

**APPENDIX A**  
**GEOPHYSICAL SURVEY REPORT**

**Geophysical Survey Report  
Former Motor Pool 1300  
Parcels 148(7) and 16(7)**

**Fort McClellan, Alabama**

**February 2001**

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## **List of Acronyms**

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AGC	automatic gain control
CD	compact disk
E-W	east to west
EBS	Environmental Baseline Study
EM	electromagnetic induction
EM31	Geonics Limited EM31 Terrain Conductivity Meter
EM61	Geonics Limited EM61 High-Resolution Metal Detector
ESE	Environmental Science and Engineering, Inc.
FMP 1300	Former Motor Pool 1300 Site
FTMC	Fort McClellan
G-856AX	Geometrics, Inc. G-856AX magnetometer
G-858G	Geometrics, Inc. G-858G magnetic gradiometer
GPR	ground penetrating radar
GPS	global positioning system
GSSI	Geophysical Survey Systems Inc.
IT	IT Corporation
MHz	megahertz
mS/m	millisiemens per meter
mV	millivolts
NAD	North American Datum
NOAA	National Oceanographic and Atmospheric Administration
N-S	north to south
ns	nanoseconds
nT	nanoteslas
ppt	parts per thousand
RTK	real-time kinematic
SSFSP	Site-Specific Field Sampling Plan
TERC	Total Environmental Restoration Contract
USACE	U.S. Army Corps of Engineers
UST	underground storage tank

## ***A.1.0 Introduction***

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IT Corporation (IT) conducted a surface geophysical survey at the Former Motor Pool 1300 (FMP 1300) [Parcels 148(7), and 16(7)] at Fort McClellan (FTMC) in Calhoun County, Alabama, from October 5 through October 21, 1998, March 9 through March 16, 1999, and May 8, 1999. The survey was conducted for the U.S. Army Corps of Engineers - Mobile District, under Total Environmental Restoration Contract Number DACA21-96-D-0018, Task Order CK005. The geophysical survey objective was to locate buried metal potentially representing underground storage tanks (UST). Based on the criteria established in the site-specific field sampling plan (SFSP) for UST identification, typical size anomalies for a 10,000-gallon UST (8 by 28 feet or 10 by 18 feet) located in logical areas (i.e., adjacent to typical FTMC gas station foundations) are identified and labeled as USTs. Anomalies that are either a typical size or in a logical location for a UST are labeled as potential USTs. The survey area was approximately 78,000 square feet (1.8 acres). The vicinity map (Figure A-1) shows the approximate location of the FMP 1300 survey area.

To accomplish the objectives of the investigation, an initial site-screening survey was conducted using magnetic and electromagnetic induction (EM) methods. Ground-penetrating radar (GPR) was later used in an effort to discriminate between magnetic and EM anomalies caused by the target USTs and those caused by other subsurface features such as utility vaults or pits containing significant metallic debris. All geophysical data were processed and color-enhanced to aid in interpreting subtle anomalies. Following geophysics fieldwork, a survey-grade global positioning system (GPS) was used to document the location of the FMP 1300 site.

The FMP 1300 site topography is relatively flat. The southern portion of the survey area is grass-covered, while the northern portion is covered with grass, asphalt, and a concrete pad as shown on the site map with geophysical interpretation (Figure A-2). The site is bounded on the west by 4th Avenue, on the east by woods, on the north by a parking lot, and on the south by a baseball field.

Field procedures used during the investigation are described in Chapter A.2.0 of this survey report. The data processing methods used during the investigation are presented in Chapter A.3.0. Geophysical data interpretation and results are presented in Chapter A.4.0. Conclusions and recommendations derived from the geophysical surveys are presented in Chapter A.5.0. A description of the equipment and a theoretical discussion of the geophysical methods are presented in the theoretical background attachment to this report.

## ***A.2.0 Field Procedures***

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This chapter describes the field procedures and instruments used to conduct the investigation, including survey control, data acquisition, and field verification of geophysical anomalies.

### ***A.2.1 Survey Control***

The geophysical survey area to be investigated was identified in the site-specific work plan based on historical site information compiled by IT and the environmental baseline study, (Environmental Science and Engineering, Inc., 1998). The geophysics crew established a base grid on 100-foot centers throughout the site. Using the base grid as a reference, the crew marked control points on 10-foot centers with surveyor's paint to provide the spatial control required of the investigation. Due to the uncertainty of true field positions inherent when establishing a survey area using 300-foot fiberglass tapes in the presence of wind and surface obstructions (e.g., trees, vehicles, and structures), the lateral precision for the survey areas and anomalies is estimated to be within +/- 1 foot. Following geophysics fieldwork, a GPS survey was conducted at the site referencing the U.S. State Plane Coordinate System (Alabama East Zone, North American Datum 1983). The GPS survey was performed in the real-time kinematic mode, which provided nominal subcentimeter resolution in XY coordinates for the site.

A detailed site map was hand-drawn in the field. The map includes any surface cultural features within the survey area, or near its perimeter, that could potentially affect the geophysical data (e.g., vehicles, overhead utilities, manhole covers). The map also shows reference features, such as buildings, fences, asphalt patches, or survey monuments that could later aid in reconstructing the site boundaries. All pertinent reference information documented on the hand-drawn site map was placed on the site interpretation map (Figure A-2). Included on the site map are GPS coordinates to help relocate the survey area.

### ***A.2.2 Geophysical Survey***

**Field Instruments.** The magnetic instruments used during the investigation consisted of a Geometrics Inc. G-858G magnetic gradiometer (G-858G) for collecting survey data and a Geometrics, Inc. G-856AX magnetometer for collecting magnetic base station data. Time-domain EM induction equipment consisted of a Geonics Limited EM61 High-Resolution Metal Detector (EM61) coupled to an Omnidata DL720 digital data logger. Frequency-domain EM induction equipment consisted of a Geonics Limited EM31 Terrain Conductivity Meter (EM31) coupled to an Omnidata DL720 digital data logger. Ground penetrating radar equipment consisted of a Geophysical Survey Systems Inc. Model SIR-2P unit coupled to 200- and/or 400-

megahertz antennae and a DPU-5400 thermal gray-scale printer. Where required, a Metrotech 9860-BRL EM utility locator was used to verify that linear anomalies seen in the EM31/EM61 data were caused by subsurface pipelines or utilities. A Trimble 4000SSI total station GPS was used to conduct the civil survey work.

All geophysical data were collected using the following IT standard operating procedures:

- ITGP-001 Surface Magnetic Surveys
- ITGP-002 Surface Frequency-Domain Electromagnetic Surveys
- ITGP-003 Ground Penetrating Radar Surveys
- ITGP-004 Surface Time-Domain Electromagnetic Surveys
- ITGP-005 Global Positioning System Surveys
- ITGP-012 Geophysical Data Management.

The three geophysical techniques of magnetics, time-domain EM, and frequency-domain EM, were used initially to screen the survey area for large buried metal objects the size of a UST. These combined methods offer the technical approach most likely to succeed in locating and delineating large metal objects. Following magnetic and EM data processing and interpretation, GPR was used to aid with interpreting the source objects responsible for observed magnetic and EM anomalies. The GPR survey was focused only on those anomalies potentially caused by a UST.

**Field Instrument Base Station.** A field instrument base station was established at FMP 1300 to provide quality control for the geophysical survey data collected at the site. The base station location was chosen to be free of surface and subsurface cultural features that could affect the geophysical data. Standard field procedures were to occupy the base station and collect readings with the survey instruments (magnetic, EM31, and EM61) before and after each data collection session. These base station data were then reviewed to assess instrument operation. Opening and closing base station file names and average data values were recorded on base station summary forms.

#### **A.2.2.1 Magnetic Survey**

**Magnetic Base Station.** A magnetic base station was established at FTMC to record the background fluctuation (diurnal drift) of the Earth's magnetic field. The magnetic base station was located in a field of small pine trees on the south side of Sixth Avenue (near Parcel 151). The magnetic base station location was determined to be free of surface and subsurface cultural features that could affect the data. A G-856AX magnetometer was used for the magnetic base station, however, instrument problems were later identified that precluded its use in "drift

correcting” the G-858G survey data. National Oceanographic and Atmospheric Administration regional magnetic field data representing the time period of the magnetic survey were later reviewed, and it was determined that the survey was conducted during a time of quiescence in the Earth’s magnetic field. The variation of the regional geomagnetic field during data collection was less than 25 nanoteslas, which is considered negligible for obscuring anomalies caused by USTs.

**G-858G Data Collection.** Magnetic field measurements were made with the two sensors of the G-858G spaced 2.5 feet (0.76 meter) apart; the lower sensor was 2.0 feet above the ground surface and the upper sensor was 4.5 feet above the ground surface. At the start and end of each data collection session, approximately 60 readings were recorded with the G-858G at the field instrument base station to verify that the instrument was operating properly, and to provide a quantitative record of instrument variation, or drift, during the survey period. A review of these base station files indicated the instrument was operating properly and instrument drift was within acceptable limits. Magnetic survey data were collected at 0.5-second intervals (approximately 2.0- to 2.5-foot intervals) along north to south (N-S) oriented survey lines spaced 10 feet apart, for a total of approximately 8,190 linear feet of survey coverage.

The magnetic data were stored in the internal memory of the G-858G along with corresponding line and station numbers and the time of acquisition. Magnetic survey data were screened in the field to assess data quality prior to completing the investigation. All magnetic survey and base station data were downloaded to a personal computer, backed up on IOMEGA® compatible zip disks, and are retained in project files.

#### **A.2.2.2 Time-Domain EM Survey**

**EM61 Data Collection.** Prior to conducting the EM61 survey, the instrument was calibrated to read zero at the field instrument base station. The EM61 was operated in the wheel mode with manual triggering, and measurements of the potential difference in the top and bottom coils were collected. At the start and end of each data collection session approximately 20 readings were recorded at the field instrument base to verify that the instrument was operating properly, and to provide a quantitative record of instrument variation, or drift, during the survey period. A review of these base station files indicated the instrument was operating properly and instrument drift was within acceptable limits. Survey data were collected at 2.5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 5 feet apart, for a total of approximately 31,790 linear feet of survey coverage. The EM61 data were acquired along perpendicular survey lines to define anomalies potentially caused by subsurface utilities and improve the geophysical interpretation of EM61 anomalies as they relate to possible USTs.

The EM61 data were stored in the digital data logger programmed with corresponding line and station numbers. EM61 line profiles were reviewed in the field using the DAT61<sup>®</sup> program to verify data quality prior to completing the survey. All EM61 survey and base station data were downloaded to a personal computer, backed up on IOMEGA<sup>®</sup> compatible zip disks, and are retained in project files.

#### **A.2.2.3 Frequency-Domain EM Survey**

**EM31 Data Collection.** Prior to conducting the EM31 survey the instrument was calibrated and the in-phase component zeroed at the field instrument base station. The instrument was operated in the vertical dipole mode measuring the in-phase and out-of-phase components of the secondary EM field. At the start and end of each data collection session approximately 20 readings were recorded at the field instrument base station to verify that the instrument was operating properly, and to provide a quantitative record of instrument variation, or drift, during the survey period. A review of these base station files indicated the instrument was operating properly and instrument drift was within acceptable limits. Survey data were collected at 5-foot intervals along N-S and E-W oriented survey lines spaced 10 feet apart, for a total of approximately 16,190 linear feet of survey coverage. The EM31 data were acquired along perpendicular survey lines to provide better definition of anomalies potentially caused by subsurface utilities, and to improve the geophysical interpretation of EM31 anomalies as they relate to possible USTs.

The EM31 data were stored in the digital data logger programmed with appropriate line and station numbers. EM31 line profiles were reviewed in the field using the DAT31<sup>®</sup> program to verify data quality prior to completing the survey. All EM31 survey and base station data were downloaded to a personal computer, backed up on IOMEGA<sup>®</sup> compatible zip disks, and are retained in project files.

#### **A.2.2.4 Anomaly Verification and GPR Survey**

**Anomaly Verification.** Preliminary color-contour maps of the magnetic, EM61, and EM31 data were generated and field-checked to differentiate between anomalies caused by surface and subsurface sources. Geophysical anomalies verified as being caused by surface features were labeled as such on the field data maps. Geophysical anomalies suspected to be caused by underground utilities were verified with an EM utility locator. The locations of confirmed utilities were placed on the site map. Anomalies caused by buried metallic objects potentially representing a UST were carefully located in the field and marked on the site map for further characterization with GPR.

***GPR Data Collection.*** Ground penetrating radar data were collected to discriminate between EM and magnetic anomalies potentially caused by USTs from those caused by significant buried metallic debris, metal reinforced utility vaults and junction boxes, or localized concentrations of metal. The GPR survey included acquisition of approximately 4,440 linear feet of data using the 200- and 400-megahertz antennas. The digital GPR data were recorded semicontinuously (32 scans per second) as the antenna was hand-towed across the survey lines. Control points were marked on the GPR records using a hand-held switch located on the antenna unit. The GPR data were field-reviewed in real time on a color monitor, stored in the internal memory of the instrument, and later downloaded to a personal computer. The GPR data were printed in the field as the survey progressed using a high-resolution thermal gray-scale printer. All GPR survey data were backed up on compact discs, and are retained in project files.

