . . .	34	
83-32-9	Acenaphthene	10	U		2,4,6-Tribromophenol - SS	84	
51-28-5	2,4-Dinitrophenol	10	U				

(1) - Cannot be separated from diphenylamine.
U - Compound analyzed for but not detected.
B - Compound was detected in QC blank.
J - Reported value less than quantitation limit.
SS - Surrogate Standard reported as percent recovery.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: CH2M HILL/LRD Contract: S25088

Lab Code: _____ Case No.: S25088 SAS No.: _____ SDG No.: GC-MS

Matrix Spike - EPA Sample No.: BAFB 0727

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	111	56	12- 89
2-Chlorophenol	200	0	162	81	27-123
1,4-Dichlorobenzene	100	0	55.0	55	36 97
N-Nitroso-di-n-prop.(1)	100	0	62.2	62	41 116
1,2,4-Trichlorobenzene	100	0	61.2	61	39 98
4-Chloro-3-methylphenol	200	0	158	79	23 97
Acenaphthene	100	0	83.6	84	46-118
4-Nitrophenol	200	0	152	76	10- 80
2,4-Dinitrotoluene	100	0	83.8	84	24- 96
Pentachlorophenol	200	0	208	104 *	9-103
Pyrene	100	0	104	104	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	77.8	39	36	42	12- 89
2-Chlorophenol	200	115	58	33	40	27-123
1,4-Dichlorobenzene	100	56.8	57	-4	28	36 97
N-Nitroso-di-n-prop.(1)	100	63.6	64	-3	38	41 116
1,2,4-Trichlorobenzene	100	60.8	61	0	28	39 98
4-Chloro-3-methylphenol	200	148	74	7	42	23 97
Acenaphthene	100	86.4	86	-2	31	46-118
4-Nitrophenol	200	172	86 *	-12	50	10- 80
2,4-Dinitrotoluene	100	86.4	86	-2	38	24- 96
Pentachlorophenol	200	218	109 *	-5	50	9-103
Pyrene	100	101	101	3	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 3 out of 22 outside limits

COMMENTS: CLP,S25088,,BAFB 0726,L,W,25088002,S,EPA,
BN

QUALITY CONTROL

QA/QC SUMMARY

OP#: BAFB3

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES			SPIKE			LCS			LCS SOURCE
						SR	D	RPD	TV	SSR	% R	TV	RESULT	% R	
TDS	08-31-89	mg/l	3	24158-3		263	258	1.9				508	492	96.8	LAB
TDS	09-01-89	mg/l	3	24185-8		251	240	4.5				508	522	103	LAB
TDS	09-01-89	mg/l	3	24191-3		336	335	0.3				508	506	99.6	LAB
TDS	09-06-89	mg/l	3	24202-6		203	1999	2.0				508	499	98.2	LAB
TDS	09-13-89	mg/l	3	24242-7		254	248	2.4				508	560	110	LAB
TDS	09-14-89	mg/l	3	24246-3		228	225	1.3							
TDS	09-14-89	mg/l	3	24265-3		244	250	2.4				508	484	95.3	LAB
TDS	09-18-89	mg/l	3	24272-3		247	244	1.2				575	569	99.0	LAB
TDS	09-19-89	mg/l	3	24304-3		284	283	0.4				575	567	98.6	LAB
TDS	09-20-89	mg/l	3	24337-3		347	363	4.5				575	5882	102	LAB
TDS	09-25-89	mg/l	3	24387-4		385	368	4.5				575	572	99.5	LAB
TDS	09-27-89	mg/l	3	24406-4		359	364	1.4							
TDS	10-02-89	mg/l	3	24451-1		460	457	0.7				575	563	97.9	LAB
Chloride	09-15-89	mg/l	1	24185-8	<1.0	16.8	17.5	4.1	20.0	38.1	106	1000	1008	101	LAB
Chloride	09-20-89	mg/l	1	24202-6	<1.0	10.8	11.2	3.6	20.0	9.5	98.5	1000	976	97.6	LAB
Chloride	09-22-89	mg/l	1	24246-3	<1.0	24.8	25.2	1.6	20.0	44.8	100	1000	982	98.2	LAB
Chloride	09-22-89	mg/l	1	24265-3	<1.0	43.7	43.7	0.0	20.0	64.1	102	1000	983	98.3	LAB
Chloride	10-10-89	mg/l	1	24451-1	<1.0	45.7	45.6	0.2	40.0	86.4	102	1000	999	99.9	LAB
Fluoride	09-15-89	mg/l	0.05	24202-6	<0.05	0.27	0.29	7.1	0.20	0.51	120	0.42	0.44	105	EPA-CI
Fluoride	09-15-89	mg/l	0.05	24185-8	<0.05	0.24	0.27	11.8	0.20	0.45	105	0.40	0.43	108	LAB
Fluoride	09-20-89	mg/l	0.05	24242-6	<0.05	0.18	0.19	5.4	0.20	0.34	80.0	0.42	0.36	85.7	EPA-CI
Fluoride	09-20-89	mg/l	0.05	24337-1	<0.05	0.14	0.13	7.4	0.20	0.29	75.0	0.42	0.38	90.5	EPA-CI
Fluoride	10-13-89	mg/l	0.05	24451-1	<0.05	0.23	0.23	0.0	0.10	0.33	100	0.40	0.41	102	LAB

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

* Not a BAFB sample.

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

FORM 004

QA/QC SUMMARY

DP#: BAFB3

TEST	DATE ANALYZED	UNITS	DL	REFERENCE NUMBER	METHOD BLANK	DUPLICATES			SPIKE			LCS			LCS SOURCE
						SR	D	RPD	TV	SSR	% R	TV	RESULT	% R	
Sulfate	09-16-89	mg/l	1	24185-3	<1	<1	<1	NC	5.00	5.7	114	20.0	21.9	110	LAB
Sulfate	09-16-89	mg/l	1	24202-4	<1	<1	<1	NC	5.00	5.2	104	20.0	22.2	111	LAB
Sulfate	09-21-89	mg/l	1	24230-16 *	<1	11.7	11.7	0.0	10.0	22.8	111	20.0	21.5	108	LAB
Sulfate	09-21-89	mg/l	1	24242-7	<1	6.0	6.0	0.0	10.0	15.4	94.0	20.0	21.2	106	LAB
Sulfate	10-11-89	mg/l	1	24451-1	<1	7.9	7.7	2.6	5.00	12.3	87.6	20.0	19.8	99.0	LAB
Nitrate-Nitrite a NO3	09-18-89	mg/l	0.13	24202-6	<0.13	10.14	9.79	3.6	11.1	23.0	116	8.86	10.1	114	EPA-CI
Nitrate-Nitrite a NO3	09-27-89	mg/l	0.13	24242-7	<0.13	11.4	11.7	2.6	4.4	16.6	117	8.86	8.82	99.5	EPA-CI
Nitrate-Nitrite a NO3	10-09-89	mg/l	0.13	24451-1	<0.13	0.22	0.22	0.0	0.89	1.20	110	3.54	3.90	110	LAB
COD	09-08-89	mg/l	7.0	24158-3	<7	<7	<7	NC	100	107	107	75.0	76.5	102	LAB
COD	09-11-89	mg/l	7.0	24087-2 *	<7	19.0	20.4	7.0	100	121	102	75.0	75.6	101	LAB
COD	09-28-89	mg/l	7.0	24265-1	<7	<7	<7	NC	100	108	108	75.0	75.9	101	LAB
Total Cyanide	09-26-89	mg/l	0.01	24304-1	<0.01	<0.01	<0.01	NC	0.100	0.111	111	0.094	0.108	115	EPA-LV

F-989

QA Criteria

1. Method Blank = + or - Detection Limit (DL) or acceptable if concentration is < or = to 10 times the sample concentration.
2. Duplicates RPD = + or - 20% for concentrations >5 times DL.
3. Duplicate (RPD) = Acceptable difference between SR and D is + or - DL where SR is < or = to 5 times DL.
4. Spike % Recovery = 75-125% for sample concentrations <4 times the spike concentrations.
5. QC Check = + or - 20% of True Value or within EPA range.

* Not a BAFB sample.

FORM 004

DL = Detection Limit
SR = Sample Result
D = Duplicate
RPD = Relative Percent Difference
TV = True Value
SSR = Spiked Sample Result
% R = Percent Recovery
LCS = Lab Control Sample
NC = Not Calculable

CH2M HILL

QUALITY CONTROL SAMPLES

LABORATORY NO.: 22294 ANALYSIS: TPH Diesel MATRIX: Soil

DATE TESTED: 2/22/89

COMPOUND	SAMPLE RESULT (PPM)	TRUE VALUE	PERCENT RECOVERY
TPH	134	180	75%

COMMENTS:

CH2M HILL

QUALITY CONTROL SAMPLES

LABORATORY NO.: 22370 ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 2/22/89

COMPOUND	SAMPLE RESULT (PPM)	TRUE VALUE	PERCENT RECOVERY
TFH	123	180	68%

COMMENTS:

BK : 24-87

CH2M HILL

QUALITY CONTROL SAMPLES

LABORATORY NO.: 22766 ANALYSIS: TFH Diesel MATRIX: Soil

DATE TESTED: 2/21/89

COMPOUND	SAMPLE RESULT (PPM)	TRUE VALUE	PERCENT RECOVERY
TFH	130	180	72%

COMMENTS:

CH2M HILL

QUALITY CONTROL SAMPLES

LABORATORY NO.: 22881 ANALYSIS: TFH DIESEL MATRIX: SOIL

DATE TESTED: 4-5-89 gm

COMPOUND	SAMPLE RESULT (PPM)	TRUE VALUE	PERCENT RECOVERY
TFH	116	180	64

COMMENTS:

CH2M HILL

QUALITY CONTROL SAMPLES

LABORATORY NO.: 22870 22879 22871 22874 22878 ANALYSIS: TFH Diesel MATRIX: Water

DATE TESTED: 4/12/89

COMPOUND	SAMPLE RESULT (PPM)	TRUE VALUE	PERCENT RECOVERY
TFH	3.67	5.0	73%

M1

COMMENTS:

CH2M HILL

QUALITY CONTROL SAMPLES

LABORATORY NO.: 22906 22874 22890 22891 22914 22915 22930 ANALYSIS: TFH Diesel MATRIX: Water

DATE TESTED: 4/12

COMPOUND			SAMPLE RESULT (PPM)	TRUE VALUE	PERCENT RECOVERY
TFH	QC	4/4	<0.05	5.0	65%
	QC	4/7	<0.05	5.0	57%

COMMENTS:

F-095

CH2M HILL

QUALITY CONTROL SAMPLES

LABORATORY NO.:

ANALYSIS: TFH Diesel

MATRIX: Water & Soil

DATE TESTED: 6/2/89

COMPOUND		SAMPLE RESULT (PPM)	TRUE VALUE	PERCENT RECOVERY
TFH	Sol QC 5/31	39.2	50	78%

Used 500 µl of a 5.0 mg/ml spike

$0.5\,ml \times \frac{5.0\,mg}{ml} = \frac{2.5\,mg}{1\,l} = 2.5\,mg/l$ water

$0.5\,ml \times \frac{5.0\,mg}{ml} = \frac{2.5\,mg}{.05\,kg} = 50\,ppm$ Soil

COMMENTS:

6-5-89

CH2M HILL

QUALITY CONTROL SAMPLES

LABORATORY NO.: 23473 6/15 / 23417 6/8 ANALYSIS: TFH Diesel MATRIX: Water + Soil

DATE TESTED: 6/20/89

COMPOUND		SAMPLE RESULT (PPM)	TRUE VALUE	PERCENT RECOVERY
TFH	QC 6/8	1.77	2.5	71%
	Sol QC 6/15	34.8	50	70%

Water:

$$0.5\ ml \times \frac{5.0\ mg}{ml} = \frac{2.5\ mg}{1\ l} = 2.5\ mg/l$$

Soil:

$$0.5\ ml \times \frac{5.0\ mg}{ml} = \frac{2.5\ mg}{0.05\ kg} = 50\ ppm$$

COMMENTS:

BB 6-21-89

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 2-24-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	15.4	20	14.0--26.0
Toluene	17.2	20	14.0--26.0
Ethyl benzene	17.7	20	14.0--26.0
Xylene	/////	NA	
Chlorobenzene	18.7	20	14.0--26.0
1,4-Dichlorobenzene	17.3	20	14.0--26.0
1,3-Dichlorobenzene	18.2	20	14.0--26.0
1,2-Dichlorobenzene	18.3	20	14.0--26.0

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 2-24-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoroethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoroethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	61.8	58.4	33.4--74.4
1,2-Dichloroethane	10.5	12.6	6.6--17.5
1,1,1-Trichloroethane	6.3	7.7	3.3--10.2
Carbon Tetrachloride	13.6	14.0	6.8--18.5
Bromodichloromethane	9.1	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.5	8.6	3.7--12.2
Dibromochloromethane	33.1	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	10.3	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	12.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 2-25-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	60.0	58.4	33.4--74.4
1,2-Dichloroethane	9.8	12.6	6.6--17.5
1,1,1-Trichloroethane	5.8	7.7	3.3--10.2
Carbon Tetrachloride	13.2	14.0	6.8--18.5
Bromodichloromethane	8.8	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.3	8.6	3.7--12.2
Dibromochloromethane	33.0	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	9.9	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	13.7	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 2/8020

Date Tested: 2-25-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance-Range (PPB)
Benzene	15.7	20	14.0--26.0
Toluene	17.8	20	14.0--26.0
Ethyl benzene	18.0	20	14.0--26.0
Xylene	/////	NA	
Chlorobenzene	19.6	20	14.0--26.0
1,4-Dichlorobenzene	19.0	20	14.0--26.0
1,3-Dichlorobenzene	19.7	20	14.0--26.0
1,2-Dichlorobenzene	19.2	20	14.0--26.0

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 3-7-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	16.1	20	14.0--26.0
Toluene	18.2	20	14.0--26.0
Ethyl benzene	18.1	20	14.0--26.0
Xylene	////	NA	
Chlorobenzene	19.0	20	14.0--26.0
1,4-Dichlorobenzene	17.6	20	14.0--26.0
1,3-Dichlorobenzene	18.9	20	14.0--26.0
1,2-Dichlorobenzene	18.9	20	14.0--26.0

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [I] 601 or [ ] 8010

Matrix: Water

Date Tested: 3-7-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoroethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoroethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	57.1	58.4	33.4--74.4
1,2-Dichloroethane	11.4	12.6	6.6--17.5
1,1,1-Trichloroethane	5.7	7.7	3.3--10.2
Carbon Tetrachloride	13.2	14.0	6.8--18.5
Bromodichloromethane	8.6	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.0	8.6	3.7--12.2
Dibromochloromethane	36.1	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	12.6	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	13.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 3-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	13.6	20	10.0--27.9
Toluene	17.4	20	11.2--27.7
Ethyl benzene	17.5	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	19.2	20	12.7--25.4
1,4-Dichlorobenzene	19.3	20	11.6--25.5
1,3-Dichlorobenzene	19.0	20	14.5--25.5
1,2-Dichlorobenzene	19.1	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 3-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	14.8	20	10.0--27.9
Toluene	17.3	20	11.2--27.7
Ethyl benzene	17.4	20	10.0--28.0
Xylene	////	NA	
Chlorobenzene	18.8	20	12.7--25.4
1,4-Dichlorobenzene	19.4	20	11.6--25.5
1,3-Dichlorobenzene	19.0	20	14.5--25.5
1,2-Dichlorobenzene	19.3	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 3-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	59.4	58.4	33.4--74.4
1,2-Dichloroethane	10.8	12.6	6.6--17.5
1,1,1-Trichloroethane	6.4	7.7	3.3--10.2
Carbon Tetrachloride	13.5	14.0	6.8--18.5
Bromodichloromethane	8.5	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.2	8.6	3.7--12.2
Dibromochloromethane	33.5	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	10.9	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	14.2	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 3-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	53.6	58.4	33.4--74.4
1,2-Dichloroethane	10.7	12.6	6.6--17.5
1,1,1-Trichloroethane	5.8	7.7	3.3--10.2
Carbon Tetrachloride	10.9	14.0	6.8--18.5
Bromodichloromethane	7.2	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.6	8.6	3.7--12.2
Dibromochloromethane	29.9	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	8.5	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	12.7	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.3

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA-601/8010

Matrix: Water

Date Tested: 3-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane		NA	
Bromomethane		NA	
Dichlorodifluoromethane		NA	
Vinyl chloride		NA	
Chloroethane		NA	
Methylene chloride		NA	
Trichlorofluoromethane		NA	
1,1-Dichloroethene		NA	
1,1-Dichloroethane		NA	
trans-1,2-Dichloroethene		NA	
Chloroform	15.4	15.0	8.4--18.7
1,2-Dichloroethane	2.4	3.1	MDL--4.7
1,1,1-Trichloroethane	1.3	1.9	0.2--2.9
arbon Tetrachloride	5.5	5.6	1.9--7.0
Bromodichloromethane	0.7	1.5	MDL--2.9
1,2-Dichloropropene		NA	
cis-1,3-Dichloropropene		NA	
Trichloroethene	1.1	1.5	0.4--3.2
Dibromochloromethane	1.4	3.2	MDL--11.8
1,1,2-Trichloroethane		NA	
trans-1,3-Dichloropropene		NA	
Bromoform	0.9	2.7	MDL--7.2
1,1,2,2-Tetrachloroethane		NA	
Tetrachloroethene	4.5	3.5	MDL--7.7
Chlorobenzene		NA	
1,3-Dichlorobenzene		NA	
1,2-Dichlorobenzene		NA	
1,4-Dichlorobenzene		NA	

Comments: NA= Compounds not analyzed for in this quality control reference standard

Approved by: _____

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.3

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA-601/8010

Matrix: Water

Date Tested: 3-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane		NA	
Bromomethane		NA	
Dichlorodifluoromethane		NA	
Vinyl chloride		NA	
Chloroethane		NA	
Methylene chloride		NA	
Trichlorofluoromethane		NA	
1,1-Dichloroethene		NA	
1,1-Dichloroethane		NA	
trans-1,2-Dichloroethene		NA	
Chloroform	15.4	15.0	8.4--18.7
1,2-Dichloroethane	2.4	3.1	MDL--4.7
,1,1-Trichloroethane	1.3	1.9	0.2--2.9
Carbon Tetrachloride	5.5	5.6	1.9--7.0
Bromodichloromethane	0.7	1.5	MDL--2.9
1,2-Dichloropropene		NA	
cis-1,3-Dichloropropene		NA	
Trichloroethene	1.1	1.5	0.4--3.2
Dibromochloromethane	1.4	3.2	MDL--11.8
1,1,2-Trichloroethane		NA	
trans-1,3-Dichloropropene		NA	
Bromoform	0.9	2.7	MDL--7.2
1,1,2,2-Tetrachloroethane		NA	
Tetrachloroethene	4.5	3.5	MDL--7.7
Chlorobenzene		NA	
1,3-Dichlorobenzene		NA	
1,2-Dichlorobenzene		NA	
1,4-Dichlorobenzene		NA	

Comments: NA= Compounds not analyzed for in this quality control reference standard

Approved by: _____

CH2M HILL Redding Environmental Laboratory F-1009 Railroad Avenue, P O. Box 2088 ding, California 96001 916 243 5831

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 3-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	18.0	20	10.0--27.9
Toluene	20.6	20	11.2--27.7
Ethyl benzene	21.1	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	19.7	20	12.7--25.4
1,4-Dichlorobenzene	21.1	20	11.6--25.5
1,3-Dichlorobenzene	20.2	20	14.5--25.5
1,2-Dichlorobenzene	19.8	20	10.6--27.6

comments:

Approved by: _____

CH2M HILL Redding Environmental Laboratory F-1010 Railroad Avenue, P O Box 2088 ting, California 96001 916 243 5831

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 3-23-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	65.9	58.4	33.4--74.4
1,2-Dichloroethane	12.2	12.6	6.6--17.5
1,1,1-Trichloroethane	6.9	7.7	3.3--10.2
Carbon Tetrachloride	14.3	14.0	6.8--18.5
Bromodichloromethane	9.1	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.6	8.6	3.7--12.2
Dibromochloromethane	37.3	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	10.7	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	14.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 3-23-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	16.5	20	10.0--27.9
Toluene	19.0	20	11.2--27.7
Ethyl benzene	19.3	20	10.0--28.0
Xylene	////	NA	
Chlorobenzene	20.3	20	12.7--25.4
1,4-Dichlorobenzene	20.3	20	11.6--25.5
1,3-Dichlorobenzene	19.0	20	14.5--25.5
1,2-Dichlorobenzene	19.9	20	10.6--27.6

comments:

Approved by: _____

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 3-30-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	52.1	58.4	33.4--74.4
1,2-Dichloroethane	8.7	12.6	6.6--17.5
1,1,1-Trichloroethane	2.8	7.7	3.3--10.2
Carbon Tetrachloride	8.9	14.0	6.8--18.5
Bromodichloromethane	5.3	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	4.1	8.6	3.7--12.2
Dibromochloromethane	20.1	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	5.1	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.3	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

Engineers
Planners
CH2MHILL Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 3-30-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	14.7	20	10.0--27.9
Toluene	18.0	20	11.2--27.7
Ethyl benzene	18.1	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	19.6	20	12.7--25.4
1,4-Dichlorobenzene	20.4	20	11.6--25.5
1,3-Dichlorobenzene	19.8	20	14.5--25.5
1,2-Dichlorobenzene	19.5	20	10.6--27.6

comments:

Approved by: ir

CH2MHILL Redding Environmental Laboratory 2713 Railroad Avenue P.O. Box 2089 Redding, California 96001 916 243 5931

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date tested: 3-21-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	64.9	58.4	33.4--74.4
1,2-Dichloroethane	10.3	12.6	6.6--17.5
1,1,1-Trichloroethane	4.9	7.7	3.3--10.2
Carbon Tetrachloride	12.7	14.0	6.8--18.5
Bromodichloromethane	6.9	10.3	5.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.5	8.6	3.7--12.2
Dibromochloromethane	26.7	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	10.1	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.8	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date tested: 3-31-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	58.2	58.4	33.4--74.4
1,2-Dichloroethane	8.4	12.6	6.6--17.5
1,1,1-Trichloroethane	3.5	7.7	3.3--18.2
Carbon Tetrachloride	9.8	14.8	6.8--18.5
Bromodichloromethane	5.6	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	4.4	8.6	3.7--12.2
Dibromochloromethane	22.1	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	8.7	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date tested: 3-31-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	17.6	20	10.0--27.9
Toluene	17.1	20	11.2--27.7
Ethyl benzene	16.8	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	18.5	20	12.7--25.4
1,4-Dichlorobenzene	19.6	20	11.6--25.5
1,3-Dichlorobenzene	19.2	20	14.5--25.5
1,2-Dichlorobenzene	19.1	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date tested: 3-31-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	22.3	20	10.0--27.9
Toluene	21.1	20	11.2--27.7
Ethyl benzene	20.4	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	22.1	20	12.7--25.4
1,4-Dichlorobenzene	20.5	20	11.6--25.5
1,3-Dichlorobenzene	20.4	20	14.5--25.5
1,2-Dichlorobenzene	20.8	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-1114 Analysis: EPA 602/8020

Date Tested: 4-3-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	28.3	20	10.0--27.9
Toluene	20.4	20	11.2--27.7
Ethyl benzene	20.1	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	21.6	20	12.7--25.4
1,4-Dichlorobenzene	18.9	20	11.6--25.5
1,3-Dichlorobenzene	18.5	20	14.5--25.5
1,2-Dichlorobenzene	18.9	20	10.6--27.6

comments: Dichlorobenzenes reported from Hall detector

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-3-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	66.8	58.4	33.4--74.4
1,2-Dichloroethane	12.8	12.6	6.6--17.5
1,1,1-Trichloroethane	3.4	7.7	3.3--18.2
Carbon Tetrachloride	14.1	14.8	6.8--18.5
Bromodichloromethane	7.8	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.4	8.6	3.7--12.2
Dibromochloromethane	19.1	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	8.8	14.9	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	14.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 4-4-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	24.0	20	10.0--27.9
Toluene	18.5	20	11.2--27.7
Ethyl benzene	18.5	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.5	20	12.7--25.4
1,4-Dichlorobenzene	16.8	20	11.6--25.5
1,3-Dichlorobenzene	16.5	20	14.5--25.5
1,2-Dichlorobenzene	16.7	20	10.6--27.6

comments: Dichlorobenzenes reported from Hall detector

Approved by:_____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A

Analysis: EPA 602/8020

Date Tested: 4-4-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	26.2	20	10.0--27.9
Toluene	19.1	20	11.2--27.7
Ethyl benzene	18.6	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.7	20	12.7--25.4
1,4-Dichlorobenzene	17.7	20	11.6--25.5
1,3-Dichlorobenzene	17.3	20	14.5--25.5
1,2-Dichlorobenzene	17.6	20	10.6--27.6

comments: Dichlorobenzenes reported from Hall detector

Approved by:_____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-4-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	61.4	38.4	33.4--74.4
1,2-Dichloroethane	10.3	12.6	6.6--17.5
1,1,1-Trichloroethane	2.8	7.7	3.3--10.2
Carbon Tetrachloride	12.4	14.0	6.8--18.5
Bromodichloromethane	6.6	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.4	8.6	3.7--12.2
Dibromochloromethane	19.4	41.5	18.3--69.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	8.1	14.0	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-4-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	63.6	58.4	33.4--74.4
1,2-Dichloroethane	11.8	12.6	6.6--17.5
1,1,1-Trichloroethane	2.1	7.7	3.3--18.2
Carbon Tetrachloride	12.1	14.8	6.8--18.5
Bromodichloromethane	6.4	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.8	8.6	3.7--12.2
Dibromochloromethane	19.5	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	7.8	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.8	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGABLE AROMATICS

PR-1AM LOT NO: 21-111A

Analysis: EPA 602/8020

Date Tested: 4-5-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	22.5	20	10.0--27.9
Toluene	19.3	20	11.2--27.7
Ethyl benzene	19.9	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.7	20	12.7--25.4
1,4-Dichlorobenzene	20.1	20	11.6--25.5
1,3-Dichlorobenzene	20.4	20	14.5--25.5
1,2-Dichlorobenzene	20.8	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-5-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	69.3	58.4	33.4--74.4
1,2-Dichloroethane	11.2	12.6	6.6--17.5
1,1,1-Trichloroethane	3.3	7.7	3.3--10.2
Carbon Tetrachloride	15.8	14.8	6.8--18.5
Bromodichloromethane	7.7	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dicnloropropene			
Trichloroethene	5.6	8.6	3.7--12.2
Dibromochloromethane	22.7	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	8.7	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	10.5	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE , VOLATILE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 4-12-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	22.6	20	10.0--27.9
Toluene	20.1	20	11.2--27.7
Ethyl benzene	18.4	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.3	20	12.7--25.4
1,4-Dichlorobenzene	12.7	20	11.6--25.5
1,3-Dichlorobenzene	16.8	20	14.5--25.5
1,2-Dichlorobenzene	16.7	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-12-1987

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	86.1	58.4	33.4--74.4
1,2-Dichloroethane	15.3	12.6	6.6--17.5
1,1,1-Trichloroethane	6.4	7.7	3.3--18.2
Carbon Tetrachloride	16.4	14.8	6.8--18.5
Bromodichloromethane	9.9	18.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.8	8.6	3.7--12.2
Dibromochloromethane	36.8	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	11.4	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.3	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	51.6	58.4	33.4--74.4
1,2-Dichloroethane	8.5	12.6	6.6--17.5
1,1,1-Trichloroethane	12.4	7.7	3.3--18.2
Carbon tetrachloride	18.8	14.8	6.8--18.5
Bromodichloromethane	6.9	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.8	8.6	3.7--12.2
Dibromochloromethane	23.7	41.5	19.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	8.3	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.4	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-14-1989

Compound	Sample Result (PPB	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	58.4	58.4	33.4--74.4
1,2-Dichloroethane	8.8	12.6	6.6--17.5
1,1,1-Trichloroethane	4.5	7.7	3.3--10.2
Carbon Tetrachloride	11.1	14.8	6.8--18.5
Bromodichloromethane	6.7	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.7	8.6	3.7--12.2
Dibromochloromethane	24.3	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	7.7	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.7	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	58.8	58.4	33.4--74.4
1,2-Dichloroethane	10.5	12.6	6.6--17.5
1,1,1-Trichloroethane	4.9	7.7	3.3--10.2
Carbon Tetrachloride	11.0	14.0	6.8--18.5
Bromodichloromethane	7.3	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.9	8.6	3.7--12.2
Dibromochloromethane	25.7	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	9.0	14.0	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.1	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

P-1031

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 4-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	17.4	20	10.0--27.9
Toluene	17.7	20	11.2--27.7
Ethyl benzene	20.0	20	10.0--28.0
Xylene	////	NA	
Chlorobenzene	19.1	20	12.7--25.4
1,4-Dichlorobenzene	20.4	20	11.6--25.5
1,3-Dichlorobenzene	19.3	20	14.5--25.5
1,2-Dichlorobenzene	19.5	20	10.4--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 4-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	18.0	20	10.0--27.9
Toluene	18.1	20	11.2--27.7
Ethyl benzene	19.0	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	19.7	20	12.7--25.4
1,4-Dichlorobenzene	21.3	20	11.6--25.5
1,3-Dichlorobenzene	20.1	20	14.5--25.5
1,2-Dichlorobenzene	21.3	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A

Analysis: EPA 602/8020

Date Tested: 4-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	18.8	20	10.0--27.9
Toluene	18.0	20	11.2--27.7
Ethyl benzene	17.7	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	19.4	20	12.7--25.4
1,4-Dichlorobenzene	22.1	20	11.6--25.5
1,3-Dichlorobenzene	20.6	20	14.5--25.5
1,2-Dichlorobenzene	21.6	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A

Analysis: EPA 602/8020

Date Tested: 4-18-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	16.3	20	10.0--27.9
Toluene	18.3	20	11.2--27.7
Ethyl benzene	18.5	20	10.0--28.0
Xylene	////	NA	
Chlorobenzene	19.4	20	12.7--25.4
1,4-Dichlorobenzene	19.2	20	11.6--25.5
1,3-Dichlorobenzene	20.6	20	14.5--25.5
1,2-Dichlorobenzene	20.3	20	10.6--27.6

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 4-18-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	57.7	58.4	33.4--74.4
1,2-Dichloroethane	11.4	12.6	6.6--17.5
1,1,1-Trichloroethane	5.6	7.7	3.3--10.2
Carbon Tetrachloride	13.3	14.0	6.8--18.5
Bromodichloromethane	8.3	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.6	8.6	3.7--12.2
Dibromochloromethane	27.8	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	0.9	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.3	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date tested: 6-5-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	72.1	58.4	33.4--74.4
1,2-Dichloroethane	13.8	12.6	6.6--17.5
1,1,1-Trichloroethane	5.9	7.7	3.3--18.2
Carbon Tetrachloride	14.6	14.8	6.8--18.5
Bromodichloromethane	9.8	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.4	8.6	3.7--12.2
Dibromochloromethane	32.3	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	11.4	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.7	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-IAM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 6-5-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	19.3	20	10.0--27.9
Toluene	19.3	20	11.2--27.7
Ethyl benzene	13.7	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	16.0	20	12.7--25.4
1,4-Dichlorobenzene	14.6	20	11.6--25.5
1,3-Dichlorobenzene	15.3	20	14.5--25.5
1,2-Dichlorobenzene	14.6	20	10.6--27.6

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.3

CH2M Hill Environmental Laboratory
Redding, California

Analysis: EPA-601/8010

Matrix: Water

Date Tested: 6-13-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane		NA	
Bromoethane		NA	
Dichlorodifluoroethane		NA	
vinyl chloride		NA	
Chloroethane		NA	
Methylene chloride		NA	
Trichlorofluoroethane		NA	
1,1-Dichloroethene		NA	
1,1-Dichloroethane		NA	
trans-1,2-Dichloroethene		NA	
Chloroform	16.4	15.0	8.4--18.7
1,2-Dichloroethane	2.8	3.1	MDL--4.7
1,1,1-Trichloroethane	1.2	1.9	0.2--2.9
Carbon Tetrachloride	5.3	5.6	1.9--7.9
Bromodichloroethane	0.7	1.5	MDL--2.9
1,2-Dichloropropane		NA	
cis-1,3-Dichloropropene		NA	
Trichloroethene	1.2	1.5	0.4--3.2
Dibromochloroethane	1.4	3.2	MDL--11.8
1,1,2-Trichloroethane		NA	
trans-1,3-Dichloropropene		NA	
Bromoform	1.4	2.7	MDL--7.2
1,1,2,2-Tetrachloroethane		NA	
Tetrachloroethene	2.9	3.5	MDL--7.7
Chlorobenzene		NA	
1,3-Dichlorobenzene		NA	
1,2-Dichlorobenzene		NA	
1,4-Dichlorobenzene		NA	

Comments: NA= Compounds not analyzed for in this quality control reference standard

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-13-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoroethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoroethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	72.0	58.4	33.4--74.4
1,2-Dichloroethane	12.9	12.6	6.6--17.5
1,1,1-Trichloroethane	6.7	7.7	3.3--10.2
Carbon Tetrachloride	15.8	14.0	6.8--18.5
Bromodichloromethane	9.3	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.9	8.6	3.7--12.2
Dibromochloromethane	32.5	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	12.3	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-[illegible]-1988

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoroethane			
vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	55.3	58.4	30.4--74.4
1,2-Dichloroethane	9.9	12.0	6.6--17.5
1,1,1-Trichloroethane	4.8	7.7	3.3--10.2
Carbon Tetrachloride	12.6	14.0	6.8--18.5
Bromodichloromethane	7.3	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.2	8.6	3.7--12.2
Dibromochloromethane	26.3	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	10.9	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	10.7	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: [signature]

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 463 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-13-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoroethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoroethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	56.3	58.4	33.4--74.4
1,2-Dichloroethane	11.0	12.6	6.6--17.5
1,1,1-Trichloroethane	6.9	7.7	3.3--10.2
Carbon Tetrachloride	13.0	14.0	6.8--18.5
Bromodichloroethane	7.3	10.3	4.3--16.7
1,2-Dichloropropa e			
cis-1,3-Dichloropropene			
Trichloroethene	6.4	8.6	3.7--12.1
Dibromochloroethane	37.0	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	10.1	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	10.6	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4 Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A

Analysis: EPA 602/8020

Date Tested: 6-13-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	18.8	20	10.0--27.9
Toluene	20.0	20	11.2--27.7
Ethyl benzene	18.0	20	10.0--28.8
Xylene. .	////	NA	
Chlorobenzene	19.8	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	37.0	40	22.2--53.1
1,3-Dichlorobenzene	18.0	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-13-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	12.6	20	10.0--27.9
Toluene	15.7	20	11.2--27.7
Ethyl benzene	17.6	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	18.6	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	34.1	40	22.2--53.1
1,3-Dichlorobenzene	18.4	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-IAM LOT NO.:21-111A

Analysis: EPA 602/8020

Date Tested: 6-13-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	12.6	20	10.0--27.9
Toluene	15.7	20	11.2--27.7
Ethyl benzene	17.6	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	16.3	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	34.1	40	22.2--53.1
1,3-Dichlorobenzene	18.4	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	56.9	58.4	33.4--74.4
1,2-Dichloroethane	10.1	12.6	6.6--17.5
1,1,1-Trichloroethane	5.2	7.7	3.3--10.2
Carbon Tetrachloride	12.8	14.0	6.8--18.5
Bromodichloromethane	7.8	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.5	8.6	3.7--12.2
Dibromochloromethane	27.0	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	10.0	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	10.3	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-14-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	17.8	20	10.0--27.9
Toluene	20.3	20	11.2--27.7
Ethyl benzene	19.7	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.7	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	58.1	40	22.2--53.1
1,3-Dichlorobenzene	24.1	20	14.5--25.5

comments:

Approved by: _____

F-1047

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	75.5	58.4	33.4--74.4
1,2-Dichloroethane	13.8	12.6	6.6--17.5
1,1,1-Trichloroethane	7.3	7.7	3.3--10.2
Carbon Tetrachloride	16.3	14.0	6.8--18.5
Bromodichloromethane	9.7	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.9	8.6	3.7--12.2
Dibromochloromethane	33.9	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	13.2	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.7	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoroethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoroethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	57.7	58.4	33.4--74.4
1,2-Dichloroethane	10.1	12.6	6.6--17.5
1,1,1-Trichloroethane	5.7	7.7	3.3--10.2
Carbon Tetrachloride	13.7	14.0	6.8--18.5
Bromodichloroethane	7.9	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.8	8.6	3.7--12.2
Dibromochloroethane	27.3	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	11.0	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	10.6	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	81.6	58.4	33.4--74.4
1,2-Dichloroethane	15.3	12.6	6.6--17.5
1,1,1-Trichloroethane	8.5	7.7	3.3--10.2
Carbon Tetrachloride	19.1	14.0	6.8--18.5
Bromodichloromethane	10.8	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	9.1	8.6	3.7--12.2
Dibromochloromethane	36.9	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	14.8	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	12.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	21.8	20	10.0--27.9
Toluene	23.3	20	11.2--27.7
Ethyl benzene	21.2	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	22.1	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	39.7	40	22.2--53.1
1,3-Dichlorobenzene	20.0	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	17.8	20	10.0--27.9
Toluene	20.3	20	11.2--27.7
Ethyl benzene	20.1	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.7	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	42.9	40	22.2--53.1
1,3-Dichlorobenzene	21.5	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-15-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	23.0	20	10.0--27.9
Toluene	24.1	20	11.2--27.7
Ethyl benzene	21.5	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	22.4	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	40.3	40	22.2--53.1
1,3-Dichlorobenzene	20.4	20	14.5--25.5

ccaaents:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hi'' Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date tested: 6-19-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	54.0	58.4	33.4--74.4
1,2-Dichloroethane	9.7	12.6	6.6--17.5
1,1,1-Trichloroethane	3.3	7.7	3.3--10.2
Carbon Tetrachloride	9.6	14.0	6.8--18.5
Bromodichloromethane	5.2	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.3	8.6	3.7--12.2
Dibromochloromethane	16.9	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	3.4	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.3	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-111A Analysis: EPA 602/8020

Date Tested: 6-19-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	15.3	20	10.0--27.9
Toluene	15.6	20	11.2--27.7
Ethyl benzene	17.4	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	17)	[illegible]	12 [illegible] -25.4
1, [illegible] chlorobenzene	24.5	20	1. [illegible] -25.5
1,[illegible] chlorobenzene	19.4	20	14.[illegible]--25.5
1,2-dichlorobenzene	20.5	20	10.6--27.6

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-21-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoroethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	46.4	58.4	33.4--74.4
1,2-Dichloroethane	9.2	12.6	6.6--17.5
1,1,1-Trichloroethane	4.4	7.7	3.3--10.2
Carbon Tetrachloride	11.3	14.0	6.8--18.5
Bromodichloromethane	6.4	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.1	8.6	3.7--12.2
Dibromochloromethane	22.9	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	8.1	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.5	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A

Analysis: EPA 602/8020

Date Tested: 6-21-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	22.6	20	10.0--27.9
Toluene	23.0	20	11.2--27.7
Ethyl benzene	13.6	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.6	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	56.1	40	22.2--53.1
1,3-Dichlorobenzene	30.0	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-23-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	47.9	58.4	33.4--74.4
1,2-Dichloroethane	9.3	12.6	6.6--17.5
1,1,1-Trichloroethane	4.6	7.7	3.3--10.2
Carbon Tetrachloride	10.2	14.0	6.8--18.5
Bromodichloromethane	7.2	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.6	8.6	3.7--12.2
Dibromochloromethane	25.9	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	10.2	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	8.5	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-23-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	57.0	58.4	33.4--74.4
1,2-Dichloroethane	11.7	12.6	6.6--17.5
1,1,1-Trichloroethane	5.4	7.7	3.3--10.2
Carbon Tetrachloride	11.4	14.0	6.8--18.5
Bromodichloromethane	8.4	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.3	8.6	3.7--12.2
Dibromochloromethane	31.7	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	13.5	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	9.6	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

F-1059

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-23-1984

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	74.0	58.4	33.4--74.4
1,2-Dichloroethane	14.3	12.6	6.6--17.5
1,1,1-Trichloroethane	6.9	7.7	3.3--10.2
Carbon Tetrachloride	15.7	14.0	6.8--18.5
Bromodichloromethane	9.5	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.6	8.6	3.7--12.2
Dibromochloromethane	36.2	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	13.2	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.8	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

F-1060

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-23-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	22.3	20	10.0--27.9
Toluene	21.8	20	11.2--27.7
Ethyl benzene	12.6	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.0	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	58.1	40	22.2--53.1
1,3-Dichlorobenzene	29.7	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A

Analysis: EPA 602/8020

Date Tested: 6-23-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	22.8	20	10.0--27.9
Toluene	21.5	20	11.2--27.7
Ethyl benzene	16.9	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.2	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	42.2	40	22.2--53.1
1,3-Dichlorobenzene	19.4	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A

Analysis: EPA 602/8020

Date Tested: 6-23-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	23.2	20	10.0--27.9
Toluene	20.8	20	11.2--27.7
Ethyl benzene	21.2	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	19.3	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	34.5	40	22.2--53.1
1,3-Dichlorobenzene	16.7	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-24-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	62.2	58.4	33.4--74.4
1,2-Dichloroethane	11.4	12.6	6.6--17.5
1,1,1-Trichloroethane	5.7	7.7	3.3--10.2
Carbon Tetrachloride	13.6	14.0	6.8--18.5
Bromodichloromethane	8.2	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.8	8.6	3.7--12.2
Dibromochloromethane	31.3	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	11.2	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.0	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-24-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	23.8	20	10.0--27.9
Toluene	22.6	20	11.2--27.7
Ethyl benzene	19.5	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	21.2	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	43.3	40	22.2--53.1
1,3-Dichlorobenzene	20.5	20	14.5--25.5

comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-26-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	62.2	58.4	33.4--74.4
1,2-Dichloroethane	11.0	12.6	6.6--17.5
1,1,1-Trichloroethane	5.9	7.7	3.3--10.2
Carbon Tetrachloride	14.0	14.0	6.8--18.5
Bromodichloromethane	8.7	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.7	8.6	3.7--12.2
Dibromochloromethane	31.9	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	11.7	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.3	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 6-26-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	63.7	58.4	33.4--74.4
1,2-Dichloroethane	11.0	12.6	6.6--17.5
1,1,1-Trichloroethane	6.1	7.7	3.3--10.2
Carbon Tetrachloride	14.4	14.0	6.8--18.5
Bromodichloromethane	9.2	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.7	8.6	3.7--12.2
Dibromochloromethane	31.5	41.5	18.3--65.1
1,1,2-Trichloroethane			
trans-1,3-Dichloropropene			
Bromoform	11.7	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane			
Tetrachloroethene	11.1	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-26-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	23.2	20	10.0--27.9
Toluene	22.4	20	11.2--27.7
Ethyl benzene	18.5	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	20.7	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	44.7	40	22.2--53.1
1,3-Dichlorobenzene	21.0	20	14.5--25.5

Comments:

Approved by: _____

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO.:21-111A Analysis: EPA 602/8020

Date Tested: 6-26-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	25.4	20	10.0--27.9
Toluene	23.3	20	11.2--27.7
Ethyl benzene	17.9	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	21.0	20	12.7--25.4
1,4 & 1,2-Dichlorobenzene	45.9	40	22.2--53.1
1,3-Dichlorobenzene	21.4	20	14.5--25.5

comments:

Approved by: _____

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 9-6-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	57.9	58.4	33.4--74.4
1,2-Dichloroethane	10.4	12.6	6.6--17.5
1,1,1-Trichloroethane	5.7	7.7	3.3--10.2
Carbon Tetrachloride	13.8	14.0	6.8--18.5
Bromodichloromethane	6.2	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	6.1	8.6	3.7--12.2
Dibromochloromethane (*)	31.3	41.5	19.3--65.1
1,1,2-Trichloroethane (*)			
trans-1,3-Dichloropropene (*)			
Bromoform	7.6	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane (**)			
Tetrachloroethene (**)	14.5	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments: (*) Under the conditions of analysis, Dibromochloromethane, 1,1,2-Trichloroethane and trans-1,3-Dichloropropene coelute. If a peak is detected, it is impossible to distinguish between the three compounds.

(**) Likewise 1,1,2,2-Tetrachloroethane and Tetrachloroethene coelute. If a peak is detected is is impossible to distinguish between the two compounds.

Approved by: _____

CH2M HILL Redding Environmental Laboratory 5090 Caterpillar Road California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-103C

Analysis: EPA 602/8020

Date Tested: 9-6-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	13.4	20	10.0--27.9
Toluene	17.2	20	11.2--27.7
Ethyl benzene	18.1	20	10.0--20.9
Xylene	////	NA	
Chlorobenzene	18.6	20	12.7--25.4
1,4-Dichlorobenzene	20.2	20	11.6--25.5
1,3-Dichlorobenzene	23.6	20	14.5--25.5
1,2-Dichlorobenzene	25.7	20	10.6--27.6

comments:

Approved by: BT

CH2M HILL Redding Environmental Laboratory 5090 Caterpillar Road Redding, California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 9-7-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	55.7	58.4	33.4--74.4
1,2-Dichloroethane	9.9	12.6	6.6--17.5
1,1,1-Trichloroethane	5.1	7.7	3.3--10.2
Carbon Tetrachloride	12.7	14.0	6.8--18.5
Bromodichloromethane	6.0	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.6	8.6	3.7--12.2
Dibromochloroethane (‡)	30.0	41.5	18.3--65.1
1,1,2-Trichloroethane (‡)			
trans-1,3-Dichloropropene (‡)			
Bromoform	7.4	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane (‡‡)			
Tetrachloroethene (‡‡)	13.6	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments: (‡) Under the conditions of analysis, Dibromochloroethane, 1,1,2-Trichloroethane and trans-1,3-Dichloropropene coelute. If a peak is detected, it is impossible to distinguish between the three compounds.

(‡‡) Likewise 1,1,2,2-Tetrachloroethane and Tetrachloroethene coelute. If a peak is detected is is impossible to distinguish between the two compounds.

Approved by: _____

CH2M HILL Redding Environmental Laboratory 5090 Caterpillar Road Redding, California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-103C Analysis: EPA 602/8020

Date Tested: 9-7-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	12.9	20	10.0--27.9
Toluene	16.7	20	11.2--27.7
Ethyl benzene	18.3	20	10.0--28.0
Xylene	////	NA	
Chlorobenzene	19.0	20	12.7--25.4
1,4-Dichlorobenzene	20.4	20	11.6--25.5
1,3-Dichlorobenzene	20.7	20	14.5--25.5
1,2-Dichlorobenzene	20.7	20	10.6--27.6

comments:

Approved by: BJT

CH2M HILL Redding Environmental Laboratory 5090 Caterpillar Road [illegible]ng, California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [4] 601 or [ ] 8010

Matrix: Water

Date Tested: 8-7-1990

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	55.7	56.4	33.4--74.4
1,2-Dichloroethane	9.9	12.6	6.6--17.5
1,1,1-Trichloroethane	5.1	7.7	3.3--10.2
Carbon Tetrachloride	12.7	14.0	6.8--18.5
Bromodichloromethane	6.0	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.6	8.6	3.7--12.2
Dibromochloromethane (‡)	38.0	41.5	18.3--65.1
1,1,2-Trichloroethane (‡)			
trans-1,3-Dichloropropene (‡)			
Bromoform	7.4	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane (‡‡)			
Tetrachloroethene (‡‡)	13.6	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments: (‡) Under the conditions of analysis, Dibromochloromethane, 1,1,2-Trichloroethane and trans-1,3-Dichloropropene coelute. If a peak is detected, it is impossible to distinguish between the three compounds.

(‡‡) Likewise 1,1,2,2-Tetrachloroethane and Tetrachloroethene coelute. If a peak is detected is is impossible to distinguish between the two compounds.

Approved by: _____

CH2M HILL Redding Environmental Laboratory 5090 Caterpillar Road California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-103C

Analysis: EPA 602/8020

Date Tested: 9-7-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	12.9	20	10.0--27.9
Toluene	16.7	20	11.2--27.7
Ethyl benzene	18.3	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	19.0	20	12.7--25.4
1,4-Dichlorobenzene	20.4	20	11.6--25.5
1,3-Dichlorobenzene	20.7	20	14.5--25.5
1,2-Dichlorobenzene	20.7	20	10.6--27.6

comments:

Approved by: _____

CH2M-HILL Redding Environmental Laboratory 5090 Caterpillar Road Redding California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date Tested: 9-8-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	55.0	58.4	33.4--74.4
1,2-Dichloroethane	9.6	12.6	6.6--17.5
1,1,1-Trichloroethane	5.4	7.7	3.3--10.2
Carbon Tetrachloride	13.4	14.0	6.8--18.5
Bromodichloromethane	6.1	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.8	8.6	3.7--12.2
Dibromochloromethane (8)	29.0	41.5	18.3--65.1
1,1,2-Trichloroethane (8)			
trans-1,3-Dichloropropene (8)			
Bromoform	7.3	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane (88)			
Tetrachloroethene (88)	14.2	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments: (8) Under the conditions of analysis, Dibromochloromethane, 1,1,2-Trichloroethane and trans-1,3-Dichloropropene coelute. If a peak is detected, it is impossible to distinguish between the three coepounds.

(88) Likewise 1,1,2,2-Tetrachloroethane and Tetrachloroethene coelute. If a peak is detected is is impossible to distinguish between the two coepounds.

Approved by: _____

CH2M HILL Redding Environmental Laboratory 5090 Caterpillar Road [illegible] California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [4] 601 or [ ] 8010

Matrix: Water

Date Tested: 9-8-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	64.9	58.4	33.4--74.4
1,2-Dichloroethane	11.1	12.6	6.6--17.5
1,1,1-Trichloroethane	8.3	7.7	3.3--10.2
Carbon Tetrachloride	14.8	14.8	6.8--18.5
Bromodichloromethane	12.1	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.8	8.6	3.7--12.2
Dibromochloromethane (8)	38.7	41.5	18.3--65.1
1,1,2-Trichloroethane (8)			
trans-1,3-Dichloropropene (8)			
Bromoform	10.7	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane (88)			
Tetrachloroethene (88)	12.7	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments: (8) Under the conditions of analysis, Dibromochloromethane, 1,1,2-Trichloroethane and trans-1,3-Dichloropropene coelute. If a peak is detected, it is impossible to distinguish between the three compounds.

(88) Likewise 1,1,2,2-Tetrachloroethane and Tetrachloroethene coelute. If a peak is detected it is impossible to distinguish between the two compounds.

Approved by: _____

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-103C

Analysis: EPA 602/8020

Date Tested: 9-8-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	14.6	20	10.0--27.9
Toluene	18.9	20	11.2--27.7
Ethyl benzene	20.6	20	10.0--28.8
Xylene	////	NA	
Chlorobenzene	21.4	20	12.7--25.4
1,4-Dichlorobenzene	21.8	20	11.6--25.5
1,3-Dichlorobenzene	23.5	20	14.5--25.5
1,2-Dichlorobenzene	22.2	20	10.6--27.6

comments:

Approved by: GT

CH2M HILL Redding Environmental Laboratory 5090 Caterpillar Road California 96003 916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date tested: 12-3-1987

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloroethane			
Bromoethane			
Dichlorodifluoromethane			
vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	58.1	58.4	33.4--74.4
1,2-Dichloroethane	16.8	12.6	6.6--17.5
1,1,1-Trichloroethane	7.2	7.7	3.3--10.2
Carbon Tetrachloride	15.5	14.2	6.8--18.5
Bromodichloromethane	9.2	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	7.2	8.6	3.7--12.2
Dibromochloromethane (*)	32.7	41.5	18.3--65.1
1,1,2-Trichloroethane (*)			
trans-1,3-Dichloropropene (*)			
Bromoform	13.4	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane (**)			
Tetrachloroethene (**)	13.9	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments: (*) Under the conditions of analysis, Dibromochloromethane, 1,1,2-Trichloroethane and trans-1,3-Dichloropropene coelute. If a peak is detected, it is impossible to distinguish between the three compounds.

(**) Likewise 1,1,2,2-Tetrachloroethane and Tetrachloroethene coelute. If a peak is detected is is impossible to distinguish between the two compounds.

Approved by: Greg Jonlin

CH2M Hill Redding Environmental Laboratory
5090 Caterpillar Road
Redding, California 96003
916 244 5227

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-103C Analysis: EPA 602/8020

Date Tested: 10-3-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	17.1	20	15.4--24.6
Toluene	19.1	20	15.5--25.4
Ethyl benzene	24.5	20	12.6--27.4
Xylene	////	NA	
Chlorobenzene	19.8	20	16.1--23.9
1,4-Dichlorobenzene	13.6	20	13.9--26.1
1,3-Dichlorobenzene	13.5	20	14.5--25.5
1,2-Dichlorobenzene	14.8	20	13.6--26.4

comments:

Approved by: Gary Fowler

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date tested: 12-4-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoroethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	52.6	58.4	33.4--74.4
1,2-Dichloroethane	11.0	12.6	6.6--17.5
1,1,1-Trichloroethane	4.3	7.7	3.3--18.2
Carbon Tetrachloride	10.5	14.0	6.8--18.5
Bromodichloromethane	5.8	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	5.9	8.6	3.7--12.2
Dibromochloromethane (*)	29.8	41.5	18.3--65.1
1,1,2-Trichloroethane (*)			
trans-1,3-Dichloropropene (*)			
Bromoform	6.4	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane (**)			
Tetrachloroethene (**)	15.8	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments: (*) Under the conditions of analysis, Dibromochloromethane, 1,1,2-Trichloroethane and trans-1,3-Dichloropropene coelute. If a peak is detected, it is impossible to distinguish between the three compounds.

(**) Likewise 1,1,2,2-Tetrachloroethane and Tetrachloroethene coelute. If a peak is detected is is impossible to distinguish between the two compounds.

Approved by: Greg Jones

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-103C

Analysis: EPA 602/8020

Date Tested: 10-4-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	14.3	20	15.4--24.6
Toluene	17.9	20	15.5--25.4
Ethyl benzene	18.2	20	12.6--27.4
Xylene	////	NA	
Chlorobenzene	18.5	20	16.1--23.9
1,4-Dichlorobenzene	34.0	20	13.9--26.1
1,3-Dichlorobenzene	23.4	20	14.5--25.5
1,2-Dichlorobenzene	24.0	20	13.6--26.4

comments:

Approved by:

CH2M HILL Engineers Planners Economists Scientists

QUALITY CONTROL REFERENCE SAMPLE
EPA WATER POLLUTION 483 CONC.4

CH2M Hill Environmental Laboratory
Redding, California

Analysis: [X] 601 or [ ] 8010

Matrix: Water

Date tested: 10-5-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Chloromethane			
Bromomethane			
Dichlorodifluoromethane			
Vinyl chloride			
Chloroethane			
Methylene chloride			
Trichlorofluoromethane			
1,1-Dichloroethene			
1,1-Dichloroethane			
trans-1,2-Dichloroethene			
Chloroform	53.5	58.4	33.4--74.4
1,2-Dichloroethane	14.5	12.6	6.6--17.5
1,1,1-Trichloroethane	7.4	7.7	3.3--10.2
Carbon Tetrachloride	16.9	14.0	6.8--19.5
Bromodichloromethane	9.9	10.3	4.3--16.7
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Trichloroethene	8.6	8.6	3.7--12.2
Dibromochloromethane (*)	48.5	41.5	18.3--65.1
1,1,2-Trichloroethane (*)			
trans-1,3-Dichloropropene (*)			
Bromoform	12.3	14.8	2.2--22.1
1,1,2,2-Tetrachloroethane (**)			
Tetrachloroethene (**)	18.0	9.5	1.3--16.6
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

Comments: (*) Under the conditions of analysis, Dibromochloromethane, 1,1,2-Trichloroethane and trans-1,3-Dichloropropene coelute. If a peak is detected, it is impossible to distinguish between the three compounds.

(**) Likewise 1,1,2,2-Tetrachloroethane and Tetrachloroethene coelute. If a peak is detected is is impossible to distinguish between the two compounds.

Approved by: Greg Jonkin

Engineers
Planners
Economists
Scientists

QUALITY CONTROL REFERENCE SAMPLE
CHEM SERVICE PURGEABLE AROMATICS

PR-1AM LOT NO: 21-103C

Analysis: EPA 602/8020

Date Tested: 0-5-1989

Compound	Sample Result (PPB)	True Value (PPB)	Acceptance Range (PPB)
Benzene	19.5	20	15.4--24.6
Toluene	21.2	20	15.5--25.4
Ethyl benzene	17.8	20	12.6--27.4
Xylene	////	NA	
Chlorobenzene	19.4	20	16.1--23.9
1,4-Dichlorobenzene	18.1	20	13.9--26.1
1,3-Dichlorobenzene	17.1	20	14.5--25.5
1,2-Dichlorobenzene	18.2	20	13.6--26.4

comments:

Approved by: Greg Foulk

APPENDIX G

GROUNDWATER LEVELS AT BEALE AIR FORCE BASE

Table G-1
GROUNDWATER LEVELS AT BEALE AFB, APRIL 1986

Well Number	Ground Surface Elevation (NGVD)	Total Depth (ft)	Screened Depth Interval (ft)	Elevation of Top of Monument (NGVD)	Depth to Water (ft)	Water Elevation (NGVD)
1-A-1	92.34	118	98-118	94.18	108.13	-13.95
2-A-1	83.58	113	93-113	86.16	102.38	-16.22
2-R-1	92.57	100	80-100	93.41	87.70	5.71
2-R-2	93.13	96	76-96	94.05	87.00	7.05
2-R-3	95.39	90	80-90	96.84	86.40	10.44
2-R-4	94.34	100	80-100	95.59	88.06	7.83
3-A-1	112.02	123	103-123	114.86	112.09	2.77
3-A-2	106.75	132	112-132	108.74	108.04	0.70
3-A-3	101.00	134	114-134	103.10	121.07	-17.97
3-A-4	103.08	132	112-132	107.27	126.18	-19.01
3-A-5	105.53	136	116-136	105.74	127.82	-22.08
4-A-1	119.25	136	116-136	119.30	125.11	-5.81
5-A-1	108.47	136	116-136	108.71	116.42	-7.71
6-A-1	99.48	85	65-85	101.56	63.55	38.00
6-A-2	98.70	93	73-93	100.24	66.00	34.24
8-A-1	156.85	135	115-135	156.91	125.78	31.13
10-A-1	140.59	100	80-100	140.84	62.18	78.66
11-A-1	124.21	137	117-137	126.10	129.96	-3.80
13-A-1	86.90	99	79-99	89.35	82.20	7.15
13-A-2	88.66	95	75-95	88.58	87.43	1.15
15-A-1	168.89	108	88-108	171.23	95.00	76.23
15-A-2	133.24	82	62-82	136.40	67.80	68.60
15-A-3	135.01	90	70-90	137.46	66.06	71.40
15-A-4	139.63	100	75-95	141.72	69.12	72.60

Table G-2
GROUNDWATER LEVELS AT BEALE AFB, OCTOBER 1986

Well Number	Ground Surface Elevation (NGVD)	Total Depth (ft)	Screened Depth Interval (ft)	Elevation of Top of Monument (NGVD)	Depth to Water (ft)	Water Elevation (NGVD)
1-A-1	92.34	118	98-118	94.18	107.13	-12.95
2-A-1	83.58	113	93-113	86.16	101.73	-15.57
2-R-1	92.57	100	80-100	93.41	--	--
2-R-2	93.13	96	76-96	94.05	85.00	9.05
2-R-3	95.39	90	80-90	96.84	84.57	12.27
2-R-4	94.34	100	80-100	95.59	85.97	9.62
3-A-1	112.02	123	103-123	114.86	112.47	2.39
3-A-2	106.75	132	112-132	108.74	108.01	0.73
3-A-3	101.00	134	114-134	103.10	122.83	-19.73
3-A-4	103.08	132	112-132	107.27	126.57	-19.30
3-A-5	105.53	136	116-136	105.74	129.25	-23.51
4-A-1	119.25	136	116-136	119.30	122.89	-3.59
5-A-1	108.47	136	116-136	108.71	114.25	-5.54
6-A-1	99.48	85	65-85	101.56	64.54	37.01
6-A-2	98.70	93	73-93	100.24	67.88	32.36
8-A-1	156.85	135	115-135	156.91	124.45	32.46
10-A-1	140.59	100	80-100	140.84	61.23	79.61
11-A-1	124.21	137	117-137	126.10	127.78	-1.68
13-A-1	86.90	99	79-99	89.35	81.15	8.20
13-A-2	88.66	95	75-95	88.58	85.42	3.16
15-A-1	168.89	108	88-108	1/1.23	94.65	76.58
15-A-2	133.24	82	62-82	136.40	68.00	68.40
15-A-3	135.01	90	70-90	137.46	66.91	70.55
15-A-4	139.63	100	75-95	141.72	71.04	70.68

Table G-3
GROUNDWATER LEVELS AT BEALE AFB, DECEMBER 5-7, 1988

Well Number	Ground Surface Elevation (NGVD)	Total Depth (ft)	Screened Depth Interval (ft)	Elevation of Top of Monument (NGVD)	Depth to Water (ft)	Water Elevation (NGVD)
1-A-1	92.34	118	98-118	94.18	--	--
2-A-1	83.58	113	93-113	86.16	92.83	-6.67
2-R-1	92.57	100	80-100	93.41	85.73	7.68
2-R-2	93.13	96	76-96	94.05	85.35	8.70
2-R-3	95.39	90	80-90	96.84	86.13	10.71
2-R-4	94.34	100	80-100	95.59	86.73	8.86
3-A-1	112.02	123	103-123	114.86	--	--
3-A-2	106.75	132	112-132	108.74	108.21	0.53
3-A-3	101.00	134	114-134	103.10	--	--
3-A-4	103.08	132	112-132	107.27	119.97	12.70
3-A-5	105.53	136	116-136	105.74	--	--
4-A-1	119.25	136	116-136	119.30	114.84	4.46
5-A-1	108.48	136	116-136	108.71	--	--
6-A-1	99.48	85	65-85	101.56	63.23	38.32
6-A-2	98.70	93	73-93	100.24	66.61	33.63
8-A-1	156.85	135 (124 now)	115-135	156.91	Dry	≤32.91
10-A-1	140.59	100	80-100	140.84	60.03	80.81
11-A-1	124.21	137	117-137	126.10	120.31	5.79
13-A-1	86.90	99	79-99	89.35	82.25	7.10
13-A-2	88.66	95	75-95	88.58	83.81	4.77
15-A-1	168.89	108	88-108	171.23	95.27	75.96
15-A-2	133.24	82	62-82	136.40	69.54	66.86
15-A-3	135.01	90	70-90	137.46	67.54	69.92
15-A-4	139.63	100	75-95	141.72	71.83	69.89

Table G-4
GROUNDWATER LEVELS AT BEALE AFB, FEBRUARY 2-7, 1989

Date	Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
02/07/89	1-A-1	92.34	118	98-118	94.18	94.73	-0.55
02/07/89	1-C-1	93.16	111	86-106	95.46	95.68	-0.22
-	1-C-2	89.89	146	120-141	92.40	--	--
--	1-C-3	90.18	110	84-105	92.27	--	--
02/07/89	1-C-4	89.78	140	114-135	92.74	93.45	-0.71
02/07/89	1-C-5	89.99	110	84-105	93.09	93.75	-0.66
02/03/89	2-A-1	83.58	113	93-113	86.16	88.09	-1.93
02/03/89	2-C-1	83.46	170	144-165	86.31	88.74	-2.43
02/03/89	2-R-1	92.57	100	80-100	93.41	84.58	8.83
02/03/89	2-R-2	93.13	96	76-96	94.05	85.02	9.03
02/03/89	2-R-3	95.39	90	80-90	96.84	85.63	11.21
02/03/89	2-R-4	94.34	100	80-100	95.59	85.97	9.62
02/07/89	3-A-1	112.02	123	103-123	114.86	112.45	2.41
02/07/89	3-A-2	106.75	132	112-132	108.74	108.39	0.35
02/07/89	3-A-3	101.00	134	114-134	103.10	115.12	-12.02
02/07/89	3-A-4	103.08	132	112-132	107.27	119.26	-11.99
02/07/89	3-A-5	105.53	136	116-136	105.74	118.01	-12.27
02/07/89	3-C-1	105.59	138	113-133	108.78	120.05	-11.27
02/07/89	4-A-1	119.25	136	116-136	119.30	114.57	4.73
02/07/89	5-A-1	108.47	136	116-136	108.71	105.45	3.26
02/07/89	5-C-1	110.21	129	104-124	110.42	107.56	2.86
02/02/89	6-A-1	99.48	85	65-85	101.56	61.88	39.67
02/02/89	6-A-2	98.70	93	73-93	100.24	64.66	35.58
02/02/89	6-C-1	108.49	90	65-85	110.96	55.48	55.48
--	8-A-1	156.85	135 (124 now)	115-135	156.91	Dry	≤32.91
02/07/89	10-A-1	140.59	100	80-100	140.84	59.89	80.95
02/07/89	11-A-1	124.21	137	117-137	126.10	--	--
02/03/89	13-A-1	86.90	99	79-99	89.35	81.86	7.49

Table G-4
(Continued)

Date	Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth To Water	Water Elevation (NGVD)
02/03/89	13-A-2	88.66	95	75-95	88.58	82.37	6.21
02/03/89	13-C-1	88.19	120	94-115	91.73	88.83	2.90
02/03/89	13-C-2	85.84	150	124-145	88.53	90.10	-1.57
02/03/89	13-C-3	85.51	110	84-105	88.22	82.61	5.61
02/03/89	13-C-4	87.81	105	80-100	90.92	84.78	6.14
02/03/89	13-C-5	92.45	117	92-112	95.57	87.80	7.77
02/03/89	13-C-6	--	--	--	--	--	--
02/02/89	15-A-1	168.89	108	88-108	171.23	95.56	75.67
02/02/89	15-A-2	133.24	82	62-82	136.40	69.58	66.82
02/02/89	15-A-3	135.01	90	70-90	137.46	67.65	69.81
02/02/89	15-A-4	139.63	100	75-95	141.72	71.98	69.74
--	16-C-1	159.36	39	14-34	162.43	--	--
02/02/89	18-C-1	110.82	134	109-129	113.89	114.95	-1.06
02/02/89	18-C-2	114.07	130	105-125	117.33	114.61	-2.72
02/02/89	19-C-1	114.54	104.5	79.5-99.5	114.87	70.06	44.81
02/02/89	19-C-2	112.99	101	65-85	116.13	69.54	46.59
02/02/89	19-C-3	112.17	110	75-95	114.83	68.85	45.98
02/02/89	19-C-4	109.07	148	83-143	112.73	68.61	44.12
02/07/89	21-C-1	102.20	139	104-125	105.55	102.72	2.83
02/02/89	23-C-1	127.76	79	45-65	128.06	46.55	81.51
02/07/89	BG-C-1	169.22	99	74-94	171.54	81.71	89.83
02/02/89	BG-C-2	159.98	109	84-104	163.54	91.88	71.66

Table G-5
GROUNDWATER LEVELS AT BEALE AFB, MARCH 27-28, 1989

Date	Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
03/27/89	1-A-1	92.34	118	98-118	94.18	93.80	0.38
03/27/89	1-C-1	93.16	111	86-106	95.46	94.81	0.65
03/27/89	1-C-2	89.89	146	120-141	92.40	92.19	0.21
03/27/89	1-C-3	90.18	110	84-105	92.27	92.08	0.19
03/27/89	1-C-4	89.78	140	114-135	92.74	92.51	0.23
03/27/89	1-C-5	89.99	110	84-105	93.09	92.80	0.29
03/27/89	2-A-1	83.58	113	93-113	86.16	85.76	0.40
03/27/89	2-C-1	83.46	170	144-165	86.31	86.79	-0.48
03/27/89	2-R-1	92.57	100	80-100	93.41	83.76	9.65
03/27/89	2-R-2	93.13	96	76-96	94.05	84.23	9.82
03/27/89	2-R-3	95.39	90	80-90	96.84	84.99	11.85
03/27/89	2-R-4	94.34	100	80-100	95.59	85.09	10.50
03/28/89	3-A-1	112.02	123	103-123	114.86	112.49	2.37
03/28/89	3-A-2	106.75	132	112-132	108.74	108.53	0.21
03/28/89	3-A-3	101.00	134	114-134	103.10	114.63	-11.53
03/28/89	3-A-4	103.08	132	112-132	107.27	118.75	-11.48
03/28/89	3-A-5	105.53	136	116-136	105.74	117.45	-11.71
03/28/89	3-C-1	105.59	138	113-133	108.78	119.64	-10.86
03/27/89	4-A-1	119.25	136	116-136	119.30	113.87	5.43
03/27/89	5-A-1	108.47	136	116-136	108.71	104.97	3.74
03/27/89	5-C-1	110.21	129	104-124	110.42	107.12	3.30
03/27/89	6-A-1	99.48	85	65-85	101.56	60.95	40.60
03/27/89	6-A-2	98.70	93	73-93	100.24	63.62	36.62
03/27/89	6-C-1	108.49	90	65-85	110.96	54.86	56.10
03/28/89	8-A-1	156.65	135 (124 now)	115-135	156.91	Dry	<32.91
03/28/89	10-A-1	140.59	100	80-100	140.84	59.38	81.46
03/27/89	11-A-1	124.21	137	117-137	126.10	119.03	7.07
03/27/89	13-A-1	86.90	99	79-99	89.35	81.34	8.01

Table G-5
(Continued)

Date	Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
03/27/89	13-A-2	88.66	95	75-95	88.58	81.20	7.38
03/27/89	13-C-1	88.19	120	94-115	91.73	87.95	3.78
03/27/89	13-C-2	85.84	150	124-145	88.53	88.27	0.26
03/27/89	13-C-3	85.51	110	84-105	88.22	81.41	6.81
03/27/89	13-C-4	87.81	105	80-100	90.92	83.56	7.36
03/27/89	13-C-5	92.45	117	92-112	95.57	86.64	8.93
-	13-C-6	-	-	-	-	-	-
03/27/89	15-A-1	168.89	108	88-108	171.23	95.46	75.77
03/27/89	15-A-2	133.24	82	62-82	136.40	69.43	66.97
03/27/89	15-A-3	135.01	90	70-90	137.46	67.64	69.82
03/27/89	15-A-4	139.63	100	75-95	141.72	72.02	69.70
03/27/89	16-C-1	159.36	39	14-34	162.43	14.79	147.64
03/27/89	18-C-1	110.82	134	109-129	113.89	113.70	0.19
03/27/89	18-C-2	114.07	130	105-125	117.33	114.26	3.07
03/27/89	19-C-1	114.54	104.5	79.5-99.5	114.87	69.46	45.41
03/27/89	19-C-2	112.99	101	65-85	116.13	69.06	47.07
03/27/89	19-C-3	112.17	110	75-95	114.83	68.34	46.49
03/27/89	19-C-4	109.07	148	83-143	112.73	67.97	44.76
03/27/89	21-C-1	102.20	139	104-125	105.55	102.13	3.42
03/28/89	23-C-1	127.76	79	45-65	128.06	46.87	81.19
03/27/89	BG-C-1	169.22	99	74-94	171.54	81.89	89.65
03/27/89	BG-C-2	159.98	109	84-104	163.54	91.97	71.57

Table G-6
GROUNDWATER LEVELS AT BEALE AFB, MAY 18-20, 1989

Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
1-A-1	92.34	118	98-118	94.18	93.10	1.08
1-C-1	93.16	111	86-106	95.46	94.08	1.38
1-C-2	89.89	146	120-141	92.40	91.53	0.87
1-C-3	90.18	110	84-105	92.27	91.40	0.87
1-C-4	89.78	140	114-135	92.74	91.85	0.89
1-C-5	89.99	110	84-105	93.09	92.12	0.97
2-A-1	83.58	113	93-113	86.16	85.25	0.91
2-C-1	83.46	170	144-165	86.31	87.63	-1.32
2-R-1	92.57	100	80-100	93.41	82.05	11.36
2-R-2	93.13	96	76-96	94.05	82.53	11.52
2-R-3	95.39	90	80-90	96.84	83.31	13.53
2-R-4	94.34	100	80-100	95.59	83.29	12.30
3-A-1	117.02	123	103-123	114.86	112.74	2.12
3-A-2	106.75	132	112-132	108.74	108.78	-0.04
3-A-3	101.00	134	114-134	103.10	113.81	-10.71
3-A-4	103.08	132	112-132	107.27	117.93	-10.66
3-A-5	105.53	136	116-136	105.74	116.57	-10.83
3-C-1	105.59	138	113-133	108.78	115.54	-6.76
4-A-1	119.25	136	116-136	119.30	113.36	5.94
5-A-1	108.48	136	116-136	108.71	104.33	4.38
5-C-1	110.21	129	104-124	110.42	106.48	3.94
6-A-1	99.48	85	65-85	101.56	60.98	40.57
6-A-2	98.70	93	73-93	100.24	63.57	36.67
6-C-1	108.49	90	65-85	110.96	54.60	56.36
8-A-1	156.85	135 (124 now)	115-135	156.91	Dry	≤32.91
10-A-1	140.59	100	80-100	140.84	59.45	81.39
11-A-1	124.21	137	117-137	126.10	118.52	7.58
13-A-1	86.90	99	79-99	89.35	79.08	10.27

Table G-6
(Continued)

Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
13-A-2	88.66	95	75-95	88.58	79.52	9.06
13-C-1	88.19	120	94-115	91.73	86.45	5.28
13-C-2	85.84	150	124-145	88.53	87.53	1.00
13-C-3	85.51	110	84-105	88.22	79.87	8.35
13-C-4	87.81	105	80-100	90.92	82.01	8.91
13-C-5	92.45	117	92-112	95.57	84.93	10.64
13-C-6	-	-	-	-	-	-
15-A-1	168.89	108	88-108	171.23	94.07	77.16
15-A-2	133.24	82	62-82	136.40	69.08	67.32
15-A-3	135.01	90	70-90	137.46	67.45	70.01
15-A-4	139.63	100	75-95	141.72	71.84	69.88
16-C-1	159.36	39	14-34	162.43	13.72	148.71
18-C-1	110.82	134	109-129	113.89	112.64	1.25
18-C-2	114.07	130	105-125	117.33	113.27	4.06
19-C-1	114.54	104.5	79.5-99.5	114.87	69.43	45.44
19-C-2	112.99	101	65-85	116.13	68.67	47.46
19-C-3	112.17	110	75-95	114.83	68.03	46.80
19-C-4	109.07	148	83-143	112.73	68.08	44.65
21-C-1	102.20	139	104-125	105.55	101.57	3.98
23-C-1	127.76	79	45-65	128.06	46.39	81.67
BG-C-1	169.22	99	74-94	171.54	81.94	89.60
BG-C-2	159.98	109	84-104	163.54	92.05	71.49

Table G-7
GROUNDWATER LEVELS AT BEALE AFB, AUGUST 22-23, 1989

Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
1-A-1	92.34	118	98-118	94.18	92.30	1.88
1-C-1	93.16	111	86-106	95.46	93.27	2.19
1-C-2	89.89	146	120-141	92.40	90.73	1.67
1-C-3	90.18	110	84-105	92.27	90.61	1.66
1-C-4	89.78	140	114-135	92.74	91.04	1.70
1-C-5	89.99	110	84-105	93.09	91.33	1.76
2-A-1	83.58	113	93-113	86.16	86.24	-0.08
2-C-1	83.46	170	144-165	86.31	88.19	-1.88
2-R-1	92.57	100	80-100	93.41	81.10	12.31
2-R-2	93.13	96	76-96	94.05	81.57	12.48
2-R-3	95.39	90	80-90	96.84	82.27	14.57
2-R-4	94.34	100	80-100	95.59	82.36	13.23
3-A-1	112.02	123	103-123	114.86	112.58	2.28
3-A-2	106.75	132	112-132	108.74	108.52	0.22
3-A-3	101.00	134	114-134	103.10	112.12	-9.02
3-A-4	103.08	132	112-132	107.27	116.22	-8.95
3-A-5	105.53	136	116-136	105.74	114.81	-9.07
3-C-1	105.59	138	113-133	108.78	114.00	-5.22
4-A-1	119.26	136	116-136	119.30	112.20	7.10
5-A-1	108.47	136	116-136	108.71	103.17	5.54
5-C-1	110.21	129	104-124	110.42	105.33	5.09
6-A-1	99.48	85	65-85	101.56	63.08	38.48
6-A-2	98.70	93	73-93	100.24	66.61	33.63
6-C-1	108.49	90	65-85	110.96	54.93	56.03
8-A-1	156.85	135 (124 now)	115-135	156.91	Dry	$\leq$32.91
10-A-1	140.59	100	80-100	140.84	59.23	81.61
11-A-1	124.21	137	117-137	126.10	117.34	8.76
13-A-1	86.90	99	79-99	89.35	78.93	10.42

Table G-7
(Continued)

Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
13-A-2	88.66	95	75-95	88.58	79.15	9.43
13-C-1	88.19	120	94-115	91.73	85.57	6.16
13-C-2	85.84	150	124-145	88.53	88.04	0.49
13-C-3	85.51	110	84-105	88.22	79.45	8.77
13-C-4	87.81	105	80-100	90.92	81.63	9.29
13-C-5	92.45	117	92-112	95.57	84.32	11.25
13-C-6	-	-	-	-	-	-
15-A-1	168.89	108	88-108	171.23	95.76	75.47
15-A-2	133.24	82	62-82	136.40	69.40	67.00
15-A-3	135.01	90	70-90	137.46	67.58	69.88
15-A-4	139.63	100	75-95	141.72	71.79	69.93
16-C-1	159.36	39	14-34	162.43	14.90	147.53
18-C-1	110.82	134	109-129	113.89	111.79	2.10
18-C-2	114.07	130	105-125	117.33	112.48	4.85
19-C-1	114.54	104.5	79.5-99.5	114.87	70.75	44.12
19-C-2	112.99	101	65-85	116.13	69.69	46.44
19-C-3	112.17	110	75-95	114.83	69.13	45.7[illegible]
19-C-4	109.07	148	83-143	112.73	69.47	43.26
21-C-1	102.20	139	104-125	105.55	100.41	5.14
23-C-1	127.76	79	45-65	128.06	46.15	81.91
BG-C-1	169.22	99	74-94	171.54	81.60	89.94
BG-C-2	159.98	109	84-104	163.54	92.03	71.51

Table G-8
GROUNDWATER LEVELS AT BEALE AFB, NOVEMBER 8-10, 1989

Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
1-A-1	92.34	118	98-118	94.18	91.38	2.80
1-C-1	93.16	111	86-106	95.46	92.41	3.05
1-C-2	89.89	146	120-141	92.40	89.78	2.62
1-C-3	90.18	110	84-105	92.27	89.65	2.62
1-C-4	89.78	140	114-135	92.74	90.10	2.64
1-C-5	89.99	110	84-105	93.09	90.39	2.70
2-A-1	83.58	113	93-113	86.16	82.20	3.96
2-C-1	83.46	170	144-165	86.31	83.71	2.60
2-R-1	92.57	100	80-100	93.41	80.16	13.25
2-R-2	93.13	96	76-96	94.05	80.67	13.38
2-R-3	95.39	90	80-90	96.84	81.48	15.36
2-R-4	94.34	100	80-100	95.59	81.48	14.11
3-A-1	112.02	123	103-123	114.86	112.62	2.24
3-A-2	106.75	132	112-132	108.74	108.86	-0.12
3-A-3	101.00	134	114-134	103.10	110.92	-7.82
3-A-4	103.08	132	112-132	107.27	115.00	-7.73
3-A-5	105.53	136	116-136	105.74	113.53	-7.79
3-C-1	105.59	138	113-133	105.38	112.87	-7.49
4-A-1	119.26	136	116-136	119.30	111.59	7.71
5-A-1	108.47	136	116-136	108.71	102.49	6.22
5-C-1	110.21	129	104-124	110.42	104.67	5.75
6-A-1	99.48	85	65-85	101.56	60.93	40.63
6-A-2	98.70	93	73-93	100.24	63.93	36.31
6-C-1	108.49	90	65-85	110.96	54.81	56.15
8-A-1	156.85	135 (124 now)	115-135	156.91	Dry	<32.91
10-A-1	140.59	100	80-100	140.84	59.29	81.55
11-A-1	124.21	137	117-137	126.10	116.70	9.40
13-A-1	86.90	99	79-99	89.35	78.64	10.71

Table G-8
(Continued)

Well Number	Ground Surface Elevation (NGVD)	Total Depth	Screened Interval	Elevation of top of Monument (NGVD)	Depth to Water	Water Elevation (NGVD)
13-A-2	88.66	95	75-95	88.58	77.98	10.60
13-C-1	88.19	120	94-115	91.73	83.86	7.87
13-C-2	85.84	150	124-145	88.52	84.93	3.59
13-C-3	85.51	110	84-105	88.22	78.19	10.03
13-C-4	87.81	105	80-100	90.92	80.41	10.51
13-C-5	92.45	117	92-112	95.57	83.22	12.35
13-C-6	86.57	108	83-103	89.47	88.71	0.76
15-A-1	168.89	108	88-108	171.23	95.75	75.48
15-A-2	133.24	82	62-82	136.40	69.38	67.02
15-A-3	135.01	90	70-90	137.46	67.68	69.78
15-A-4	139.63	100	75-95	141.72	71.90	69.82
16-C-1	159.36	39	14-34	162.43	16.72	145.71
18-C-1	110.82	134	109-129	113.89	110.50	3.39
18-C-2	114.07	130	105-125	117.33	111.43	5.90
19-C-1	114.54	104.5	79.5-99.5	114.87	69.40	45.47
19-C-2	112.99	101	65-85	116.13	68.78	47.35
19-C-3	112.17	110	75-95	114.83	68.15	46.68
19-C-4	109.07	148	83-143	112.73	68.06	44.67
21-C-1	102.20	139	104-125	105.55	99.75	5.80
23-C-1	127.76	79	45-65	128.06	46.08	81.98
BG-C-1	169.22	99	74-94	171.54	81.54	90.00
BG-C-2	159.98	109	84-104	163.54	92.12	71.42

Table G-9
SUMMARY OF GROUNDWATER LEVELS AT BEALE AFB, 1986-1989
(feet NGVD)

Well Number	April 1986	October 1986	December 1988	February 1989	March 1989	May 1989	August 1989	November 1989
1-A-1	-13.95	-12.95	--	-0.55	0.38	1.08	1.88	2.80
1-C-1	--	--	--	-0.22	0.65	1.38	2.19	3.05
1-C-2	--	--	--	--	0.21	0.87	1.67	2.62
1-C-3	--	--	--	--	0.19	0.87	1.66	2.62
1-C-4	--	--	--	-0.71	0.23	0.89	1.70	2.64
1-C-5	--	--	--	-0.66	0.29	0.97	1.76	2.70
2-A-1	-16.22	-15.57	-6.67	-1.93	0.40	0.91	-0.08	3.96
2-C-1	--	--	--	-2.43	0.48	-1.32	-1.88	2.60
2-R-1	5.71	--	7.68	8.83	9.65	11.36	12.31	13.25
2-R-2	7.05	9.05	8.70	9.03	9.82	11.52	12.48	13.38
2-R-3	10.44	12.27	10.71	11.21	11.85	13.53	14.57	15.36
2-R-4	7.83	9.62	8.86	9.62	10.50	12.30	13.23	14.11
3-A-1	2.77	2.39	--	2.41	2.37	2.12	2.28	2.24
3-A-2	0.70	0.73	0.53	0.35	0.21	-0.04	0.22	-0.12
3-A-3	-17.97	-19.73	--	-12.02	-11.53	-10.71	-9.02	-7.82
3-A-4	-19.01	-19.30	12.70	-11.99	-11.48	-10.66	-8.95	-7.73
3-A-5	-22.08	-23.51	--	-12.27	-11.71	-10.83	-9.07	-7.79
3-C-1	--	--	--	-11.27	-10.86	-10.16	-8.62	-7.49
4-A-1	-5.81	-3.59	4.46	4.73	5.43	5.94	7.10	7.71
5-A-1	-7.71	-5.54	--	3.26	3.74	4.38	5.54	6.22
5-C-1	--	--	--	2.86	3.30	3.94	5.09	5.75
6-A-1	38.00	37.01	38.32	39.67	40.60	40.57	38.48	40.63
6-A-2	34.24	32.36	33.63	35.58	36.62	36.67	33.63	36.31
6-C-1	--	--	--	55.48	56.10	56.36	56.03	56.15
8-A-1	31.13	32.46	≤32.91	≤32.91	≤32.91	≤32.91	≤32.91	≤32.91
10-A-1	78.66	79.61	80.81	80.95	81.46	81.39	81.61	81.55
11-A-1	-3.80	-1.68	5.79	--	7.07	7.58	8.76	9.40
13-A-1	7.15	8.20	7.10	7.49	8.01	10.27	10.42	10.71
13-A-2	1.15	3.16	4.77	6.21	7.38	9.06	9.43	10.60

Table G-9
(Continued)

Well Number	April 1986	October 1986	December 1988	February 1989	March 1989	May 1989	August 1989	November 1989
13-C-1	--	--	--	2.90	3.78	5.28	6.16	7.87
13-C-2	--	--	--	-1.57	0.26	1.00	0.49	3.59
13-C-3	--	--	--	5.61	6.81	8.35	8.77	10.03
13-C-4	--	--	--	6.14	7.36	8.91	9.29	10.51
13-C-5	--	--	--	7.77	8.93	10.64	11.25	12.35
13-C-6	--	--	--	--	--	--	--	0.76
15-A-1	76.23	76.58	75.96	75.67	75.77	77.16	75.47	75.48
15-A-2	68.60	68.40	66.86	66.82	66.97	67.32	67.00	67.02
15-A-3	71.40	70.55	69.92	69.81	69.82	70.01	69.88	69.78
15-A-4	72.60	70.68	69.89	69.74	69.70	69.88	69.93	69.82
16-C-1	--	--	--	--	147.64	148.71	147.53	145.71
18-C-1	--	--	--	-1.06	0.19	1.25	2.10	3.39
18-C-2	--	--	--	-2.72	3.07	4.06	4.85	5.90
19-C-1	--	--	--	44.81	45.41	45.44	44.12	45.47
19-C-2	--	--	--	46.59	47.07	47.46	46.44	47.35
19-C-3	--	--	--	45.98	46.49	46.80	45.70	46.68
19-C-4	--	--	--	44.12	44.76	44.65	43.26	44.67
21-C-1	--	--	--	2.83	3.42	3.98	5.14	5.80
23-C-1	--	--	--	81.51	81.19	81.67	81.91	81.98
BG-C-1	--	--	--	89.83	89.65	89.60	89.94	90.00
BG-C-2	--	--	--	71.66	71.57	71.49	71.51	71.42

APPENDIX H
GEOPHYSICAL DATA

Individual magnetometer survey lines for the magnetic geophysical surveys conducted in Stage 2-1 at IRP Sites 16, 17, 20, and 22 are presented in Appendix H.

The procedure for establishing the grid lines for the magnetometer survey at Sites 16, 17, and 20 consisted of establishing a 20- or 40-foot rectangular grid in the area where buried metal was suspected. This area was determined and a zero point was located based on field reconnaissance at each site. Grid line designations presented in Appendix H are the indicated distance east or west of this zero point.

A geophysical survey was conducted at Site 20 to determine if additional buried grease pits may be present in the area surrounding the existing grease pit. The west side of Site 20 was surveyed, overlapping onto Site 13. The Site 20 data presented in Appendix H is titled Landfill No. 1. The data applies to both Site 13 and Site 20.

The procedure for evaluating the presence of underground abandoned tanks at Site 22 consisted of setting up a small grid on a tank-by-tank basis. The grid was comprised of three lines 60 feet long and 10 feet apart, and was centered on the tank location specified on the 1944 Camp Beale maps. When an anomaly was located at the edge of the grid, the grid was extended to include the entire anomaly.