### **A.3.0 Data Processing**

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**Color Contour Maps.** Contour maps of magnetic, EM61, and EM31 data were generated using the OASIS Montaj<sup>®</sup> geophysical mapping system from Geosoft, Inc. These maps were color-enhanced to aid with interpreting subtle anomalies. Select contour maps from this site are presented as Figures A-3 through A-9.

A series of data processing steps were required to generate the contour maps. G-858G magnetic gradiometer data were downloaded from the field instrument and converted to an ASCII file using Geometrics, Inc. MAGMAP<sup>®</sup> program. EM61 and EM31 data were downloaded from the data loggers and converted to ASCII files using DAT61<sup>®</sup> and DAT31<sup>®</sup> software from Geonics, Inc. The ASCII data files were then reviewed to assess line numbers, station ranges, and overall data quality. Field data file names and corresponding base station data files were recorded on the data file tracking form. Data screening results were then recorded on the base station summary form. Following data quality assessment, geometry corrections to field data files were made, if necessary, using a text editor, and were recorded on the geophysical data editing form.

Final, corrected magnetic and EM data files containing local geophysical station coordinates (X, Y) and the geophysical measurement (Z) were converted to OASIS Montaj format and imported into the geophysical mapping software. All data files within the Geosoft database were reviewed in profile form to verify completeness of data editing. The data were then gridded with a bidirectional gridding module using an Akima spline. The grid cell size for the magnetic, EM61, and EM31 data was chosen to be 2.5, 2.5, and 5.0 feet, respectively. A color-contouring scale was selected to enhance data anomalies of interest to this investigation. The names of files generated and processing parameters used were recorded on data processing forms. Final processed map names are shown in the data processing box found in the lower left corner of each contour map presented. All completed forms of magnetic and EM data collected during the investigation are retained in project files.

**GPR Profiles.** Select GPR profile data were processed using the Gradix<sup>®</sup> data processing and interpretation system from Interpex Limited, and are presented as Figures A-10 and A-11. The GPR data were trace balanced and gained using an automatic gain control function. A color amplitude scale was then chosen to enhance features of interest. Following GPR processing, the data were imported to Microsoft WORD<sup>®</sup> to produce color figures. GPR data file names are shown below each profile. All GPR data are stored on compact disks and retained in project files.

## **A.4.0 Interpretation of Geophysical Data**

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The methods by which the geophysical data were interpreted, and the results of that interpretation are described in this chapter.

Figure A-2 presents the site map with geophysical interpretation. The interpreted color-contour map of G-858G total magnetic field for the upper sensor is presented as Figure A-3. Interpreted color-contour maps of EM61 bottom coil data acquired along N-S and E-W survey lines are presented as Figures A-4 and A-5, respectively. Interpreted color-contour maps of EM31 conductivity and in-phase component data collected along N-S survey lines are presented as Figures A-6 and A-7, respectively. Interpreted color-contour maps of EM31 conductivity and in-phase component data collected along E-W survey lines are presented as Figures A-8 and A-9, respectively. Four GPR profiles deemed most useful in further characterizing anomalies identified in the EM and magnetic data are presented as Figures A-10 and A-11. The locations of these GPR profiles are shown on Figure A-2. A theoretical background is presented as an attachment to this report. This attachment discusses the factors influencing the observed geophysical response for the various methods and equipment used to conduct the FMP 1300 survey.

In addition to the geophysical interpretation and GPR line locations, the site map (Figure A-2) contains detailed information on reference features (e.g., asphalt and concrete pavement, buildings, and fences), so that the survey area and geophysical anomaly locations can be relocated in the future. Anomalies shown on the site interpretation map correspond to those seen in the magnetic, EM, and GPR data. Surface reference features shown on the site interpretation map were translated from the hand-drawn site map made in the field, and the map contains GPS survey coordinates.

### **A.4.1 Data Interpretation Criteria**

**Color Contour Map Anomalies.** Anomalies shown on the magnetic and EM contour maps range from high to low values and from negative to positive, depending on the type of data displayed. The observed anomalies in the contour map of G-858G total magnetic field for the upper sensor have values above and below the average magnetic field intensity of 50,800 nT for Anniston, Alabama. The typical magnetic data response to near-surface ferrous metallic debris is an asymmetric south high/north low signature. The characteristic EM61 response over a buried metal object shows a positive-amplitude signal, with signal strength dependent upon the size of the object, distance from the transmitter/receiver coils, and the type of material. Upper

and lower receiver coils readings are processed to determine a differential value that can be used to approximate the depth of source objects in the data. Although all EM61 data were evaluated during interpretation, only the bottom coil EM61 data is presented in the report because these data are most sensitive to buried metal objects. The characteristic EM31 anomaly over a near-surface metallic conductor consists of a narrow zone having strong negative amplitude centered over the target and a broader lobe of weaker, positive amplitude on either side of the target. As the depth of the target feature increases, the characteristic EM31 response changes to a positive amplitude centered over the target.

Anomalies present on the contour maps of magnetic, EM61, and EM31 data were first field-checked and correlated with known metallic surface objects and other cultural surface features so that anomalies caused by subsurface sources could be determined. Many of the high-amplitude anomalies seen in the contour maps of the magnetic, EM61, and EM31 data (Figures A-3 through A-9) are caused by cultural features including fences, buildings, underground utilities, and metallic debris. These anomalies, as well as anomalies identified to be caused by source objects the size of a UST, are labeled on each of the contour maps and are discussed in the following text. Several anomalies interpreted to be caused by discrete, buried metal objects smaller than a UST are not discussed in the text.

***UST Anomaly Identification.*** Each anomaly potentially caused by a UST is indicated by red shading and designated by an alphanumeric symbol with a number in parenthesis on the geophysical interpretation map, color-contour maps, and GPR profiles. The number shown in parenthesis indicates the anomaly type and potential for the source object to be a UST. Geophysical anomalies most likely to be caused by USTs are designated with a (1) in parentheses. Geophysical anomalies with a ranking of (2) are more uncertain and may be interpreted as a metallic source object other than a UST, although there is potential for the anomaly to be caused by a UST. Anomalies with a ranking of (3) are highly uncertain and generally interpreted to be caused by a source object other than a UST.

The qualitative numerical rankings of anomalies is based on the geophysical response from all the methods used to conduct a survey, although the ranking is highly weighted on the GPR system response. Rank (1) anomalies most often occur at open sites away from surface and subsurface cultural interference, and at very small sites where a geophysical survey is conducted to confirm the existence of a tank in a specified area.

Typically in open areas, a rank (1) geophysical anomaly shows the following characteristics in the data:

- High-amplitude signal strength in two or more of the site-screening methods (magnetic, EM61, and EM31 data)
- Location in an area that cannot be linked to another possible source object (e.g., buried utility, structures, and fences)
- Source geometry seen in the GPR reflection data that is consistent with a UST.

Clearly in the portions of the site near surface cultural interference it is highly unlikely for a geophysical anomaly to be ranked (1), even though the source object seen in the data could be a tank. Most rank (2) anomalies have the potential to be a UST, but often lack conclusive GPR data over the source object. Rank (2) anomalies typically show favorable magnitude and signal characteristics in the magnetic and EM data; however, since the dimensions and geometry of the source object may not be resolved and mapped; the feature is not ranked (1). Rank (3) anomalies usually occur in one or two data sets and the results lack conclusive GPR data over the source object. Rank (3) anomalies are interpreted to be caused by a source object other than a UST.

According to the SFSP criteria anomalies that are found of typical size and in logical areas for USTs (i.e., adjacent to typical FTMC gas station foundations) will be identified and labeled as USTs. Anomalies that are of typical sizes but not in logical locations will be labeled as potential USTs.

#### **A.4.2 Former Motor Pool 1300 Data Interpretation**

Three geophysical anomalies not explained by known surface or subsurface cultural features are labeled A-1(2), A-2(2), A-3(2) on the data maps and profiles and discussed below.

**Anomaly A-1(2).** Anomaly A-1(2) is located at (65E, 292N) and occurs in all three site-screening methods of investigation. A complex of two high-amplitude magnetic anomalies southwest of the reinforced concrete pad makes direct correlation with Anomaly A-1(2) difficult. The southwesternmost part of the complex magnetic response, that is closest to the interpreted source location, has a magnitude of approximately 4,000 nanoteslas (Figure A-3). Anomaly A-1(2) has a low-amplitude response in the EM61 data, approximately 300 millivolts (mV) (Figures A-4 and A-5), and a subtle response in the EM31 data (Figures A-6 and A-9). The location of the source object at the southeast end of a northwest-trending pipeline is evident in the EM61 data. The GPR reflection data (Figure A-10) show a buried source object at the end of the pipeline as well. The source object, approximately 5 by 8 feet, could be a transfer pit or valve box associated with the aforementioned utility, or a small UST. According to the criteria established in the SFSP for UST identification, Anomaly A-1(2) is a potential UST since it does not represent a typical size for a 10,000-gallon UST, but is located in a logical area for a UST.

**Anomaly A-2(2).** Anomaly A-2(2) is located at (60E, 310N) and correlates quite well with the northeasternmost part of the magnetic anomaly complex located southwest of the concrete pad. In the EM61 data, Anomaly A-2(2) appears as a low-amplitude response of approximately 100 mV. The anomaly is not apparent in the EM31 data due to interference from the concrete pad. The GPR reflection data (Figure A-10) show a buried source object at an estimated depth of 3 to 4 feet. The location of the anomaly is most evident in the EM61 data. The source object, approximately 5 by 8 feet, could be a transfer pit or valve box associated with a lateral utility from the concrete pad, or a small UST. According to the criteria established in the SFSP for UST identification, Anomaly A-2(2) is a potential UST since it does not represent a typical size for a 10,000-gallon UST, but is located in a logical area for a UST.

**Anomaly A-3(2).** Anomaly A-3(2) is located at (90E, 340N) and appears as a low-amplitude anomaly in the EM61 data, approximately 80 mV. The anomaly is not apparent in either the magnetic or EM31 data due to interference from the nearby concrete pad and a nearby pipeline. The GPR reflection data (Figure A-11) show a buried source object at the location of the EM61 anomaly and a N-S trending pipeline. Both have a similar GPR signature in terms of depth (approximately 2 to 3 feet) and source object diameter. Anomaly A-3(2) is interpreted to be caused by a section of pipe; however, a very small UST could generate a similar EM61 response. According to the criteria established in the SFSP for UST identification, Anomaly A-3(2) is a potential UST since it does not represent a typical size for a 10,000-gallon UST, but is located in a logical area for a UST.

## ***A.5.0 Conclusions and Recommendations***

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A surface geophysical survey using magnetic, EM and GPR methods was conducted on October 5 through October 21, 1998, March 9 through March 16, 1999, and May 8, 1999 at the Former Motor Pool 1300 site. The objective of the survey was to locate buried metal representing USTs.

Three geophysical anomalies were identified in the FMP 1300 geophysical data. The sources of Anomalies A-1(2) and A-2(2) are located at approximately (65E, 292N), and (60E, 310N), respectively. Both of these objects appear to be approximately 5 feet wide and 8 feet long. Although each of these features have geometry somewhat consistent with that of a UST, and are located within a logical area for placement of a UST, the anomalies do not appear to be large enough to represent a 10,000-gallon UST. Based on criteria established in the SFSP, Anomaly A-1(2) and A-2(2) are potential tanks. The source of Anomaly A-3(2) is located at approximate coordinates (90E, 340N), and has dimensions and geometry more likely caused by a section of pipe than a UST. However, a very small UST could cause a similar geophysical response to that observed, and the anomaly is located within a logical area for placement of a UST. Based on the SFSP criteria, Anomaly A-3(2) is a potential tank since the anomaly does not appear to be large enough to represent a 10,000-gallon UST.

A hand sketched site map and GPS survey of site features provided a permanent record of the survey boundaries and anomalies located. Positions on the geophysical interpretation map (Figure A-2) are conservatively estimated to be accurate to within +/- 1 foot.

Pipeline locations are indicated on the site interpretation map where evident in the geophysical data. However, the map should not be considered clearance for exploratory trenching or other invasive investigations. Utility clearances must be obtained from local utility companies prior to invasive investigations.

Beyond the recommendation above, and based on the objectives and results of the geophysical survey presented in this report, no further geophysical work is recommended at the FMP 1300 site.