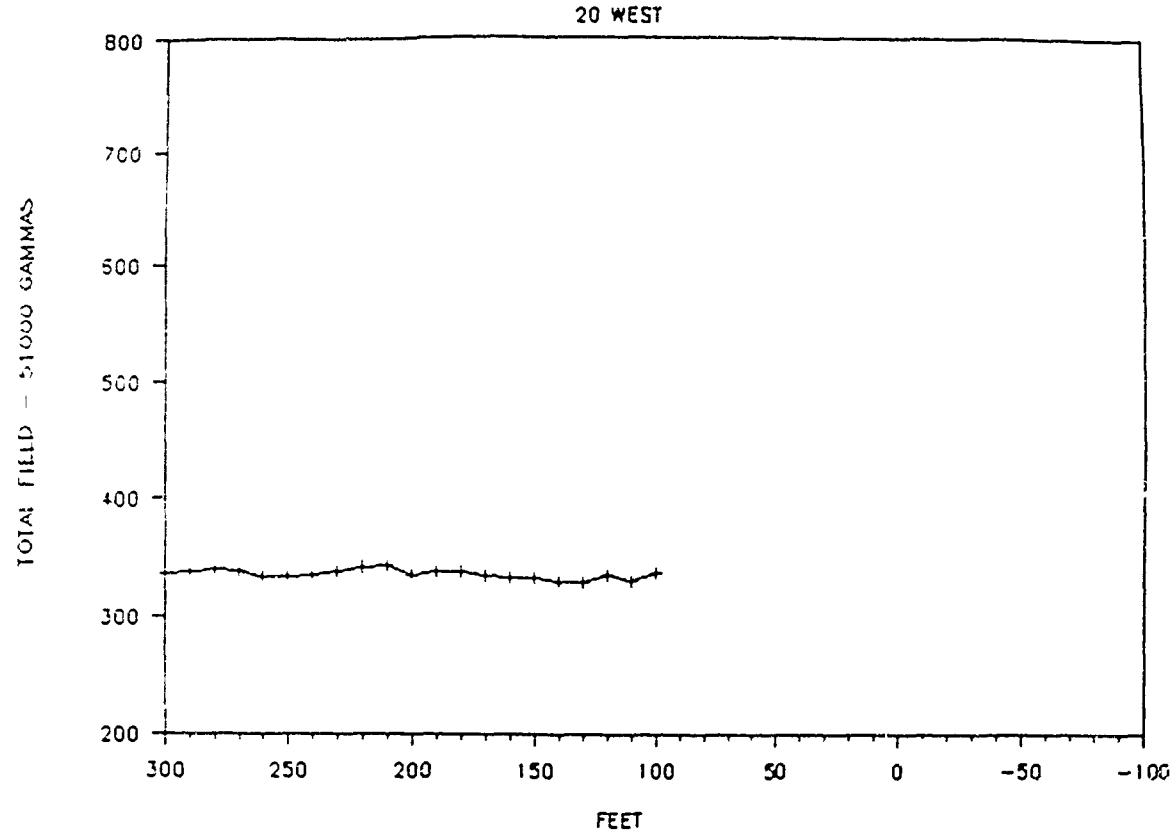
SITE 16

EXPLOSIVE ORDNANCE DISPOSAL (EOD) AREA

Geophysical Data

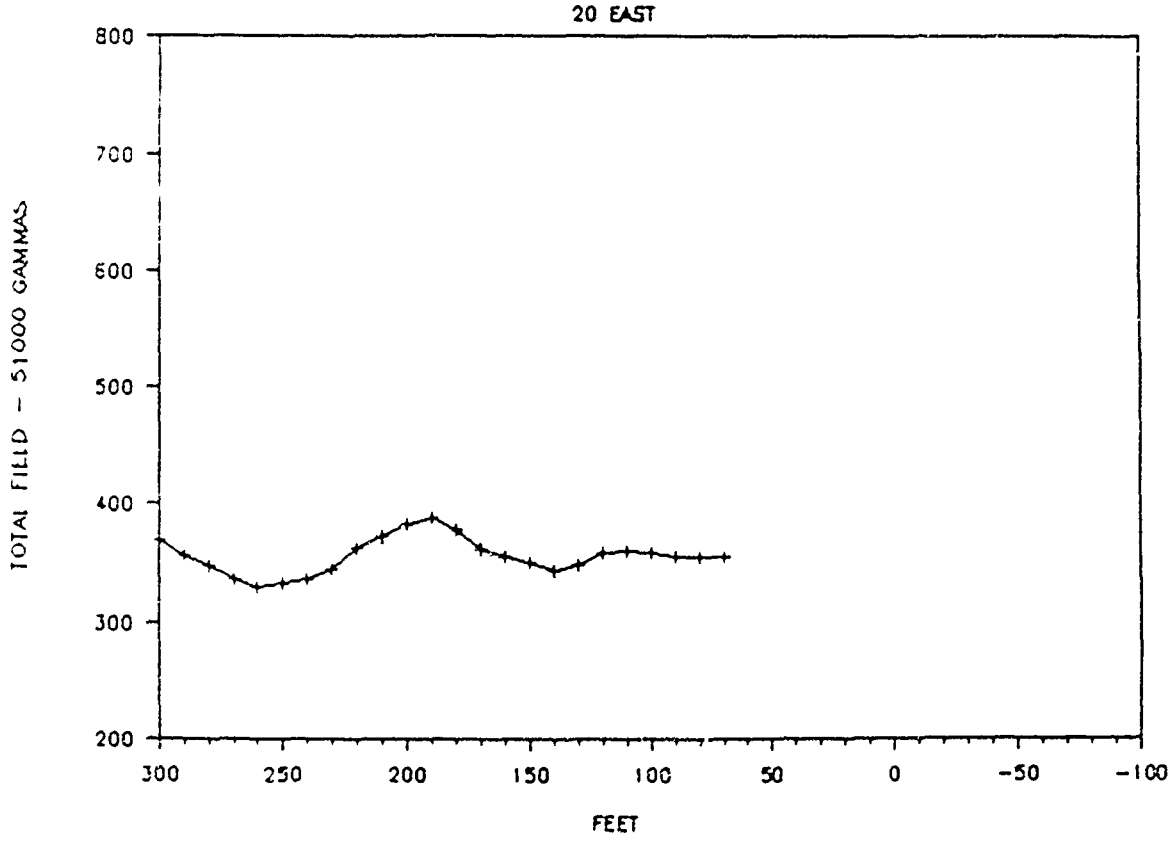
EOD- SITE 16

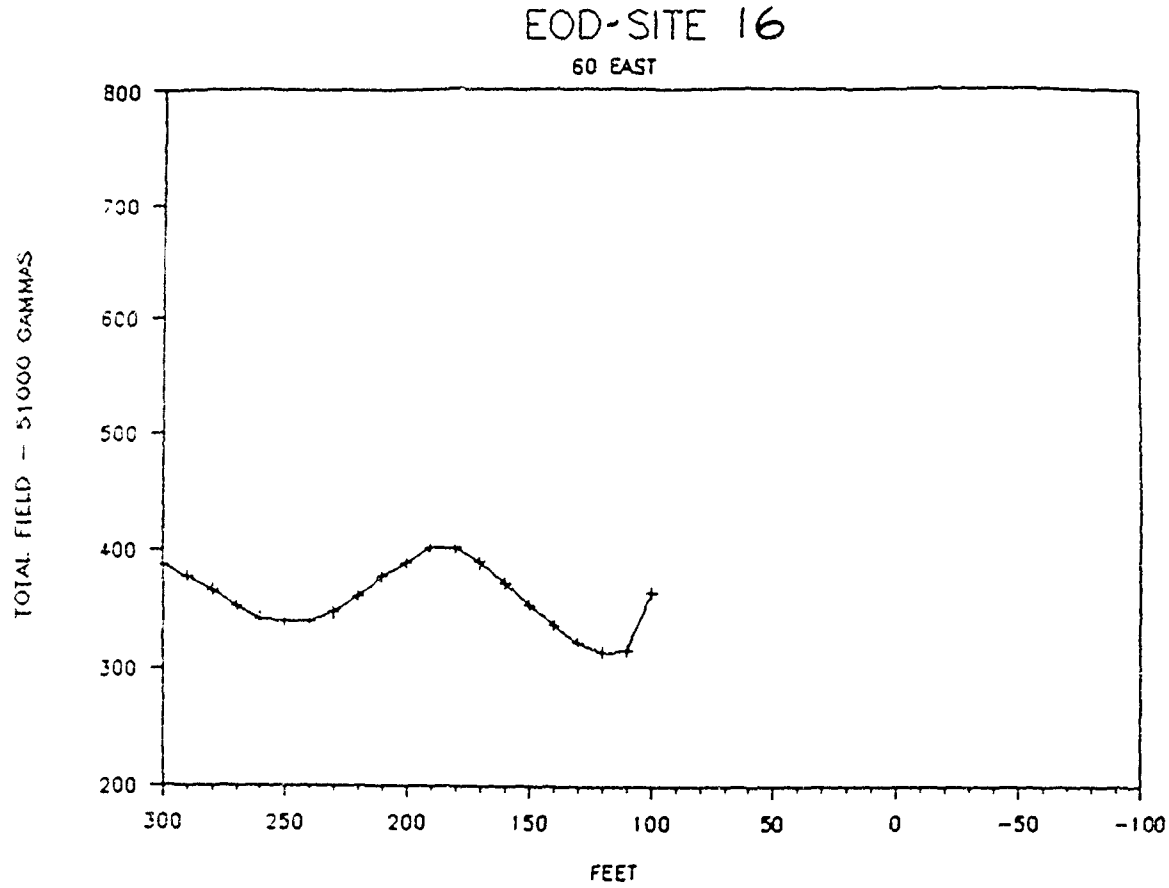
20 WEST

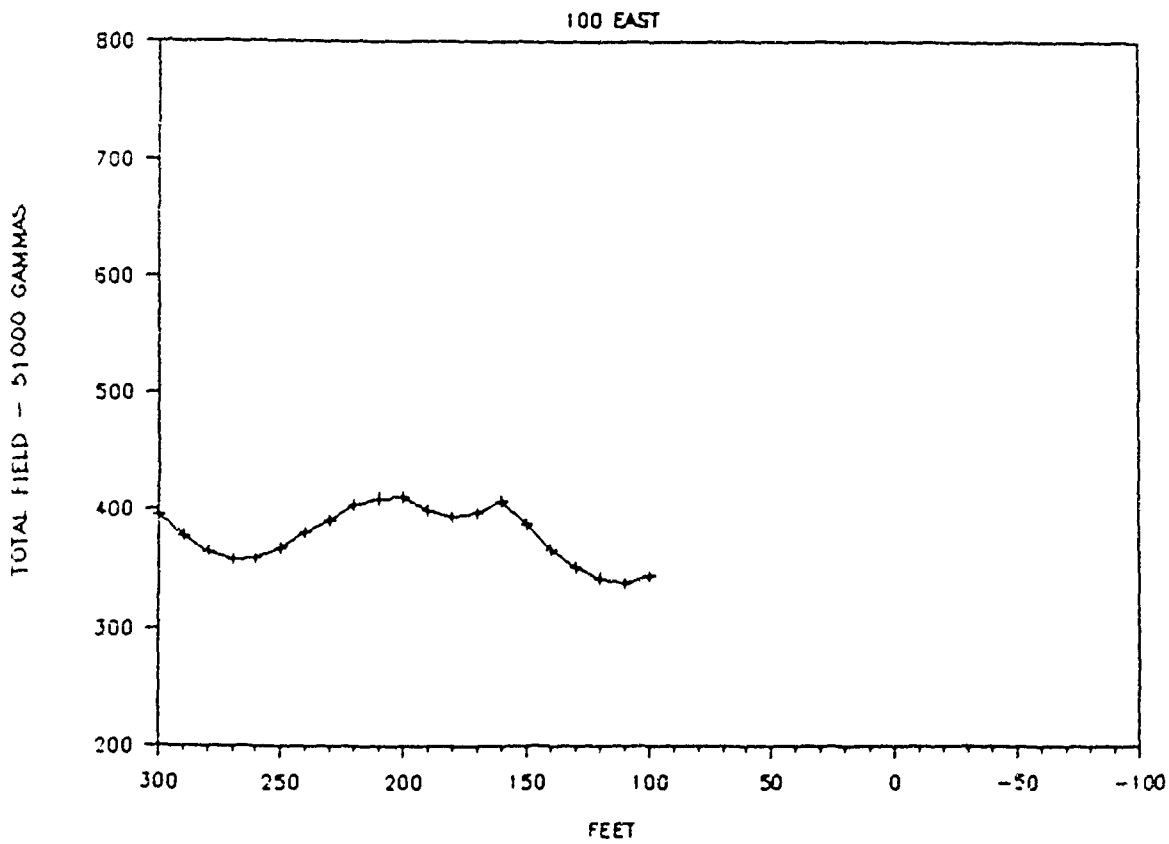


EOD- SITE 16

20 EAST

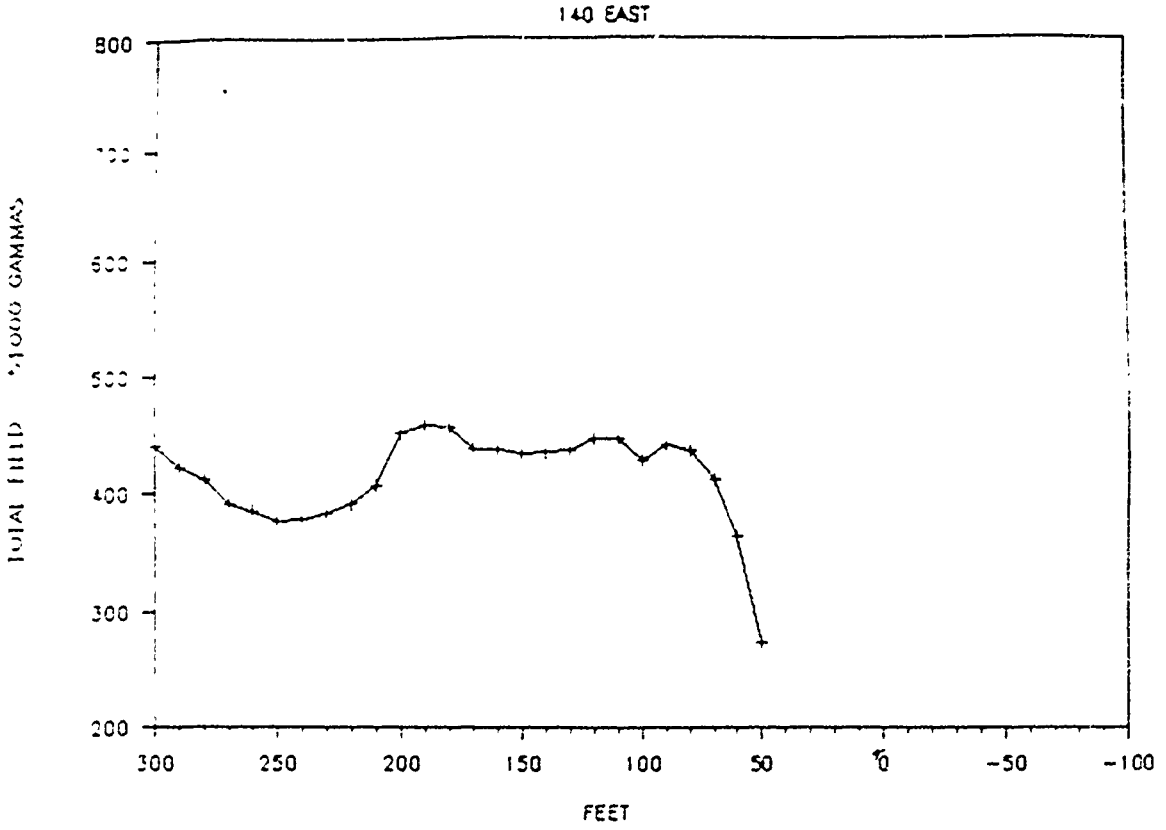



EOD-SITE 16
60 EAST
800
700
600
500
400
300
200
TOTAL FIELD - 51000 GAMMAS
300
250
200
150
100
50
0
-50
-100
FEET


EOD-SITE 16
100 EAST
800
700
600
500
400
300
200
TOTAL FIELD - 51000 GAMMAS
300
250
200
150
100
50
0
-50
-100
FEET

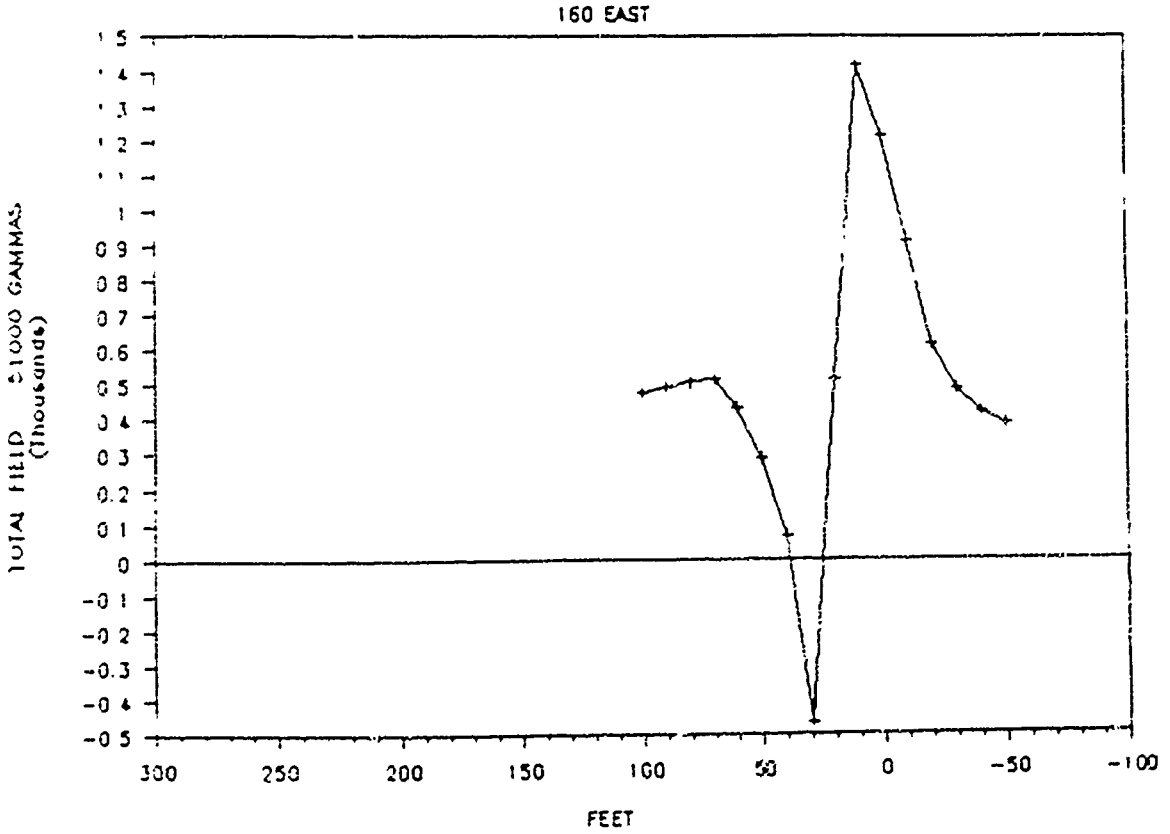
EOD-SITE 16

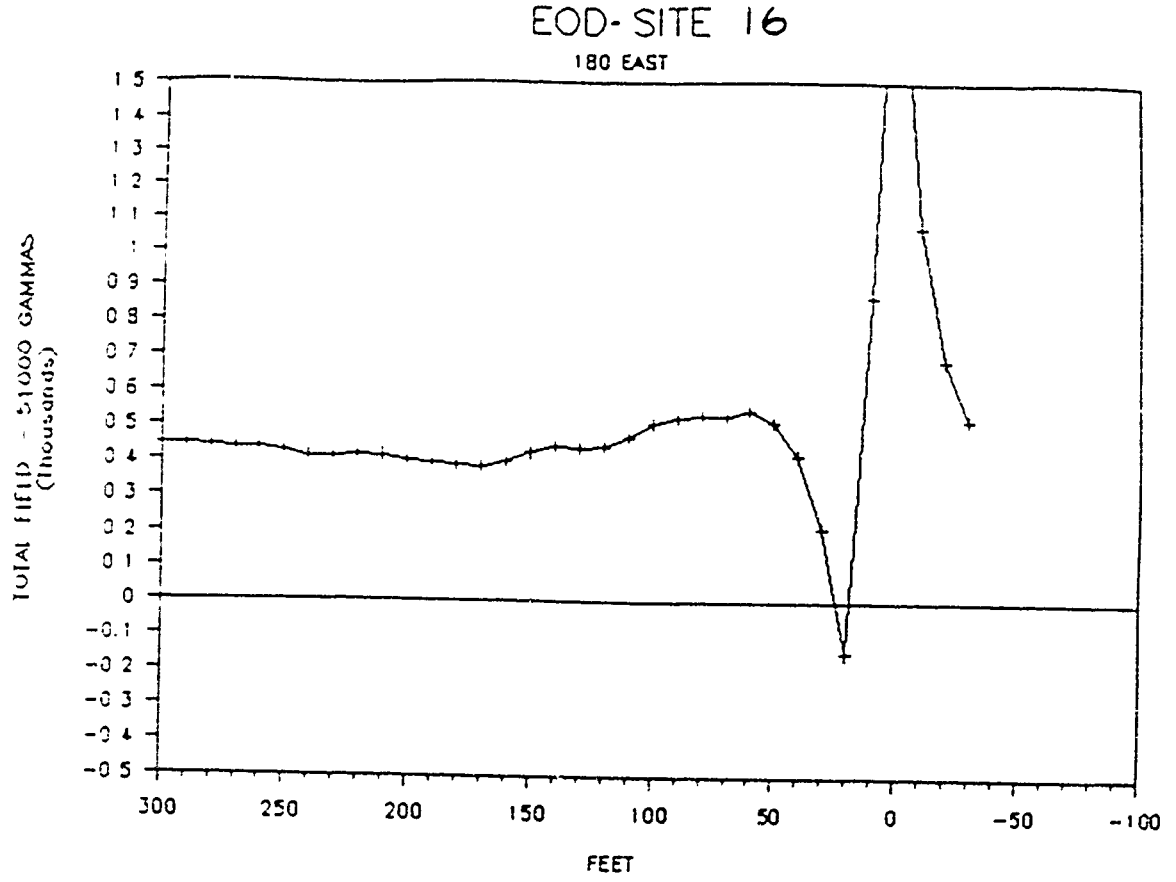
140 EAST



EOD- SITE 16

160 EAST

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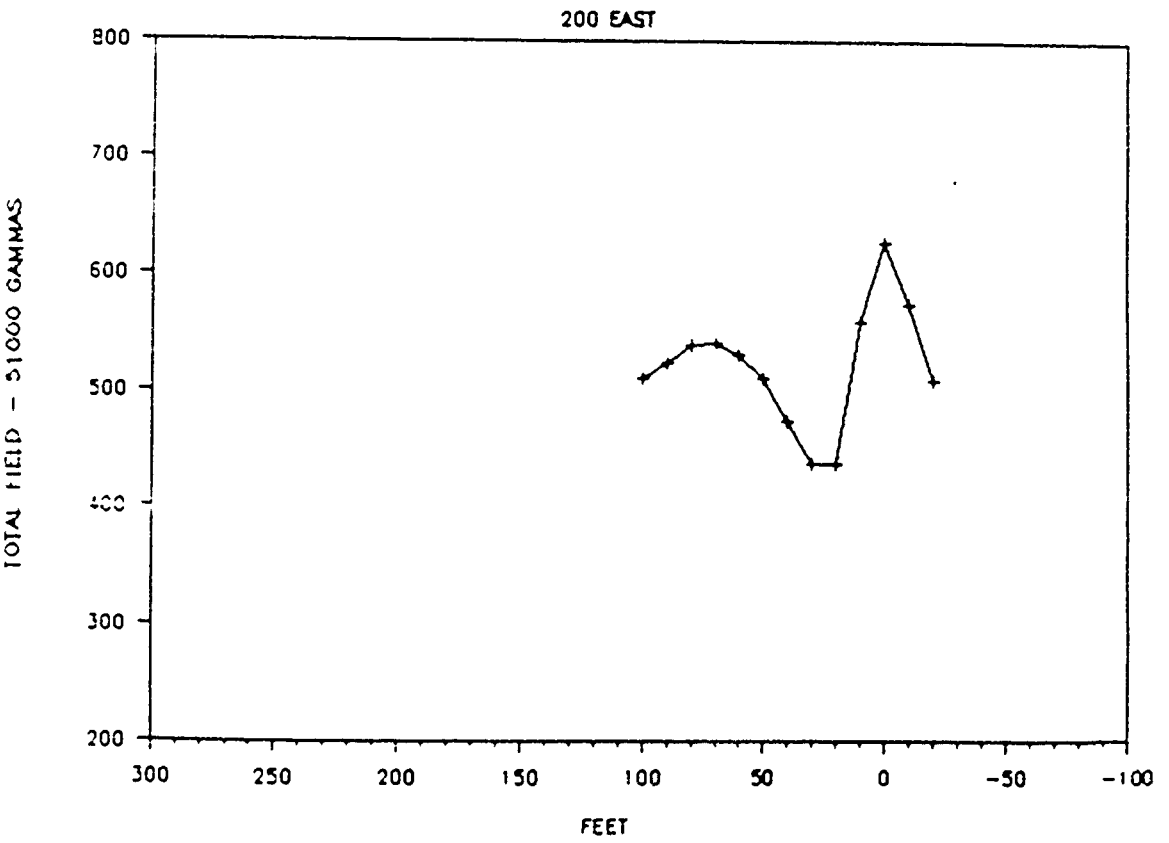
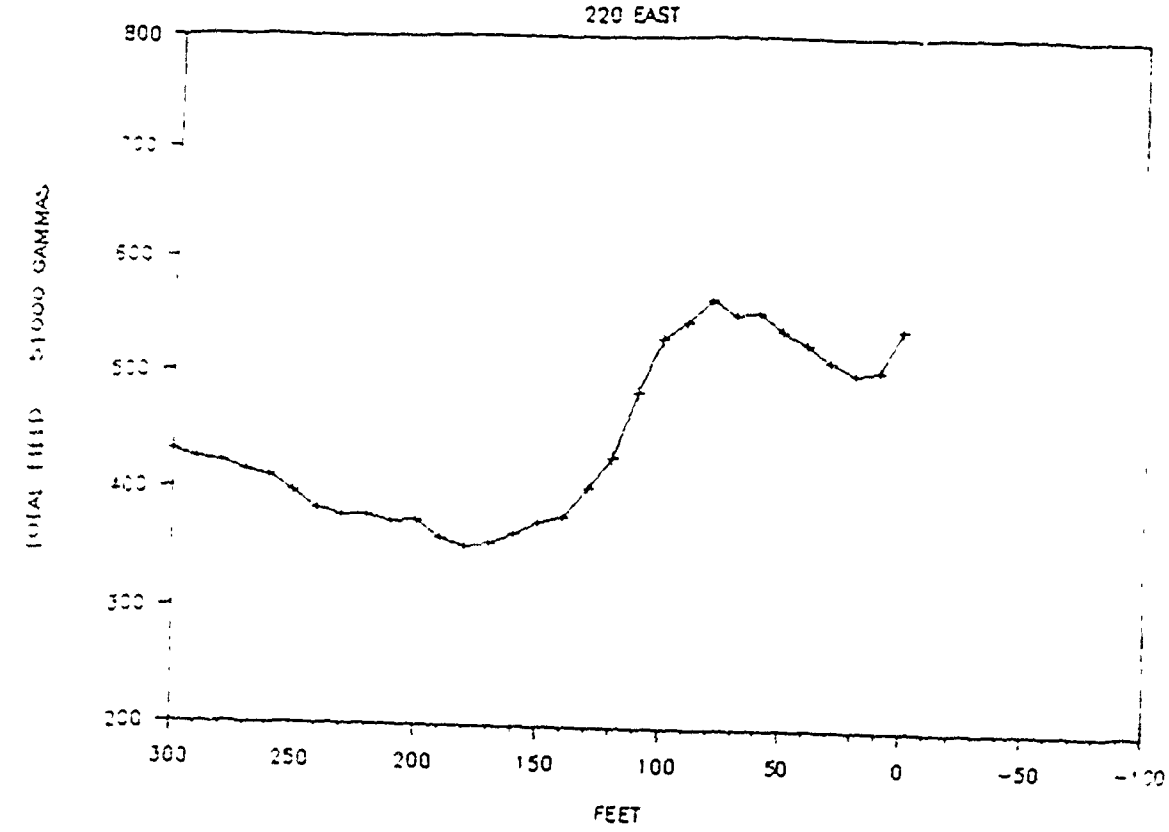
180 EAST
TOTAL FIELD - 51000 GAMMAS
(Thousands)
FEET


EOD-SITE 16
200 EAST
TOTAL FIELD - 51000 GAMMAS
FEET

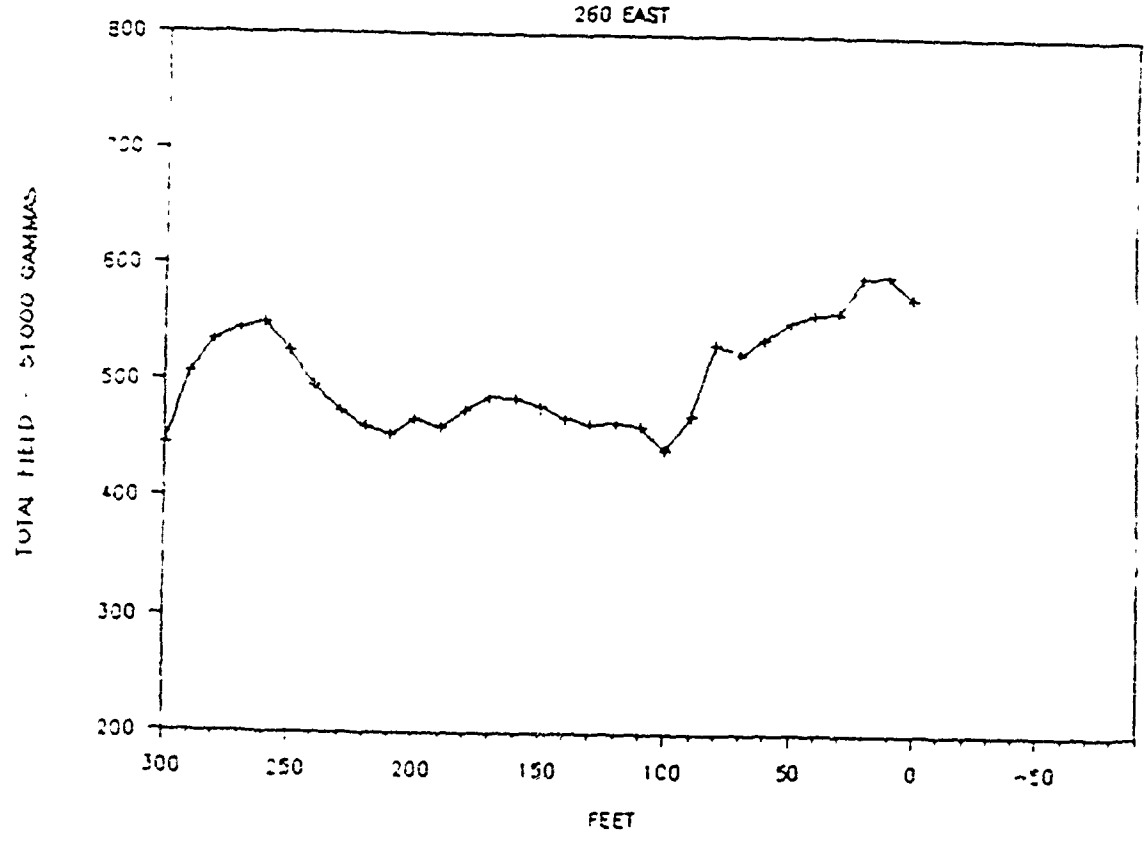
EOD-SITE 16

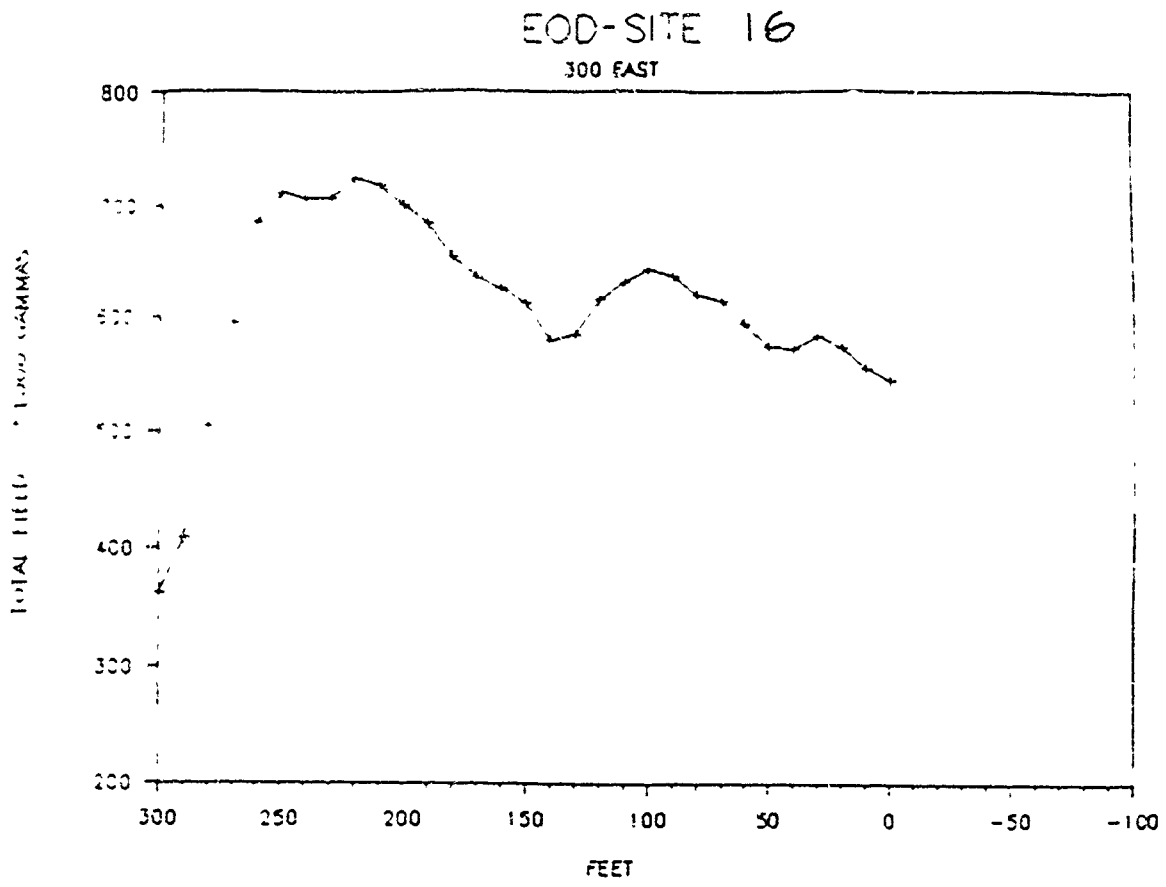
220 EAST



EOD-SITE 16

260 EAST

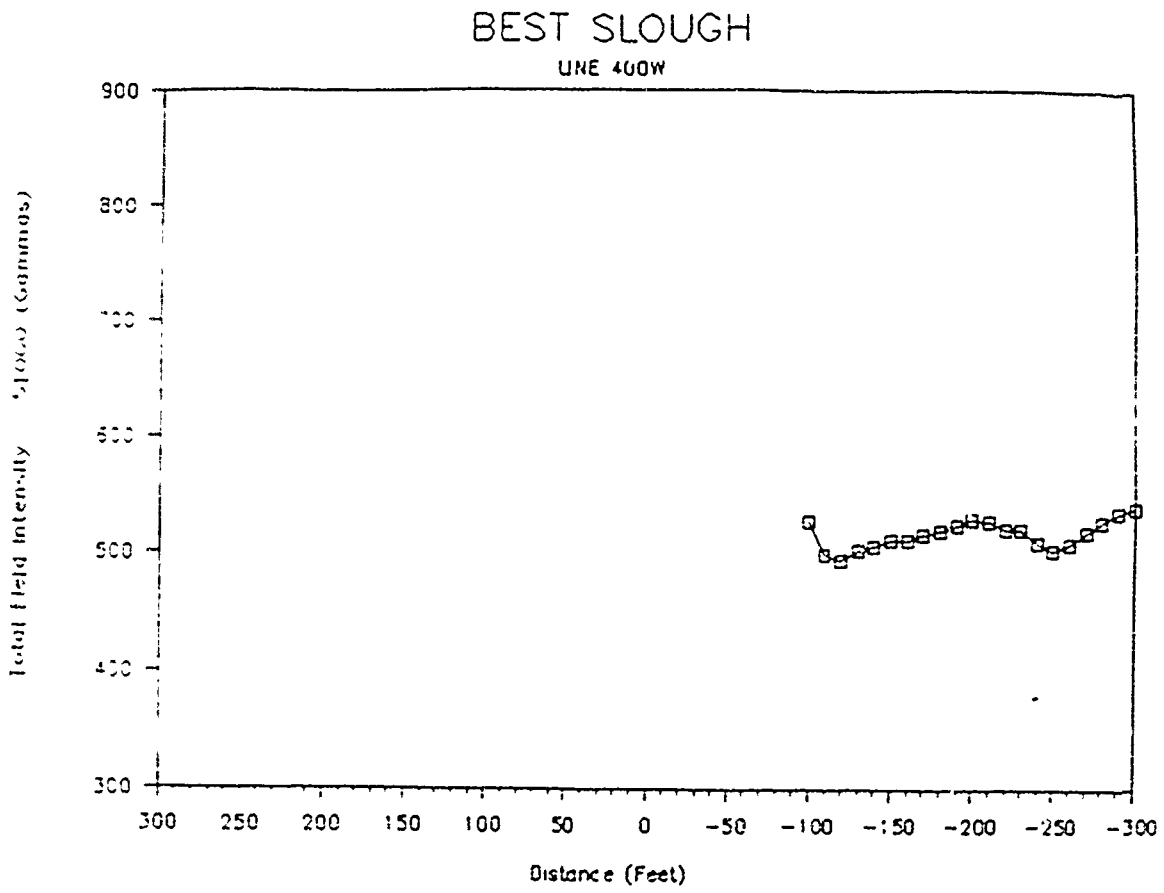


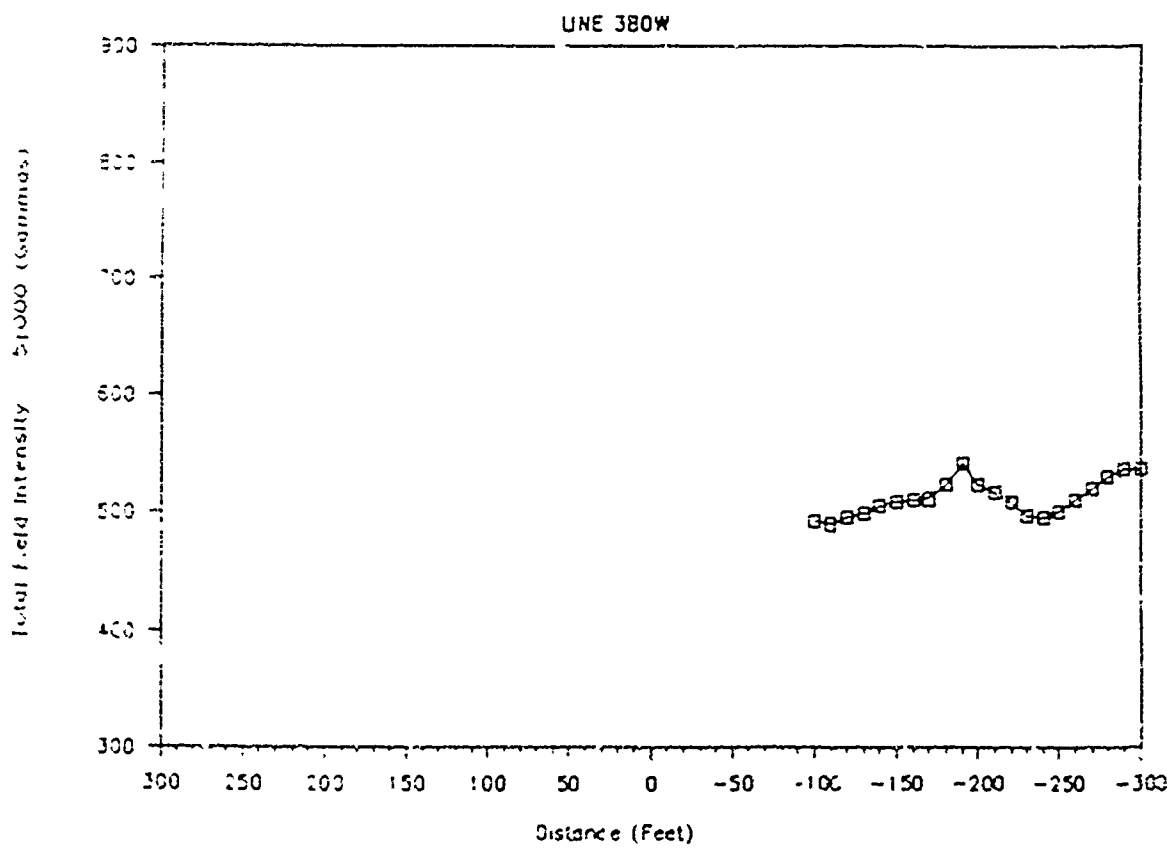

EOD-SITE 16
300 EAST
800
400
300
200
300
250
200
150
100
50
0
-50
-100
FEET

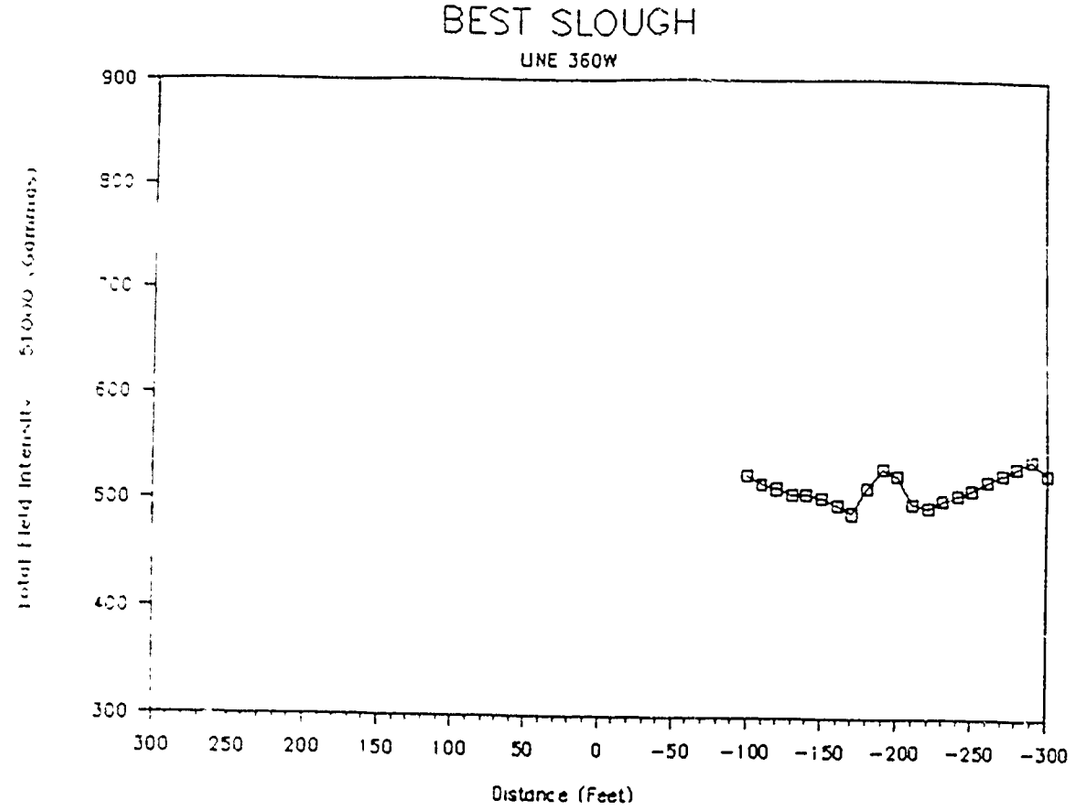
SITE 17

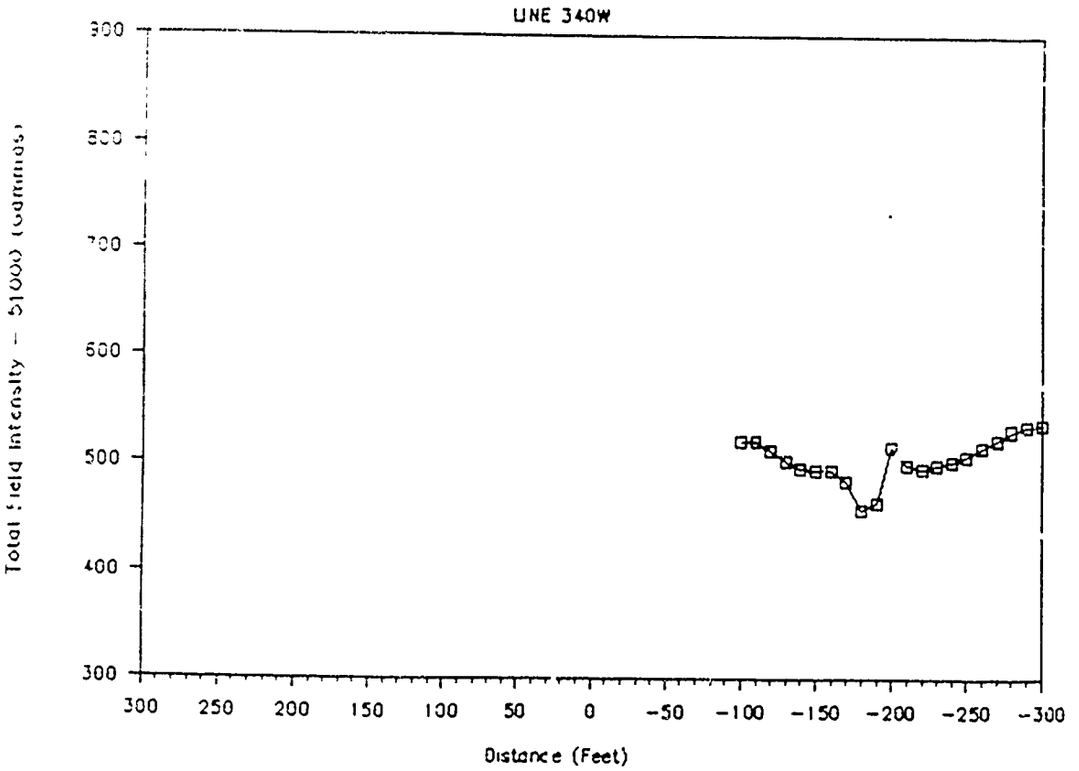
BEST SLOUGH

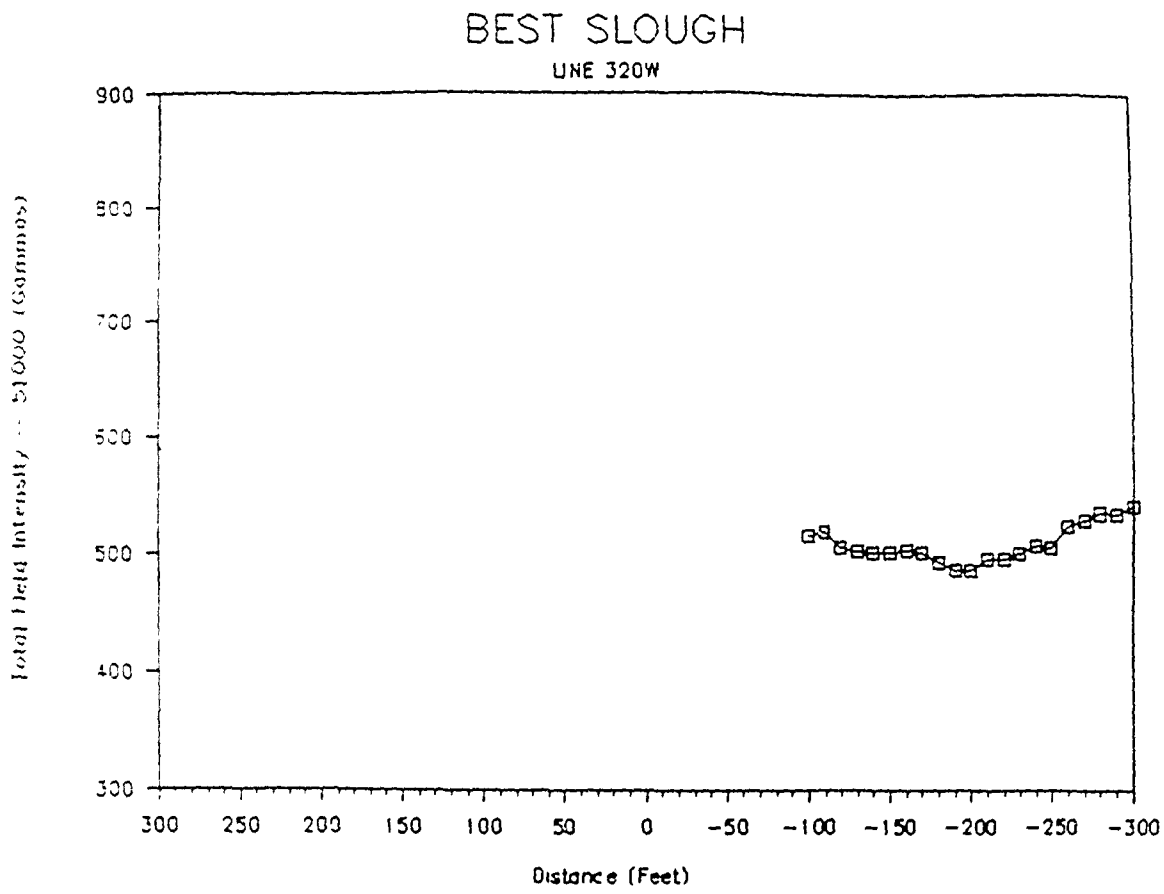
Geophysical Data

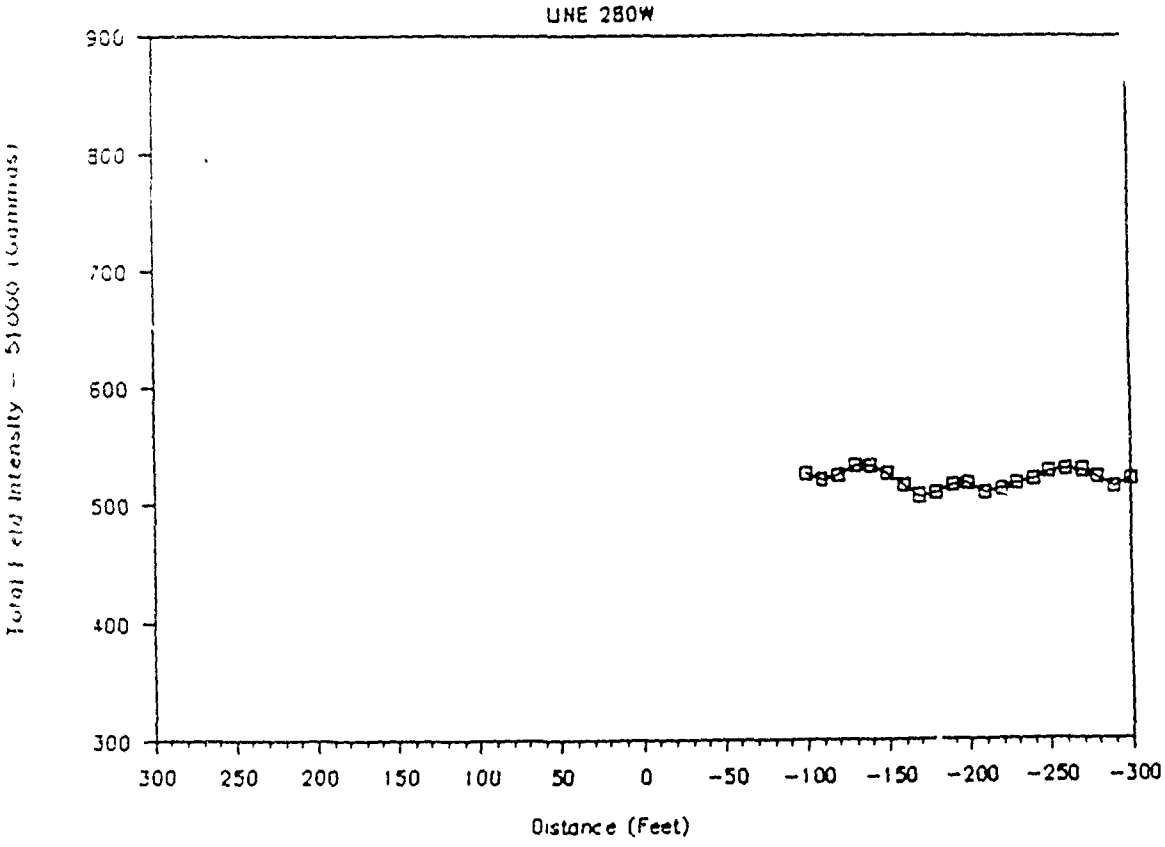

BEST SLOUGH
UNE 400W
Total Field Intensity (Gammas)
900
800
500
400
300
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Distance (Feet)

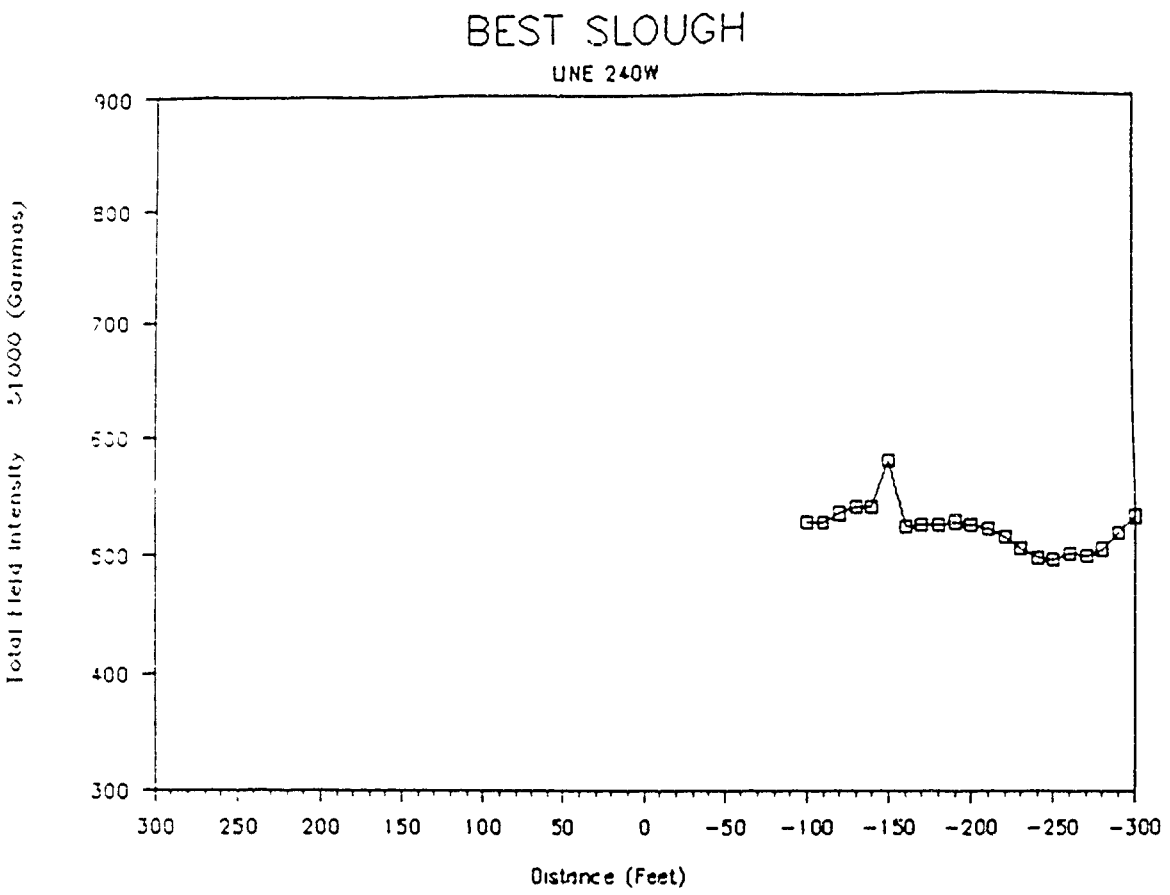

BEST SLOUGH
UNE 380W
Total Field Intensity (Gammas)
800
600
500
400
300
300
250
200
150
100
50
0
-50
-150
-200
-250
Distance (Feet)

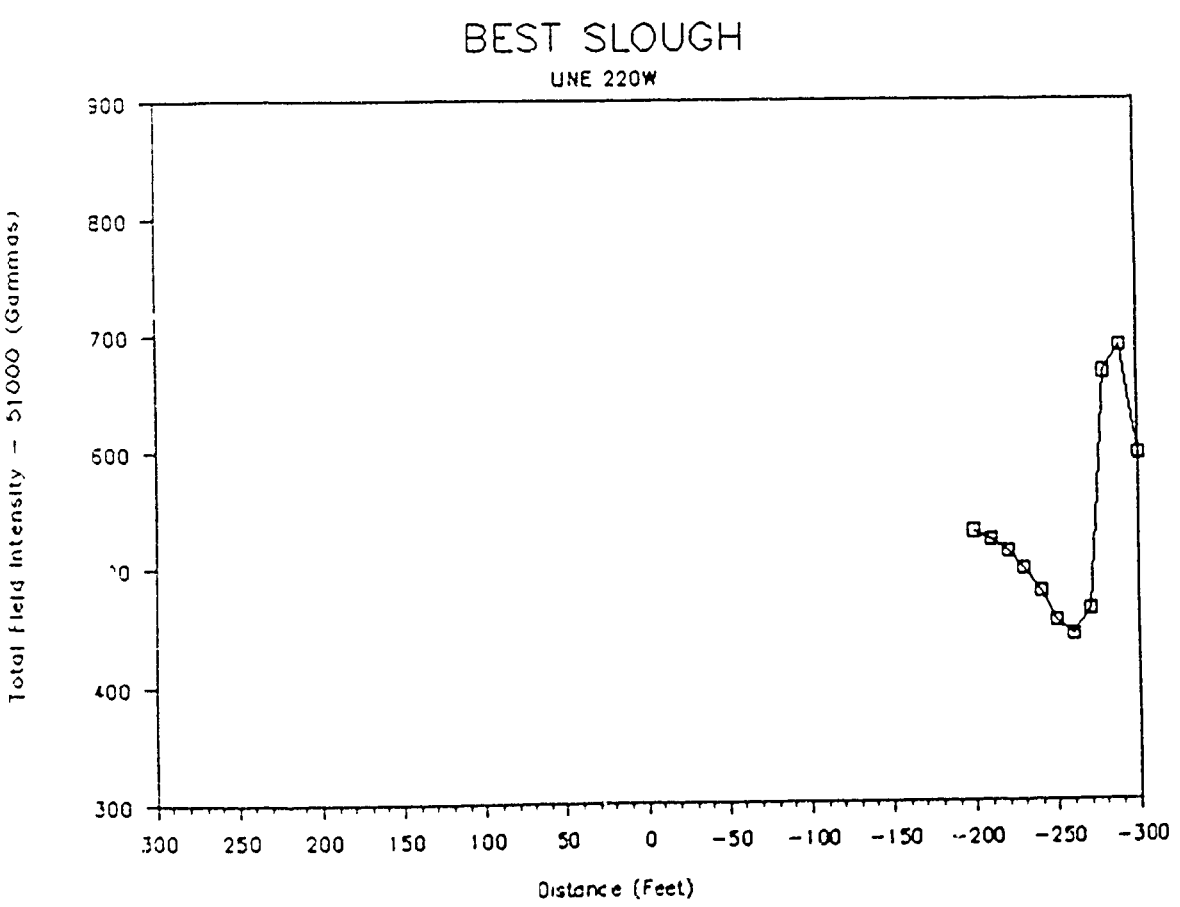

BEST SLOUGH
LINE 360W
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
LINE 340W
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
LINE 320W
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

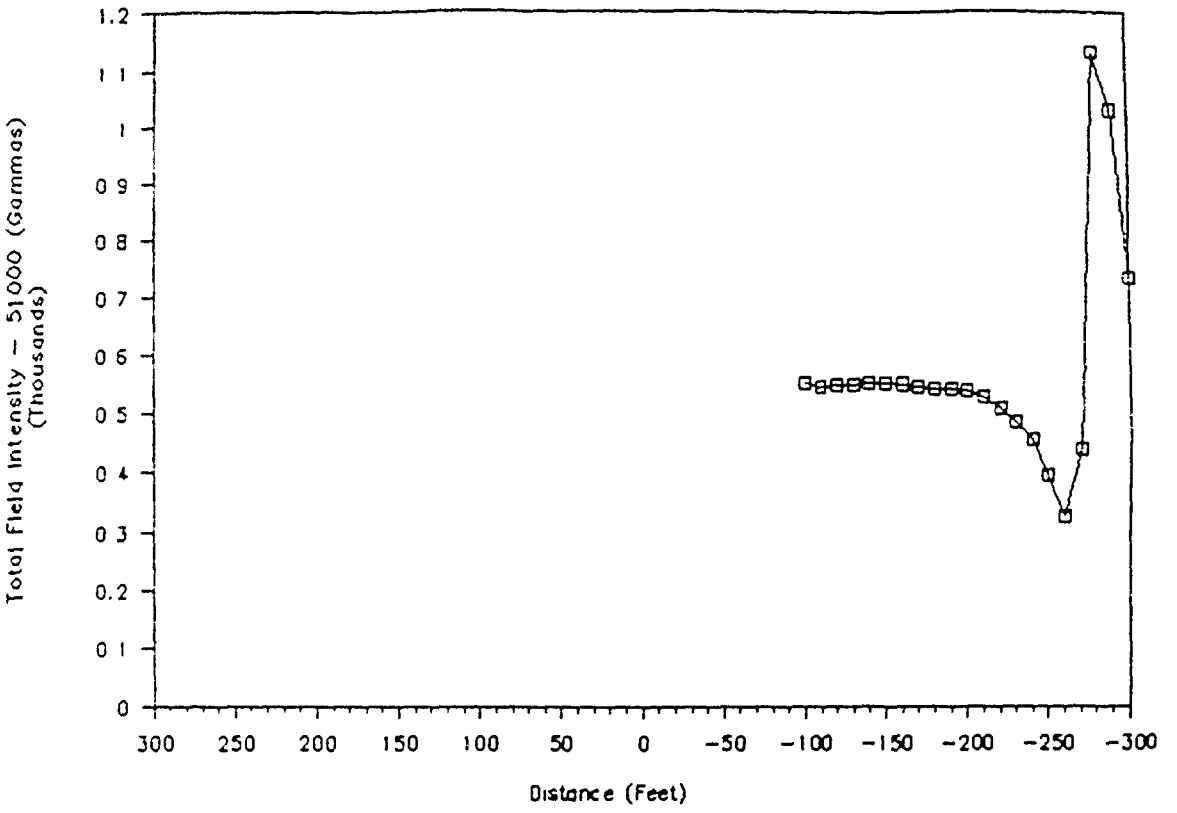

BEST SLOUGH
LINE 280W
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
UNE 240W
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
UNE 220W
Total Field Intensity - 51000 (Gammas)
900
800
700
600
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

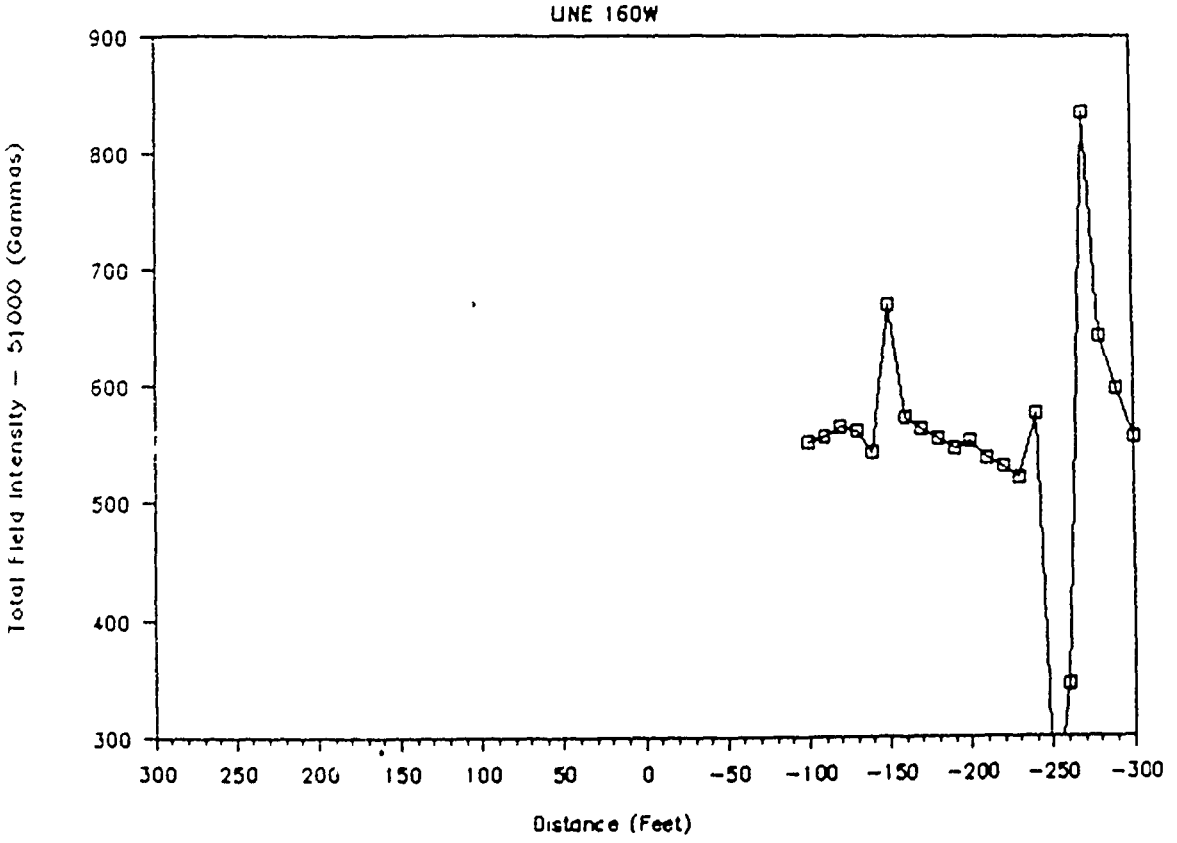
BEST SLOUGH

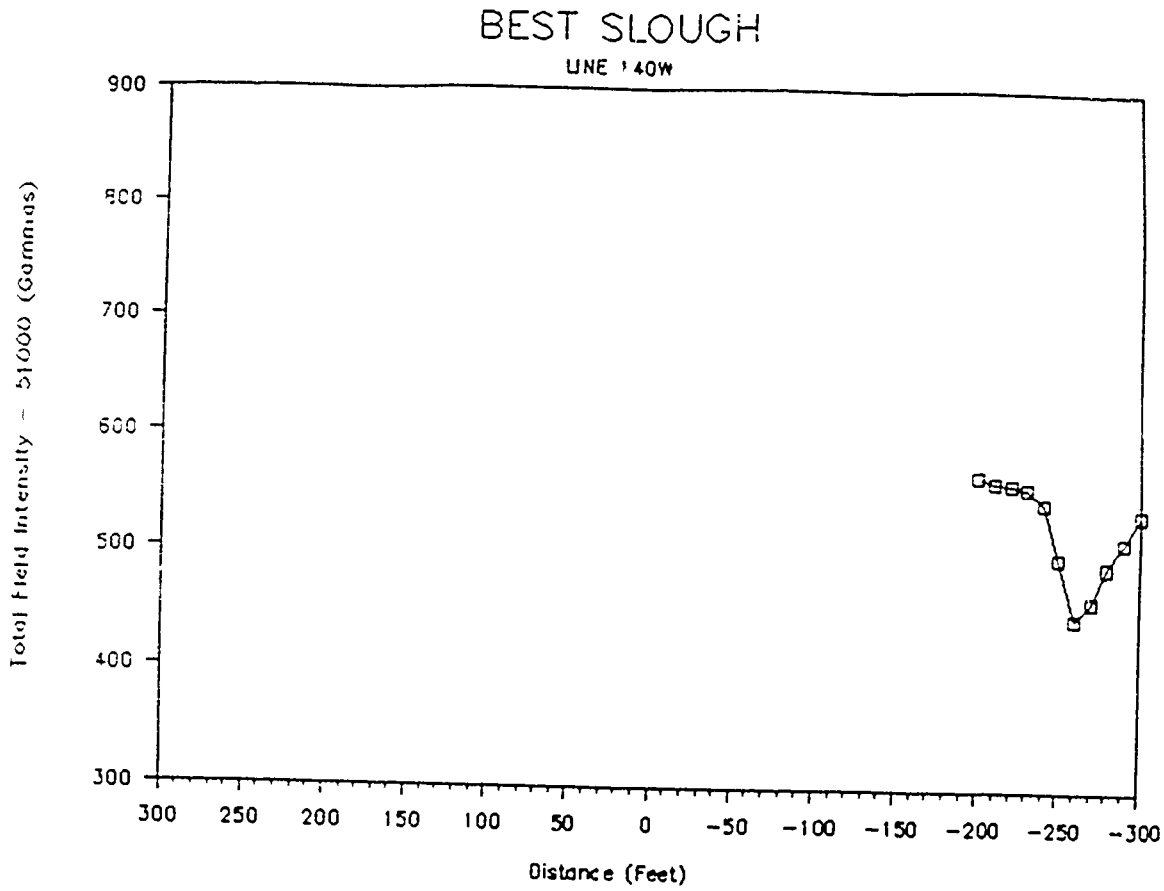
UNE 200W

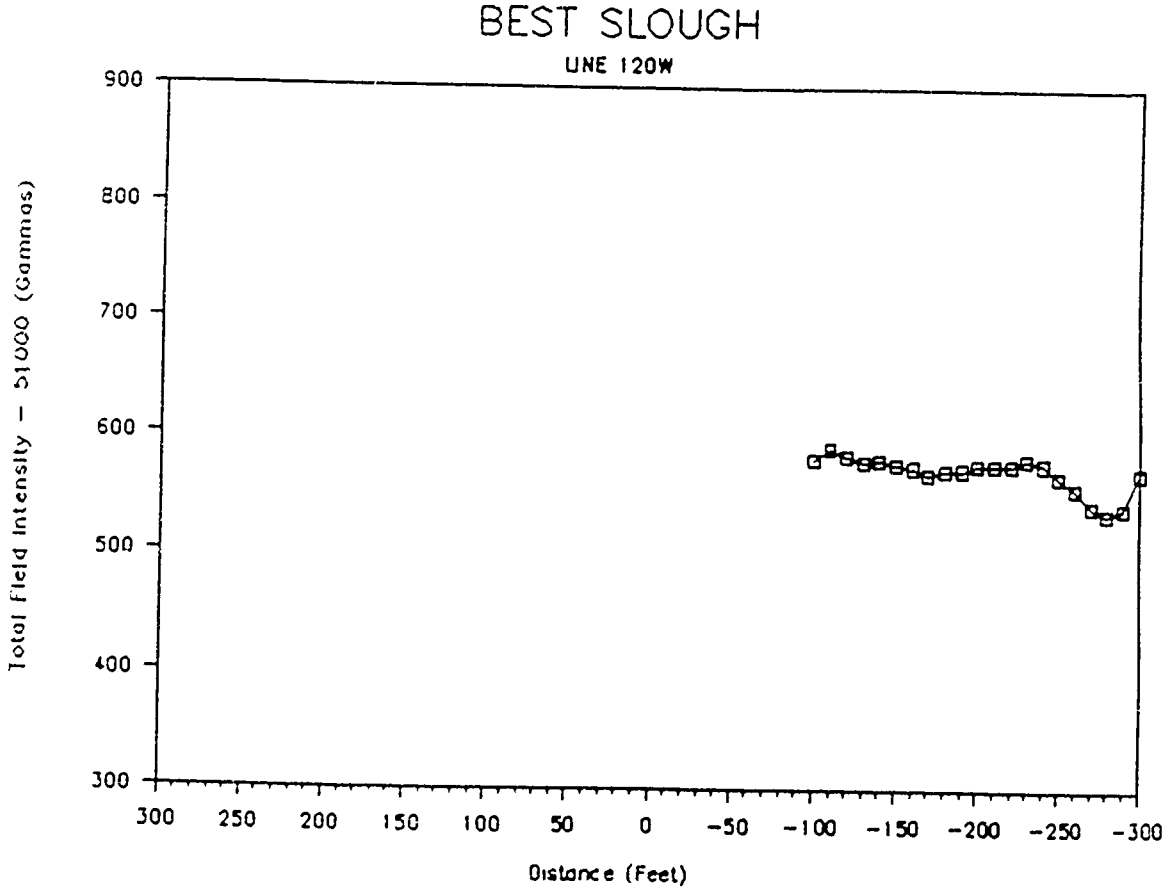


BEST SLOUGH

UNE 160W

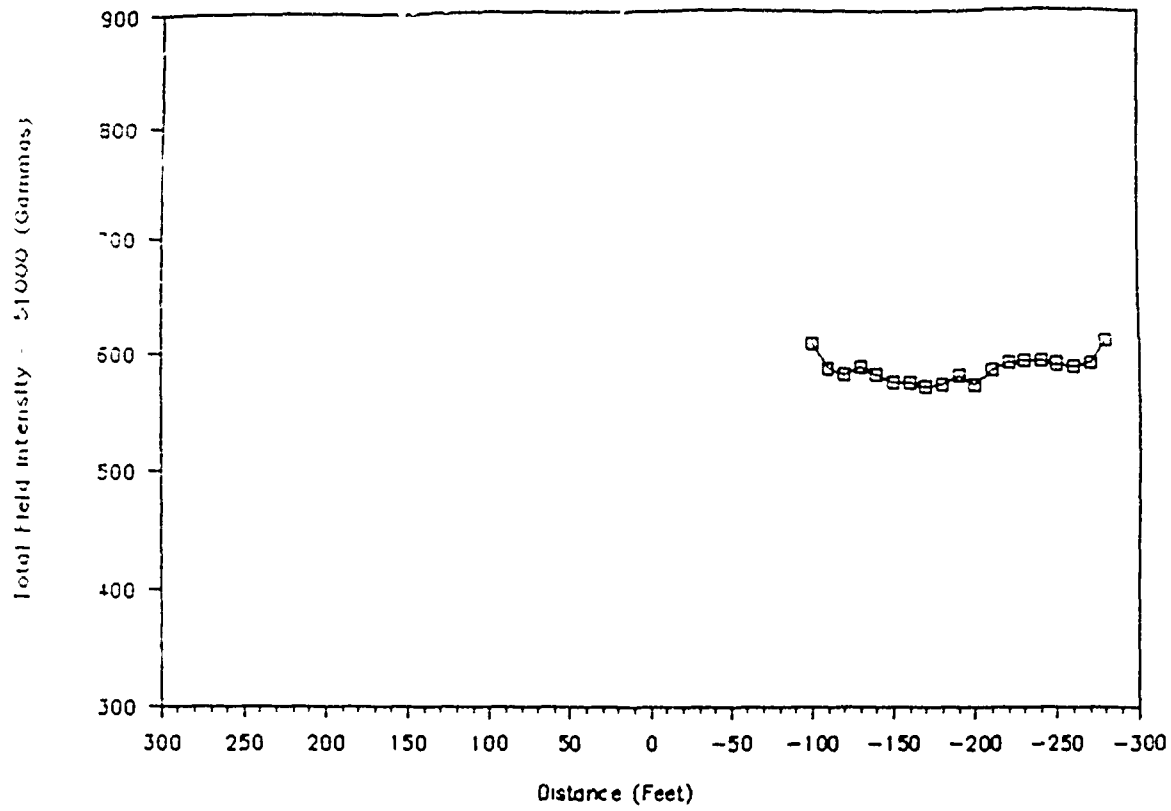



BEST SLOUGH
UNE 140W
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
UNE 120W
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

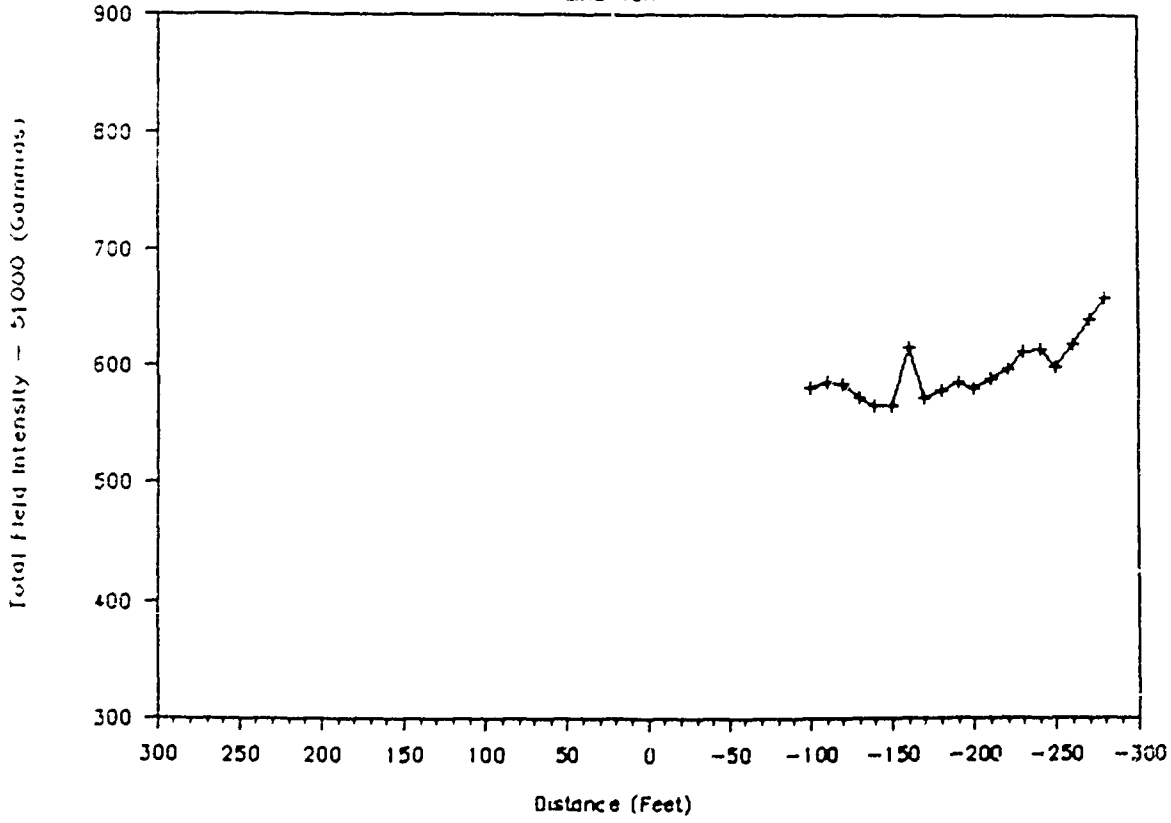
BEST SLOUGH

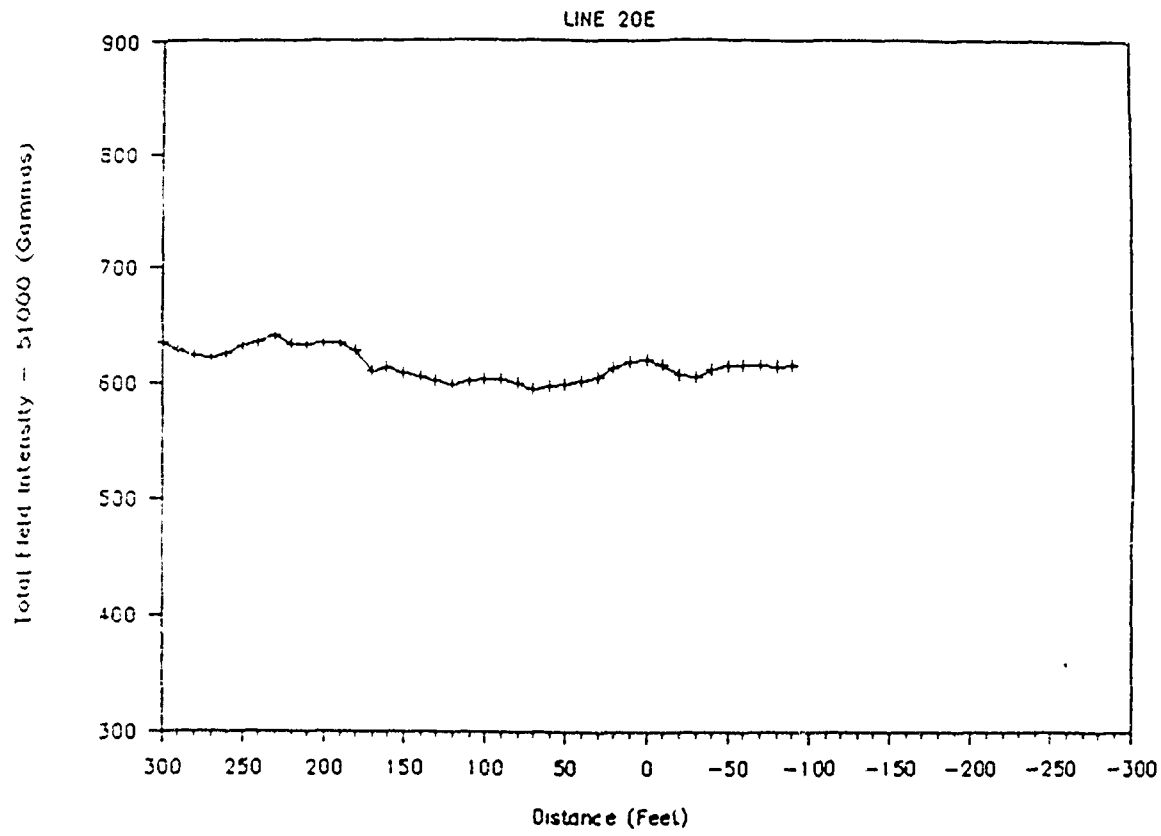
LINE 80W

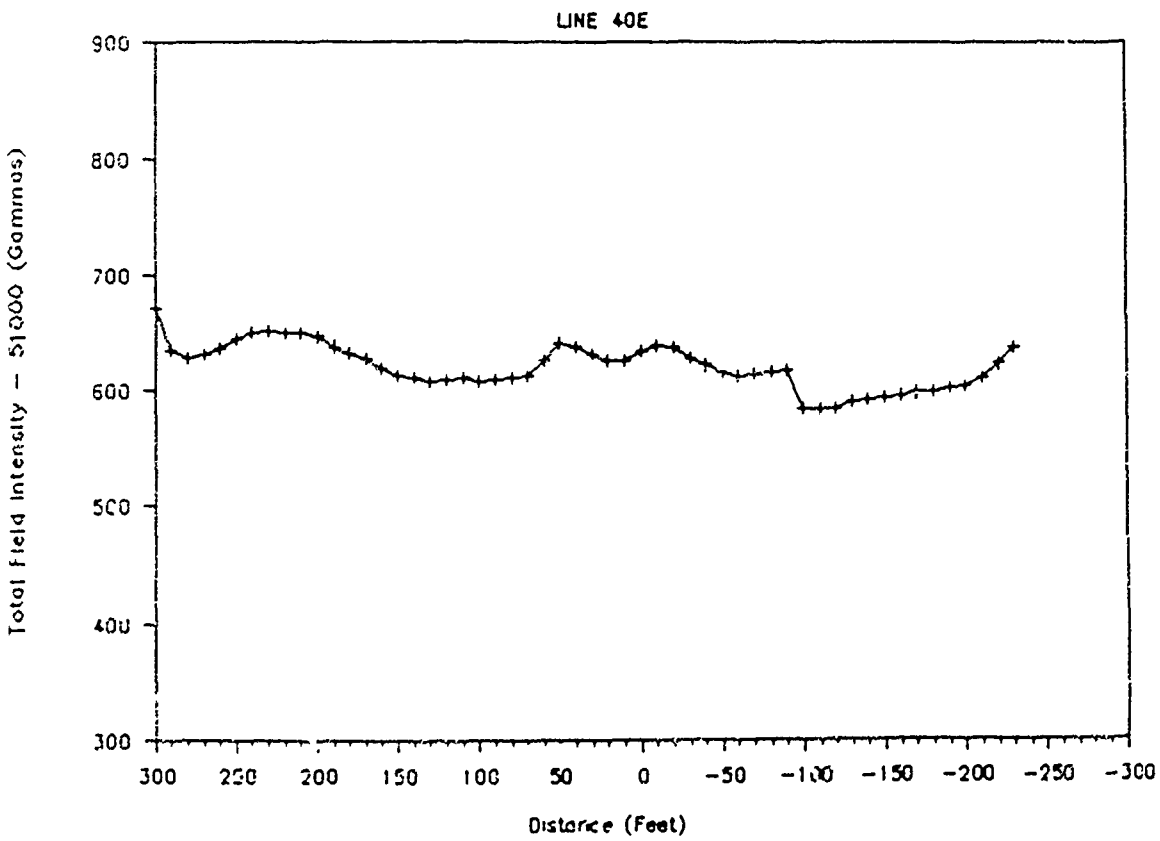


BEST SLOUGH

LINE 40W

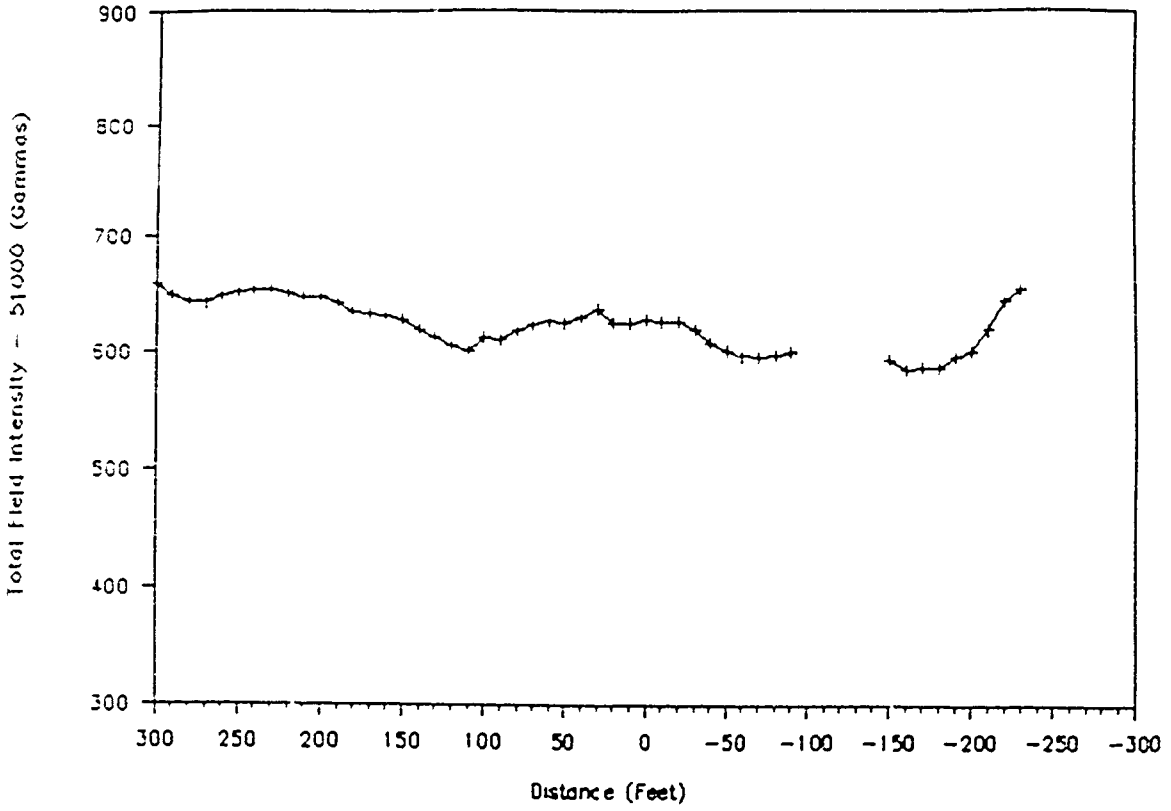



BEST SLOUGH
LINE 20E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
LINE 40E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

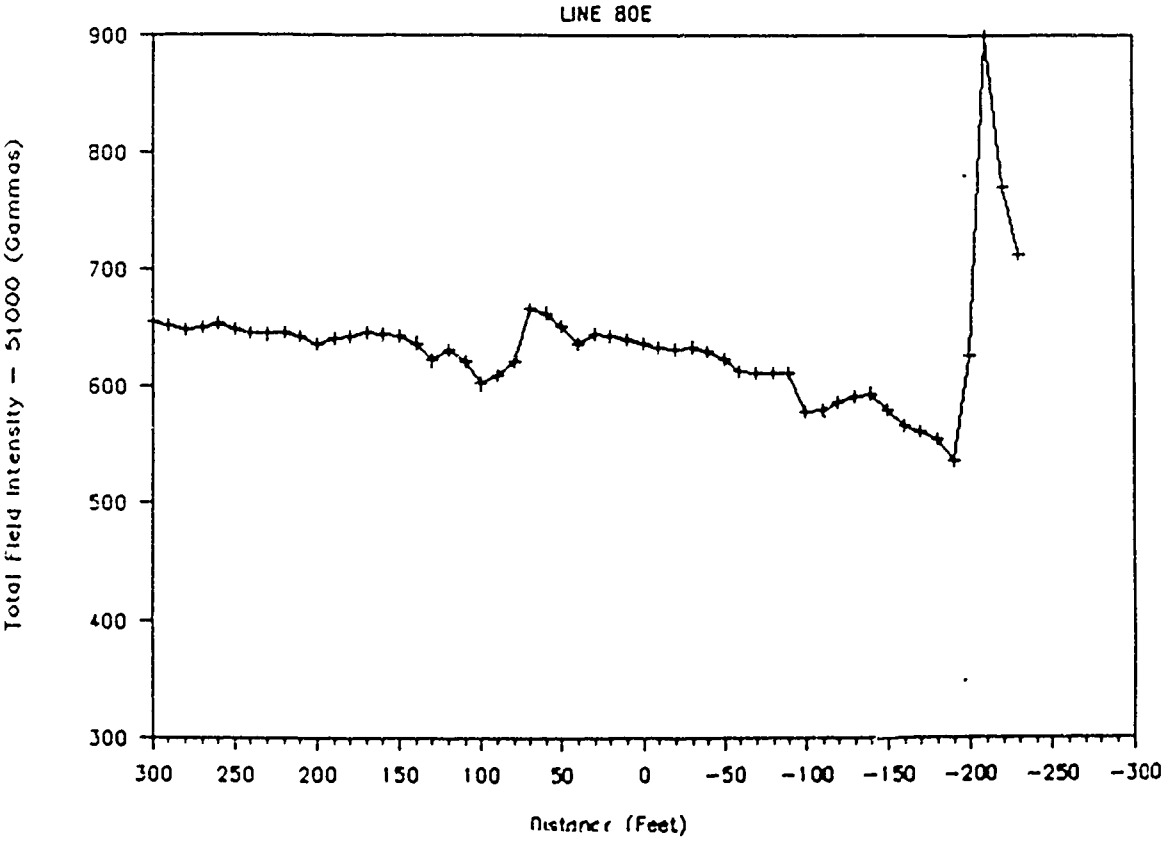
BEST SLOUGH

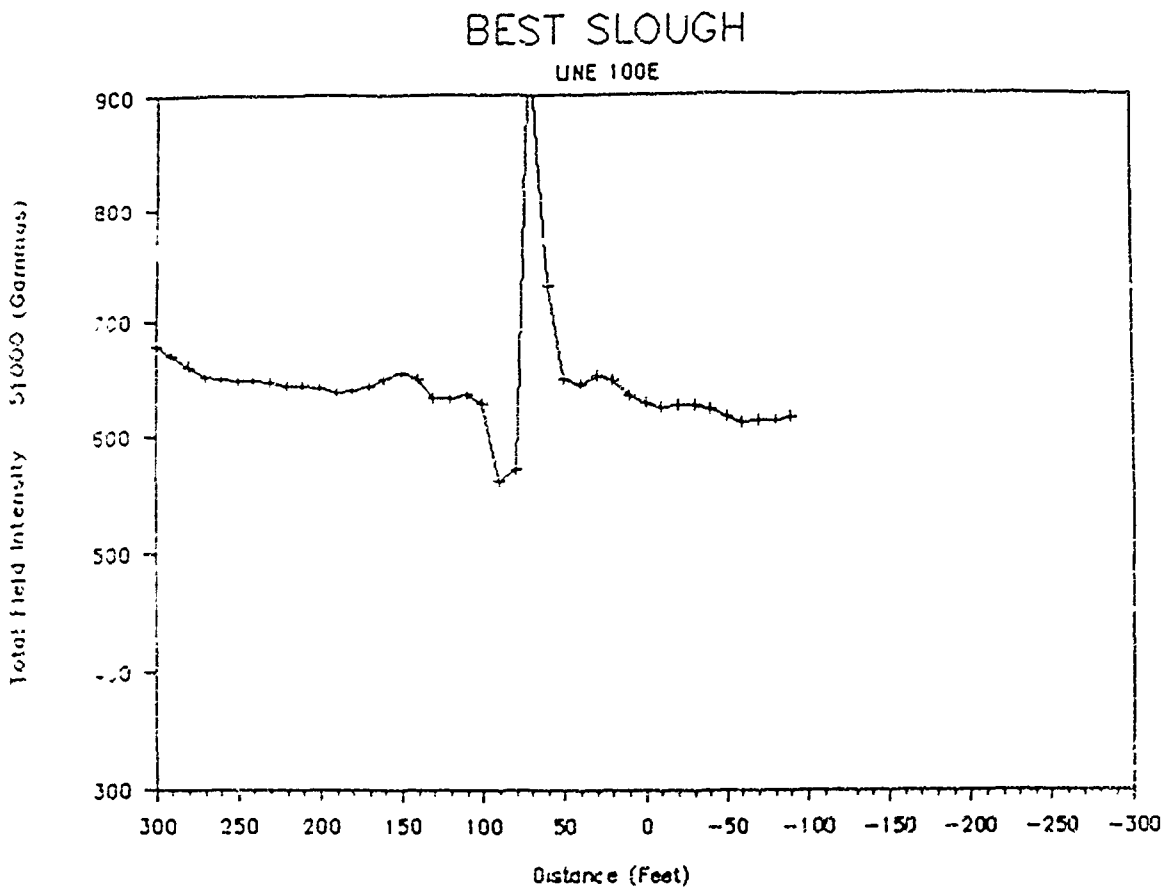
LINE 60E

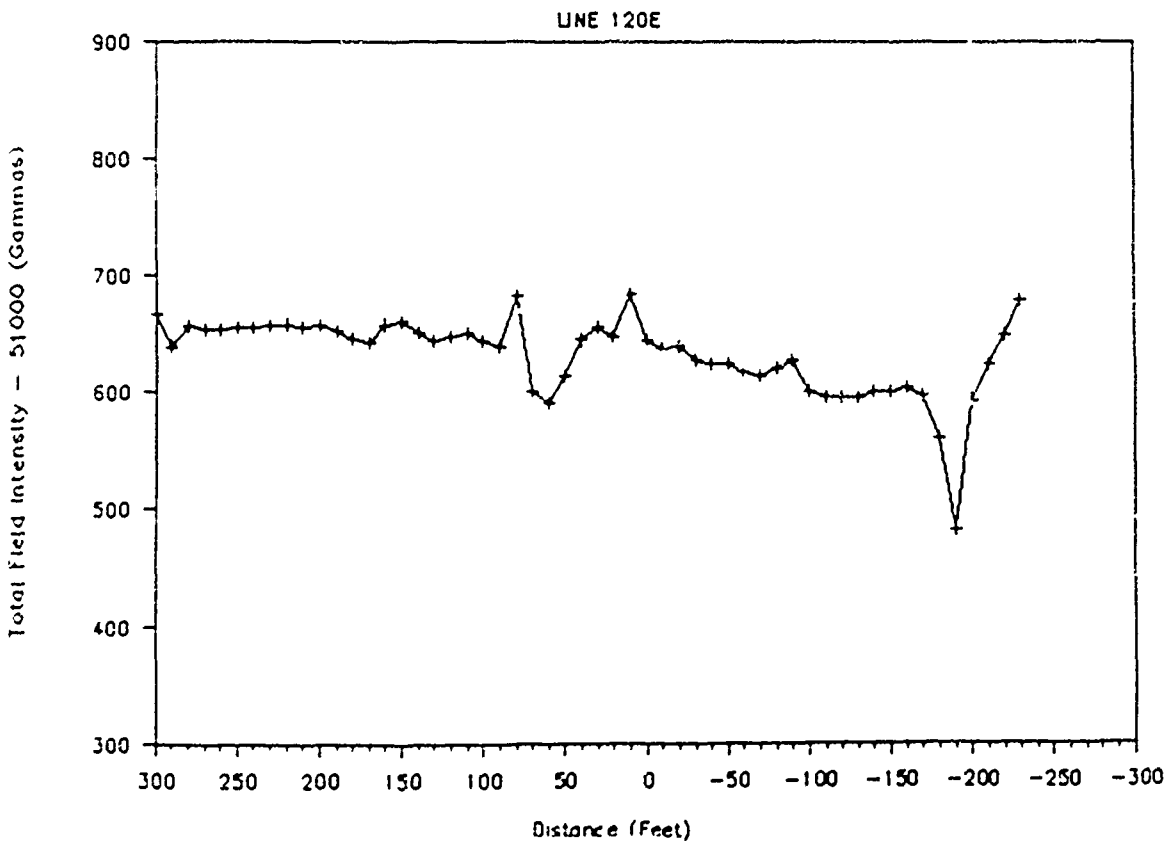


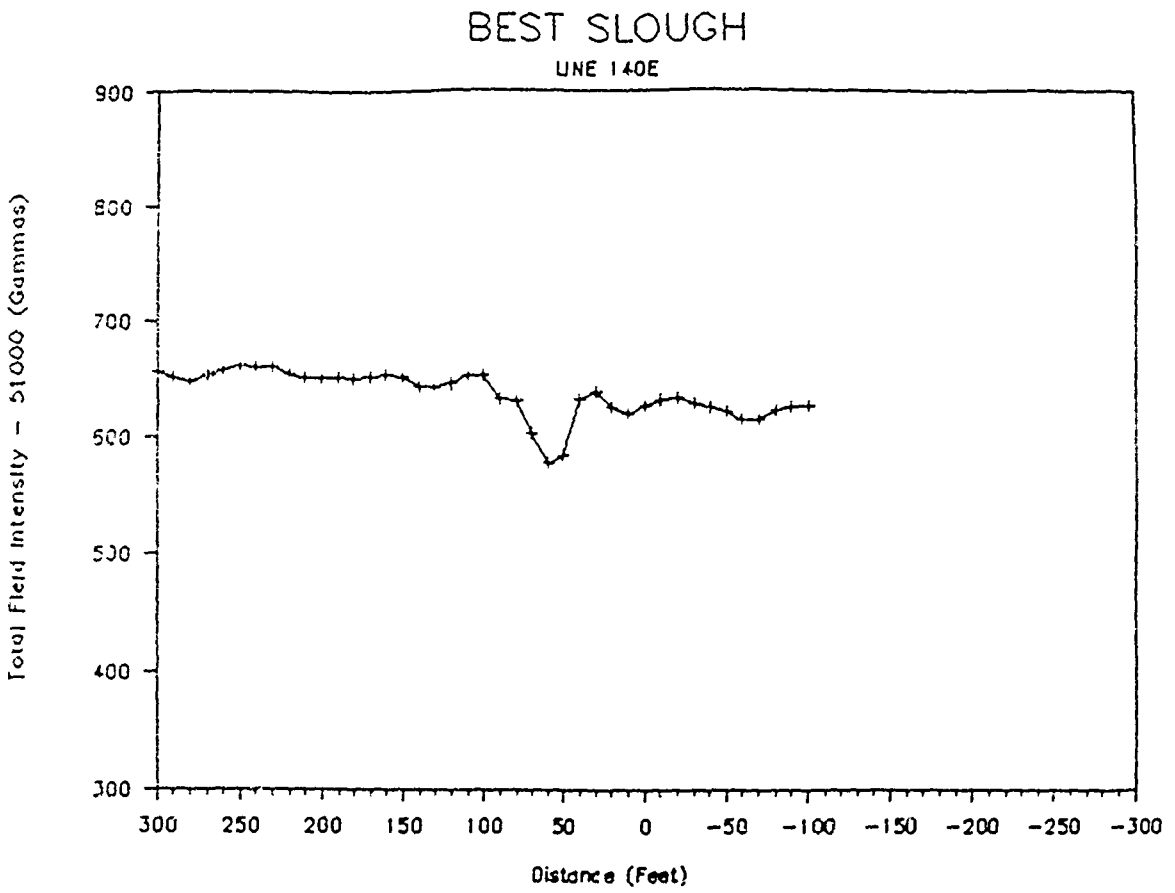
BEST SLOUGH

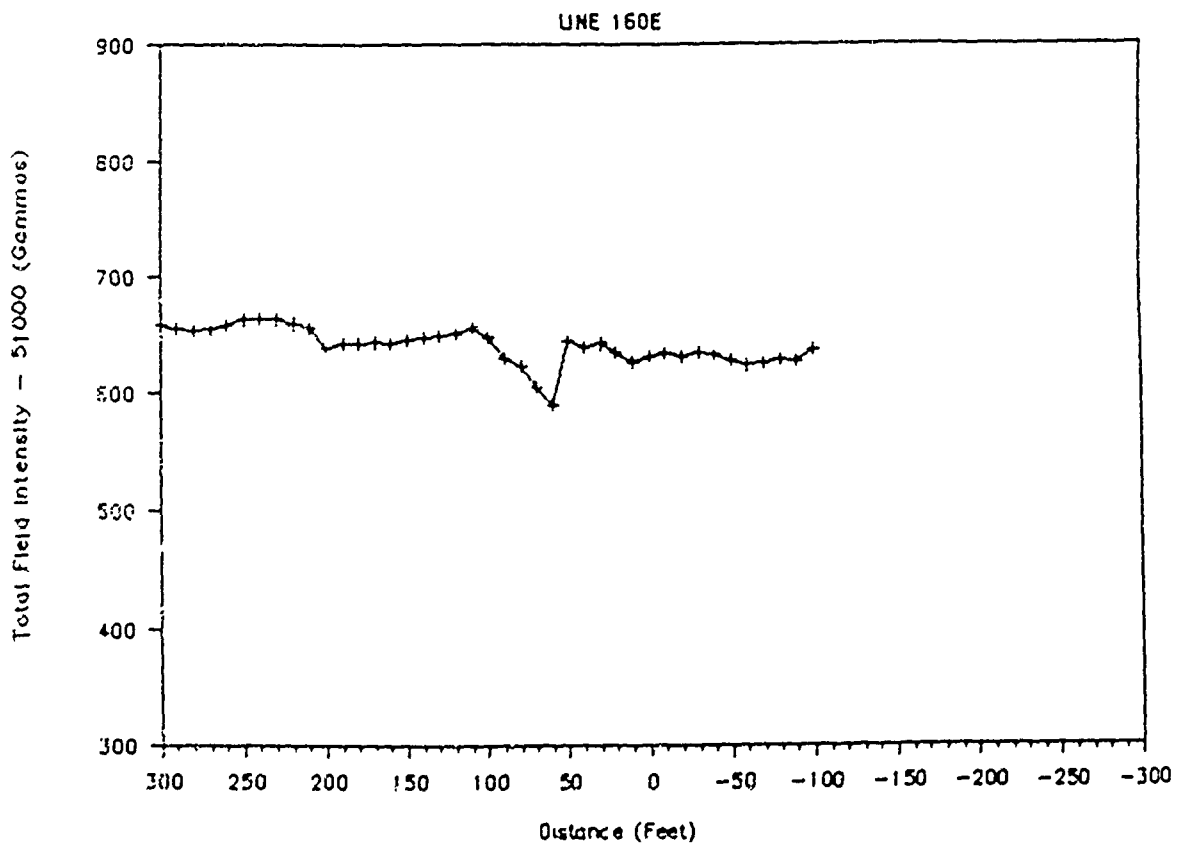
LINE 80E

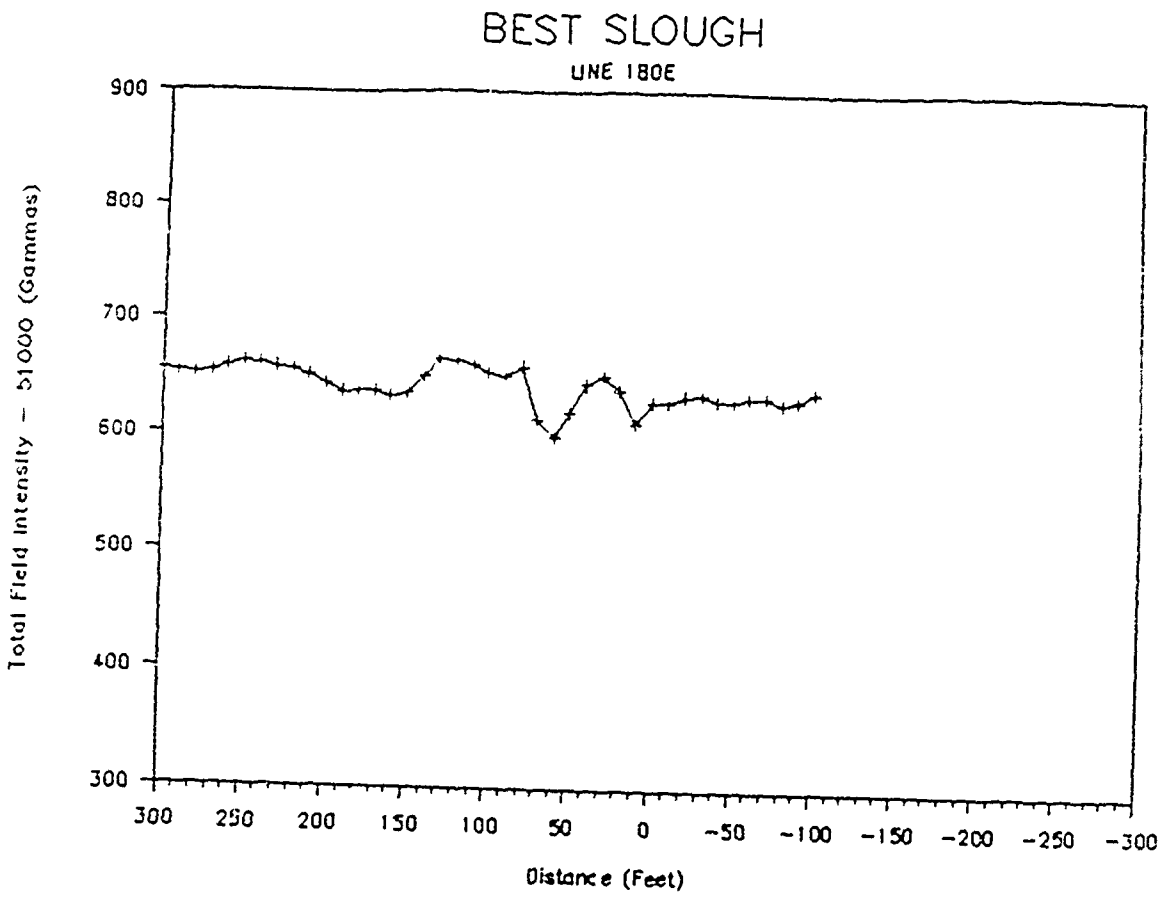


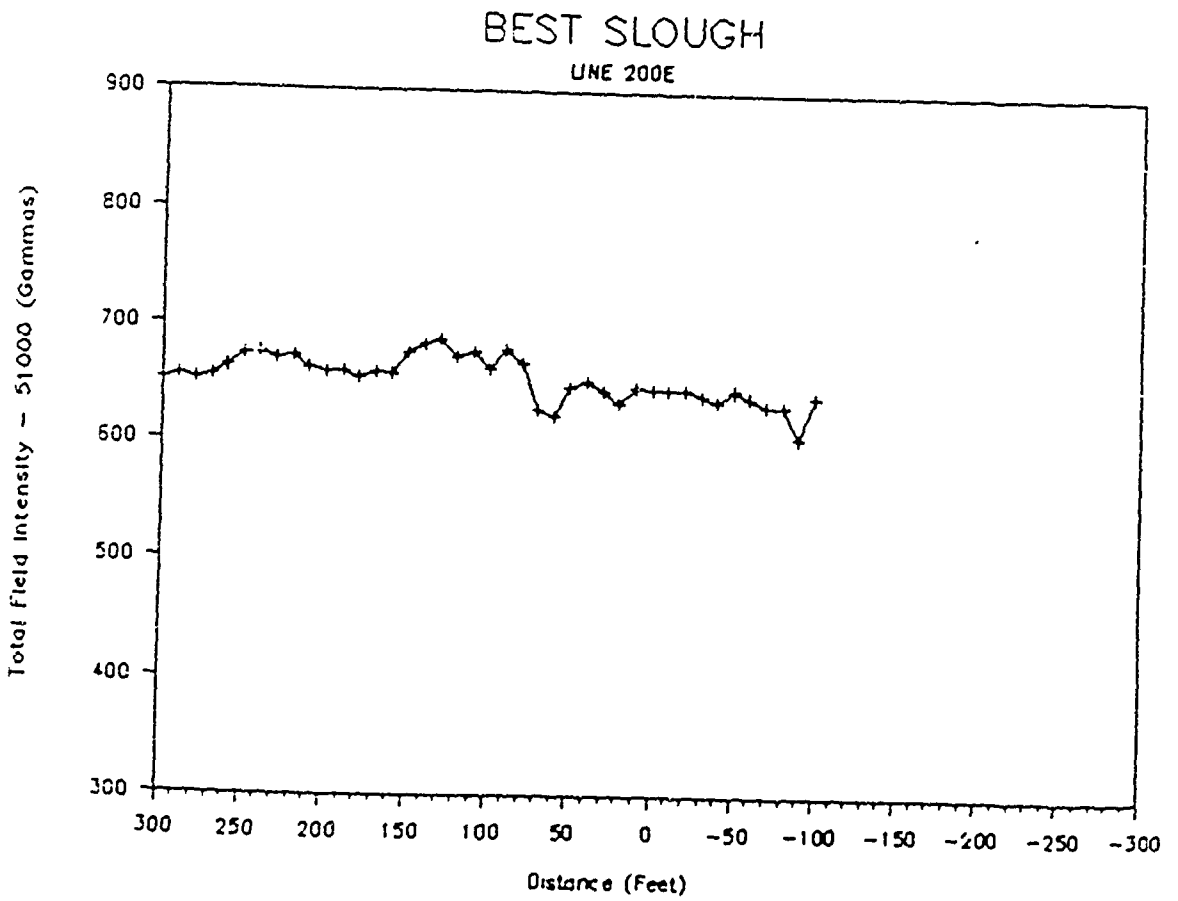

BEST SLOUGH
LINE 100E
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

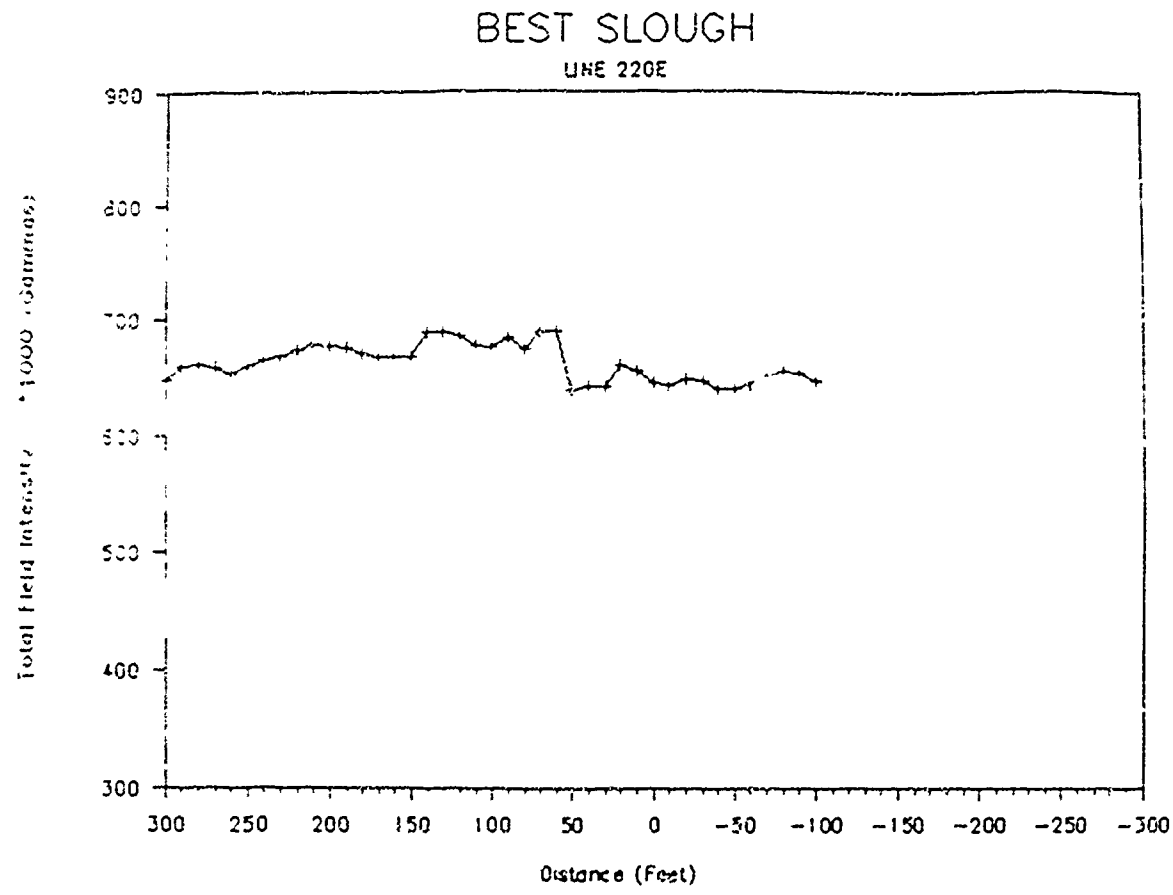

BEST SLOUGH
LINE 120E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

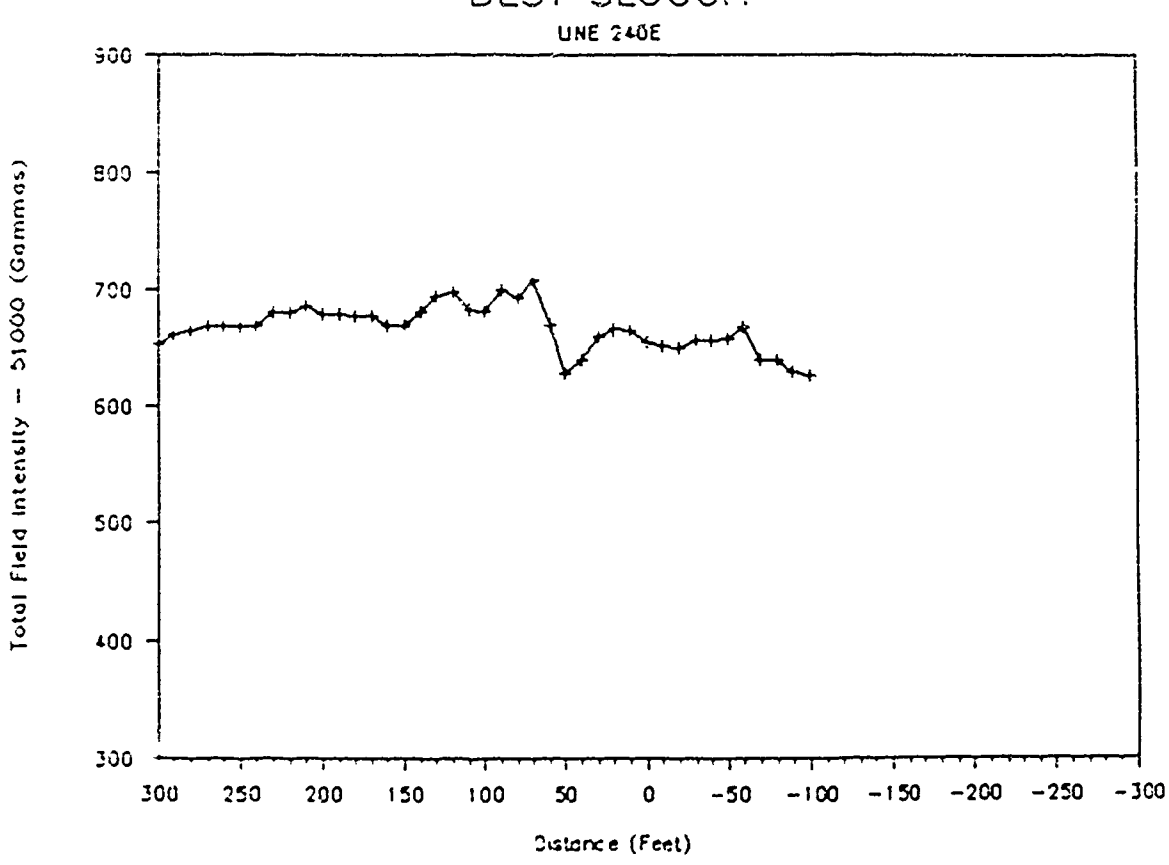

BEST SLOUGH
LINE 140E
900
800
700
600
500
400
300
Total Field Intensity - 51000 (Gammas)
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Distance (Feet)

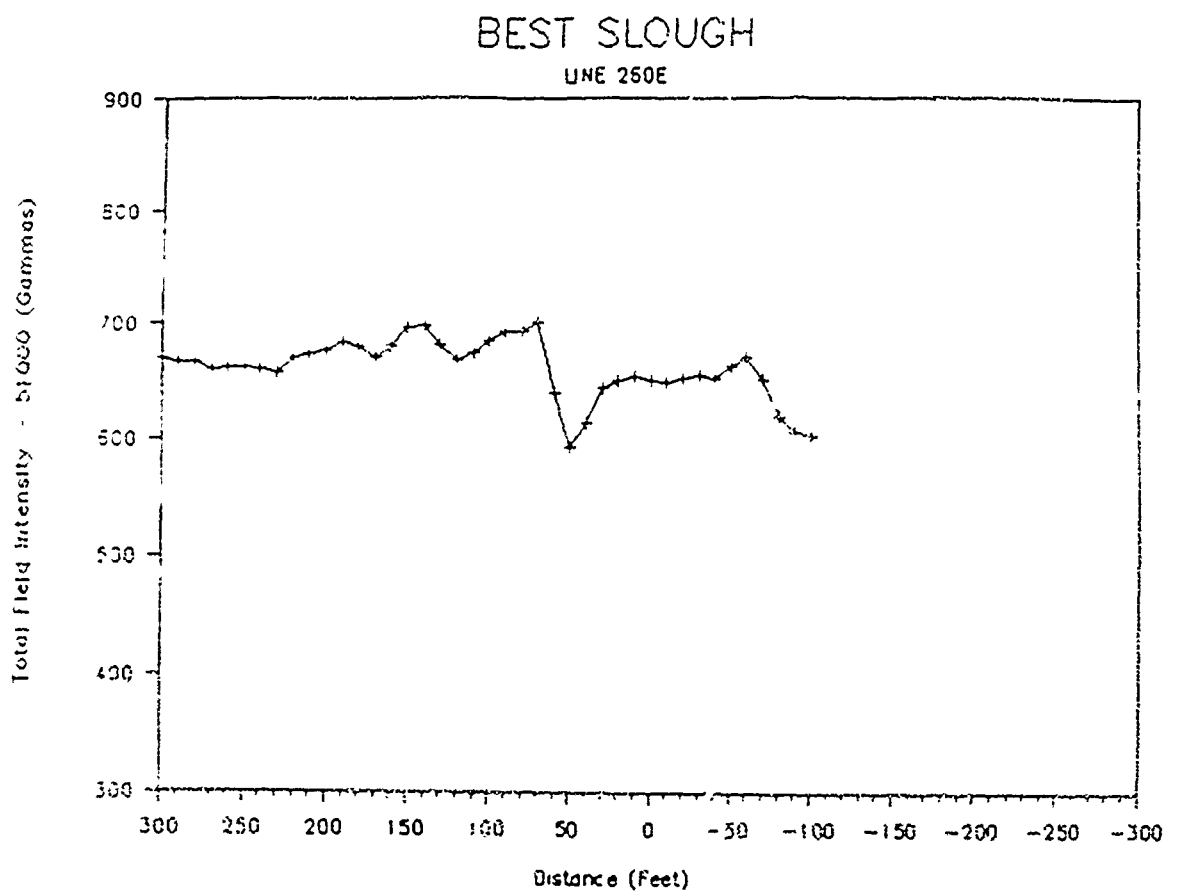

BEST SLOUGH
LINE 160E
900
800
700
600
500
400
300
Total Field Intensity - 51000 (Gammas)
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Distance (Feet)

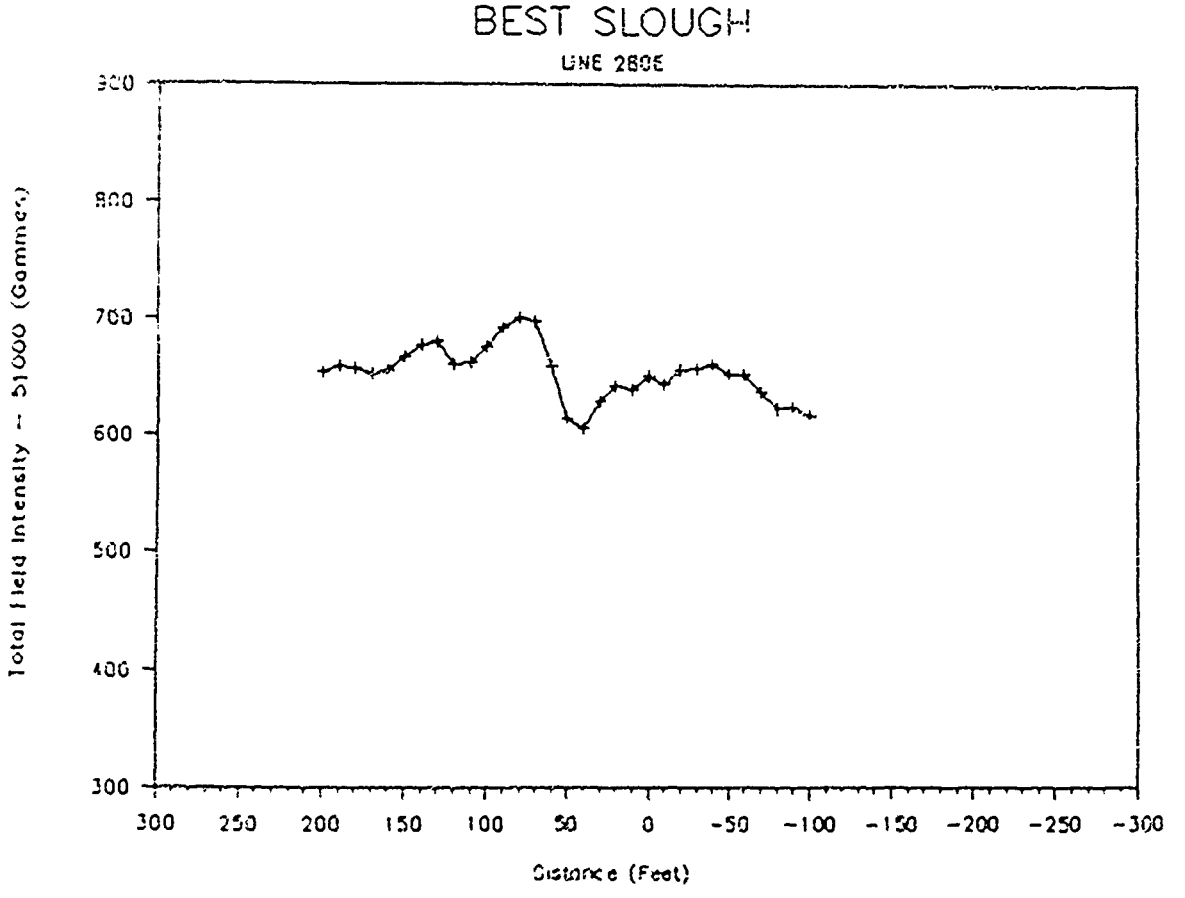

BEST SLOUGH
LINE 180E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

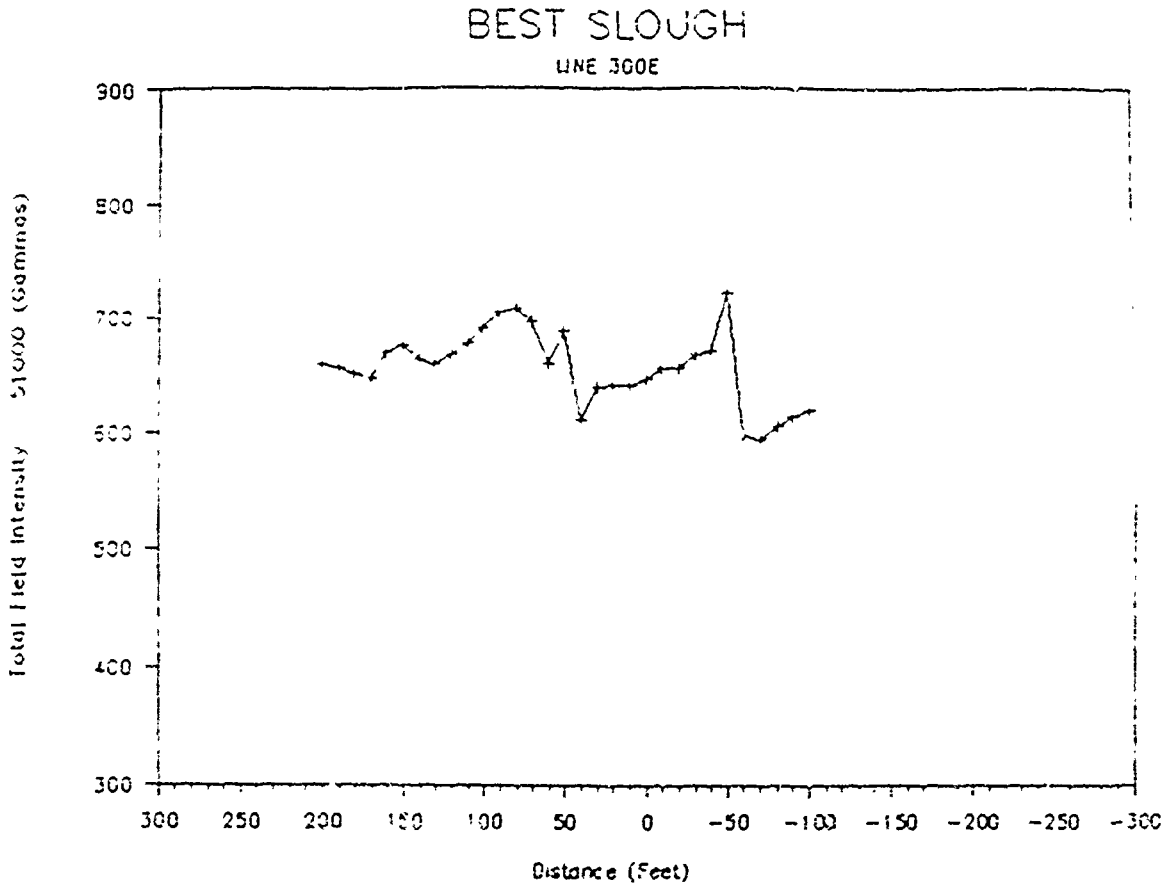

BEST SLOUGH
LINE 200E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

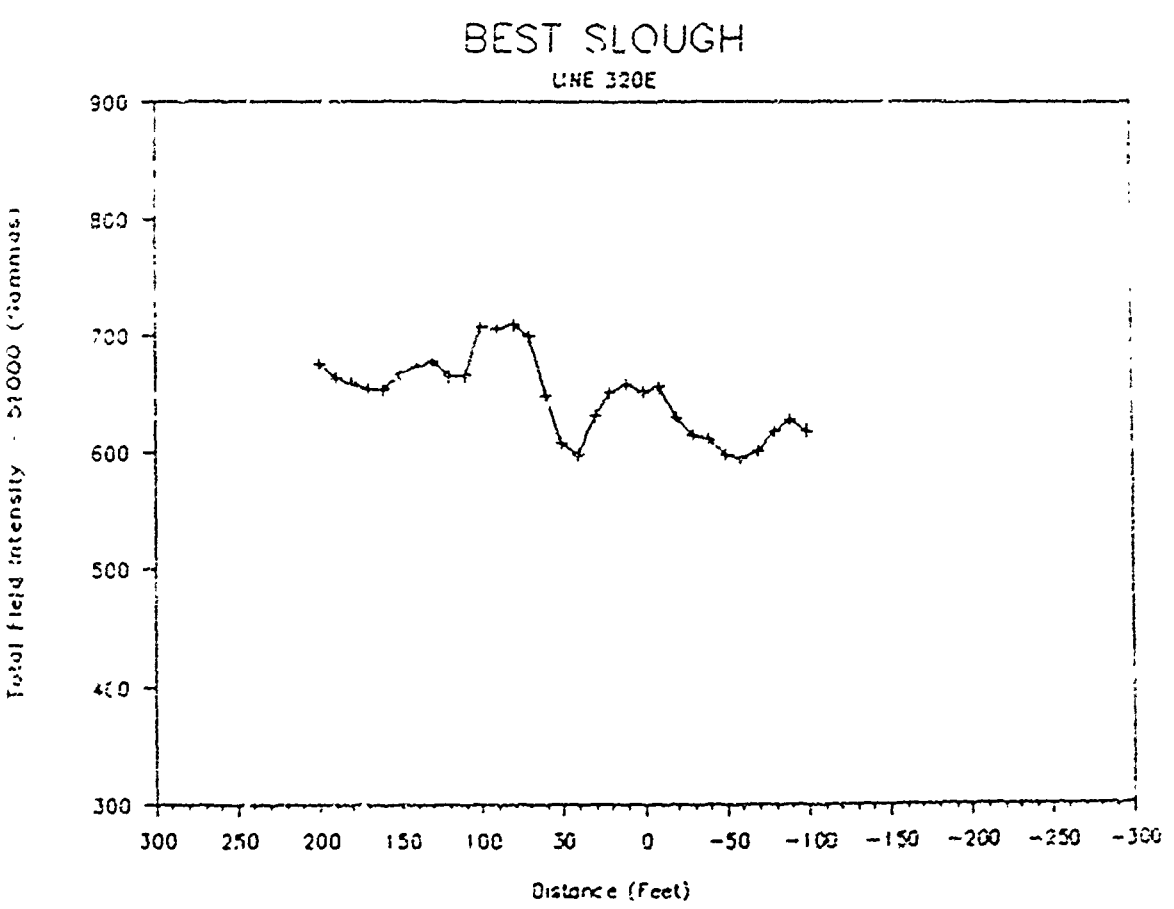

BEST SLOUGH
LINE 220E
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
LINE 240E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
LINE 260E
900
800
700
600
500
400
300
Total Field Intensity - 51000 (Gammas)
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Distance (Feet)

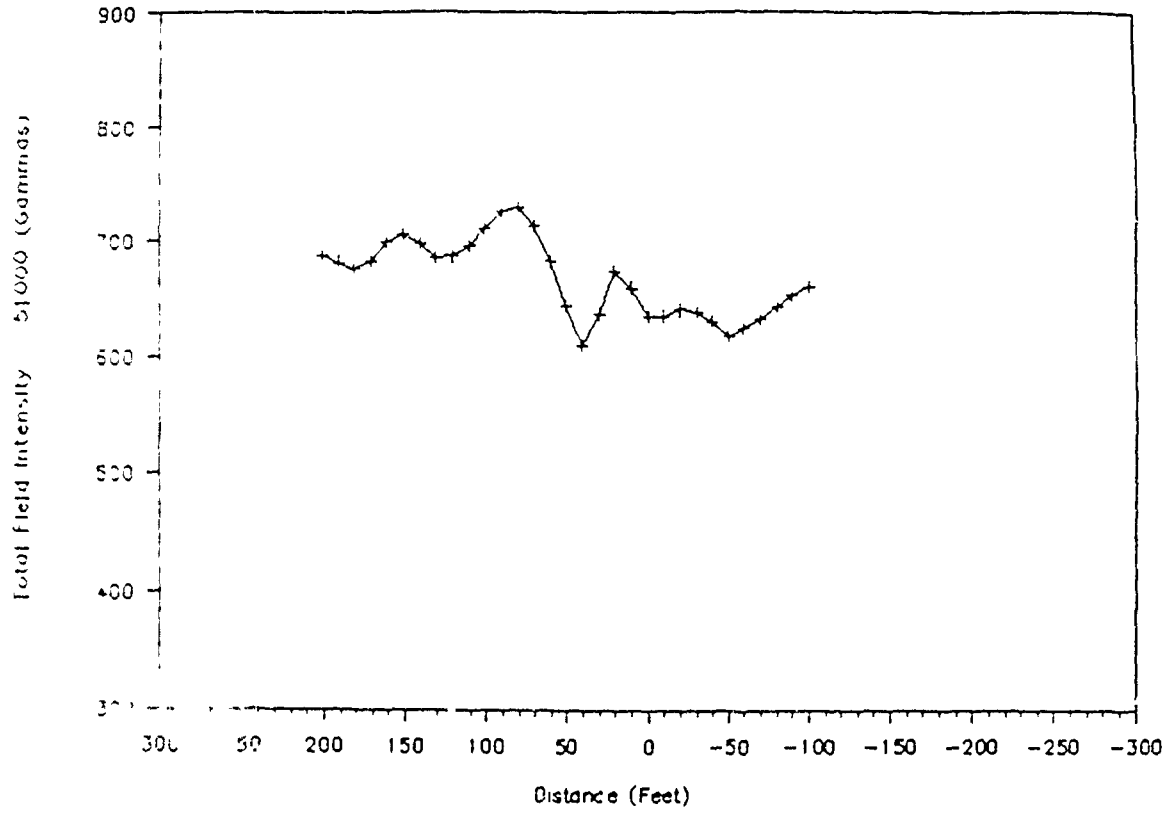

BEST SLOUGH
LINE 280E
900
800
700
600
500
400
300
Total Field Intensity - 51000 (Gammas)
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Distance (Feet)


BEST SLOUGH
LINE 300E
900
800
700
600
500
400
300
Total Field Intensity - 51000 (Gammas)
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Distance (Feet)


BEST SLOUGH
LINE 320E
900
800
700
600
500
400
300
Total Field Intensity - 51000 (Gammas)
300
250
200
150
100
50
0
-50
-100
-150
-200
-250
-300
Distance (Feet)

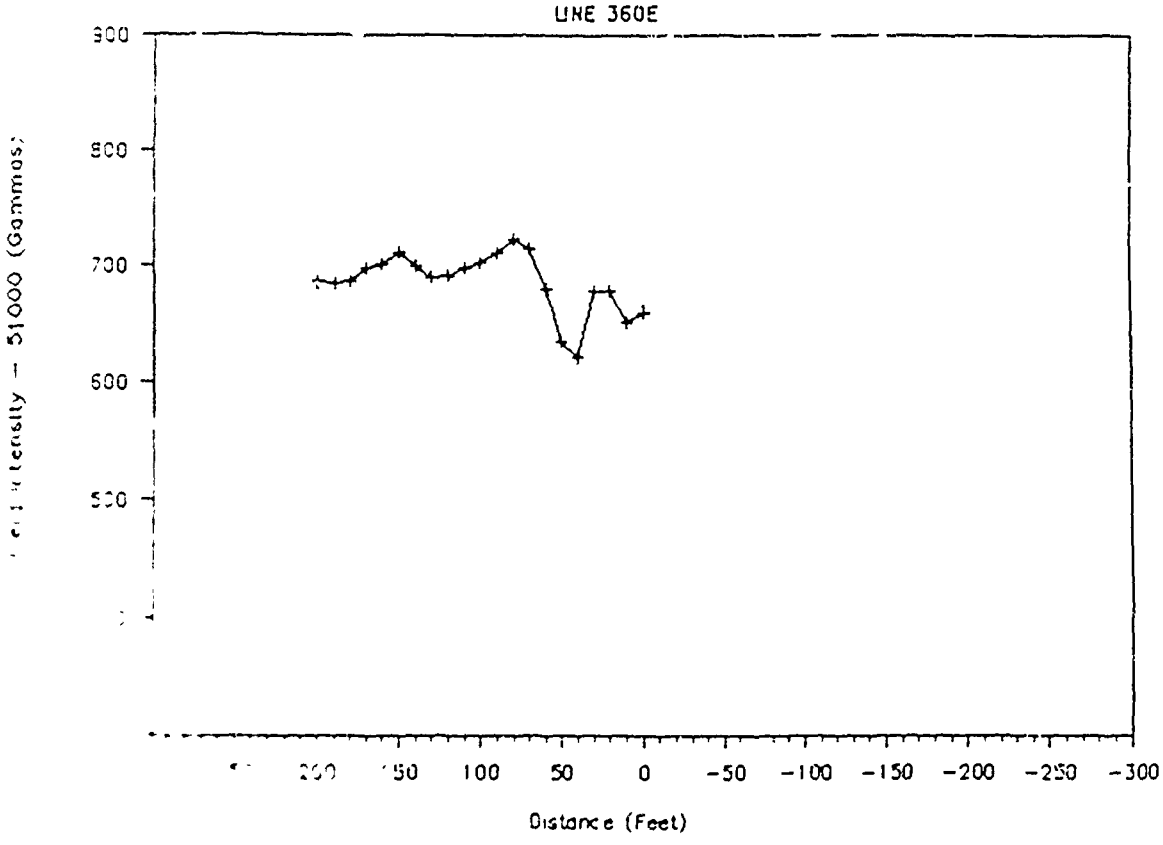
BEST SLOUGH

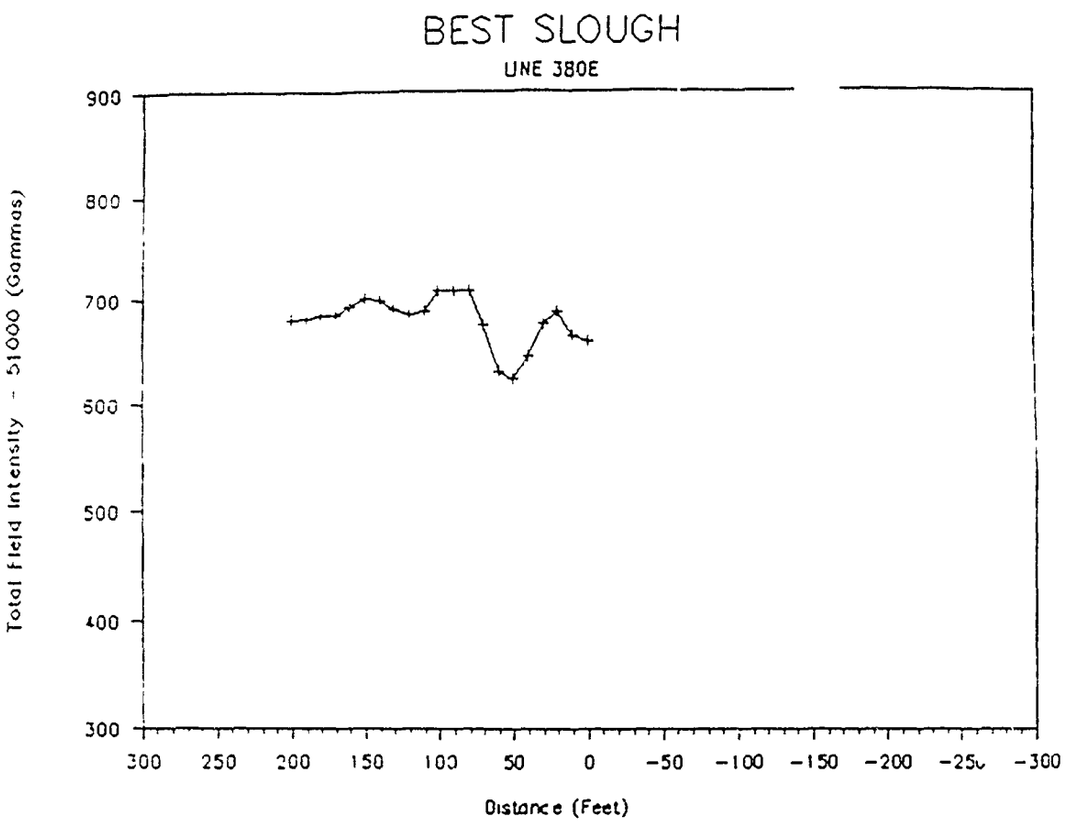
UNE 340E

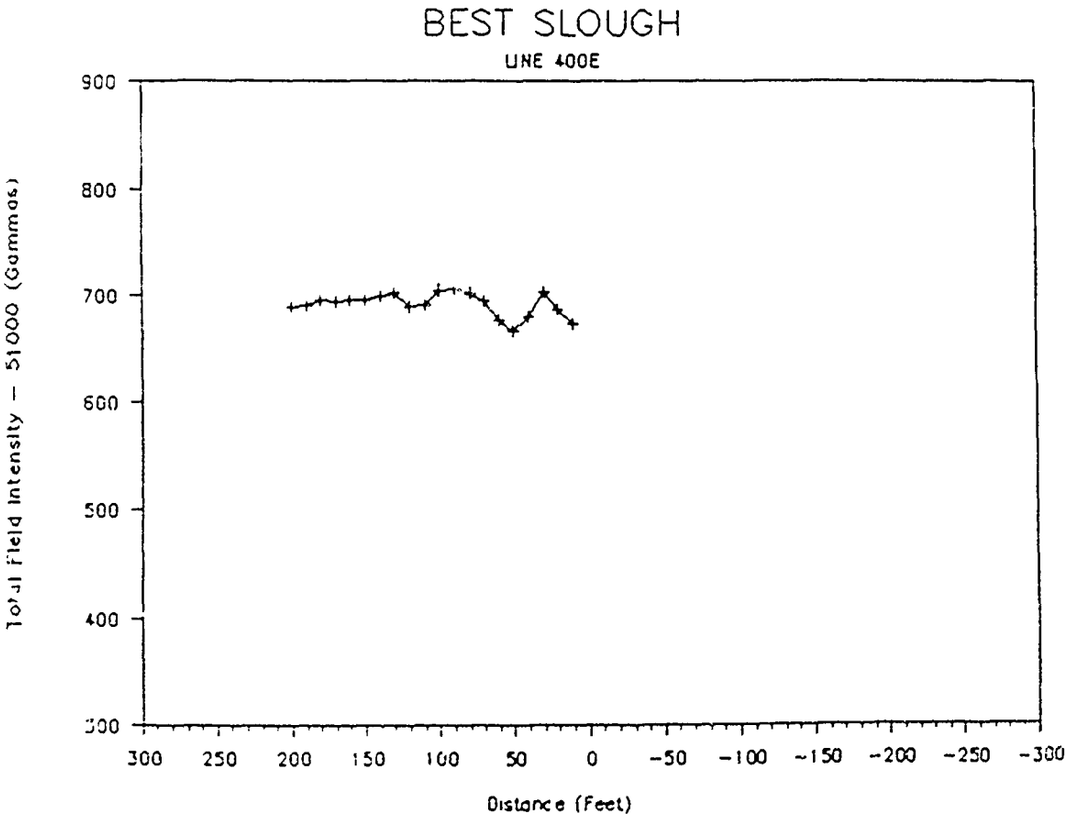


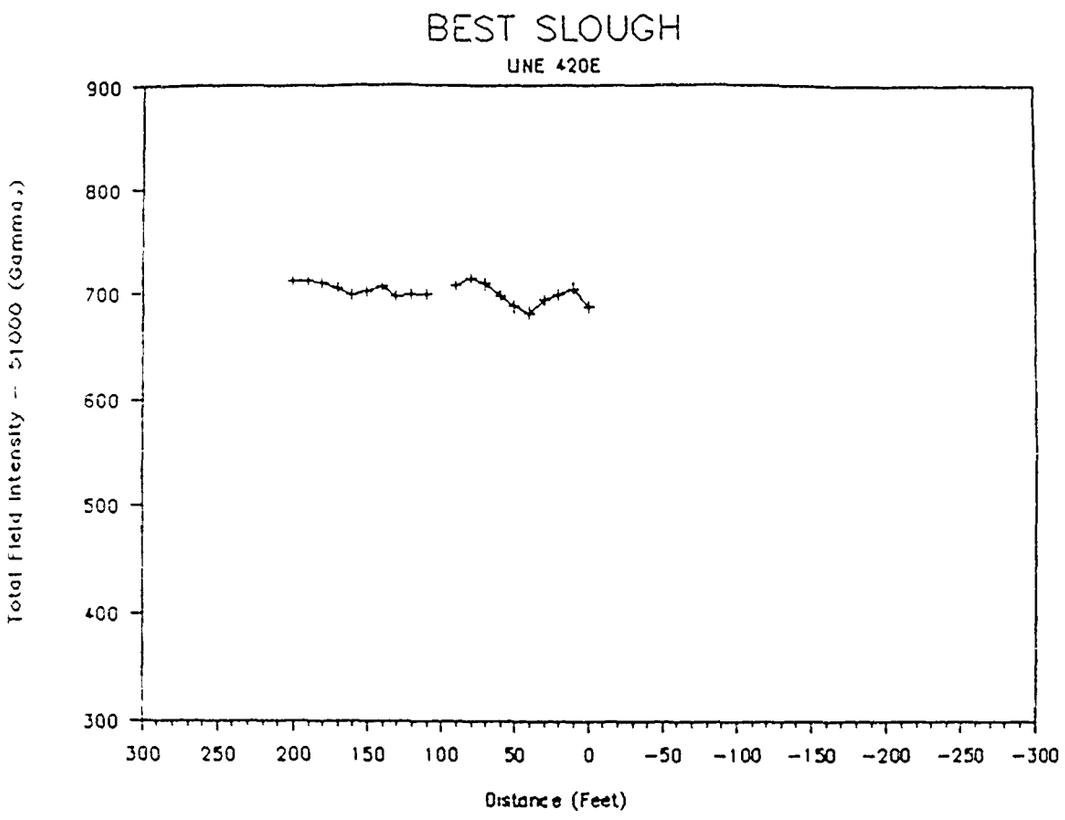
BEST SLOUGH

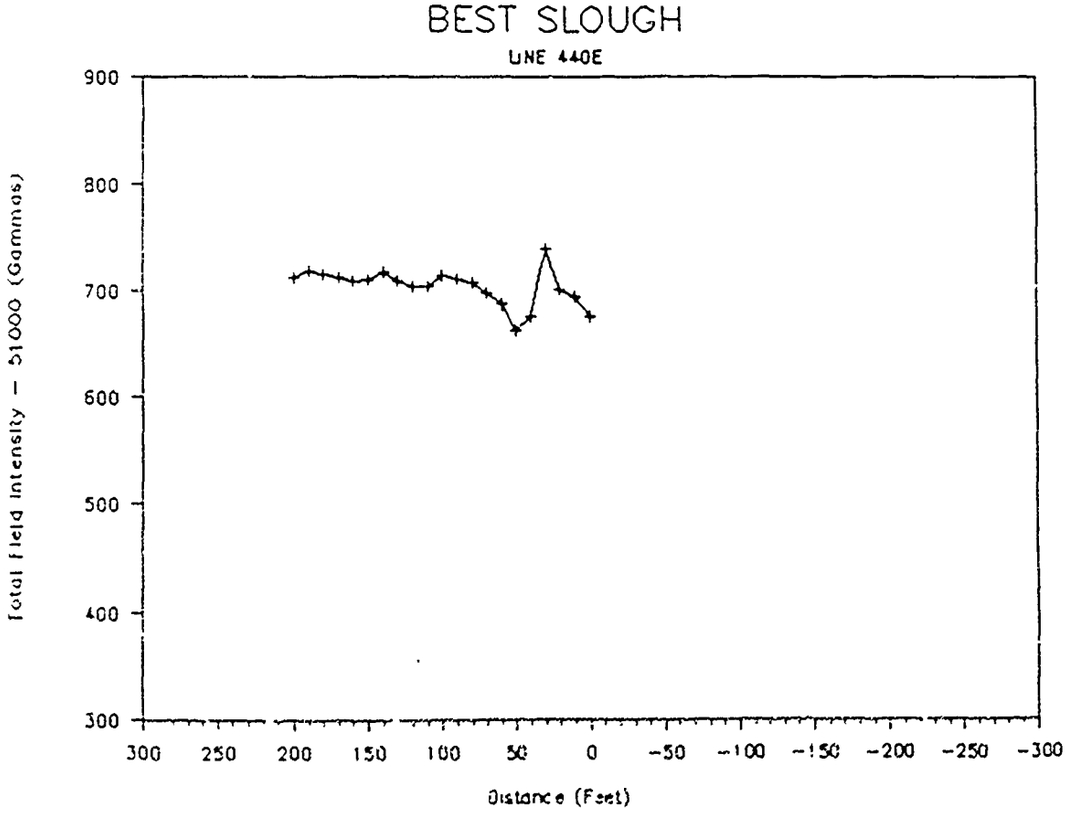
UNE 360E




BEST SLOUGH
LINE 380E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)


BEST SLOUGH
LINE 400E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

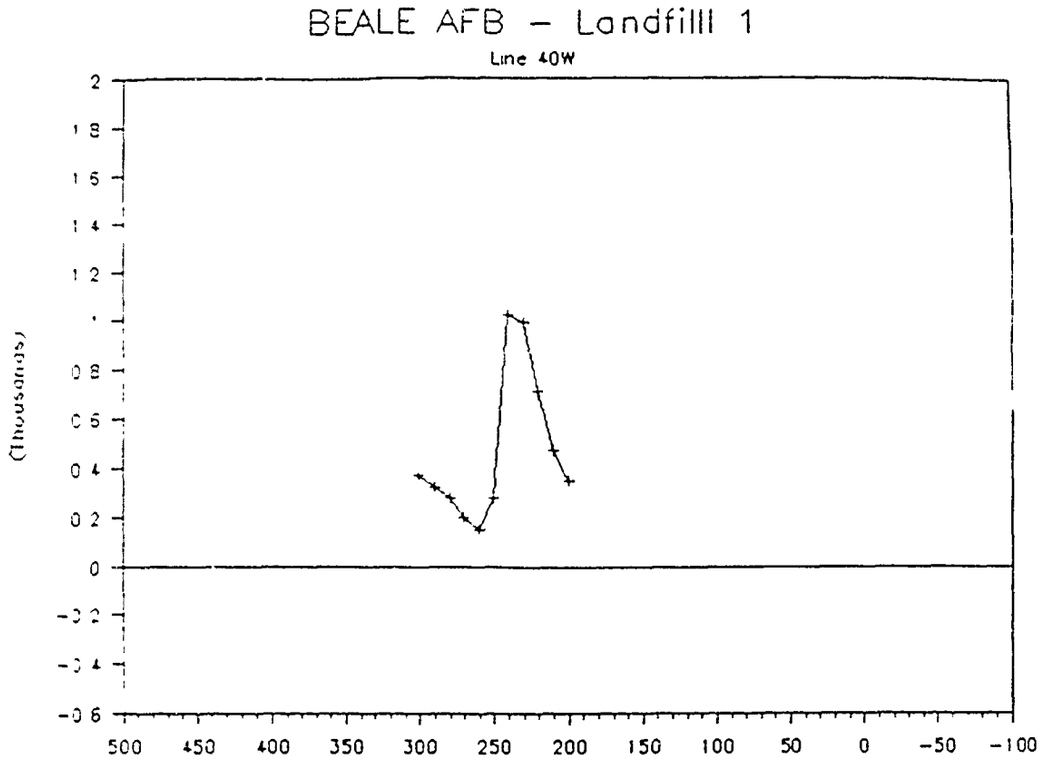

BEST SLOUGH
LINE 420E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

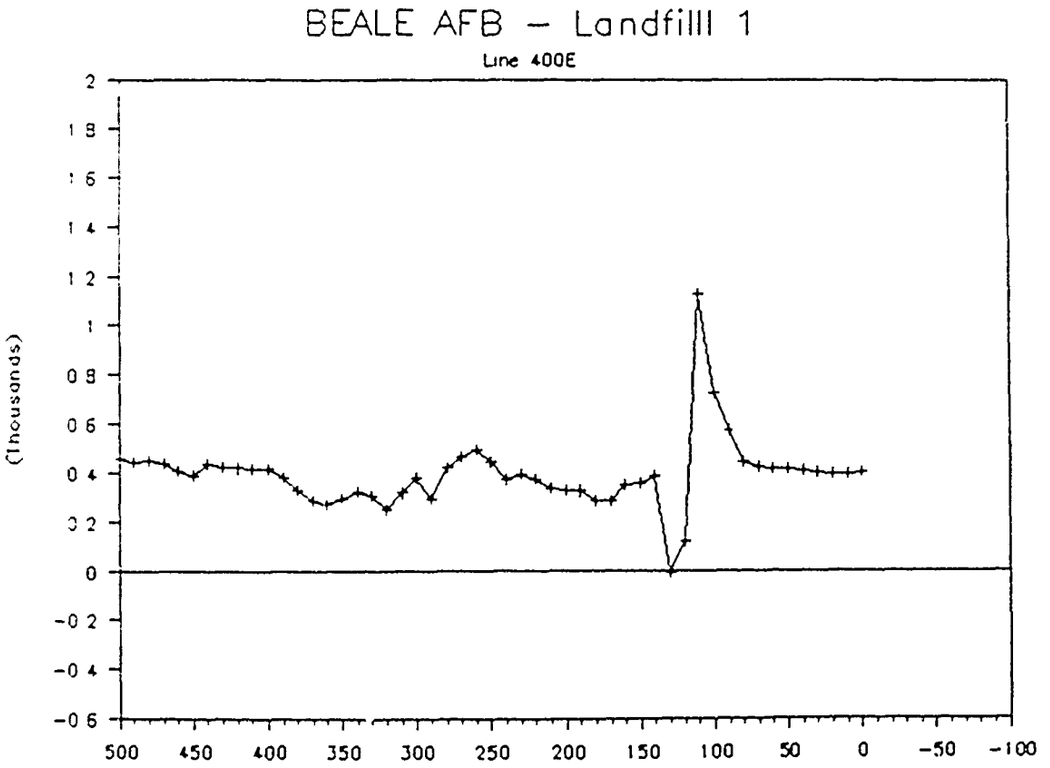

BEST SLOUGH
LINE 440E
Total Field Intensity - 51000 (Gammas)
900
800
700
600
500
400
300
300 250 200 150 100 50 0 -50 -100 -150 -200 -250 -300
Distance (Feet)

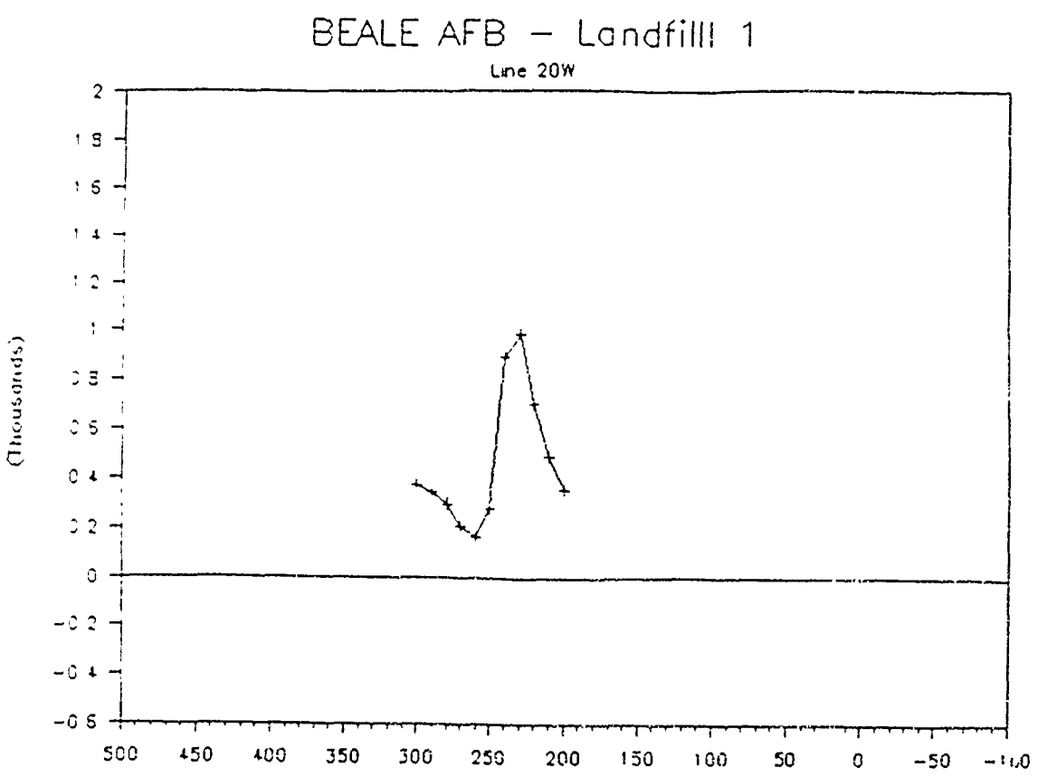
SITE 20

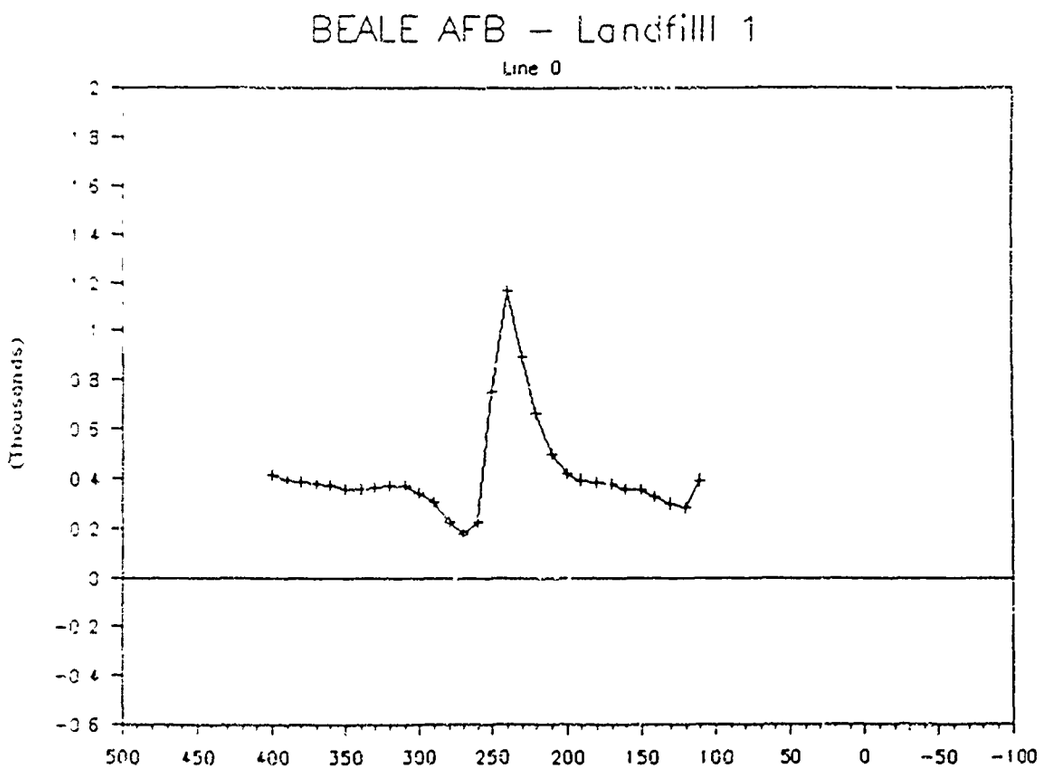
GREASE PIT
(AND LANDFILL NO. 1)

Geophysical Data


BEALE AFB – Landfilll 1
Line 40W
(Thousands)
2
1 8
1 6
1 4
1 2
1
0 8
0 6
0 4
0 2
0
-0 2
-0 4
-0 6
500 450 400 350 300 250 200 150 100 50 0 -50 -100

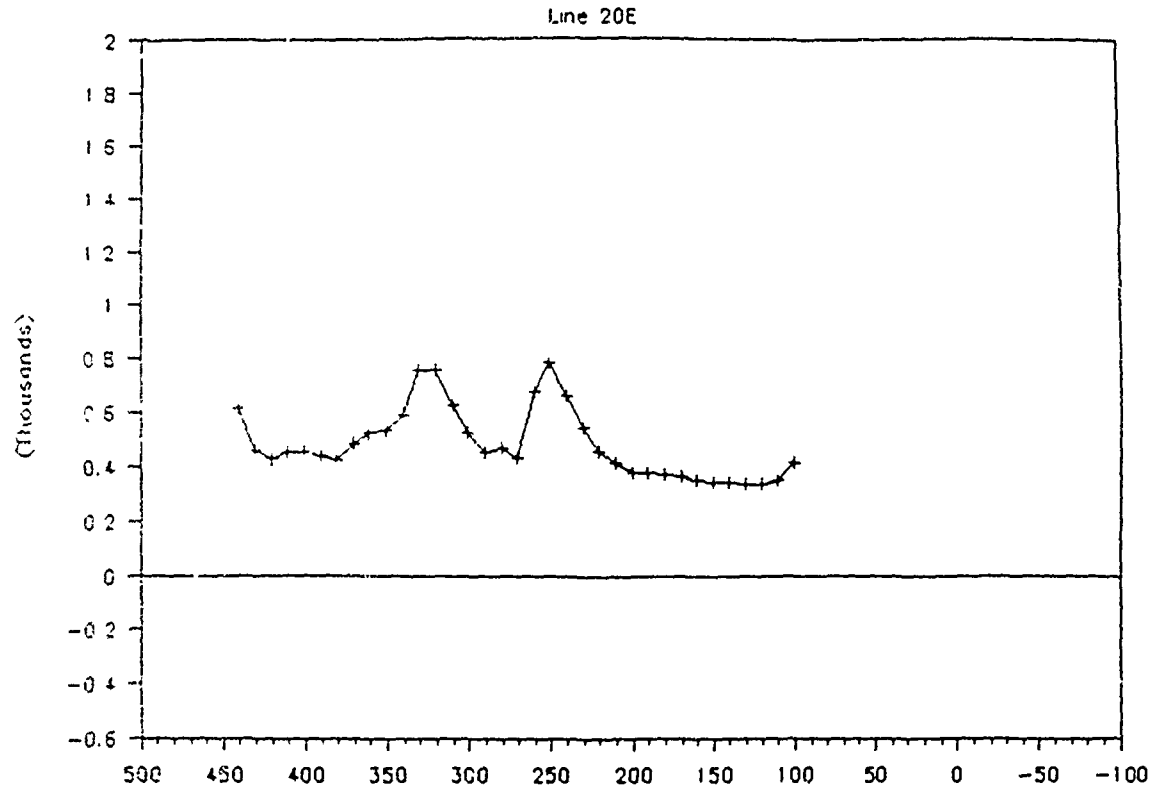

BEALE AFB – Landfilll 1
Line 400E
(Thousands)
2
1 8
1 6
1 4
1 2
1
0 8
0 6
0 4
0 2
0
-0 2
-0 4
-0 6
500 450 400 350 300 250 200 150 100 50 0 -50 -100


BEALE AFB – Landfill 1
Line 20W
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50


BEALE AFB – Landfill 1
Line 0
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100

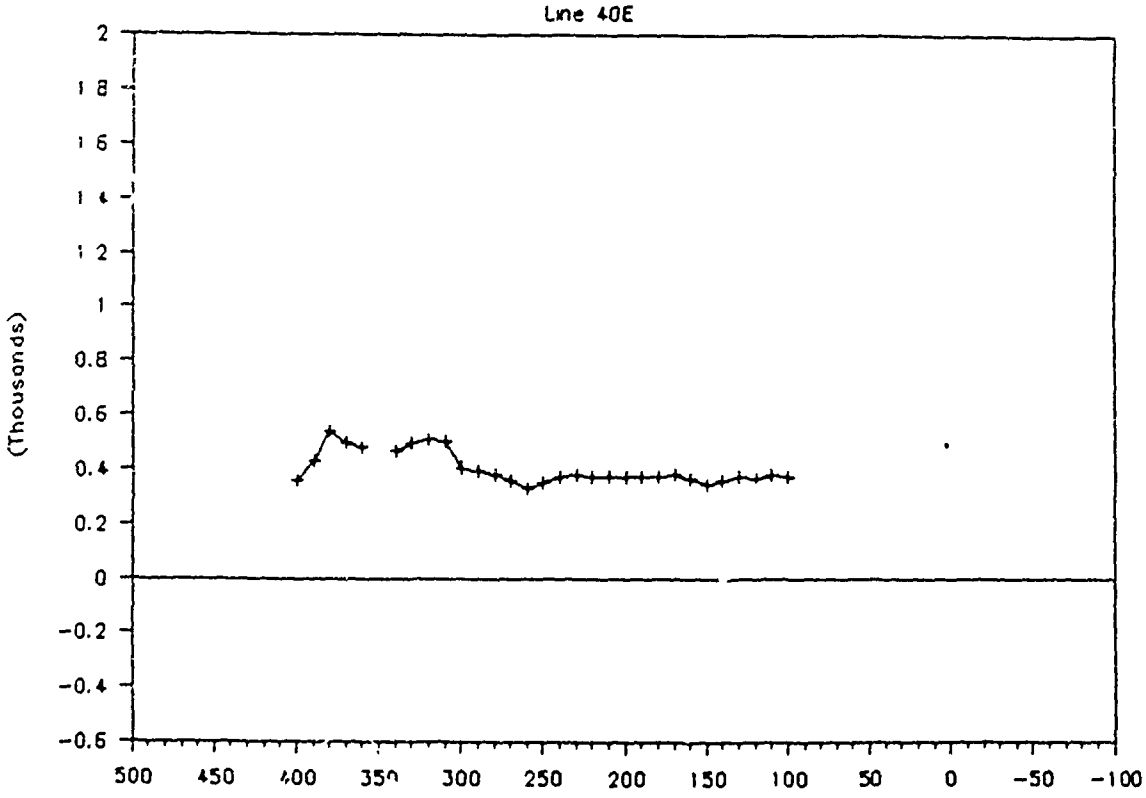
BEALE AFB – Landfilll 1

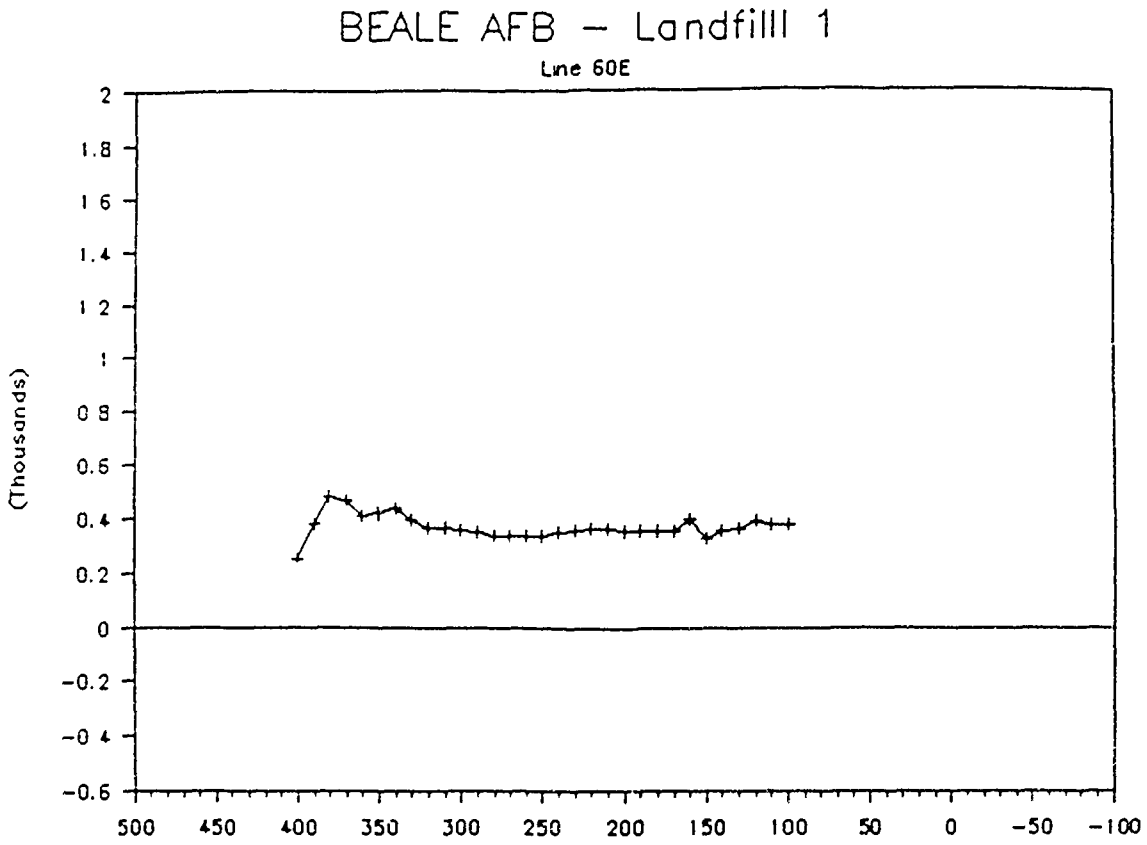
Line 20E

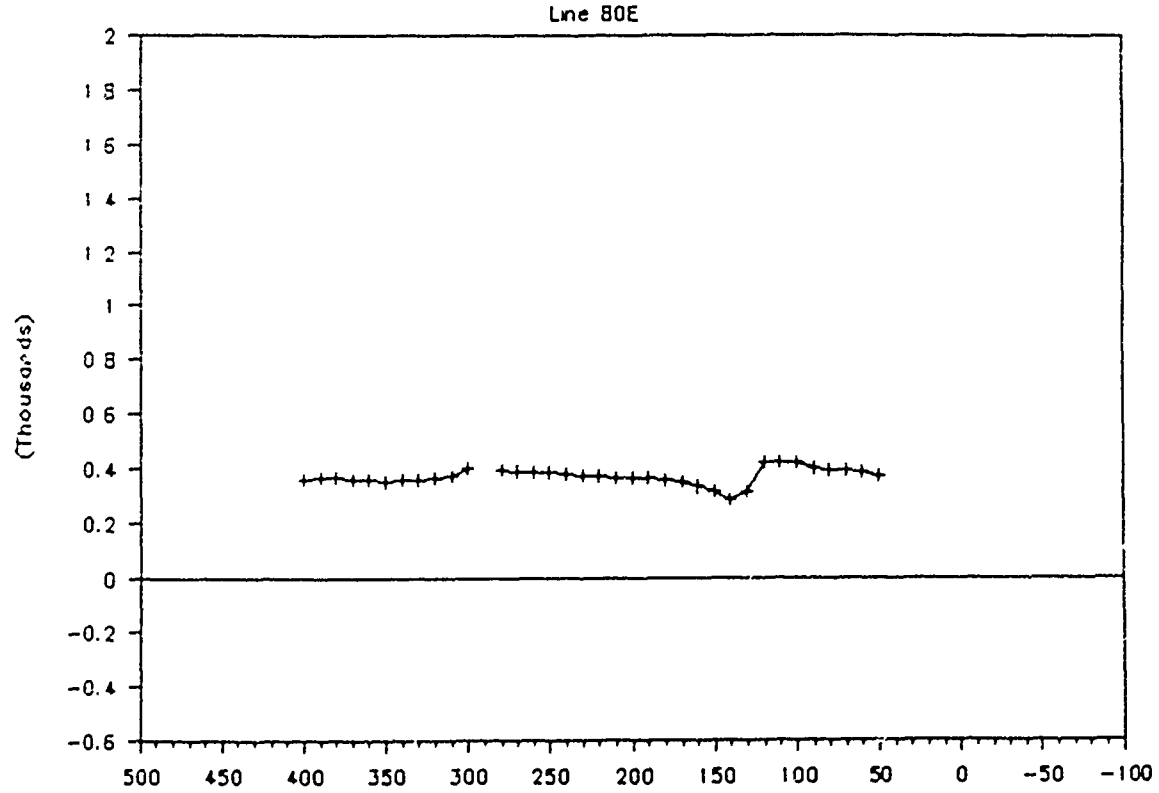


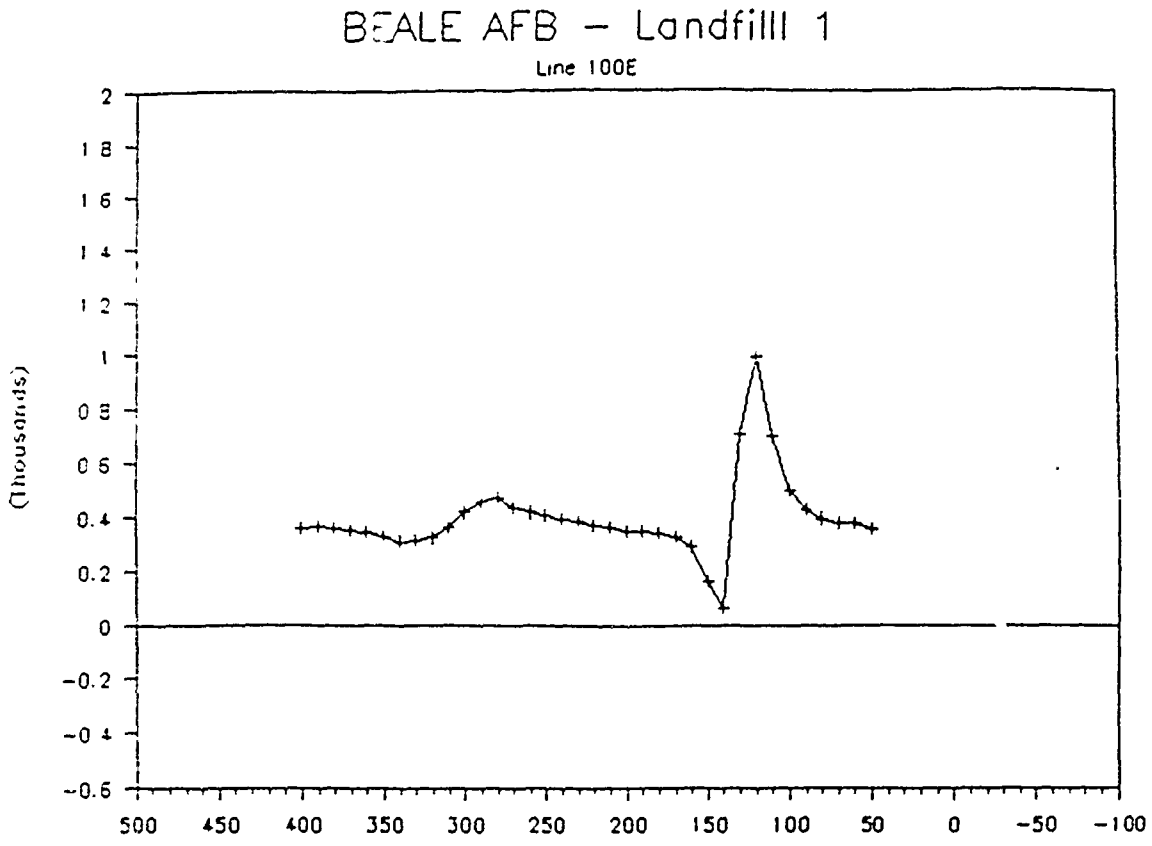
BEALE AFB – Landfilll 1

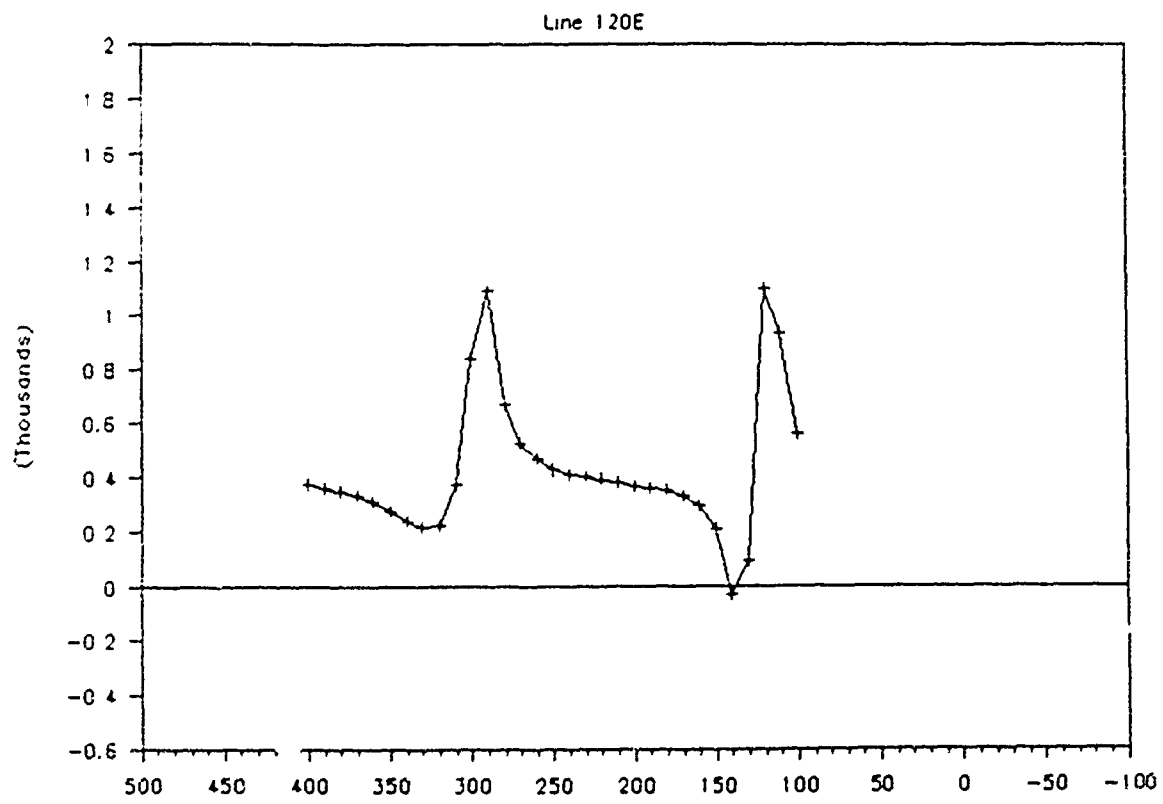
Line 40E

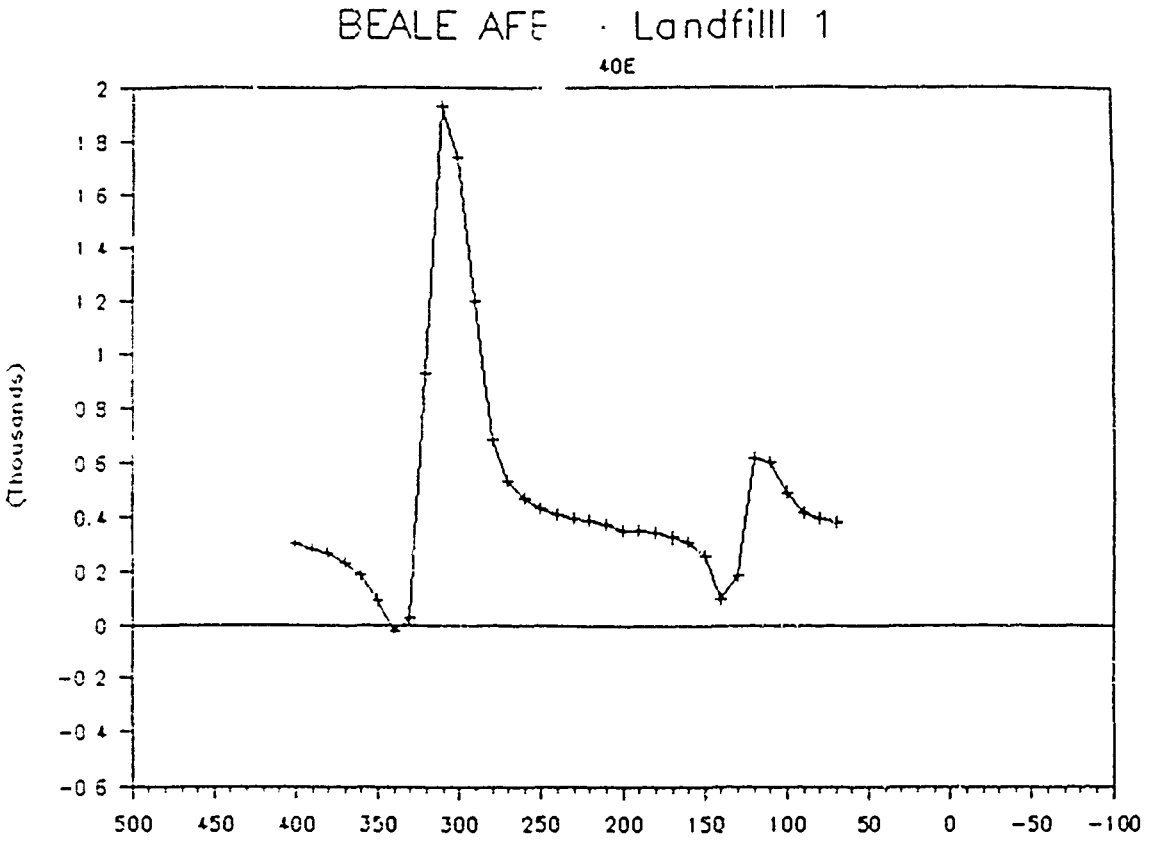


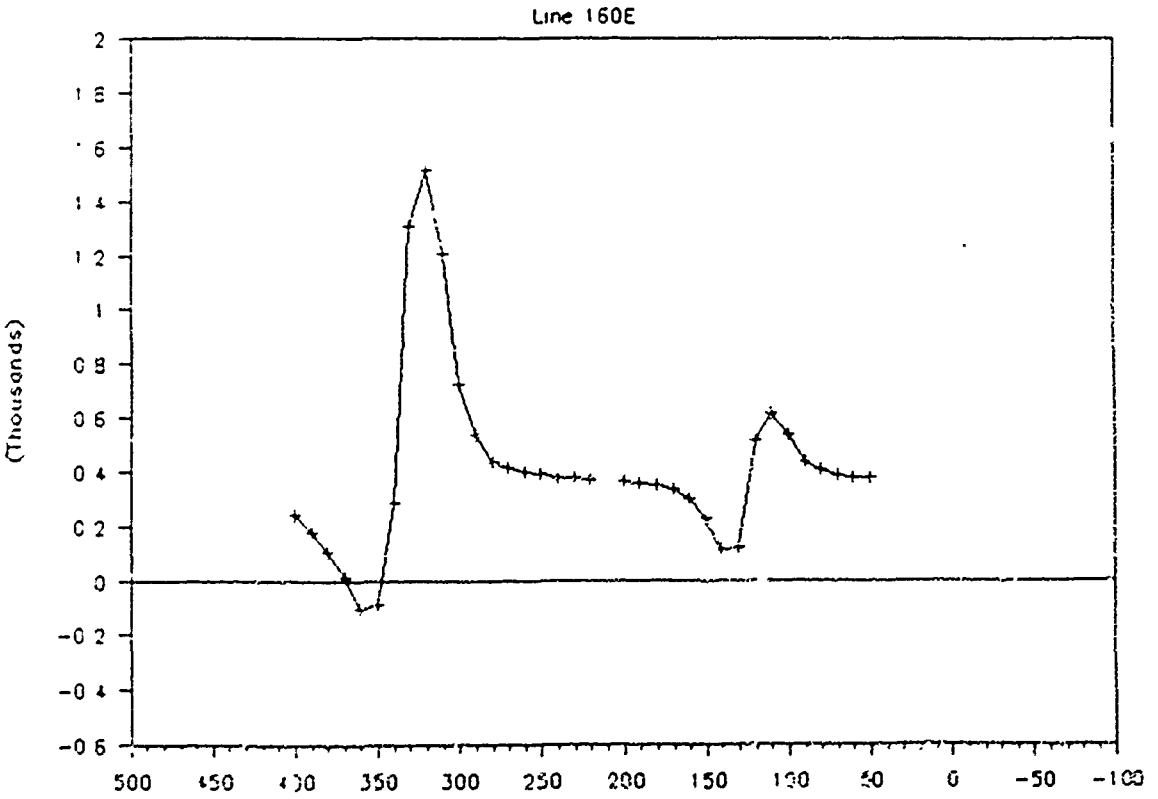

BEALE AFB – Landfilll 1
Line 60E
(Thousands)
2
1.8
1 6
1.4
1 2
1
0 8
0.6
0.4
0.2
0
-0.2
-0 4
-0.6
500 450 400 350 300 250 200 150 100 50 0 -50 -100

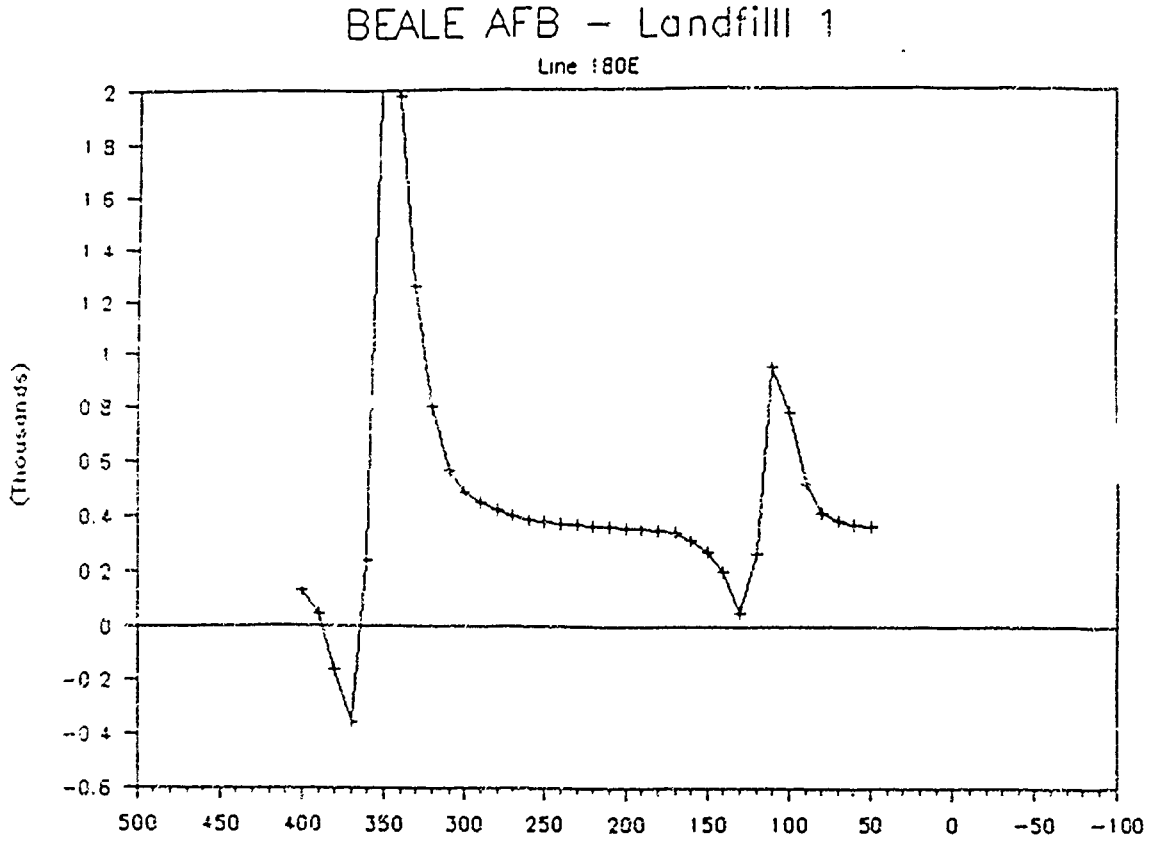

BEALE AFB – Landfilll 1
Line 80E
(Thousands)
2
1 8
1 6
1 4
1 2
1
0 8
0 6
0.4
0.2
0
-0.2
-0.4
-0.6
500 450 400 350 300 250 200 150 100 50 0 -50 -100