DWG. NO.: ... \774645es.249  
 PROJ. NO.: 774645  
 INITIATOR: M. MAKI  
 PROJ. MGR.: J. YACOUB  
 DRAFT. CHCK. BY:  
 ENGR. CHCK. BY: M. MAKI  
 STARTING DATE: 03/16/99  
 DATE LAST REV.:  
 DRAWN BY: D. BILLINGSLEY  
 DRAWN BY:  
 01/06/00  
 10:54:26  
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
  - PAVED ROADS AND PARKING
  - BUILDING
  - PARCELS 148(7) & 16(7) BOUNDARIES
  - GEOPHYSICAL SURVEY AREA
  - SURFACE DRAINAGE / CREEK
  - FENCE
  - UTILITY POLE

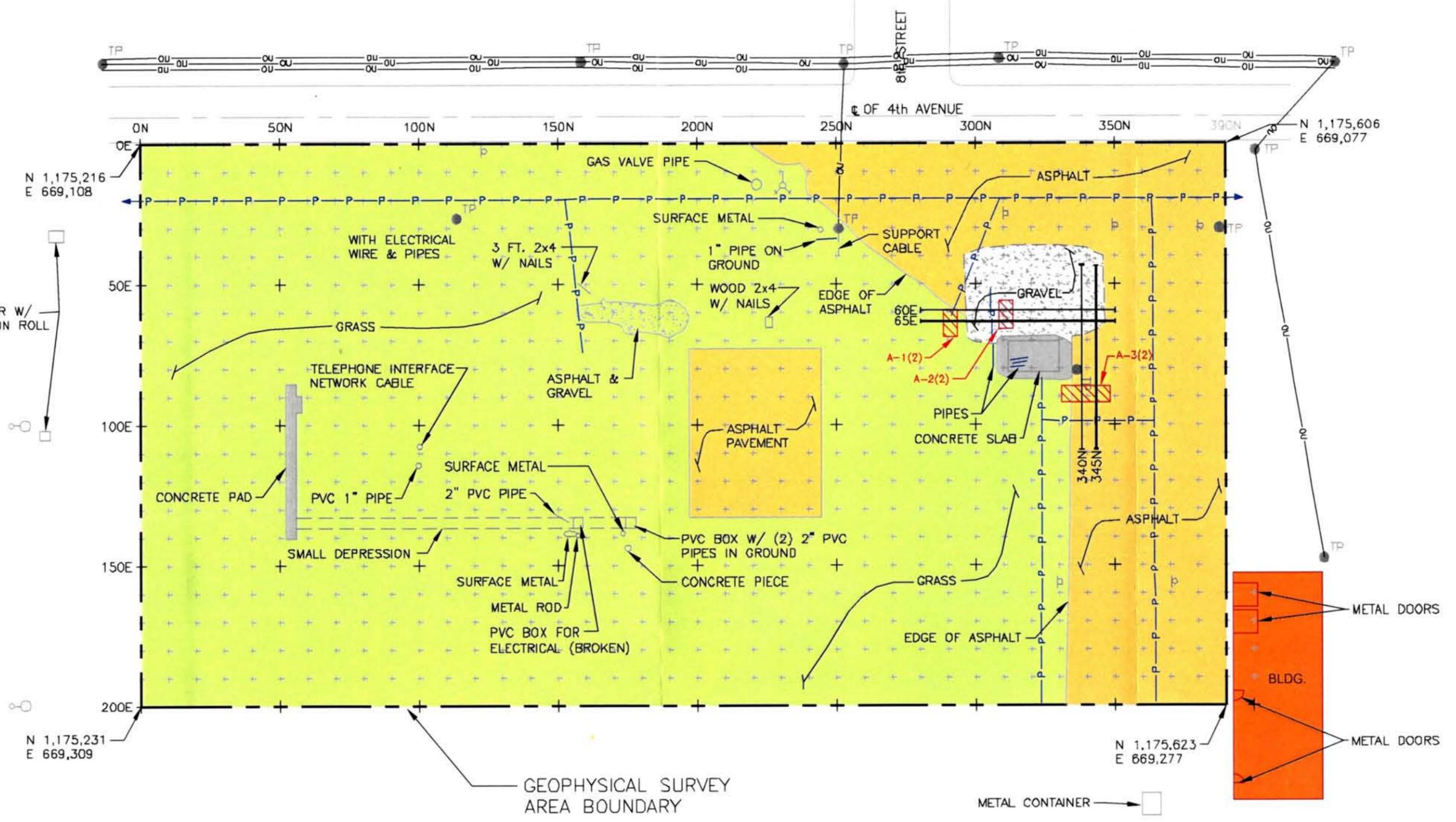
**FIGURE A-1**  
**VICINITY MAP**  
**FORMER MOTOR POOL 1300**  
**PARCELS 148(7) AND 16(7)**

U. S. ARMY CORPS OF ENGINEERS  
 MOBILE DISTRICT  
 FORT McCLELLAN  
 CALHOUN COUNTY, ALABAMA  
 Contract No. DACA21-96-D-0018



DRAWING NUMBER 9849\_03.DWG  
 CG  
 CHECKED BY  
 APPROVED BY  
 MSN 12/30/98  
 DRAWN BY

CABLE ROLLER W/  
 ULTRALINER ON ROLL



LEGEND

- |  |   |   |  |
|--|---|---|--|
|  | GEOPHYSICAL ANOMALY DISCUSSED IN TEXT, NUMBER SHOWN IN PARENTHESIS INDICATES ANOMALY TYPE FOR POTENTIAL UST |   | OVERHEAD UTILITIES                           |
|  |   |   | LOCATION OF BURIED PIPE OR UTILITY           |
|  | TELEPHONE POLE  |   | GPR PROFILES PRESENTED                       |
|  | LIGHT POLE  | N 1,175,216<br>E 669,108  | ALABAMA EAST STATE PLANE COORDINATES (NAD83) |
|  | METAL SIGN POST   | NOTES: 1) LOCATIONS OF FEATURES OUTSIDE SURVEY AREA ARE APPROXIMATE |  |
|  | FIRE HYDRANT  |   |  |

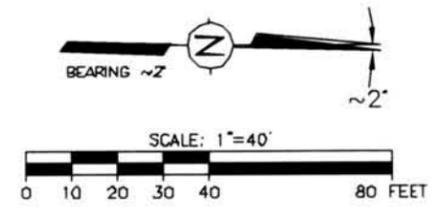
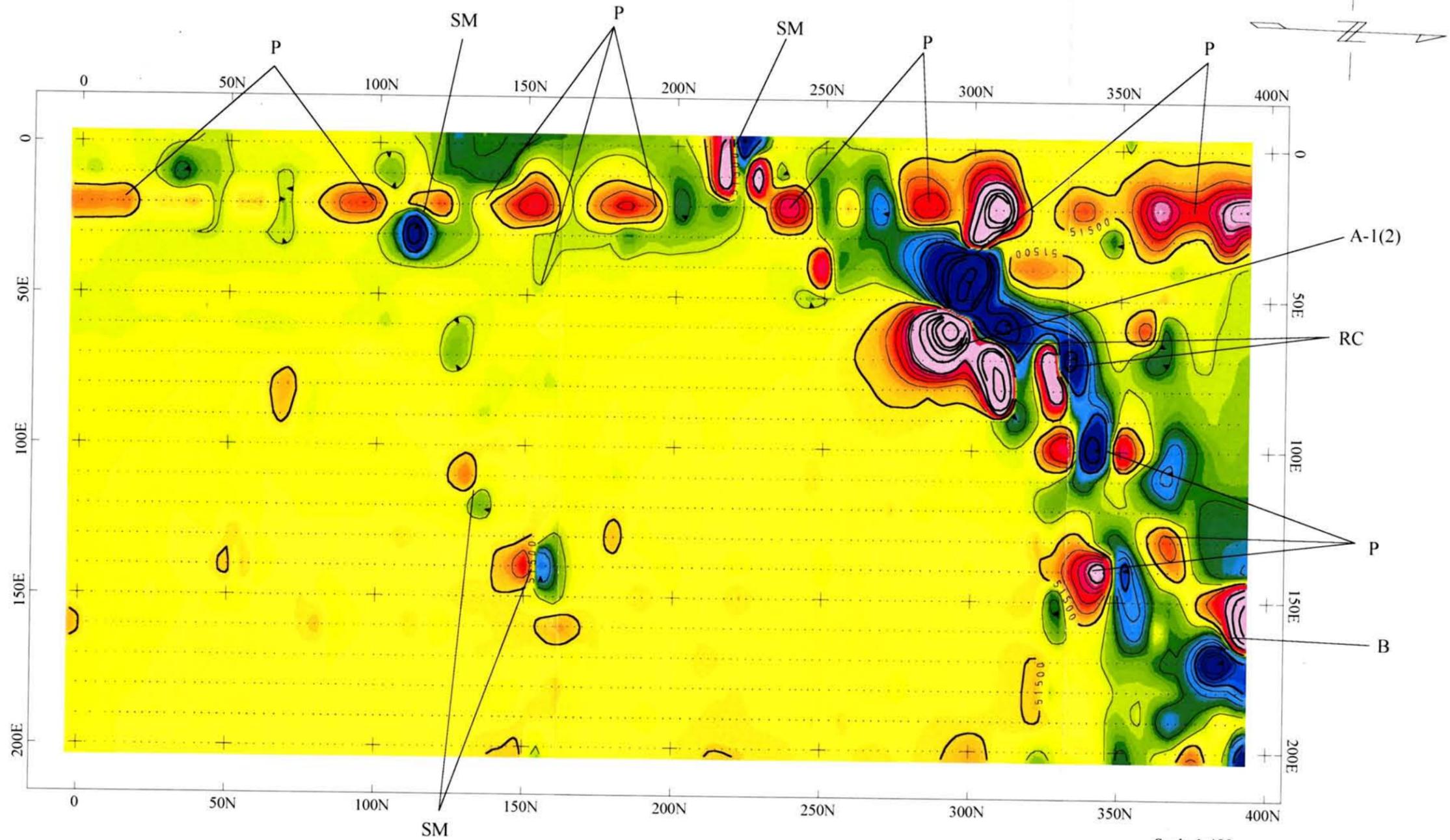
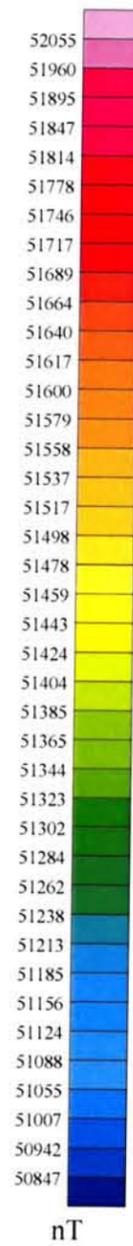


FIGURE A-2  
 FORMER MOTOR POOL 1300  
 SITE MAP WITH GEOPHYSICAL INTERPRETATION  
 PARCELS 148(7), AND 16(7)

U.S. ARMY CORPS OF ENGINEERS  
 MOBILE DISTRICT  
 FORT McCLELLAN  
 CALHOUN COUNTY, ALABAMA  
 Contract No. DACA21-96-D-0018



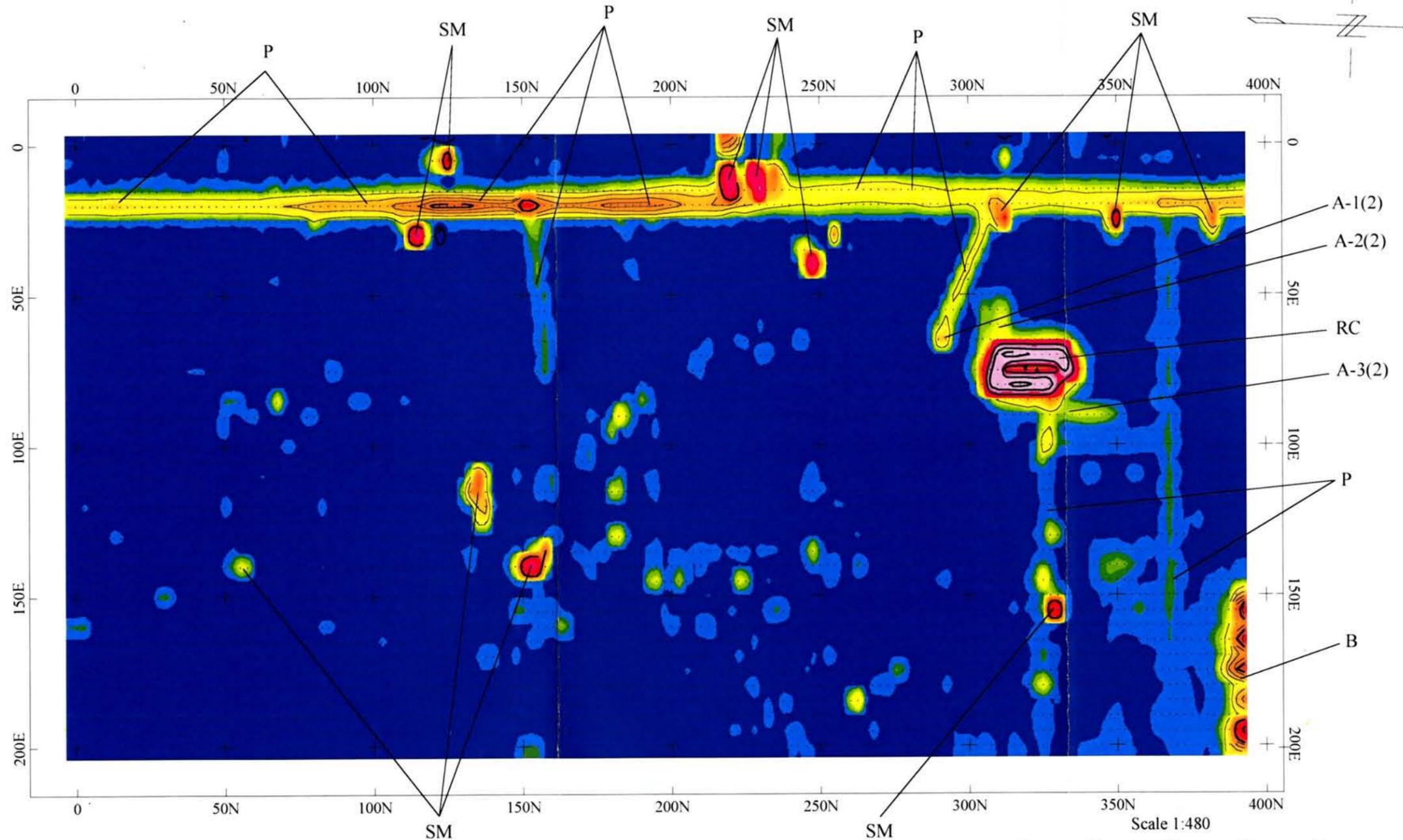
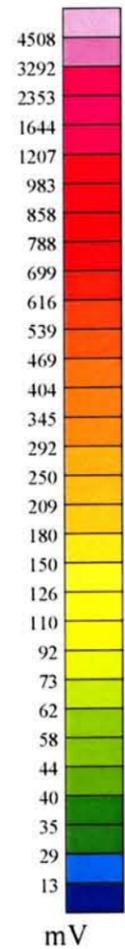