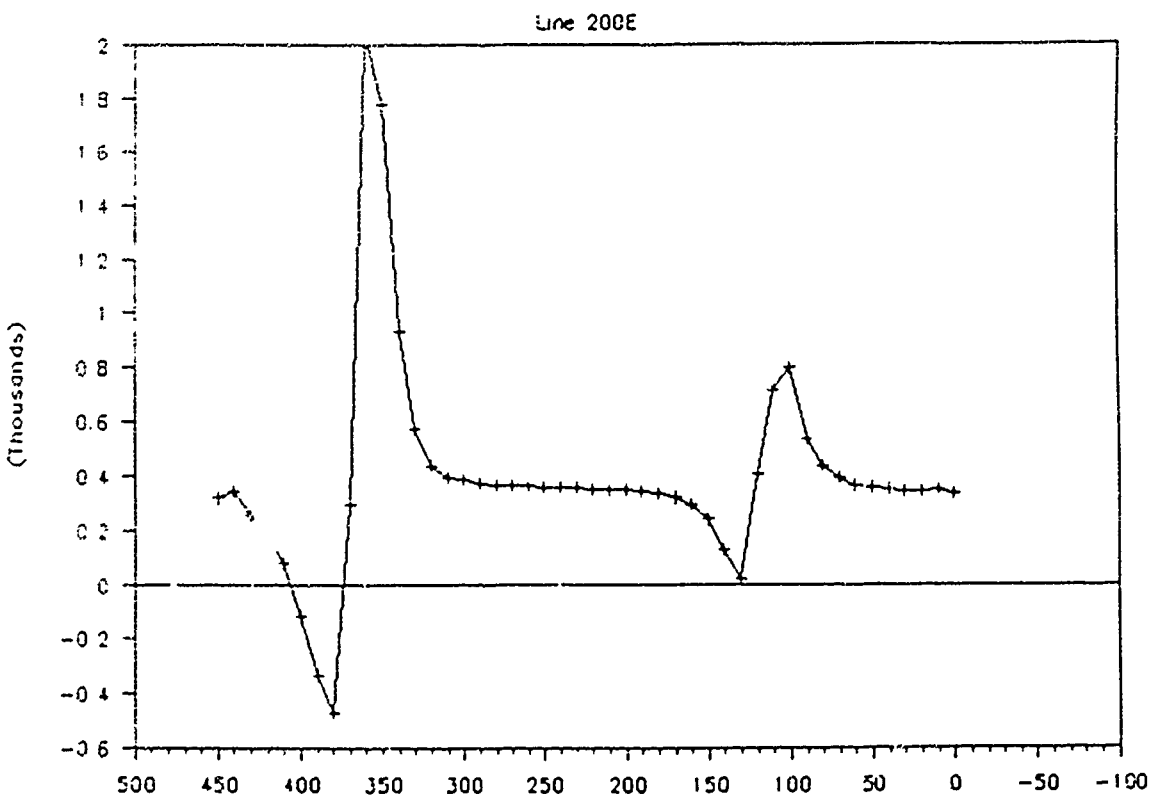

BEALE AFB – Landfilll 1
Line 100E
(Thousands)
2
1 8
1 6
1 4
1 2
1
0 8
0 6
0.4
0.2
0
-0.2
-0 4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100


BEALE AFB – Landfilll 1
Line 120E
(Thousands)
2
1 8
1 6
1 4
1 2
1
0 8
0.6
0 4
0 2
0
-0 2
-0 4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100


BEALE AFB - Landfilll 1
40E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100

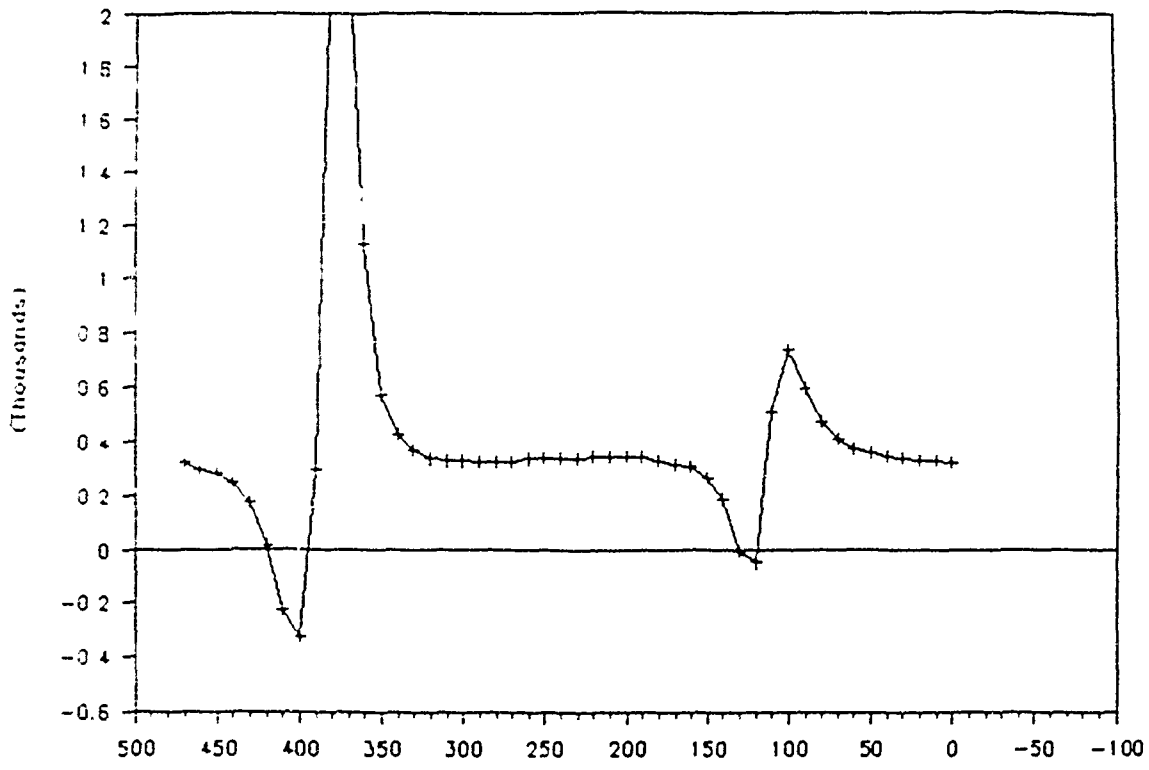

BEALE AFB - Landfilli 1
Line 160E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100


BEALE AFB – Landfilll 1
Line 180E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100


BEALE AFB – Landfilll 1
Line 200E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100

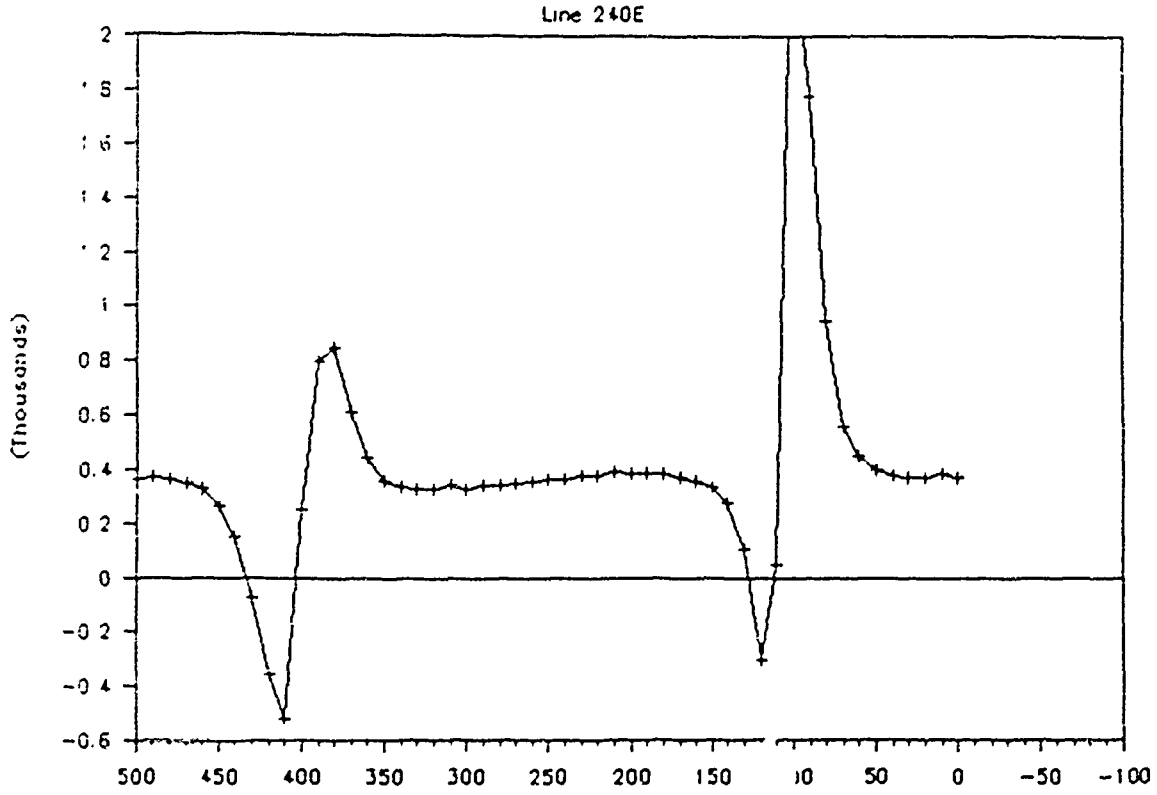
BEALE AFB – Landfiill 1

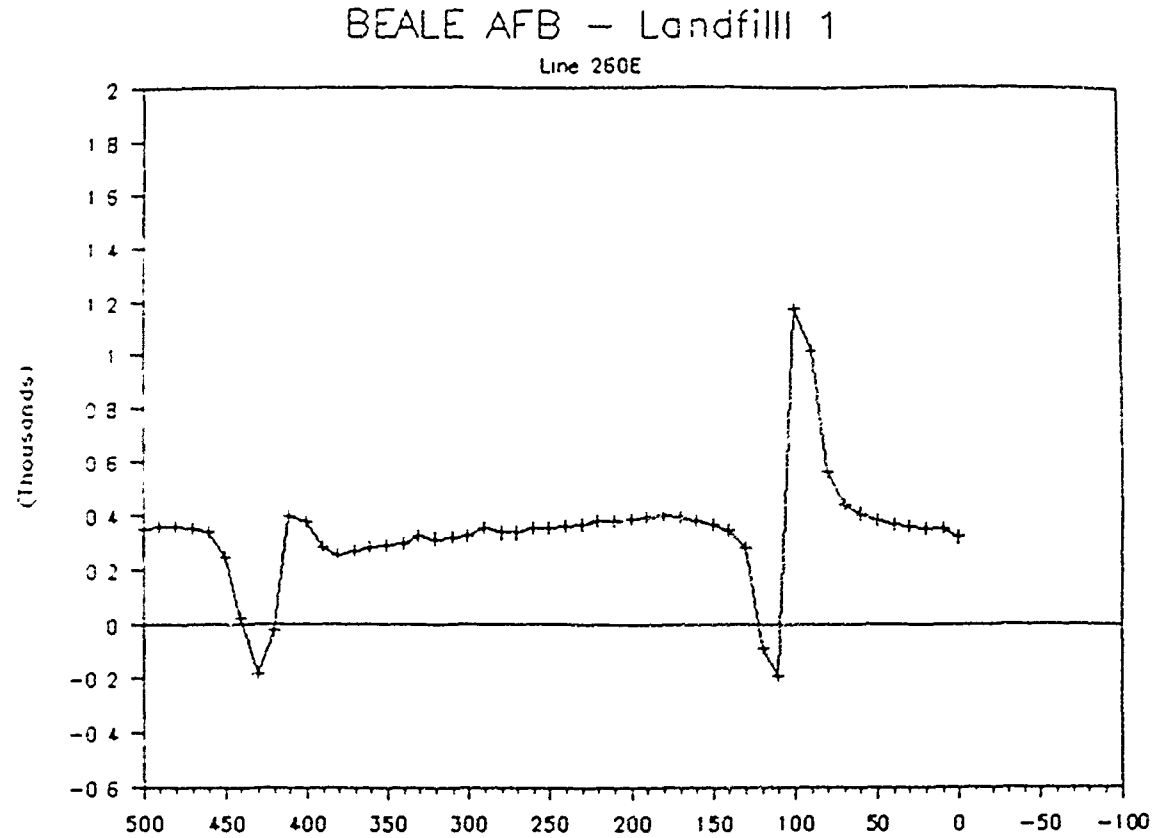
Line 220E

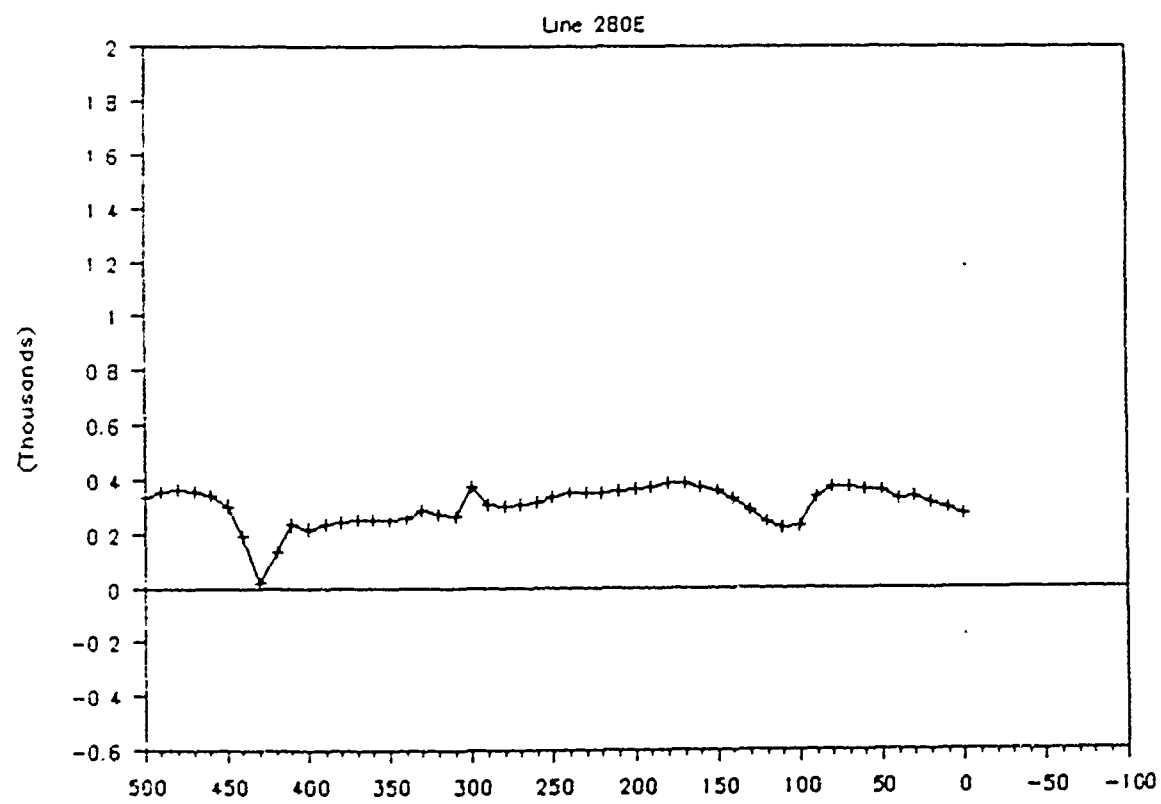


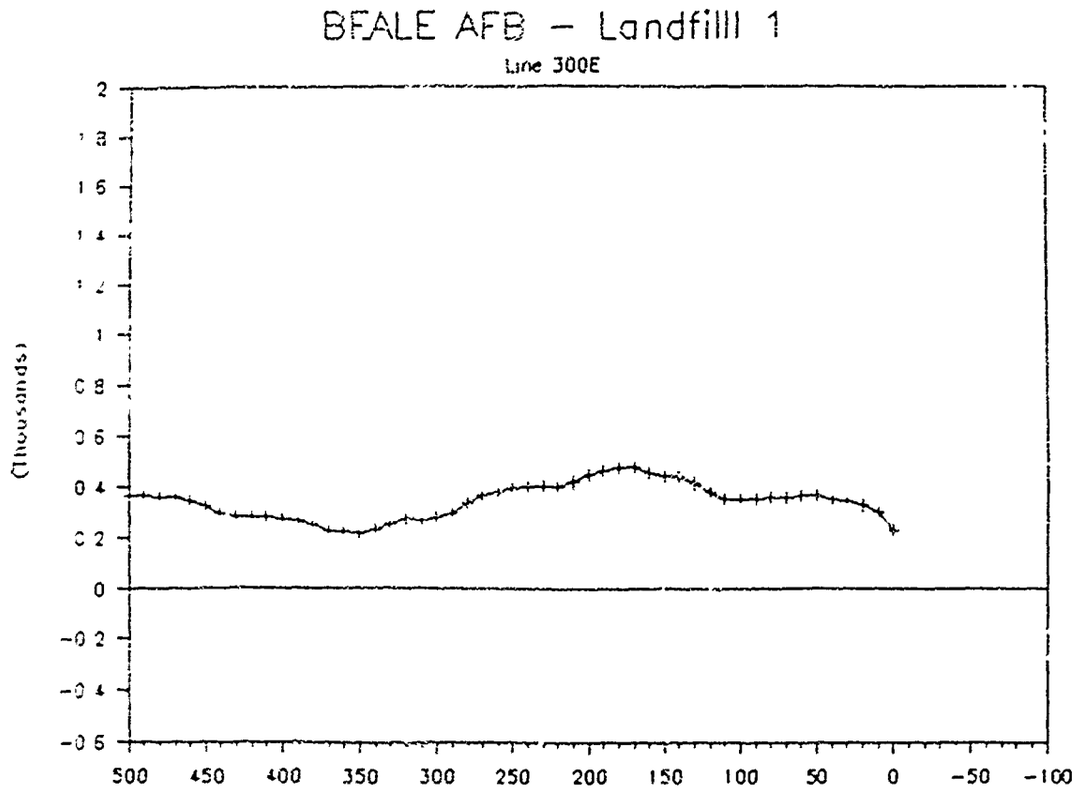
BEALE AFB – Landfiill 1

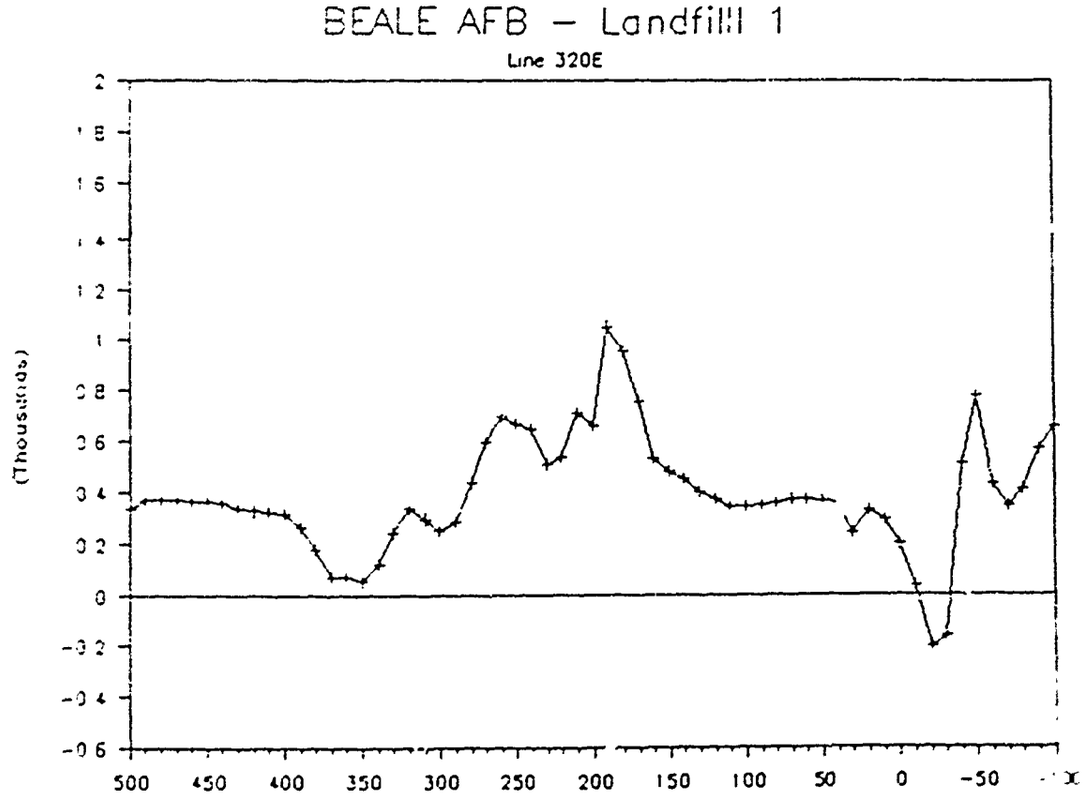
Line 240E

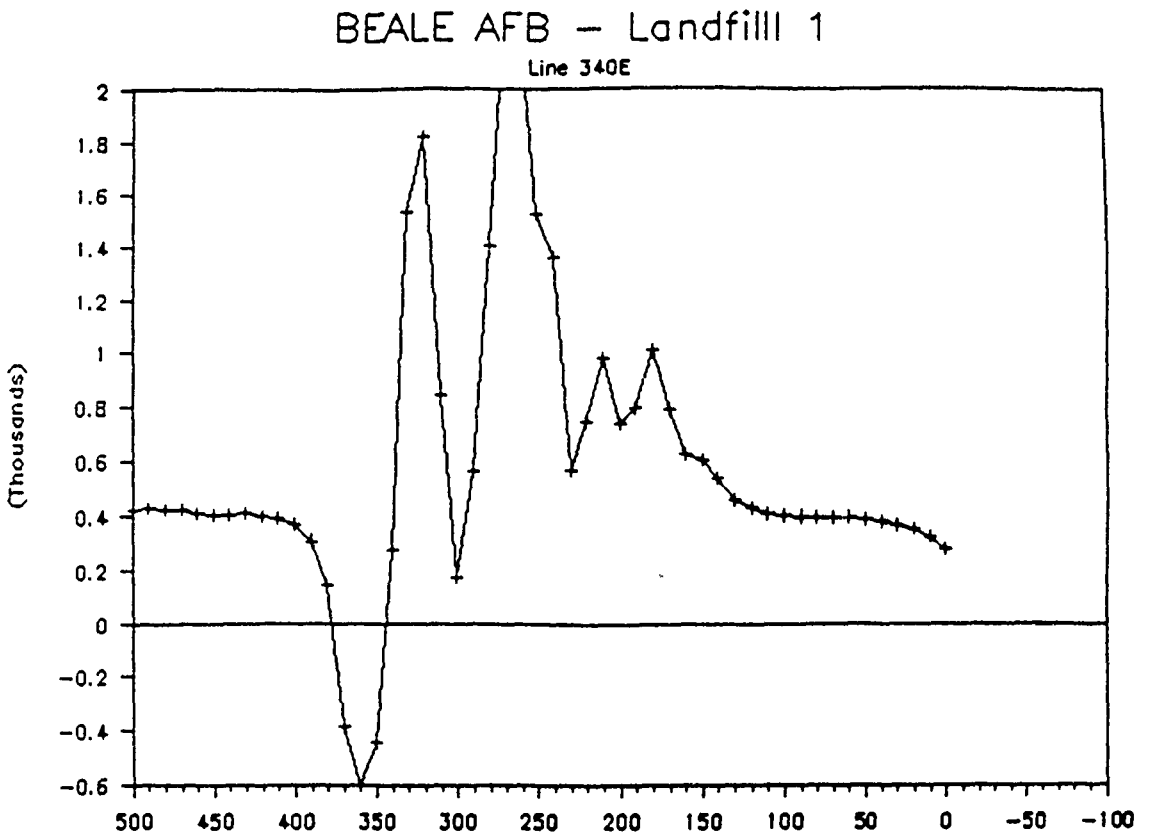


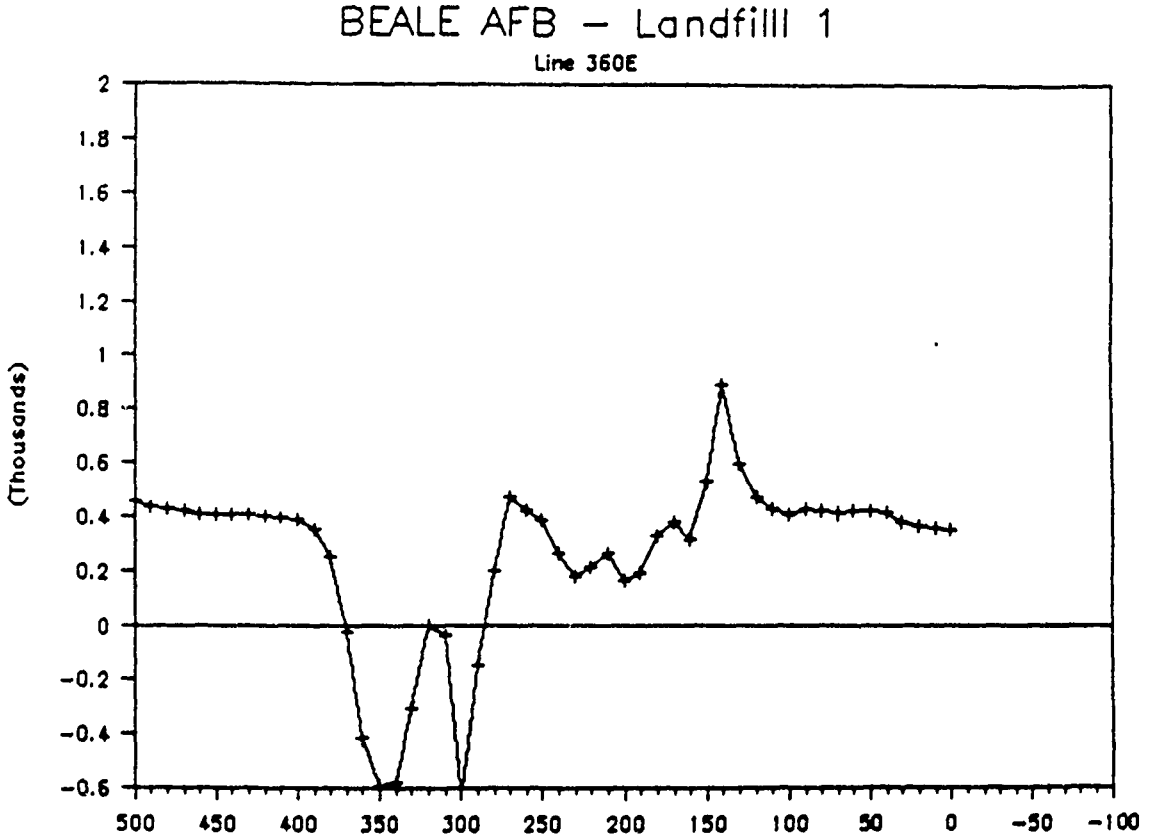

BEALE AFB – Landfilll 1
Line 260E
(Thousands)
2
1 8
1 6
1 4
1 2
1
0 8
0 6
0 4
0 2
0
-0 2
-0 4
-0 6
500 450 400 350 300 250 200 150 100 50 0 -50 -100

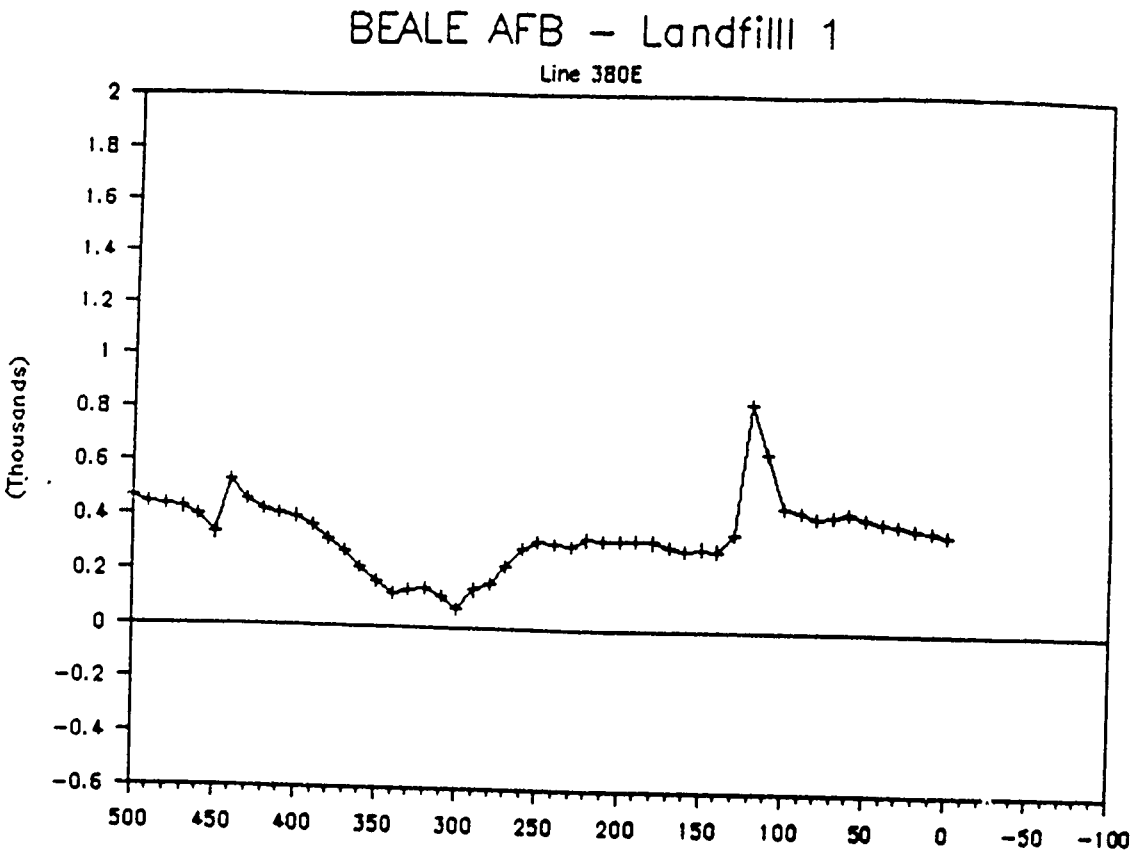

BEALE AFB – Landfilll 1
Line 280E
(Thousands)
2
1 8
1 6
1 4
1 2
1
0 8
0.6
0 4
0 2
0
-0 2
-0 4
-0.6
500 450 400 350 300 250 200 150 100 50 0 -50 -100


BEALE AFB – Landfill 1
Line 300E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100


BEALE AFB – Landfill 1
Line 320E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50


BEALE AFB – Landfilll 1
Line 340E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100

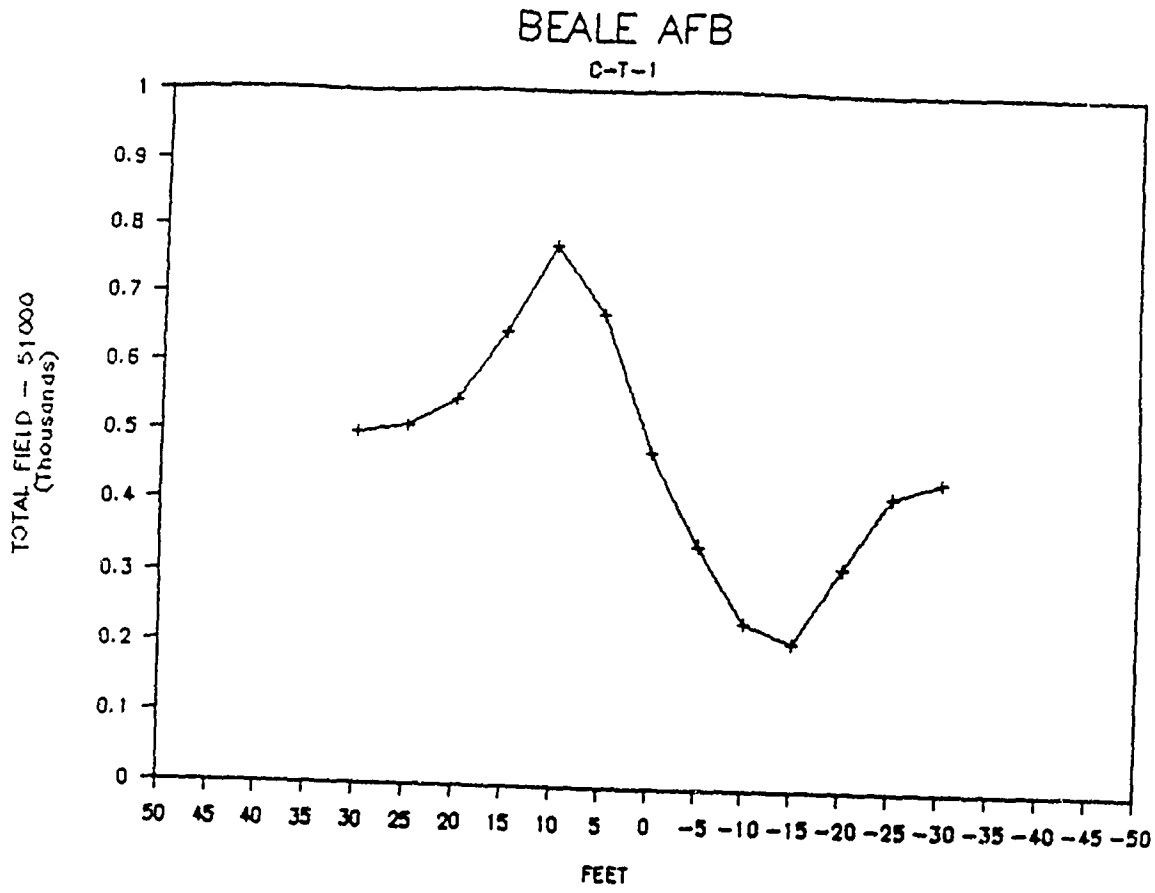

BEALE AFB – Landfilll 1
Line 360E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100

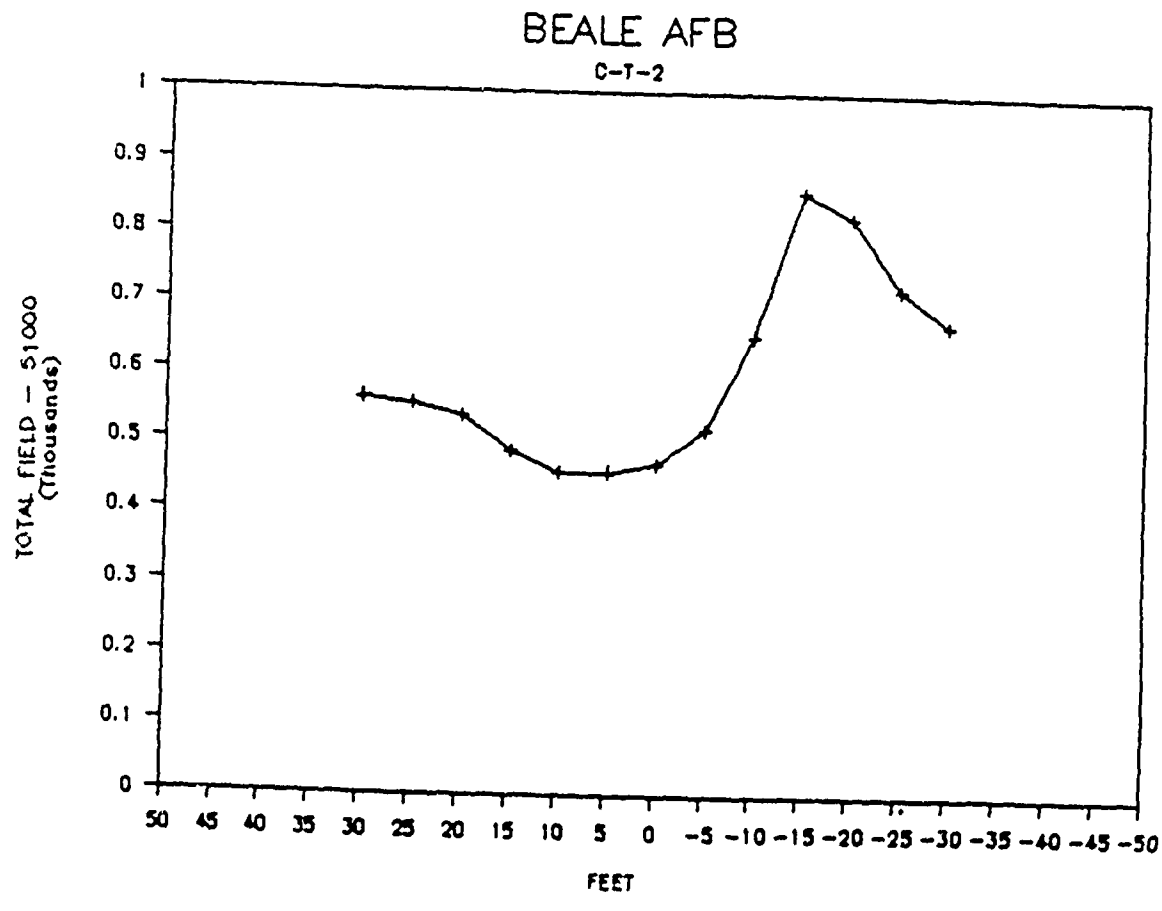

BEALE AFB – Landfilll 1
Line 380E
(Thousands)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
500
450
400
350
300
250
200
150
100
50
0
-50
-100

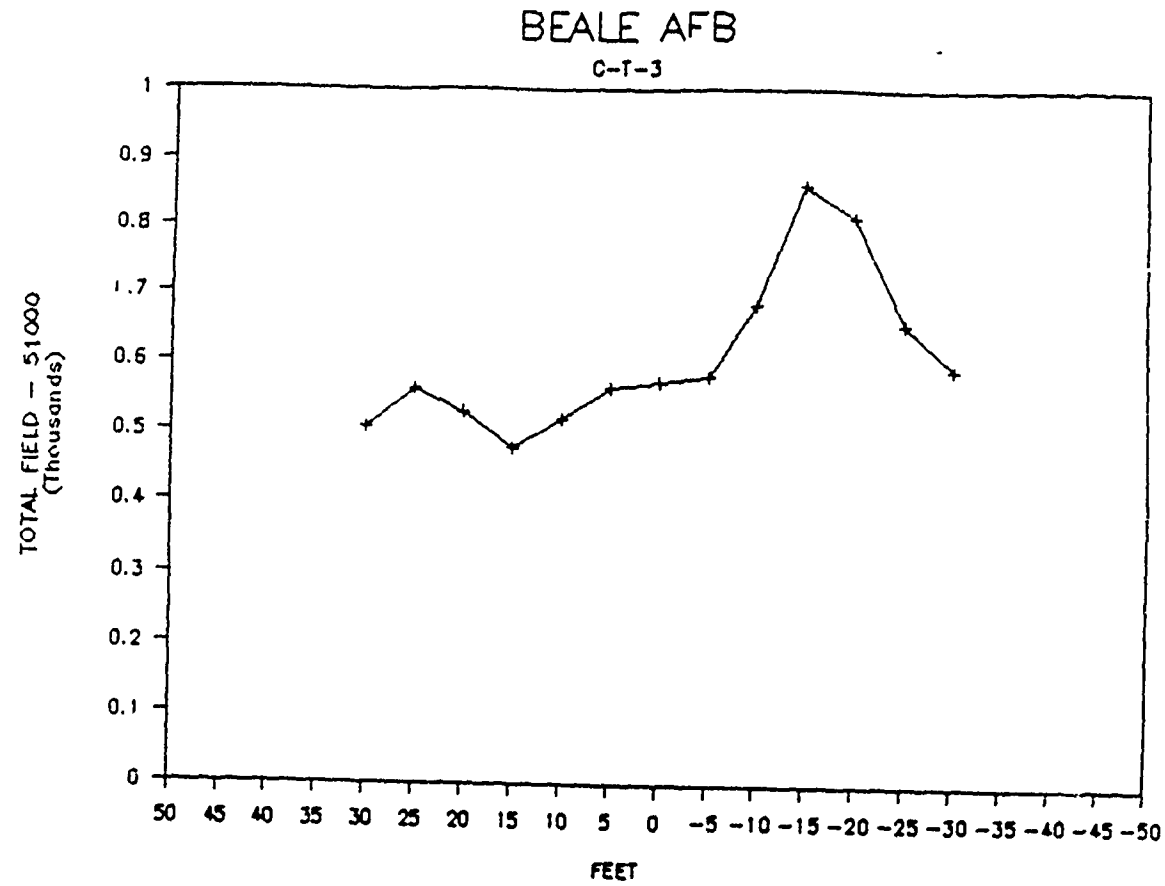
SITE 22

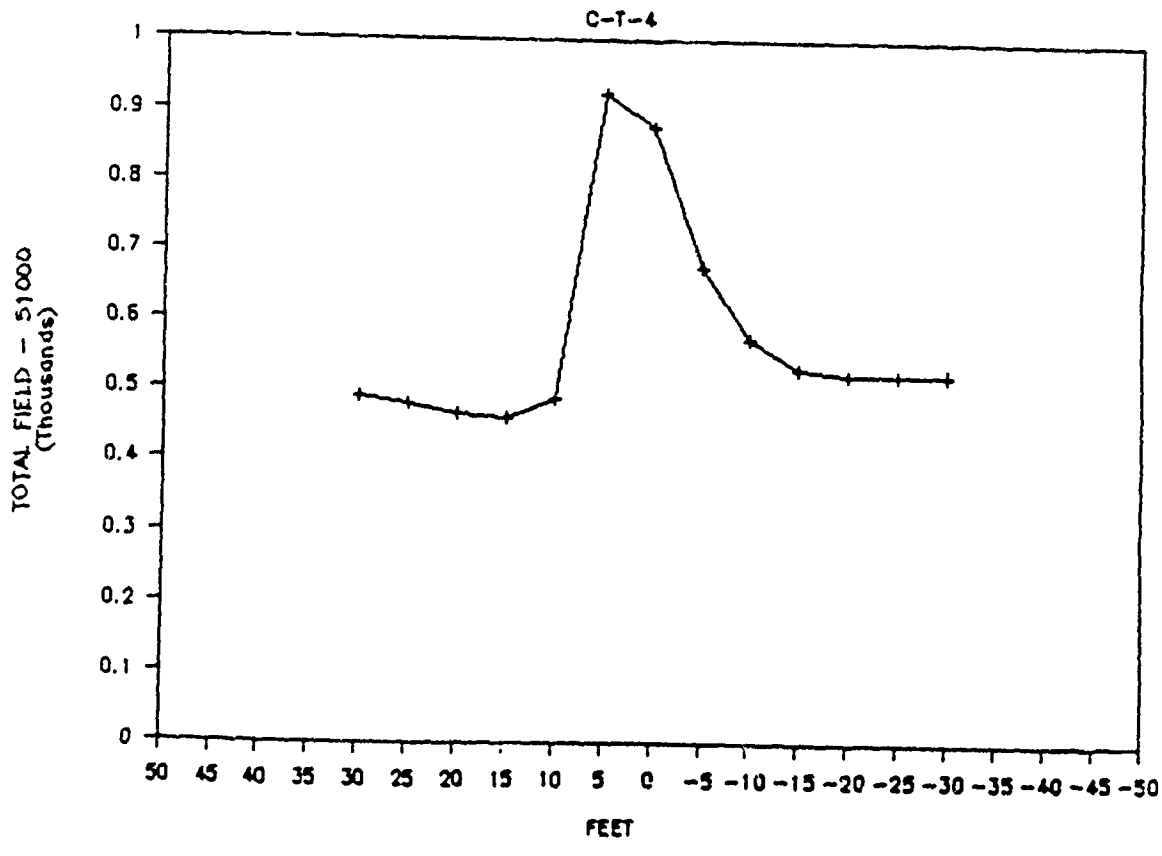
ABANDONED UNDERGROUND STORAGE TANKS

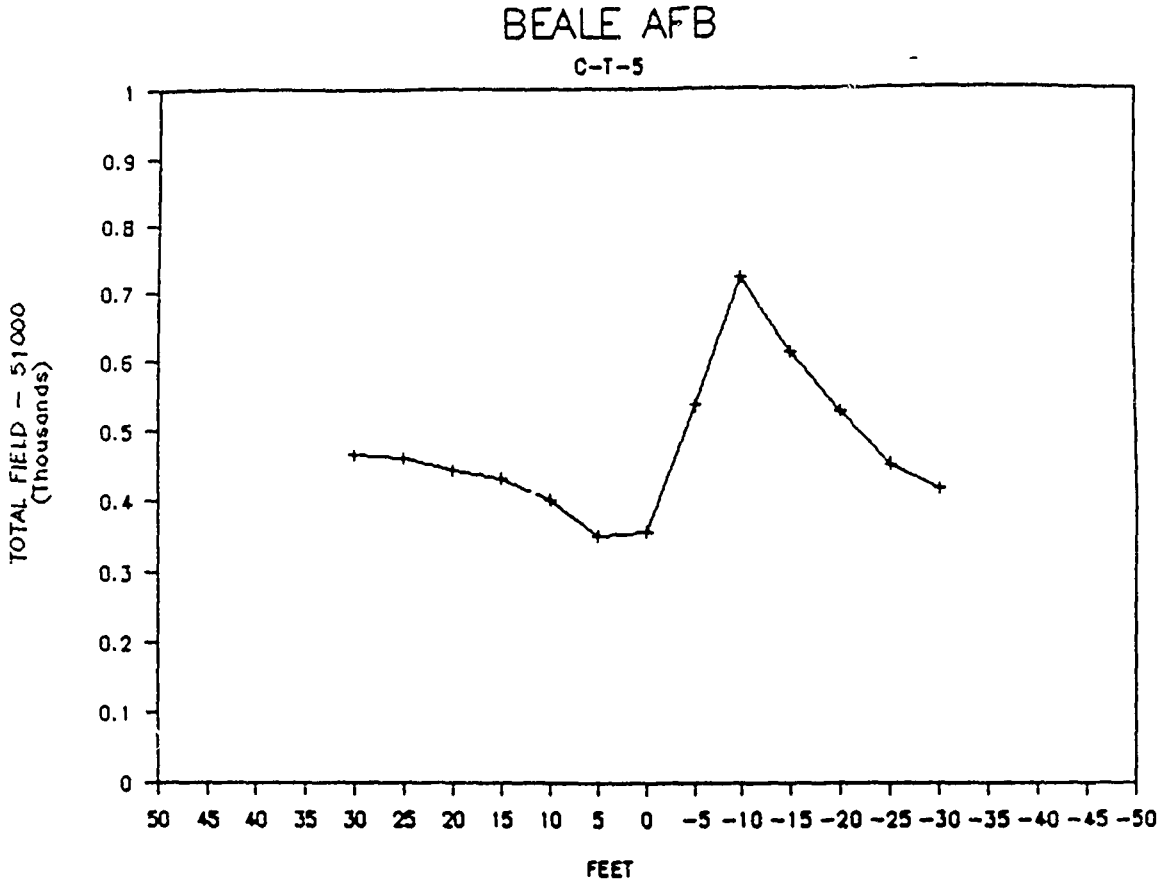
Geophysical Data

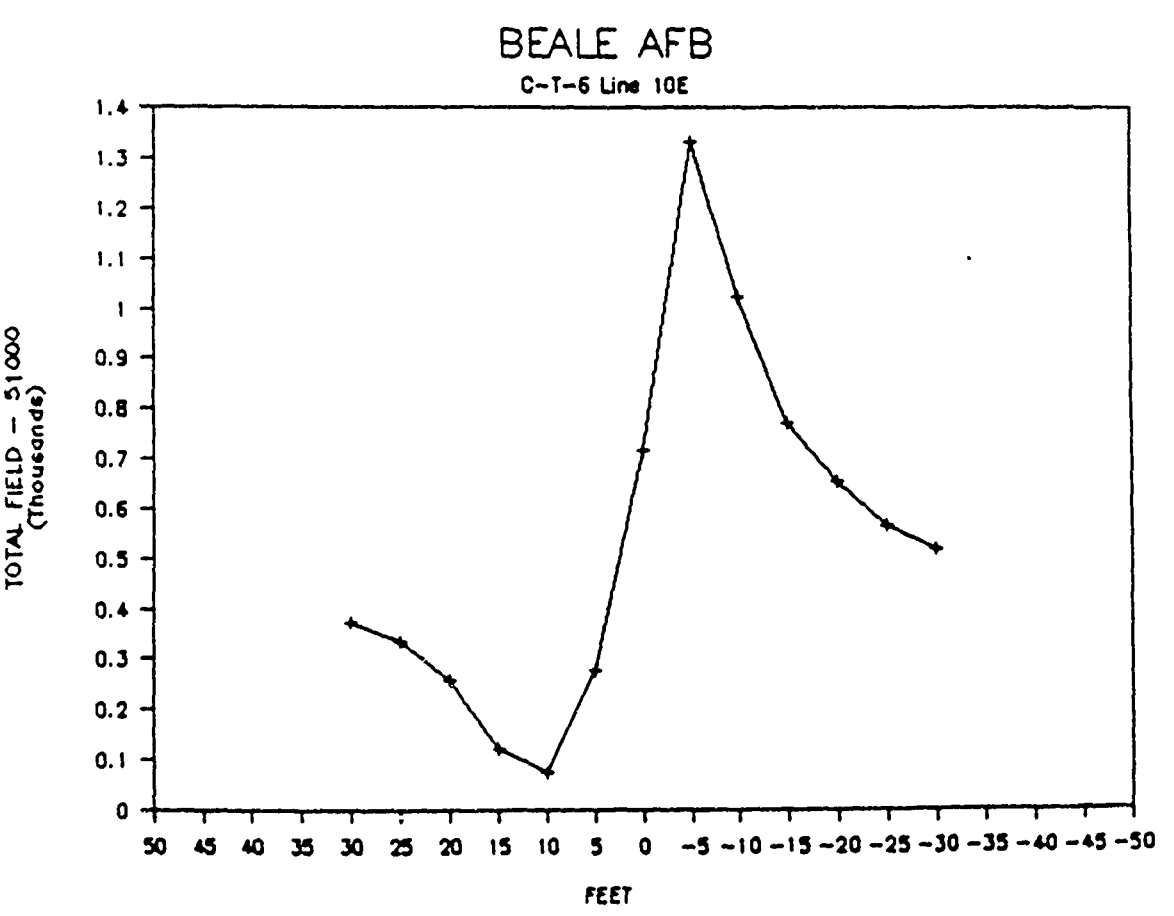

BEALE AFB
C-T-1
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

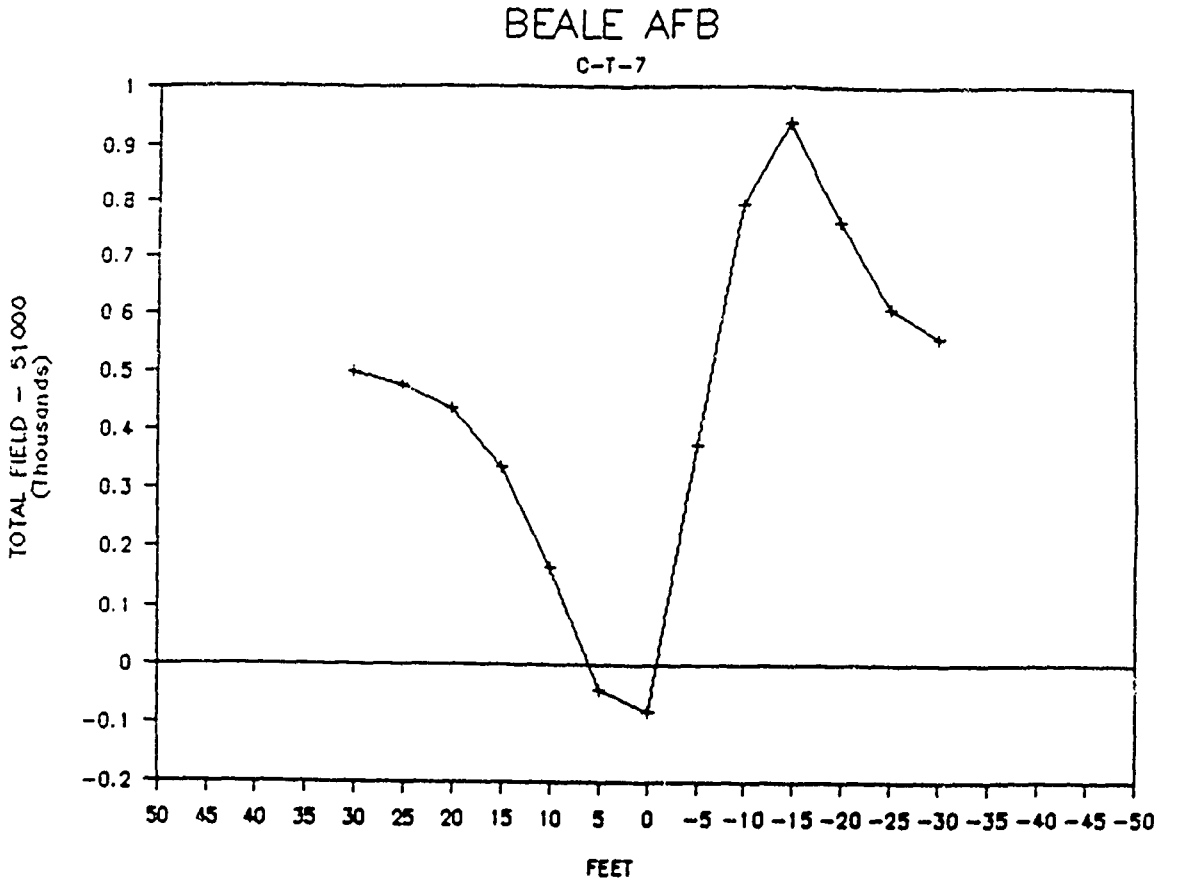

BEALE AFB
C-T-2
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

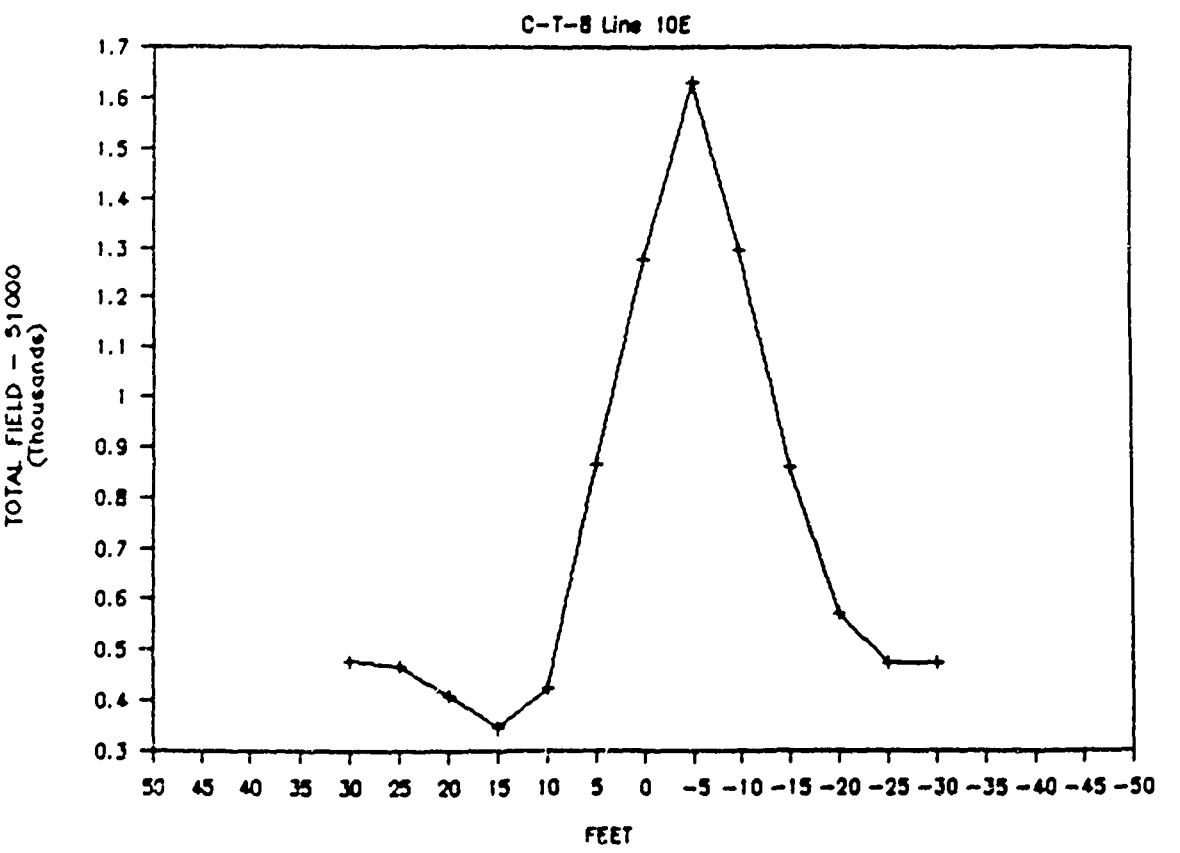

BEALE AFB
C-T-3
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

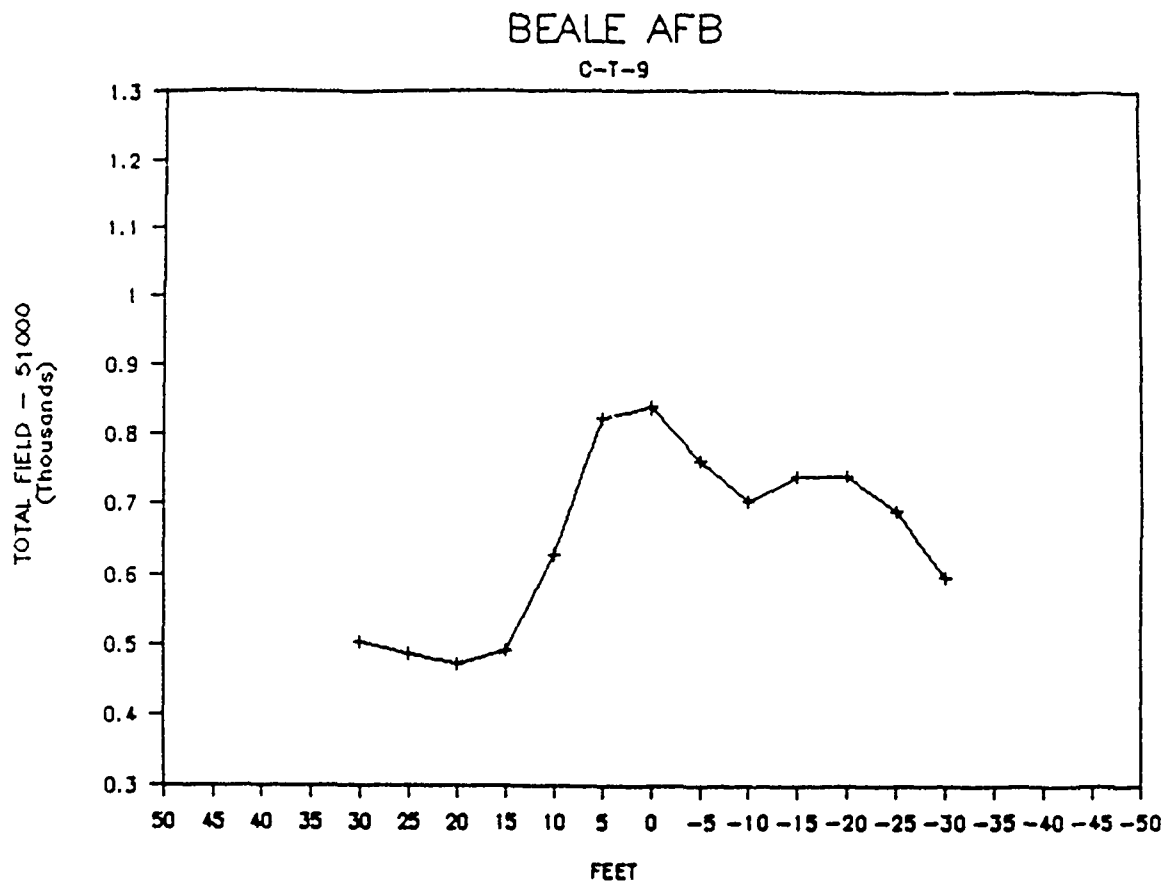

BEALE AFB
C-T-4
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

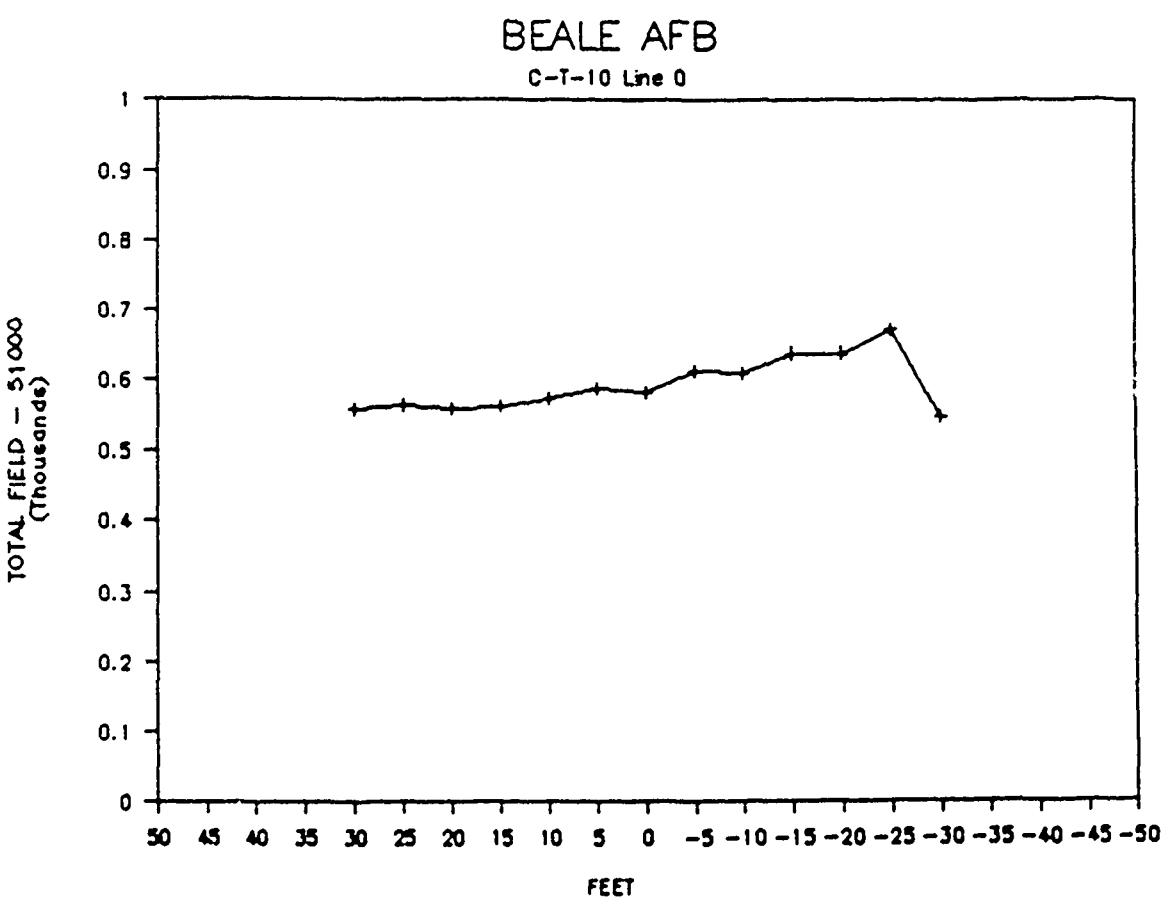

BEALE AFB
C-T-5
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

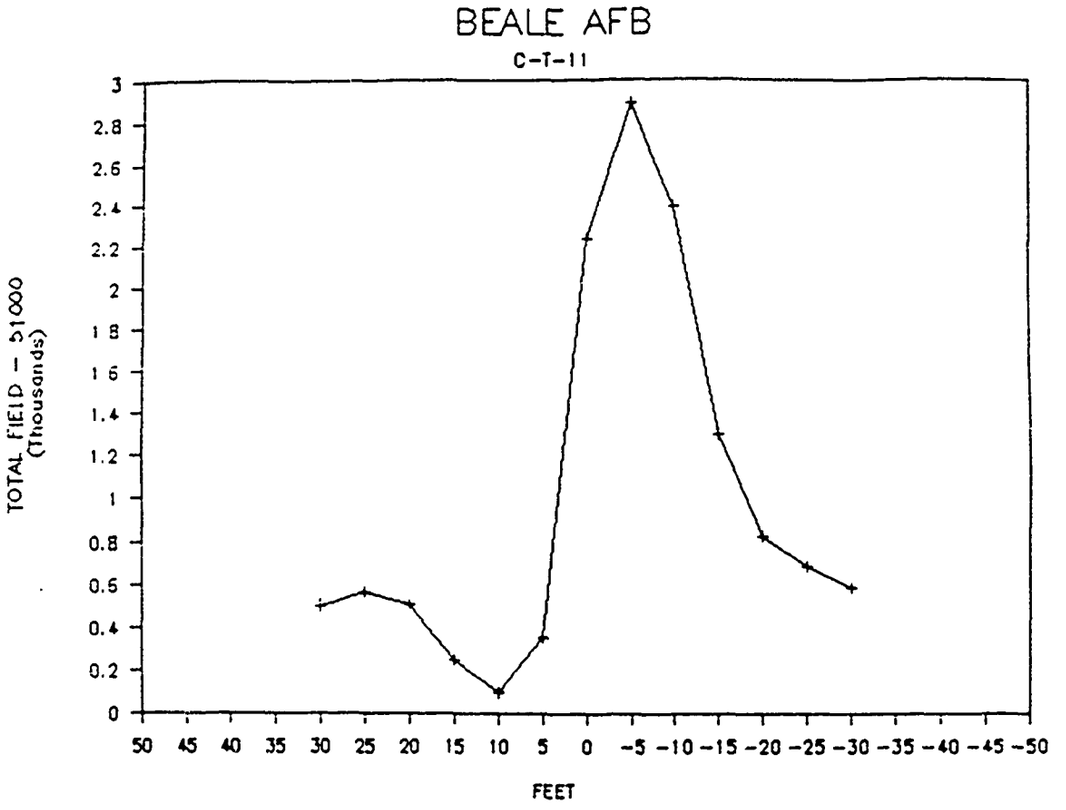

BEALE AFB
C-T-6 Line 10E
TOTAL FIELD - 51000
(Thousands)
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

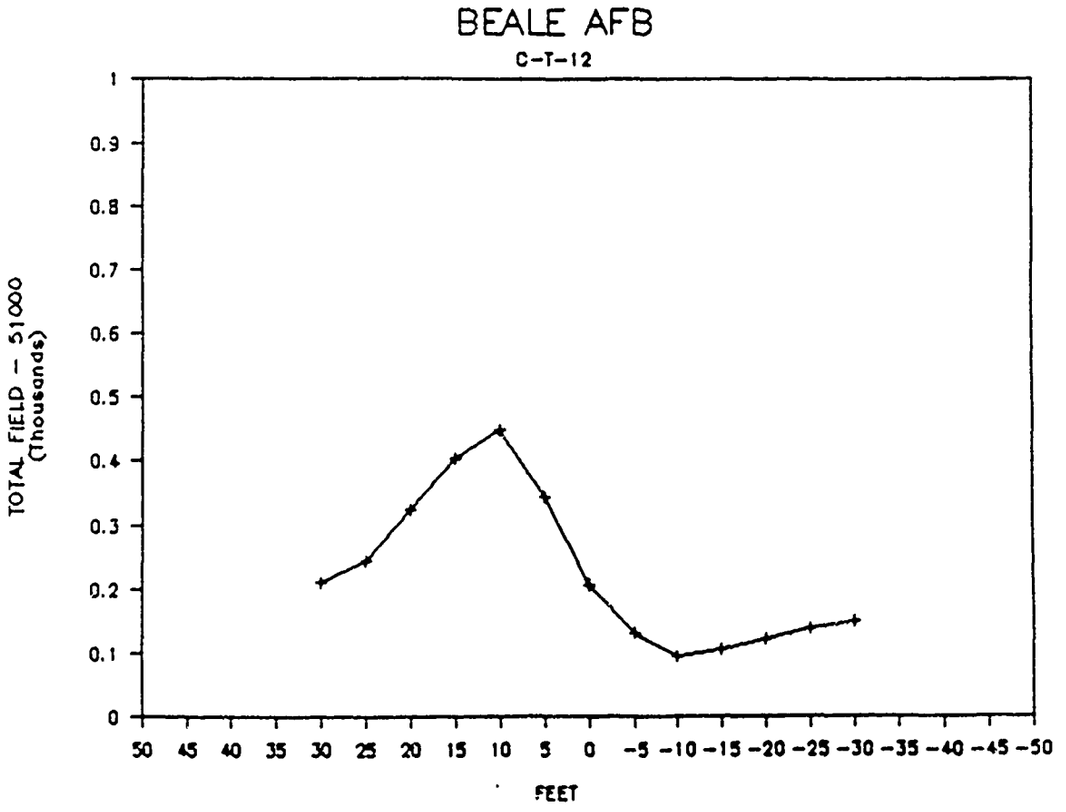

BEALE AFB
C-T-7
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

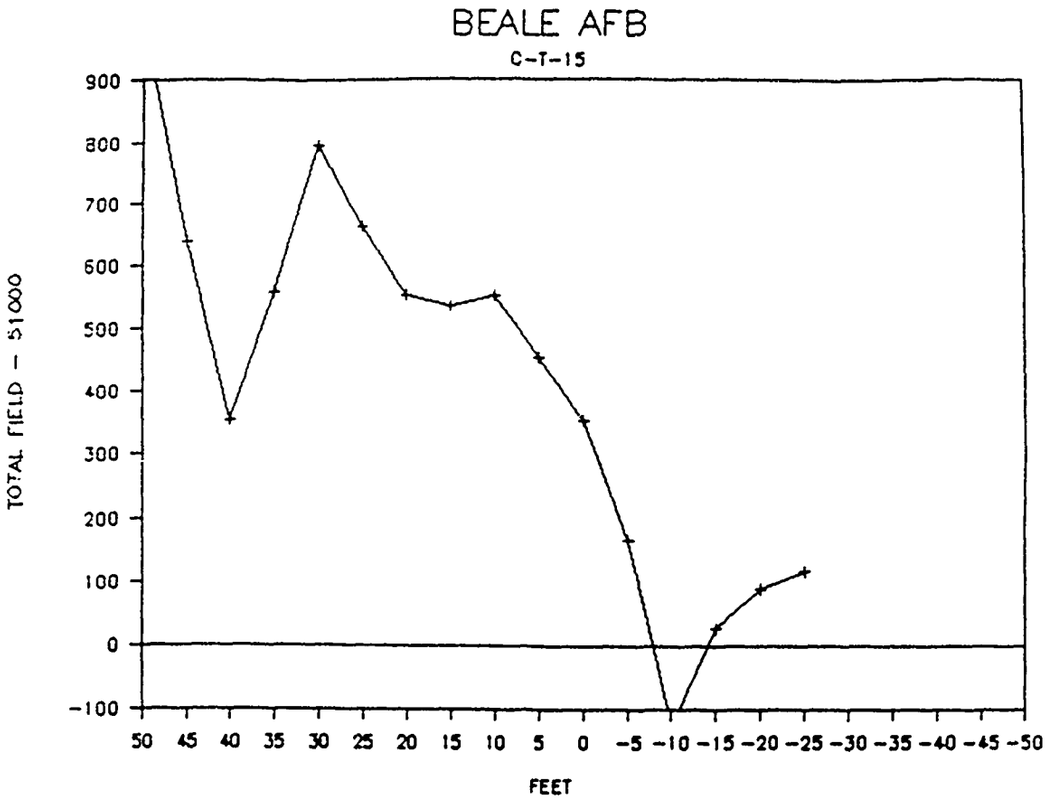

BEALE AFB
C-T-8 Line 10E
TOTAL FIELD - 51000 (Thousands)
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

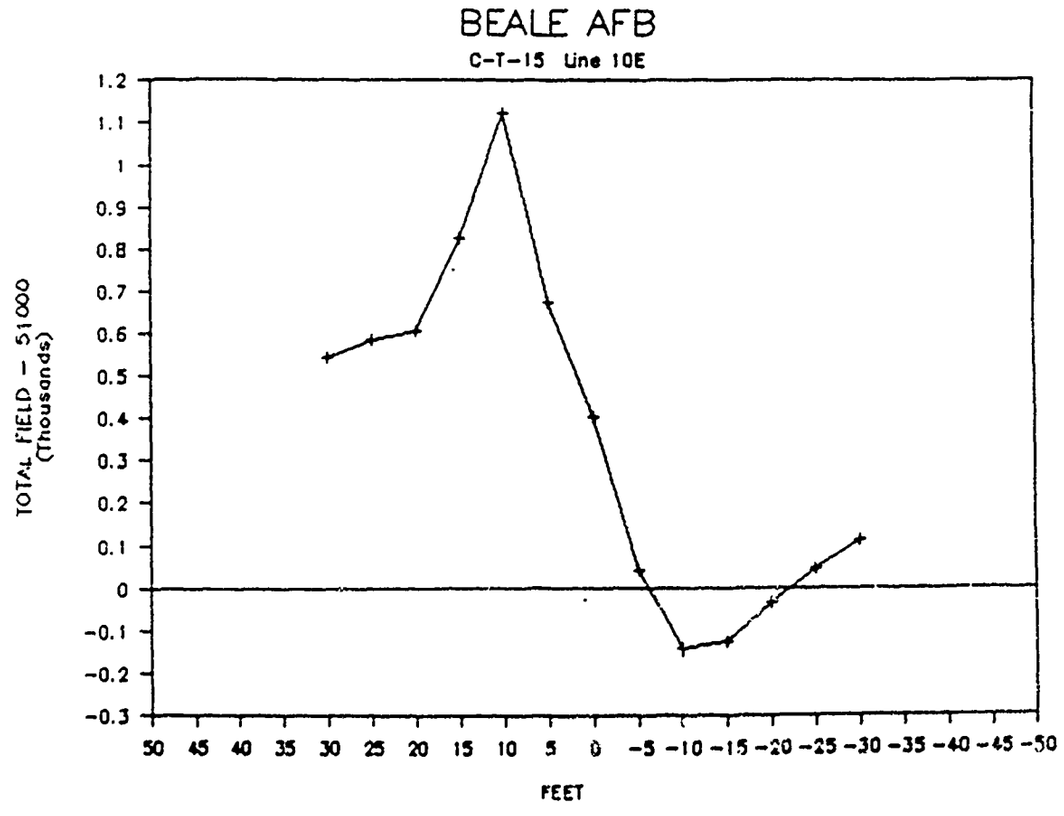

BEALE AFB
C-T-9
TOTAL FIELD - 51000
(Thousands)
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

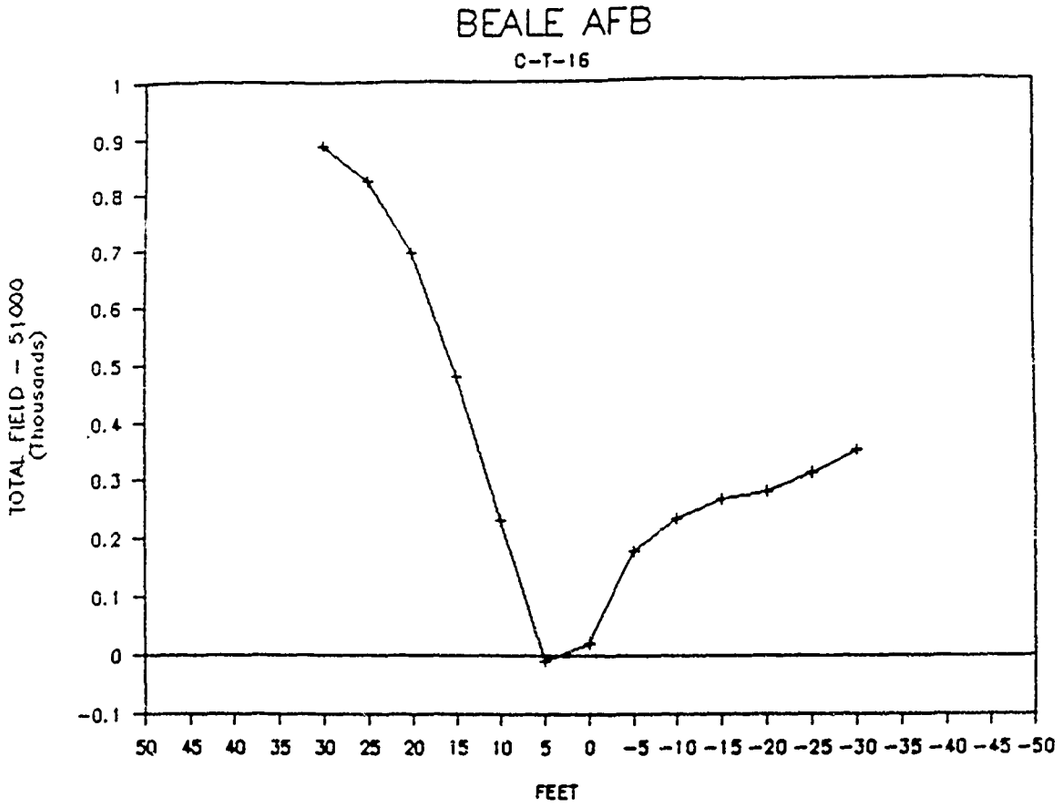

BEALE AFB
C-T-10 Line 0
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

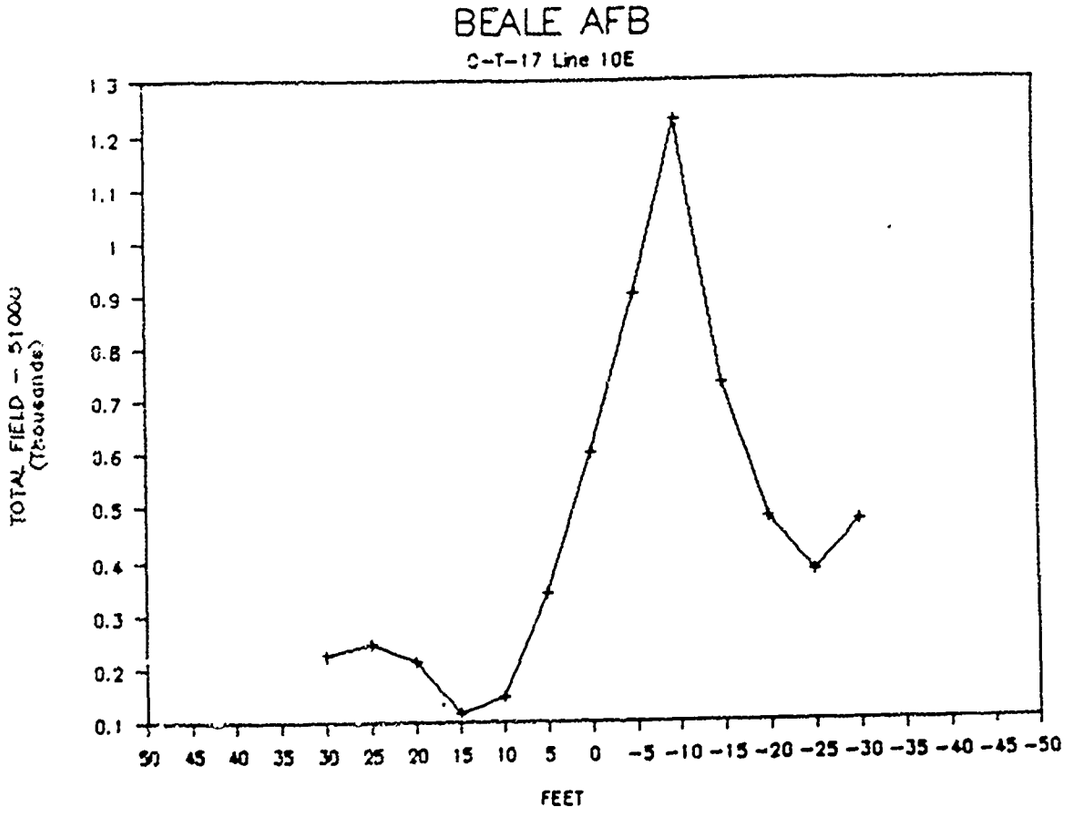

BEALE AFB
C-T-11
TOTAL FIELD - 51000 (Thousands)
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

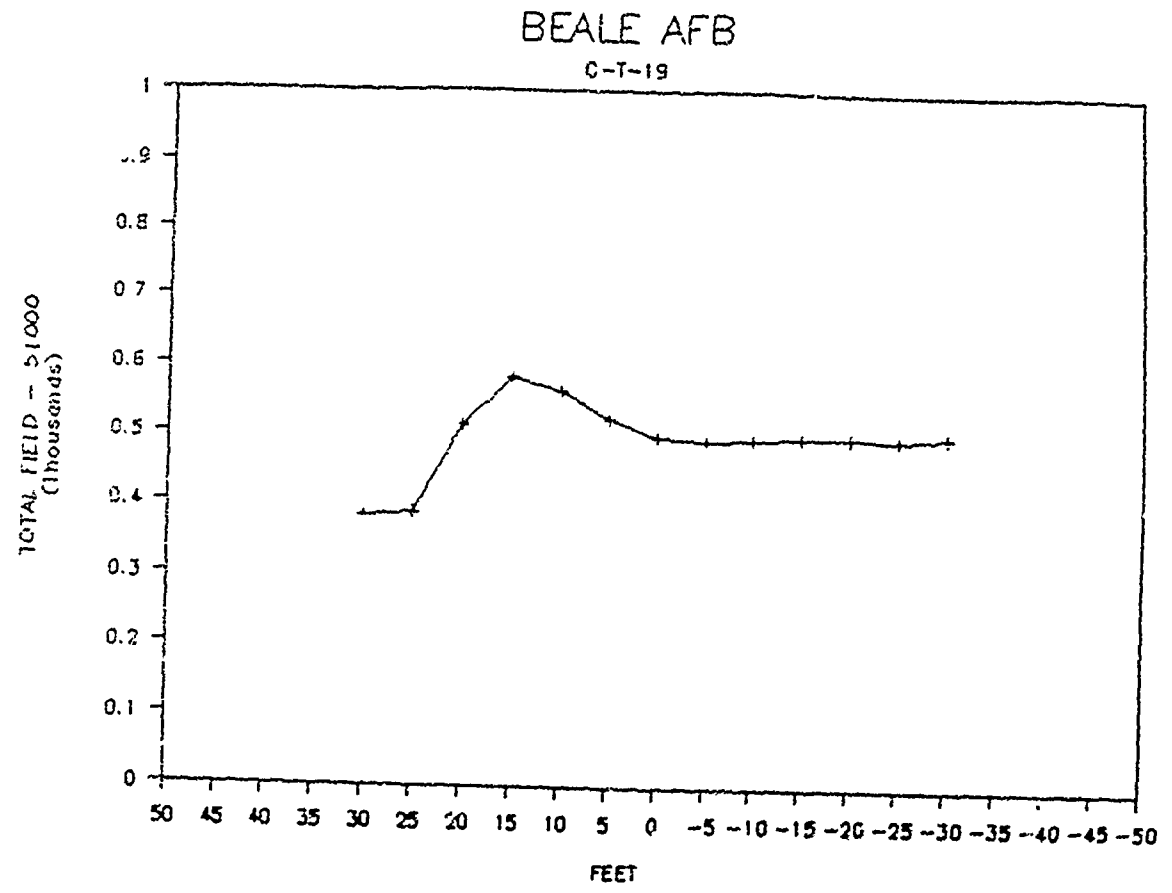

BEALE AFB
C-T-12
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

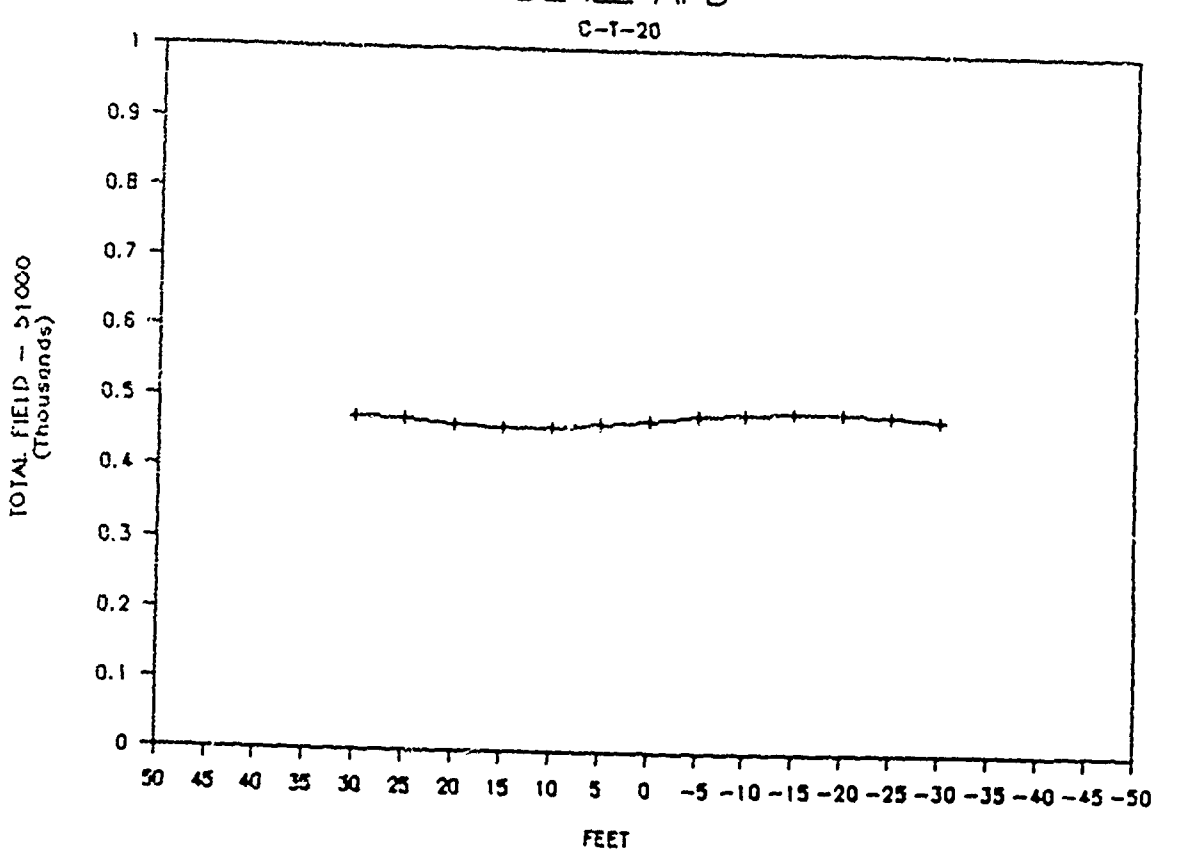

BEALE AFB
C-T-15
TOTAL FIELD - 51000
900
800
700
600
500
400
300
200
100
0
-100
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

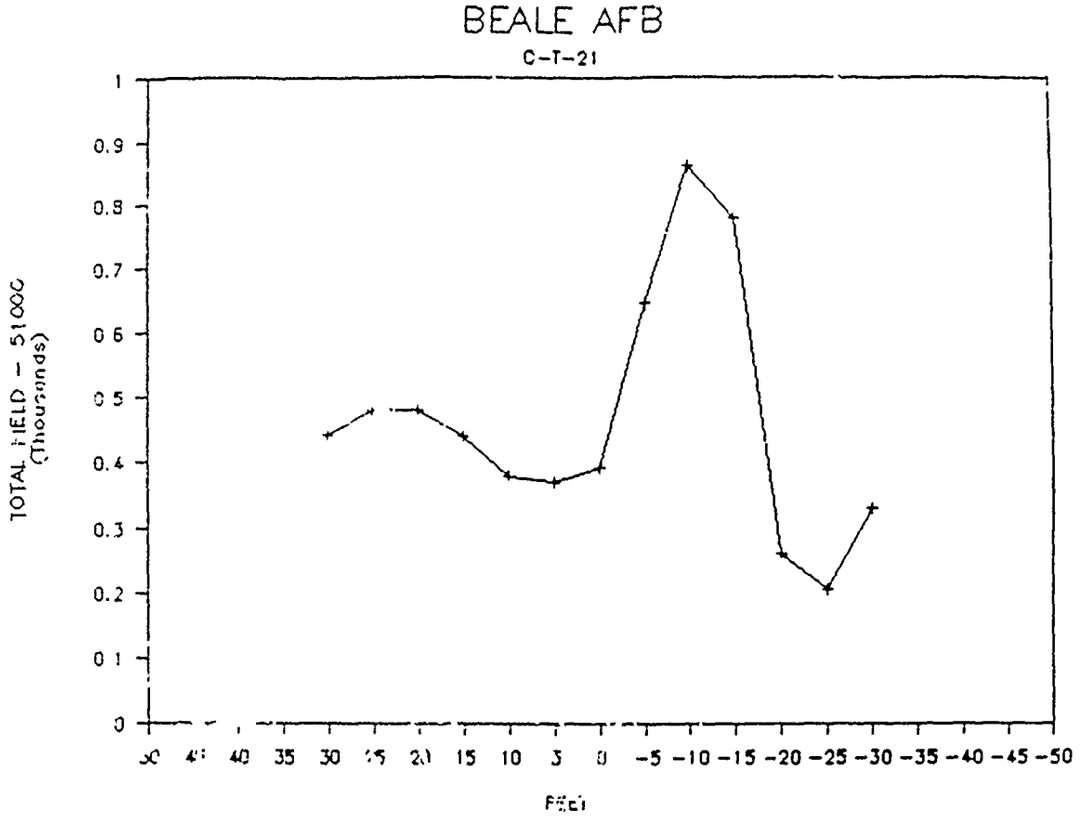

BEALE AFB
C-T-15 Line 10E
TOTAL FIELD - 51000
(Thousands)
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

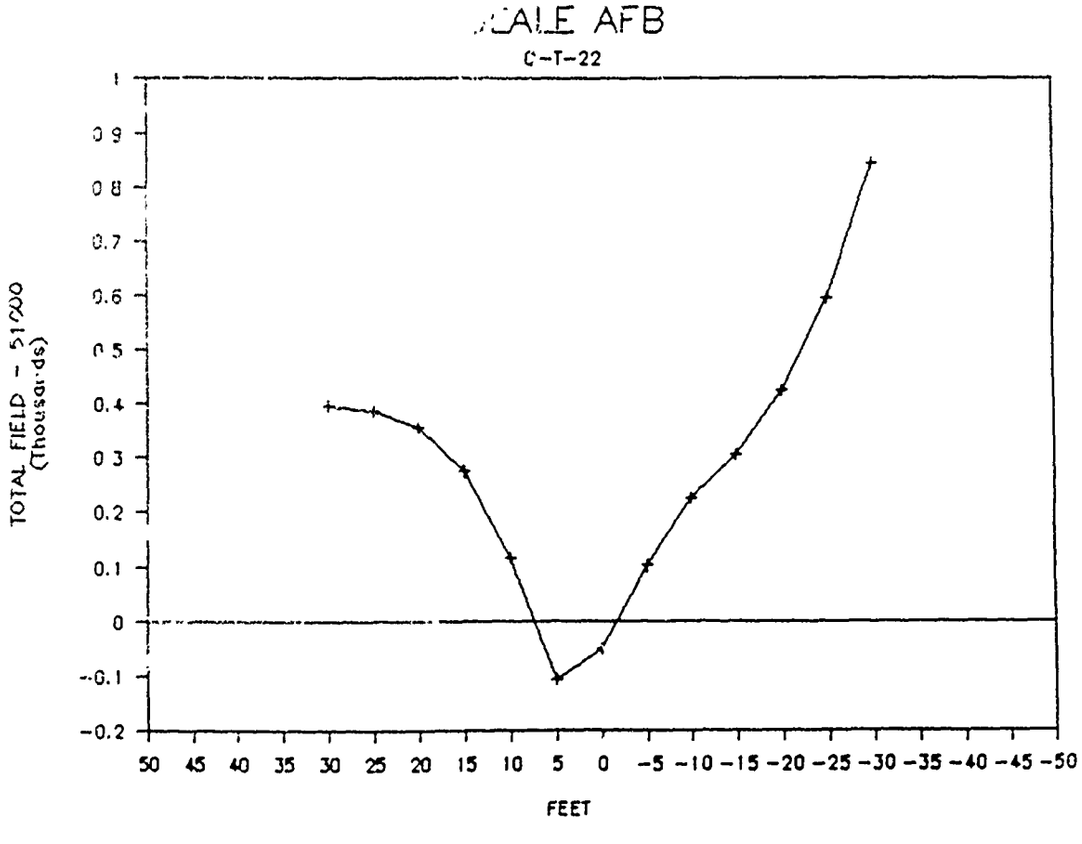

BEALE AFB
C-T-16
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

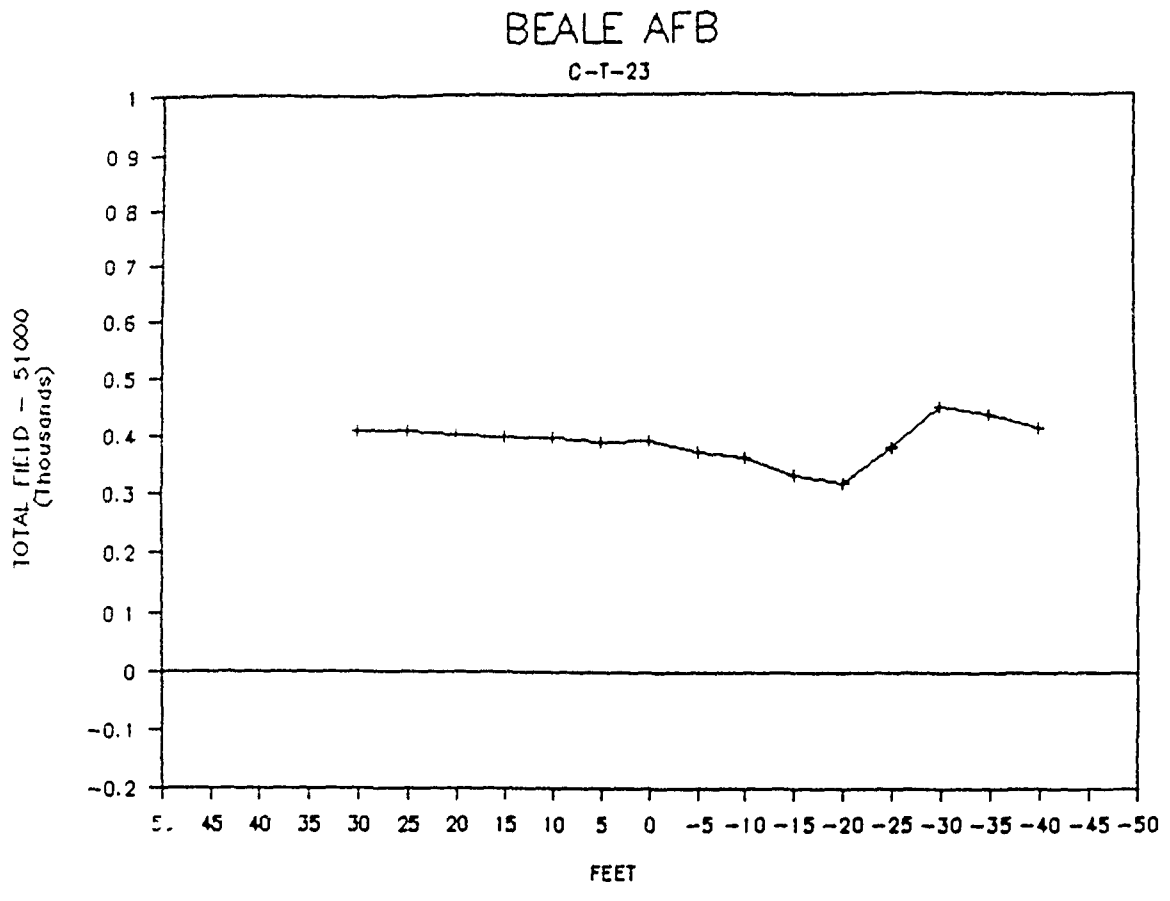

BEALE AFB
C-T-17 Line 10E
TOTAL FIELD - 51000 (Thousands)
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

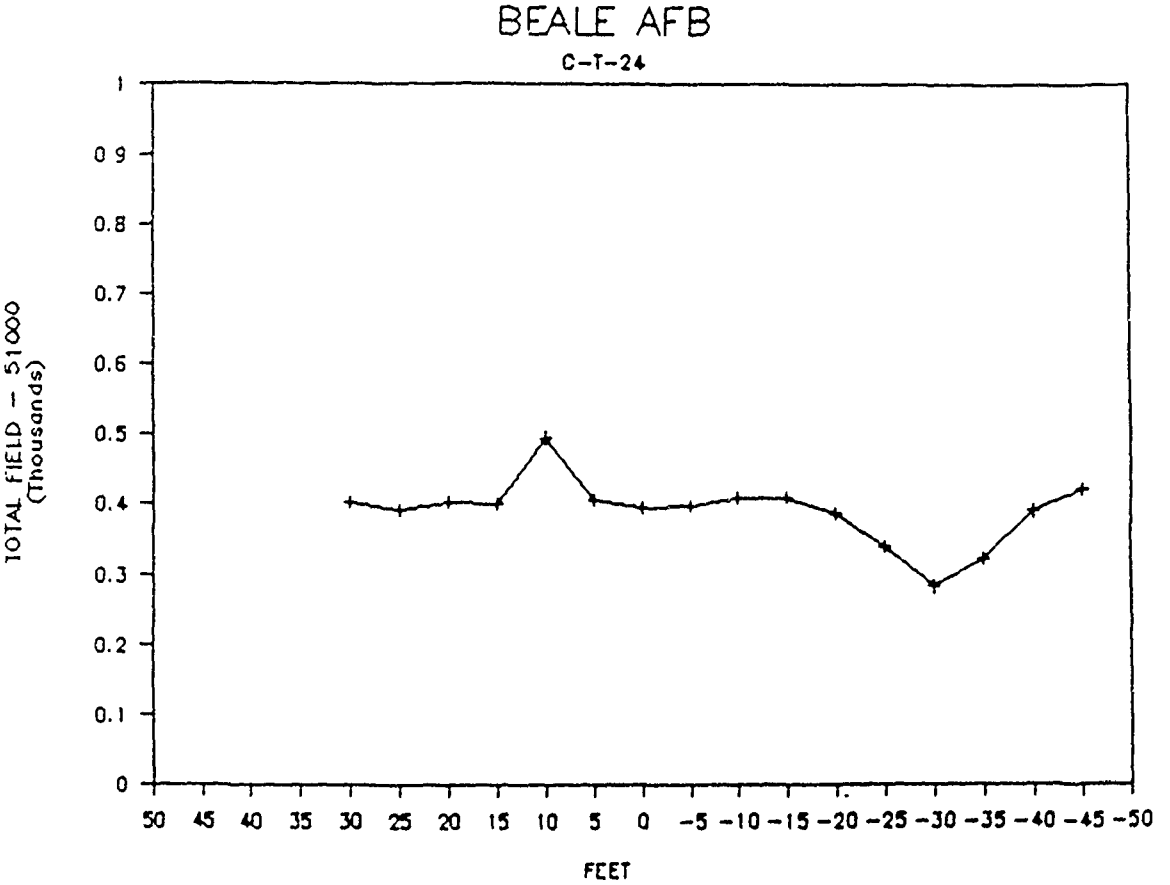

BEALE AFB
C-T-19
TOTAL FIELD - 51000
(Thousands)
1
.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

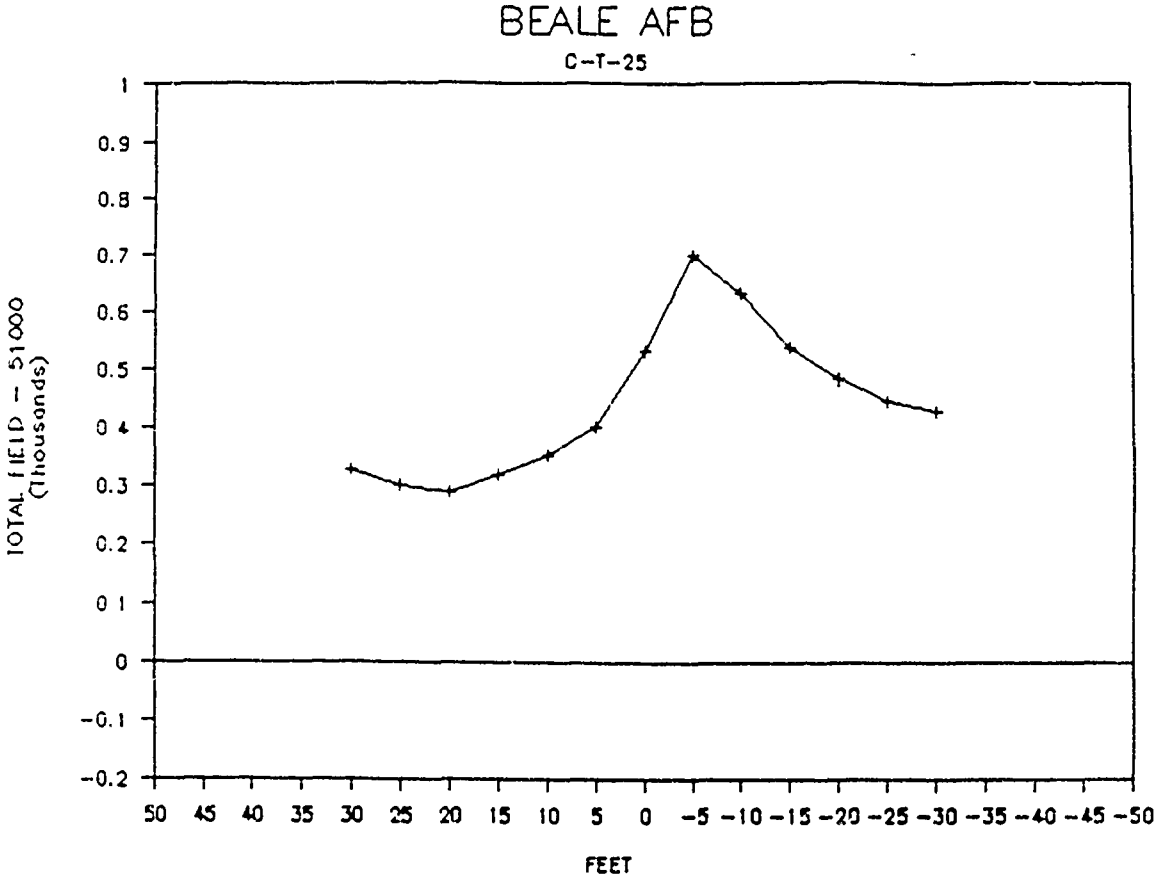

BEALE AFB
C-T-20
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-21
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

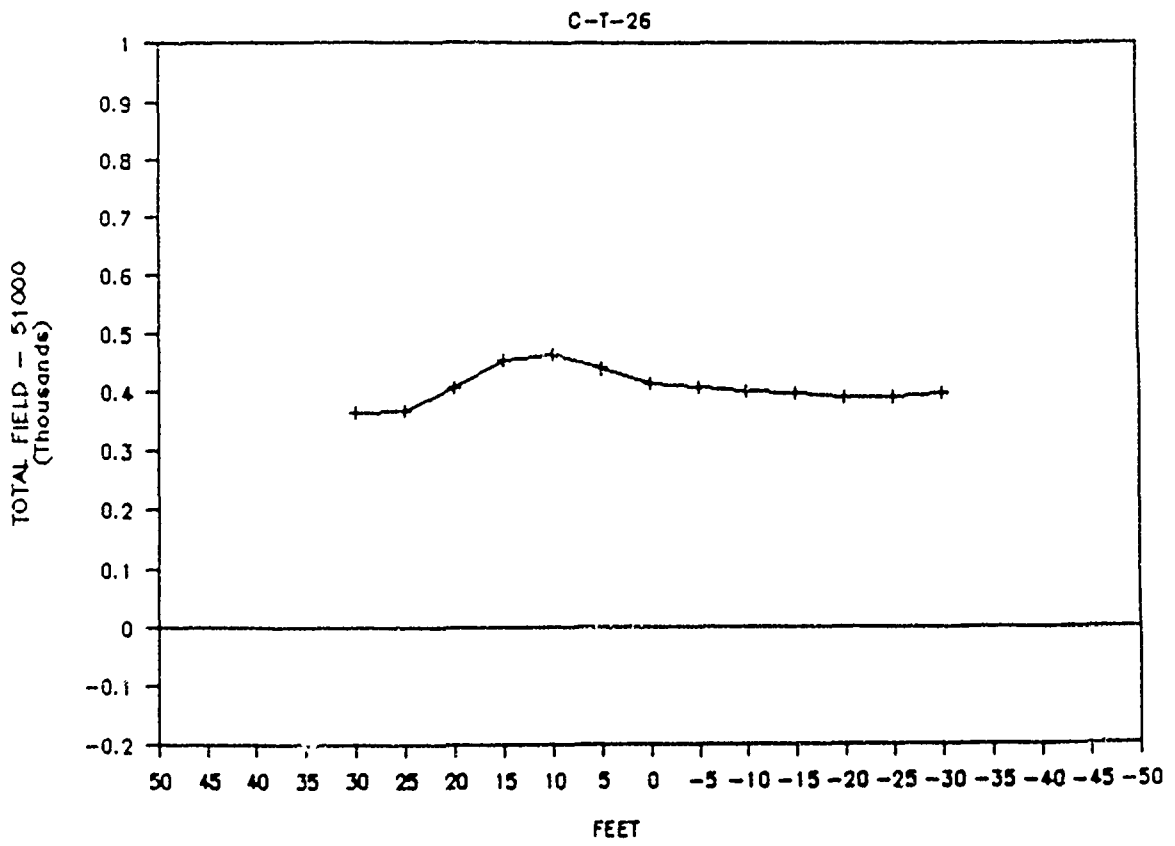

BEALE AFB
C-T-22
TOTAL FIELD - 51200
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

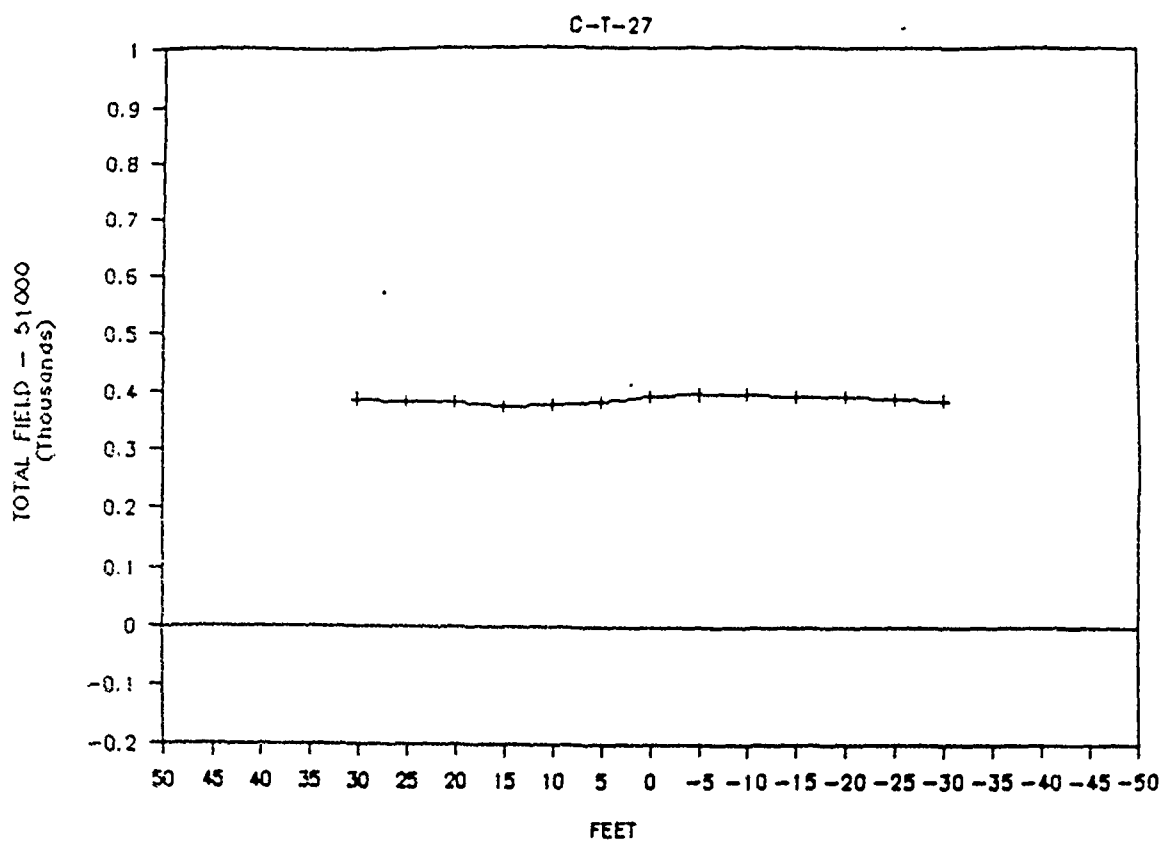

BEALE AFB
C-T-23
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

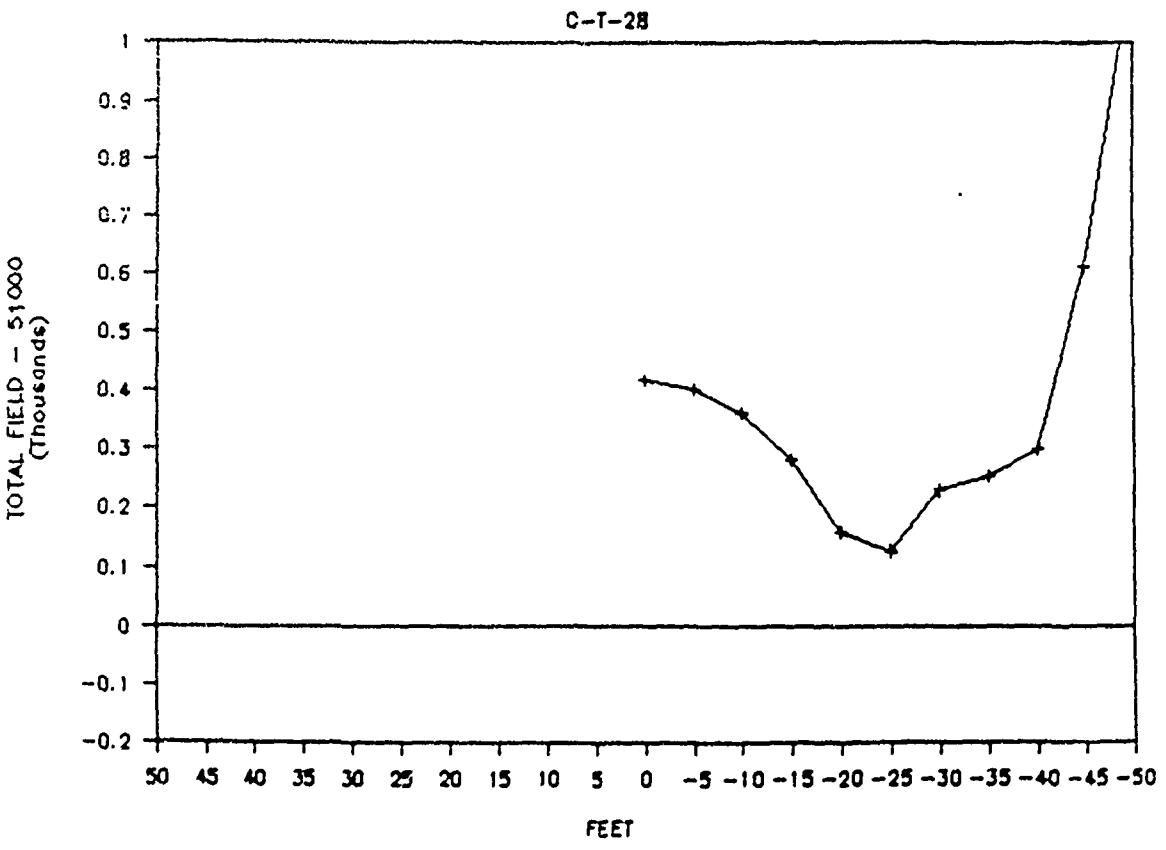

BEALE AFB
C-T-24
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-25
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

BEALE AFB

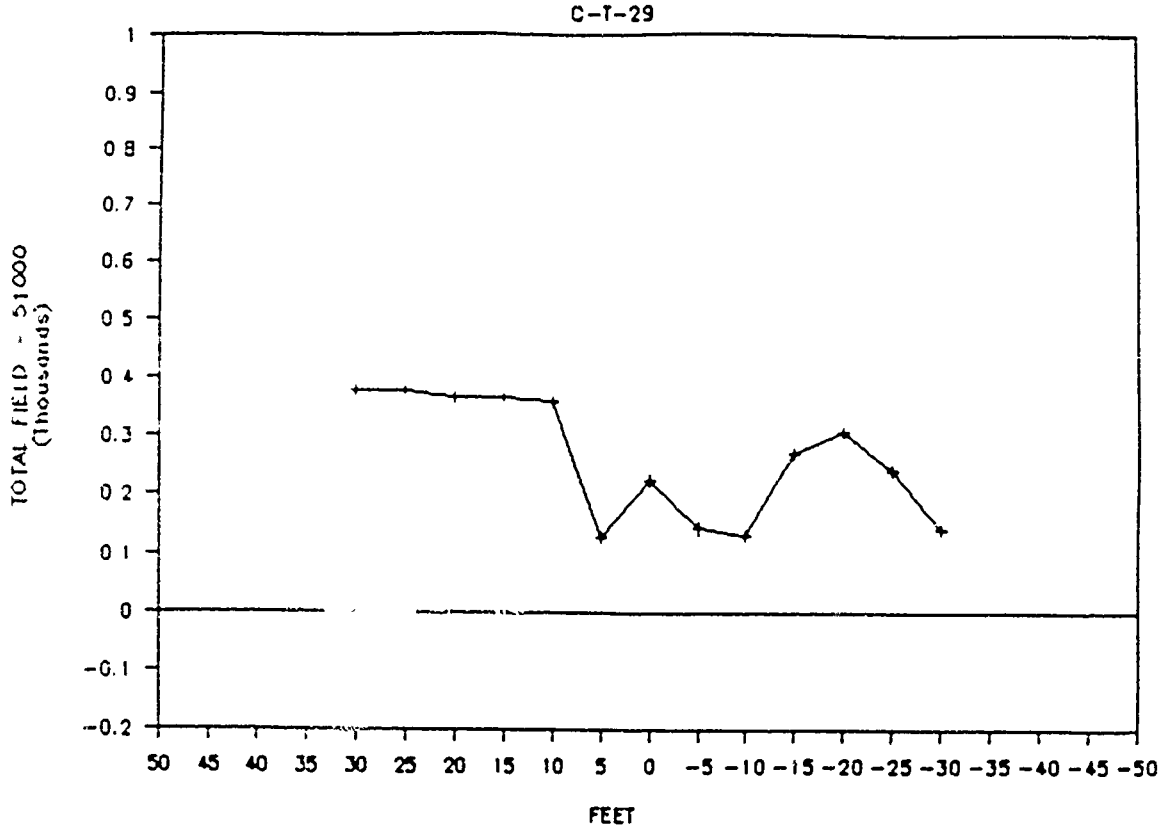

BEALE AFB
C-T-26
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-27
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-28
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

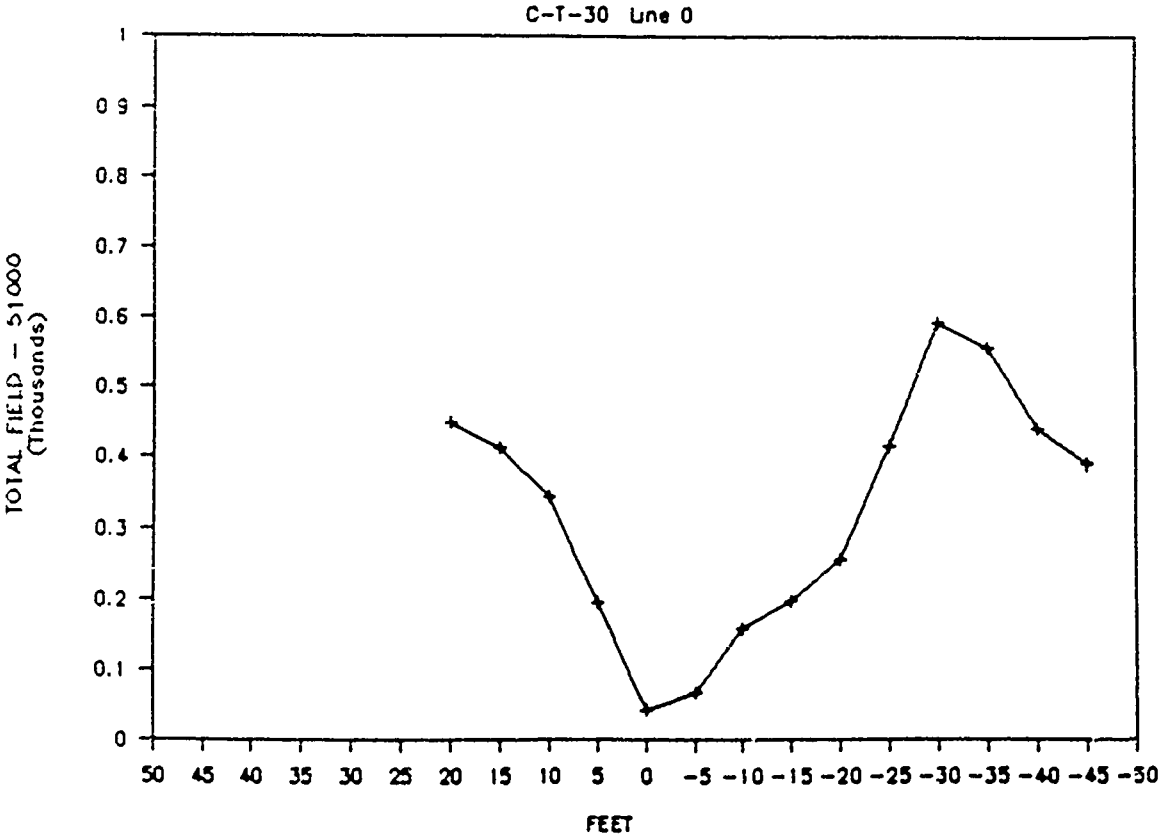
BEALE AFB

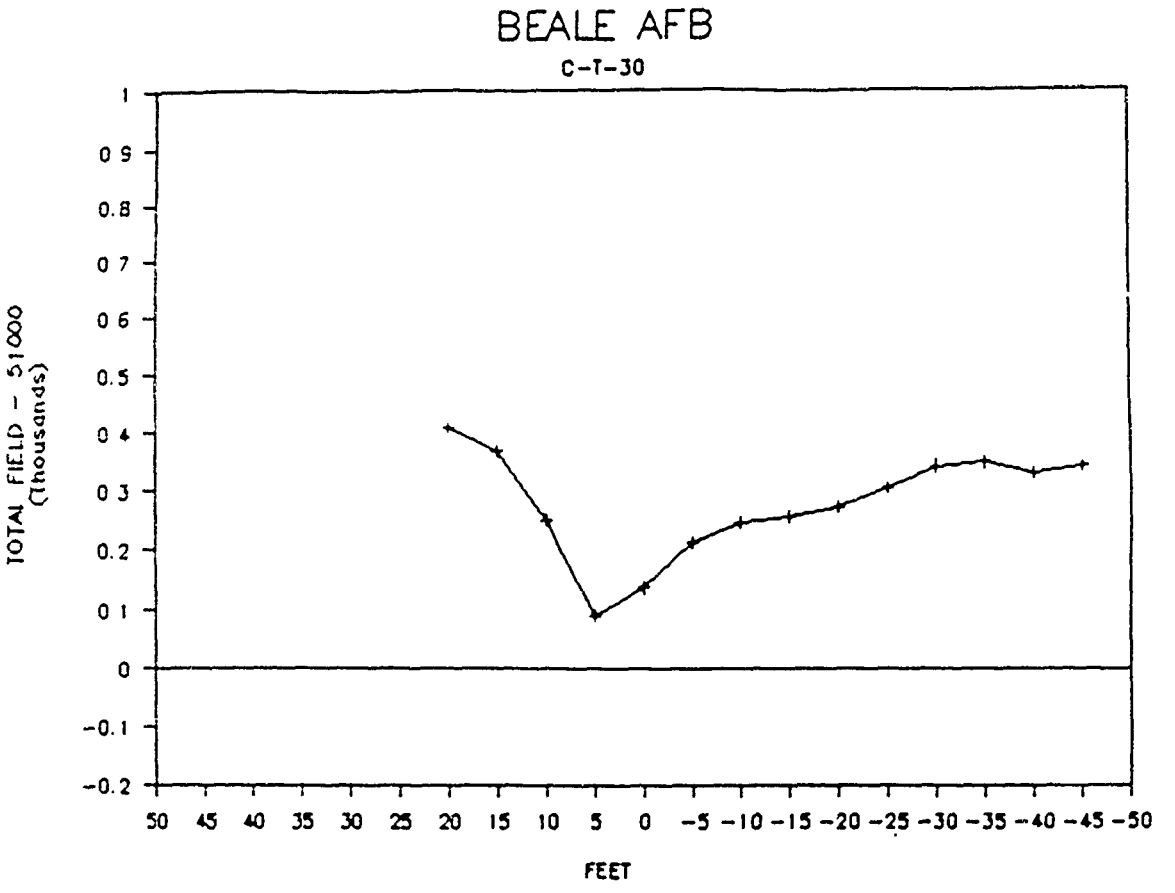
C-T-29

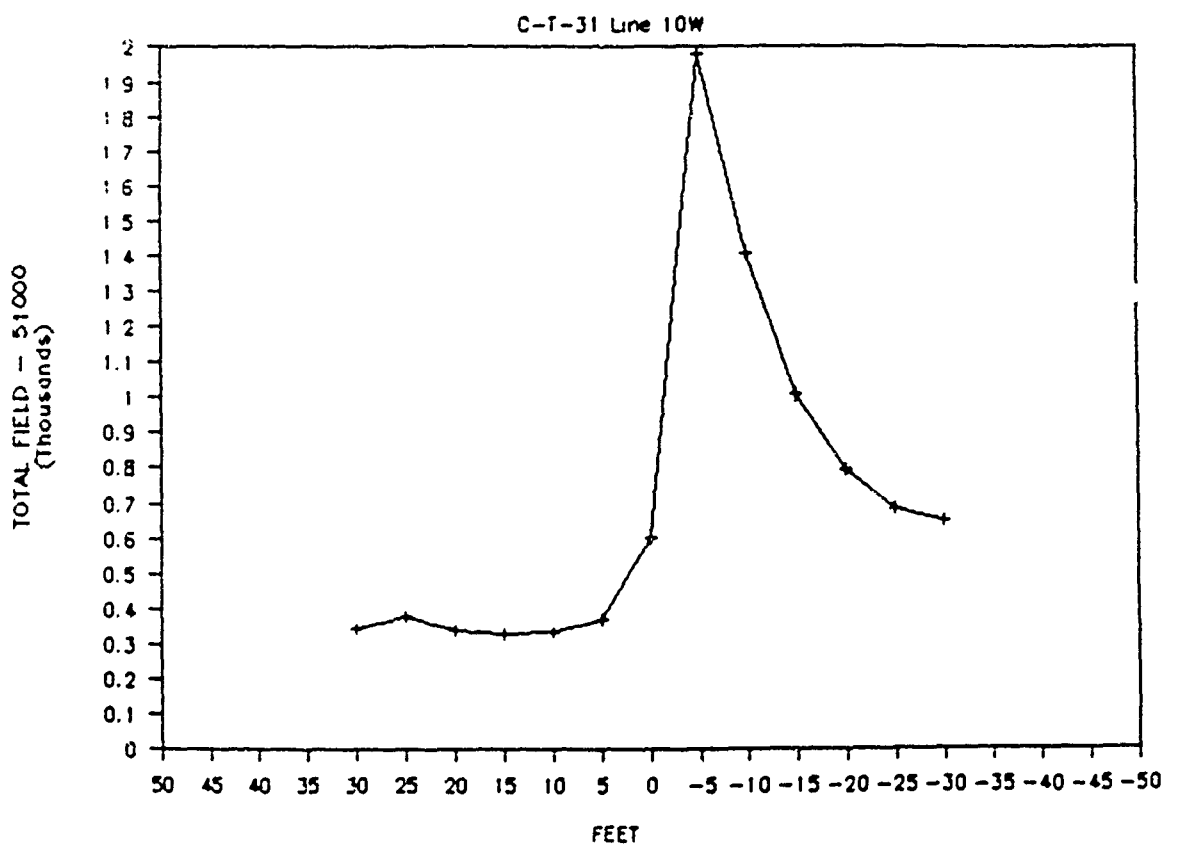


BEALE AFB

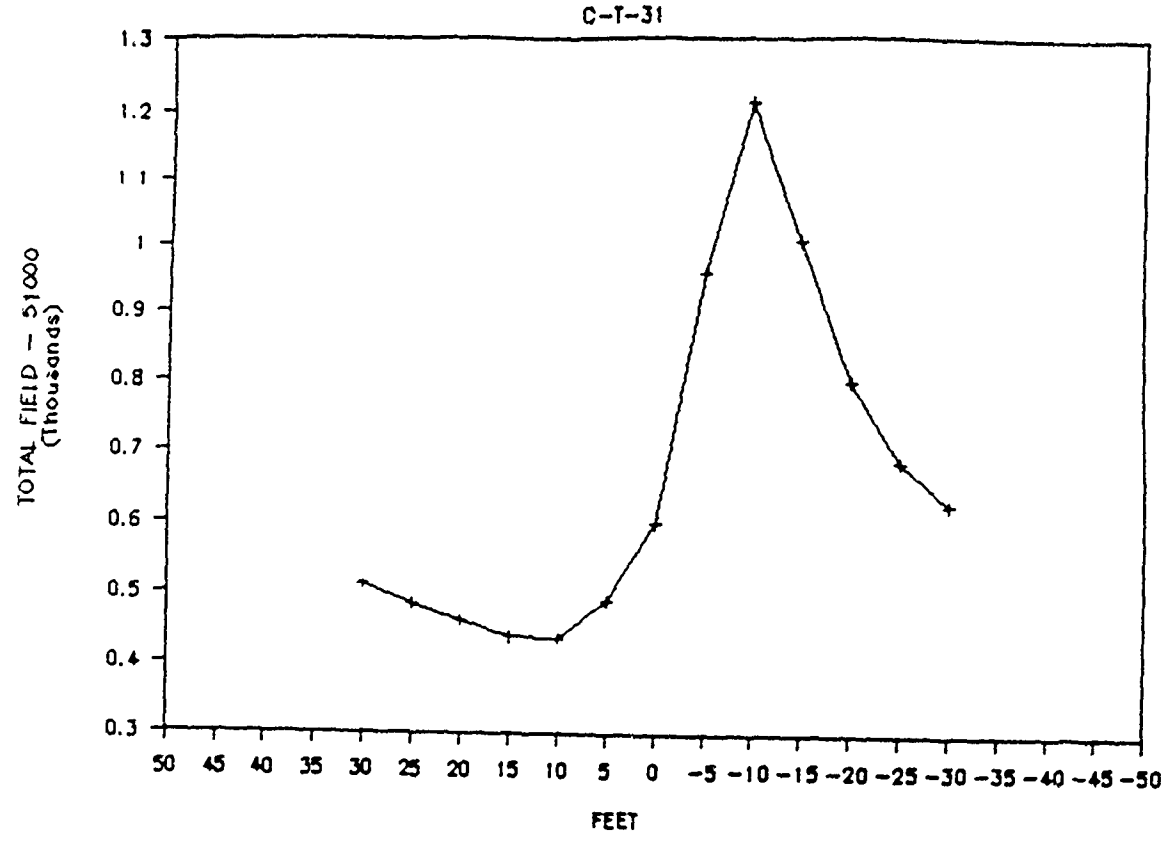
C-T-30 Line 0



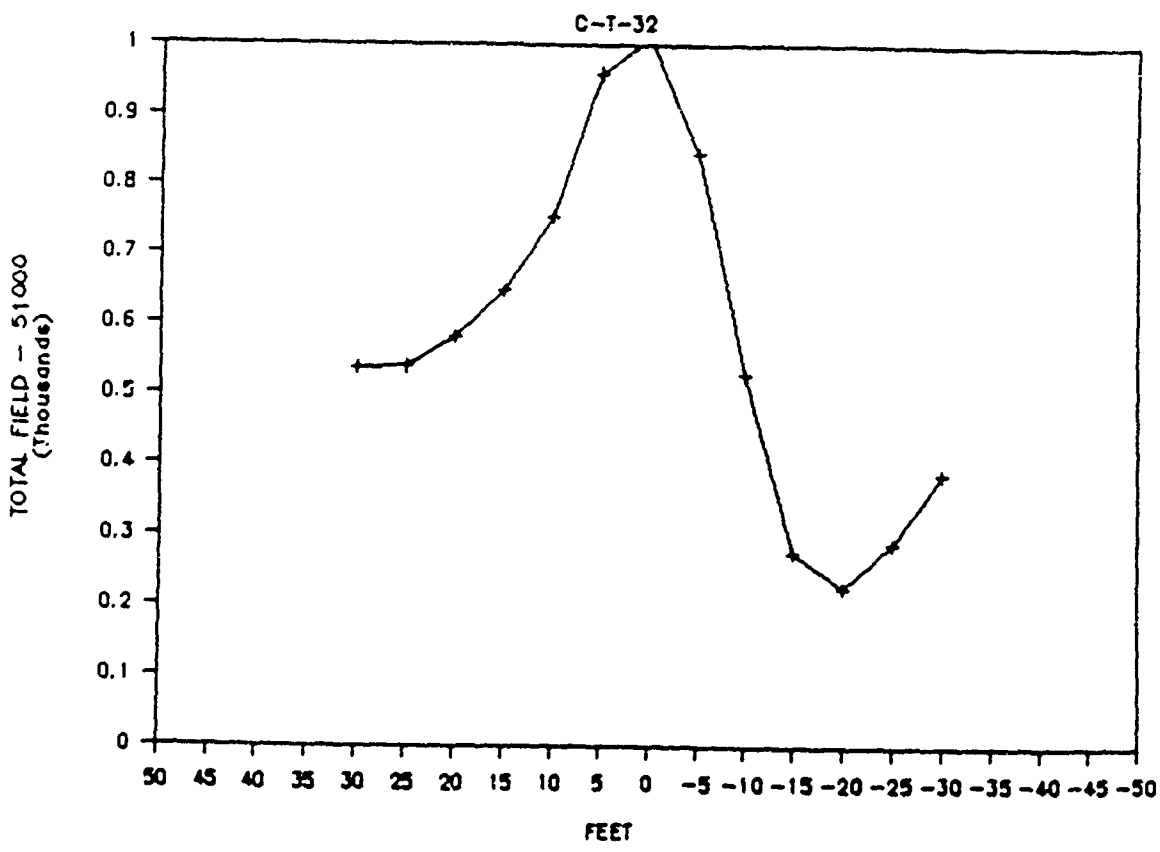

BEALE AFB
C-T-30
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-31 Line 10W
TOTAL FIELD - 51000
(Thousands)
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

BEALE AFB

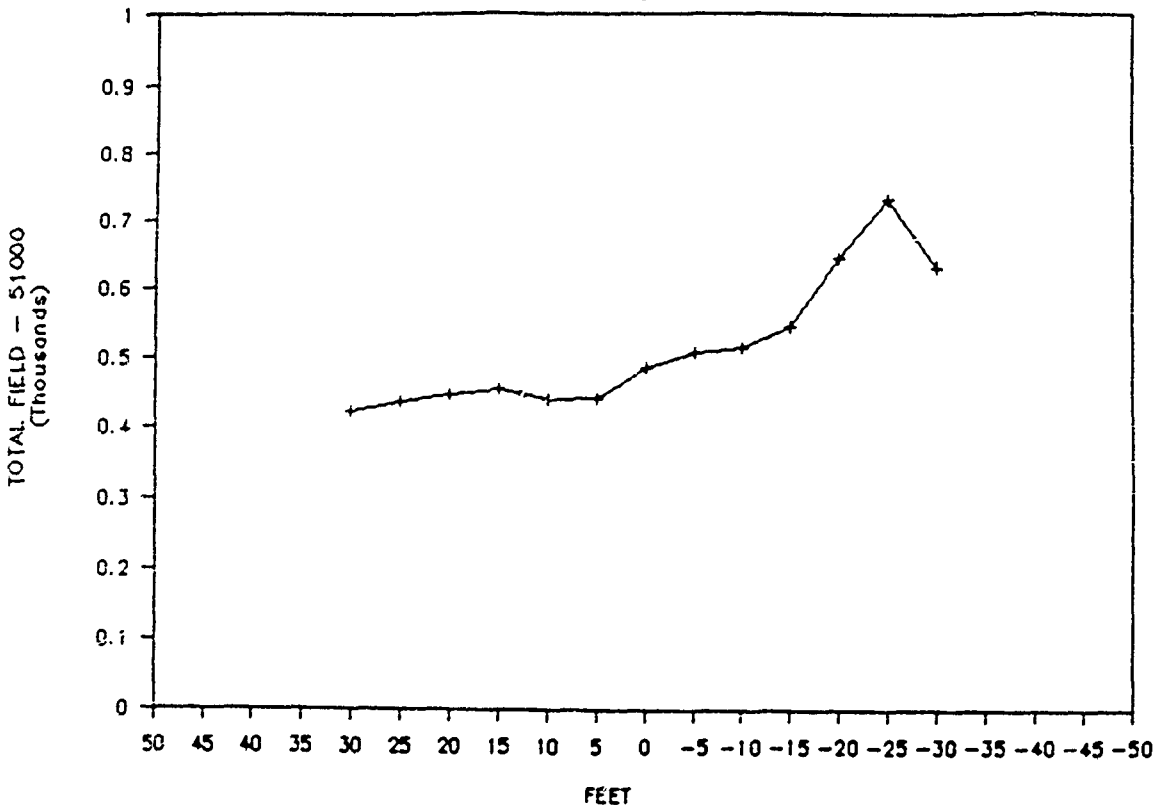


BEALE AFB



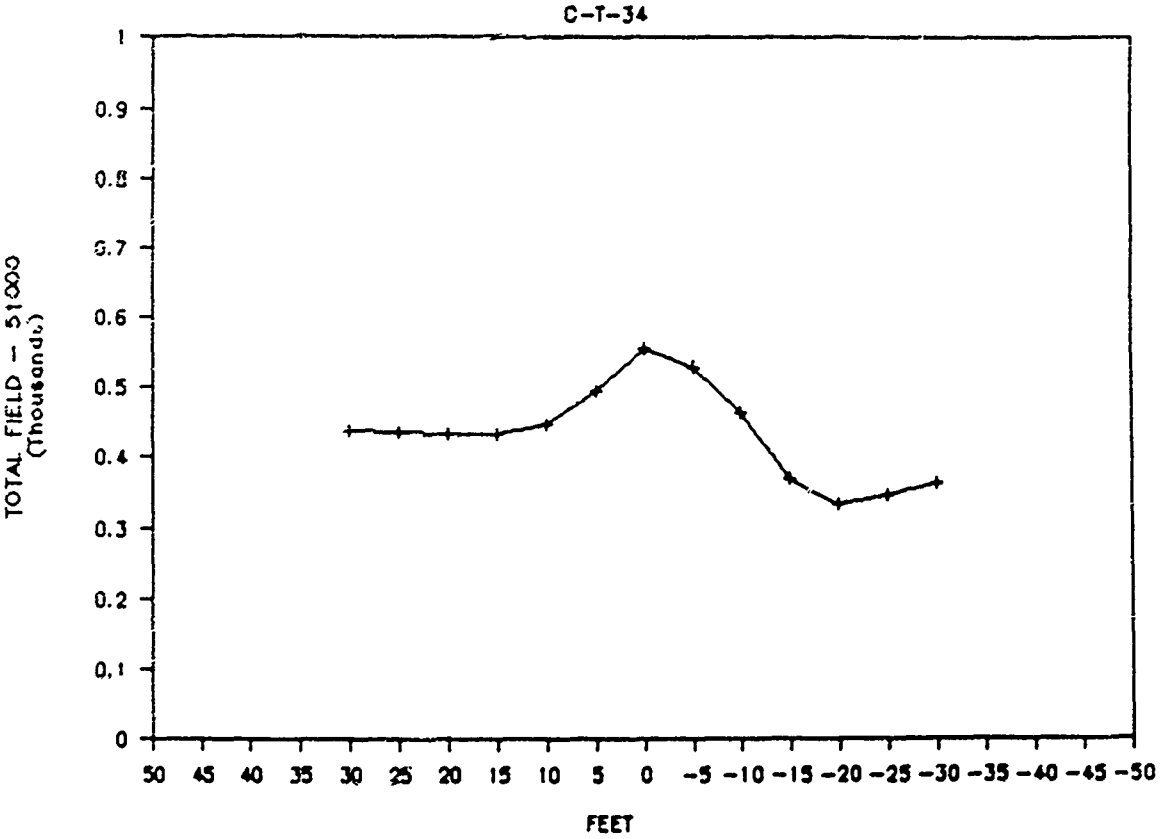
BEALE AFB

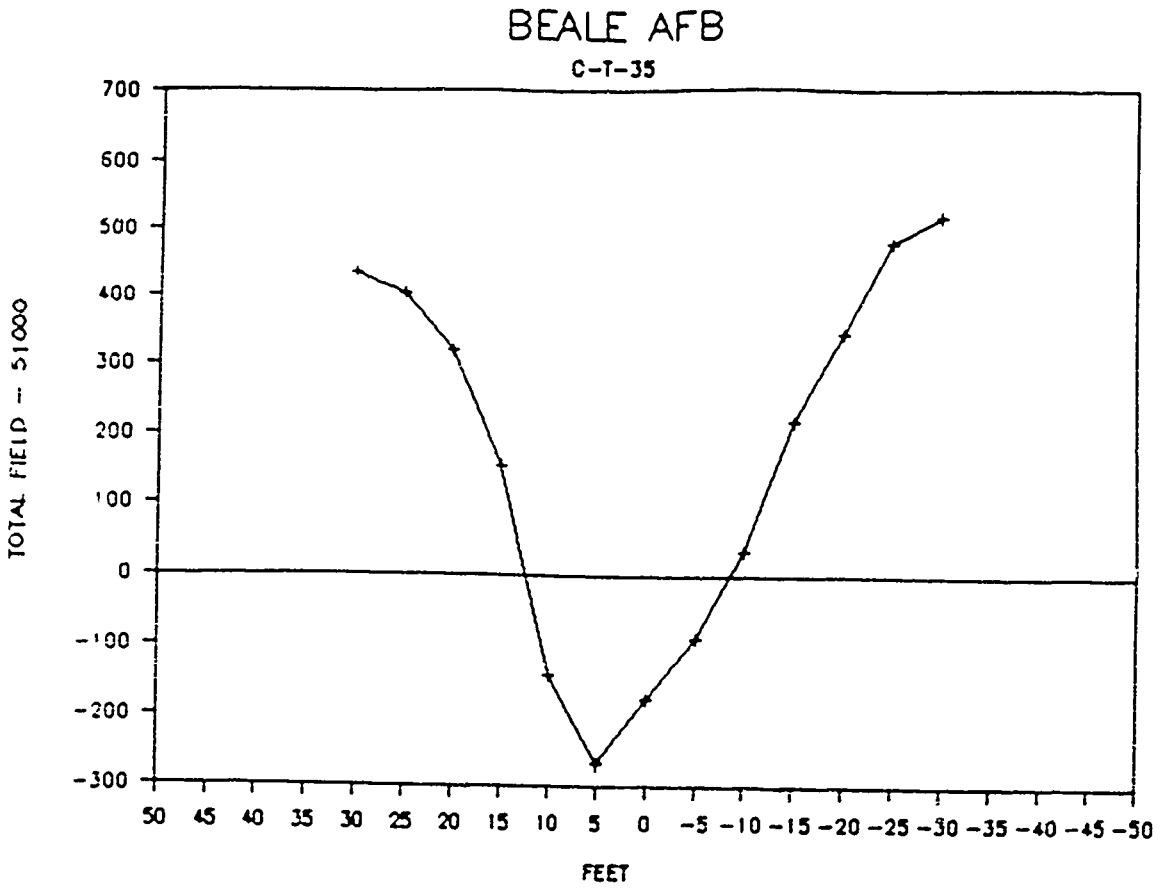
C-T-33

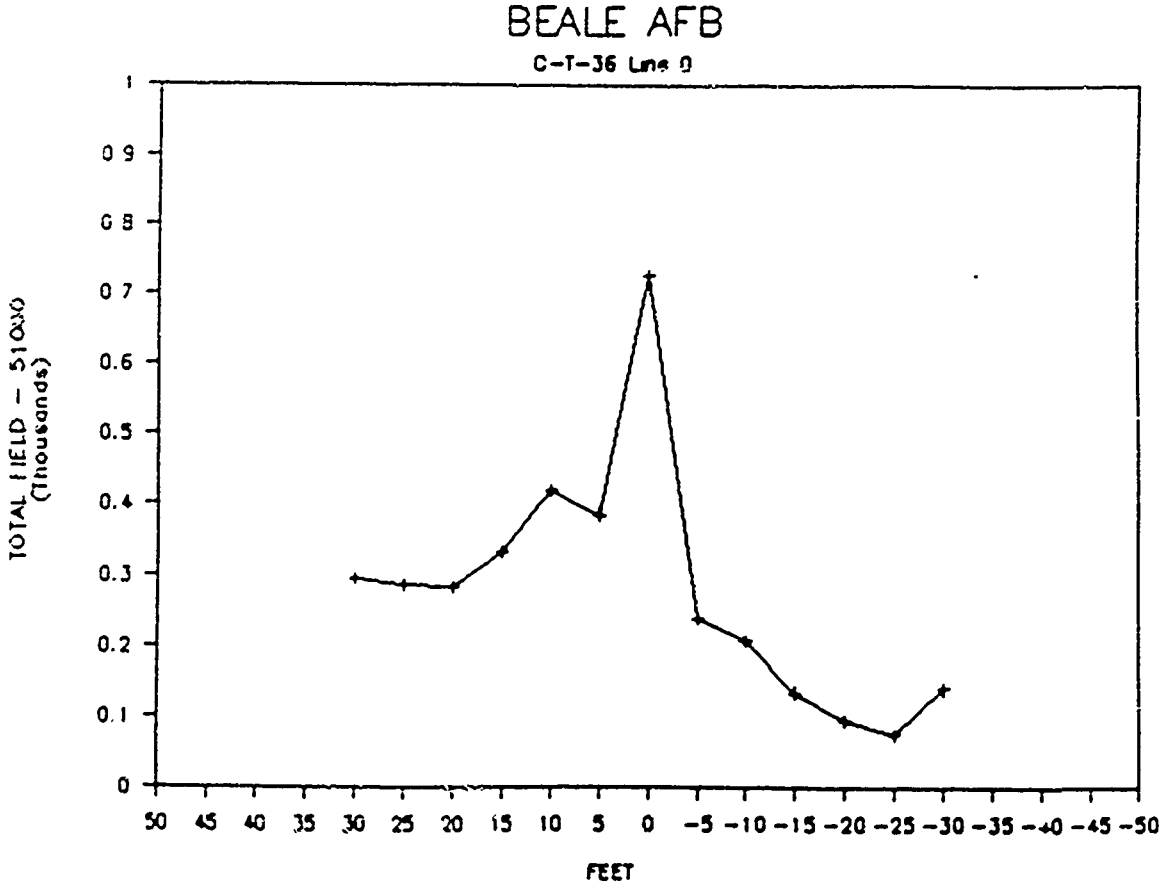


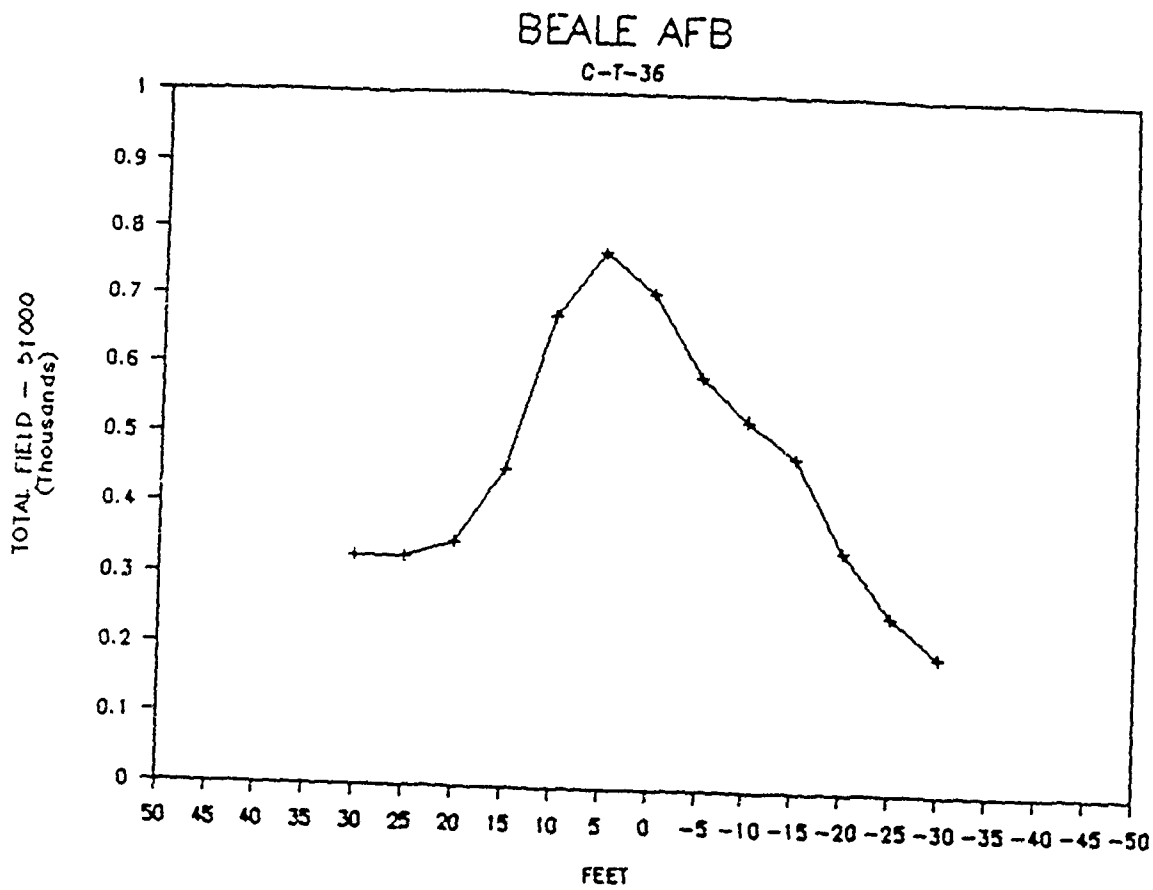
BEALE AFB

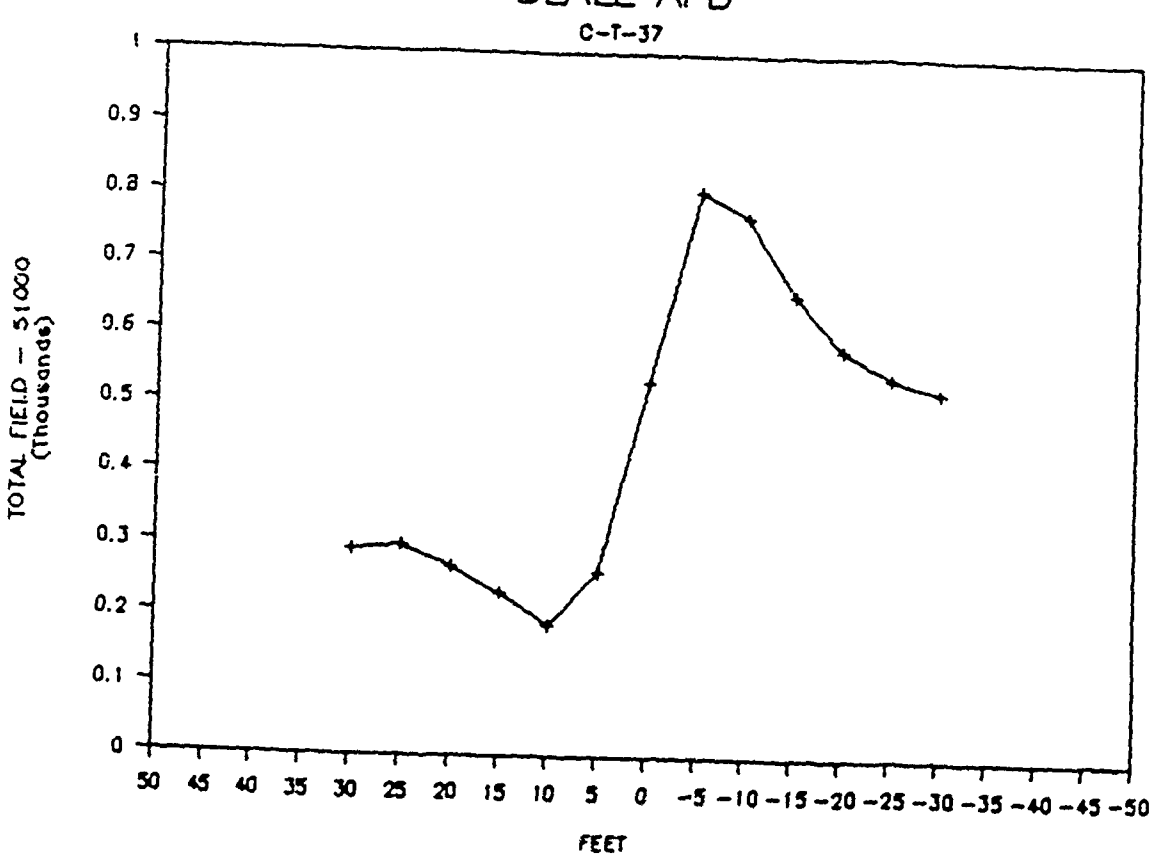
C-T-34

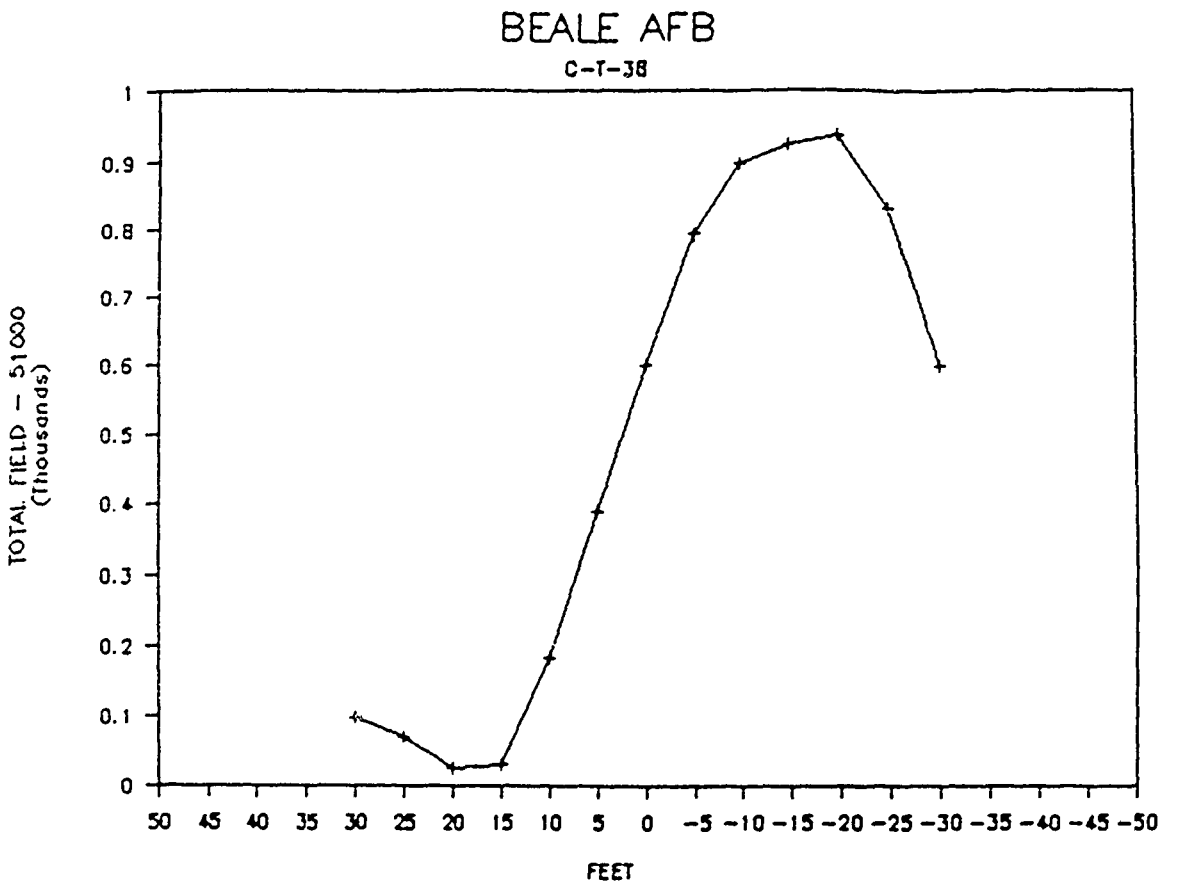


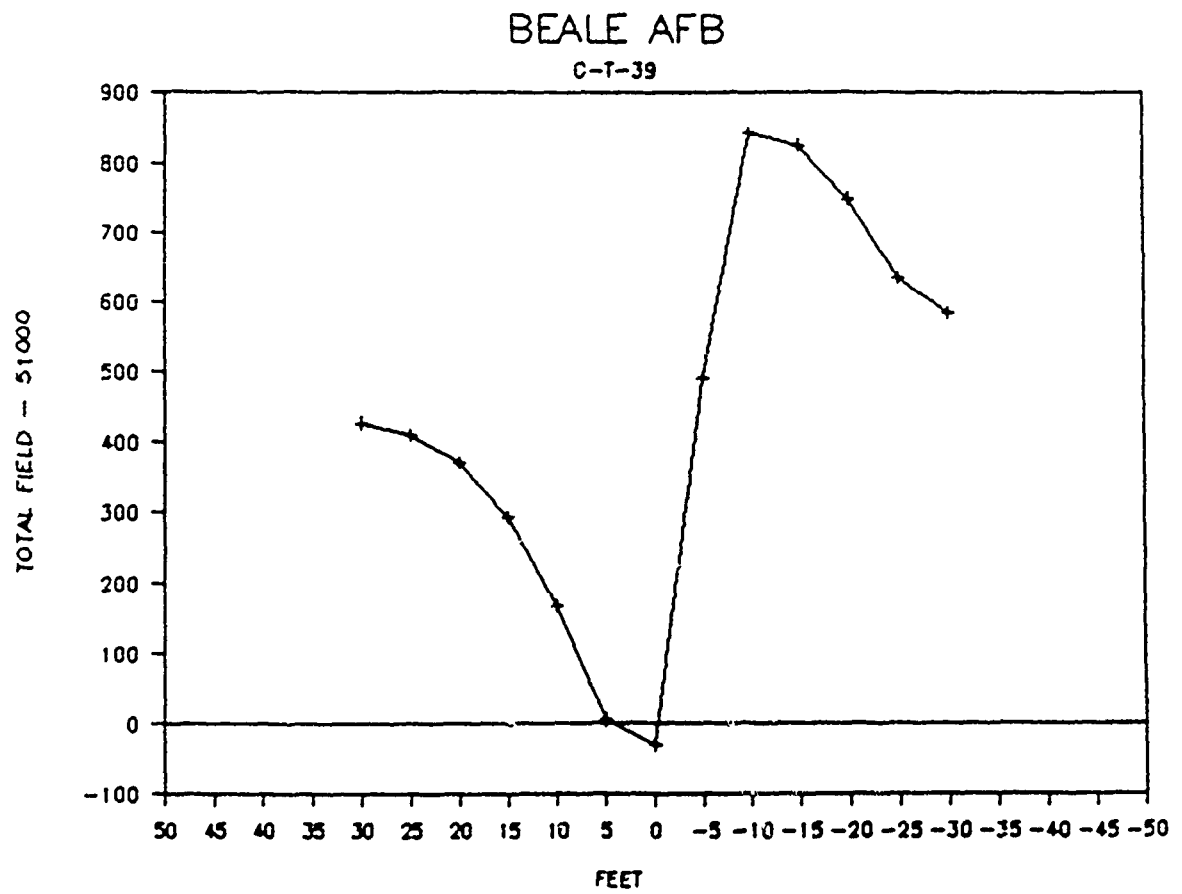

BEALE AFB
C-T-35
TOTAL FIELD - 51000
700
600
500
400
300
200
100
0
-100
-200
-300
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

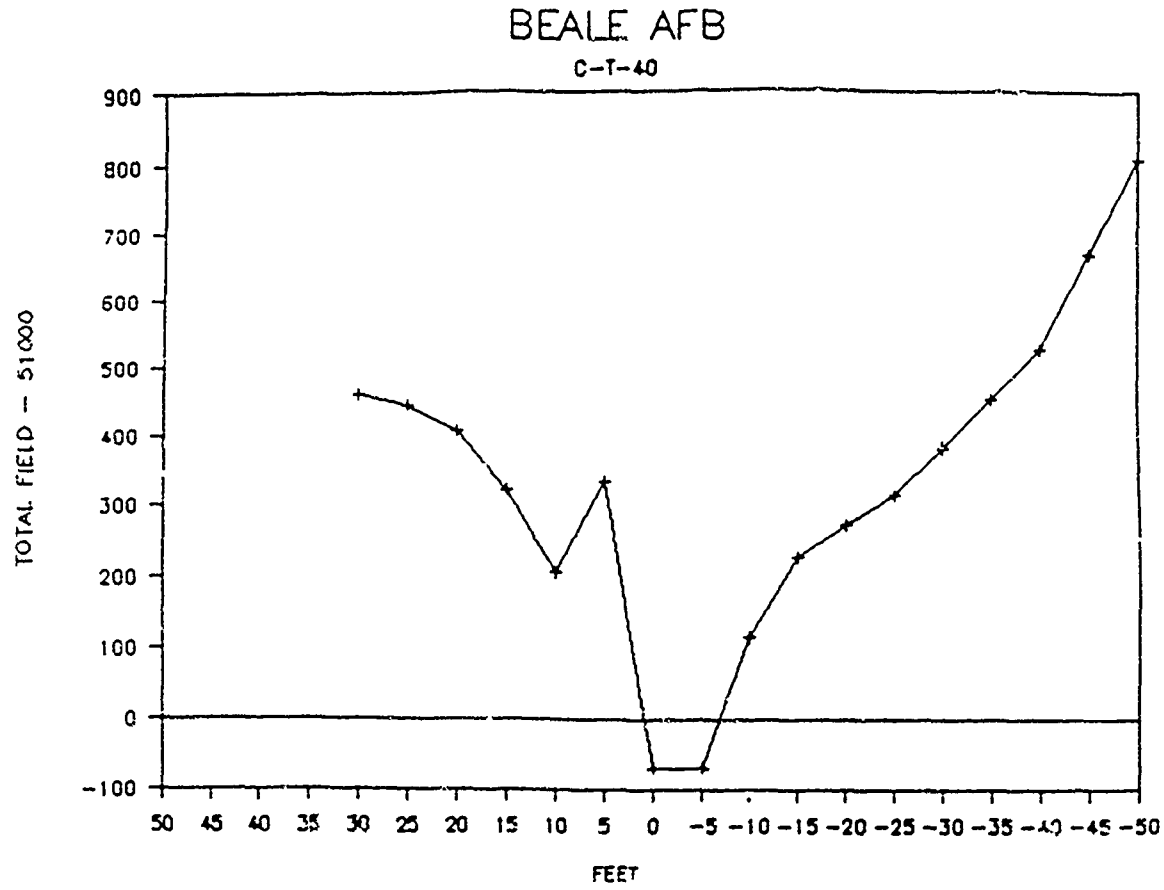

BEALE AFB
C-T-36 Line 0
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

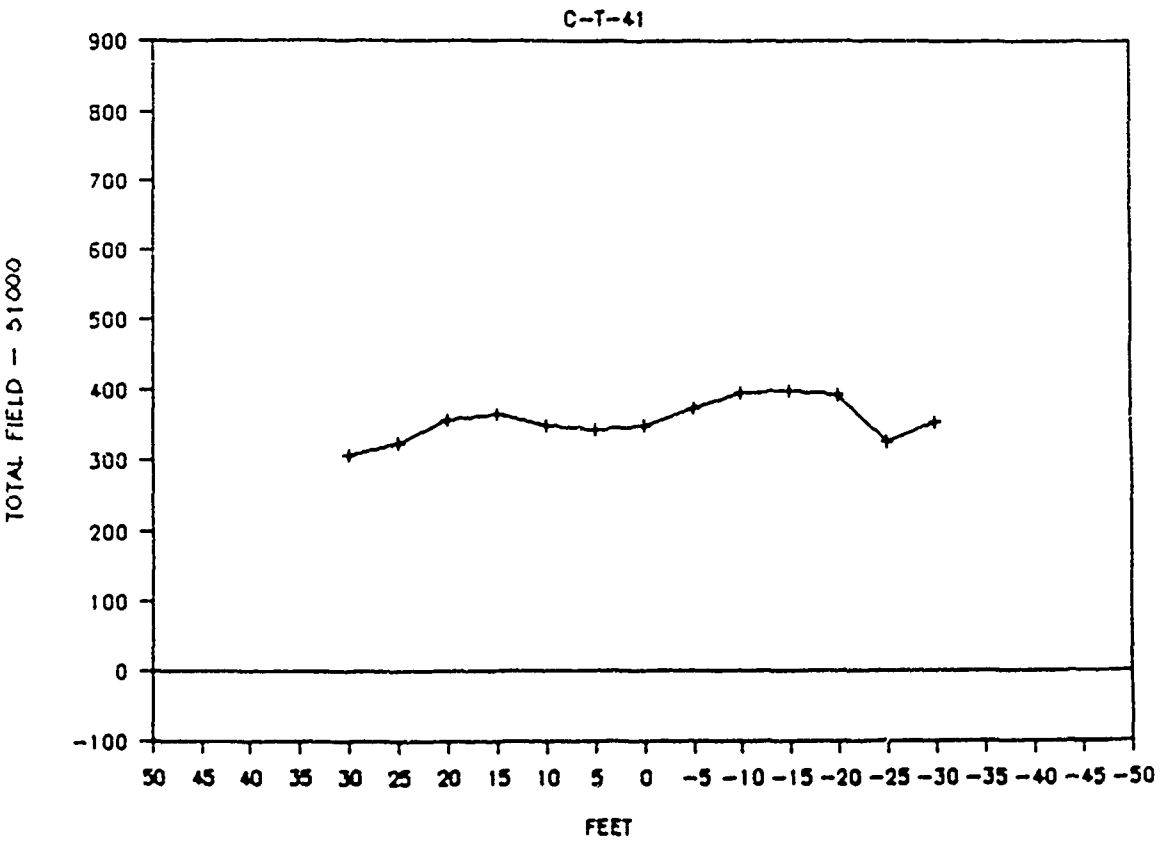

BEALE AFB
C-T-36
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

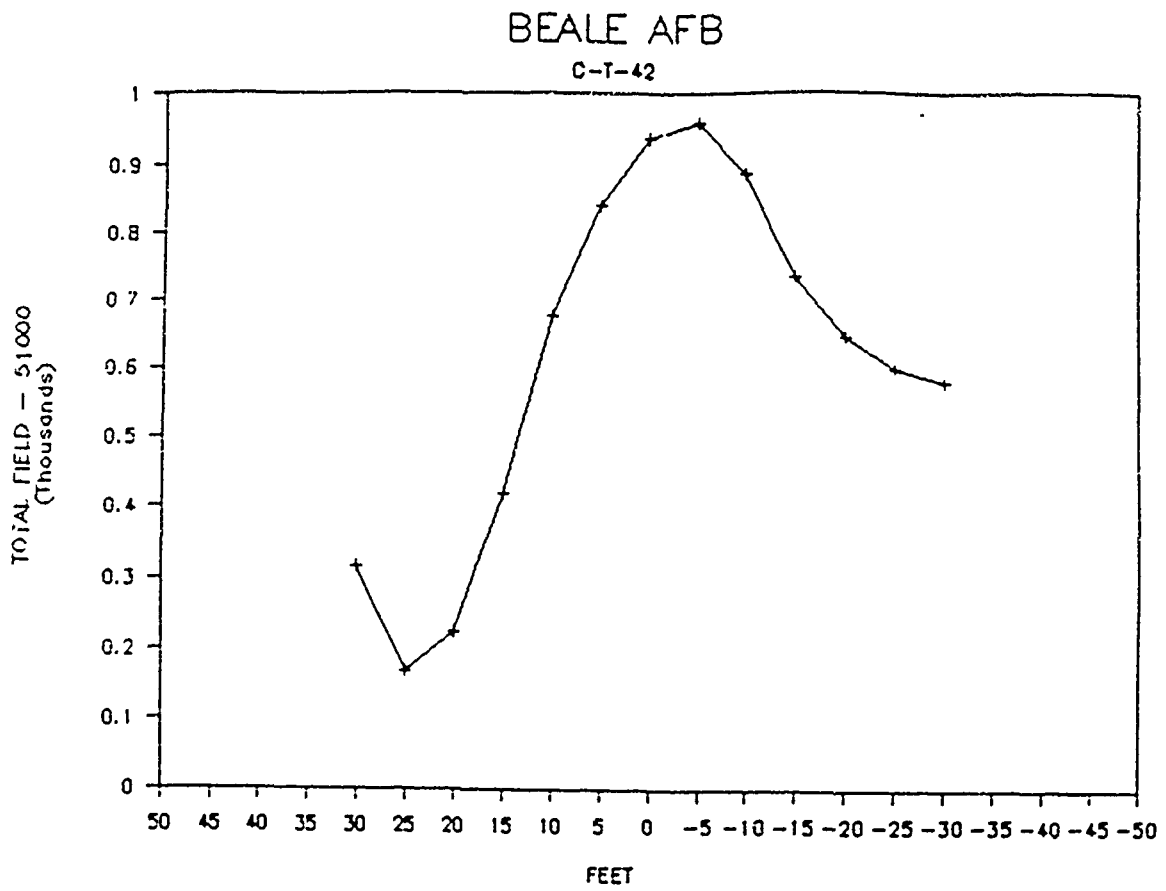

BEALE AFB
C-T-37
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

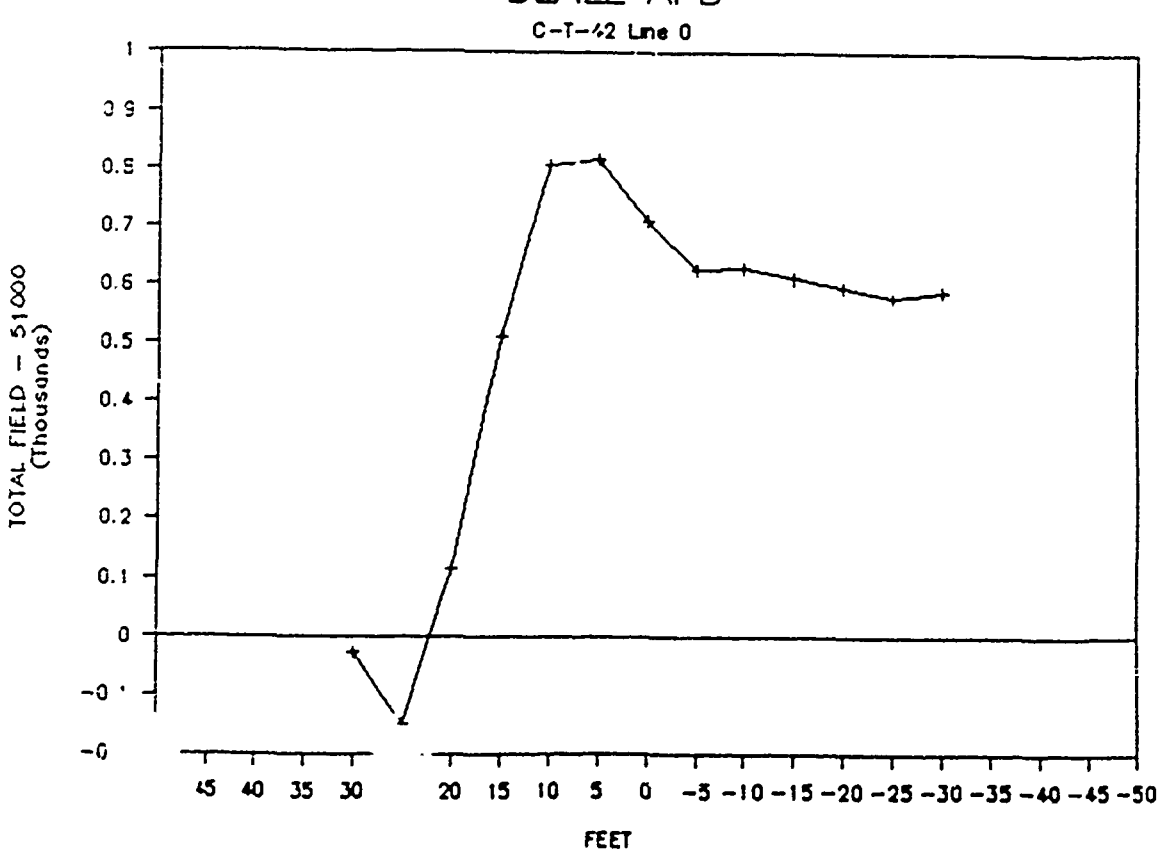

BEALE AFB
C-T-38
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

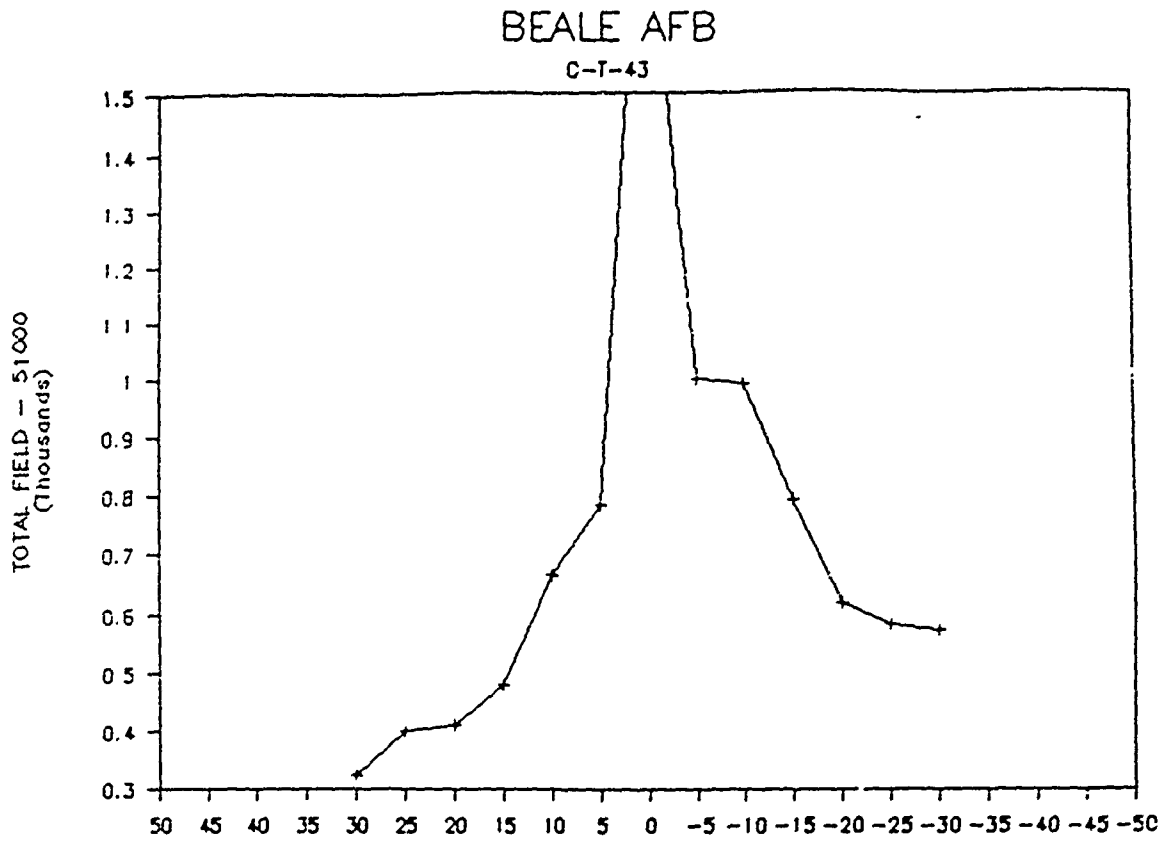

BEALE AFB
C-T-39
TOTAL FIELD - 51000
900
800
700
600
500
400
300
200
100
0
-100
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

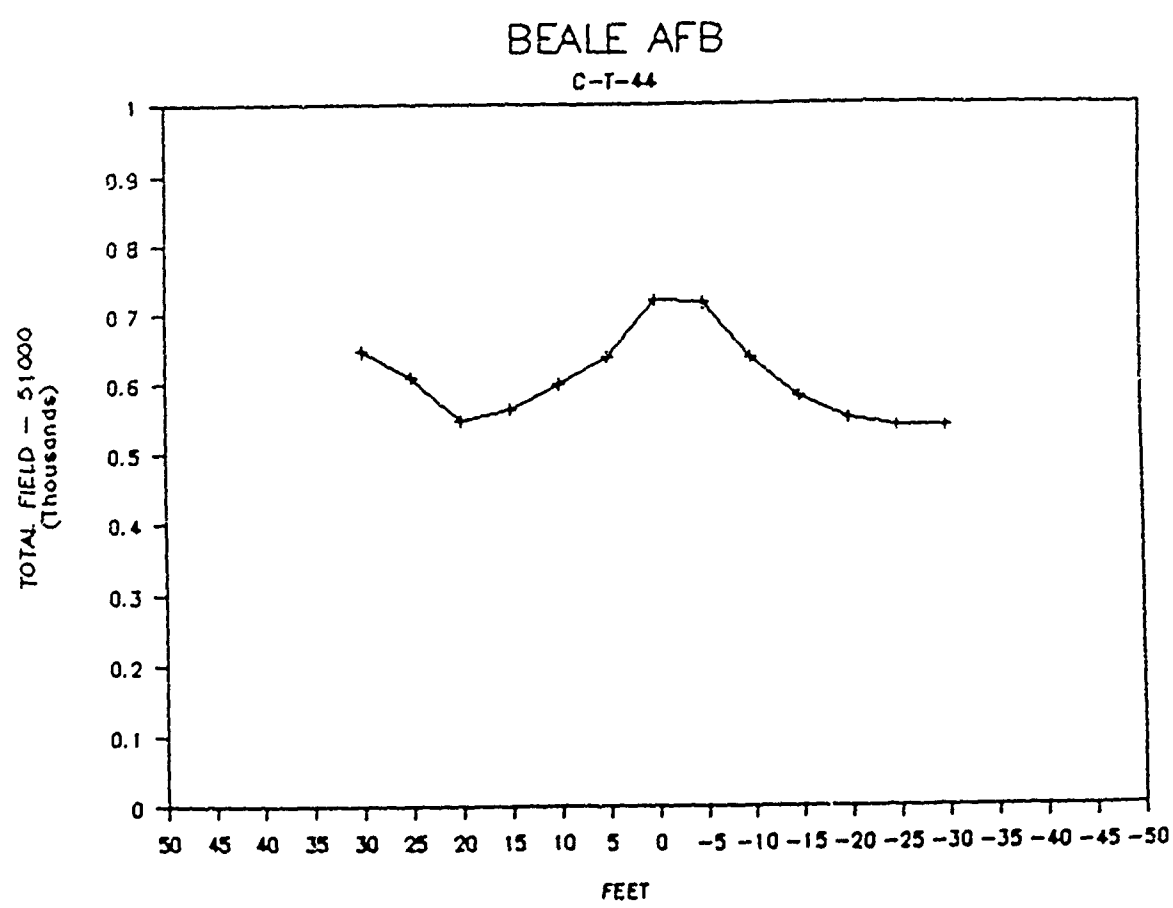

BEALE AFB
C-T-40
TOTAL FIELD - 51000
900
800
700
600
500
400
300
200
100
0
-100
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

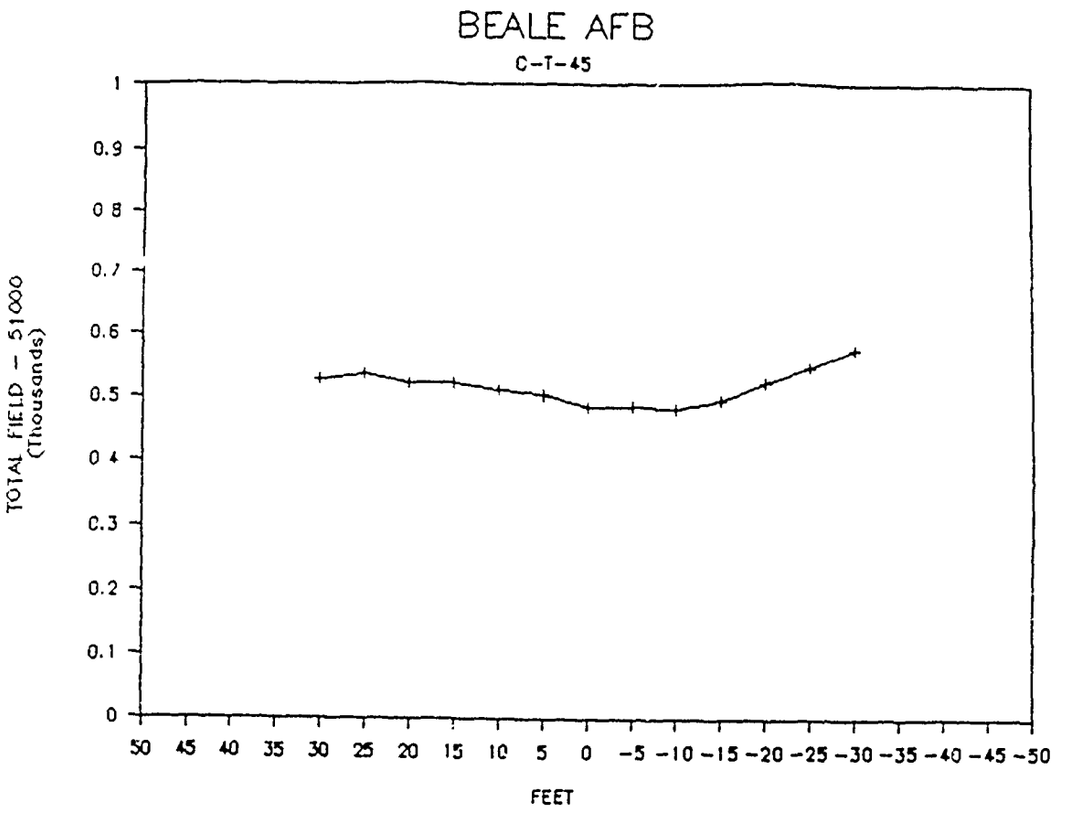

BEALE AFB
C-T-41
TOTAL FIELD - 51000
900
800
700
600
500
400
300
200
100
0
-100
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

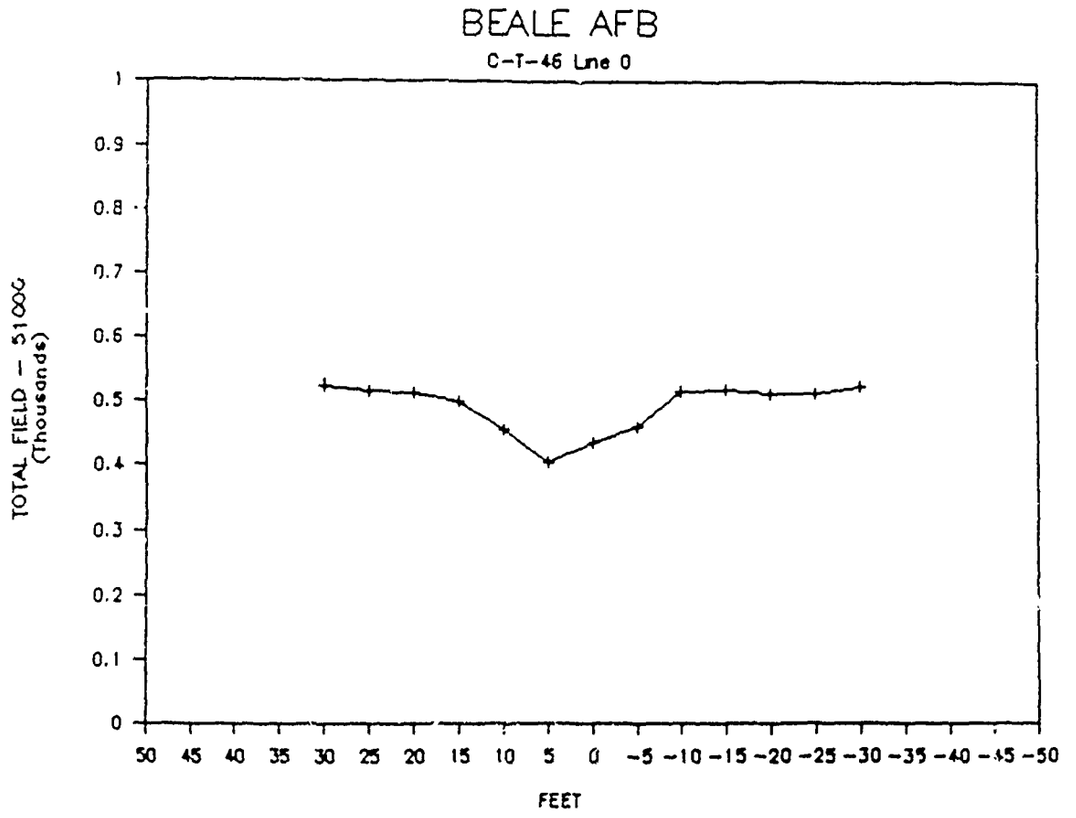

BEALE AFB
C-T-42
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-42 Line 0
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
45 40 35 30 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-43
TOTAL FIELD - 51000 (Thousands)
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