**LEGEND:**

- ... GEOPHYSICAL SURVEY LINES
- A-1(2) GEOPHYSICAL ANOMALY DISCUSSED IN TEXT; NUMBER SHOWN IN PARENTHESIS INDICATES ANOMALY TYPE FOR POTENTIAL UST
- SM ANOMALY CAUSED BY SURFACE METAL
- RC ANOMALY CAUSED BY REINFORCED CONCRETE
- B ANOMALY CAUSED BY BUILDING OR STRUCTURE
- P ANOMALY CAUSED BY BURIED PIPES OR UTILITY

NAME: Micki Maki	DATE: January 7, 1999
PROJECT NUMBER: 774645	LOCATION: C:\Projects\Fort McClellan\FMP1300\MAG Upper map

**FIGURE A-3**  
**FORT McCLELLAN**  
**SITE - FORMER MOTOR POOL 1300**  
 G-858G TOTAL MAGNETIC FIELD  
 UPPER SENSOR (4.5 FT ABOVE GROUND SURFACE)  
**IT GEOPHYSICS GROUP KNOXVILLE, TENNESSEE**

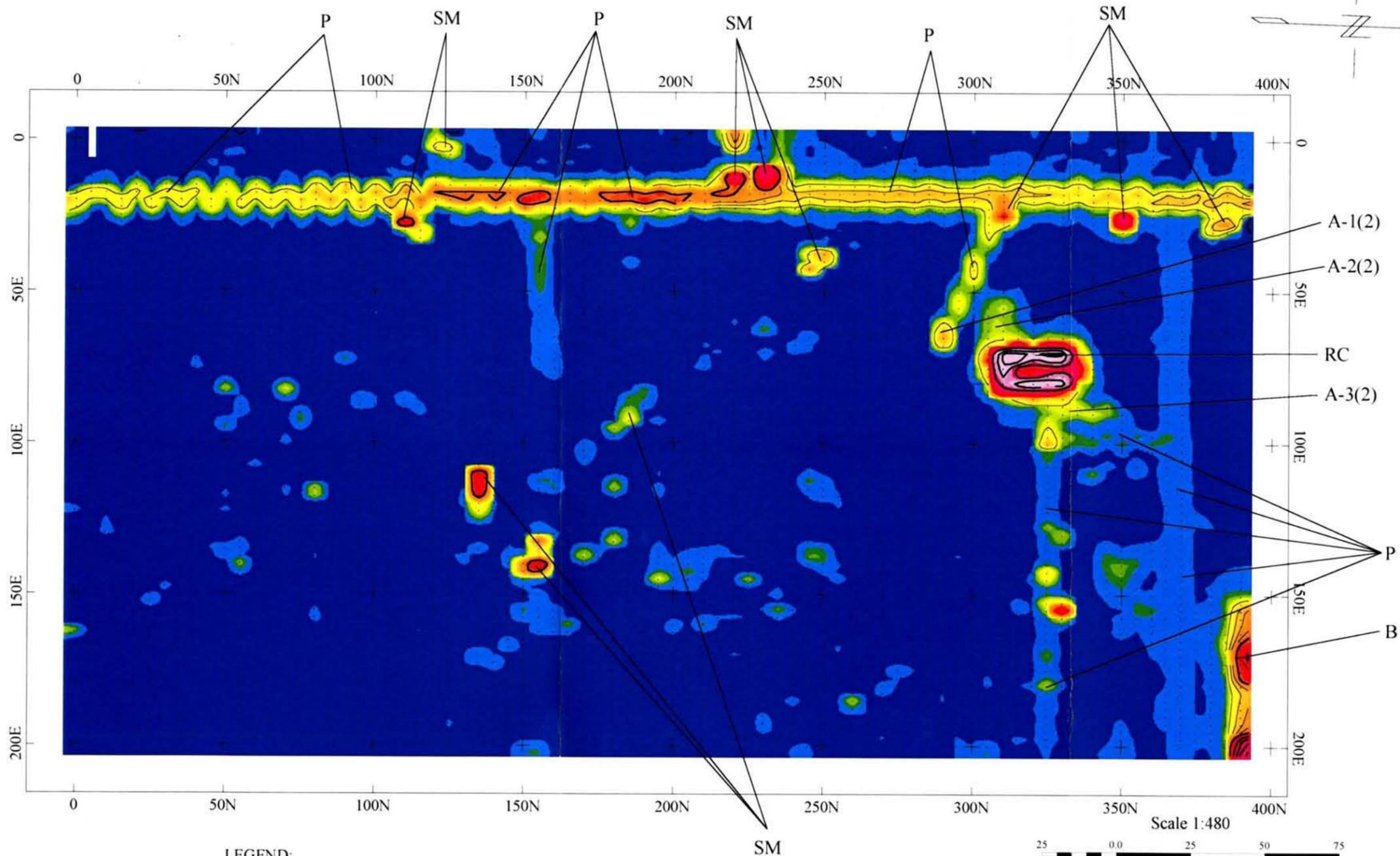
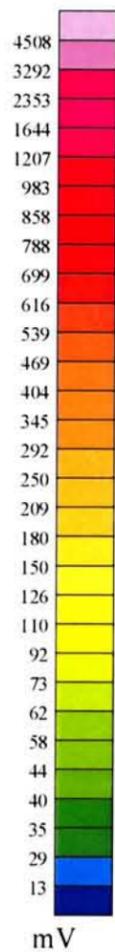


**LEGEND:**

- GEOPHYSICAL SURVEY LINES
- A-1(2) GEOPHYSICAL ANOMALY DISCUSSED IN TEXT;  
NUMBER SHOWN IN PARENTHESIS INDICATES  
ANOMALY TYPE FOR POTENTIAL UST
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- P ANOMALY CAUSED BY BURIED PIPES OR UTILITY

NAME: Micki Maki	DATE: November 5, 1999
PROJECT NUMBER: 774645	LOCATION: C:\Projects\Fort McClellan\FMP1300\EM61 fmp13nb.map

**FIGURE A-4**  
**FORT McCLELLAN**  
**SITE - FORMER MOTOR POOL 1300**  
EM61 POTENTIAL DIFFERENCE  
BOTTOM COIL (1.5 FT ABOVE GROUND SURFACE)  
NORTH-SOUTH SURVEY LINES  
**IT GEOPHYSICS GROUP KNOXVILLE, TENNESSEE**

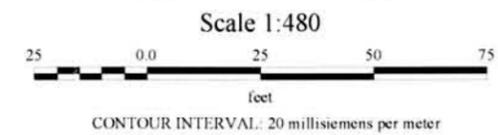
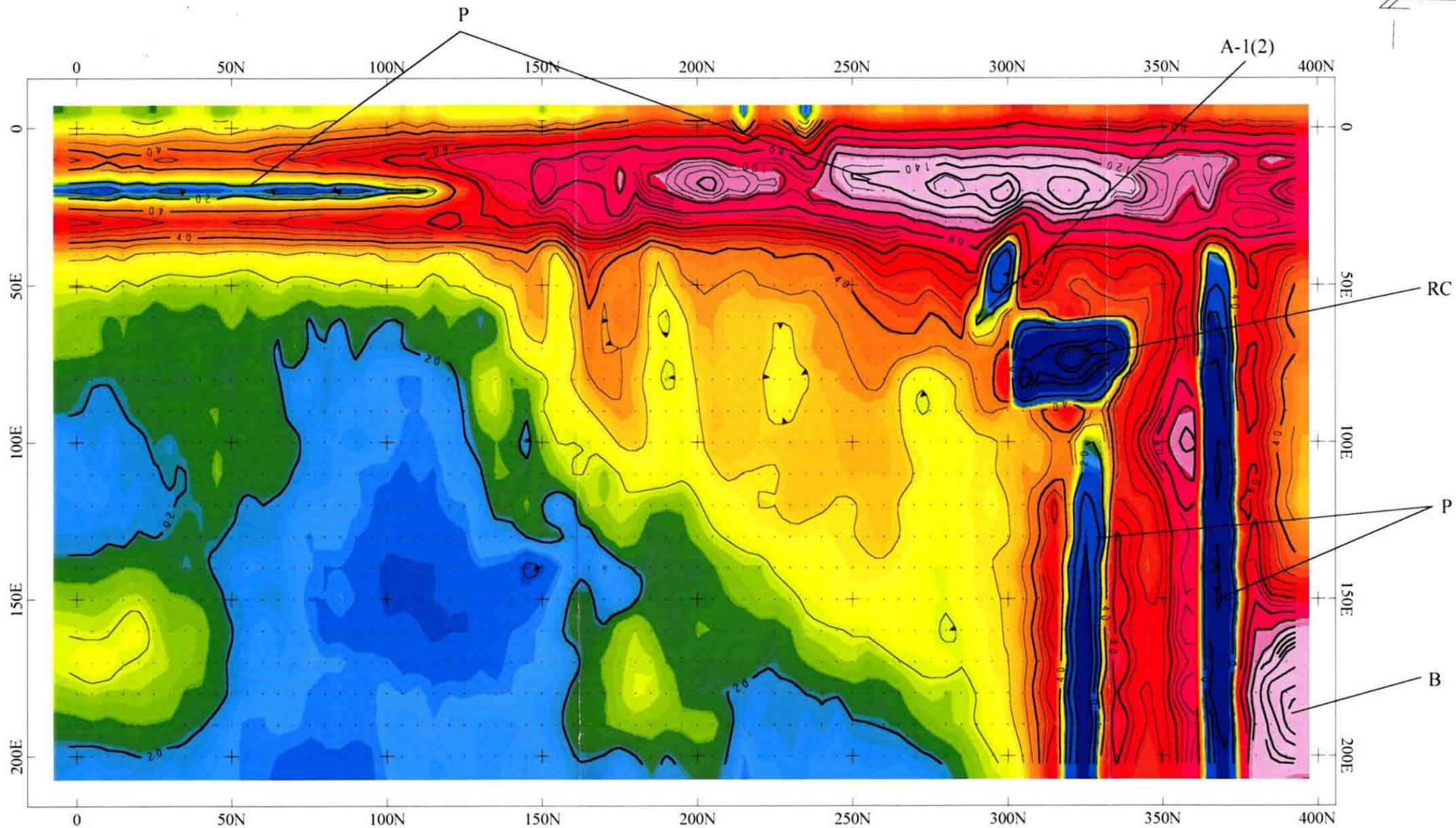
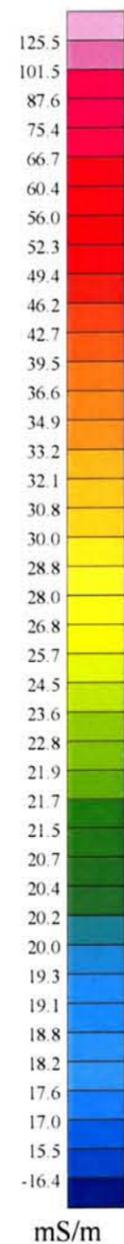


**LEGEND:**

- ... GEOPHYSICAL SURVEY LINES
- A-1(3) GEOPHYSICAL ANOMALY DISCUSSED IN TEXT;  
NUMBER SHOWN IN PARENTHESIS INDICATES  
ANOMALY TYPE FOR POTENTIAL UST
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- B ANOMALY CAUSED BY BUILDING OR STRUCTURE
- P ANOMALY CAUSED BY BURIED PIPES OR UTILITY

NAME: Micki Maki	DATE: November 5, 1999
PROJECT NUMBER: 774645	LOCATION: C:\Projects\Fort McClellan\FMP1300\EM61\mp13eb.map

**FIGURE A-5**  
**FORT McCLELLAN**  
**SITE - FORMER MOTOR POOL 1300**  
 EM61 POTENTIAL DIFFERENCE  
 BOTTOM COIL (1.5 FT ABOVE GROUND SURFACE)  
 EAST-WEST SURVEY LINES  
**IT GEOPHYSICS GROUP KNOXVILLE, TENNESSEE**