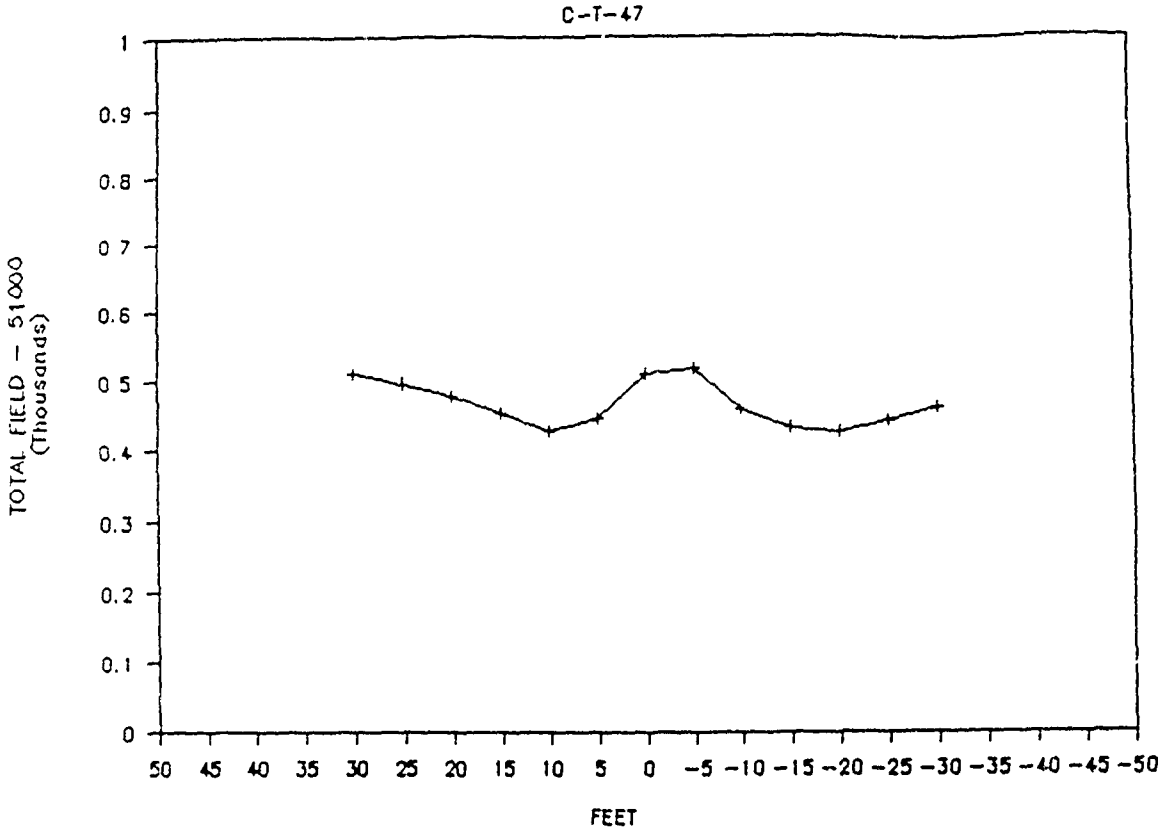

BEALE AFB
C-T-44
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-45
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-46 Line 0
TOTAL FIELD - 51000 (Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

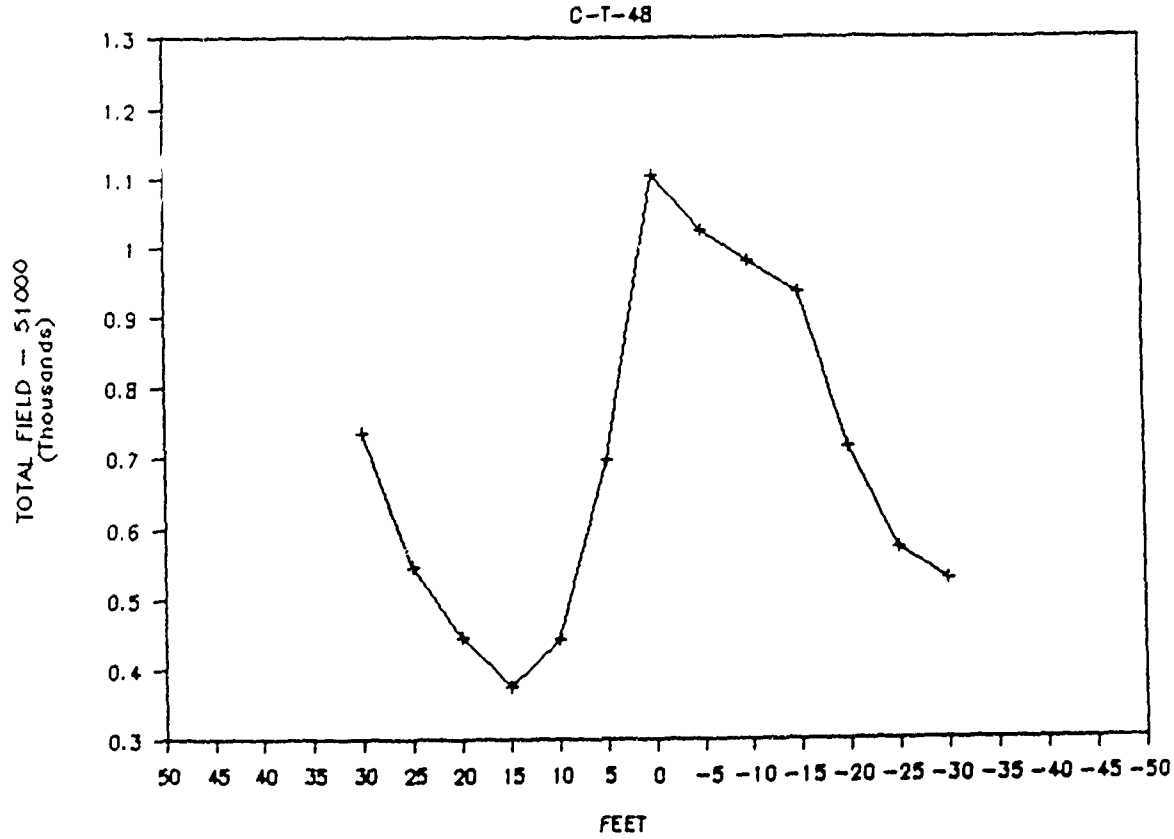
BEALE AFB

C-T-47



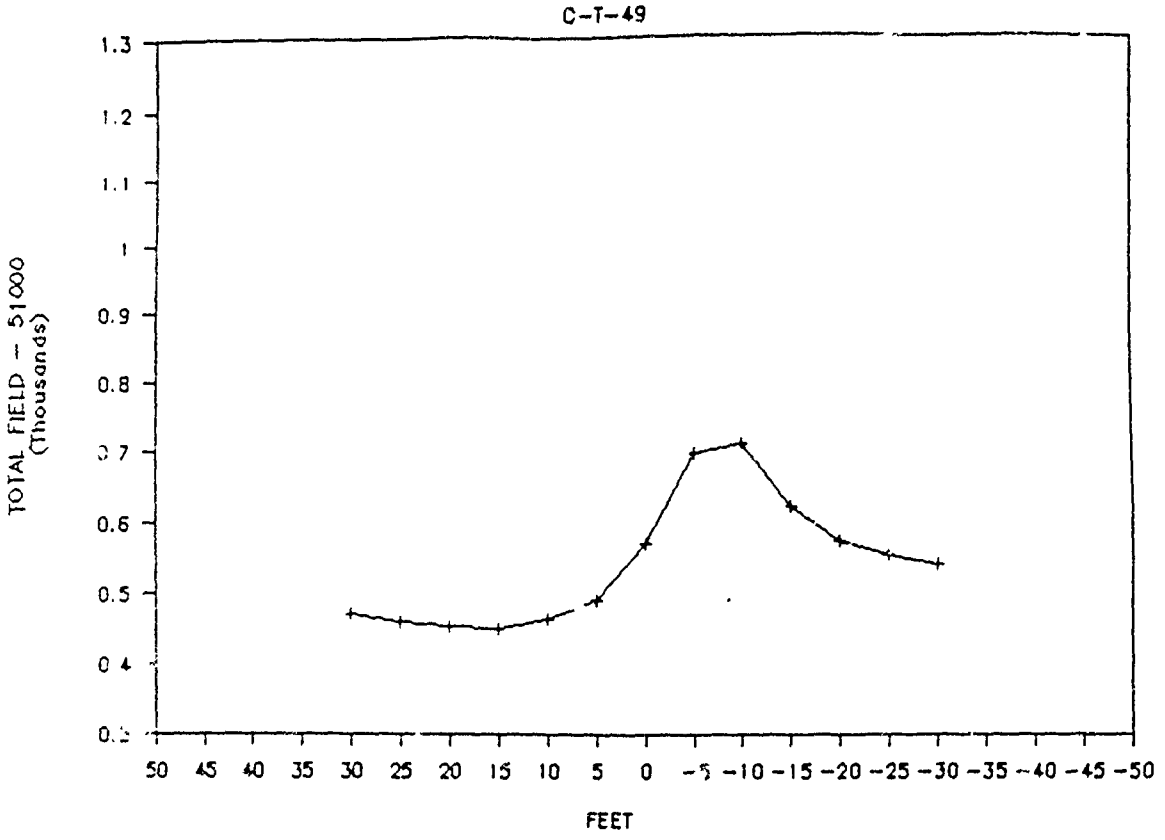
BEALE AFB

C-T-48



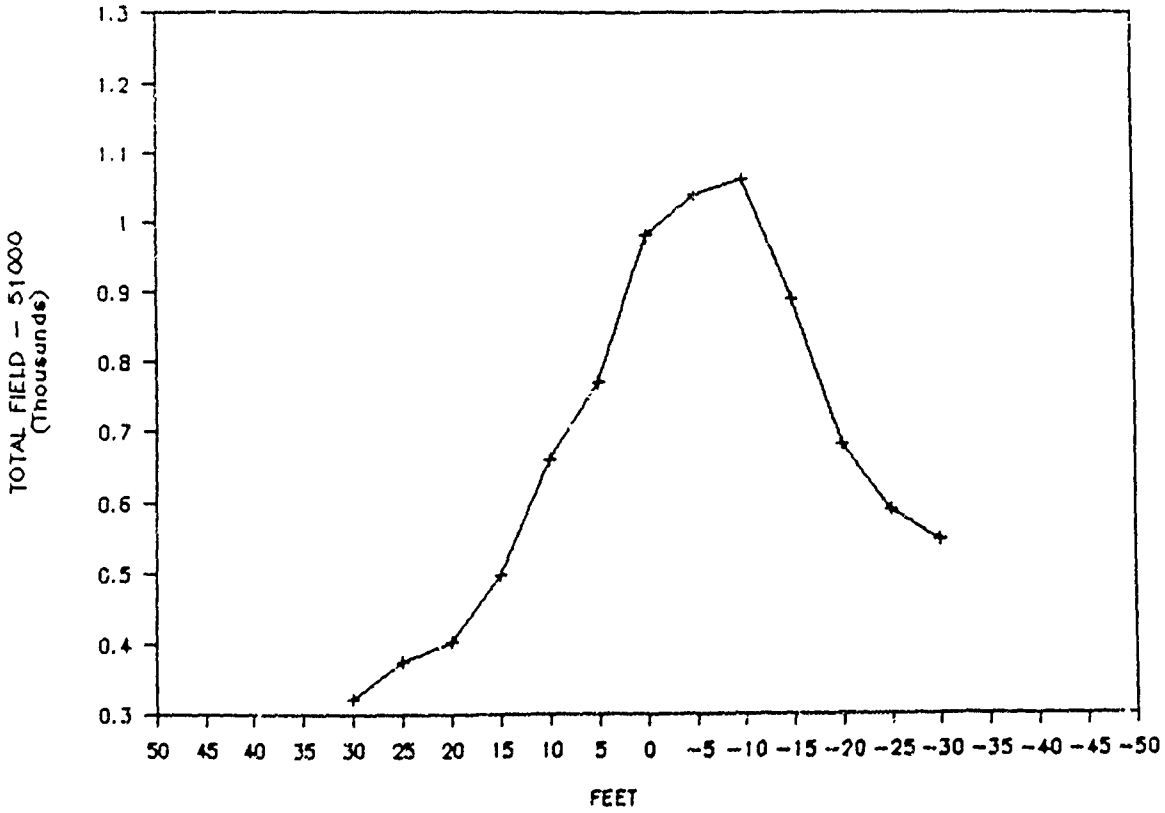
BEALE AFB

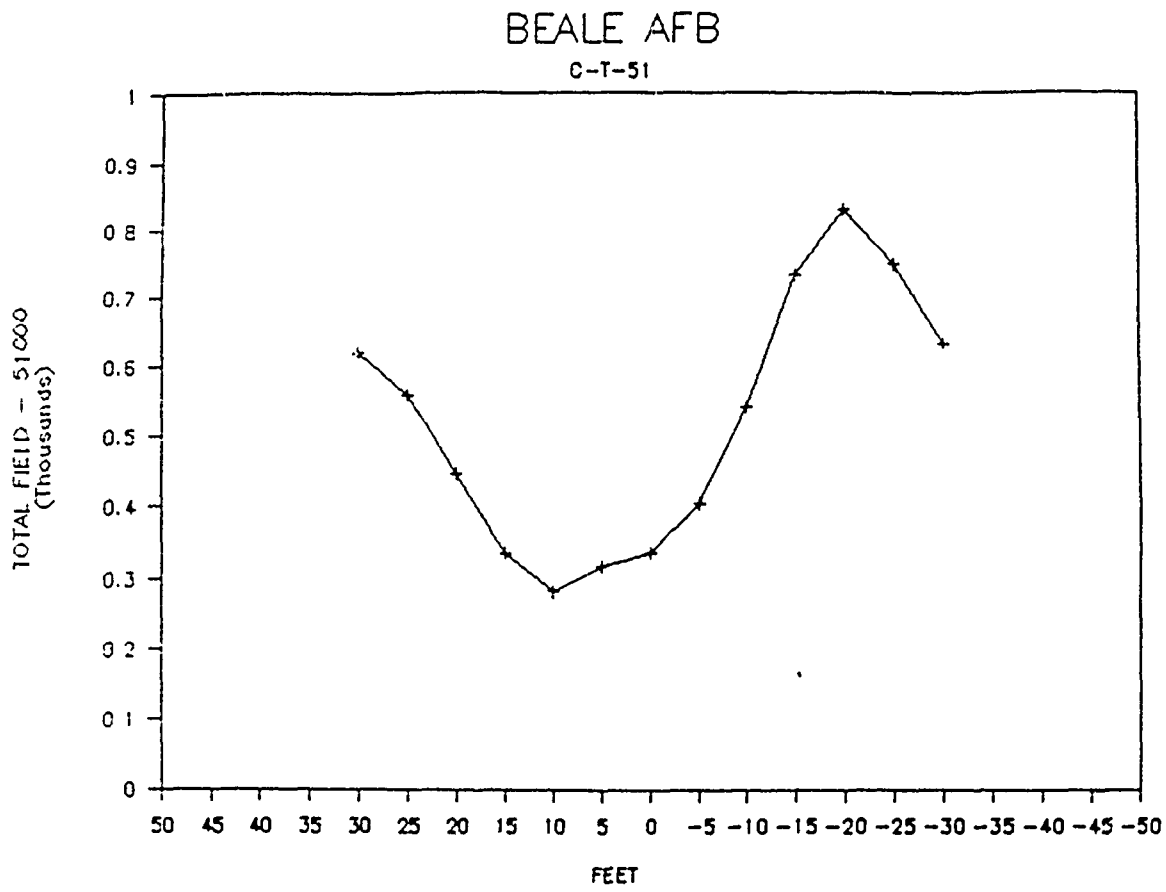
C-T-49



BEALE AFB

C-T-50

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C-T-51
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(Thousands)
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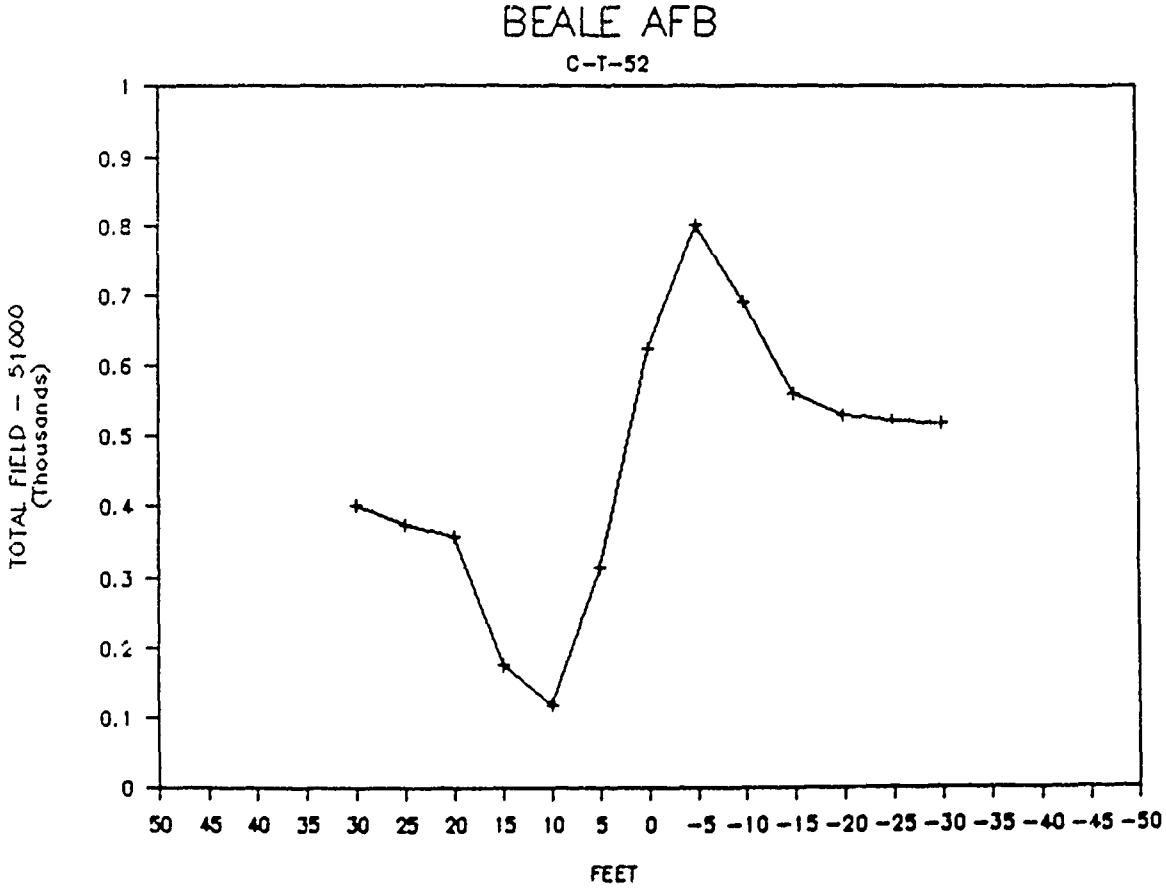
FEET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(Thousands)
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0.2
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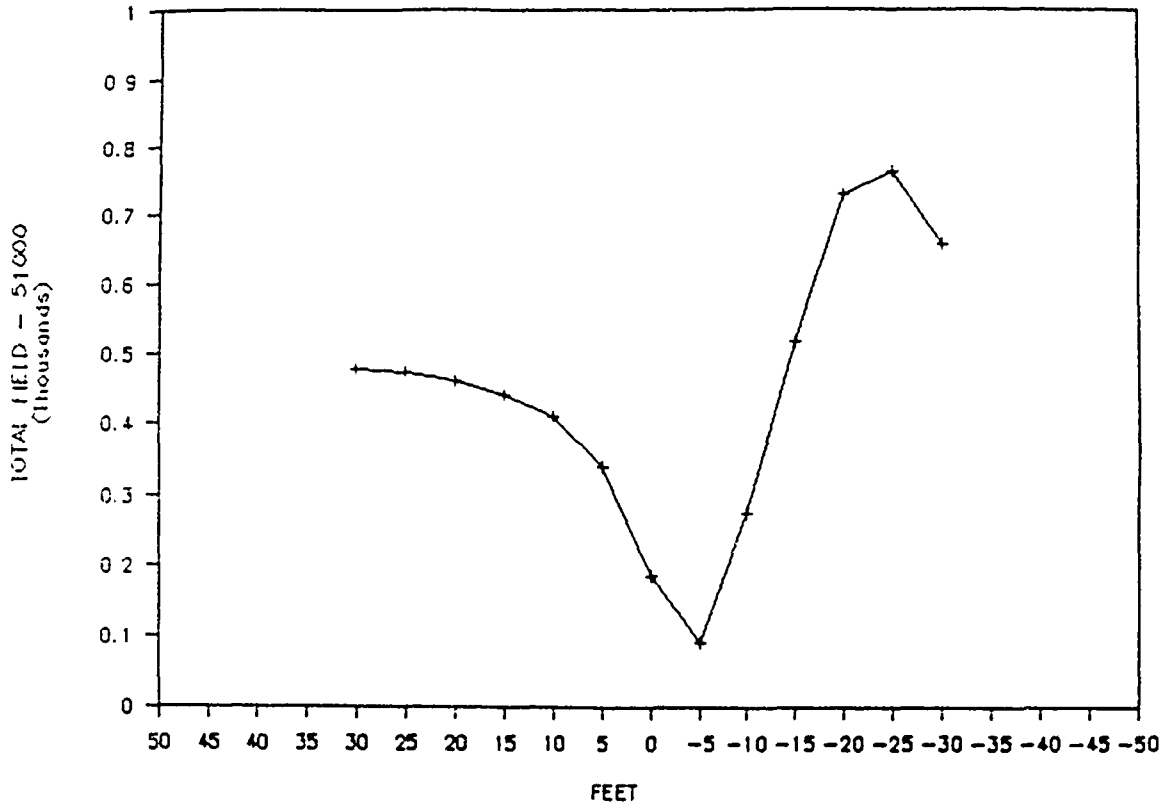
FEET

BEALE AFB

C-T-53



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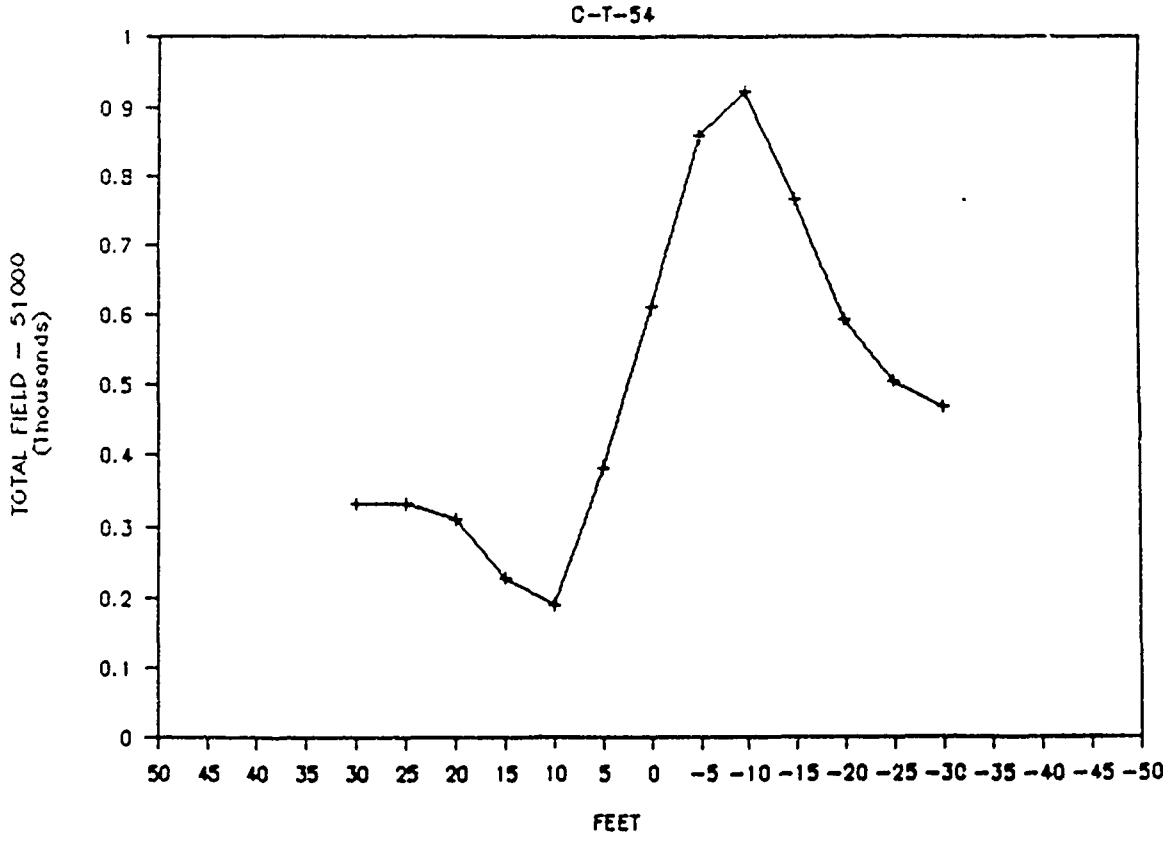
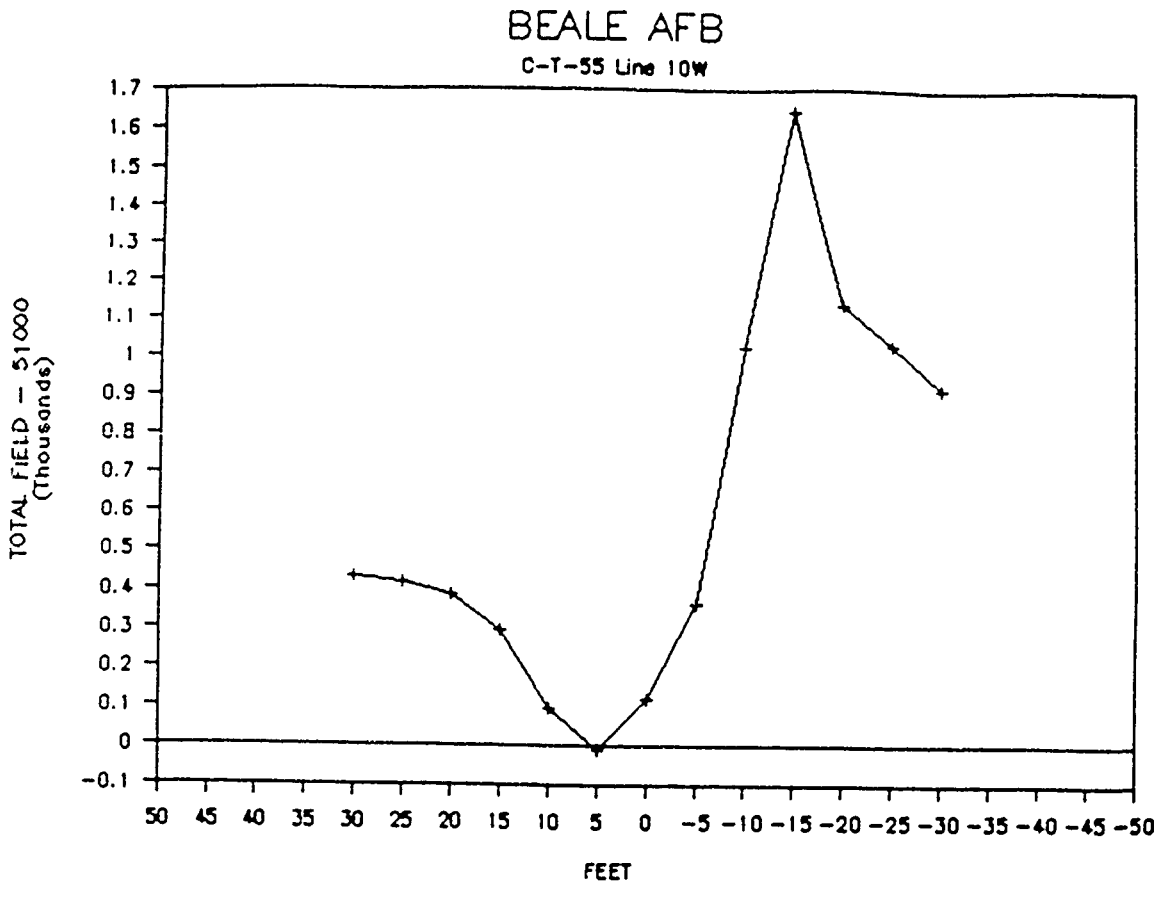
C-T-54

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C-T-55 Line 10W
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1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
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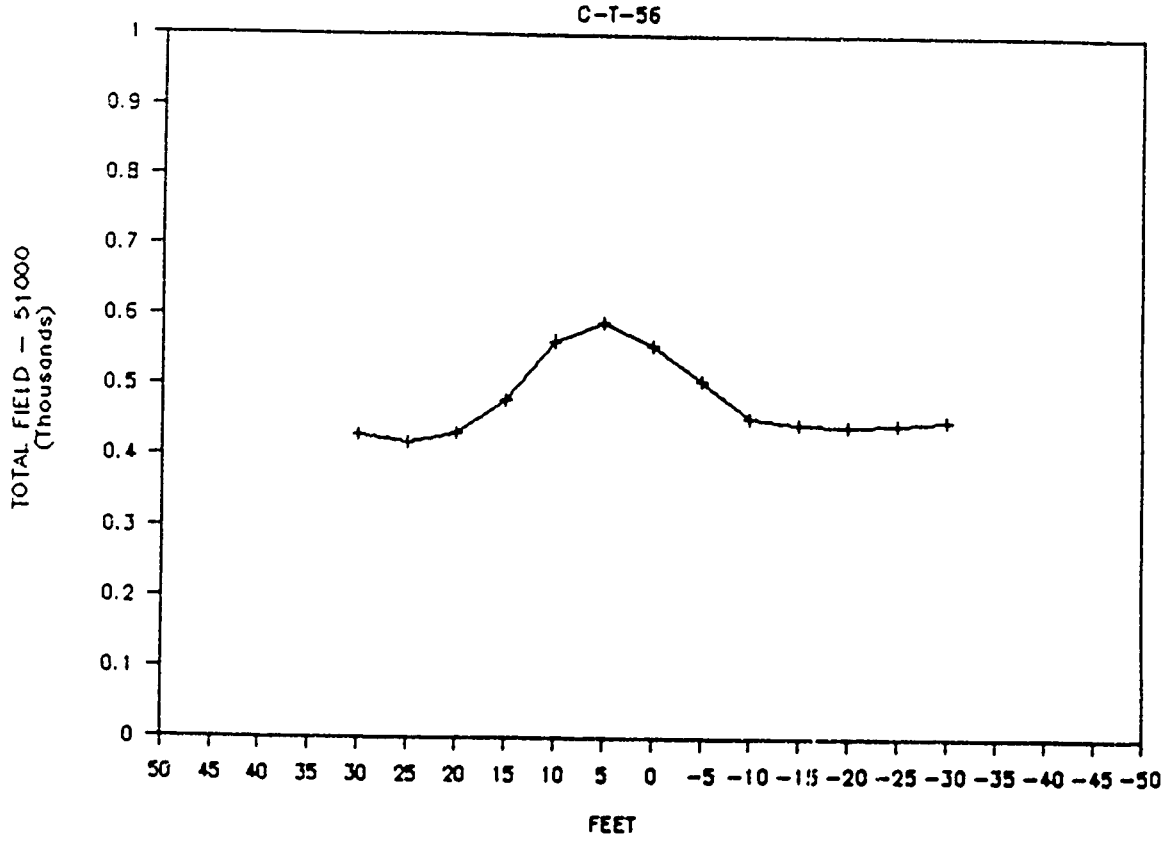
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0.5
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0.2
0.1
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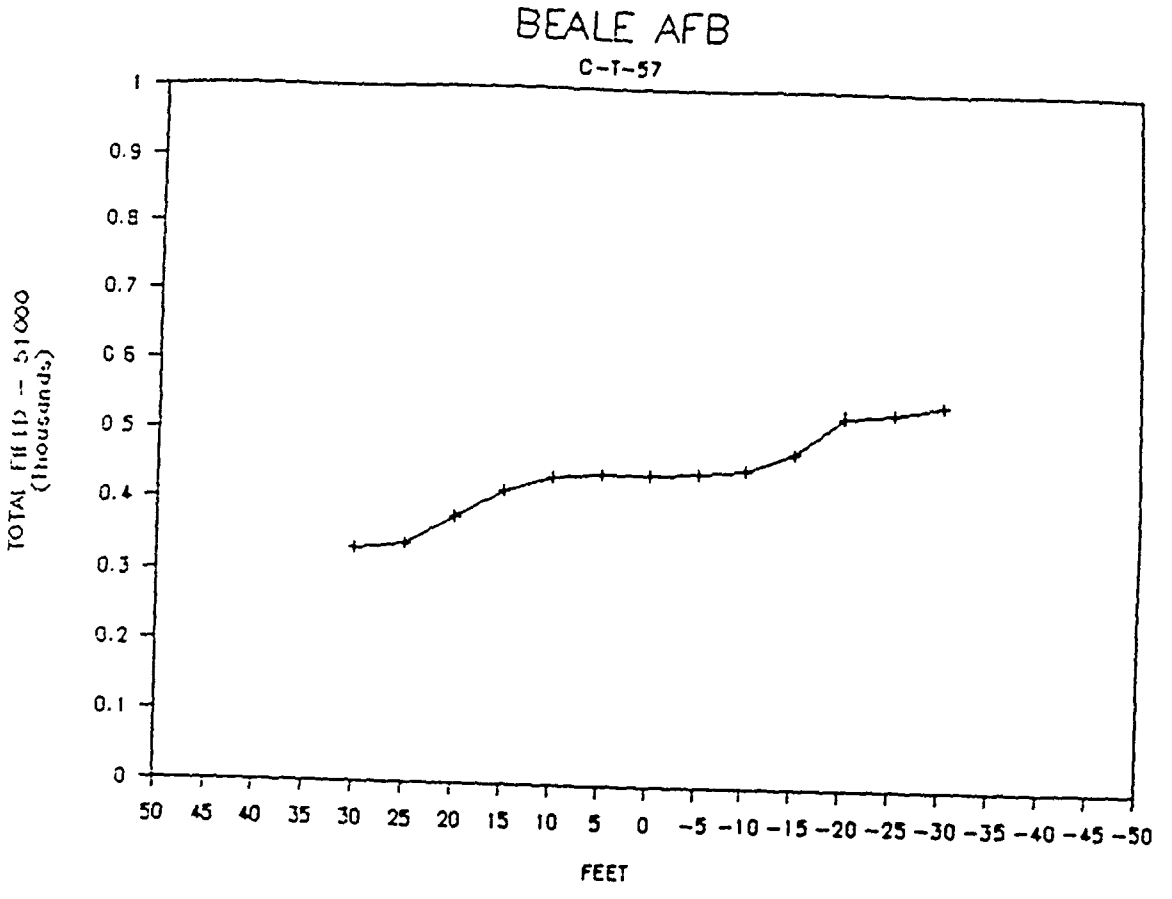
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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(Thousands)
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0.7
0.6
0.5
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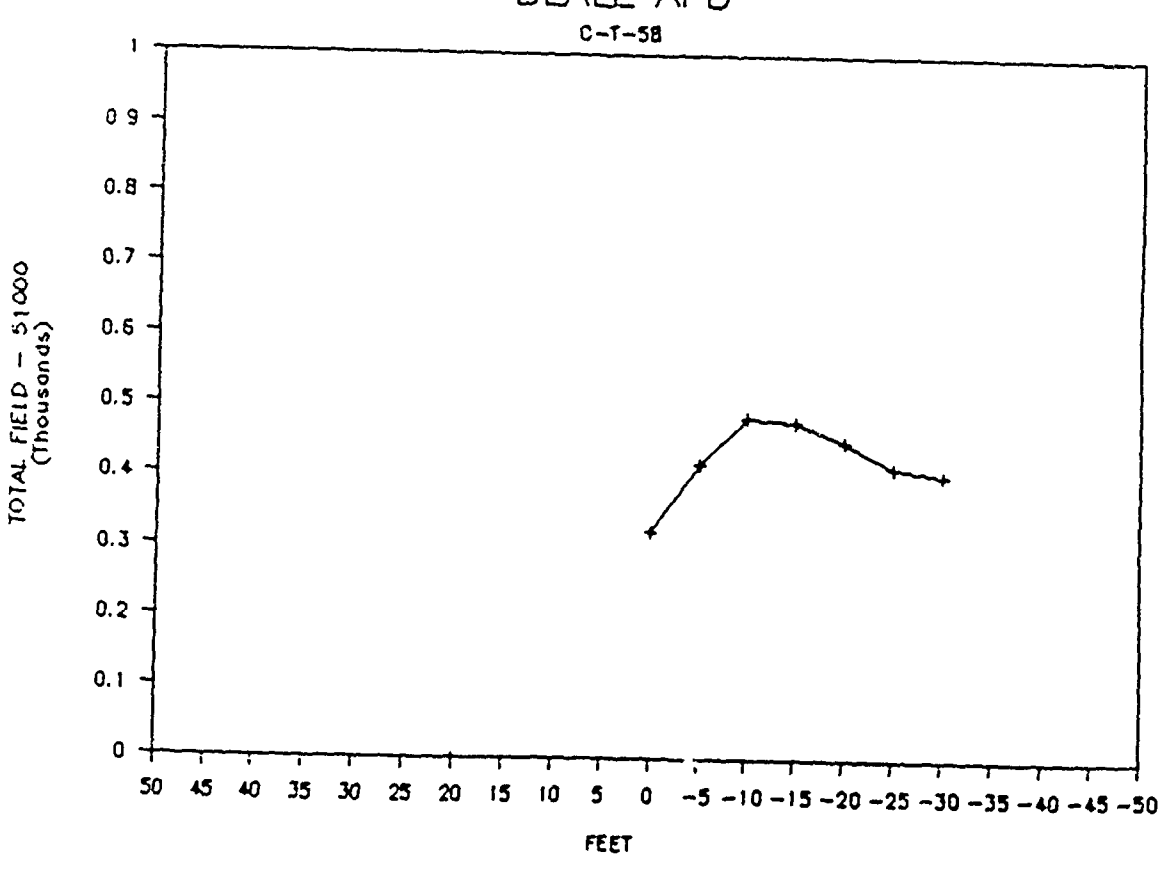
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-58
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(Thousands)
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0.8
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0.6
0.5
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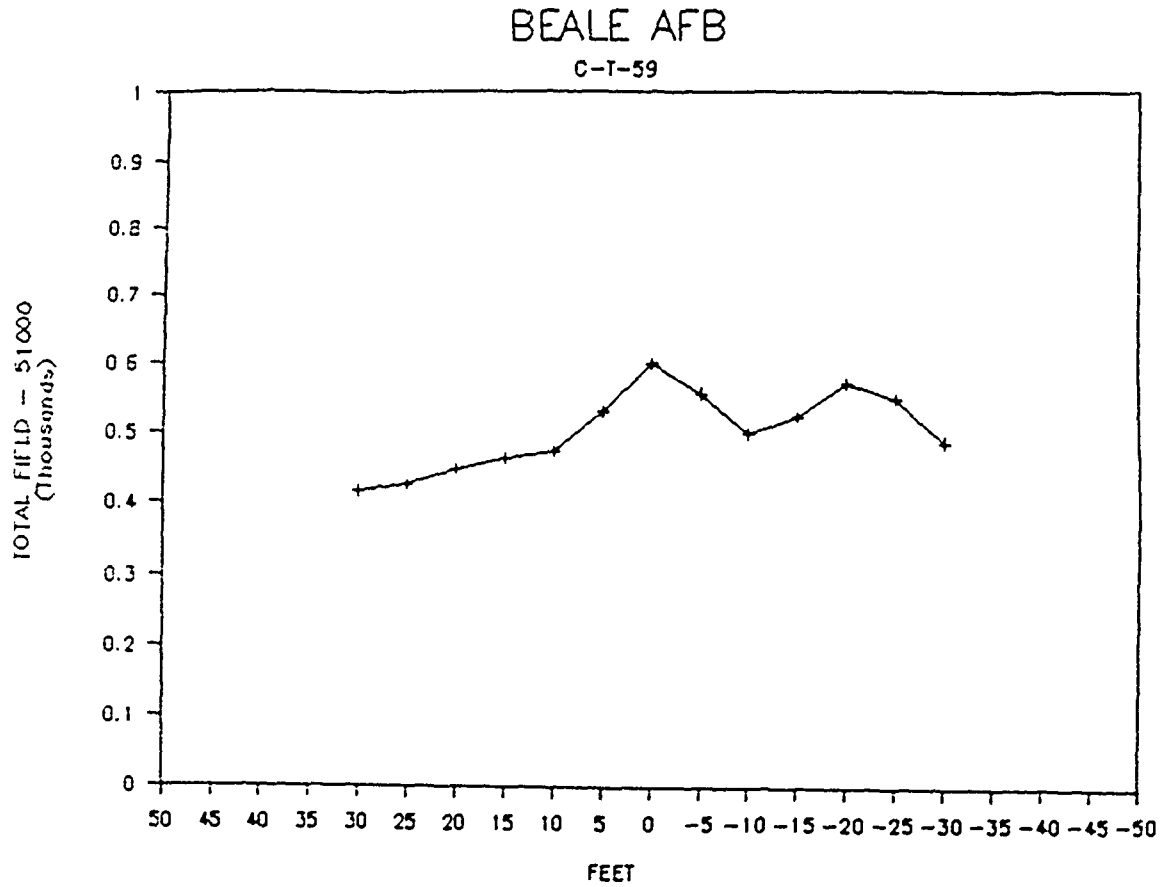
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-59
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0.6
0.5
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0.2
0.1
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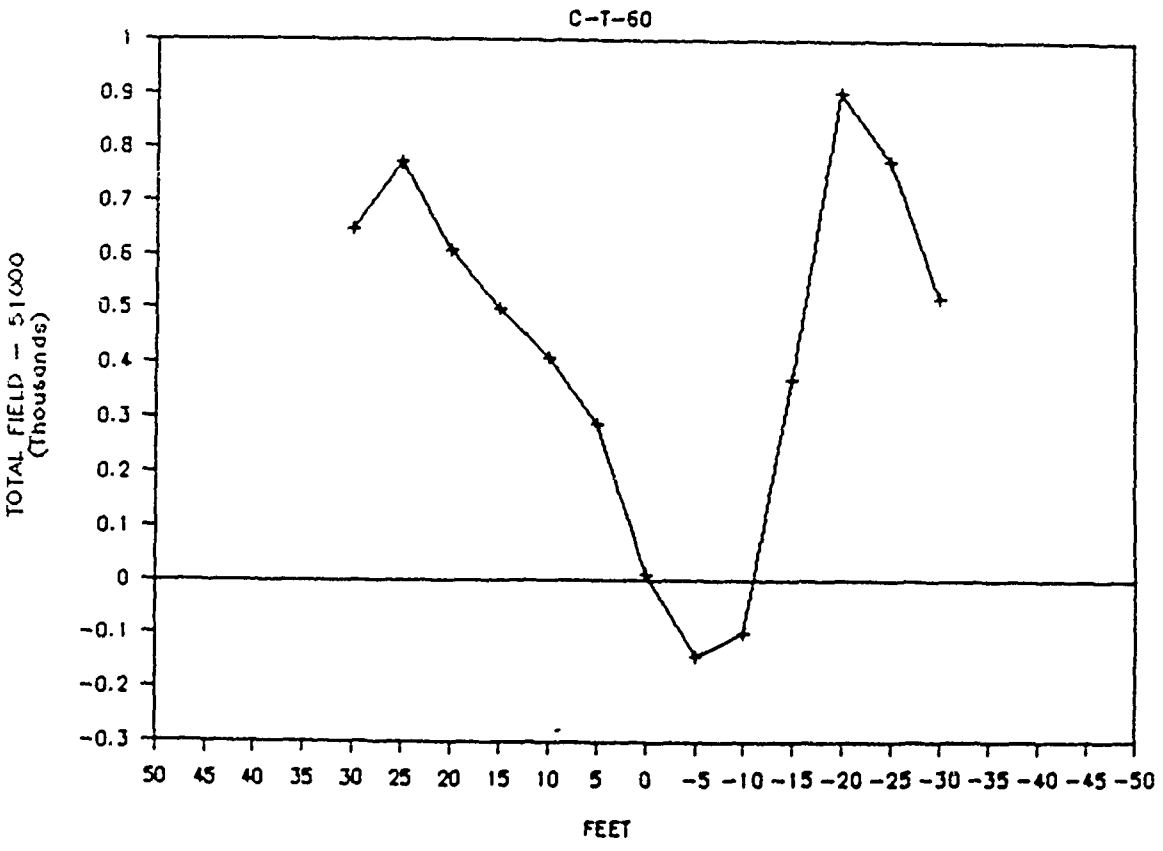
FEET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0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
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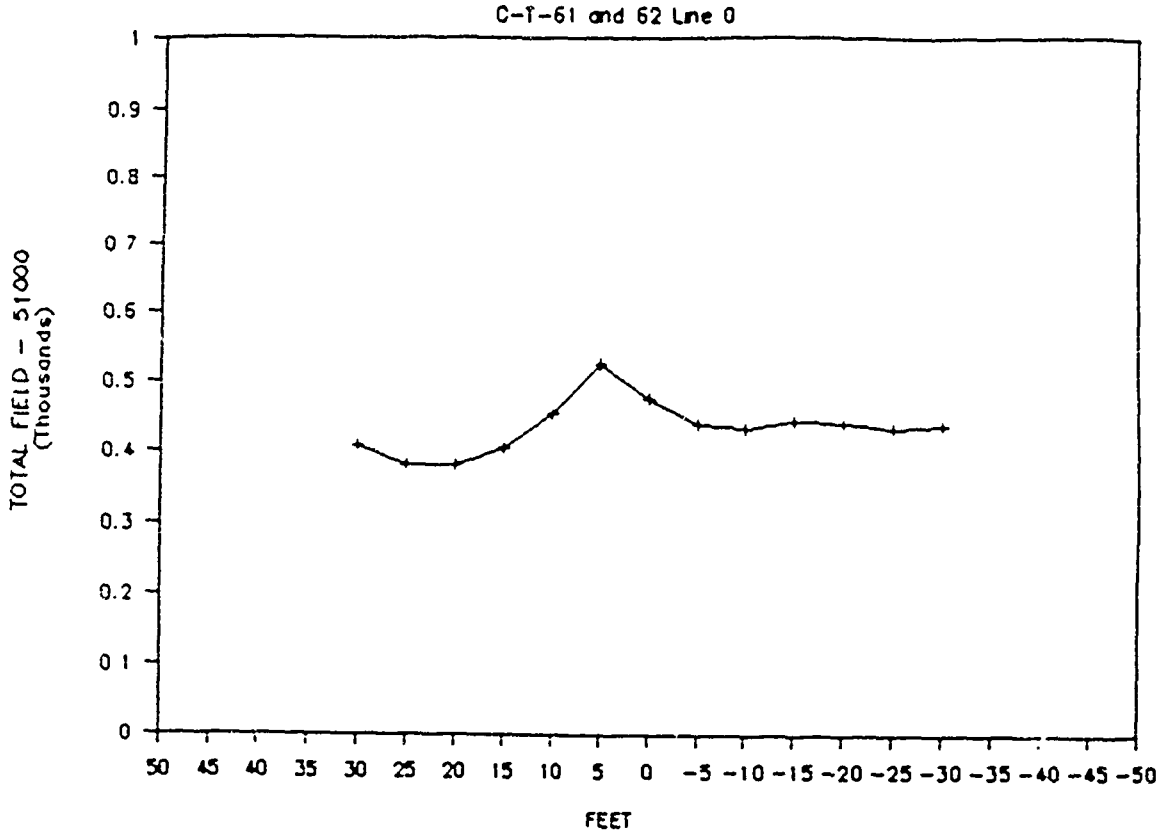
FEET

BEALE AFB

C-T-61 and 62 Line 0



BEALE AFB

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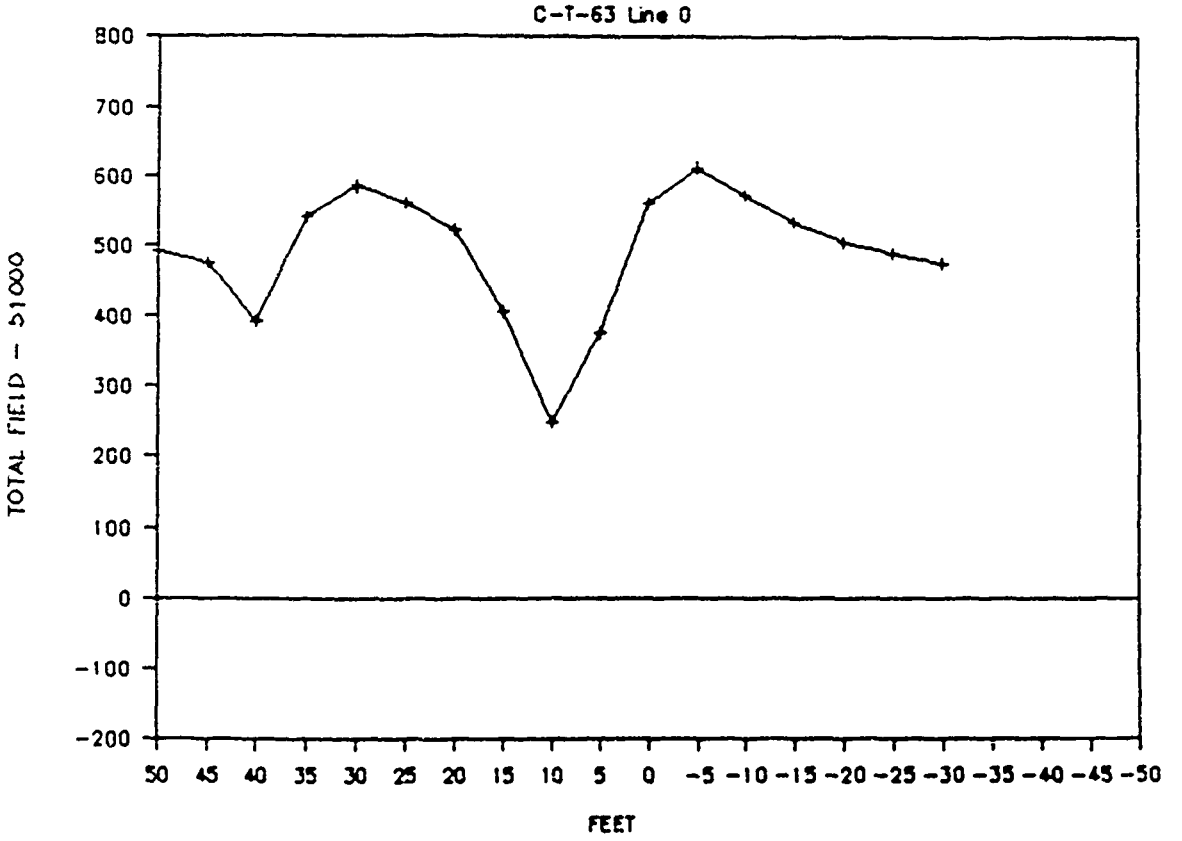

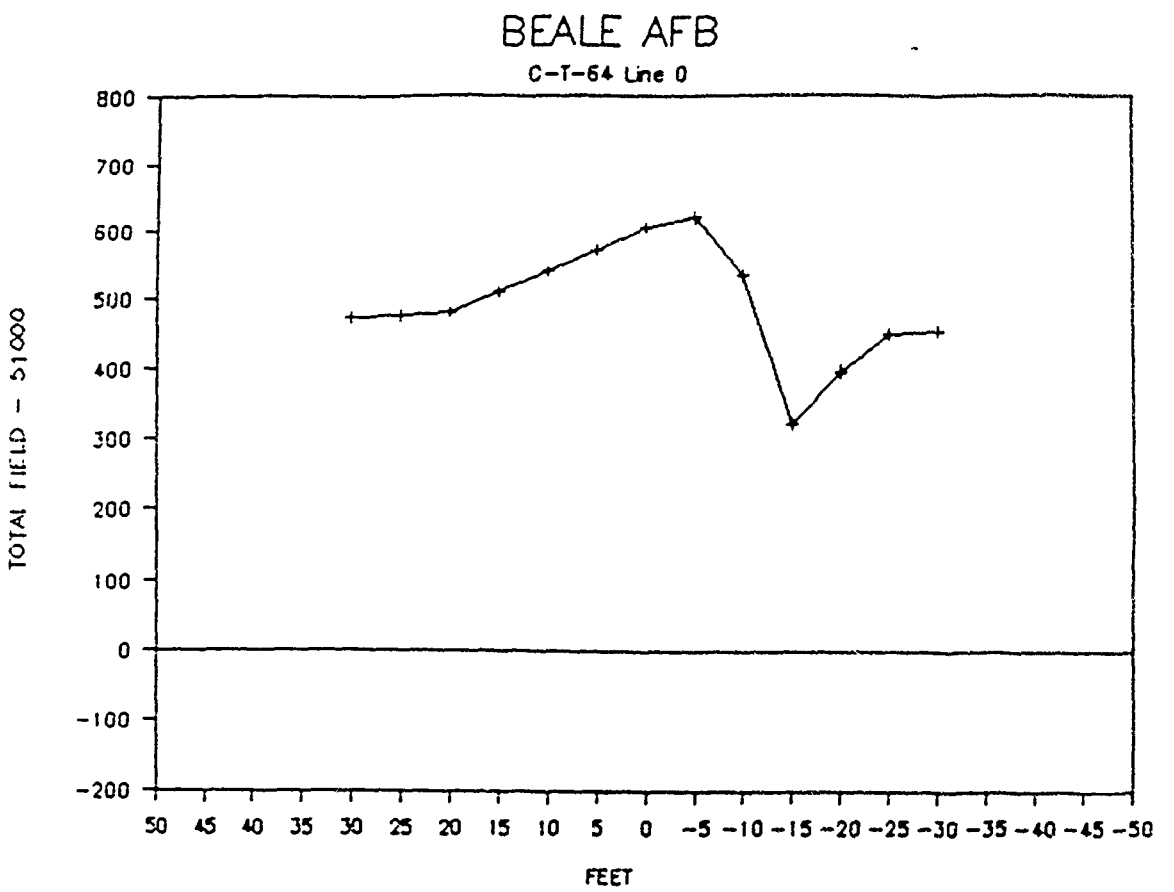
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C-T-64 Line 0
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700
600
500
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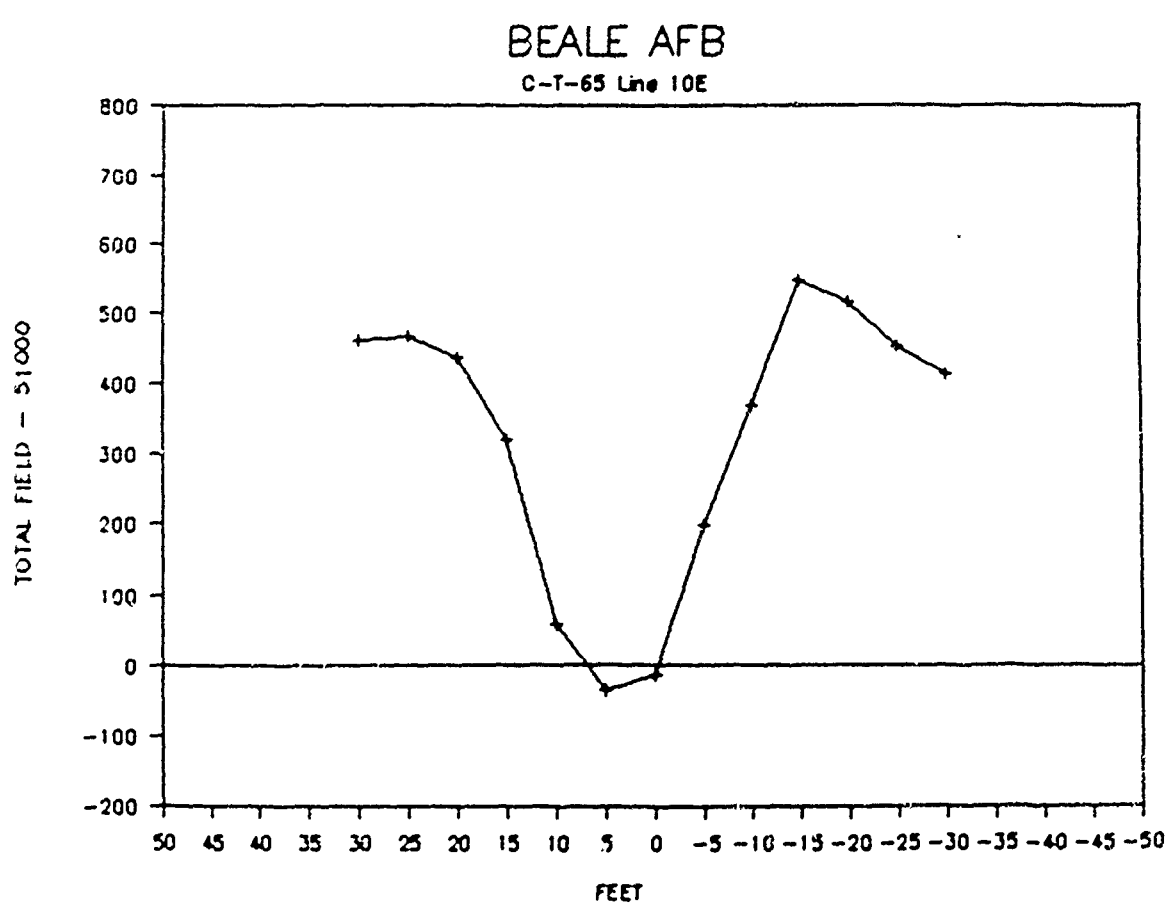
100
0
-100
-200
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-65 Line 10E
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700
600
500
400
300
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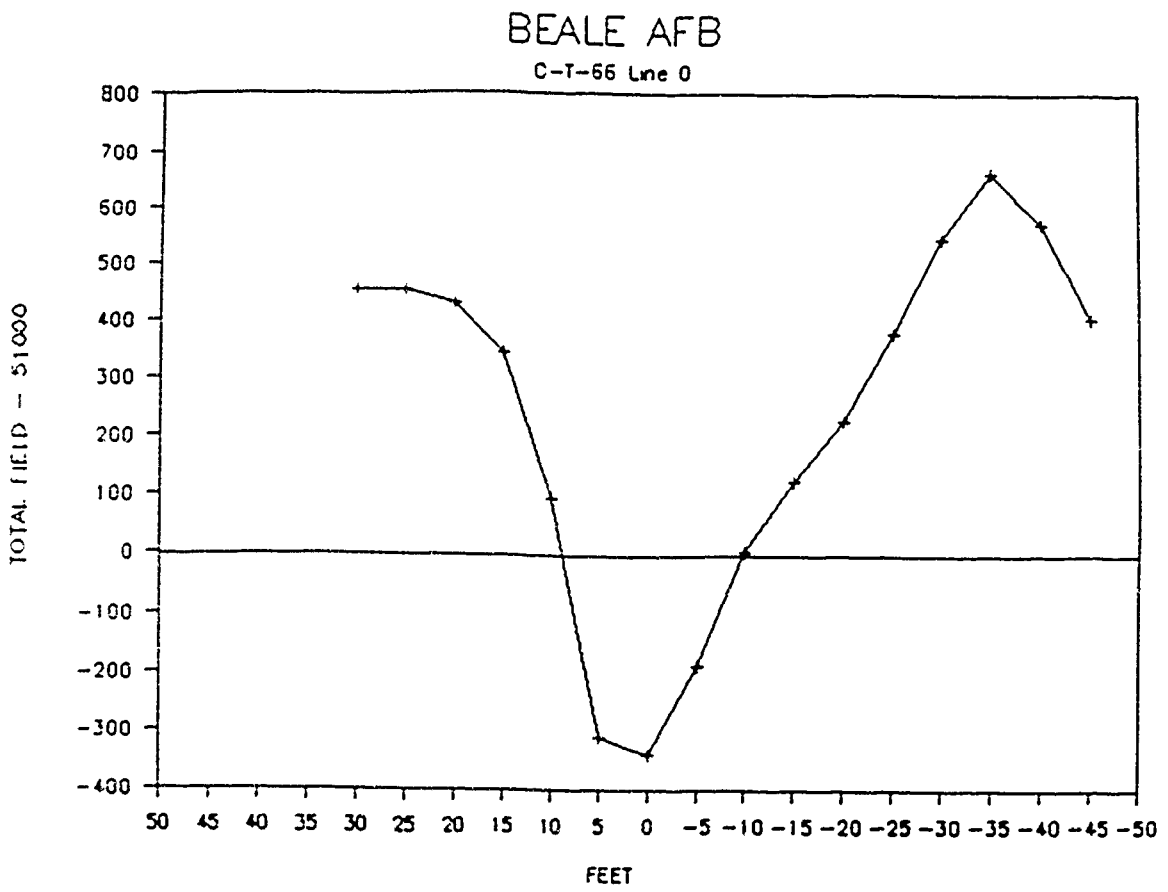
100
0
-100
-200
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-66 Line 0
TOTAL FIELD - 51000
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700
600
500
400
300
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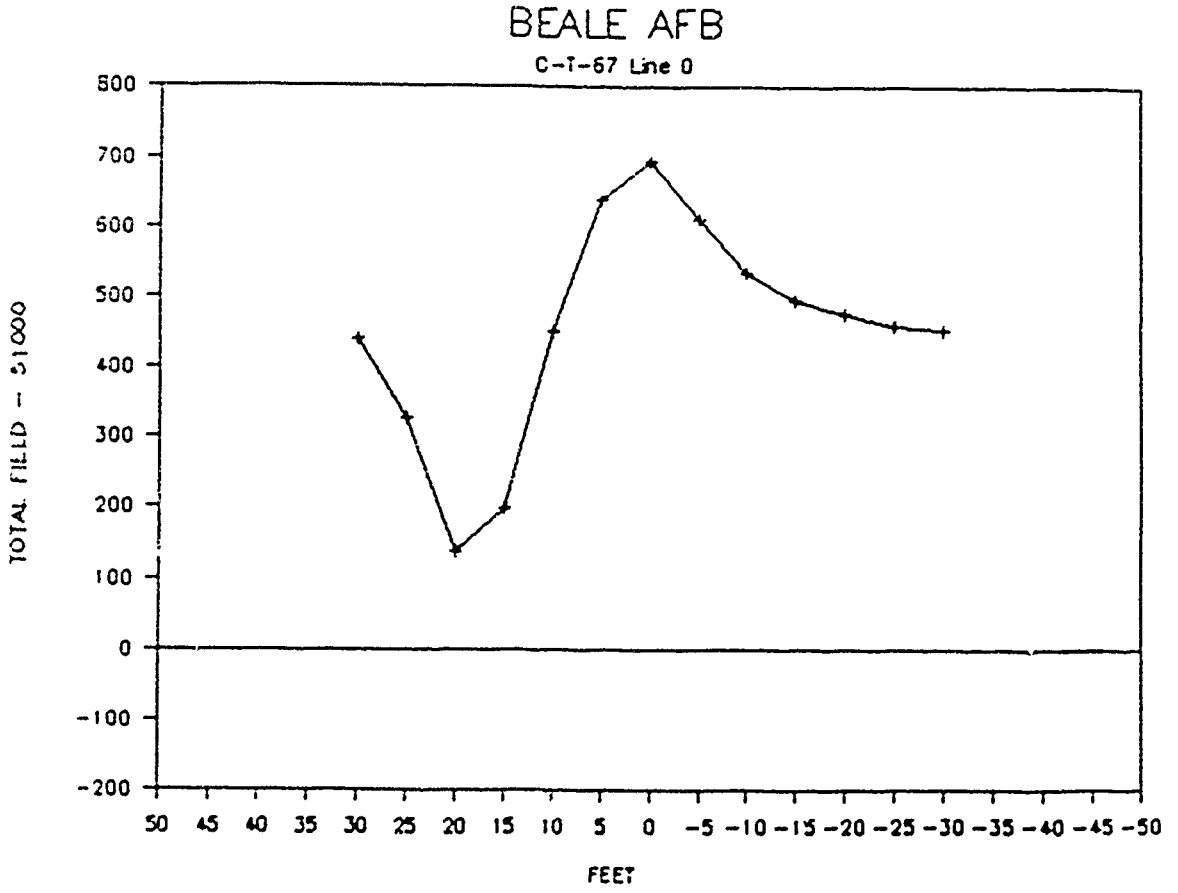
-200
-300
-400
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-67 Line 0
TOTAL FIELD - 51000
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700
600
500
400
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200
100
0
-100
-200
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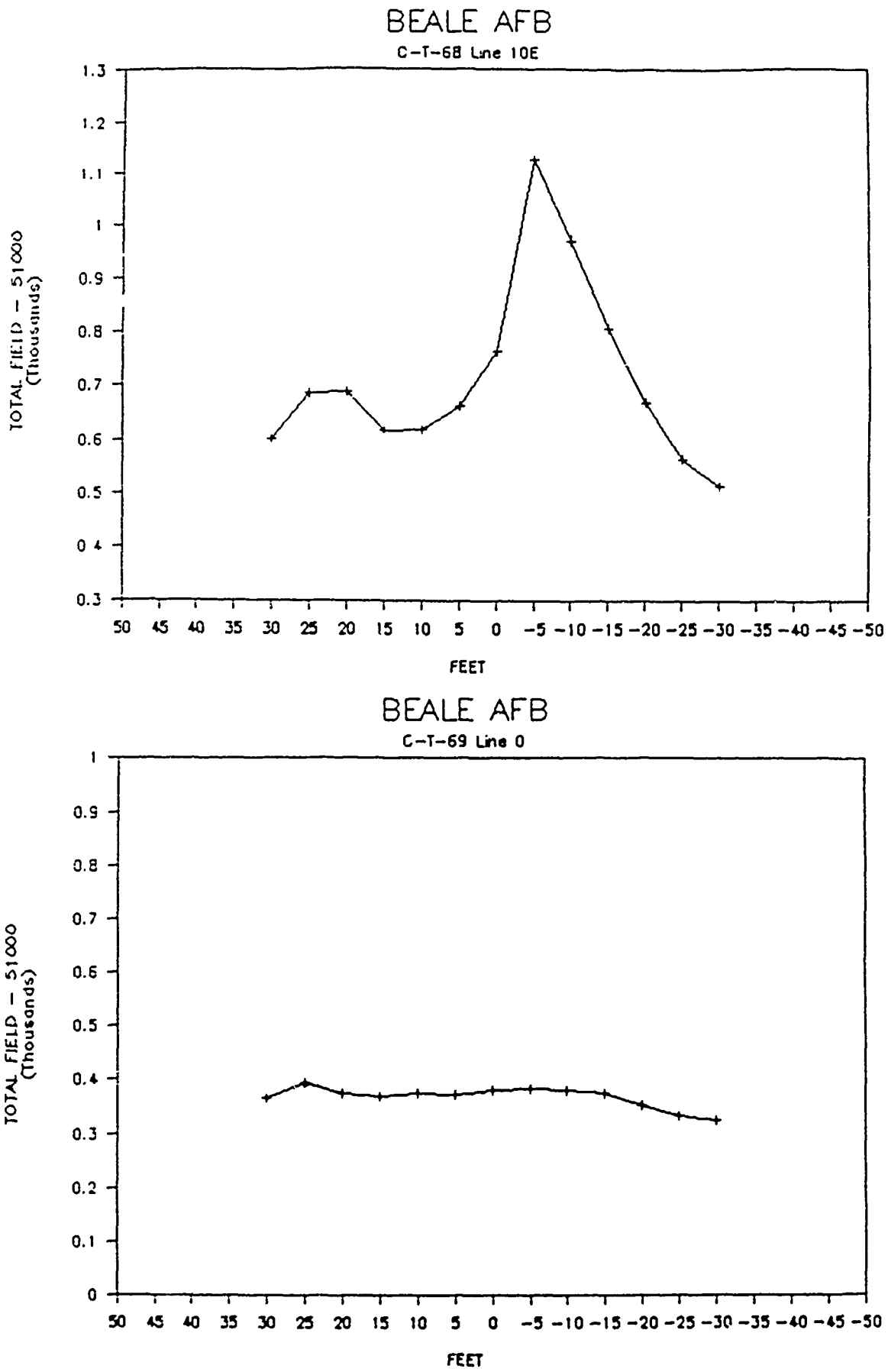
FEET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C-T-68 Line 10E
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(Thousands)
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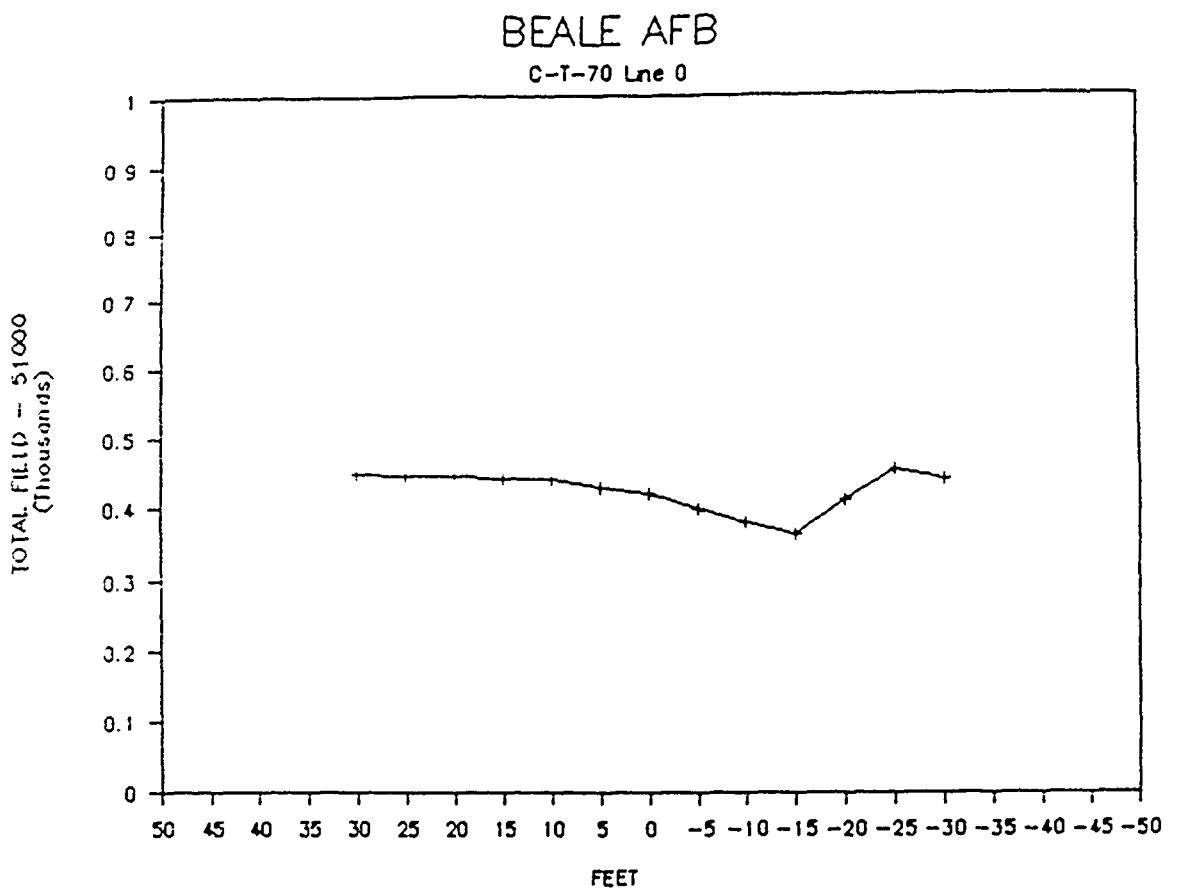
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET
BEALE AFB
C-T-69 Line 0
TOTAL FIELD - 51000
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-70 Line 0
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0.8
0.7
0.6
0.5
0.4
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0.2
0.1
0
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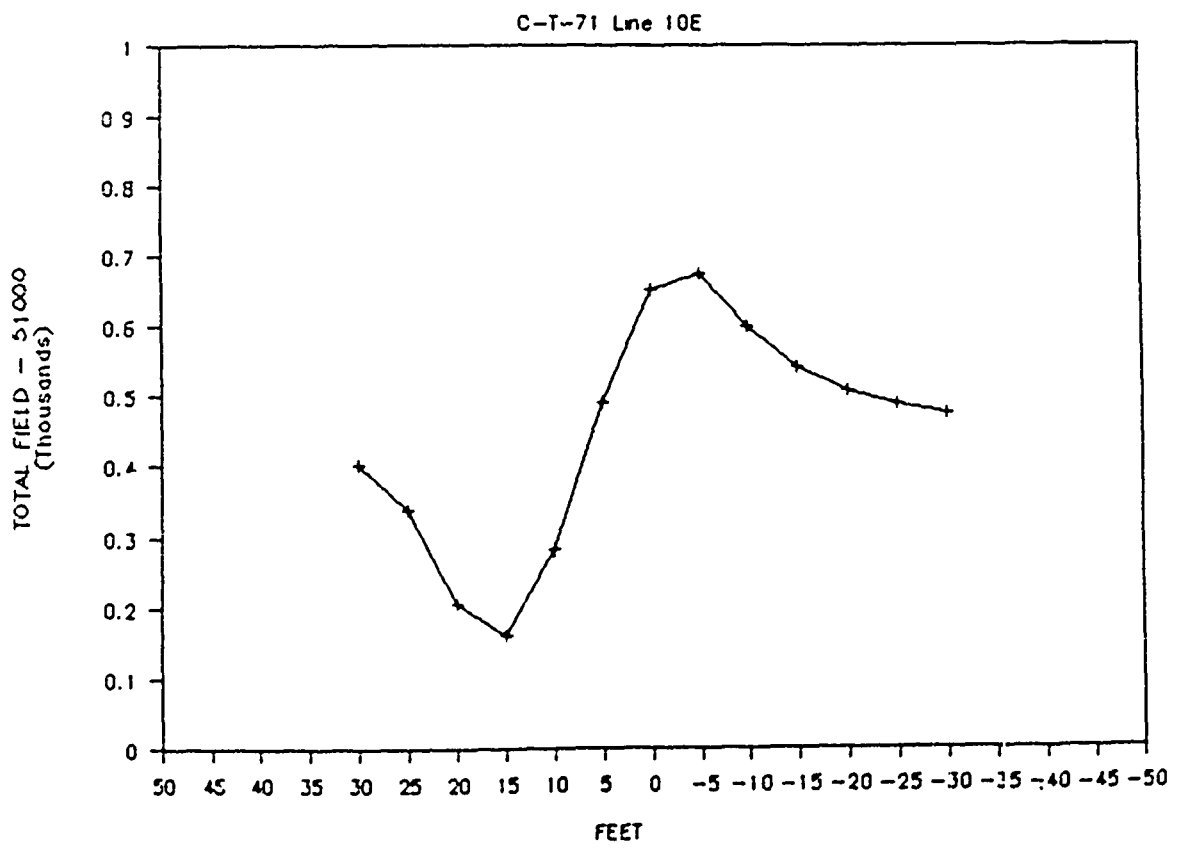
FEET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C-T-71 Line 10E
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0.7
0.6
0.5
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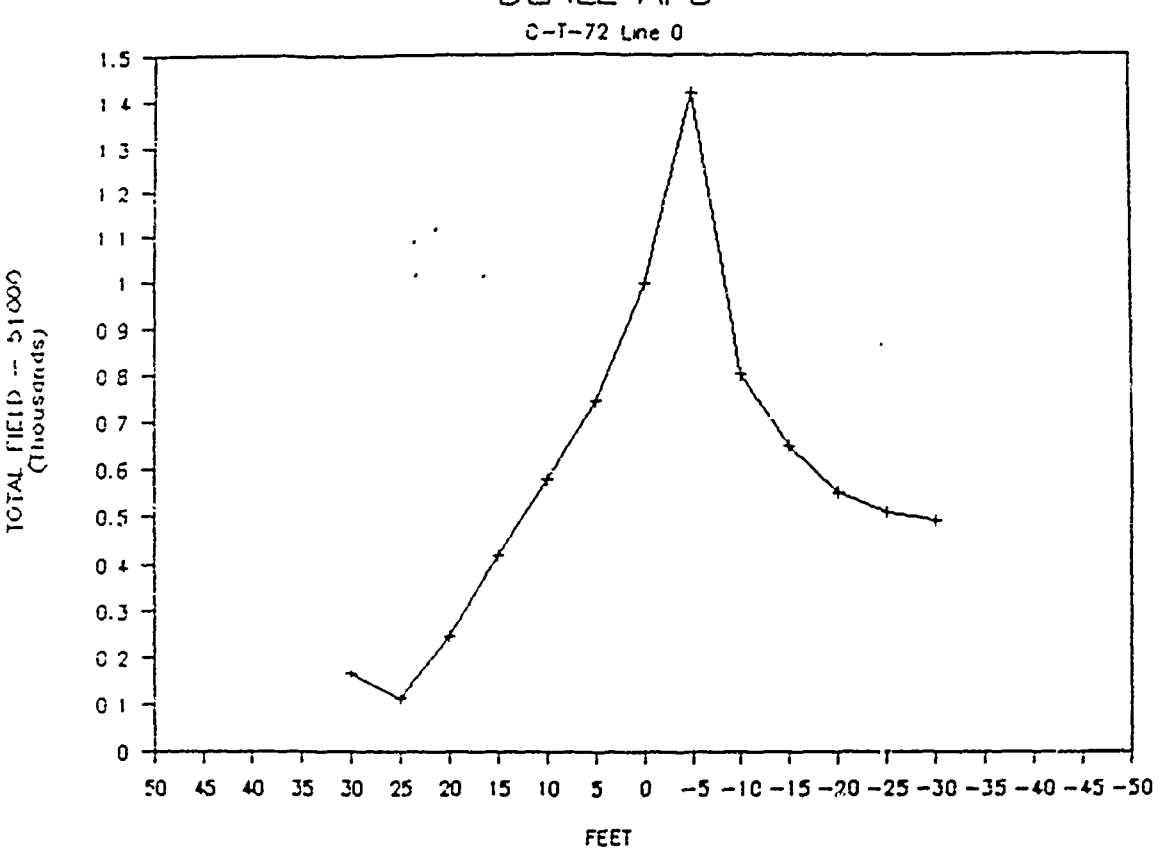
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-72 Line 0
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1.3
1.2
1.1
1
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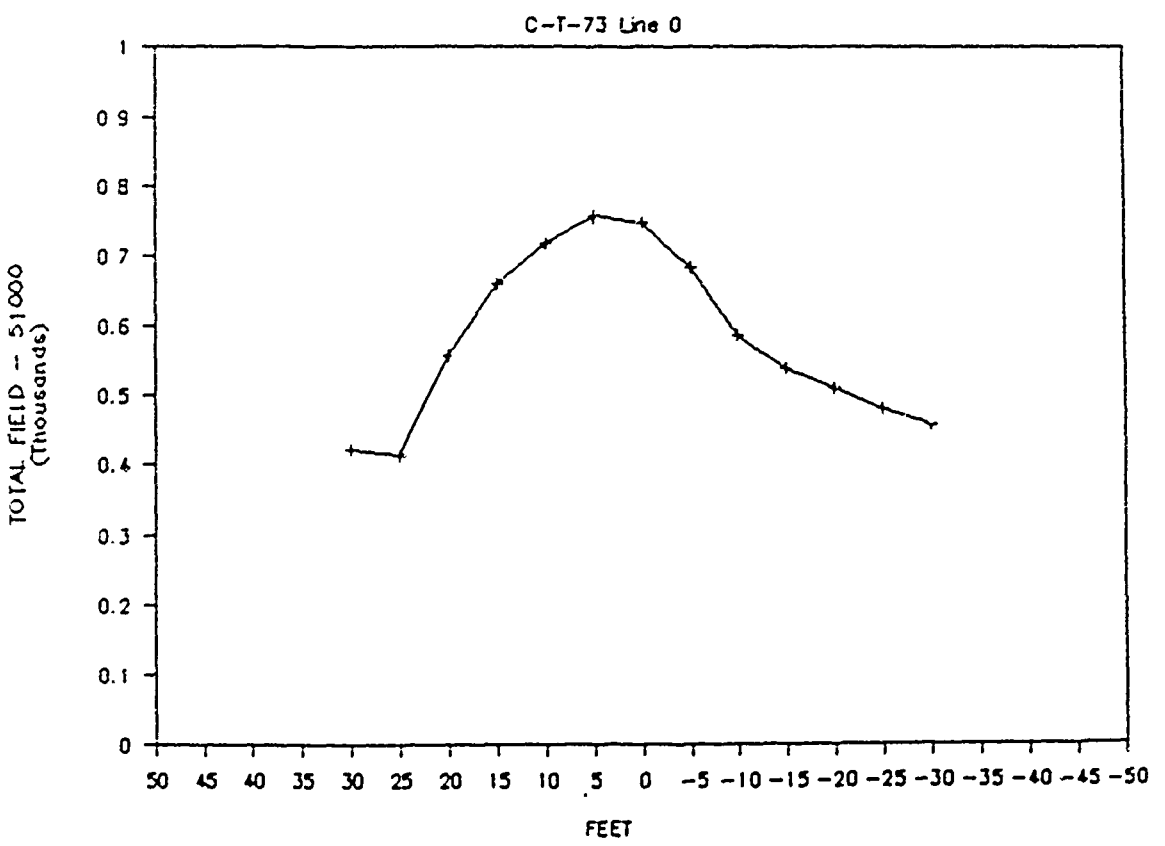
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-73 Line 0
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0.7
0.6
0.5
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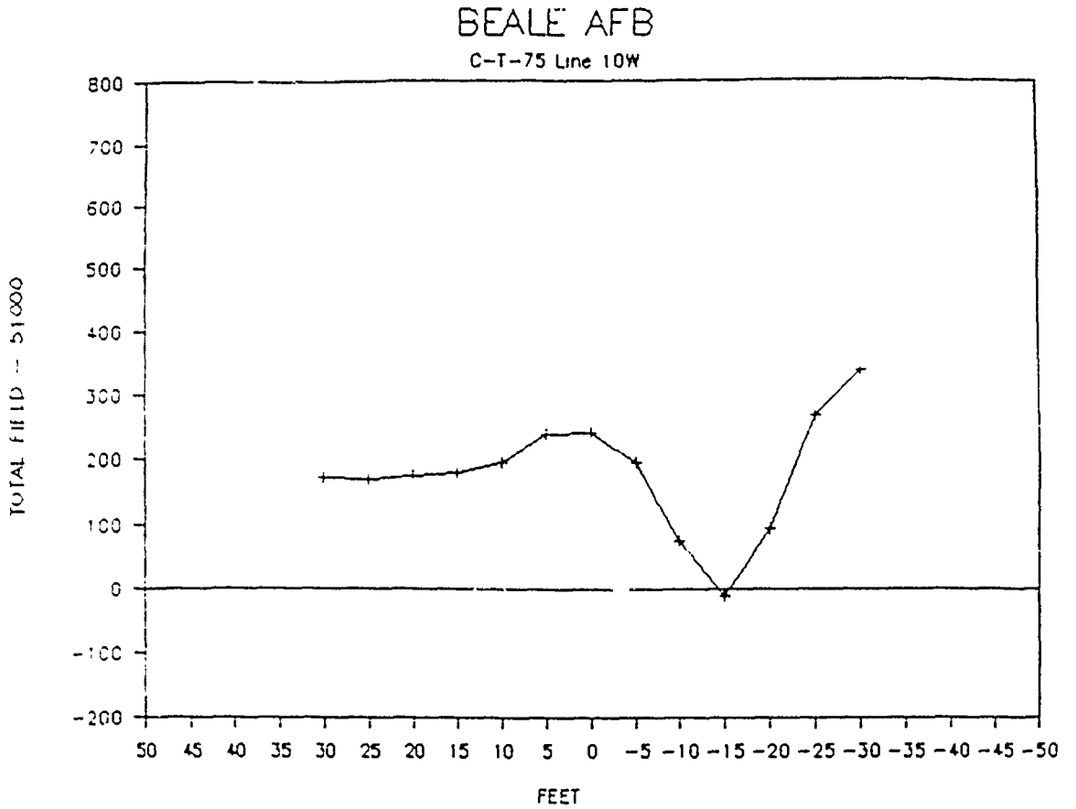
0.2
0.1
0
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET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C-T-75 Line 10W
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0
-100
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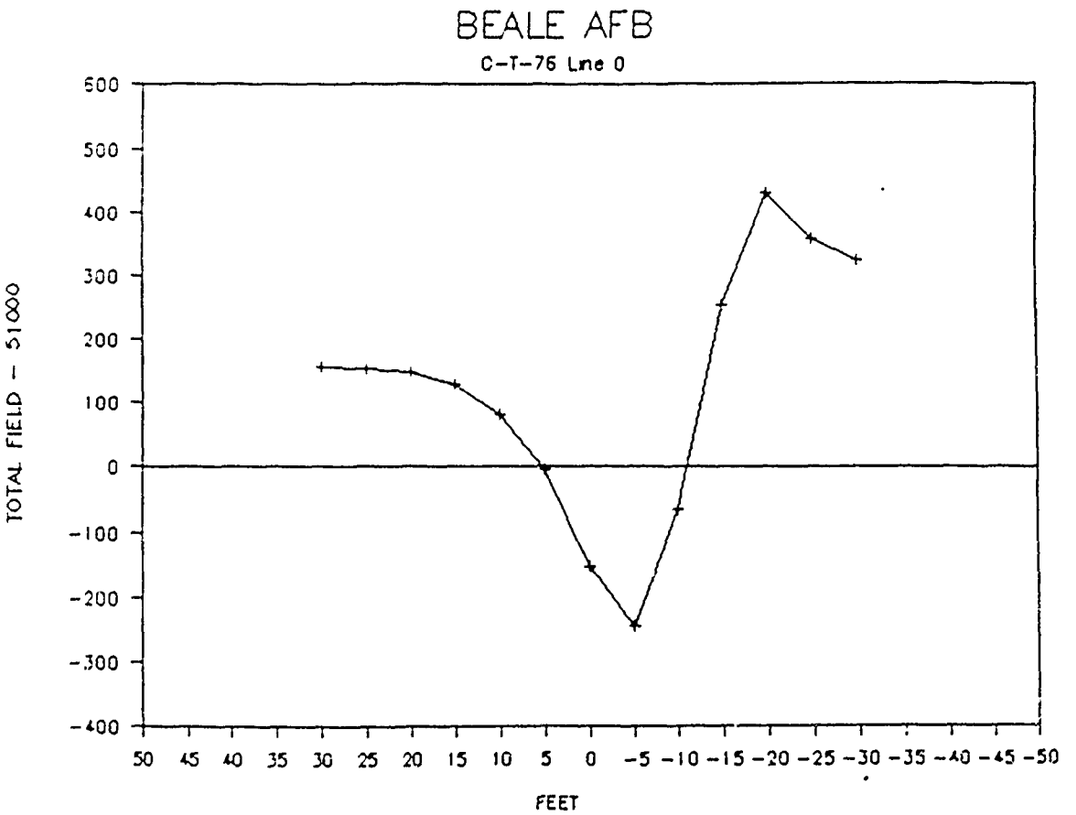
FEET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C-T-76 Line 0
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400
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-300
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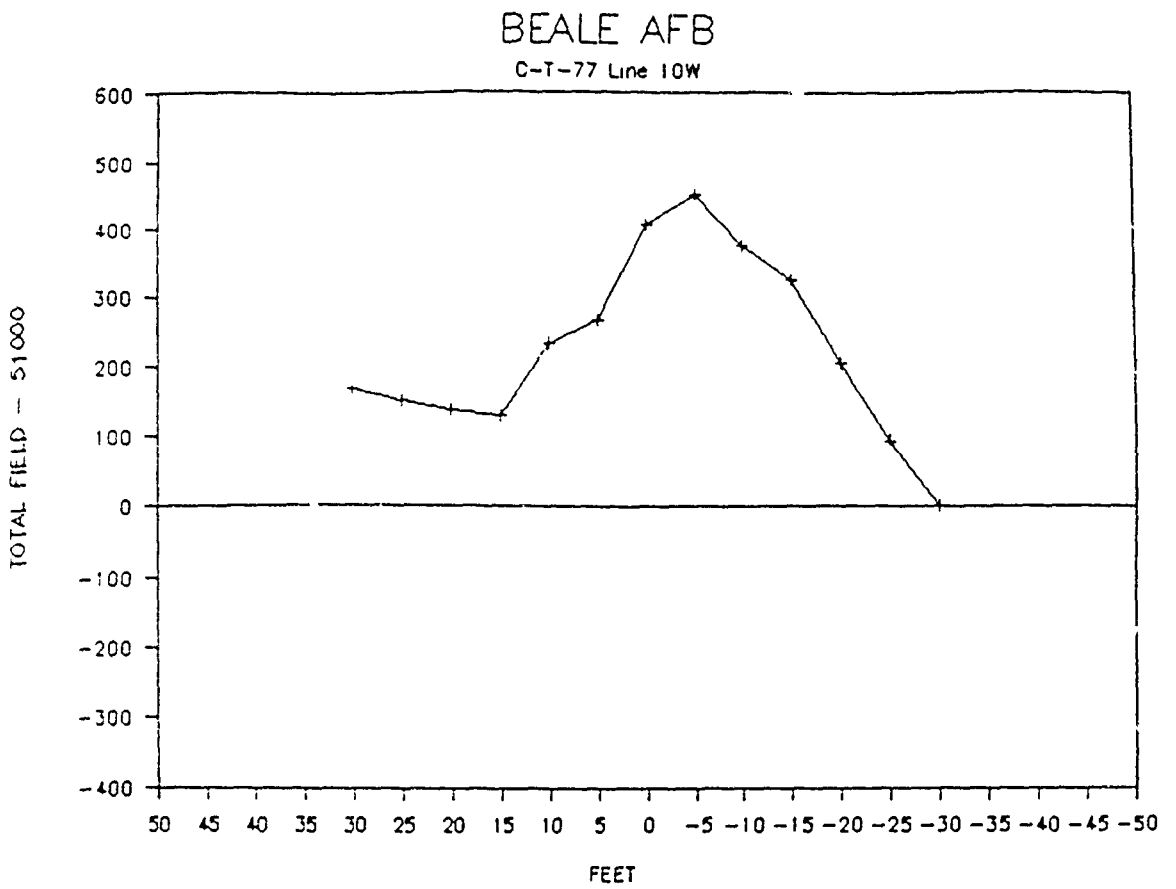
FEET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C-T-77 Line 10W
TOTAL FIELD - 51000
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500
400
300
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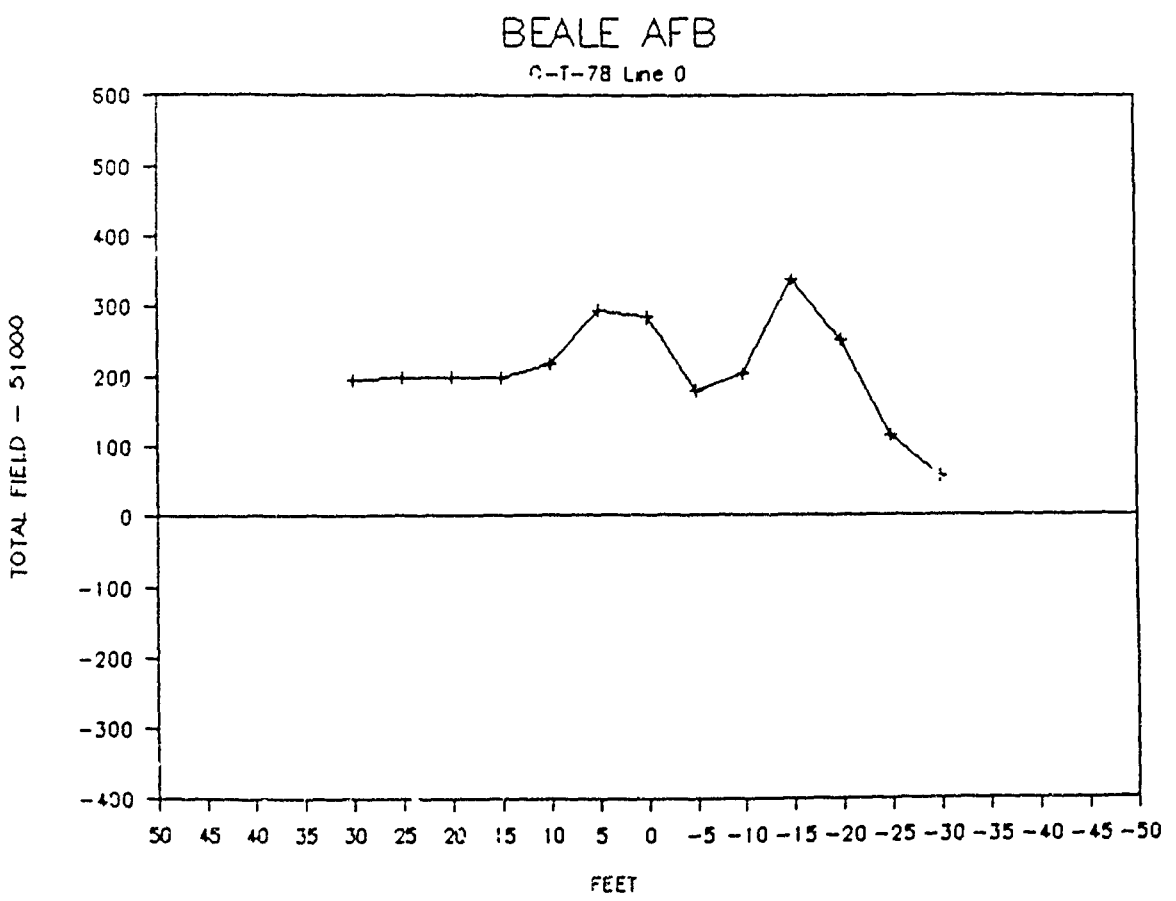
-200
-300
-400
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET


BEALE AFB
C-T-78 Line 0
TOTAL FIELD - 51000
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500
400
300
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-200
-300
-400
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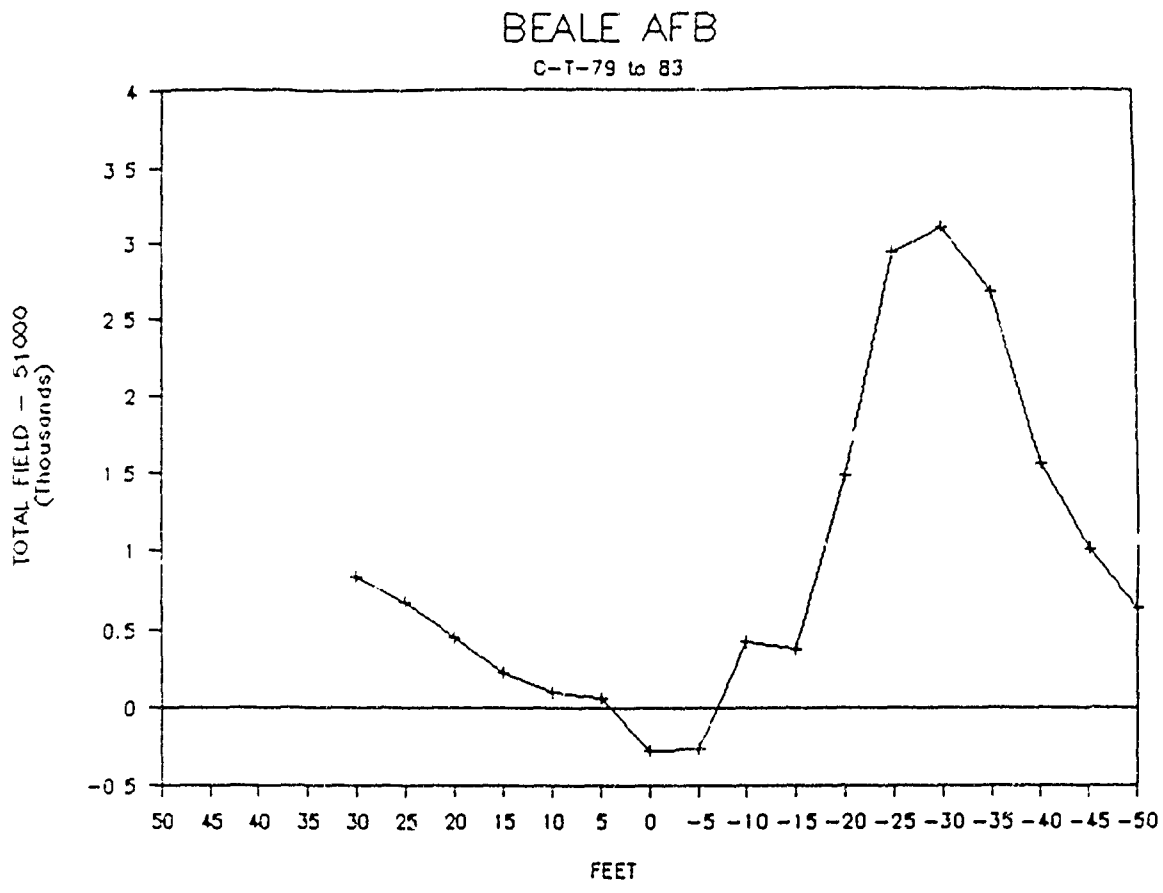
FEET


BEALE AFB
C-T-79 to 83
TOTAL FIELD - 51000 (Thousands)
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3.5
3
2.5
2
1.5
1
0.5
0
-0.5
50 45 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50
FEET

APPENDIX I

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Appendix I
ARARs DEVELOPMENT

INTRODUCTION TO APPENDIX

This Appendix presents the development of Applicable or Relevant and Appropriate Requirements (ARARs) for the Beale site. An introduction to ARARs is followed by the identification of ARARs for constituents currently detected (August 1989) at Beale sites.