- LEGEND:**
- ... GEOPHYSICAL SURVEY LINES
  - A-1(3) GEOPHYSICAL ANOMALY DISCUSSED IN TEXT;  
NUMBER SHOWN IN PARENTHESIS INDICATES  
ANOMALY TYPE FOR POTENTIAL UST
  - P ANOMALY CAUSED BY BURIED PIPES OR UTILITY
  - RC ANOMALY CAUSED BY REINFORCED CONCRETE
  - B ANOMALY CAUSED BY BUILDING OR STRUCTURE

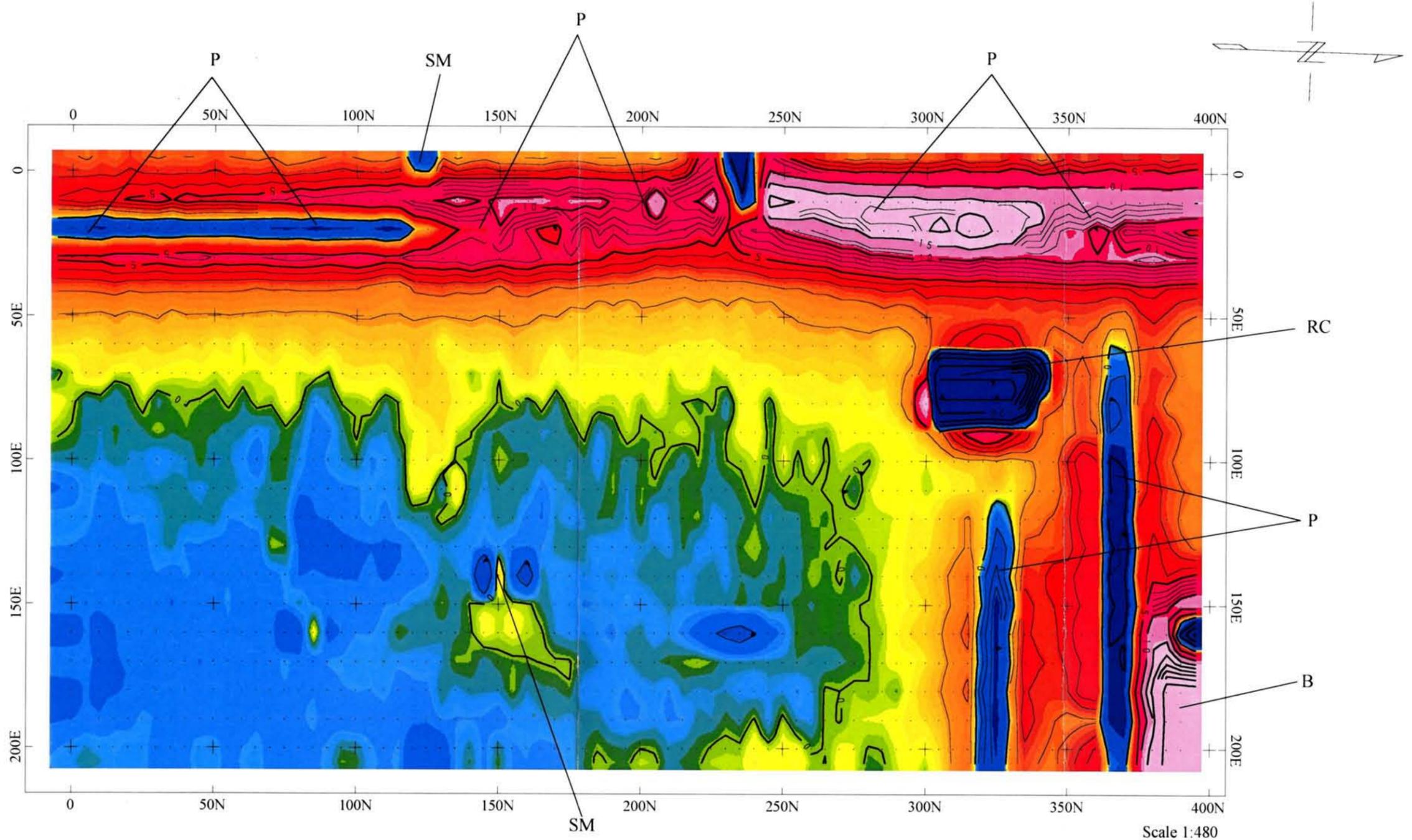
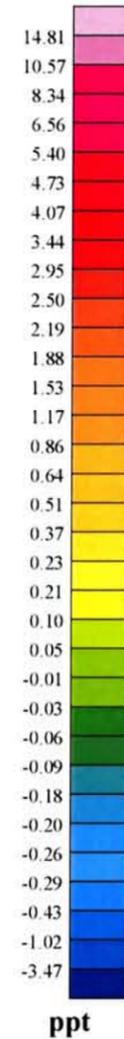
**FIGURE A-6**

**FORT McCLELLAN**  
**SITE - FORMER MOTOR POOL 1300**

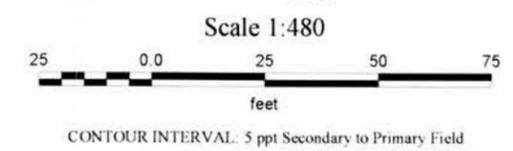
EM31 CONDUCTIVITY  
VERTICAL DIPOLE (3.0 FT ABOVE GROUND SURFACE)  
NORTH-SOUTH SURVEY LINES

**IT GEOPHYSICS GROUP KNOXVILLE, TENNESSEE**

NAME: Micki Maki	DATE: November 5, 1999
PROJECT NUMBER: 774645	LOCATION: C:\Projects\Fort McClellan\FMP1300\EM31_fmpl3ns.map

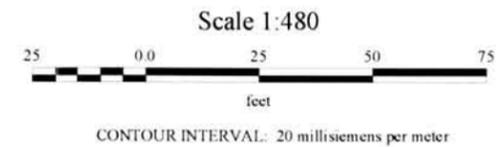
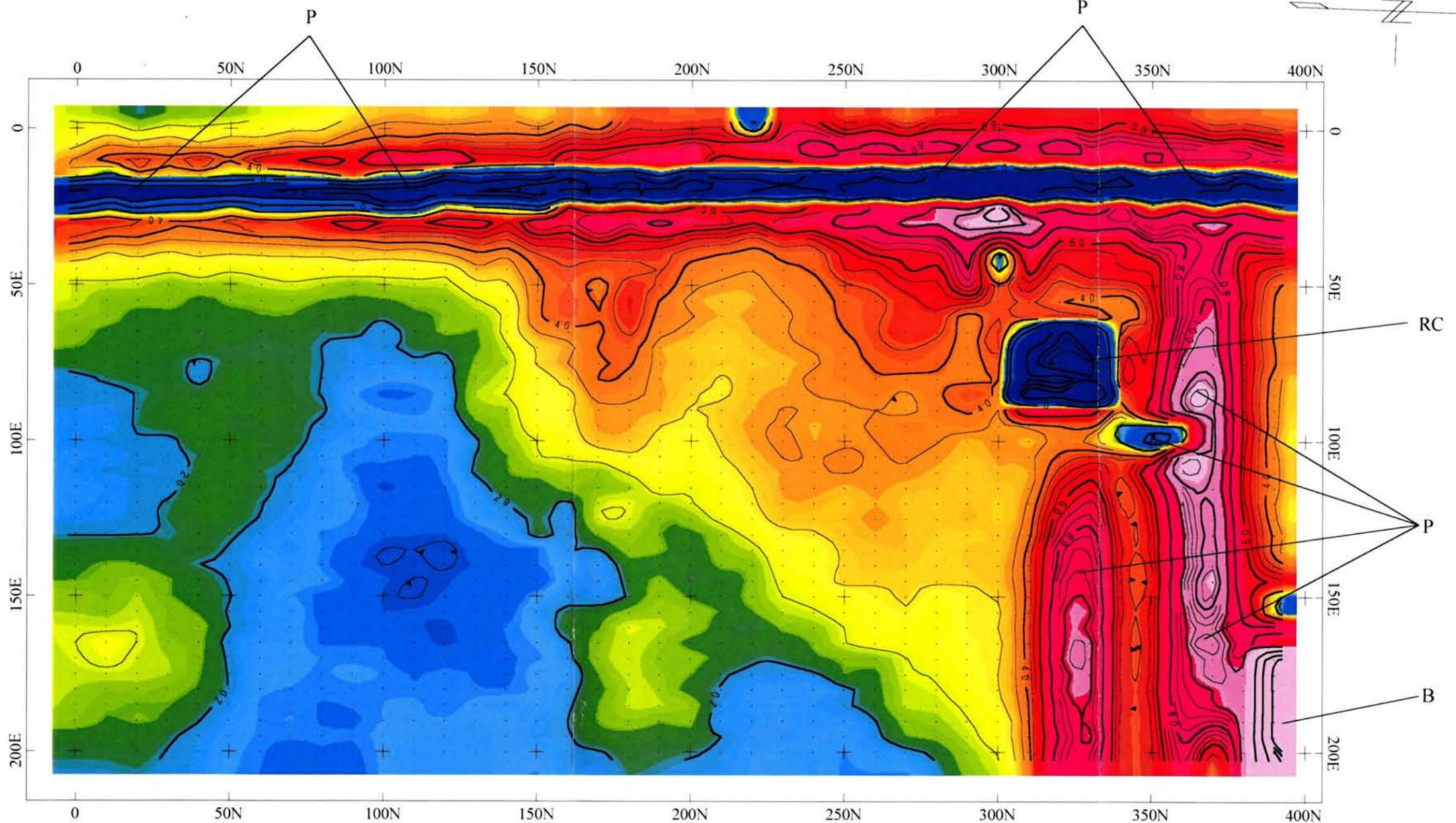
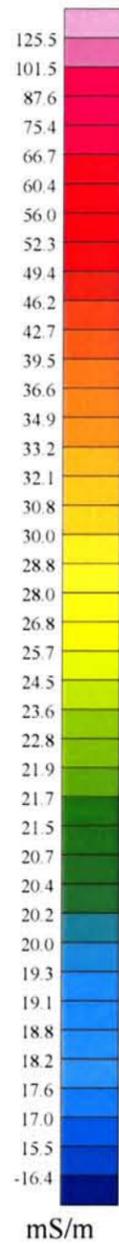


- LEGEND:**
- ... GEOPHYSICAL SURVEY LINES
  - SM ANOMALY CAUSED BY SURFACE METAL
  - RC ANOMALY CAUSED BY REINFORCED CONCRETE
  - B ANOMALY CAUSED BY BUILDING OR STRUCTURE
  - P ANOMALY CAUSED BY BURIED PIPES OR UTILITY



NAME: Micki Maki	DATE: November 5, 1999
PROJECT NUMBER: 774645	LOCATION: C:\Projects\Fort McClellan\FMP1300\EM31\mp13ni.map