There are three types of ARARs: chemical-, location-, and action-specific. Action-specific ARARs are typically identified during the development of remedial alternatives. Therefore, we have limited our analysis to chemical- and location-specific ARARs, which are normally identified during the remedial investigation.

An ARARs evaluation provides the information necessary to attain a degree of cleanup consistent with federal and state laws and regulations. However, ARARs may not address all contaminants and therefore may not adequately mitigate the threat of contaminants to public health and welfare. Evaluation and quantification of the threat to human health or the environment is the objective of a risk assessment. It is imperative that such an assessment be conducted for the Beale sites prior to the evaluation of remedial alternatives.

The references used to develop ARARs are represented in Table I-1. This table includes the references listed in Section 2 of the Handbook to Support the IRP Statements of Work for Remedial Investigation/Feasibility Studies (the "handbook") as well as additional ARARs references. Rationale is given for those omissions of sources listed in Section 2 of the handbook but not included in the ARARs analysis. While this document presents the development of ARARs, the ultimate determination of ARARs must be done by appropriate agencies.

INTRODUCTION TO ARARs

Congress specified, in Section 121(d) of the Superfund Amendments and Reauthorization Act (SARA), that site cleanups conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), comply with requirements of all applicable or relevant and appropriate federal and duly promulgated state

Table I-1
REVIEW OF SOURCES OF POTENTIAL ARARs

Potential ARARs Source	Chemical	Location	Action	Comments
Resource Conservation and Recovery Act (RCRA)	X	X	*	
Solid Waste Disposal Act (SDWA)		X	*	The Solid Waste Disposal Act is now RCRA.
Safe Drinking Water Act (SDWA)	X			Proposed revisions were also evaluated.
Clean Water Act (CWA)	X	X		
Marine Protection, Research, and Sanctuaries Act (MPRSA)		X	*	
Toxic Substances Control Act (TSCA)	X		*	
Clean Air Act (CAA) Ambient Air Quality Standards (AAQS)	X	X	*	
Occupational Safety and Health Administration (OSHA)			*	Does not have provisions that could be potential chemical- or location-specific ARARs.
National Pollutant Discharge Elimination System (NPDES)			*	Does not have provisions that could be potential chemical- or location-specific ARARs.
Health Effects Assessment and Maximum Contaminant Levels (MCLs)	X		*	Evaluation included as part of SDWA evaluation.
Federal Water Quality Criteria	X		*	Evaluation included as part of CWA evaluation.
Department of Transportation Regulations (DOT)			*	Does not have provisions that could be potential chemical- or location-specific ARARs.

X = Evaluated as potential ARARs source.
* = Potential action-specific ARARs source.

Table I-1
(Continued)

Potential ARARs Source	Chemical	Location	Action	Comments
Laws and regulations pertaining to historic sites, fish and wildlife, archaeological resources, endangered species, "sole-source" aquifers, groundwater protection, flood plains, wetlands, etc.		X	* (some)	
CERCLA compliance with other laws (ARARs) Manual (OSWER Directive 9234.1-01 Interim Final)				This document is not considered an ARAR; however, it was used extensively during the development of the Beale sites location- and chemical-specific ARARs.
Nuclear Waste Policy Act (NWPA) at any of the Beale				Nuclear contaminants have not been detected sites as of August 1989.
California Hazardous Waste Management Regulations	X	X	*	
California Safe Drinking Water Act	X			
Mulford-Carrell Air Resources Act (California)	X		*	This Act adopts the federal air standards as a minimum. Additional standards are added through counties that implement this Act.
California Porter-Cologne Water Quality Act		X	*	

X = Evaluated as potential ARARs source.
* = Potential action-specific ARARs source.

environmental and public health laws. These laws are known in the Superfund program as ARARs. The objective of the current Air Force Installation Restoration Program (AFIRP) is to develop and select solutions to remediate contamination through an approach that is in accordance with CERCLA, the National Contingency Plan (NCP), and SARA.

The goal of the development of ARARs is to identify a degree of cleanup at a site that is consistent with federal and state laws. ARARs must be attained for hazardous constituents remaining onsite at the completion of the remedial action. Remedial actions must also comply with ARARs with the purpose of protecting public health and the environment. ARARs should generally be attained at all points of potential exposure or at the point specified by the ARAR itself.

ARARs, as defined by the U.S. Environmental Protection Agency (EPA), are divided into three categories:

- Chemical-specific
- Location-specific
- Action-specific

Chemical-specific ARARs impose quantitive restrictions on chemical contamination in the environment. Location-specific ARARs restrict activities in sensitive locations. Action-specific ARARs require remedial actions to meet predetermined design or performance standards.

As stated earlier, ARARs provide the basis for determining acceptable levels of environmental control as specifically required by other environmental laws. Actions taken at AFIRP sites must, like Superfund sites, at the least, meet these levels of control.

In addition to the requirements of federal and state environmental laws and regulations, this document identifies environmental criteria, advisories, and guidance documents that do not impose mandatory levels of environmental control but do provide a reasonable basis for evaluating conditions and actions. These criteria and guidance documents are "to be considered" (TBC) in determining appropriate actions. If ARARs are judged to be insufficiently protective of human health or the environment, or if there is no ARAR for a constituent, TBCs will be considered for inclusion in the site remedy.

Remedial actions conducted under CERCLA on National Priorities List (NPL) sites are exempt from permitting requirements, administrative requirements, and compliance with local laws and regulations. Since none of the Beale sites have been included on the NPL, these exemptions do not apply.

The standards, criteria, and action levels listed in the Analyte tables within Section 4 of the main body of the text represent the most stringent ARAR or TBC for a constituent. The values in these tables should only be considered in conjunction with this Appendix.

DEFINITIONS

The definitions associated with ARARs must be clearly understood to appreciate the outcome of any ARARs evaluation. The definitions, as used in this document and presented below, have been developed from OSWER Directive No. 9234.1-01.

Applicable Requirements

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA (AFIRP) site.

For a requirement to be applicable, the remedial action or the circumstances at the site must satisfy all of the jurisdictional prerequisites of that requirement. For example, the minimum technology requirement for landfills under RCRA applies only if a new hazardous waste landfill (or an expansion of an existing landfill) is to be built on a CERCLA (AFIRP) site.

Relevant and Appropriate Requirements

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, although not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA

(AFIRP) site so their use is well suited to the particular site. However, in some circumstances, a requirement may be relevant but not appropriate for the site-specific situation.

The relevance and appropriateness of a requirement can be judged by comparing certain factors with the factors addressed in the requirement. These factors include the characteristics of the remedial action, the hazardous substances in question, and the physical circumstances of the site. For example, although RCRA capping regulations are not applicable to capping in-place hazardous waste that was disposed prior to November 19, 1980, and left undisturbed by remedial action, the RCRA regulation for closure by capping may be deemed relevant and appropriate. It is also possible for portions of a requirement to be considered relevant and appropriate while other portions of the same requirement may be dismissed as irrelevant or inappropriate.

A requirement that is judged to be relevant and appropriate must be complied with to the same degree as if it were applicable. Moreover, under CERCLA, remedial actions must comply with a relevant and appropriate requirement that is more stringent than an applicable requirement.

Chemical-Specific ARARs

Chemical-specific ARARs include those laws and requirements that regulate materials containing specified chemical constituents or the release to the environment of materials possessing certain chemical or physical characteristics. These requirements generally set health or risk-based concentration limits or discharge limitations in various environmental media for specific hazardous substances. If, in a specific situation, a chemical is subject to more than one discharge or exposure limit, the more stringent of the requirements should generally be applied. The assessment of exposure limits should be completed as part of a risk assessment and therefore was not completed for Beale sites at this time.

Location-Specific ARARs

Location-specific ARARs are those requirements that relate to the geographic or physical position of the site, rather than the nature of the contaminants or the proposed site remedial actions. These requirements may limit the type of

remedial actions that can be implemented or may impose additional constraints on the cleanup action. Flood plain restrictions and the protection of endangered species are among the potential location-specific ARARs.

To Be Considered Requirements

In addition to legally binding laws and regulations, many federal and state environmental and public health programs also develop criteria, advisories, guidance, and proposed standards that are not legally binding but that may provide useful information or recommended procedures. These criteria are "to be considered" (TBC) and are usually evaluated, along with ARARs, to establish protective cleanup level targets and to help identify preferred remedial action alternatives. If no ARARs address a particular situation or if existing ARARs do not ensure protectiveness, TBC advisories, criteria, or guidelines should be used to set cleanup targets. Note that it may be necessary to adjust the TBC values in order to apply them. For instance, TBC values expressed as dosages may have to be converted to ambient concentration levels before they can be applied to a site. This conversion will be conducted as part of risk assessments to be performed in future IRP stages.

The location- and chemical-specific ARARs evaluation for the Beale sites was not done on a site-by-site basis. Rather, ARARs were identified as potential ARARs for all Beale sites. In addition to conducting a risk assessment, it will be necessary to develop site-specific ARARs for each of the Beale sites prior to the evaluation of remedial alternatives for these sites.

IDENTIFICATION OF ARARs AND TBCs

CHEMICAL-SPECIFIC

Tables I-2 and I-3 identify potential state and federal chemical-specific ARARs. Tables I-4, I-5, and I-6 present the standards for these potential chemical-specific ARARs for groundwater and surface water, air, and soil for constituents currently detected at Beale sites. The major laws that impose limits on the constituents in the tables are RCRA, the California SDWA, the federal SDWA, the Porter Cologne Water Quality Act, the Federal Clean Water Act, and the California Hazardous Waste Management regulations.

Table I-2
INITIAL IDENTIFICATION OF POTENTIAL STATE CHEMICAL-SPECIFIC ARARs

Requirement	Prerequisites	Citation	Description	Applicable/Relevant and Appropriate	Comments
Mulford-Carrell Air Resources Act (CARA)	Impacts on air quality	California Health and Safety Code, Division 26, Section 39000 et seq. CAC Title 17, Part III, Chapter 1, Section 6000 et seq.	Establishes concentrations and durations of air pollutants that reflect the relationship between the intensity and composition of pollution to undesirable effects.	Yes/--	Air sampling has not been conducted; potential for these pollutants exists. The federal Clean Air Act is implemented through CARA in California. CARA is implemented at the county level through local Air Quality Management Districts.
California Safe Drinking Water Act (SDWA)	Public water system	California Water Code Division 7, Part 1, Chapter 7, Section 4010 et seq. CAC Title 22, Division 4, Chapter 15	Establishes health-based standards for public water systems [maximum contaminant levels (MCLS) and secondary MCLS (SMCLS)]	Yes/--	Organic and inorganic contaminants have been detected in groundwater and surface water at Beale AFB. California SMCLs are enforceable standards in California.
Porter-Cologne Water Quality Act	Waters of the United States	California Water Code, Division 7, Chapter 482 CAC Title 23, Chapter 3, Section 2050 et seq.	Objectives are to restore and maintain the chemical, physical, and biological integrity of California's waters.	Yes/--	Hutchinson Creek, Reeds Creek, and Dry Creek all traverse Beale as they flow southwesterly from the foothills. The federal Clean Water Act is implemented under the Porter-Cologne Water Quality Act in California.

NOTE: -- = If a requirement is applicable, it cannot also be relevant and appropriate.

Table I-3

INITIAL IDENTIFICATION OF POTENTIAL FEDERAL CHEMICAL-SPECIFIC ARARs

Requirement	Prerequisites	Citation	Description	Applicable/ Relevant and Appropriate	Comments
Safe Drinking Water Act (SDWA)		(42 USC 300)			
National Primary Drinking Water Standards	Public water system	40 CFR 141	Establishes health-based standards for public water systems [maximum contaminant levels (MCLs)].	Yes/--	Organic and inorganic contaminants have been detected in groundwater and surface water at Beale AFB.
National Secondary Drinking Water Standards	Public water system	40 CFR 143	Establishes standards for the aesthetic qualities of public water systems [secondary MCLs (SMCLs)].	No/Yes	SMCLS are not federally enforceable but are intended as guidelines for the states.
Maximum Contaminant Level Goals (also known as Recommended Maximum Contaminant Levels)	Public water system	Public Law No. 99-339 100 Stat. 642 (1986)	Establishes maximum contaminant level goals (MCLGs) of no known or anticipated adverse health effects.	No/No	MCLGs are nonenforceable requirements; however these are "to be considered."
Clean Water Act (CWA)[a]	Waters of the United States	33 USC 1251 et seq.	Objectives are to restore and maintain the chemical, physical, and biological integrity of the nation's waters.	Yes/--	Hutchinson Creek, Reeds Creek, and Dry Creek all traverse Beale as they flow southwesterly from the foothills.
Clean Air Act (CAA)[b]					
National Primary and Secondary Ambient Air Quality Standards (NAAQS)	Contamination of air affecting public health and welfare	40 CFR 50 (42 USC 7401 et seq.)	Establishes standards for ambient air quality to protect public health and welfare (including standards for particulate matter and lead).	Yes/--	While the type and extent of air pollutants, if any, that may be of concern at Beale are unknown at this time, the assumption that air pollutants are present at some of the Beale sites is a conservative estimate.

Table 1-3 (Continued)

Requirement	Prerequisites	Citation	Description	Applicable/ Relevant and Appropriate	Comments
Resource Conservation and Recovery Act (RCRA) MCLs	Uppermost aquifer underlying a waste management unit beyond the point of compliance; RCRA hazardous waste, storage or disposal.	40 CFR 264.94 (42 USC 6901 et seq.)	Owners/operators of RCRA treatment, storage, or disposal facilities must comply with conditions in this section that are designed to ensure that hazardous constituents entering the groundwater from a regulated unit do not exceed the concentration limits under 264.94 in the uppermost aquifer underlying the waste management area beyond the point of compliance.	No/Yes	The specific properties at many of the Beale AFB sites are sufficiently similar to these requirements to render them relevant and appropriate.
Toxic Substance Control Act (TSCA)	PCB contaminated soils	40 CFR 761 (15 USC 2601, et seq.)		No/No	PCBs were not currently detected in Beale site soils.

[a] The federal Clean Water Act is implemented in California by the State Water Resources Control Board (Porter-Cologne Water Quality Act).
[b] The federal Clean Air Act is implemented in California by the State Air Resources Board (Mulford-Carrell Air Resources Board).

NOTE: -- = If a requirement is applicable, it cannot also be relevant and appropriate.

Table I-4
FEDERAL AND STATE POTENTIAL CHEMICAL-SPECIFIC ARARs AND TBCs: GROUNDWATER AND SURFACE WATER

		ARARs						TBCs					
						CWA AWQC[e]							
Constituent Detected	Units	RCRA MCL[a]	CaSDWA MCL[b]	CaSDWA SMCLs[c]	SDWA MCL[d]	Acute	Chronic	SDWA SMCLs[f]	SDWA MCLGs[g]	DHS Applied Action Levels[h]	DHS Action Levels[i]	FAO Recommended Maximum Concentrations in Irrigation Water[j]	FAO Guideline for Livestock Drinking Water[k]
Specific Conductivity	umhos/cm	NS	NS	900	NS	NS	NS	NS	NS	NS	NS	NS	NS
Temperature	deg C	NS	NS	NS	NS	[l]	[l]	NS	NS	NS	NS	NS	NS
pH	pH	NS	NS	NS	NS	5-9[l]	NS	6.5-8.5	NS	NS	NS	NS	NS
Alkalinity	mg/l	NS	NS	NS	NS	20[o]	NS	NS	NS	NS	NS	NS	NS
Alkalinity-Phenolphthalein	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bicarbonate	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Carbonate	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Dissolved Solids	mg/l	NS	NS	500	NS	NS	NS	500	NS	NS	NS	NS	NS
Chloride	mg/l	NS	250	250	NS	NS	NS	250	NS	NS	NS	NS	NS
Fluoride	mg/l	NS	1.4[m]	NS	4.0	NS	NS	2.0	4	NS	NS	NS	NS
Nitrate and Nitrite	mg/l	NS	[n]	NS	10[o]	10[p]	NS	10	NS	NS	NS	NS	NS
Sulfate	mg/l	NS	NS	250	NS	NS	NS	250	NS	NS	NS	NS	NS
Chemical Oxygen Demand (COD)	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Arsenic	mg/l	0.05	0.05	NS	0.05	0.0000022[q]	NS	NS	NS	0.022[r]	NS	0.10[s]	0.2
Lead	mg/l	0.05	0.05	NS	0.05	0.082[t]	0.0032[t]	NS	NS	0.0044[r]	NS	5.0[u]	0.1[v]
Mercury	mg/l	0.002	0.002	NS	0.002	0.0024[w]	0.000012[w]	NS	0.012	0.002[x]	NS	NS	NS
TPH-Diesel	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TPH-Gas	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cyanide	mg/l	NS	NS	NS	NS	0.022[w]	0.0052[w]	NS	NS	NS	NS	NS	NS
Calcium	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Iron	mg/l	NS	NS	0.3	NS	0.3[l]	NS	0.3	NS	NS	NS	NS	NS
Magnesium	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Manganese	mg/l	NS	NS	0.05	NS	0.05[l]	NS	0.05	NS	NS	NS	NS	NS
Nickel	mg/l	NS	NS	NS	NS	1.4[x]	0.16[t]	NS	NS	0.4[x]	NS	NS	NS
Potassium	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sodium	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Vanadium	mg/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Zinc	mg/l	NS	NS	5.0[l]	NS	0.120[t]	0.110[t]	5	NS	0.012[r]	NS	NS	NS
Carbon tetrachloride	mg/l	NS	NS	NS	.005	35.2	NS	NS	NS	NS	NS	NS	NS
Trans -1,2- Dichloroethene	ug/l	NS	NS	NS	NS	NS	NS	NS	100	NS	NS	NS	NS
Chloroform	ug/l	NS	NS	NS	NS	0.19[q]	NS	NS	NS	6[x]	NS	NS	NS
Methylene Chloride	ug/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	40	NS	NS
Trichloroethene	ug/l	NS	5.0	NS	5.0	2.7[q]	NS	NS	0	7[x]	NS	NS	NS
1,1,2- Trichoroethane	ug/l	NS	32	NS	NS	0.6[q]	NS	NS	NS	NS	100	NS	NS
Tetrachloroethene	ug/l	NS	5.0	NS	NS	0.8[q]	NS	NS	NS	NS	4.0	NS	NS
Toluene	ug/l	NS	NS	NS	2000	14,300[y]	NS	40	2000	100[x]	100	NS	NS
N - Nitrosodiphenylamine(1)	ug/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-n-Butylphthalate	ug/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
bis (2-Ethylhexyl) Phthalate	ug/l	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table I-4
(Continued)

NS = No Standard, criteria, or action level exists for constituent.

[a]Resource Conservation and Recovery Act (RCRA) Maximum Contaminant Level (MCL)
[b]California State Drinking Water Act (CaSDWA) MCL
[c]CaSDWA Secondary MCL (SMCL)
[d]Federal SDWA MCL
[e]Federal Clean Water Act (CWA) Ambient Water Quality Criteria (AWQC)
[f]Federal SDWA SMCLs
[g]Federal SDWA MCL goals
[h]Drinking Water Applied Action Levels recommended by the California Department of Health Services; Technical Services Branch to be used in conjunction with the California Site Mitigation Decision Tree.
[i]Drinking Water Action Levels recommended by the California Department of Health Services, Public Water Supply Branch
[j]Food and Agriculture Organization of the United Nations (FAO) Recommended Maximum Concentration. The maximum concentration is based on a water application rate consistent with good irrigation practices (10,000 m^3 per hectare per year)
[k]Standard varies with location and freshwater species
[l]For domestic water supply (welfare)
[m]Value of 1.4 mg/l is for air temperature of 26.3° to 32.5° C; MCL changes with air temperature to a maximum of 2.4 mg/l at 12.0° C and below
[n]Standard is for Nitrate (as NO_3)
[o]Standard is for Nitrate as N
[p]Nitrate Nitrogen for domestic water supply
[q]Level which may result in excess cancer risk of 10^{-6}. Ingestion of contaminated water and aquatic organisms.
[r]For freshwater aquatic species biological receptor
[s]Toxicity to plants varies widely ranging from 12 mg/l for sudan grass to less than 0.05 mg/l for rice
[t]Hardness dependent criteria (100 mg/l used); for protection of freshwater aquatic species
[u]Can inhibit plant cell growth at very high concentrations
[v]Lead is accumulative and problems may begin at a threshold value of 0.05 mg/l
[w]Standard is for protection of freshwater aquatic species
[x]For human biological receptor
[y]For protection of human health from the toxic properties of toluene ingested through water and contaminated aquatic organisms

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Table I-5
FEDERAL AND STATE POTENTIAL CHEMICAL-SPECIFIC
ARARs AND TBCs: AIR

Constituent Detected[a]	Units	TBC DHS Applied Action Levels[b]
Dichloromethane	mg/m^3	NS
1,2-Dichloroethane	mg/m^3	NS
Benzene	mg/m^3	0.0032
Carbon Tetrachloride	mg/m^3	NS
Trichloroethene	mg/m^3	0.007
Tetrachloroethene	mg/m^3	NS

NS = No standard, criteria, or action level exists for constituent.

[a]Constituents detected in ambient air downwind of Landfill Number 3.
[b]Applied Action Levels recommended by California Department of Health Services (6/30/89) for use with the California Site Mitigation Decision Tree.

Table I-6
FEDERAL AND STATE POTENTIAL CHEMICAL-SPECIFIC
ARARs AND TBCs: SOIL

		TBCs			
Constituent	Units	Title 22 TTLC Values[a]	SWRCB LUFT Cleanup Levels[b]	Units	Title 22 STLC Values[c]
Percent Moisture	mg/kg	NS	NS	mg/l	NS
Soil pH	mg/kg	NS	NS	mg/l	NS
Ingnitability	mg/kg	NS	NS	mg/l	NS
Cyanide	mg/kg	NS	NS	mg/l	NS
Mercury	mg/kg	20	NS	mg/l	NS
Oils and Grease	mg/kg	NS	NS	mg/l	NS
TFH-Diesel	mg/kg	NS	NS	mg/l	NS
TFH-Gas	mg/kg	NS	NS	mg/l	NS
Aluminum	mg/kg	NS	NS	mg/l	NS
Antimony	mg/kg	500	NS	mg/l	15
Barium	mg/kg	10,000	NS	mg/l	100
Beryllium	mg/kg	75	NS	mg/l	0.75
Cadmium	mg/kg	100	NS	mg/l	1.0
Calcium	mg/kg	NS	NS	mg/l	NS
Chromium	mg/kg	500[d]	NS	mg/l	5
Cobalt	mg/kg	8,000	NS	mg/l	80
Copper	mg/kg	2,500	NS	mg/l	25
Iron	mg/kg	NS	NS	mg/l	NS
Lead	mg/kg	1,000	NS	mg/l	5
Magnesium	mg/kg	NS	NS	mg/l	NS
Manganese	mg/kg	NS	NS	mg/l	NS
Nickel	mg/kg	2,000	NS	mg/l	20
Potassium	mg/kg	NS	NS	mg/l	NS
Silver	mg/kg	500	NS	mg/l	5
Sodium	mg/kg	NS	NS	mg/l	NS
Thallium	mg/kg	700	NS	mg/l	7
Vanadium	mg/kg	2,400	NS	mg/l	24
Zinc	mg/kg	5,000	NS	mg/l	250
Chloromethane	mg/kg	NS	NS	mg/l	NS
Methylene Chloride	mg/kg	NS	NS	mg/l	NS
Acetone	mg/kg	NS	NS	mg/l	NS
2-Butanone	mg/kg	NS	NS	mg/l	NS
Vinyl Acetate	mg/kg	NS	NS	mg/l	NS
Carbon Disulfide	mg/kg	NS	NS	mg/l	NS
1,1-Dichloroethane	mg/kg	NS	NS	mg/l	NS
Trans 1,2-Dichloroethane	mg/kg	NS	NS	mg/l	NS
Trichloroethene	mg/kg	2,040	NS	mg/l	204
Tetrachloroethene	mg/kg	NS	NS	mg/l	NS
1,1,2,2-Tetrachloroethane	mg/kg	NS	NS	mg/l	NS
Benzene	mg/kg	NS	[e]	mg/l	NS

Constituent	TBCs				
	Units	Title 22 TTLC Values[a]	SWRCB LUFT Cleanup Levels[b]	Units	Title 22 STLC Values[c]
4-Methyl-2-Pentanone	mg/kg	NS	NS	mg/l	NS
2-Hexanone	mg/kg	NS	NS	mg/l	NS
Chloroform	mg/kg	NS	NS	mg/l	NS
Toluene	mg/kg	NS	[e]	mg/l	NS
Chlorobenzene	mg/kg	NS	NS	mg/l	NS
Ethylbenzene	mg/kg	NS	[e]	mg/l	NS
Styrene	mg/kg	NS	NS	mg/l	NS
Xylenes (Total)	mg/kg	NS	[e]	mg/l	NS
Xylenes (O&M)	mg/kg	NS	NS	mg/l	NS
Xylenes (p)	mg/kg	NS	NS	mg/l	NS
Phenol	mg/kg	NS	NS	mg/l	NS
4-Methylphenol	mg/kg	NS	NS	mg/l	NS
2,4-Dimethylpheno	mg/kg	NS	NS	mg/l	NS
Pentachlorophenol	mg/kg	17	NS	mg/l	1.7
2-Chlorophenol	mg/kg	NS	NS	mg/l	NS
1,3-Dichlorobenzene	mg/kg	NS	NS	mg/l	NS
1,4-Dichlorobenzene	mg/kg	NS	NS	mg/l	NS
1,2-Dichlorobenzene	mg/kg	NS	NS	mg/l	NS
Benzoic Acid	mg/kg	NS	NS	mg/l	NS
Isophorone	mg/kg	NS	NS	mg/l	NS
2,4-Dinitrotoluene	mg/kg	NS	NS	mg/l	NS
2,6-Dinitrotoluene	mg/kg	NS	NS	mg/l	NS
Acenapthene	mg/kg	NS	NS	mg/l	NS
Fluorene	mg/kg	NS	NS	mg/l	NS
Phenanthrene	mg/kg	NS	NS	mg/l	NS
Anthracene	mg/kg	NS	NS	mg/l	NS
Fluoranthene	mg/kg	NS	NS	mg/l	NS
Pyrene	mg/kg	NS	NS	mg/l	NS
Naphthalene	mg/kg	NS	NS	mg/l	NS
Methylnaphthalene	mg/kg	NS	NS	mg/l	NS
2-Methylnaphthalene	mg/kg	NS	NS	mg/l	NS
N-Nitrosodiphenylamine	mg/kg	NS	NS	mg/l	NS
N-Nitrosodimethylamine	mg/kg	NS	NS	mg/l	NS
Butylbenzylphthalate	mg/kg	NS	NS	mg/l	NS
Di-n-octylphthalate	mg/kg	NS	NS	mg/l	NS
bis(2 ethylhexyl)phthalate	mg/kg	NS	NS	mg/l	NS
Chrysene	mg/kg	NS	NS	mg/l	NS
Benzo(b)fluoranthene	mg/kg	NS	NS	mg/l	NS
Benzo(k)fluoranthene	mg/kg	NS	NS	mg/l	NS
Indeno(a)pyrene	mg/kg	NS	NS	mg/l	NS
Benzo-a-pyrene	mg/kg	NS	NS	mg/l	NS
Indeno(1,2,3-cd)pyrene	mg/kg	NS	NS	mg/l	NS
Tetra Furans (total)	mg/kg	NS	NS	mg/l	NS
Penta Furans (total)	mg/kg	NS	NS	mg/l	NS
Hexa Furans (total)	mg/kg	NS	NS	mg/l	NS

Table I-6
(Continued)

Constituent	Units	TBCs: Title 22 TTLC Values[a]	TBCs: SWRCB LUFT Cleanup Levels[b]	Units	TBCs: Title 22 STLC Values[c]
Indeno(1,2,3-cd)pyrene	mg/kg	NS	NS	mg/l	NS
Tetra Furans (total)	mg/kg	NS	NS	mg/l	NS
Penta Furans (total)	mg/kg	NS	NS	mg/l	NS
Hexa Furans (total)	mg/kg	NS	NS	mg/l	NS
Hepta Furans (total)	mg/kg	NS	NS	mg/l	NS
Octa Furans (total)	mg/kg	NS	NS	mg/l	NS
Tetra Dioxins (total)	mg/kg	0.01[f]	NS	mg/l	0.001[f]
Penta Dioxins (total)	mg/kg	NS	NS	mg/l	NS
Hexa Dioxins (total)	mg/kg	NS	NS	mg/l	NS
Hepta Dioxins (total)	mg/kg	NS	NS	mg/l	NS
Octa Dioxins (total)	mg/kg	NS	NS	mg/l	NS

NS = No standard, criteria, or action level exists for constituent.

[a]California Hazardous Waste Management Regulations, CAC Title 22, Division 4, Chapter 30, Total Threshold Limit Concentrations (TTLC) for hazardous waste determination. A waste is a hazardous waste if the concentration of a constituent in the waste exceeds the TTLC for that constituent.

[b]State Water Resources Control Board (SWRCB) Leaking Underground Full Tank (LUFT) Cleanup Levels for contaminants in soil

[c]California Hazardous Waste Management Regulations, CAC Title 22, Division 4, Chapter 30, Soluble Threshold Limit Concentrations (STLC) for hazardous waste determination. A waste is a hazardous waste if the concentration of a constituent in the waste exceeds its listed STLC for that constituent. The Waste Extraction Test (WET) is used for this determination.

[d]Chromium VI compounds. For chromium III compounds, value TTLC is 2,500 mg/kg.

[e]Cleanup standards vary, depending on site characteristics (depth of contamination, source, precipitation, etc.).

[f]Standard is for 2,3,7,8-TCDD

Groundwater and Surface Water

The RCRA and state and federal SDWA Maximum Contaminant Level (MCL) standards are based on human consumption of water for drinking, cooking, and bathing. Economic considerations and technical feasibility of treatment processes are included in the justification for these levels. These are enforceable standards that are applicable to contaminants in any surface water body or aquifer that can be classified as a source or potential source of public drinking water. At some of the Beale sites, the SDWA and RCRA MCLs may be considered applicable or relevant and appropriate to surface water or groundwater, even though the water is not a current source of public drinking water at that site.

Also presented in Table I-4 are state and federal secondary MCL (SMCL) standards. SMCLs are intended to protect the public welfare, and to ensure a supply of pure, wholesome, and potable water. The California SMCLs are enforceable standards that are applicable to distribution system water. At some of the Beale sites, the California SMCLs may be considered applicable or relevant and appropriate to surface water or groundwater, even though the water is not distribution system water (e.g., if there are not other standards for a constituent, or if the SMCL is more stringent than an ARAR). Federal SMCLs are not enforceable but are intended as gui lines for the states. Federal SMCLs are therefore TBCs.

The point of compliance must be determined at each Beale site for MCLs and SMCLs. Where the contaminant has not actually entered a public drinking water supply (the actual service line into homes or businesses), but has entered an aquifer or surface water body that is or may be used for drinking water, the effects of dilution or biodegradation may be considered in determining the allowable concentration for the aquifer or surface water body. Therefore, the concentrations listed in Table I-4 represent ARARs for Superfund (AFIRP) actions, but do not dictate where those standards must be met. Determining allowable concentrations and determining where these standards should be met should be the goal of a risk assessment and the development of site-specific ARARs.

The federal CWA Ambient Water Quality Criteria (AWQC) are implemented in California under the Porter Cologne Water Quality Act. AWQC are designed to protect aquatic life (both marine and freshwater), and in some cases, human wel-

fare. The standards to protect aquatic life are expressed on the bases of acute and chronic toxicity levels. The standards to protect human health are not expressed on the bases of acute and chronic toxicity levels. However, these standards are listed in the acute column because they are maximum values. Where there are standards for protection of aquatic life and for human health, the more stringent of the two standards is presented in Table I-4.

As is true for the MCLs and SMCLs, the point of compliance with AWQC must be determined at each Beale site. It may be appropriate to consider the effects of dilution or biodegradation in determining the allowable concentration for an aquifer or surface water body.

MCL goals (MCLGs) were also reviewed as potential TBCs. MCLGs are health based standards that do not take into account the cost or implementability of treatment. They are goals for the nation's public water supply systems that represent the concentration at which there is no known risk to human health. EPA has determined that MCLs protect human health and the environment and, therefore, EPA classifies MCLs as ARARs. MCLGs are not promulgated, enforceable requirements and therefore are TBCs, not ARARs. MCLGs, along with other TBCs, may be used when multiple compounds or exposure pathways cause the MCLs and other ARARs to be less than fully protective.

The Technical Services Branch of the California Department of Health Services (DHS) Applied Action Levels for drinking water are also potential TBCs for the Beale sites. DHS Applied Action Levels are developed for and must be used in conjunction with the process outlined in the DHS document "California Site Mitigation Decision Tree," May 1985. Applied Action Levels and the Site Mitigation Decision Tree process should be used when the ARARs for a given constituent are insufficient to protect public health.

The DHS Action Levels for Public Water Supplies are potential TBCs for the Beale sites. DHS Action Levels are numeric guidelines for the protection of public drinking water supplies established by the Public Water Supply Branch of the DHS. Action Levels should be used in conjunction with Applied Action Levels to determine the levels at which water purveyors must take corrective action. Action Levels are TBCs and should be used when ARARs for a given constituent do not adequately protect public health.

Maximum Concentrations and Guidelines for Livestock Drinking Water recommended by the Food and Agriculture Organization of the United Nations (FAO) are potential TBCs. These limits are recommended levels for use in agricultural irrigation and livestock consumption. These limits could be TBCs at Beale sites where contaminated water could be potentially used for agricultural irrigation or livestock consumption if there are nc ARARs for the constituent of interest.

Air

The federal Clean Air Act (CAA) is administered in California under the Mulford-Carrell Air Resources Act (CARA). The air standards under this act that are established by EPA are:

- Criteria pollutants--National Ambient Air Quality Standards (NAAQS) Program
- Hazardous air pollutants--New Source Emissions Standards for Hazardous Air Pollutants (NESHAP) Program
- Designated Pollutants--New Source Performance Standards (NSPS)

The NAAQS are the only CAA standards that could be considered chemical-specific ARARs. NESHAPS and NSPS are potential action-specific ARARs. The NAAQS are not directly enforceable. However, the NAAQS are used to develop State Implementation Plans (SIPs), and SIPs and NAAQS are used to set emission limitations in permits. The emission limitations are enforceable standards. If the Beale sites are emitting air contaminants, these sites could be considered stationary sources and the NAAQS could be considered applicable or relevant and appropriate for the Beale sites. The NAAQS were reviewed for potential applicability or relevance and appropriateness to the constituents currently detected (August 1989) in air at the Beale sites. There are no NAAQS for these constituents. Likely potentially applicable or relevant and appropriate NAAQS for the Beale sites will include the standards for lead, particulate matter, and ozone. In addition to the provisions of the federal CAA, the CARA establishes specific requirements for certain pollutants. The Air Resources Board (ARB) has divided California into specific air basins and has set standards for these basins. Local Air Pollution Control Districts (APCDs) have been delegated primary responsibility for the

control of emissions from stationary sources in each basin. As with the NAAQS, the CARA air standards could be considered a potential ARAR for the Beale sites. The rules and regulations governing air pollution control in Yuba County were reviewed as potential TBCs for the Beale sites. No standards for any of the known Beale site contaminants were found in these rules and regulations. Likely potentially applicable or relevant and appropriate Yuba County standards for Beale will include the standards for visible emissions (Rule 3.0), particulate matter concentration (Rule 3.2), dust and fumes (Rule 3.3), and odors (Rule 2.13).

The California DHS Applied Action Levels for air are also potential TBCs for the Beale sites. DHS Applied Action Levels are developed for and must be used in conjunction with the process outlined in the DHS document "California Site Mitigation Decision Tree," May 1985. Applied Action Levels and the Site Mitigation Decision Tree process should be used when the ARARs for a given constituent are insufficient to protect public health. Applied Action Levels for constituents detected in ambient air downwind of Landfill Number 3 are listed in Table I-5.

Soil

The California Hazardous Waste Management regulations, CAC Title 22, Division 4, Chapter 30 Total Threshold Limit Concentrations (TTLC) and Soluble Threshold Limit Concentrations) (STLC) for hazardous waste determination are potential TBCs. If the concentration of a constituent in the waste exceeds the TTLC or the STLC for that constituent, the waste is a hazardous waste. Although the TTLC and/or STLC values for determining whether or not a waste is hazardous would probably not be considered a cleanup level, TTLC and STLC values should be considered where an ARAR does not exist for a constituent or when an ARAR is not protective of human health.

The State Water Resources Control Board (SWRCB) Leaking Underground Fuel Tank (LUFT) Field Manual is another potential TBC. This manual sets cleanup levels for benzene, toluene, xylene, ethylbenzene, and total petroleum hydrocarbons (see Table I-6). These levels are determined from site characteristics. Computer modeling is used to determine these levels.

Location-Specific

Tables I-7 and I-8 provide the potential state and federal location-specific requirements currently identified as potential ARARs for CERCLA (AFIRP) remedial actions. Location-specific ARARs differ from chemical-specific or action-specific ARARs in that they are not closely related to the characteristics of the wastes at the site or to the specific remedial alternative under consideration. Location-specific ARARs are concerned with the characteristics of the area in which the site is located. Actions may be required to preserve or protect aspects of the environment or cultural resources of the area that may be threatened by the existence of the site or by remedial actions at the site.

The laws that form the list of potential location-specific ARARs include RCRA, the National Archaeological and Historic Preservation Act, the National Historic Preservation Act, the Historic Sites, Buildings, and Antiquities Act, the Endangered Species Act, the Clean Water Act, the Safe Drinking Water Act, the Wilderness Act, the Fish and Wildlife Coordination Act, the National Wildlife Refuge System Act, the Scenic Rivers Act, the Rivers and Waters Act, the Coastal Zone Management Act, the Marine Protection Resources and Sanctuary Act, the Executive Orders on the Protection of Wetlands and on the Protection of Flood Plains, the Porter-Cologne Water Quality Control Act, and CARA.

The potential location-specific ARARs for the Beale sites are RCRA, the Executive Order on Flood Plains, the Fish and Wildlife Coordination Act, the Endangered Species Act, the California Endangered Species Act, and the California Fish and Game Code.

Site 17, next to Best Slough, is located on the edge of the 100-year flood plain. The RCRA regulations [40 CFR 264.18(b)] require that hazardous waste treatment, storage, or disposal facilities within the 100-year flood plain be designed, constructed, operated, and maintained to prevent washout. If remedial actions require construction of such a facility in the flood plain, it would likely be necessary to meet this requirement.

Site 1 is also located in a lowland that could be susceptible to light flooding. The Executive Order on Flood Plains (Executive Order 11988) could be relevant and appropriate for this site. Executive Order 11988 requires that if actions are to occur in a flood plain, measures must be taken to avoid adverse effects, minimize potential harm,

Table 5 7
INITIAL IDENTIFICATION OF POTENTIAL STATE LOCATION SPECIFIC ARARs

Requirement	Prerequisites	Citation	Description	Applicable/Relevant and Appropriate	Comments
California Endangered Species Act	Critical habitat upon which endangered species or threatened species depend	California Administrative Code (CAC), Title 14, Division 670 5, Chapter 1 5	Must take action to preserve endangered or threatened species.	Yes/	With the exception of a beetle that lives in elderberry bushes the only known endangered species at any of the Beale sites are migrant The California Endangered Species Act will be ARAR if elderberry bushes are disturbed.
Porter Cologne Water Quality Control Act	Wetland	California Water Code, Division 7, Chapter 482 CAC, Title 23, Chapter 3, Sections 2050 et seq.	Must take action to minimize destruction, loss, or degradation of wetlands	No/No	No Beale sites are within designated wetlands
California Wilderness Act	Wilderness area	CAC, Title 3, Division 5, Chapter 1.3	Must administer area in such a manner as will leave it unimpaired as wilderness and preserve its wilderness character.	No/No	No Beale sites are wilderness areas
California Fish and Game Code	Diversion, channeling, or other activity that modifies a stream or watercourse	Fish and Game Code, Division 6, Part 1, Chapter 2, Sections 5650 and 5651	Must take action to protect fish and wildlife resources.	Yes/--	There are bodies of water of the United States on some of the Beale sites Hutchinson Creek runs through Site 2 and adjacent to Site 13. Dry Creek runs parallel to Site 1/ Disturbance of these creeks could affect fish and wildlife resources.
California Wild and Scenic Rivers Act	Action that could affect a wild or scenic river	CAC, Division 5, Chapter 1.4	Must avoid taking or assisting in action that will have direct adverse effect on scenic river.	No/No	There are no wild or scenic rivers on any of the Beale sites.
California Coastal Act of 1976	Activities relating to the planning or management of coastal zone resources	Public Resources Code, Division 13, Section 21000 et seq. CAC, Title 14, Division 5.5	Activities in the California coastal zones must be consistent with approved state management programs.	No/No	The study area is an inland site with no direct access to coastal land.
Porter-Cologne Water Quality Control Act	Oceans and waters of the United States	California Water Code, Division 7, Chapter 482 CAC, Title 23, Chapter 3, Sections 2050 et seq.	Action to dispose of dredge material into ocean waters is prohibited without a permit.	No/No	No waters of sufficient size are located on any of the Beale sites to make dredge disposal feasible.

Table 1 / (continued)

Requirement	Prerequisites	Citation	Description	Applicable/Relevant and Appropriate	Comments
	Waste discharge to land of liquid or solid hazardous waste (Class I Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2531(a)	New Class I disposal units should be located where natural geologic features provide optimum conditions for isolation of wastes from waters of the state.	Yes/-	There are bodies of water on some of the Beale sites.
	Waste discharge to land of liquid or solid hazardous waste (Class I Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2531(b)(1)	New Class I disposal units must be constructed on a site underlain by natural geologic materials of permeability not more than $1x10^{-7}$ cm/sec.	Yes/-	Soil permeabilities have not been measured; however, surface soil permeabilities are generally quite low; would be applicable if such actions were to occur.
	Waste discharge to land of liquid or solid hazardous waste (Class I Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2531(c)	New Class I disposal units must not be located in areas subject to inundations by 100-year floods	Yes/-	Site 17, next to Best Slough, is located on the edge of the 100-year flood plain.
	Waste discharge to land of liquid or solid hazardous waste (Class I Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2531(d)	New Class I disposal units must have a 200-foot setback from any Holocene fault.	No/No	There are no faults that have been displaced in Holocene time near any of the Beale AFB sites.
	Solid waste discharge to land of liquid or solid hazardous waste Class I Management Unit)	CAC, Title 23, Chapter 3, Section 2531(e)	New Class I disposal units must be constructed outside areas of potential rapid geologic change.	No/No	None of the Beale sites are located in areas of rapid Waste geologic change.
	Waste discharge to land of liquid or solid hazardous waste (Class I Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2531(f)	New Class I disposal units must be constructed outside areas subject to tsunamis, seiches, and surges.	No/No	None of the Beale sites are located in areas subject to tsunamis, seiches, and surges.
	Waste discharge to land of liquid and solid designated waste (Class II Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2532(a)	New Class II waste management units should be located where site characteristics and containment structures isolate wastes from waters of the state.	Yes/-	There are bodies of water on some of the Beale sites.
	Waste discharge to land of liquid and solid designated waste (Class II Waste Management Unit)	CAC Title 23, Chapter 3, Section 2532(b)(1).	New Class II waste management units must be constructed on a site underlain by natural geologic materials or permeability not more than $1x10^{-6}$ cm/sec.	Yes/--	Soil permeabilities have not been measured; however, soil permeabilities are generally quite low; would be applicable if such actions were to occur.

Table 1-7 (continued)

Requirement	Prerequisites	Citation	Description	Applicable/Relevant and Appropriate	Comments
	Waste discharge to land of liquid and solid designated waste (Class II Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2532(c)	New Class II waste management units must be designed, constructed, operated, and maintained to prevent inundation or washout due to 100 year floods.	Yes/	Site 17 next to Best Slough is located on the edge of the 100 year flood plain.
	Waste discharge to land of liquid and solid designated waste (Class II Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2532(d)	New Class II waste management units must have a 200-foot setback from any known Holocene fault.	No/No	There are no faults that have been displaced in Holocene time near any of the Beale AFB sites.
	Waste discharge to land of liquid and solid designated waste (Class II Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2532(e)	New Class II waste management units may be located in areas of potential rapid geologic change if containment structures are designed, constructed, or maintained to prevent failure.	No/No	None of the Beale sites are located in an area of rapid geologic change.
	Waste discharge to land of liquid and solid designated waste (Class II Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2532(f)	New Class II waste management units may be located in areas subject to tsunamis, seiches, and surges if designed, constructed, and maintained to preclude failure due to such events.	No/No	None of the Beale sites are located in areas subject to tsunamis, seiches, and surges.
	Waste discharge to land of nonhazardous solid waste (Class III Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2533(a)	Class III landfills shall be located where site characteristics provide adequate separation between nonhazardous solid waste and waters of the state.	Yes/-	Some of the Beale sites' characteristics could be adequate.
	Waste discharge to land of nonhazardous solid waste (Class III Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2533(b)	New Class III landfills shall be sited where soil characteristics, distance from waste to groundwater, and other factors will ensure no impairment of beneficial uses of surface water or of groundwater beneath or adjacent to the landfill.	Yes/-	Some of the Beale sites could be adequate.
	Waste discharge to land of nonhazardous solid waste (Class III Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2533(c)	New Class III landfills should be designed, constructed, operated, and maintained to	Yes/ -	Site 17 next to Best Slough is located on the edge of the 100-year flood plain.

Table I-7 (continued)

Requirement	Prerequisites	Citation	Description	Applicable/Relevant and Appropriate	Comments
			prevent inundation or washout due to .06 year floods		
	New waste discharge to land of nonhazardous solid waste (Class III Waste Management Unit)	CAC, Title 23, Chapter 3, Section 2533(d)	New Class III landfills should not be located on a known Holocene fault	No/No	There are no faults that have been displaced in Holocene time near any of the Beale AFB sites.
	Waste discharge to land of nonhazardous solid waste (Class III Waste Management Unit)	CAC, Title 23 Chapter 3, Section 2533(e)	New Class III landfills may be located within areas of rapid geologic change if containment structures are designed, constructed, and maintained to preclude failure.	No/No	None of the Beale sites are located in an area of rapid geologic change.
Mulford-Carrell Air Resources Act (California Clean Air Act)	Nonattainment area for emitted constituent	California Health and Safety Code, Division 26, Section 39000, et. seq. AC, Title 17, Part III, Chapter 1, Section 6000 et seq.	Major sources of air contaminants in areas not in attainment for air quality must undergo more stringent new source review	Yes/	The Beale area is in attainment for ozone.

NOTE:--If a requirement is applicable, it cannot also be relevant and appropriate.

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Table I-8
INITIAL IDENTIFICATION OF POTENTIAL FEDERAL LOCATION-SPECIFIC ARARs

Requirement	Prerequisites	Citation	Description	Applicable/ Relevant and Appropriate	Comments
Resource Conservation and Recovery Act (RCRA)	RCRA hazardous waste, treatment, storage, or disposal	40 CFR 264.18(a) (42 USC 6901 et seq.)	New treatment, storage, or disposal of hazardous waste is prohibited within 61 meters (200 feet) of a fault displaced in Holocene time.	No/No	No faults have been displaced in Holocene time near any of the Beale AFB sites.
RCRA	RCRA hazardous waste, treatment, storage, or disposal	40 CFR 264.18(b) (42 USC 6901 et seq.)	Treatment, storage, or disposal facilities within the 100-year flood plain must be designed, constructed, operated, and maintained to prevent washout.	Yes/--	Site 17 next to Best Slough is located on the edge of the 100-year flood plain.
Executive Order on Flood Plains	Action that will occur in a flood plain (i.e., lowlands and relatively flat areas adjoining inland and coastal waters, and other flood-prone areas)	Executive Order 11988, Protection of Flood Plains (40 CFR.6.302, Appendix A)	Must take action to avoid or minimize potential harm to flood plains, and restore and preserve natural and beneficial values.	Yes/No	In addition to Site 17, Site 1 is located in a lowland that could be susceptible to light flooding.
RCRA	Noncontainerized or bulk liquid hazardous waste	40 CFR 264.18(c) (42 USC 6901 et seq.)	The placement of any noncontainerized or bulk liquid hazardous waste in a salt dome formation, salt bed formation, underground mine, or cave is prohibited.	No/No	None of the Beale sites contain any salt dome formations, underground mines, or caves. No such disposal is planned for the site wastes.
National Archaeological and Historical Preservation Act	Alteration of terrain that threatens significant scientific, prehistorical, historical, or archaeological data	(16 USC Section 469) 36 CFR 65	Must take action to recover and preserve artifacts.	No/No	No known scientific, prehistoric, or historic artifacts are present at any of the sites.
Fish and Wildlife Coordination Act	Diversion channeling or other activity that modifies a stream or river (body of water of the United States) and affects fish or wildlife	(16 USC 661 et seq.)	Must take action to protect fish or wildlife.	Yes/--	There are waters of the United States on some of the Beale sites. Hutchinson Creek runs through Site 2 and adjacent to Site 13. Dry Creek runs parallel to Site 17. Disturbance of these creeks could affect fish and wildlife resources.

Table I-8 (Continued)

Requirement	Prerequisites	Citation	Description	Applicable/ Relevant and Appropriate	Comments
Wild and Scenic Rivers Act	Activities that affect or may affect any of the rivers specified in Section 1276(a)	[16 USC 1271 et seq. Section 7(a)]	Must avoid taking or assisting in action that will have direct adverse effect on scenic river.	No/No	There are no scenic rivers on any of the Beale sites.
Coastal Zone Management Act	Activities affecting the coastal zone including lands thereunder and adjacent shorelands	(16 USC Section 1451 et seq.)	Must conduct activities in a manner consistent with approved state management programs.	No/No	The study area is inland site with no direct access to coastal lands.
Clean Water Act (CWA) Section 404	Oceans and waters of the United States	40 CFR 125, Subpart M (42 USC 7401 et seq.)	Action to dispose of dredge material into ocean waters is prohibited without a permit.	No/No	No waters of sufficient size are located on any of the Beale sites to make dredge disposal feasible.
Marine Protection Resources and Sanctuary Act, Section 103	Oceans and waters of the United States	40 CFR 230, 231 (33 USC 1401 et seq., 16 USC 1431 et seq.)	Action to dispose of dredge material into ocean waters is prohibited without a permit.	Yes/--	There are waters of the United States on some of the Beale sites. Hutchinson Creek runs through Site 2 and adjacent to Site 13. Dry Creek runs parallel to Site 17.
Historic Sites, Buildings, and Antiquities Act	Existence of natural landmarks	(16 USC 461-467)	Must avoid undesirable impacts upon landmarks.	No/No	There are no natural landmarks on any of the Beale sites.
Rivers and Harbors Act	Activities affecting navigable waters	33 USC 401 et seq.	Substantive requirements of Section 10 must be met if an alternative developed would involve structures or work in or affect navigable waters.	No/No	There are no navigable waters on any of the Beale sites.
National Historic Preservation Act, Section 106	Property included in or eligible for the National Register of Historic Places	(16 USC 470 et seq.) 36 CFR 800	Must take action to preserve historic properties owned or controlled by federal agency. Must plan action to minimize harm to National Historic landmarks.	No/No	None of the Beale sites have been included in the National Register of Historic Places.
Endangered Species Act of 1973	Critical habitat upon which endangered species or threatened species depends	(16 USC 1531 et seq.) 50 CFR 200, 50 CFR 402	Must take action to conserve endangered species or threatened species.	Yes/No	With the exception of a beetle which lives in elderberry bushes, the only known endangered species at any of the

Table I-8 (Continued)

Requirement	Prerequisites	Citation	Description	Applicable/ Relevant and Appropriate	Comments
					Beale sites are migrant. Th Endangered Species Act will be an ARAR if elderberry bushes are disturbed.
Executive Order on Protection of Wetlands	Wetland as defined by Executive Order 11990, Section 7	Executive Order 11990 40 CFR 6.302, Appendix A	Must take action to minimize the destruction, loss, or degradation of wetlands.	No/No	No Beale sites are within designated wetlands.
Wilderness Act	Federally-owned area described as a wilderness area	(16 USC 1131 et seq.) 50 CFR 35.1 et seq.	Area must be administered in a manner that will leave it unimpaired as wilderness and preserve its wilderness character.	No/No	No Beale sites have been designated as Federal Wilderness Areas.
National Wildlife Refuge System	Area designated as part of the National Wildlife Refuge System	(16 USC 668 d.d. et seq.) 50 CFR Part 27	Only actions that are allowed under the provisions of 16 USC, Section dd(c) may be undertaken in areas that are part of the National Wildlife Refuge System.	No/No	No Beale site has been designated as a National Wildlife Refuge.
Safe Drinking Water Act	A critical aquifer protection area as defined at 40 CFR 149.3	(42 USC 300n) 40 CFR 146.4 at seq.	Actions must be taken pursuant to the aquifer's comprehensive management plan, if such a plan has been developed.	No/No	There are no critical aquifer protection areas on any of the Beale sites.
Clean Air Act	Nonattainment area for emitted constituent	40 CFR 50 et seq. (42 USC 7401)	Major sources of air contaminants in areas not in attainment for air quality must undergo more stringent new source review.	Yes/--	The Beale area is nonattainment for ozone.

NOTE:--=If a requirement is applicable, it cannot also be relevant and appropriate.

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and restore and preserve natural and beneficial values. These actions would probably need to be taken if remedial actions are to occur in Site 17.

The federal Fish and Wildlife Coordination Act and the California Fish and Game Code require consultation with the Department of Fish and Wildlife prior to any action that would alter a U.S. body of water. Hutchinson Creek runs through Site 2 and parallel to Site 13, and Dry Creek runs parallel to Site 17. Disturbance of these creeks could affect fish and wildlife resources. The Department of Fish and Wildlife should probably be contacted prior to any disturbance of these creeks.

The federal Endangered Species Act and the California Endangered Species Act require action to conserve endangered or threatened species and consultation with the Department of Interior. With the exception of a beetle that lives in elderberry bushes, the only known endangered species at any of the Beale sites are migrant. The Endangered Species Act will likely be applicable if elderberry bushes are disturbed.

The Porter-Cologne Water Quality Control Acts contains specific locational requirements for Class I, II, and III land disposal facilities. The locational requirements are different for Class I, II, and III landfills. The requirements are presented in Table I-7 and are generally in the form of restrictions on construction of facilities in flood plains, fault areas, and areas of rapid geologic change. There are also requirements that certain natural geologic features be present.

Under the federal Clean Air Act, an area that does not attain primary and secondary ambient air quality standards will be designated a nonattainment area. Major sources of air contaminants in areas not in attainment for air quality standards must undergo more stringent new source review and permitting under CARA; CARA is therefore a potential location-specific ARAR in Table I-7.

ACTION-SPECIFIC

An analysis of the action-specific ARARs has not been completed at this time for the Beale AFB sites, but it will be necessary to develop these ARARs in the future. A discussion of action-specific ARARs has been included here for informational purposes.

Action-specific ARARs define acceptable treatment and disposal procedures for hazardous substances. These ARARs generally set performance, design, or other action-specific controls or restrictions on activities related to management of hazardous substances or pollutants. These requirements are triggered by the particular remedial activities selected to accomplish a remedy. Because there are usually several alternative actions for any remedial site, very different requirements can come into play. The action-specific requirements do not in themselves determine the remedial alternative; rather, they indicate how or to what level clean-up will be achieved.

SUMMARY AND CONCLUSIONS

The information presented in this ARARs analysis provides a guideline for the development of remedial alternatives. The ultimate goal of the evaluation of ARARs is to provide the information needed to develop remedial goals and to attain a degree of cleanup of a site that is consistent with federal and state laws and guidances. Location- and chemical-specific ARARs also provide the information needed to refine and focus remaining data requirements. ARARs must be attained for hazardous constituents remaining onsite at the completion of the remedial action. Compliance with ARARs should also be ensured during implementation of remedial actions in order to protect public health and the environment.

ARARs evaluation is also an integral part of the evaluation of candidate remedial action alternatives. While location- and chemical-specific ARARs provide some information, the critical ARAR information for the evaluation of remedial alternatives must come from the action-specific ARARs. Therefore, action-specific ARARs must be developed as information becomes available during the development of the remedial alternatives.

A risk assessment will also be necessary prior to evaluation of remedial alternatives. ARARs may not address all contaminants, and ARARs may not adequately address the threat of contaminants to public health and welfare. A risk assessment will provide appropriate cleanup levels for those contaminants that do not have ARARs, based on evaluation of the threat to human health and the environment. It is imperative that action-specific ARARs be developed, chemical- and location-specific ARARs be further specified, and a risk assessment be conducted for the Beale sites prior to the evaluation of remedial alternatives.

APPENDIX J

NO FURTHER ACTION DECISION DOCUMENTS FOR SITES 7,12, AND 17

TECHNICAL DOCUMENT TO SUPPORT
NO FURTHER ACTION

SUMMARY OF ALTERNATIVE SELECTION

BEALE AIR FORCE BASE
MARYSVILLE, CALIFORNIA
SITE NO. 7
ARMY BIOLOGICAL PRODUCTION SITE

UNITED STATES AIR FORCE
OCCUPATIONAL AND ENVIRONMENTAL HEALTH LABORATORY (USAFOEHL)
TECHNICAL SERVICES DIVISION (TS)
BROOKS AIR FORCE BASE, TEXAS 78235-5501

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TECHNICAL DOCUMENT TO SUPPORT
NO FURTHER ACTION

I. BASE/INSTALLATION/FACILITY

Beale Air Force Base
Installation Restoration Program
Army Biological Production Site, Site No. 7

II. NAME AND LOCATION

Army Biological Production Site, Site No. 7
Beale Air Force Base
Yuba County
California

III. STATEMENT OF BASIS

This decision is based upon the Installation Restoration Program (IRP) Phase I and Phase II, Stage 1, studies conducted at Beale Air Force Base. Final reports from these studies are dated April 1984 and May 1987, respectively.

IV. DESCRIPTION OF THE SELECTED REMEDY

Based on the current conditions at the Army Biological Production Site, I have determined that no significant risk or threat to public health or the environment exists. Therefore, I have determined that no further action is required.

V. DECLARATION OF CONSISTENCY WITH CERCLA AS AMENDED BY SARA AND THE NCP

I have determined that the selected remedy of no further action is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate, and is cost effective. Contaminant levels at the site were determined to present no imminent or substantial threat to human health or the environment. No treatment or further actions are necessary.

United States Air Force

State of California

U.S. Environmental Protection Agency

SAC/T104/057.50

I. INTRODUCTION

This document summarizes the rationale for no further action (NFA) at the Army Biological Production Site (Site No. 7) at Beale Air Force Base (AFB), Marysville, California. This section provides a description of the site. Additional sections describe site history, current site status, including presence or absence of contaminants, and the data analysis that led to the NFA decision. The last two sections explain the NFA decision and describe regulatory agency and public involvement in the decision.

1.1 SITE LOCATION AND DESCRIPTION

1.1.1 LOCATION, ADDRESS

The Army Biological Production Site (Site No. 7) is located on Beale AFB in Yuba County, 10 miles east of Marysville, California. The site is adjacent to the Beale Rod and Gun Club, southeast of the base sewage treatment plant (see Figure J-7-1). Both the south and west borders of the base are within 1 mile of the site.

1.1.2 AREA OF SITE, TOPOGRAPHY, LOCATED IN FLOOD PLAIN

The elevation of the site is approximately 95 feet above sea level.

1.1.3 ADJACENT LAND USES

The area around the base is sparsely populated, and the primary land use is agriculture.

1.1.4 LOCATION AND DISTANCE TO NEARBY POPULATIONS

The base housing area, inhabited by approximately 6,000 people, is located about 4.5 miles east of the site. Other cities and towns in the area include Marysville, Yuba City, and Olivehurst to the west, and Wheatland to the south.

1.1.5 GENERAL SURFACE AND GROUNDWATER RESOURCES

The site is one-half mile south of Hutchinson Creek, a small creek that forms in the foothills north of Beale AFB and flows south and west off the base property.

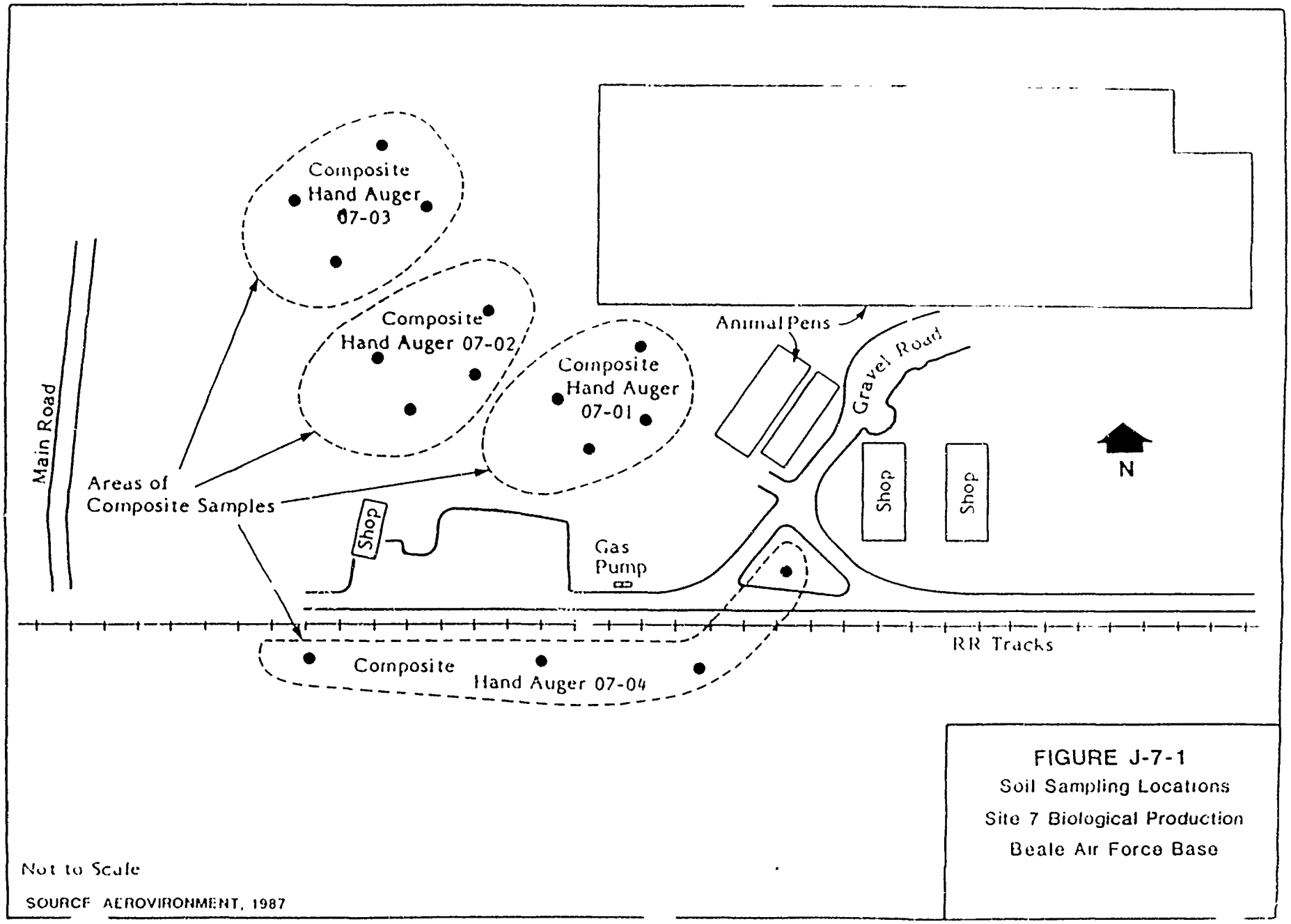


FIGURE J-7-1
Soil Sampling Locations
Site 7 Biological Production
Beale Air Force Base

Not to Scale

SOURCE AEROVIRONMENT, 1987

1.1.6 SURFACE AND SUBSURFACE FEATURES

The site is a grassland area at very low relief. The soil consists of poorly drained, medium-textured clay and hardpans of the Yokohl-Kimball Association which formed on the Victor Formation. The Victor Formation consists of heterogeneous mixtures of clay, silt, sand, and gravel deposited by streams draining the Sierra Nevada.

II. SITE HISTORY

2.1 DESCRIBE SITE HISTORY IN TERMS OF:

2.1.1 HOW SITE WAS ESTABLISHED

This site was formerly used by the U.S. Army to produce wheat stem rust (Puccinia graminus tritici).

2.1.2 PERIOD OF OPERATION

Wheat stem rust production took place from 1962 to 1969.

2.1.3 HISTORY OF OWNERSHIP

The site is currently used by the Beale Rod and Gun Club. Game birds are housed in large pens on the site.

2.1.4 SITE USES OVER PERIOD OF OPERATION

The chemicals used at the site during wheat stem rust production included freon, carbon dioxide, ethylene oxide, and possibly trichloroethylene (TCE).

2.1.5 TYPE OF PERMITS APPLIED FOR AND/OR APPROVED, PERMITTING AUTHORITY

Data on permits related to the wheat stem rust production is not known.

2.1.6 HISTORY OF RELEASES

In 1969, the production stocks remaining at Beale were destroyed and the material was rendered inactive by chemical treatment and incineration. The residual ash was assayed and plowed into the soil at the site to a depth of 6 inches.

The entire destruction process was accomplished successfully, in complete cooperation with federal and state agricultural authorities.

2.1.7 WASTE CHARACTERISTICS

An IRP Phase I Records Searc indicated that this site did not have a significant potential for contaminant migration (Engineering-Science, 1984). The site received a HARM score of 52.

The site was sampled and characterized as part of the Beale AFB IRP Phase II, Stage 1 study. No significant contamination was detected at the site (AeroVironment, 1987).

III. CURRENT SITE STATUS

3.1 PHYSIOGRAPHY AND CLIMATOLOGY

Beale AFB is located in the eastern part of the Sacramento Valley which, together with San Joaquin Valley to the south, constitutes the Great Central Valley of California. The Great Valley extends from Bakersfield in the south to Redding in the north. It is about 60 miles across, and is bordered to the east by Sierra Nevada Foothills and to the west by the Coast Ranges.

Beale AFB displays characteristics of both the Great Valley and the Sierra Nevada geomorphic provinces. The western portion of the base is relatively flat grassland, characteristic of the Great Valley. The eastern areas of the base consist of gently sloping hills, which are the foothills of the Sierra Nevadas.

The elevation of Beale AFB ranges from 80 to 90 feet above the National Geodetic Vertical Datum of 1929 (NGVD) along the western and southwestern boundary, to more than 400 feet in the northeastern part of the base. The rise in elevation occurs along gently sloping hills common to the Sierra Nevada Foothills, which rise gradually to over 13,000 feet NGVD at the Sierra Nevada crests.

The Sacramento River drains the Sacramento Valley flowing southerly to the Sacramento-San Joaquin Delta for eventual discharge through San Francisco Bay into the Pacific Ocean. The Feather River, a tributary of the Sacramento River, flows southward west of the base. Both the Yuba River to the north of Beale Air Force Base, and the Bear River to the south, drain from east to west into the Feather River. Several small creeks flow from east to west across the base and converge with either the Bear River or the Feather River, southeast of the base.

The Beale AFB area climate is fairly typical of the Great Central Valley. Mean winter temperatures (November through April) are in the mid-40s (degrees Fahrenheit) to mid-50s, with winter lows in the 20s and winter highs in the 70s and 80s. Mean summer temperatures (May through October) are in the mid-60s to upper 70s, with summer highs greater than 100°F and summer lows in the high 40s and low 50s.

Annual precipitation fluctuates widely in California, with drought conditions followed by heavy rainfall years, and vice versa. The mean annual precipitation rate for the Beale AFB area is 23.1 inches, based on data from 1960 to 1985. Almost 95 percent of this rainfall occurs during the rainy period from October to April.

3.2 SOILS

3.2.1 SOIL DESCRIPTION

Soils at Beale AFB consist of three predominant types. The western third of the base is underlain by the Yokohl-Kimball Association, which formed on moderately old alluvial fans. The soils consist of poorly drained, medium-textured clay and hardpans developed on the Victor Formation.

3.2.2 SOIL CONTAMINATION

Surface soil at Site 7, the Biological Production Site, was sampled on November 20, 1985. The sampling was conducted in a loose grid pattern that included a large area north of the railroad tracks and an area just south of the tracks. Sixteen samples were collected from a depth of zero to 0.5 feet. At the laboratory, four groups of four samples (related by vicinity) were composited and analyzed for volatile organic compounds and heavy metals. Table J-7-1 shows the soil sampling results for Site 7.

The composite sample from an area south of the pheasant pens and north of the railroad tracks contained 12 mg/kg silver, which is slightly elevated above background (approximately 4 mg/kg). Previous analyses of the residual ash from production stock incineration indicate the level of silver present in the residue was about 2 ppm (mg/kg) (Engineering Science, 1984). No other contaminants were found above background levels.

AL T.24/359.50

Table J-7 1

Soil Sampling Resu[illegible]
Site 7 - Biological Product[illegible] (DA-4)

SITE 7 - BIOLOGICAL PRODUCTION (DA-4)
Acurex Report # 851[illegible]-048

Sampled 11/20/85 for 8010/8020 and Metals
Units-UG/G

			Total Metals								8010				8020
ACUREX #	AV SAMPLE#	DEPTH (FT)	As	Ba	Cd	Cr	Pb	Hg	Se	Ag	Methylene chloride	Chloroform	1,1,1-TCA	Carbon Tetrachloride	Ethyl Benzene
810779-82	7-1-H1	0.5	13	89	0.6	20	12	<.05	0.4	12	0.002	0.0004			0.001
810783-86	7-2-H1	0.5	16	89	0.6	29	13	<.05	0.4	2.8	0.005	0.00042	0.00008		0.0014
810787-90	7-3-H1	0.5	12	82	0.6	25	11	<.05	<0.2	2.8	0.002	0.00022		.00004	0.0006
810791-94	7-4-H1	0.5	6.8	71	0.4	18	[illegible]	<.05	<0.2	6	0.002	0.0003			0.0009
		DOHS TTLC:	500	10000	100	2500	1000	20	100	500					

Source: AeroVironment, 1987

Note: Only those results reported at concentrations above detection are presented.

3.3 GROUNDWATER

3.3.1 HYDROGEOLOGIC SETTING

Beale AFB is located within the Sacramento Basin Hydrologic Area along the eastern basin margin. Groundwater movement along this margin, at the turn of the century, was from the Sierra Nevada Foothills in the east toward the Feather and Sacramento Rivers to the west. The river system thus served as discharge points for the groundwater. As a result of extensive groundwater extraction, primarily for crop irrigation since the turn of the century, the major discharge for the groundwater has been through pumping. This has altered the direction of groundwater movement in many places throughout the Sacramento Valley, including areas near Beale AFB. The rivers no longer serve as groundwater discharge points. In fact, water from the river channels recharge the groundwater system.

Another source of recharge to the regional groundwater reservoir is along formation outcrops in the Sierra Nevada Foothills, which at depth constitute the major water supply aquifers. Percolation of rainwater or irrigation waters through these materials reaches the groundwater reservoir. However, only lands with sufficiently permeable soil will permit percolation.

In the Sacramento Valley, groundwater occurs under unconfined and confined conditions. Holocene deposits, such as flood plains and alluvial fans, usually contain unconfined groundwater, except when the sediments are overlain by clayey (flood plain) materials. In older materials, the water may be unconfined at shallow depths and completely confined at greater depths. The depth to the water varies from less than 10 feet in the central part of the valley to almost 100 feet along valley margins.

Beale AFB straddles the eastern groundwater basin margin. A pumping trough is located south-southwest of the base, bordered by the Yuba, Feather, and Bear Rivers. Groundwater flow is predominantly westerly, with the possibility of localized gradients to the northwest and southwest.

Recharge to the groundwater reservoir at Beale is ultimately from instream percolation from the Yuba River, north of the base, manifested as groundwater inflow from the north, northwest, and northeast. Recharge may also occur from infiltration of precipitation, irrigation waters, and intermittent creeks. These latter recharge sources would

strongly depend on the presence of hardpan, since hardpan severely restricts vertical movement of water.

Discharge of groundwater from the aquifer system occurs mainly from pumping. At Beale, groundwater is pumped from nine water supply wells located within the base boundary.

3.3.2 GROUNDWATER CONTAMINATION

No groundwater samples were obtained specifically for investigation of this site. Base production wells were sampled in early 1986 as part of IRP Phase II, Stage 1 activities. Samples were analyzed for volatile and extractable organics, metals, oil and grease, and phenols. Although several metals were detected above the analytical detection limit (but below the limit of quantification), no evidence of contamination was noted.

3.4 SURFACE WATER

3.4.1 FLOW RATES

No surface water samples were obtained specifically for investigation of this site. No major streams flow through or are adjacent to the site. Hutchinson Creek passes within one-half mile to the north.

3.4.2 CONTAMINANT LOADS

No surface water samples were obtained specifically for investigation of this site. No major streams flow through or are adjacent to the site. Hutchinson Creek passes within one-half mile to the north.

3.5 RECEPTORS

3.5.1 HUMAN

There are no potential receptors evident at the Army Biological Production Site. Contaminants were undetected or at low concentrations that do not represent a threat to groundwater, surface water, or air quality.

3.5.2 WILDLIFE

There are no potential receptors evident at the Army Biological Production Site. Contaminants were undetected or at low concentrations that do not represent a threat to groundwater, surface water, or air quality.

IV. DATA ANALYSIS/RISK ASSESSMENT

4.1 SOILS

In the IRP Phase II, Stage 1 study, samples were collected and composited from the top 6 inches of soil at 16 locations around the biological production site. The analysis of the four composite samples showed no organic chemical contamination and only slightly elevated silver concentrations (2.5 to 12 mg/kg). The silver concentrations are not considered environmentally significant. Army documents reviewed during the IRP Phase I record search reported that all chemicals used at the biological production facility were incinerated, and that no contamination existed at the site. Results of this sampling program supported those documents. No contamination appears to exist in soils at this site.

4.2 GROUNDWATER

Groundwater samples were not collected at this site.

4.3 SURFACE WATER

Surface water samples were not collected at this site.

4.4 AIR

Air samples were not collected at this site.

4.5 SUMMARY

Risk assessments are conducted to better understand the nature of chemical releases from a site, the potential pathways of human exposure, the degree to which releases (if any) could violate applicable standards and criteria, and a measure of the potential threat to public health as a result of such releases.

Based on analysis of the available data, there is no substantial current or future risk to public health resulting from the Army Biological Production Site. No source of contamination was detected, and therefore there is little probability of chemical releases to environmental transport media such as soil, groundwater, surface water, or air. Because no contamination source or environmental pathways exist, there is little or no probability of human exposure or risk to public health associated with the site.

V. SELECTED ACTION

Sixteen surface soil samples were collected at the Biological Production Site to evaluate the possibility of contamination resulting from biological research previously conducted by the Army at this location. The results show that no contamination exists at this site. This finding agrees with Army reports, which indicate that no contamination was left after the Army departed from the site.

5.1 ALTERNATIVES EVALUATION

Alternatives considered for the Biological Production Site include:

1. No further action: No contaminants remain at the site and no threat to the environment exists, so no further action need be taken.

2. Additional shallow soil sampling: If further questions exist about the site conditions, samples could be collected at more locations around the site and at depths greater than zero to 0.5 foot.

5.1.1 THE SELECTED ACTION

The no further action alternative was selected, based on the results of IRP Phase II, Stage 1 study. No contamination was detected at the sampled locations, and no other contamination is believed to exist at the site.

This alternative was proposed in the IRP Phase II, Stage 1 Report (AeroVironment, 1987), and the California Department of Health Services and the Regional Water Quality Control Board have concurred with the "no action" alternative.

5.2 CONSISTENCY WITH ENVIRONMENTAL LAWS

5.2.1 ARAR COMPLIANCE

None of the samples collected at the Army Biological Production Site had concentrations of contaminants that approached or exceeded applicable or relevant federal or state standards or guidelines for the protection of human health and the environment. Therefore, no regulatory requirements for further investigative or remedial actions are triggered.

Federal, state, and local laws, regulations, standards, policies, and criteria considered include the Resource

Conservation and Recovery Act, the Clean Air Act, the National and California Ambient Air Quality Standards, the Department of Transportation Hazardous Material Transport rules, Federal Water Quality Criteria, the National Environmental Policy Act, the California Environmental Quality Act, federal and state worker health and safety requirements, National Pollution Discharge Elimination System requirements, EPA's groundwater strategy, the California Health and Safety Code, the California Hazardous Wastes Control Act, the California Administrative Code (Titles 22 and 23), the California Applied Action Levels for Toxic Waste Sites, and applicable local ordinances and requirements.

VI. REGUL TORY AGENCY AND PUBLIC INVOLVEMENT

6.1 REGULATORY AGENCIES

Federal, state, and local regulatory agencies have provided review and comment on IRP activities at Beale AFB since the initiation of the program in 1983. Involved agencies include the U.S. Environmental Protection Agency (EPA), the California Department of Health Services (DHS), the Central Valley Regional Water Quality Control Board (RWQCB), and the Yuba County Health Department.

In late 1986, copies of the draft IRP Phase II, Stage 1 report recommending no further action at the Army Biological Production site were distributed to the agencies for review and comment. DHS and the RWQCB provided written comments (DHS, 1987; RWQCB, 1987). These comments were responded to on a point-by-point basis in letters to DHS and RWQCB from the Beale AFB Commander (Department of the Air Force, 1987a and 1987b).

Agency comments were also considered in finalization of the IRP Phase II, Stage 1 report (AeroVironment, 1987). Comments on the Army Biological Production Site indicate that DHS and the RWQCB generally concur with the recommended no further action alternative. This No Further Action Decision Document will be distributed to the agencies for formal concurrence.

6.2 PUBLIC INVOLVEMENT

Public involvement regarding IRP issues at Beale AFB has been coordinated by the Wing Public Affairs Office. Once the Record of Decision regarding no further action at the Army Biological Production Site has been approved, the

appropriate public notification and review processes will be conducted.

6.3 RESPONSES TO ALL PUBLIC COMMENTS

All public comments will be addressed following public notification and review processes as described in Section 6.2.

REFERENCES

Engineering Science. Installation Restoration Program - Phase I - Record Search, Beale Air Force Base, California. Prepared for the United States Air Force Strategic Air Command. April 1984.

AeroVironment, Inc. Installation Restoration Program - Phase II - Confirmation/Quantification - Stage 1, Beale Air Force Base, California. Prepared for Headquarters Strategic Air Command/Command Surgeon's Office. May 1987.

California Department of Health Services (DHS), 1987a. Letter from Gunther L. Sturm, Senior Sanitary Engineer, Sanitary Engineering Branch, to Capt. Stephen W. Prawdzik, USAF Hospital/SGPB, Beale Air Force Base. January 29, 1987.

California Regional Water Quality Control Board, Central Valley Region (RWQCB), 1987a. Letter from Karen A. O'Haire, Chief, North Valley Regulatory Unit, to Capt. Stephen W. Prawdzik, USAF Hospital/SGPB, Beale Air Force Base. March 24, 1987.

Department of the Air Force, 1987a. Letter from James F. Wilson, Colonel, USAF, Commander, Beale Air Force Base, to David Wang, Toxic Substances Control Division, Department of Health Services. June 10, 1987.

Department of the Air Force, 1987b. Letter from James F. Wilson, Colonel, USAF, Commander, Beale Air Force Base, to Karen O'Haire and Mike Floyd, Regional Water Quality Control Board. June 11, 1987.

TECHNICAL DOCUMENT TO SUPPORT
NO FURTHER ACTION

SUMMARY OF ALTERNATIVE SELECTION

BEALE AIR FORCE BASE
MARYSVILLE, CALIFORNIA
SITE NO. 12
ENTOMOLOGY BUILDING 440

UNITED STATES AIR FORCE
OCCUPATIONAL AND ENVIRONMENTAL HEALTH LABORATORY (USAFOEHL)
TECHNICAL SERVICES DIVISION (TS)
BROOKS AIR FORCE BASE, TEXAS 78235-5501

AF/TI94-055.50

TECHNICAL DOCUMENT TO SUPPORT
NO FURTHER ACTION

I. BASE/INSTALLATION/FACILITY

Beale Air Force Base
Installation Restoration Program
Entomology Building 440, Site No. 12

II. NAME AND LOCATION

Entomology Building 440, Site No. 12
Beale Air Force Base
Yuba County
California

III. STATEMENT OF BASIS

This decision is based upon the Installation Restoration Program (IRP) Phase I and Phase II, Stage 1, studies conducted at Beale Air Force Base. Final reports on these studies are dated April 1984 and May 1987, respectively.

IV. DESCRIPTION OF THE SELECTED REMEDY

Based on the current conditions at the Entomology Building 440 site, I have determined that no significant risk or threat to public health or the environment exists. Therefore, I have determined that no further action is required.

V. DECLARATION OF CONSISTENCY WITH CERCLA AS AMENDED BY SARA AND THE NCP

I have determined that the selected remedy of no further action is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate, and is cost effective. Contaminant levels at the site were determined to present no imminent or substantial threat to human health or the environment. No treatment or further actions are necessary.

United States Air Force

State of California

U.S. Environmental Protection Agency

AC/T.../...50

I. INTRODUCTION

This document summarizes the rationale for no further action (NFA) at the Entomology Building 440 site (Site No. 12) at Beale Air Force Base (AFB), Marysville, California. This section provides a description of the site. Additional sections describe site history, current site status, including presence or absence of contaminants, and the data analysis that led to the NFA decision. The last two sections explain the NFA decision and describe regulatory agency and public involvement in the decision.

1.1 SITE LOCATION AND DESCRIPTION

1.1.1 LOCATION, ADDRESS

The Entomology Building 440 site (Site No. 12) is located on Beale AFB in Yuba County, 10 miles east of Marysville, California. It is just east of J Street, approximately 2 miles north of the Beale Rod and Gun Club, and 2 miles south of the Fire Protection Training Area (see Figure J-12-1). The site is approximately 1 mile east of the base's west border.

1.1.2 AREA OF SITE, TOPOGRAPHY, LOCATED IN FLOOD PLAIN

The elevation of the site is approximately 120 feet above sea level.

1.1.3 ADJACENT LAND USES

The area around the base is sparsely populated, and the primary land use is agriculture.

1.1.4 LOCATION AND DISTANCE TO NEARBY POPULATIONS

The base housing area, inhabited by approximately 6,000 people, is located about 4.5 miles east of the site. Other cities and towns in the area include Marysville, Yuba City, and Olivehurst to the west, and Wheatland to the south.

1.1.5 GENERAL SURFACE AND GROUNDWATER RESOURCES

The site is approximately 1 mile west of Hutchinson Creek as it flows from north to south, before turning west off the base.