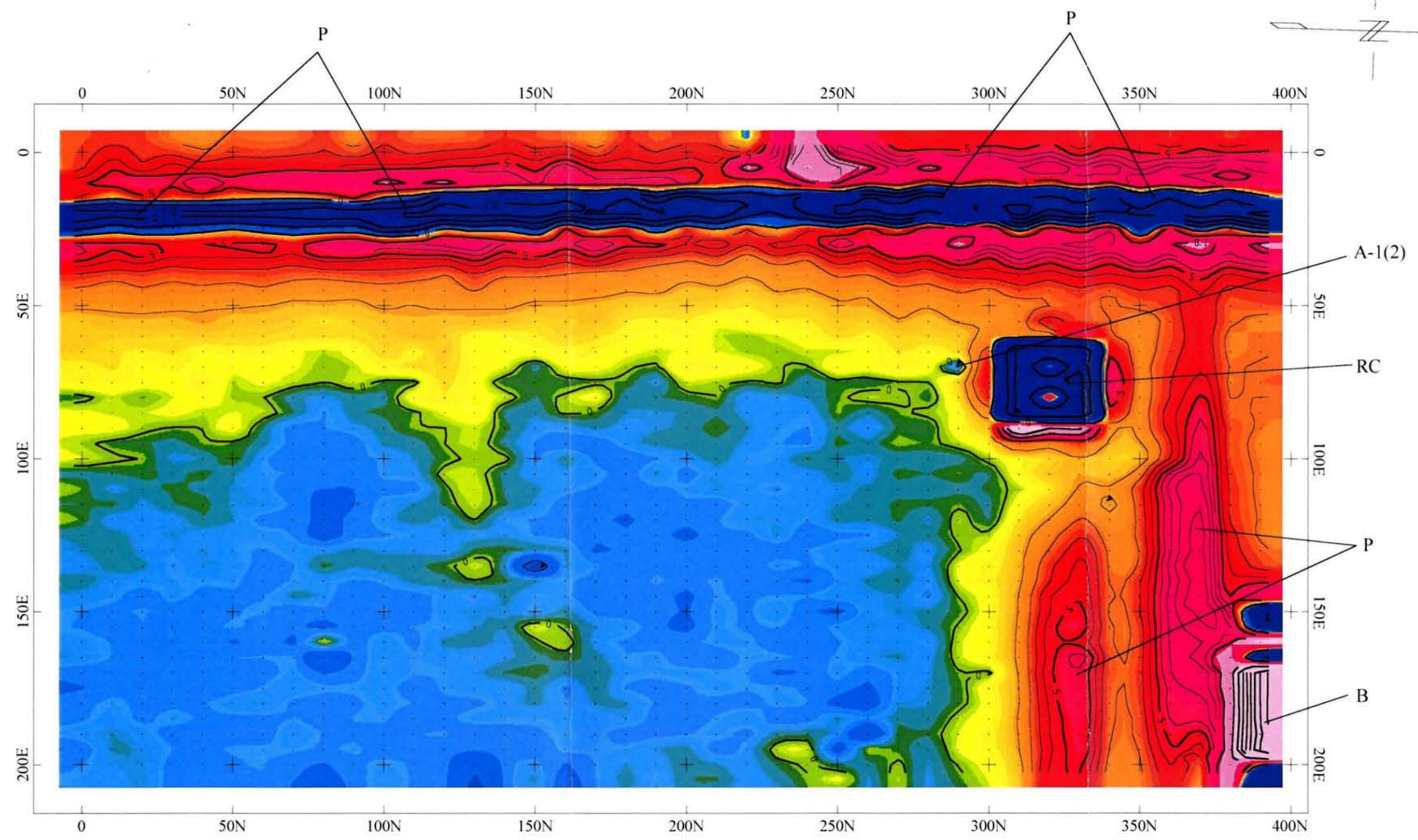
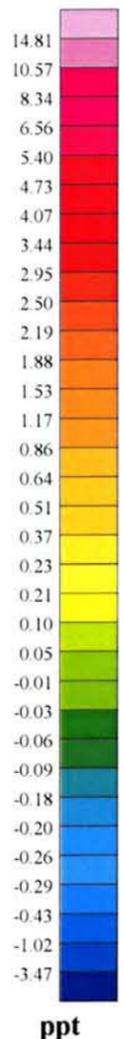
**FIGURE A-7**  
**FORT McCLELLAN**  
**SITE - FORMER MOTOR POOL 1300**  
 EM31 IN-PHASE COMPONENT  
 VERTICAL DIPOLE (3.0 FT ABOVE GROUND SURFACE)  
 NORTH-SOUTH SURVEY LINES  
**IT GEOPHYSICS GROUP KNOXVILLE, TENNESSEE**



- LEGEND:**
- ... GEOPHYSICAL SURVEY LINES
  - P ANOMALY CAUSED BY BURIED PIPES OR UTILITY
  - RC ANOMALY CAUSED BY REINFORCED CONCRETE
  - B ANOMALY CAUSED BY BUILDING OR STRUCTURE

NAME: Micki Maki	DATE: November 5, 1999
PROJECT NUMBER: 774645	LOCATION: C:\Projects\Fort McClellan\FMP1300\EM31 fmp13ec.map

**FIGURE A-8**  
**FORT McCLELLAN**  
**SITE - FORMER MOTOR POOL 1300**  
 EM31 CONDUCTIVITY  
 VERTICAL DIPOLE (3.0 FT ABOVE GROUND SURFACE)  
 EAST-WEST SURVEY LINES  
**IT GEOPHYSICS GROUP KNOXVILLE, TENNESSEE**

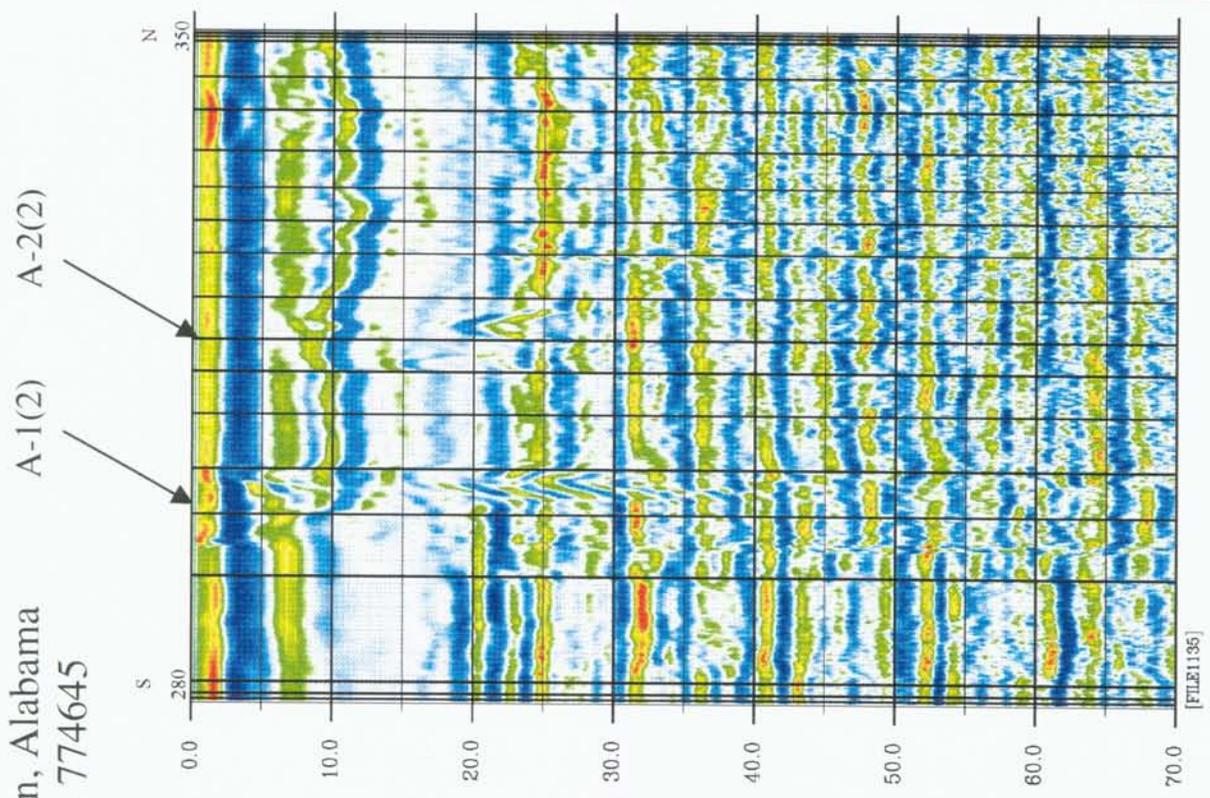


- LEGEND:**
- ... GEOPHYSICAL SURVEY LINES
  - A-1(2) GEOPHYSICAL ANOMALY DISCUSSED IN TEXT; NUMBER SHOWN IN PARENTHESIS INDICATES ANOMALY TYPE FOR POTENTIAL UST
  - P ANOMALY CAUSED BY BURIED PIPES OR UTILITY
  - RC ANOMALY CAUSED BY REINFORCED CONCRETE
  - B ANOMALY CAUSED BY BUILDING OR STRUCTURE

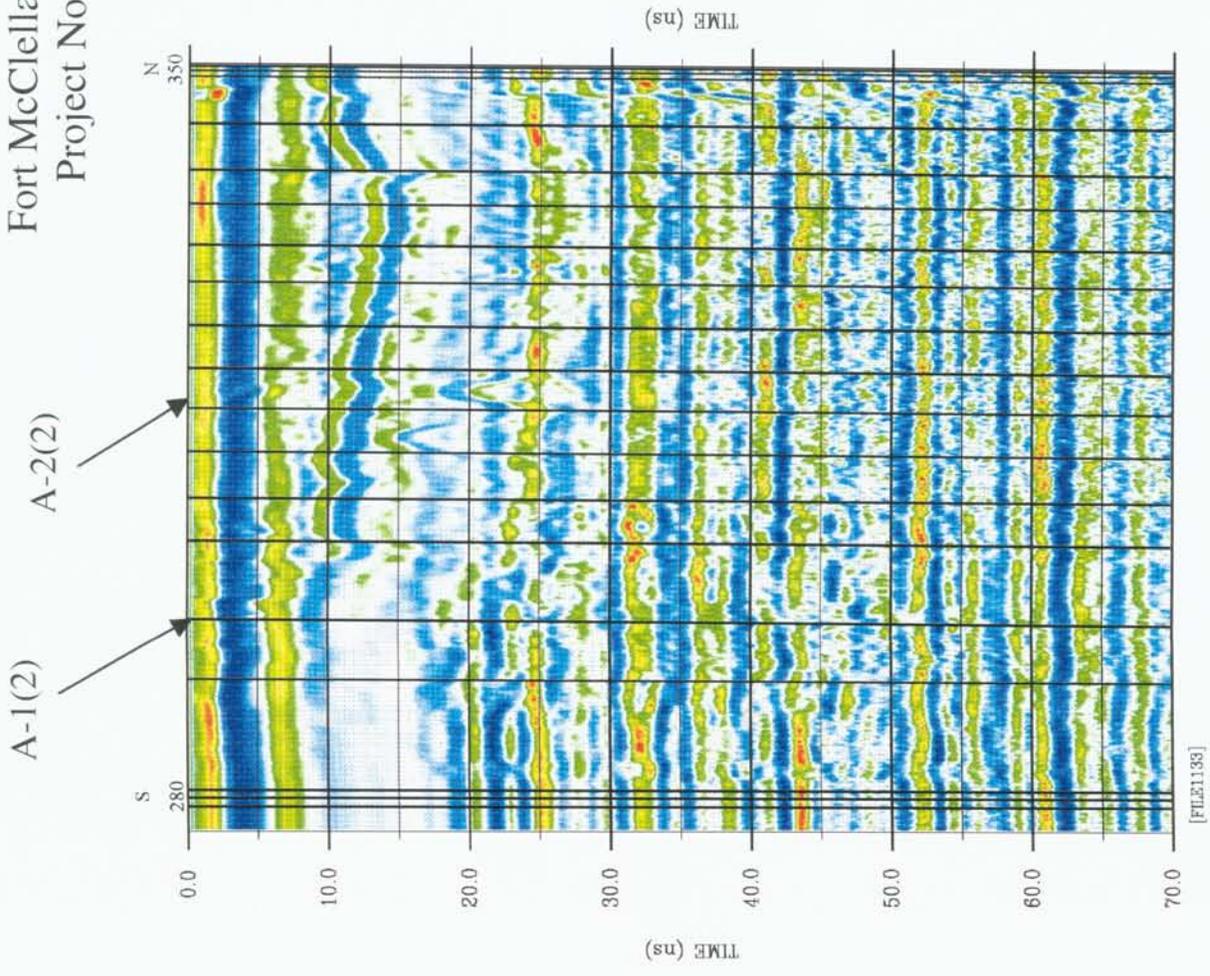
**FIGURE A-9**  
**FORT McCLELLAN**  
**SITE - FORMER MOTOR POOL 1300**  
 EM31 IN-PHASE COMPONENT  
 VERTICAL DIPOLE (3.0 FT ABOVE GROUND SURFACE)  
 EAST-WEST SURVEY LINES  
**IT GEOPHYSICS GROUP KNOXVILLE, TENNESSEE**

NAME: Micki Maki	DATE: June 27, 1999
PROJECT NUMBER: 774645	LOCATION: C:\Projects\Fort McClellan\FMP1300\EM31_fmp13ei.map

Figure A-10  
Former Motor Pool 1300 Site  
Fort McClellan, Alabama  
Project No. 774645

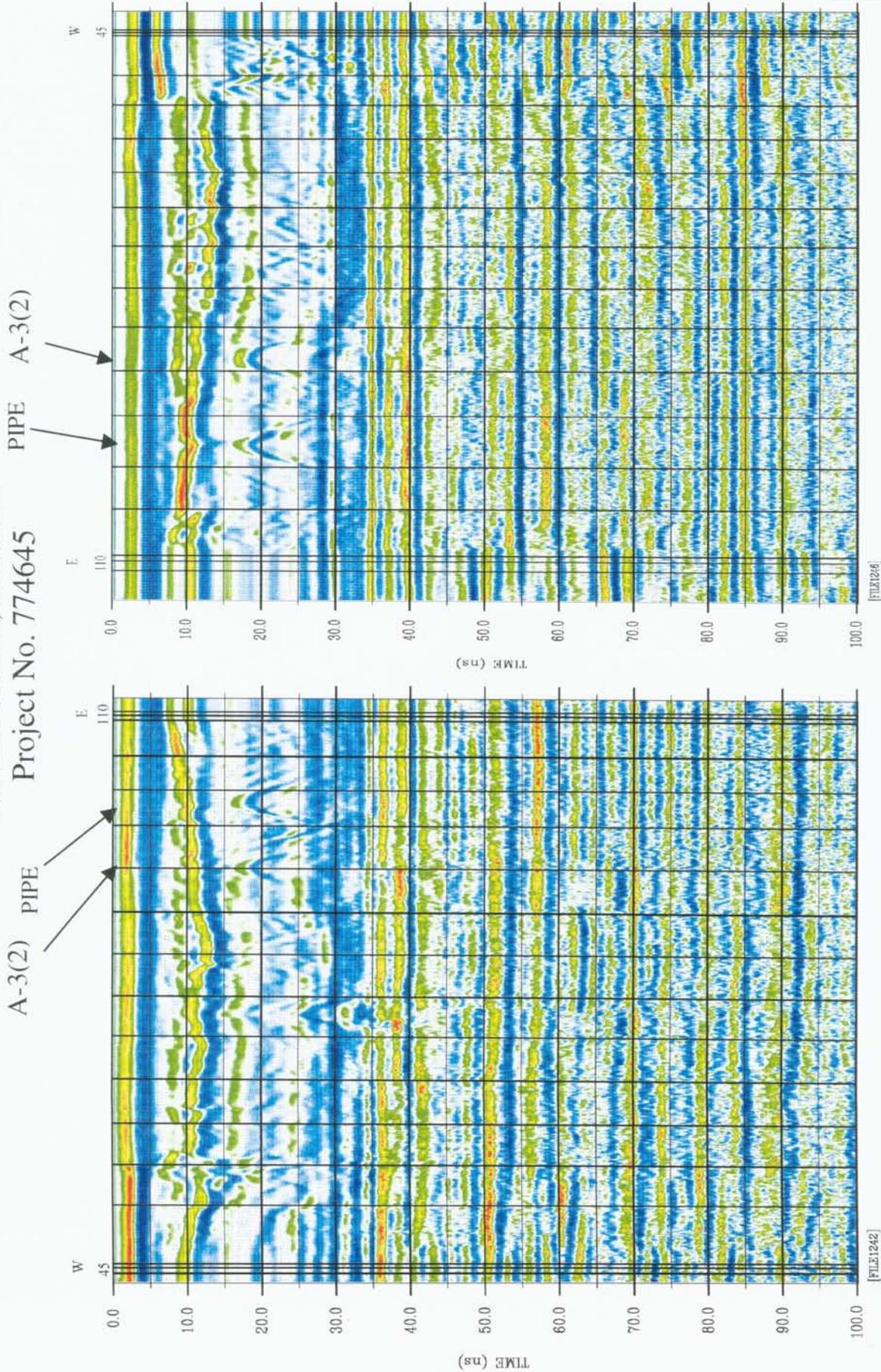


Line 60 E, 200 MHz Antenna



Line 65 E, 200 MHz Antenna

Figure A-11  
Former Motor Pool 1300 Site  
Fort McClellan, Alabama  
Project No. 774645



Line 345 N, 200 MHz Antenna

Line 340 N, 200 MHz Antenna

**ATTACHMENT  
THEORETICAL BACKGROUND**

# **Table of Contents**

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2.0 Frequency-Domain Electromagnetic Induction Method.....	3
3.0 Time-Domain Electromagnetic Induction Method.....	5
4.0 Ground-Penetrating Radar Method.....	7
5.0 References.....	9

## **List of Acronyms**

---

EM	electromagnetic induction
EM31	Geonics Limited EM31 Terrain Conductivity Meter
EM61	Geonics Limited EM61 High-Resolution Metal Detector
G-858G	Geometrics Inc. G-858G Magnetic Gradiometer
GPR	ground-penetrating radar
mV	millivolts
nT	nanoteslas
nT/m	nanoteslas per meter
UXO	unexploded ordnance

## **1.0 Magnetic Method**

---

The magnetic instruments used during the Fort McClellan surface geophysical surveys were a Geometrics, Inc., G-858G "walking mode" Magnetic Gradiometer (G-858G) for acquiring survey data and a Geometrics, Inc., G-856 Magnetometer for collecting magnetic base station data.

The G-858G, which is an optically-pumped cesium vapor instrument, measures the intensity of the Earth's magnetic field in nanoteslas (nT) and the vertical gradient of the magnetic field in nanoteslas per meter (nT/m). The vertical gradient is measured by simultaneously recording the magnetic field with two sensors at different heights. To determine the vertical magnetic gradient, the upper sensor reading is subtracted from the lower sensor reading, and the result is then divided by the distance between the sensors. The distance between sensors for this investigation was 2.5 feet (0.76 meter). The vertical magnetic gradient measurement allows for better definition of shallower anomalies.

During operation of the G-858G magnetic gradiometer, a direct current is used to generate a polarized monochromatic light. Absorption of the light occurs within the naturally precessing cesium atoms found in the instrument's two vapor cells or sensors. When absorption is complete, the precessing atoms become a transfer mechanism between light and a transverse radiofrequency field at a specific frequency of light known as the Larmor frequency. The light intensity is used to monitor the precession and adjusts the radiofrequency allowing for the determination of the magnetic field intensity (Sheriff, 1991).

The Earth's magnetic field is believed to originate in currents in the Earth's liquid outer core. The magnetic field varies in intensity from approximately 25,000 nT near the equator, where it is parallel to the Earth's surface, to approximately 70,000 nT near the poles, where it is perpendicular to the Earth's surface. In Alabama, the intensity of the Earth's magnetic field varies from 50,000 nT to 51,000 nT, and has an associated inclination of approximately 54 degrees.

Anomalies in the Earth's magnetic field are caused by induced or remnant magnetism. Remnant magnetism is caused by naturally occurring magnetic materials. Induced magnetic anomalies result from the induction of a secondary magnetic field in a ferromagnetic material (e.g., pipelines, drums, tanks, or well casings) by the Earth's magnetic field. The shape and amplitude of an induced magnetic anomaly over a ferromagnetic object depend on the geometry, size,

depth, and magnetic susceptibility of the object and on the magnitude and inclination of the Earth's magnetic field in the study area (Dobrin, 1976; Telford, et al., 1976). Induced magnetic anomalies over buried objects such as drums, pipes, tanks, and buried metallic debris generally exhibit an asymmetrical, south high/north low signature (maximum amplitude on the south side and minimum on the north). Magnetic anomalies caused by buried metallic objects generally have dimensions much greater than the dimensions of the objects themselves. As an extreme example, a magnetometer may begin to sense a buried oil well casing at a distance of greater than 50 feet.

The magnetic method is not effective in areas with ferromagnetic material at the surface because the signal from the surface material obscures the signal from any buried objects. Also, the presence of an alternating current electrical power source can render the signal immeasurable because of the high precision required in the measurement of the frequency at which the protons precess (Breiner, 1973). The precession signal may also be sharply degraded in the presence of large magnetic gradients (exceeding approximately 600 nT/m).

The magnetic field measured at any point on the Earth's surface undergoes low-frequency diurnal variation, called magnetic drift, associated with the Earth's rotation. The source of magnetic drift is mainly within the ionosphere, and its magnitude is sometimes large enough to introduce artificial trends in survey data. The G-856 base station magnetometer was used to record this drift for removal from the G-858G survey data during processing.

Applications of the magnetic method include delineating old waste sites and mapping unexploded ordnance (UXO), drums, tanks, pipes, abandoned wells, and buried metallic debris. The method also is useful in searching for magnetic ore bodies, delineating basement rock, and mapping subsurface geology characterized by volcanic or mafic rocks.

## ***2.0 Frequency-Domain Electromagnetic Induction Method***

---

Frequency-domain electromagnetic induction (EM) equipment used during this investigation consisted of a Geonics EM31 terrain conductivity meter (EM31) coupled to an Omnidata DL720 digital data logger. The EM31 consists of a 12-foot-long plastic boom with a transmitter coil mounted at one end and a receiver coil at the other. An alternating current is applied to the transmitter coil, causing the coil to radiate a primary EM field. As described by Faraday's law of induction, this time-varying magnetic field generates eddy currents in conductive subsurface materials. These eddy currents have an associated secondary magnetic field with a strength and phase shift (relative to the primary field) that are dependent on the conductivity of the medium. The combined effect of the primary and secondary fields is measured by the receiver coil in-phase (in-phase) and 90 degrees out-of-phase (quadrature) with the primary field. Most geologic materials are poor conductors. Current flow through geologic materials takes place primarily in the pore fluids (Keller and Frischknecht, 1966); as such, conductivity is predominantly a function of soil type, porosity, permeability, pore fluid ion content, and degree of saturation. The EM31 is calibrated so that the out-of-phase component is converted to electrical conductivity in units of millisiemens per meter (McNeill, 1980), and the in-phase component is converted to parts per thousand of the secondary field to the primary EM field. The in-phase component is a relative value that is generally set to zero over background materials at each site.

The depth of penetration for EM induction instruments depends on the transmitter/receiver separation and coil orientation (McNeill, 1980). The EM31 has an effective exploration depth of approximately 18 feet when operating in the vertical dipole mode (horizontal coils). In this mode, the maximum instrument response results from materials at a depth of approximately two-fifths the coil spacing (or, approximately 2 feet below ground surface with the instrument at the normal operating height of approximately 3 feet), providing that no large metallic features such as tanks, drums, pipes, and reinforced concrete are present. Single buried drums typically can be located to depths of approximately 5 feet, whereas clusters of drums can be located to significantly greater depths if background noise is limited or negligible. In the horizontal dipole mode (vertical coils), the EM31 has an effective exploration depth of approximately 9 feet and is most sensitive to materials immediately beneath the ground surface.

The EM31 generally must pass over or very near a buried metallic object to detect it. Both the out-of-phase and in-phase components exhibit a characteristic anomaly over near-surface metallic conductors. This anomaly consists of a narrow zone having strong negative amplitude centered over the target and a broader lobe of weaker, positive amplitude on either side of the target. For long, linear conductors such as pipelines, the characteristic anomaly is as described when the axis of the coil (instrument boom) is at an angle to the conductor. However, when the instrument boom is oriented parallel to the conductor, a positive amplitude anomaly is obtained.

The application of frequency-domain EM techniques includes mapping conductive groundwater contaminant plumes in very shallow aquifers, delineating oil brine pits, landfill boundaries and pits and trenches containing buried metallic and nonmetallic debris, and locating buried pipes, cables, drums, and tanks.

### ***3.0 Time-Domain Electromagnetic Induction Method***

---

Time-domain electromagnetic induction equipment used during this investigation consisted of a Geonics EM61 high-resolution metal detector (EM61) coupled to an Omnidata DL720 digital data logger. The EM61 consists of one transmitter and two receiver coils each 1-meter square. The transmitter and one receiver coil are coincident within the instrument; the second receiver coil is separated by 0.5 meters. Comparison of the readings in the two receiver coils allows for discrimination between shallow and deeply buried metal objects. In operation, a pulse of current in the transmitter coil generates a primary magnetic field that induces eddy currents in nearby metallic conductors, as described by Faraday's law of induction. These eddy currents produce secondary magnetic fields that are measured by the time-dependant, decaying voltage they produce in the receiver coils.

The internal electronics of the EM61 are designed such that readings are taken in a very narrow time window following transmitter turnoff. The measurement of secondary fields in the absence of a primary field allows for the high sensitivity measurements obtained with the system. Since the current ring diffuses down and outward, readings taken immediately after current shutoff are most affected by near-surface conditions and the later readings by the electrical properties of the deeper subsurface.

The EM61 is generally adjusted in the field to have a zero millivolts (mV) response over background conditions.

The EM61 depth of penetration depends primarily on the size of the target, and to a lesser degree on the type of metal (Geonics, 1997). The EM61 has an effective exploration depth in excess of 10 feet for locating large conductive features, such as tanks.

The EM61 generally must pass over, or very, near a buried metallic object to detect it. The EM61 characteristic anomaly consists of readings elevated 10 to 20 mV above background for small conductors and up to several thousand mV for large conductors, such as tanks. For mapping long, linear conductors, the EM61 data is most useful when measurements are taken perpendicular to the orientation of the conductor.

The application of near-surface time-domain EM techniques with instruments such as the EM61, includes detecting and mapping metallic objects (buried pipes, cables, drums, and tanks), and mapping the boundaries of landfill, pits or trenches containing buried metallic debris.

## **4.0 Ground-Penetrating Radar Method**

---

Ground-penetrating radar (GPR) equipment used during this investigation consisted of a Geophysical Survey Systems, Inc. Model SIR-2P equipped with 200- and 400-megahertz monostatic antennas, and a DPU-5400 high-resolution thermal gray-scale printer.

When conducting a GPR survey, an antenna containing both a transmitter and a receiver is pulled along the ground surface. The transmitter radiates short pulses of high-frequency (center frequencies in the range of 200 to 400 megahertz EM energy into the ground. The EM wave propagates into the subsurface at a velocity determined by the electromagnetic properties (primarily dielectric constant) of the medium through which the wave travels. When the wave encounters the interface of two materials having different electromagnetic properties, such as between soil and an underground storage tank, a portion of the energy is reflected back to the surface where the receiver measures its amplitude and time of arrival. The magnitude of the reflection is an indication of the degree of contrast in the electrical properties of the interface producing the reflection—the greater the contrast, the greater the amplitude. The time of the reflection arrival indicates the relative depth of the source of the reflection. The reflection is often seen as a characteristic triplet that is the result of the receiving antenna response and of multiples generated along the propagation path. The received signal is transmitted to a control unit, displayed on a color monitor, and saved on the control unit's digital hard drive.