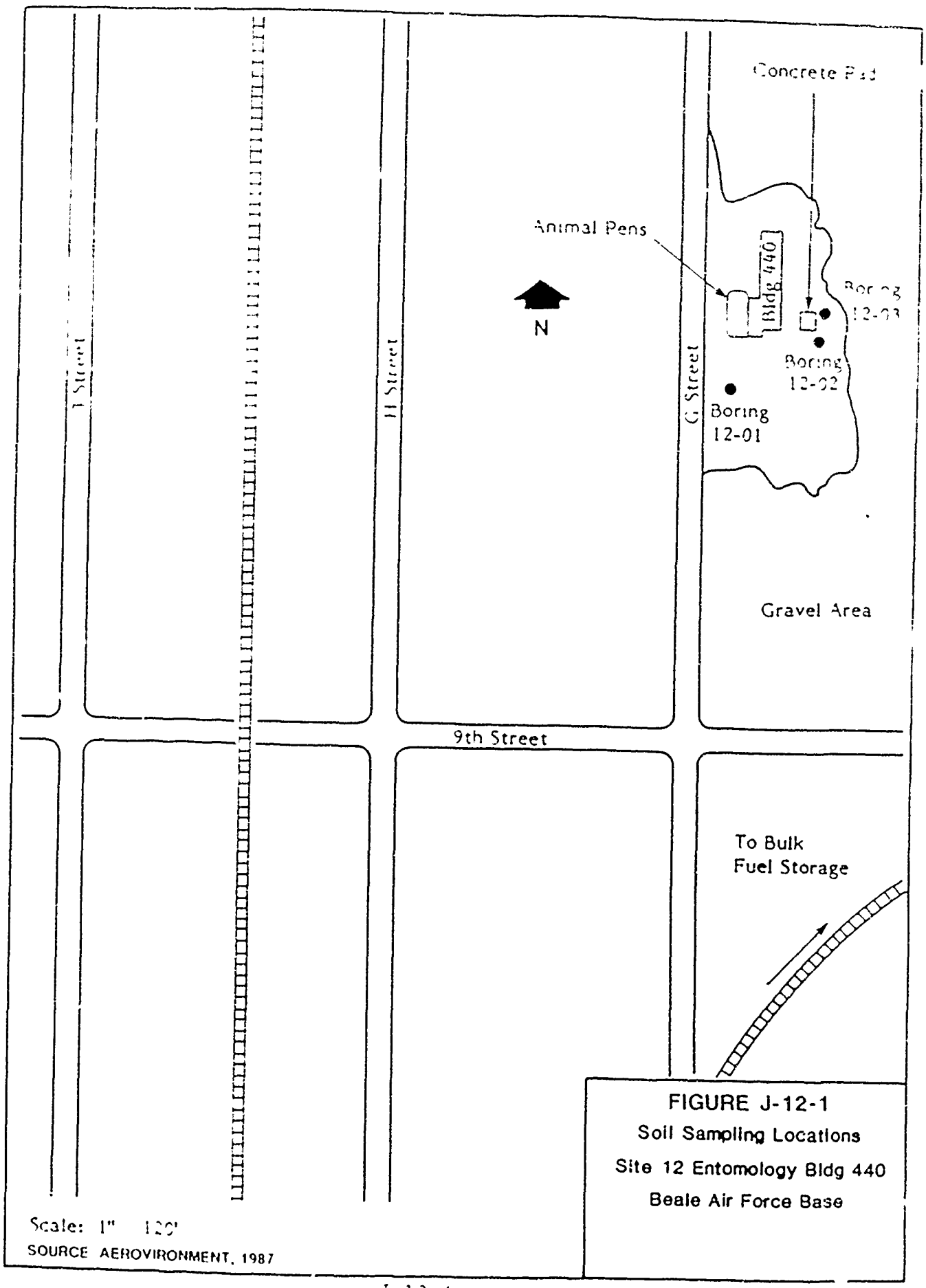


FIGURE J-12-1
Soil Sampling Locations
Site 12 Entomology Bldg 440
Beale Air Force Base

1.1.6 SURFACE AND SUBSURFACE FEATURES

The site consists of a concrete pad adjacent to the southeast corner of Building 440 and an area of low-lying ground 50 feet east of the southeast corner of the building.

II. SITE HISTORY

2.1 DESCRIBE SITE HISTORY IN TERMS OF:

2.1.1 HOW SITE WAS ESTABLISHED

Building 440 was formerly used as the base entomology shop.

2.1.2 PERIOD OF OPERATION

The entomology shop was operable from 1965 to 1980.

2.1.3 HISTORY OF OWNERSHIP

Building 440 is currently used by the base animal control officer to house stray domestic animals.

2.1.4 SITE USES OVER PERIOD OF OPERATION

Chemicals used for pest control were stored and mixed here.

2.1.5 TYPE OF PERMITS APPLIED FOR AND/OR APPROVED, PERMITTING AUTHORITY

Data on permits related to the entomology shop is not known.

2.1.6 HISTORY OF RELEASES

Two areas near the building reportedly received spills of chemicals in the past. These two areas are a concrete pad next to the southeast corner of the building and an area of low lying ground 50 feet east of the southeast corner of the building.

2.1.7 WASTE CHARACTERISTICS

An IRP Phase I Records Search indicated that this site did not have a significant potential for contaminant migration (Engineering Science, 1984). The site received a HARM score of 48. The site was sampled and characterized as part of the Beale AFB IRP Phase II, Stage 1 study. No significant contamination was detected at the site (AeroVironment, 1987).

III. CURRENT SITE STATUS

3.1 PHYSIOGRAPHY AND CLIMATOLOGY

Beale AFB is located in the eastern part of the Sacramento Valley which, together with San Joaquin Valley to the south, constitutes the Great Central Valley of California. The Great Valley extends from Bakersfield in the south to Redding in the north. It is about 60 miles across, and is bordered to the east by Sierra Nevada Foothills and to the west by the Coast Ranges.

Beale AFB displays characteristics of both the Great Valley and the Sierra Nevada geomorphic provinces. The western portion of the base is relatively flat grassland, characteristic of the Great Valley. The eastern areas of the base consist of gently sloping hills, which are the foothills of the Sierra Nevadas.

The elevation of Beale AFB ranges from 80 to 90 feet above the National Geodetic Vertical Datum of 1929 (NGVD) along the western and southwestern boundary, to more than 400 feet in the northeastern part of the base. The rise in elevation occurs along gently sloping hills common to the Sierra Nevada Foothills, which rise gradually to over 13,000 feet NGVD at the Sierra Nevada crests.

The Sacramento River drains the Sacramento Valley flowing southerly to the Sacramento-San Joaquin Delta for eventual discharge through San Francisco Bay into the Pacific Ocean. The Feather River, a tributary of the Sacramento River, flows southward west of the base. Both the Yuba River to the north of Beale Air Force Base, and the Bear River to the south, drain from east to west into the Feather River. Several small creeks flow from east to west across the base and converge with either the Bear River or the Feather River, southeast of the base.

The Beale AFB area climate is fairly typical of the Great Central Valley. Mean winter temperatures (November through April) are in the mid-40s (degrees Fahrenheit) to mid-50s, with winter lows in the 20s and winter highs in the 70s and 80s. Mean summer temperatures (May through October) are in the mid-60s to upper 70s, with summer highs greater than 100°F and summer lows in the high 40s and low 50s.

Annual precipitation fluctuates widely in California, with drought conditions followed by heavy rainfall years, and

vice versa. The mean annual precipitation rate for the Beale AFB area is 23.1 inches, based on data from 1960 to 1985. Almost 95 percent of this rainfall occurs during the rainy period from October to April.

3.2 SOILS

3.2.1 SOIL DESCRIPTION

Soils at Beale AFB consist of three predominant types. The western third of the base is underlain by the Yokohl-Kimball Association, which formed on moderately old alluvial fans. The soils consist of poorly drained, medium-textured clay and hardpans developed on the Victor Formation.

3.2.2 SOIL CONTAMINATION

Three soil borings were completed at Site 12 on November 13, 1985. Boring 12-01, the background boring, was located approximately 75 feet south of Building 440. Borings 12-02 and 12-03 were drilled near the edge of the small concrete pad located approximately 30 feet east of the southeast corner of the building. The pad may have been used as a pesticide mixing and washing area at the time the building served as an entomology shop (1965 to 1980).

Samples were taken from each boring at depths of 1.5 feet, 6.5 feet, and 11.5 feet. The 6.5- and 11.5-foot samples were submitted to the laboratory but not analyzed, pending results from analysis of the 1.5-foot samples for pesticides and herbicides. Table J-12-1 shows the laboratory results for the 1.5-foot samples.

The insecticide 4,4-DDE was detected in Boring 12-03 at a level twice the method detection limit, but no further evidence of pesticide or herbicide contamination was found at the site. Deep samples were not analyzed because samples of upper soils did not show significant contamination.

3.3 GROUNDWATER

3.3.1 HYDROLOGIC SETTING

Beale AFB is located within the Sacramento Basin Hydrologic Area along the eastern basin margin. Groundwater movement along this margin, at the turn of the century, was from the Sierra Nevada Foothills in the east toward the Feather and Sacramento Rivers to the west. The river system thus served as discharge points for the groundwater. As a result of

Table J-12-1

Soil Sampling Results
Site 12 - Entomology Building No. 440

SITE 12- ENTOMOLOGY BUILDING #440
Acurex Report # 8511-033

Sampled 11/13/85 for 509 A&B
UNITS- UG/G

ACUREX #	AV SAMPLE#	DEPTH (FT)	509A 4-4-DDE
904270	12-1-S1	1.5	
904271	12-1-S2	6.5	
904273	12-2-S1	1.5	
904274	12-2-S2	6.5	
904276	12-3-S1	1.5	0.04
904277	12-3-S2	6.5	

Note: Only those results reported at concentrations above detection are presented.

Source: AeroVironment, 1987

extensive groundwater extraction, primarily for crop irrigation since the turn of the century, the major discharge for the groundwater has been through pumping. This has altered the direction of groundwater movement in many places throughout the Sacramento Valley, including areas near Beale AFB. The rivers no longer serve as groundwater discharge points. In fact, water from the river channels recharge the groundwater system.

Another source of recharge to the regional groundwater reservoir is along formation outcrops in the Sierra Nevada Foothills, which at depth constitute the major water supply aquifers. Percolation of rainwater or irrigation waters through these materials reaches the groundwater reservoir. However, only lands with sufficiently permeable soil will permit percolation.

In the Sacramento Valley, groundwater occurs under unconfined and confined conditions. Holocene deposits, such as flood plains and alluvial fans, usually contain unconfined groundwater, except when the sediments are overlain by clayey (flood plain) materials. In older materials, the water may be unconfined at shallow depths and completely confined at greater depths. The depth to the water varies from less than 10 feet in the central part of the valley to almost 100 feet along valley margins.

Beale AFB straddles the eastern groundwater basin margin. A pumping trough is located south-southwest of the base, bordered by the Yuba, Feather, and Bear Rivers. Groundwater flow is predominantly westerly, with the possibility of localized gradients to the northwest and southwest.

Recharge to the groundwater reservoir at Beale is ultimately from instream percolation from the Yuba River, north of the base, manifested as groundwater inflow from the north, northwest, and northeast. Recharge may also occur from infiltration of precipitation, irrigation waters, and intermittent creeks. These latter recharge sources would strongly depend on the presence of hardpan, since hardpan severely restricts vertical movement of water.

Discharge of groundwater from the aquifer system occurs mainly from pumping. At Beale, groundwater is pumped from nine water supply wells located within the base boundary.

3.3.2 GROUNDWATER CONTAMINATION

No groundwater samples were obtained specifically for investigation of this site. Base production wells were sampled in early 1986 as part of IRP Phase II, Stage 1 activities. Samples were analyzed for volatile and extractable organics, metals, oil and grease, and phenols. Although several metals were detected above the analytical detection limit (but below the limit of quantification), no evidence of contamination was noted.

3.4 SURFACE WATER

3.4.1 FLOW RATES

No surface water samples were obtained specifically for investigation of this site. No major streams flow through or are adjacent to the site. Hutchinson Creek is approximately 1 mile east of the site.

3.4.2 CONTAMINANT LOADS

No surface water samples were obtained specifically for investigation of this site. No major streams flow through or are adjacent to the site. Hutchinson Creek is approximately one mile east of the site.

3.5 RECEPTORS

3.5.1 HUMAN

There are no potential receptors evident at the Entomology Building 440 site. Contaminants were undetected or at low concentrations that do not represent a threat to groundwater, surface water, or air quality.

3.5.2 WILDLIFE

There are no potential receptors evident at the Entomology Building 440 site. Contaminants were undetected or at low concentrations that do not represent a threat to groundwater, surface water, or air quality.

IV. DATA ANALYSIS/RISK ASSESSMENT

4.1 SOILS

Two soil borings (plus a background boring) were drilled at the Entomology Building 440 site to determine whether

pesticide/herbicide contamination had resulted from past entomology shop practices. The two borings were located near a concrete pad southeast and down slope of the building. The pad may have been used for mixing or loading chemicals.

No significant contamination was found in any of the samples, nor is there visual evidence or odor around the site that would indicate contamination.

4.2 GROUNDWATER

Groundwater samples were not collected at this site.

4.3 SURFACE WATER

Surface water samples were not collected at this site.

4.4 AIR

Air samples were not collected at this site.

4.5 SUMMARY

Risk assessments are conducted to better understand the nature of chemical releases from a site, the potential pathways of human exposure, the degree to which releases (if any) could violate applicable standards and criteria, and a measure of the potential threat to public health as a result of such releases.

Based on analysis of the available data, there is no substantial current or future risk to public health resulting from the Entomology Building 440 site. No source of contamination was detected, and therefore there is little probability of chemical releases to environmental transport media such as soil, groundwater, surface water, or air. Because no contamination source or environmental pathways exist, there is little or no probability of human exposure or risk to public health associated with the site.

V. SELECTED ACTION

Three soil borings were completed near Entomology Building 440, one upgradient from the site to establish background levels and two at the concrete pad suspected of being the mixing location. Samples indicate no significant pesticide contamination of the soil in the areas.

5.1 ALTERNATIVES EVALUATION

Alternatives considered for the Entomology Building 440 site include:

1. No further action: No significant concentrations of contaminants were detected at the site, and no threat to the environment exists, so no further action need be taken.

2. Additional soil sampling: Sampling would determine whether other areas around Building 440 are contaminated from entomology activities.

5.1.1 THE SELECTED ACTION

The no further action alternative was selected, based on the results of IRP Phase II, Stage 1 study. No significant contamination was detected at the sampled locations, and no other contamination is believed to exist at the site.

This alternative was proposed in the IRP Phase II, Stage 1 Report (AeroVironment, 1987), and the California Department of Health Services and the Regional Water Quality Control Board have concurred with the "no action" alternative.

5.2 CONSISTENCY WITH ENVIRONMENTAL LAWS

5.2.1 ARAR COMPLIANCE

None of the samples collected at the Entomology Building 440 site had concentrations of contaminants that approached or exceeded applicable or relevant federal or state standards or guidelines for the protection of human health and the environment. Therefore, no regulatory requirements for further investigative or remedial actions are triggered.

Federal, state, and local laws, regulations, standards, policies, and criteria considered include the Resource Conservation and Recovery Act, the Clean Air Act, the National and California Ambient Air Quality Standards, the Department of Transportation Hazardous Material Transport rules, Federal Water Quality Criteria, the National Environmental Policy Act, the California Environmental Quality Act, federal and state worker health and safety requirements, National Pollution Discharge Elimination System requirements, EPA's groundwater strategy, the California Health and Safety Code, the California Hazardous Wastes Control Act, the California Administrative Code (Titles 22 and 23), the

California Applied Action Levels for Toxic Waste Sites, and applicable local ordinances and requirements.

VI. REGULATORY AGENCY AND PUBLIC INVOLVEMENT

6.1 REGULATORY AGENCIES

Federal, state, and local regulatory agencies have provided review and comment on IRP activities at Beale AFB since the initiation of the program in 1983. Involved agencies include the U.S. Environmental Protection Agency (EPA), the California Department of Health Services (DHS), the Central Valley Regional Water Quality Control Board (RWQCB), and the Yuba County Department of Health Services.

In late 1986, copies of the draft IRP Phase II, Stage 1, report recommending no further action at the Entomology Building 440 site were distributed to the agencies for review and comment. DHS and the RWQCB provided written comments (DHS, 1987; RWQCB, 1987). These comments were responded to on a point-by-point basis in letters to DHS and RWQCB from the Beale AFB Commander (Department of the Air Force, 1987a and 1987b).

Agency comments were also considered in finalization of the IRP Phase II, Stage 1 report (AeroVironment, 1987). Comments on the Entomology Building 440 site indicate that DHS and the RWQCB generally concur with the recommended no further action alternative. This No Further Action Decision Document will be distributed to the agencies for formal concurrence.

6.2 PUBLIC INVOLVEMENT

Public involvement regarding IRP issues at Beale AFB has been coordinated by the Wing Public Affairs Office. Once the Record of Decision regarding no further action at the Army Biological Production Site has been approved, the appropriate public notification and review processes will be conducted.

6.3 RESPONSES TO ALL PUBLIC COMMENTS

All public comments will be addressed following public notification and review processes as described in Section 6.2.

REFERENCES

Engineering Science. Installation Restoration Program - Phase I - Record Search, Beale Air Force Base, California. Prepared for the United States Air Force Strategic Air Command. April 1984.

AeroVironment, Inc. Installation Restoration Program - Phase II - Confirmation/Quantification - Stage 1, Beale Air Force Base, California. Prepared for Headquarters Strategic Air Command/Command Surgeon's Office. May 1987.

California Department of Health Services (DHS), 1987a. Letter from Gunther L. Sturm, Senior Sanitary Engineer, Sanitary Engineering Branch, to Capt. Stephen W. Prawdzik, USAF Hospital/SGPB, Beale Air Force Base. January 29, 1987.

California Regional Water Quality Control Board, Central Valley Region (RWQCB), 1987a. Letter from Karen A. O'Haire, Chief, North Valley Regulatory Unit, to Capt. Stephen W. Prawdzik, USAF Hospital/SGPB, Beale Air Force Base. March 24, 1987.

Department of the Air Force, 1987a. Letter from James F. Wilson, Colonel, USAF, Commander, Beale Air Force Base, to David Wang, Toxic Substances Control Division, Department of Health Services. June 10, 1987.

Department of the Air Force, 1987b. Letter from James F. Wilson, Colonel, USAF, Commander, Beale Air Force Base, to Karen O'Haire and Mike Floyd, Regional Water Quality Control Board. June 11, 1987.

TECHNICAL DOCUMENT TO SUPPORT
NO FURTHER ACTION

SUMMARY OF ALTERNATIVE SELECTION

BEALE AIR FORCE BASE
MARYSVILLE, CALIFORNIA
SITE NO. 17
BEST SLOUGH

UNITED STATES AIR FORCE
OCCUPATIONAL AND ENVIRONMENTAL HEALTH LABORATORY (USAFOEHL)
TECHNICAL SERVICES DIVISION (TS)
BROOKS AIR FORCE BASE, TEXAS 78235-5501

TECHNICAL DOCUMENT TO SUPPORT
NO FURTHER ACTION

I. BASE/INSTALLATION/FACILITY

Beale Air Force Base
Installation Restoration Program
Best Slough, Site No. 17

II. NAME AND LOCATION

Best Slough, Site No. 17
Beale Air Force Base
Yuba County
California

III. STATEMENT OF BASIS

This decision is based upon the Installation Restoration Program (IRP) Phase I, Phase II, Stage 1, and Stage 2-1 studies conducted at Beale Air Force Base. Final reports on these studies are dated April 1984, May 1987, and August 1989, respectively.

IV. DESCRIPTION OF THE SELECTED REMEDY

Based on the current conditions at the Best Slough site, I have determined that no significant risk or threat to public health or the environment exists. Therefore, I have determined that no further action is required.

V. DECLARATION OF CONSISTENCY WITH CERCLA AS AMENDED BY SARA AND THE NCP

I have determined that the selected remedy of no further action is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate, and is cost effective. Contaminant levels at the site were determined to present no imminent or substantial threat to human health or the environment. No treatment or further actions are necessary.

United States Air Force

State of California

U.S. Environmental Protection Agency

I. INTRODUCTION

This document summarizes the rationale for no further action (NFA) at the Best Slough site (Site No. 17) at Beale Air Force Base (AFB), Marysville, California. This section provides a description of the site. Additional sections describe site history, current site status, including presence or absence of contaminants, and the data analysis that led to the NFA decision. The last two sections explain the NFA decision and describe regulatory agency and public involvement in the decision.

1.1 SITE LOCATION AND DESCRIPTION

1.1.1 LOCATION, ADDRESS

The Best Slough site (Site No. 17) is located on Beale AFB in Yuba County, 10 miles east of Marysville, California. The site is south of Gavin Mandry Road near the two bridges west of the base housing area and east of Landfill No. 3 (see Figure J-17-1).

The south border of the base is slightly over 1 mile south of the site, and the east border is approximately 2 miles to the east.

1.1.2 AREA OF SITE, TOPOGRAPHY, LOCATED IN FLOOD PLAIN

The elevation of the Best Slough site is approximately 150 feet above sea level. The site is wooded and includes four shallow trenches.

1.1.3 ADJACENT LAND USES

The area around the base is sparsely populated, and the primary land use is agriculture.

1.1.4 LOCATION AND DISTANCE TO NEARBY POPULATIONS

The base housing area, inhabited by approximately 6,000 people, is located about 1 mile east of the site. Other cities and towns in the area include Marysville, Yuba City, and Olivehurst to the west, and Wheatland to the south.

1.1.5 GENERAL SURFACE AND GROUNDWATER RESOURCES

Best Slough and its source, Dry Creek, flow southwestward to join the Bear River approximately 10 and 11 miles southwest of the base, respectively.

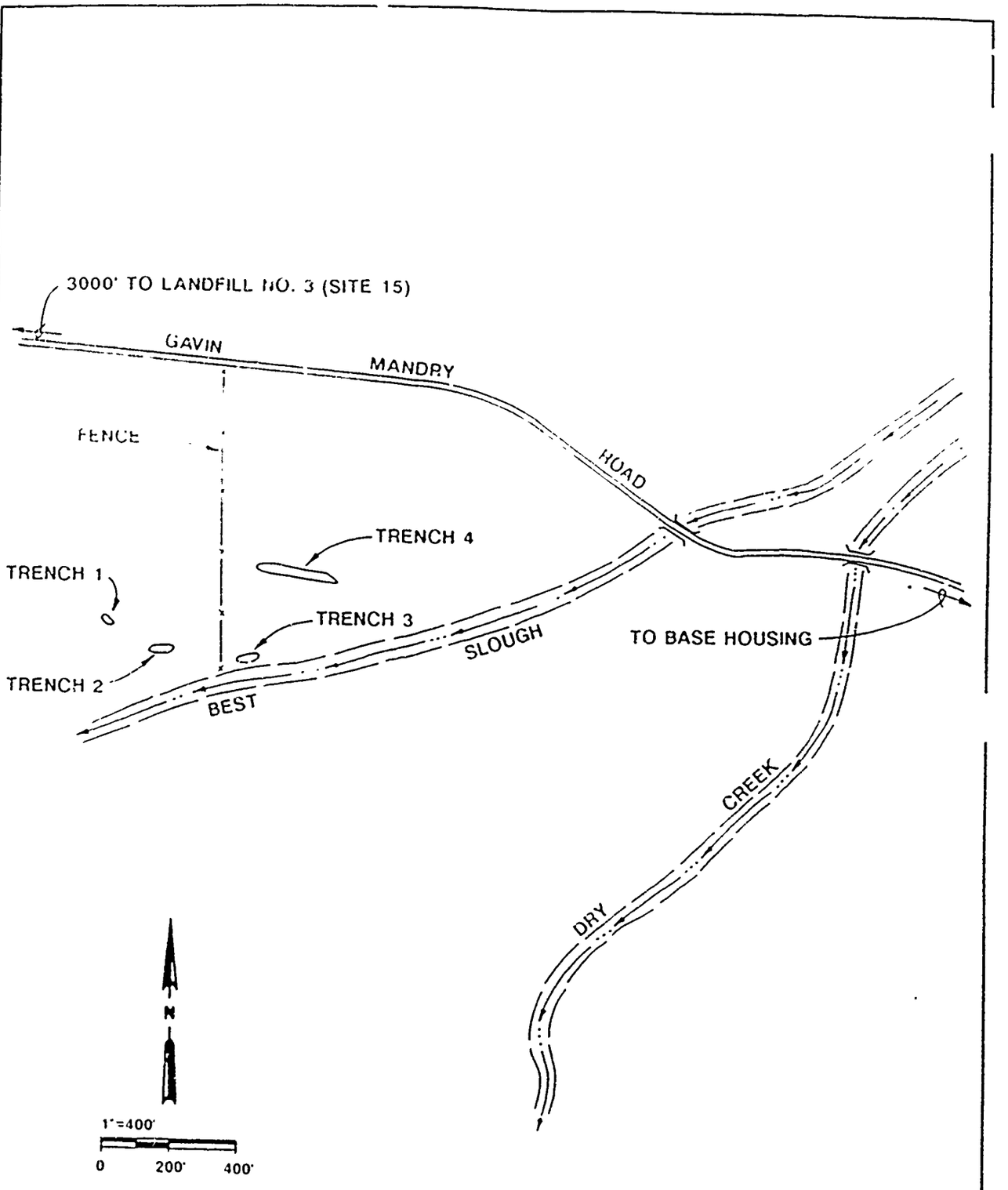


FIGURE J-17-1
SITE 17: BEST SLOUGH

CH2M HILL

1.1.6 SURFACE AND SUBSURFACE FEATURES

The site consists of four depressions or trenches in the ground, one of which contains approximately 25, and another which contains approximately 10 empty 55-gallon drums.

II. SITE HISTORY

2.1 DESCRIBE SITE HISTORY IN TERMS OF:

2.1.1 HOW SITE WAS ESTABLISHED

This site was added to the IRP investigation because empty drums were discovered in trenches 50 feet west of the slough in January 1985. The drums are badly rusted and deteriorated. No information is available on what, if anything, the drums contained or when they were placed here.

2.1.2 PERIOD OF OPERATION

No information is currently known regarding the period of operation.

2.1.3 HISTORY OF OWNERSHIP

No information is currently known regarding the history of ownership.

2.1.4 SITE USES OVER PERIOD OF OPERATION

No information is currently known regarding the site uses over the period of operation.

2.1.5 TYPE OF PERMITS APPLIED FOR AND/OR APPROVED, PERMITTING AUTHORITY

No information is currently known regarding permits related to the site.

2.1.6 HISTORY OF RELEASES

No information is currently known regarding a history of releases.

2.1.7 WASTE CHARACTERISTICS

This site was not included in the IRP Phase I Records Search and did not receive a HARM score. The site was sampled

and characterized as part of the Beale AFB IRP Phase II, Stage 1, study. No significant contamination was detected at the site (AeroVironment, 1987). A magnetic geophysical survey for buried drums was conducted at Site 17 during IRP Stage 2-1 (CH2M HILL, 1989). No sampling was conducted at Site 17 during Stage 2-1.

III. CURRENT SITE STATUS

3.1 PHYSIOGRAPHY AND CLIMATOLOGY

Beale AFB is located in the eastern part of the Sacramento Valley which, together with San Joaquin Valley to the south, constitutes the Great Central Valley of California. The Great Valley extends from Bakersfield in the south to Redding in the north. It is about 60 miles across, and is bordered to the east by Sierra Nevada Foothills and to the west by the Coast Ranges.

Beale AFB displays characteristics of both the Great Valley and the Sierra Nevada geomorphic provinces. The western portion of the base is relatively flat grassland, characteristic of the Great Valley. The eastern areas of the base consist of gently sloping hills, which are the foothills of the Sierra Nevada.

The elevation of Beale AFB ranges from 80 to 90 feet above the National Geodetic Vertical Datum of 1929 (NGVD) along the western and southwestern boundary, to more than 400 feet in the northeastern part of the base. The rise in elevation occurs along gently sloping hills common to the Sierra Nevada Foothills, which rise gradually to over 13,000 feet NGVD at the Sierra Nevada crests.

The Sacramento River drains the Sacramento Valley flowing southerly to the Sacramento-San Joaquin Delta for eventual discharge through San Francisco Bay into the Pacific Ocean. The Feather River, a tributary of the Sacramento River, flows southward west of the base. Both the Yuba River to the north of Beale Air Force Base, and the Bear River to the south, drain from east to west into the Feather River. Several small creeks flow from east to west across the base and converge with either the Bear River or the Feather River, southeast of the base.

The Beale AFB area climate is fairly typical of the Great Central Valley. Mean winter temperatures (November through April) are in the mid-40s (degrees Fahrenheit) to mid-50s, with winter lows in the 20s and winter highs in the 70s and

80s. Mean summer temperatures (May through October) are in the mid-60s to upper 70s, with summer highs greater than 100°F and summer lows in the high 40s and low 50s.

Annual precipitation fluctuates widely in California, with drought conditions followed by heavy rainfall years, and vice versa. The mean annual precipitation rate for the Beale AFB area is 23.1 inches, based on data from 1960 to 1985. Almost 95 percent of this rainfall occurs during the rainy period from October to April.

3.2 SOILS

3.2.1 SOIL DESCRIPTION

The Auburn-Sobrante-Las Posas Soil Association occurs on the eastern portion of the base and is associated with the Sierra Nevada pre-Tertiary basement complex. It is a shallow, gravelly, and rocky soil formed on decomposing metamorphic, igneous, and sedimentary rocks. It is a relatively immature soil, due to the high relief and rapid erosion of the Sierra Nevada.

3.2.2 SOIL CONTAMINATION

The IRP Phase II, Stage 1 site investigation consisted of four soil borings around the perimeter of the large trench containing the rusting drums. In addition, one boring was drilled 220 feet west of this trench, and the background boring was located along the fence at the northwest edge of the site (see Figure J-17-2). Two surface hand-auger samples were also collected from each of three trenches.

Samples from these borings were collected at 5-foot and 15-foot depths and analyzed for oil and grease, volatile organic compounds, total phenolics, and pesticides herbicides. Phase II, Stage 1 sampling was conducted on October 22 and 23, 1985. Table J-17-1 shows the laboratory results for these samples. No detectable concentrations of any of the analytes were found.

3.3 GROUNDWATER

3.3.1 HYDROLOGIC SETTING

Beale AFB is located within the Sacramento Basin Hydrologic Area along the eastern basin margin. Groundwater movement along this margin, at the turn of the century, was from the Sierra Nevada Foothills in the east toward the Feather and

Table J-17-1

Soil Sampling Results
Site 17 - Best Slough

SITE 17- BEST SLOUGH
Acurex Report # 8511-092 & 8510-048

Sampled 11/21/85 (hand auger samples) for Oil & Grease, Phenols, 509 P&B and 8010/8020
Sampled 10/22/85 (auger rig samples) for Oil & Grease, Phenols, 509 P&B and 8010/8020
UNITS- UG/G

ACUREX	AV SAMPLE	DEPTH (FT)	O&G	PHENOL	8010 Methylene Chloride	trans-1,2-DCE	Chloro-form	1,1,1-TCA	TCE	Tetra-chloro-ethane	01-chloro-benzenes	1,1,2-Tri-chloro-ethane	Chloro-ethene	1,1-DCE	(Chloro-benzene)	8020 Benzene	Toluene	Ethyl Benzene	Chloro-benzene	Xylenes	5050 2,4	D	2,4,5-T	Silvex
810813	17-1-HI	0.5	<100	<1	0.004		0.00048									0.0003	0.002	0.0007						
810814	17-2-HI	0.5	<100	<1	0.004		0.00032			0.0006								0.0005						
810815	17-3-HI	0.5	<100	<1	0.002		0.00037	0.00004								0.0002	0.0006	0.0007	0.0004	0.0001				
810816	17-4-HI	0.5	<100	<1	0.002									0002			0.0003	0.001	0.0002					
810817	17-5-HI	0.5	<100	<1	0.002		0.0031											0.0008						
810818	17-6-HI	0.5	<100	<1	0.002		0.00037	0.00027										0.0009						
904194	17-1-S1	5	<100	<1	0.016	0.0001	0.002		0.001	0.0004														
904195	17-1-S2	15	<100	<1	0.01		0.0006		0.008	0.002		0.008									<0.1	<0.1	<0.1	
904196	17-2-S1	5	<100	<1	0.006		0.0009		0.0003	0.002	0.002		0.0008											
904197	17-2-S2	15	<100	<1	0.02		0.002		0.0002															
904192	17-3-S1	5	<100	<1	0.004		0.0008		0.0003															
904193	17-3-S2	15	<100	<1	0.012		0.001		0.0002												0.1	<0.1	<0.1	
904215	17-4-S1	5	<100	<1	0.007		0.0009		0.0005					0.0001	0.0003									
904216	17-4-S2	15	<100	<1	0.02	0.0001	0.001		0.0004												0.1	<0.1	<0.1	
904217	17-5-S1	5	<100	<1	0.008		0.0007		0.0001					0.0001										
904218	17-5-S2	15	<100	<1	0.009		0.0009		0.0001															
904219	17-6-S1	5	<100	<1	0.025		0.002	0.0001	0.0001					0.0001										
904220	17-6-S2	15	<100	<1	0.015		0.001		0.0002															

Note: Only those results reported at concentrations above detection are presented.

Source: IRP Phase II, Stage 1 Final Report, AeroVironment, 1987. The DOHS TTLC for TCE is 2040 µg/g.

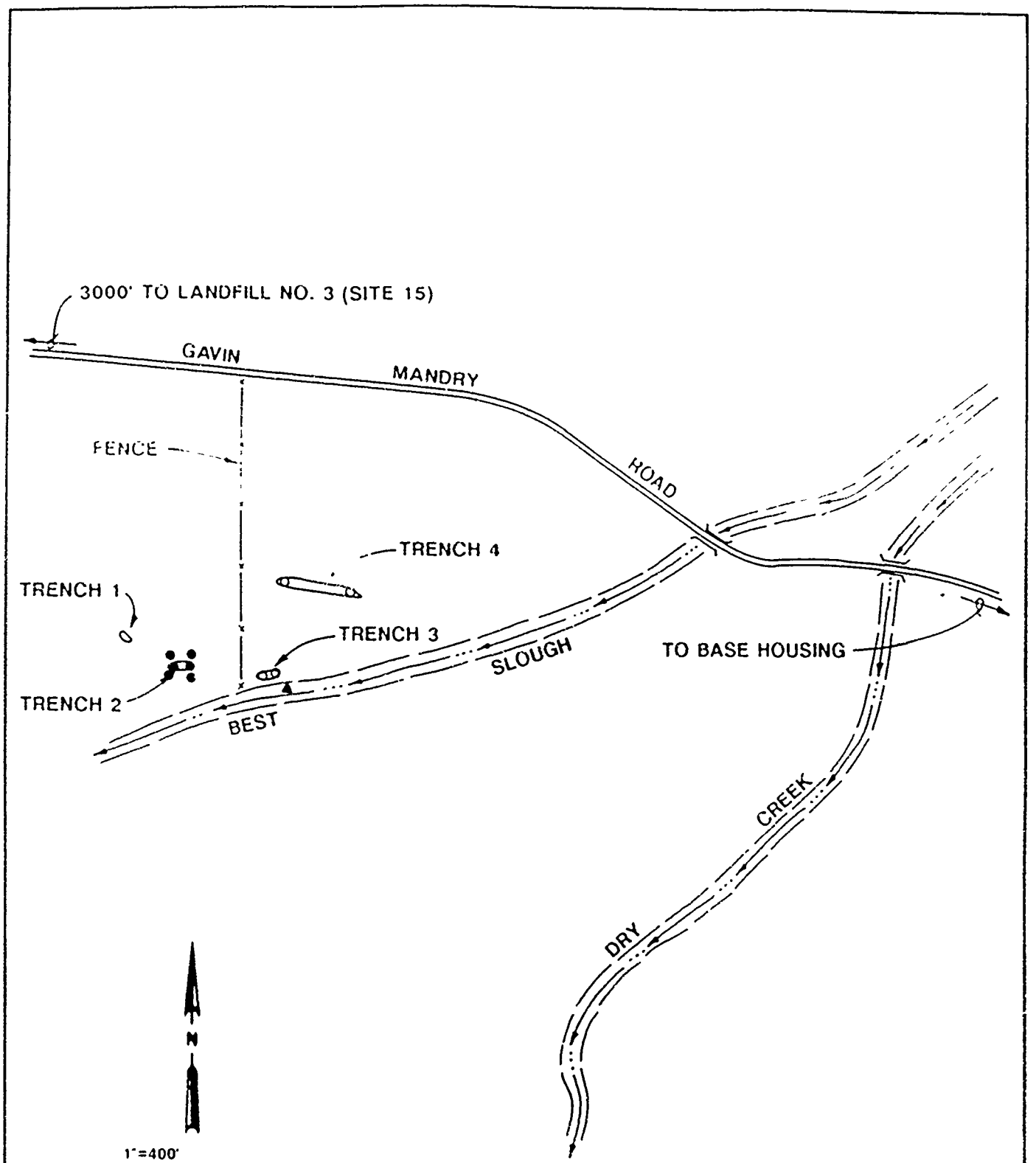


FIGURE J-17-2
IRP PHASE II, STAGE 1 SAMPLING LOCATIONS
SITE 17: BEST SLOUGH

CH2M HILL

Sacramento Rivers to the west. The river system thus served as discharge points for the groundwater. As a result of extensive groundwater extraction, primarily for crop irrigation since the turn of the century, the major discharge for the groundwater has been through pumping. This has altered the direction of groundwater movement in many places throughout the Sacramento Valley, including areas near Beale AFB. The rivers no longer serve as groundwater discharge points. In fact, water from the river channels recharge the groundwater system.

Another source of recharge to the regional groundwater reservoir is along formation outcrops in the Sierra Nevada Foothills. Percolation of rainwater or irrigation waters through these materials reaches the groundwater reservoir. However, only lands with sufficiently permeable soil will permit percolation.

In the Sacramento Valley, groundwater occurs under unconfined and confined conditions. Holocene deposits, such as flood plains and alluvial fans, usually contain unconfined groundwater, except when the sediments are overlain by clayey (flood plain) materials. In older materials, the water may be unconfined at shallow depths and completely confined at greater depths. The depth to the water varies from less than 10 feet in the central part of the valley to almost 100 feet along valley margins.

Beale AFB straddles the eastern groundwater basin margin. A pumping trough is located south-southwest of the base, bordered by the Yuba, Feather, and Bear Rivers. Groundwater flow is predominantly westerly, with the possibility of localized gradients to the northwest and southwest.

Recharge to the groundwater reservoir at Beale is ultimately from instream percolation from the Yuba River, north of the base, manifested as groundwater inflow from the north, northwest, and northeast. Recharge may also occur from infiltration of precipitation, irrigation waters, and intermittent creeks. These latter recharge sources would strongly depend on the presence of hardpan, since hardpan severely restricts vertical movement of water.

Discharge of groundwater from the aquifer system occurs mainly from pumping. At Beale, groundwater is pumped from nine water supply wells located within the base boundary. These wells are located approximately 6 miles northwest of Site 17.

3.3.2 GROUNDWATER CONTAMINATION

No groundwater samples were obtained specifically for investigations of this site. Four monitoring wells were sampled during Phase II, Stage 1, and Stage 2-1 at Site 15 (Landfill No. 3), located 3,000 feet west (downgradient) of Site 17. Samples were analyzed for purgeable halocarbons, purgeable aromatics, semivolatile organics, ICP metals, arsenic, lead, mercury, selenium, and general water quality parameters. Although several metals and arsenic were detected above the analytical detection limit, no evidence of contamination was noted.

3.4 SURFACE WATER

3.4.1 FLOW RATES

The flow rates of Best Slough and Dry Creek are currently unknown.

3.4.2 CONTAMINANT LOADS

During Phase II, Stage 1, one surface water sample was collected from Best Slough near the trenches (Table J-17-2). The volatile organic compound sample collected during the first sampling round in November 1985 was not analyzed by EPA Method 602 within the specified holding time due to a laboratory instrument malfunction. Another volatile organic compound sample was taken and analyzed in January 1986 to provide a valid data set. No volatile organic compounds were detected. Results are presented in Table J-17-2.

3.5 RECEPTORS

3.5.1 HUMAN

There are no potential receptors associated with the Best Slough site. Contaminants were undetected or at low concentrations that do not represent a threat to groundwater, surface water, or air quality.

3.5.2 WILDLIFE

There are no potential receptors associated with the Best Slough site. Contaminants were undetected or at low concentrations that do not represent a threat to groundwater, surface water, or air quality.

Table J-17-2. Surface Water Sampling Results from Site 17, Best Slough.

	17-1-W1[1] 11/19/85[1] 8511-048[2]	17-1-W2 4/16/86[1] 8604-037[3]
601 Results (µg/l)		
Chloromethane	ND	ND
Bromomethane	ND	ND
Diachlorodifluoromethane	ND	ND
Vinyl chloride	ND	ND
Chloroethane	ND	ND
Methylene chloride	1.5*	ND
Trichlorofluoromethane	ND	ND
1,1-DCE	ND	ND
1,1-DCA	ND	ND
trans-1,2-DCE	ND	ND
Chloroform	0.3	ND
1,2-DCA	ND	ND
1,1,1-TCA	ND	ND
Carbon tetrachloride	ND	ND
Bromodichloromethane	ND	ND
1,2-Dichloropropane	ND	ND
trans-1,3-Dichloropropane	ND	ND
TCE	0.3	ND
Dibromochloromethane[a]	ND	ND
1,1,2-Trichloroethane[a]	ND	ND
cis-1,3-Dichloropropane[a]		
Chloroethylvinyl ether	ND	ND
Bromoform	ND	ND
Tetrachloroethane[b]	ND	ND
Tetrachloroethene[b]		
Chlorobenzene	ND	ND
Dichlorobenzenes	ND	ND
Surrogate Recovery, %	80	88
Analysis Date:	11/25/85	4/23/86
602 Results (µg/l)		
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	0.5	ND
Chlorobenzene[4]	ND	ND
Xylenes[5]	ND	ND
Dichlorobenzenes	ND	ND
Analysis Date:	1/13/86	4/21/86
% Surrogate Recovery	93	94
Oil & Grease (mg/l)	<0.1	1.9
Phenols (µg/l)	3	5
Pesticide/Herbicides (µg/l)	ND	
Lindane		0.01
2,4-D		0.07

Footnotes:

*Typical laboratory background for methylene chloride is 1-5 µg/l.
a - These compounds coelute
b - These compounds coelute
1 - Date sampled
2 - Acurex report No., refer to sample No. 810774 (Phenols), 810771 (601), 810775 (Pesticide/Herbicide), and 810773 (Oil & Grease), beginning on page H-136 in Appendix H. The 602 sample was collected 19/9/86, refer to sample no. 810458 on page H-261 in Appendix H (report 8601-026).
3 - Acurex report No., refer to sample No. 906173 (Phenols), 906170 (601/602), 906171 (Pesticide/Herbicides), and 906172 (Oil & Grease), on pages H-305, 351, 315/334 (309A/309B) and 339, respectively, in Appendix H.
4 - Chlorobenzene and metaxylene
5 - Ortho-xylene and para-xylene
ND - Not detected

Source: IRP Phase II, Stage 1 Final Report, AeroVironment, 1987.

IV. DATA ANALYSIS/RISK ASSESSMENT

4.1 SOILS

No evidence of soil contamination from drum disposal was found at the Best Slough site. Analyses of the soil samples collected at the site indicated no detectable concentrations of contaminants. Further, there were no odors, soil staining, or evidence of chemicals in or near the drums. The drums were badly rusted, but there was no evidence of chemical residue on the inner or outer surfaces. No labels were present to identify the original contents.

4.2 GROUNDWATER

Groundwater samples were not collected at this site. No monitoring wells exist at Site 17.

4.3 SURFACE WATER

No evidence of surface water contamination from drum disposal was found at the Best Slough site. Analyses of the surface water samples collected at Site 17 indicated 0.3 ug/l in one sample, and 0.01 and 0.07 ug/l of Lindane and 2,4-D in the other sample. Phenol was detected in both samples at 3 and 5 ug/l. Oil and grease were detected in one sample at 1.9 mg/l.

4.4 AIR

Air samples were not collected at this site.

4.5 SUMMARY

Risk assessments are conducted to better understand the nature of chemical releases from a site, the potential pathways of human exposure, the degree to which releases (if any) could violate applicable standards and criteria, and a measure of the potential threat to public health as a result of such releases.

Based on analysis of the available data, there is no substantial current or future risk to public health resulting from the Best Slough site. No source of contamination was detected, and therefore there is little probability of chemical releases to environmental transport media such as soil, groundwater, surface water, or air. Because no contamination source or environmental pathways exist, there

is little or no probability of human exposure or risk to public health associated with the site.

V. SELECTED ACTION

During Phase II, Stage 1 three trenches were investigated at Site 17 using hollow-stem auger and shallow hand-auger borings. No contamination was found in any of the soil samples. A surface water sample collected in the adjacent stream showed no contamination attributed to Site 17.

During Stage 2-1 a geophysical magnetic survey was conducted at four trenches at Site 17. The survey consisted of making magnetometer readings along grid lines spaced 20 feet. Results of this survey are shown on Figures J-17-3 and J-17-4. The only metal detections are at the exposed drums. No signs of buried drums were detected.

5.1 ALTERNATIVES EVALUATION

Alternatives considered for the Best Slough site include:

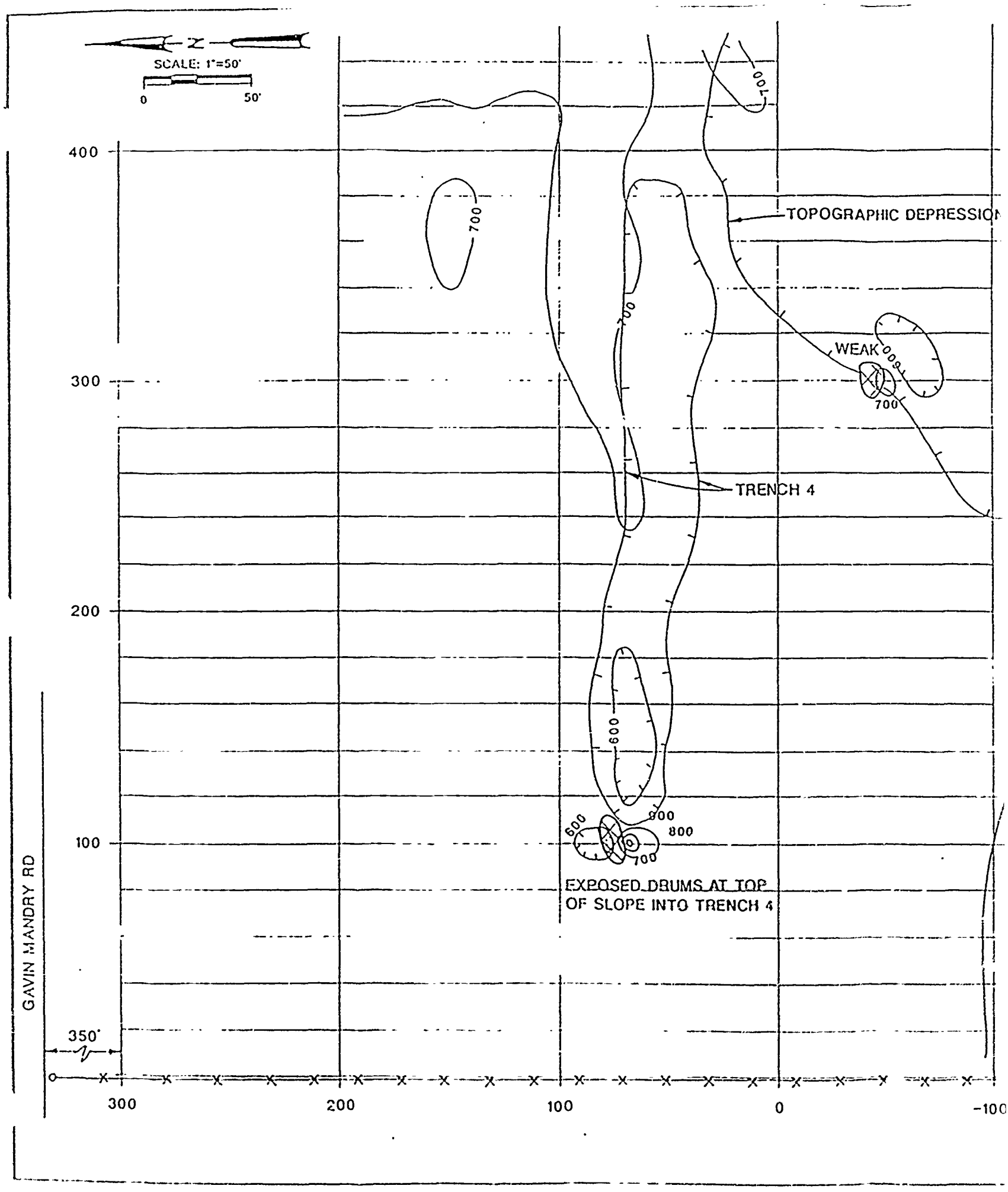
1. No further action: No contaminants were detected at the site, and no threat to the environment exists, so no further action need be taken.

2. Additional site investigation: Soil sampling and site excavation would examine a larger area around the trenches and/or refine the results obtained thus far, as well as uncover further evidence of the site's history.

5.1.1 THE SELECTED ACTION

The no further action alternative was selected, based on the results of IRP Phase II, Stage 1 and Stage 2-1 studies. No significant contamination or signs of additional buried drums were detected at the sampled locations, and no other contamination is believed to exist at the site.

This alternative was proposed in the IRP Phase II, Stage 1 Report (AeroVironment, 1987). The California Department of Health Services generally concurred with the "no action" alternative, as long as the drums were removed and properly disposed. The Regional Water Quality Control Board recommended additional soil sampling and a survey of the depressions for buried objects. The conclusion of IRP study, and the alternative selected, is that no further action is necessary at this site.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SCALE: 1"=50'
0
50'
400
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GAVIN MANDRY RD
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700
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TOPOGRAPHIC DEPRESSION
WEAK
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700
TRENCH 4
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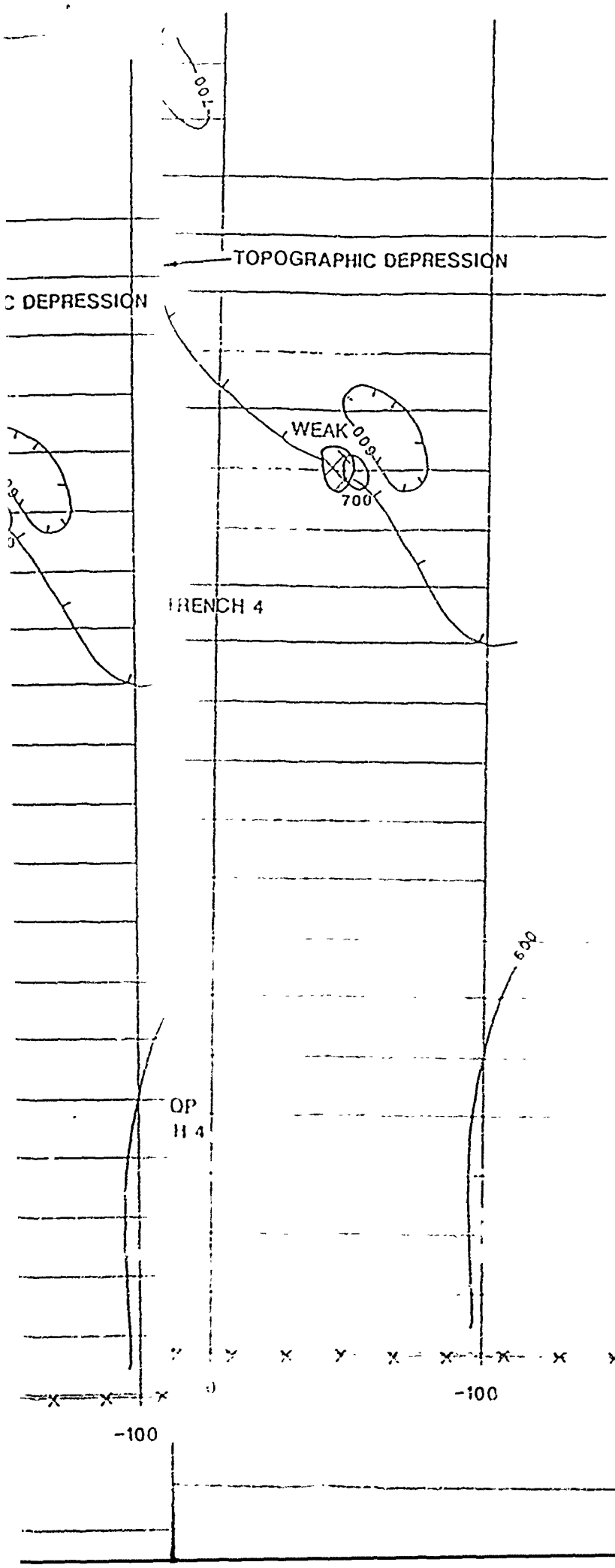
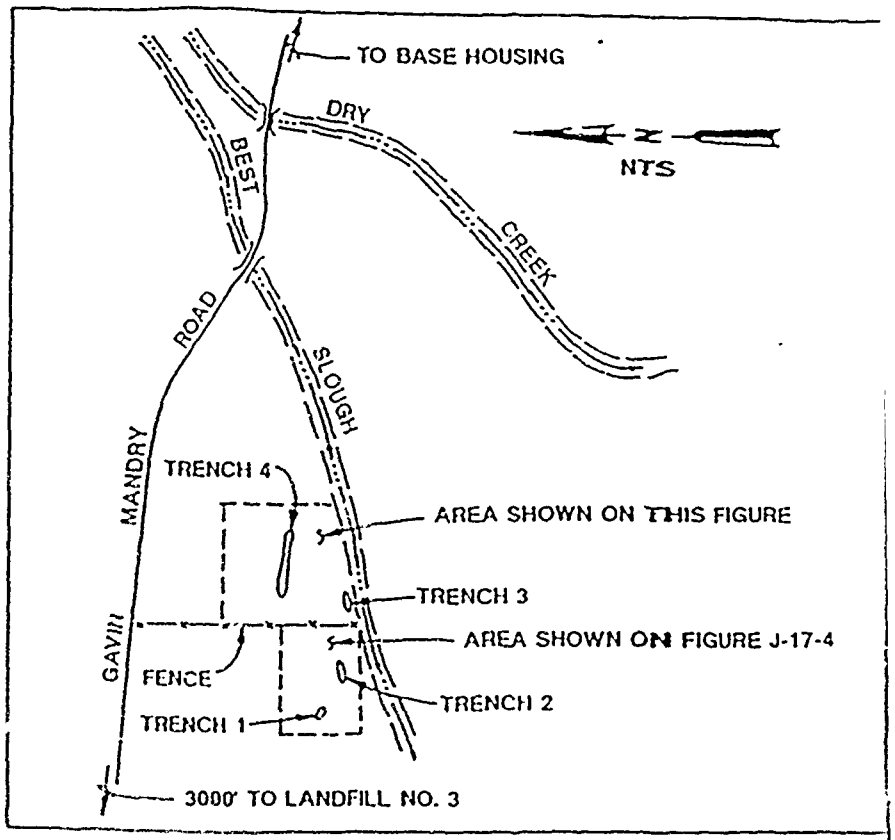
EXPOSED DRUMS AT TOP
OF SLOPE INTO TRENCH 4



LEGEND

INTERPRETED SOURCE AREAS FOR MAGNETIC ANOMALIES

MAGNETIC CONTOUR INTERVAL 100 GAMMAS



LOCATION MAP

FIGURE J-17-3
TOTAL MAGNETIC FIELD INTENSITY AND INTERPRETED SOURCE AREAS FOR MAGNETIC ANOMALIES
SITE 17: BEST SLOUGH, EAST OF FENCE

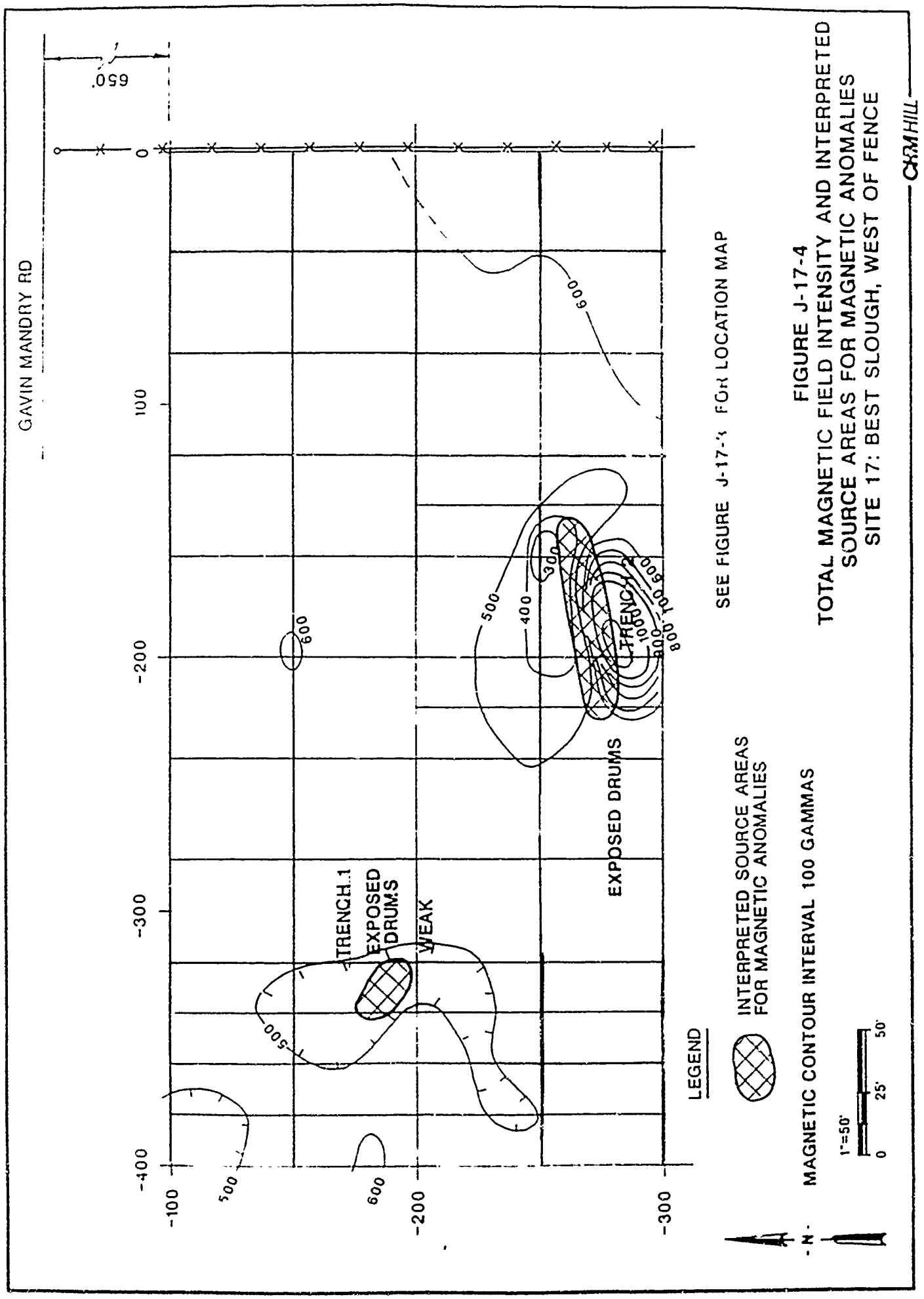


FIGURE J-17-4
TOTAL MAGNETIC FIELD INTENSITY AND INTERPRETED SOURCE AREAS FOR MAGNETIC ANOMALIES SITE 17: BEST SLOUGH, WEST OF FENCE

CH2M HILL

5.2 CONSISTENCY WITH ENVIRONMENTAL LAWS

5.2.1 ARAR COMPLIANCE

None of the samples collected at the Best Slough site had concentrations of contaminants that approached or exceeded applicable or relevant federal or state standards or guidelines for the protection of human health and the environment. Therefore, no regulatory requirements for further investigative or remedial actions are triggered.

Federal, state, and local laws, regulations, standards, policies, and criteria considered include the Resource Conservation and Recovery Act, the Clean Air Act, the National and California Ambient Air Quality Standards, the Department of Transportation Hazardous Material Transport rules, Federal Water Quality Criteria, the National Environmental Policy Act, the California Environmental Quality Act, federal and state worker health and safety requirements, National Pollution Discharge Elimination System requirements, EPA's groundwater strategy, the California Health and Safety Code, the California Hazardous Wastes Control Act, the California Administrative Code (Titles 22 and 23), the California Applied Action Levels for Toxic Waste Sites, and applicable local ordinances and requirements.

VI. REGULATORY AGENCY AND PUBLIC INVOLVEMENT

6.1 REGULATORY AGENCIES

Federal, state, and local regulatory agencies have provided review and comment on IRP activities at Beale AFB since the initiation of the program in 1983. Involved agencies include the U.S. Environmental Protection Agency (EPA), the California Department of Health Services (DHS), the Central Valley Regional Water Quality Control Board (RWQCB), and the Yuba County Department of Health Services.

In late 1986, copies of the draft IRP Phase II, Stage 1 report recommending no further action at the Best Slough site were distributed to the agencies for review and comment. DHS and the RWQCB provided written comments (DHS, 1987; RWQCB, 1987). These comments were responded to on a point-by-point basis in letters to DHS and RWQCB from the Beale AFB Commander (Department of the Air Force, 1987a and 1987b).

Agency comments were also considered in finalization of the IRP Phase II, Stage 1 report (AeroVironment, 1987).

Comments on the Best Slough site indicate that DHS generally concurred with the recommended no further action alternative as long as the drums are properly removed and disposed. The RWQCB recommended additional soil sampling and a survey of the depressions for buried objects. This No Further Action Decision Document will be distributed to the agencies for formal concurrence.

In response to RWQCB comments, a one-day geophysical survey of the site was conducted to determine if buried drums are present. Four depressions at Site 17 were surveyed using magnetometer methods. Results of the survey indicate no signs of buried metal. The only positive signs of detected metal were the exposed drums, as indicated on Figures J-17-3 and J-17-4.

6.2 PUBLIC INVOLVEMENT

Public involvement regarding IRP issues at Beale AFB has been coordinated by the Wing Public Affairs Office. Once the Record of Decision regarding no further action at Site 17 has been approved, the appropriate public notification and review processes will be conducted.

6.3 RESPONSES TO ALL PUBLIC COMMENTS

All public comments will be addressed following public notification and review processes as described in Section 6.2.

REFERENCES

Engineering Science. Installation Restoration Program - Phase I - Record Search, Beale Air Force Base, California. Prepared for the United States Air Force Strategic Air Command. April 1984.

AeroVironment, Inc. Installation Restoration Program - Phase II - Confirmation/Quantification - Stage 1, Beale Air Force Base, California. Prepared for Headquarters Strategic Air Command/Command Surgeon's Office. May 1987.

California Department of Health Services (DHS), 1987a. Letter from Gunther L. Sturm, Senior Sanitary Engineer, Sanitary Engineering Branch, to Capt. Stephen W. Prawdzik, USAF Hospital/SGPB, Beale Air Force Base. January 29, 1987.

California Regional Water Quality Control Board, Central Valley Region (RWQCB), 1987a. Letter from Karen A. O'Haire, Chief, North Valley Regulatory Unit, to Capt. Stephen W. Prawdzik, USAF Hospital/SGPB, Beale Air Force Base. March 24, 1987.

Department of the Air Force, 1987a. Letter from James F. Wilson, Colonel, USAF, Commander, Beale Air Force Base, to David Wang, Toxic Substances Control Division, Department of Health Services. June 10, 1987.

Department of the Air Force, 1987b. Letter from James F. Wilson, Colonel, USAF, Commander, Beale Air Force Base, to Karen O'Haire and Mike Floyd, Regional Water Quality Control Board. June 11, 1987.

APPENDIX K

AIR FORCE RESPONSE TO COMMENTS BY CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD AND CALIFORNIA DEPARTMENT OF HEALTH SERVICES

APPENDIX K
AIR FORCE RESPONSES TO CALIFORNIA WATER
QUALITY CONTROL BOARD GENERAL COMMENTS

BEALE AIR FORCE BASE
FINAL DRAFT - RI REPORT

Comment	Air Force Response
1. Do the previously generated reports and investigations satisfy the current RI/FS and QA/QC requirements? If not, in what areas are they inadequate?	This project did not specifically include a review of previous reports for compliance with the RI/FS and QA/QC specifications. However, all IRP reports have been thoroughly reviewed and scrutinized for compliance with requirements existing at the time each was prepared. The Air Force has expended considerable funds for draft reports and workplans to allow ample opportunity to judge adequacy of each report in this regard.
2. It is obvious from the RI report's analysis results that there were a large quantify of laboratory-induced false positives. What steps are going to be taken in the future to eliminate the recurrence, i.e., new lab, more blank samples, extractant tested and certified, etc.?	CH2M HILL, IRP Contractor, has built a new laboratory that should minimize analytical problems. Additionally, the Air Force will ensure that a better QC program is performed in future efforts.
3. Recommend looking at analytical laboratory's ventilation system or the label-marking procedure for field samples in an effort to eliminate some of the false positives.	In June 1990 CH2M HILL opened a new chemical laboratory with a positive outward pressure ventilation system.

4. Because BAFB has more than just leaking underground tank sites, it is inappropriate to use the LUFT Manual for calculating clean-up levels or criteria for recommending no further investigations at particular sites.	The LUFT field manual Leaching Potential Analysis is only used for purposes of discussion in this report as noted in Section 4.1. It was used as a basis for comparison because TTLC values have not been established for TFH-gas and diesel, or BETX.
5. A site should be removed from further investigation and remediation consideration at this stage of the RI/FS process only if all surface water, groundwater, and soil chemical parameters, metals, and compound concentrations are at or below the statistical background values and pose no impacts to the beneficial uses of the waters of the state.	So noted.
6. When total metals or compound concentrations in a sample are less than the TTLC value, but are a factor of 10 or greater than the STLC value, then, the Title 22 Waste Extraction Test (WET) procedure should be performed and the soluble concentrations determined.	In the future, Title 22 Waste Extraction Tests will be performed on IRP-generated waste that have compound concentrations greater than 10 times the STLC.
7. The short-term pump tests should be used only for determining a rough estimate of aquifer parameters and for estimating the approximate time required for a contaminant to travel off base.	Agree. The text has been reviewed to make sure that "Rate and Direction of Flow" sections do not overstate the estimates. The short-term pump tests were used only for determining a rough estimate of aquifer parameters and subsurface geology in the immediate vicinity of the well. Additional language emphasizing this has been added to the beginning of Section 4 and Appendix E of the Final Report. This discussion also describes the assumptions that were made in the pump test analyses.

8. Groundwater flow direction arrows should be provided on each of the figures that show cross section locations.	Groundwater flow direction arrows have been added to plan view maps with cross section lines where data justified confidence in the direction.

AIR FORCE'S RESPONSES TO CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SPECIFIC COMMENTS ON BEALE AIR FORCE BASE FINAL DRAFT

Comment	Air Force Response
1. Section 2.3.2.2 Surface Water Quality - Why wasn't the upgradient surface water sampled?	In Section 5.2.23, Installation Background Sampling (p. 5-74) of the original draft workplan of April 1988, CH2M HILL proposed collecting and analyzing background surface water grab samples at three (minimum) incoming streams quarterly, provided water is present, for 1 year. At the direction of the Air Force, this background surface water sampling was removed from the final work plan of October 1988.
2. Section 3.5.3.1, Soil Borings - In the last paragraph on page 3-31, it states that CH2M HILL will coordinate the soil cuttings (monitoring well and borings) disposal through Beale AFB's Environmental Engineering. Unless the cuttings are "thoroughly" analyzed, it is not recommended that they be disposed of in a landfill type fashion. We recommend that the cuttings be determined as "hazardous" or not in accordance with Title 22. If nonhazardous, they should be buried or spread adjacent to the borehole locations they came from. This method of cuttings disposal will prevent the consolidation of any potential	Cuttings suspected of being hazardous based on field screening during drilling were drummed on site. Drummed cuttings were disposed of under the direction of the Environmental Branch at Beale AFB. Thirty-six barrels of drummed drill cuttings were delivered to the Base Hazardous Waste Storage Facility; 25 of these barrels were disposed of as hazardous waste solid, N.O.S. Disposal was done through the Defense Reutilization and Marketing Office (DRMO), McClellan AFB, CA. Barrels disposed of through DRMO consisted of soil from borings 3-C-2SB, 3-C-3SB, 3-C-4SB, 3-C-6SB, 3-C-6SB, 3-C-8SB, 3-C-10SB, 18-C-1SB, 18-C-2SB, and 18-C-3SB. The remaining 11 barrels

contaminants and the development of a new ground or surface water contaminant source.	were disposed of at the Beale AFB landfill (Site 15). On November 15, 1989, an agreement was reached between Thomas Hultin, Beale AFB, and Sue Yee, California Regional Water Quality Control Board (CRWQCB), to use the Base landfill for disposal of those barrels with a total fuel hydrocarbon value of less than 400 ppm. The barrels disposed of in the landfill consisted of soil from borings 3-C-5SB, 3-C-10SB, and 23-C-2SB. Cuttings that showed no indication of being hazardous at the time of drilling using field screening techniques were stored in plastic at the drill site until analytical results confirmed they were not hazardous. These cuttings were then spread out at the drill site.
3. Section 4.1.1, Discussion of Results for Site 1 - In our November 3, 1988, comments on the IRP State 2-1 Workplan, we requested a characterization of the first storm runoff event of the season. It does not appear that this was conducted in State 2-1 of the IRP.	Beale's Bioenvironmental Engineering Office sampled seasonal flow at the site and submitted the results to the CRWQCB area engineer.
4. Section 4.1.i.1.3, Analytical Results: Surface Water - The detection limits for some of the metals analyses are too high when compared to current water quality criteria and standards. Also, boron, mercury, and PCBs should have been included in the IRP analyses, since they have been detected in the discharge by earlier Air Force sampling and analysis.	Workplan and Quality Assurance Project Plans were approved by the State Department of Health Services and Regional Water Quality Control Board. This comment will be considered in future sampling efforts.

5. Section 4.1.2.1.3, Analytical Results - On page 4-60 under Sludge Ponds and Surface Soils, the following metals should have been analyzed for, using an appropriate atomic absorption method: Arsenic, Selenium, Hexavalent Chrome, and Lead.	Arsenic, selenium, total chromium, and lead were analyzed using the ICP metals methods in the approved workplan. Future sampling efforts will use the atomic absorption method.
6. Figure 4.1.2-10, TCE and Cyanide Concentrations - The figure is mislabeled; it is actually TCE and Arsenic.	The figure has been corrected. It does show TCE and cyanide. The legend was mislabeled as TCE and arsenic.
7. Section 4.1.2.3.1, Zones of Contamination - On page 4-95, the second paragraph states that PCP was discharged onto the ground surface at each well head at 0.5 to 1 gallon of PCP per month. Is this pure PCP or it is more correct to say 0.5 to 1.0 gallons "Dowicide-G which contains PCP was discharged onto the ground at each well head"?	Dowicide-G containing pentachlorophenate was added to the wastewater from 1967 to 1984. Once a month, in order to flush the lines, 500 to 2,000 gallons of photowaste effluent was flushed into the ground at the wells or the filters at the plant according to the Phase I Records Search (Engineering Science). The concentration of Dowicide-G or pentachlorophenate in the effluent was not stated in the Records Search.
8. Section 4.1.2.3.2.2, Rate and Direction of Migration Based on Hydrogeologic Properties - On page 4-97, the first paragraph should use the groundwater gradient "i" near Site 13 rather than Site 3.	This is a typographic error and has been corrected.
9. Section 4.1.3, Discussion of Results for Site 3 - If possible, when referencing aerial photographs for site investigations, copies of the aerial should be included in the report.	The aerial photographs were not of sufficiently high quality to reproduce for the report. The explanation has been added to the text.

10. Section 4.1.3.1.3, Analytical Results - What fire fighting agents were used at the fire training burn pits? Were the appropriate chemicals analyzed for during this RI?	This and previous IRP reports discuss the history of fire training area. Potential contaminants were considered in the approved Workplan.
11. Section 4.1.3.3, Significance of Findings - Lead (Pb) was reported in three surface samples at total concentrations high enough to require soluble concentrations to be determined and compared to STLC values.	Analytical methods for this investigation were performed in accordance with the approved Workplan and Quality Assurance Project Plan. WETs will be performed in future sampling efforts for samples with total concentrations greater than 10 times the STLC.
12. Section 4.1.4.1.3, Analytical Results, page 4-147 - First paragraph indicates a zone (28 feet BGS) that had a pH of 3.6. Is it possible that a lens or an aquitard prevents the low pH liquid from migrating downward? if so, it should be determined what the lateral extent of the perched zone might be.	It is possible that a lens of impermeable material prevented the low pH liquid from migrating downward, but it is equally likely that the soil buffered the liquid as it percolated downward.
13. Section 4.1.9, Discussion of Results for Site 9: Entomology Building 2560 - First paragraph, page 4-211, states that rinsate and mixing pesticide containers have been discharged onto the gravel area and allowed to evaporate since 1981. Is this still the practice of the Entomology personnel? If so, it must be stopped.	This practice was stopped before this investigation began. A cement basin and berm were installed to replace the gravel basin August 1987, as discussed in Sections 1.3.3.2, 1.4.9.1, 1.9.1.4, 4.1.9, and 4.2.1 of the Final Draft Report.
14. Section 4.1.13.1.2, Site Hydrology - Table 4.1.13-2 was not clear which of the confined aquifers the aquifer properties were developed for, i.e., the shallow or deep aquifer.	The text has been modified to remove misunderstanding of "aquifers." The reference to average values has been removed, and a range of values presented.

15. Section 4.1.18, Discussion of Results for Site 18 - Bulk Fuel Storage Facility - In the field replicate for 18-C-10SS, the Table 4.1.18-3 indicates hazardous levels of beryllium. Is this a decimal problem or a paint chip being analyzed?	The results for barium of 122 mg/kg was incorrectly reported as the beryllium result; the actual beryllium result was less than 0.59 mg/kg. These mistakes have been corrected.
16. Section 4.1.22, Discussion of Results for Site 22: Abandoned Underground Tanks - Although quite burdensome, all abandoned, as well as operational, tanks will have to be inventoried and inspected as required under the California Underground Storage Tank Regulations.	So noted.
17. Section 6.2.16, Explosive Ordinance Disposal Area - It may be necessary to develop a monitoring and reporting program that satisfies the monitoring requirements of Title 23, Chapter 3, Subchapter 15 for the continued operation of the site as a disposal unit.	Beale AFB has submitted a Part A RCRA permit application for the EOD, and a Part B application is being prepared. No further permitting should be needed.
18. Section 6.2.24, Site 24: Landfill No. 4 - This site may be eligible for an exemption from the requirements of California's SWAT program if the following two requirements are satisfied: (1) The site contains less than 50,000 cubic yards in place refuse, and (2) no hazardous wastes are known or suspected of being discharged to the landfilled area.	So noted.

19. In Appendix I, Table 1-4, Title 22 STLC values should have been included.	Table I-4 is for groundwater and surface water. STLC values are not applicable to water samples. Title 22 STLC values have been included in Table I-6 in the Final Report.

AIR FORCE'S RESPONSES TO CALIFORNIA DEPARTMENT OF HEALTH SERVICES' COMMENTS ON BEALE AIR FORCE BASE FINAL DRAFT RI REPORT

Primary Concerns	Air Force Response
1. Operable Units - Expedited Approach - Section 4.2.2, page 4-513, describes the EPA definition of an Operable Unit. The following two main contaminated areas of concern should be placed on an expedited schedule for investigation and remediation. These two areas include the West Site Drainage Ditch (Sites 1, 5, and 21), and Landfill No. 1 area (Sites 2, 13, and 20). Beale should focus on expediting the remedial process at these two areas, while still addressing the remaining sites. An expedited response to prevent further migration of the contaminated groundwater should commence immediately at Landfill No. 1 area, due to the current and future public health and environmental exposure from this site (see primary concern #9). Further delay in controlling the migration of the groundwater plume emanating from Landfill No. 1 area will only result in a more costly remedial alternative.	So noted.

It may be possible to expedite the process by double tracking separate non-critical path portions of the process. For instance, at the Landfill No. 1 area, the Risk Assessment could begin while still defining the extent of the groundwater contamination. At the same time, preliminary selection of remedial alternatives could commence.

A critical path planning document would be beneficial in implementing this approach.

2. Contaminant Fate and Transport/Process Clarification

A) Section 1.1.3 should be written to reflect the process that Beale is following. Key elements of the RI, as well as the RA and FS, should be specified separately in Section 1.1.3. This approach will clarify and tie this RI report into the upcoming Risk Assessment and Feasibility Study, as well as provide more information for expedited response actions. It is also suggested that general report outlines be included for the RA and FS.

B) Contaminant Fate and Transport should be a key element for this RI. "Contaminant Fate and Transport" site specific sections should be included in Section 4. The Contaminant Fate and Transport sections should include contaminant persistence as well as contaminant migration. If applicable, sections of the RI report should describe estimated contaminant persistence in the

Comments 2A, B, and C are beyond the scope of this RI effort. These comments will be taken into consideration in future IRP efforts.

	site-specific environment and physical, chemical, and/or biological factors for the media(s) of interest.	
	C) Contaminant migration (including velocities, time predictions, etc.) are predicted for areas where groundwater contamination exists. However, the same evaluation of contaminant migration is not predicted for soil contamination. The same assessment of contaminant migration prediction, if applicable, should be applied to the other media including air and soil (sediment and vadose zone).	
3.	Leaking Underground Fuel Tank (LUFT) Manual - The LUFT manual is referenced throughout the report. The LUFT manual does not take into consideration public health exposure when estimating cleanup levels. This limitation should be stated in the report (page 4-4). The LUFT referenced cleanup standards stated in the report may not be the adopted cleanup levels. Cleanup levels will be determined by a risk assessment process which incorporates site specific public health and ecological based exposure data.	The LUFT field manual Leaching Potential Analysis is used only for purposes of discussion in this report, as noted in Section 4.1. It was used as a basis for comparison because TTLC values have not been established for TFH-gas and diesel, or benzene, ethylbenzene, toluene, and xylene (BETX). We stated, "Where sample concentrations exceed derived standards, it should not automatically be assumed that additional investigation or remediation is required." We added for the Final Report, "Cleanup levels will eventually be determined by a risk assessment process which incorporates site-specific public health and ecological based exposure data."
4.	Soluble Threshold Leaching Concentrations (STLC) - Title 22, STLC values should be referenced in the report and utilized as comparable guideline when applicable.	STLC is a different unit than TTLC and cannot be directly compared to soil concentrations in mg/kg. Analytical methods for this investigation were performed in accordance with the

An example is on page 4-342. Metals concentration detected in the soil are compared to the Total Threshold Limit Concentration (TTLC) values. The lead concentration of 527 mg/kg is compared to the TTLC of 1,000 mg/kg, and the report states this is not considered a hazardous waste according to the TTLC value. However, considering that the STLC for lead is 5 mg/l, and if a Waste Extraction Test (WET) is performed on this sample, the WET result may be greater than 5 mg/l. Therefore, the sample may be considered hazardous according to the STLC value.

It should also be mentioned in the report that TTLC and STLC values are not considered cleanup levels. Cleanup levels for contaminates of concern are determined on a site specific health and ecological basis during the RA and FS, and may be set at a level lower than TTLCs or STLCs.

An example is dioxin (page 4-89, Site 2). The majority of cleanup levels previously determined for dioxins have been set at, or below, 1 part per billion (ppb) utilizing the EPA's Toxic Equivalency Factor (TEF). The report states that because the TTLC is 0.01 mg/kg for tetrachlorodibenzo-p-dioxin (tetra CDD) and the detected concentration of total tetra CDD was 0.0017 mg/kg, the sediment sample is not a hazardous material. This statement infers that dioxin is not a concern, nor

approved Workplan and Quality Assurance Project Plan. WETs will be considered where appropriate in future investigation. We noted in Section 4.1 of the Final Report that TTLC and STLC values are not considered cleanup levels. Cleanup levels will eventually be determined by a risk assessment that incorporates site specific public health and ecological based exposure data.

Our statement concerning dioxin indicated only that the sample is approximately one-sixth of the TTLC for the TTLC standard tetra dioxin isomer and therefore is not a hazardous material by that criteria.

will it be addressed in the RA. Dioxins must be addressed in the RA and FS; therefore, cleanup levels for dioxins and furans will be determined for this site.

5. Dioxin Characterization - One dioxin/furan sample was analyzed for the Photowaste Treatment Ponds and one for the Emergency Holding Basin. Because dioxins/furans are a concern, and will be addressed in the RA and FS, additional sampling for dioxins/furans should be conducted to characterize the extent of the contamination.

Beale AFB plans to perform additional IRP work at these two sites in the future. Additional sampling for dioxins and furans will be considered at that time.

6. Data Base - A large volume of chemical (sampling points, analysis, validation, etc.) and physical (monitoring wells, location, construction information, etc.) data are being generated during this RI/FS process. These data should be placed on a data base for current and future reference, accessible by Beale as well as the regulatory agencies. In order for the public to have access to the administrative records for Beale, the repositories should contain hard copies of the data presented in the data base.

Hard copies of the data are presented in this RI Report are available upon request. Additionally, HSD/YAQ is in the process of upgrading an Information Management System that contains data on the contractual and technical aspects of many IRP projects.

7. Hydrogeological Characterization - The following comments are specific to Site 13. These comments should be considered for all the sites where known or expected groundwater contamination exists for revisions to the RI report. In addition, the following comments should be referenced for future well placement and construction. It is noted that some of the concerns listed below are

also listed in the recommendation section of the RI report. These comments were provided by Susan Timm, RG, of Region 1's Technical Services and Support Unit (TSSU).

A) The geology has not been defined sufficiently to determine thickness and extent of the uppermost aquifer. Additional wells with continuous sampling and geophysical logging are recommended for determining the subsurface geology. Detailed cross sections should be prepared depicting geology and water saturation data.

7A. Additional monitoring wells were recommended for Site 13 in Section 6 of the RI report, in order to further characterize the horizontal and vertical extent of contamination. However, more geological logging, geophysics, and cross sections will yield more data, but not necessarily more usable geologic information. The dual tube drilling method used in this investigation produced continuous immediate return of cuttings through a cyclone separator. Cuttings samples were generally taken approximately every 2 feet, which demonstrated the extreme heterogeneity of this alluvial sequence.

The groundwater system at Beale AFB is characterized by its alluvial geologic setting in which isolated coarse-grained stream channel deposits are contained within a matrix of fine-grained overbank deposits. There is no "aquifer" in a textbook sense. Groundwater tends to flow in relatively more permeable lenticular clayey and silty sands contained within a complex assemblage of sandy clays and sandy silts. Thus, rather than identifiable aquifers that may be correlated from place to place, the groundwater may be considered to flow in a single, large-scale heterogeneous system.

In such a setting, pump test results must be regarded as estimates and as a descriptive tool to help define the subsurface geology. Groundwater

analytical techniques were developed using simplifying assumptions. These include the assumption that aquifers (and groundwater flow paths) are horizontal, bounded by units capable of being described mathematically, are infinite in areal extent, of constant thickness, and are homogeneous and isotropic. Although techniques have been developed that deal with some departure from the simplified system described above, no technique fully addresses a system as complex as that at Beale AFB. In this situation, it has become standard practice to employ standard methods of pump test analysis, while recognizing that results are estimates only.

Hydraulic boundaries that show up on time-drawdown plots of short-term pump tests at Beale AFB tend to reflect the fact that the cone of depression is encountering geologic materials of varying permeability, rather than large-scale regional boundaries that would affect groundwater velocities and flow paths. Portions of the plot used to calculate aquifer parameters depended on judgement on a case-by-case basis. Factors included the desire to use late portions of the curve where possible, portions of longest time duration, or in certain cases the shallow rather than steep portion of the curve to derive conservatively high values of groundwater velocity. Again, the drawdown plots of short-term tests are mainly useful as illustrations of alluvial geology in the immediate vicinity of the well, including the presence of nearby materials of varying permeability, and as estimates only of groundwater parameters. The test that most

accurately portrayed subsurface groundwater conditions at Beale was the 72-hour test performed at Site 19, which tended to average out local heterogeneities.

Although a discussion of the geology and groundwater at Beale AFB is provided in Section 2, a summary of the main points of this discussion will be prepared and inserted into the introduction of Section 4 and Appendix E. This latter discussion will also describe the assumptions that were made in the pump test analyses.

B) The groundwater flow properties have not been defined adequately to determine flow direction. Additional wells and/or piezometers screened across the water table are necessary for determining horizontal groundwater flow direction. Flow nets showing horizontal and vertical flow direction should be prepared.

7B. Water table conditions do not exist for the most part at Site 13. Wells were screened across the uppermost permeable zones on the assumption that this is where potentially contaminated groundwater would most likely migrate. Because these zones lie at different vertical elevations, vertical flow components make it impossible to quantitatively derive horizontal flow components suitable for preparation of flow nets. However, data are certainly adequate to determine qualitatively the direction of flow. This is sufficient to begin remediation. Additional monitoring wells are recommended in Sections 4.2.3 and 6.2.13 to better define the extent of the TCE plume at Site 13 and further define the direction of flow.

C) Piezometers should be installed in permeable moist areas above the zone defined, at present, as the water table to determine if a perched zone exists above the "water table."

7C. Such piezometers would yield no useful information.

D) The Cooper-Jacob Method is designed for analyzing aquifer tests in confined aquifers. This method requires close spacing of the test well and observation well and/or a long pumping time. In order to use Cooper-Jacob, the well function "u" should be less than 0.01. Only pumping well 13-C-3 and observation well 13-A-2 was "u" less than 0.01. As indicated in the RI report, the transmissivity values would be approximated or composited values due to both the heterogeneity of the sediments, and the fact that the screens cross more than one isolated permeable zone.

Aquifer test results should be plotted on both log-log and semi-log graphs. It is unclear if the aquifer is confined, semi-confined, or unconfined. Use of the Cooper-Jacob method of analysis for unconfined or semi-confined aquifers may result in an over estimation of aquifer parameters due to delayed yield.

If the Cooper-Jacob straight line method of analysis is to be used, maximum drawdown in the aquifer should be less than 15 percent of the total saturated thickness.

Apparently the effect of partial penetration of the aquifer was not considered in the aquifer test analysis.

7D. See general comments in 7A above. The heterogeneity of the system would also limit the usefulness of type curves (log-log plots). Pump test results should be regarded as estimates only. The aquifer is a large scale heterogeneous alluvial system, with thin, discontinuous permeable zones. Partial penetration corrections are normally made to counteract the effects of vertical flow components to the well during pumping. In the Beale AFB setting, horizontal stratification greatly diminishes the effects of vertical flow on the drawdown curve.

E) Placement of extraction wells should be based on capture zone analyses which require knowledge of groundwater flow direction, groundwater velocity, and geology.

See Comment 7B above. Capture zone analyses would be estimates due to the complexity of the system and the limitations of the data. Additional data would not significantly reduce

	the uncertainty. However, capture zone analyses should be made and the extraction system should still be operated and monitored, with adjustments and refinements made as necessary according to observations of the results.
F) Pumping the deep aquifer for aquifer tests is not recommended because contamination could be drawn from the upper aquifer into the lower aquifer.	Agree in general, but must point out that the system is too complex to be divided into an "upper" and "lower" aquifer. The text has been revised to clarify this issue. In any case, no drawdown was observed in nearby wells after 4 hours of pumping in the deeper well.
G) The filter pack used in the monitoring wells was Monterey No. 3, while the screen slot size was either 0.010 or 0.020 inches. Plots of the grain size distribution of Monterey No. 3 indicate that none of this filter pack will pass through 0.010- slot or 0.020-slot screens. Slot sizes should be selected so that 5 to 10 percent of the filter pack can pass through the well screen during development. Procedures as described in Groundwater and Wells (Driscoll, 1986) on pages 438 through 443 should be followed to determine the appropriate filter pack and screen slot size for monitoring wells.	The use of Lonestar No. 3 sand with 0.010-inch and 0.020-inch screen is standard practice in California. Basing filter material size on sieve analysis would be expensive and is unnecessary in monitoring wells as long as wells are properly developed and turbidity free water is obtained for sampling. The procedures outlined on pages 438 through 443 of Groundwater and Wells (Driscoll, 1986) are designed to achieve maximum production in large capacity water wells. On these wells a feed tube is used to replace the filter pack material that is washed through the screen. Groundwater and Wells (page 722) notes that "Filter packing procedures recommended for water wells are not suitable for monitoring wells unless the hydraulic characteristics of the formation materials are similar to those of an aquifer." The sediments at Beale are predominantly fine grained with isolated sand lenses. Monitoring wells at Beale were carefully constructed and developed so that

	groundwater samples taken from the wells are representative of aquifer conditions.
8. Decision Documents - Currently, the Department's Region 1 is developing in-house procedures for revir of Decision Documents. Comments on Appendix J will be forthcoming at a later date.	So noted.
9. Alternate Water Supply - The Department recommends that Beale take the responsibility to provide an alternate water supply to the resident next to Landfill No. 1 (Site 13). It is recognized that Beale has periodically sampled the resident's well, and that the trichloroethane (TCE) results have consistently been below the federal and state Maximum Contaminant Level (MCL) of 5 ppb. However, considering the general direction and velocity of groundwater flow, detection of TCE off base, and the high groundwater concentration of TCE detected on base, it is probable that the concentration of TCE in the resident's well will increase in the future. Beale should offer an alternate drinking water supply to the residents prior to detecting TCE at above the MCL.	Beale AFB began providing bottled water to residents of Deep Violet Farms on August 27, 1990.
10. Soils Management Plan - A soils management plan, similar to that used by McClellan AFB, should be developed for Beale. This plan will facilitate communication and coordination within Beale on removal actions or interim remedial actions, as well as future construction projects where contaminated soil is encountered.	Beale AFB has begun development of a soils management plan as recommended.

The plan should outline the procedures for handling and temporary storage of CERCLA-contaminated soil. The purposes of the plan are to: (1) develop a decision document when encountering contaminated soil during construction projects, (2) help coordinate construction projects with the Beale Environmental Management Office, (3) coordinate, when appropriate, with the proper regulatory agencies, and (4) develop a plan to handle and temporarily store CERCLA-related contaminated soil.	
11. Page 6-2, Recommendations - West Side Drainage Ditch - Previous sampling results in the Stage 1 investigation reported TCE concentration above the MCL. In addition to commencing the RA and FS for this site, additional monitoring wells should be placed to define the groundwater plume.	So noted.

Secondary Concerns	Air Force Comments
1. Page 3-50, Section 3.6.2.3 - Toluene was detected in a majority of the soil samples throughout the base. The RI report determined that the toluene was probably a false positive. Could the electrical tape used to seal the soil sampled be the source of the toluene?	The false positive results for toluene may be due to the electrical tape used to seal the samples. This has been noted in Section 3.7.2.3. An experiment by AeroVironment, the previous IRP contractor at Beale, was cited. AeroVironment placed electrical tape in organic free water that was then analyzed and found to contain high levels of toluene.

2. Page 3-67, Section 3.7.1 - The report should state if the laboratories listed are accredited by the Department for hazardous waste testing.	Section 3.7.1. was modified to state that "All laboratories used are accredited by California Department of Health Services for hazardous waste testing."
3. Page 6-6, Recommendations - Battery Shop Dry Well - The abandonment of the "removal action" as described in the Health and Safety Code and CERCLA. Therefore, a workplan should be submitted to our office for review prior to commencement of any remedial action.	So noted.
4. <u>Page 6-12, Recommendations - Photowaste Emergency Holding Pond</u>	
A) See Primary Concern No. 5 (Dioxins/furans)	See comment to Primary Concern No. 5
B) The uppermost aquifer has not been characterized at the site. The base of MW-19-C-1 was logged as sand and gravel; thus, TSSU interprets that the base of the uppermost aquifer in this area is not defined. It is recommended that a monitoring well cluster of two wells approximately 150 feet east of boring 19-C-3SB be installed. This location is interpreted by TSSU to be nearly directly downgradient from the basin. It is also recommended that a monitoring well paired with MW-19-C-1 and screened at the bottom 10 feet of the uppermost aquifer be installed. The borehole drilled for this well should be drilled at least 7 feet into a clay bed before the base of the uppermost	See general comments in 7A above, regarding the "uppermost aquifer" and the nature of the hydrogeological system. The groundwater system at Beale AFB is characterized by its alluvial geologic setting in which isolated coarse-grained stream channel deposits are contained within a matrix of fine-grained overbank deposits. There is no "aquifer" in a textbook sense. Groundwater tends to flow in relatively more permeable lenticular clayey and silty sands contained within a complex assemblage of sandy clays and sandy silts. Thus, rather than identifiable aquifers that may be correlated from place to place, the groundwater may be considered to flow in a single, large-scale heterogeneous system. Additional wells are not justified based on contaminant levels observed in the liner and soils beneath the

aquifer can be considered defined. This borehole should then be backfilled with grout or bentonite pellets to the level of the base of the uppermost aquifer before well construction is commenced.	basin, especially considering the preponderance of fine-grained sediments between the basin and the groundwater. Contaminants noted in Site 19 wells were not part of the waste stream at the Emergency Holding Basin, and were not observed in the liner or subsurface soils. These contaminants appear to come from another source. Additional investigation should be directed toward finding this source.
5) Page 6-14, Abandoned Underground Storage Tanks - A meeting is scheduled in the near future with the Regional Water Quality Control Board, the Department, and the County to discuss the underground storage tank issue at Beale.	So noted.