As predicted by Maxwell's equations for a propagating EM wave, two kinds of charge flow are generated by the associated alternating electric and magnetic fields (Ulriksen, 1982). The charge flows are conduction and displacement currents. The conduction current term is predominant at lower frequencies, and conduction currents are used in the EM induction method. At the higher frequencies used in the GPR method, the displacement current term becomes predominant because the high frequencies will set bound charges in motion, causing polarization.

The physical properties that describe the movement of charges by conduction and displacement currents are the conductivity and the dielectric constant of the medium, respectively. Conductivity is a measure of the ease with which charges and charged particles move freely through the medium when subjected to an external electric field. The dielectric constant, or its value normalized by the dielectric constant of free space called the relative dielectric constant, is a measure of

how easily a medium polarizes to accommodate the EM fields of a propagating wave (Keller and Frischknecht, 1966).

Although conductivity has a smaller effect on the transmission of EM waves emitted from a GPR unit, it has an important effect on the attenuation of the waves (Ulriksen, 1982). Highly conductive media will attenuate the EM signal rapidly and restrict depth penetration to the first several feet. Highly resistive (poorly conductive) media allow deeper penetration. The frequency of the transmitted waves also affects the depth of penetration. Lower frequencies penetrate deeper but have lower resolution, whereas higher frequencies can resolve smaller objects and soil layers at the expense of depth penetration. At many sites in the southeastern United States, heavy clay soils are relatively conductive and depth of penetration is often limited to 5 feet or less. At some sandy sites, typical of coastal regions, GPR depth of penetration has exceeded 8 feet.

In unconsolidated materials, conduction occurs predominantly through pore fluids (Keller and Frischknecht, 1966). Therefore, changes in pore fluid content, porosity, permeability, and degree of saturation will affect reflected and refracted EM signals. Backfilled trenches, in which there may be different compaction densities relative to the surrounding area, can be identified by low to moderate amplitude reflections. When the target of a GPR survey is a metallic conductor such as metal pipes and cables, drums, tanks, or ammunition shells, the reflections have high amplitude because of the nearly complete reflection of the EM wave from the metallic conductor. Thus, the property of total reflection makes metallic targets well suited for detection within the range of the GPR unit. No reflections will occur from below the metallic conductor, although multiples are common. The edges of metallic reflectors will generally exhibit diffraction patterns as a result of the transmitting and the receiving antennae being unfocused and emitting and receiving from a 45-degree cone. The cone causes the radar to receive reflections from objects that are ahead of it, at times later than an object at the same depth directly below the antennae. As the radar approaches an object, the reflection becomes earlier in time, with the earliest reflection taking place when the radar is directly above the object. A complimentary pattern occurs as the antenna moves away from the object, resulting in the characteristic hyperbolic shaped anomaly on GPR profiles characteristic of small, subsurface metallic objects.

Applications of GPR include delineation of pits and trenches containing metallic and nonmetallic debris; location of buried pipes, drums, and underground storage tanks; and mapping of landfill boundaries and near-surface geology.

## 5.0 References

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Ulriksen, C. P. F., 1982, *Application of Impulse Radar to Civil Engineering*, Department of Engineering Geology, Lund University of Technology, Sweden.

**APPENDIX B**

**SAMPLE COLLECTION LOGS AND ANALYSIS REQUEST/  
CHAIN OF CUSTODY RECORDS**

**SAMPLE COLLECTION LOGS**



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-21-98

Location Code: FTA-148-GP01

Collection Time: 1415

Sample Number: DB0001

Sample Name: FTA-148-GP01-SS-DB0001-REG

Start Depth: 0

Sampling Method: HA

End Depth: 1

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Sample Team: Auer, Short

Comments: COLLECTED w/ STAINLESS STEEL HAND AUGER. UNDER ASPHALT

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 16

**Collection Date:** 10-21-98

**Location Code:** FTA-148-GP01

**Collection Time:** 1430

**Sample Number:** DB0002

**Sample Name:** FTA-148-GP01-DS-DB0002-REG

**Start Depth:** 4

**Sampling Method:** DP

**End Depth:** 8

**Containers**

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES_N	N	B	1	8	oz	CWM

**Sample Team:** Allen, Shaw

**Comments:** Refusal 8'

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**Sketch Location:**

**Logged BY / Date:** \_\_\_\_\_

**Reviewed BY / Date:** \_\_\_\_\_



ENTERED  
3/25/99  
by Sm

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 1-27-99 st

Location Code: FTA-148-GP01

Collection Time: 1410

Sample Number: DB3001

Sample Name: FTA-148-GP01-GW-DB3001-REG

Start Depth: \_\_\_\_\_

Sampling Method: PP

End Depth: \_\_\_\_\_

### Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES_N	B		1	1	L	Amb. Glass
METALS-W	N	C	1	1	L	HDPE

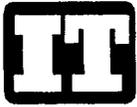
Sample Team: TIM MATHES  
KEVIN ARNOLD

METALS Ph < 2

### PURGE RECORD:

Initial	Time(24hr)	DepthtoWater (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
	1340	11.74	190	6.09	419.4	28.6	2.79	19.84	0
	1349	12.54	136	5.99	413.2	0	2.16	19.27	1.7
	1355	13.04	106	6.02	412.6	0	1.95	19.05	1.4
	1403	13.50	69	5.74	413.7	0	1.82	19.09	2.1
Sample:									

Logged BY / Date: J. H. G. 1-27-99 Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Location Code: FTA-148-GP02

Sample Number: DB0003

Sample Name: FTA-148-GP02-SS-DB0003-REG

Sampling Method: HA

Collection Date: 10-21-98

Collection Time: 1520

Start Depth: 0

End Depth: 1

Sample Team: Allen, Short

Analytical Suite	Containers		Qty	Size	Units	Type
	Flt	Frtn				
VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES_N	N	B	1	8	oz	CWM

Comments: COLLECTION taken w/ stainless steel hand Auger, NOT on ASPHALT

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1c)

Location Code: FTA-148-GP02

Sample Number: DB0004

Sample Name: FTA-148-GP02-DS-DB0004-REG

Sampling Method: DP

Collection Date: 10-21-98

Collection Time: 1535

Start Depth: 8

End Depth: 12

**Containers**

Analytical Suite    Flt Frtn Qty    Size    Units    Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: Refusal @ 12' . Temp well installed

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

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3/25/99

by sm

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16)  
Location Code: FTA-148-GP02  
Sample Number: DB3002  
Sample Name: FTA-148-GP02-GW-DB3002-REG  
Sampling Method: PP

Collection Date: 1-27-99

Collection Time: 1540

Start Depth: \_\_\_\_\_

End Depth: \_\_\_\_\_

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES_N	B		1	1	L	Amb. Glass
METALS-W	N	C	1	1	L	HDPE

Sample Team: TIM MATHES  
KEVIN ARNOLD

**PURGE RECORD:**

Initial	Time(24hr)	DepthtoWater (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
<del>1448</del>	1448	13.93	37	7.27	44.8	187	1.81	19.92	0
	1503	14.06	37	6.97	487.0	0	.74	18.54	1
	1513								
	1613	14.08	44	6.77	512.7	28.4	.47	18.40	2
	<del>1634</del>								
	1534	14.13	36	6.38	536.5	12.4	.78	18.17	3
Sample:									

Logged BY / Date: J. Mathes 1-27-98 Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

# Sample Collection Log

**Project: 774645 Fort McClellan**  
**Manager: Jeanie Yacoub**

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16)

Collection Date: 10-21-98

Location Code: FTA-148-GP03

Collection Time: 1450

Sample Number: DB0005

Sample Name: FTA-148-GP03-SS-DB0005-REG

Start Depth: 0

Sampling Method: HA

End Depth: 1

Analytical Suite	Containers		Qty	Size	Units	Type
	Flt	Frtn				
VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES_N	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: COLLECTED w/ STAINLESS steel hand Auger, under ASPHALT

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-21-98

Location Code: FTA-148-GP03

Collection Time: 1500

Sample Number: DB0006

Sample Name: FTA-148-GP03-DS-DB0006-REG

Start Depth: 8

Sampling Method: DP

End Depth: 10

**Containers**

Analytical Suite    Flt Frtn Qty Size Units Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: Refuser 10'. Temp well installed 3'-8'  
plenty of water

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



ENTERED  
3/25/99  
by sm

# Sample Collection Log

**Project: 774645 Fort McClellan**  
Manager: Jeanie Yacoub

Site: Former Motor Pool Area 1300 (Parcel 148, 1f)  
Location Code: FTA-148-GP03  
Sample Number: DB3003  
Sample Name: FTA-148-GP03-GW-DB3003-REG  
Sampling Method: PP

RFA / COC Number: \_\_\_\_\_  
Collection Date: 10-28-98  
Collection Time: 1225  
Start Depth: N/A  
End Depth: \_\_\_\_\_

Containers						
Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES-3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES	N	B	1	1	L	Amb. Glass
METALS-W	N	C	1	1	L	HDPE

Sample Team: MS/MSD  
M-CALITY

DID  
MS/MSD AT THIS LOCATION  
FOR ALL PARAMETERS -  
DB 3003 MS / DB 3003 MSD

**PURGE RECORD:**

Initial	Time(24hr)	Depth to Water (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm) µS/cm	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
	1210	6.81	-75	6.38	997.0	>1000 (INST.)	1.31	26.60	
	1252		-69	6.36	851.4	9.6	1.26	26.15	
Sample:									

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1c)

Collection Date: 10-28-98

Location Code: FTA-148-GP08 → GP03

Collection Time: 1225

Sample Number: DB3004-MS

Sample Name: FTA-148-GP08-GW-DB3004-MS

Start Depth: NA /

Sampling Method: PP → DB3003

End Depth: ↓

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES_N	B	1	1	L		Amb. Glass
METALS-W	N	C	1	1	L	HDPE

Sample Team: M. Adams  
McCarty

COLLECTED ALL PARAMETERS

**PURGE RECORD:**

Initial	Time(24hr)	Depth to Water (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
(SEE REG)									
Sample:									

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1c)

Collection Date: 10-28-98

Location Code: FTA-148-GP08 GP03

Collection Time: 1225

Sample Number: DB3004-MSD

Sample Name: FTA-148-GP08-GW-DB3004-MSD

Start Depth: N/A ↓

Sampling Method: PP DB3003

End Depth: \_\_\_\_\_

**Containers**

Analytical Suite Flt Frtn Qty Size Units Type

Sample Team: M. Adams

VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES_N B		B	1	1	L	Amb. Glass
METALS-W	N	G	1	1	L	HDPE

M. Carthy

COLLECTED ALL PARAMETERS

**PURGE RECORD:**

Initial Time(24hr)	Depth to Water (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
(SEE REL)								
Sample:								

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-22-98

Location Code: FTA-148-GP04

Collection Time: 0905

Sample Number: DB0007

Sample Name: FTA-148-GP04-SS-DB0007-REG

Start Depth: 0

Sampling Method: HA

End Depth: 1

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES_N	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: COLLECTED w/ STAINLESS Steel hand Auger, NOT ON ASPHALT

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-22-98

Location Code: FTA-148-GP05

Collection Time: 0905

Sample Number: DB0008

Sample Name: FTA-148-GP05-SS-DB0008-REG

Start Depth: Ø

Sampling Method: HA

End Depth: 1

**Containers**

Analytical Suite    Flt Frtn Qty Size Units Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: COLLECTED w/ STAINLESS STEEL HAND AUGER, UNDER ASPHALT.

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1t

Collection Date: 10-22-98

Location Code: FTA-148-GP06

Collection Time: 0940

Sample Number: DB0009

Sample Name: FTA-148-GP06-SS-DB0009-REG

Start Depth: ∅

Sampling Method: HA

End Depth: 1

**Containers**

Analytical Suite    Flt Frtn Qty Size Units Type

VOLATILES 3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: collected w/ stainless steel hand Auger, under ASPHALT

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-22-98

Location Code: FTA-148-GP07

Collection Time: 0930

Sample Number: DB0010

Sample Name: FTA-148-GP07-SS-DB0010-REG

Start Depth: 0

Sampling Method: HA

End Depth: 1

**Containers**

Analytical Suite    Flt Frtn Qty Size    Units    Type

VOLATILES 3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES_N	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: Collected w/ stainless steel hand Auger, under ASPHALT

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-23-98

Location Code: FTA-148-GP08

Collection Time: 1030

Sample Number: DB0011

Sample Name: FTA-148-GP08-SS-DB0011-REG

Start Depth: ϕ

Sampling Method: HA

End Depth: 1

**Containers**

Analytical Suite    Flt Frtn Qty Size Units Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: Sample Collected w/ stainless steel hand auger, under asphalt.

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
TECHNOLOGY  
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# Sample Collection Log

**Project: 774645 Fort McClellan**  
**Manager: Jeanie Yacoub**

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-23-98

Location Code: FTA-148-GP08

Collection Time: 1040

Sample Number: DB0012

Sample Name: FTA-148-GP08-DS-DB0012-REG

Start Depth: 4

Sampling Method: DP

End Depth: 6

Analytical Suite	Containers			Units	Type
	Flt	Frtn	Qty		
VOLATILES_3	N	A	3	5	g EnCore
METALS-S	N	B	1	8	oz CWM
SEMIVOLATILES	N	B	1	8	oz CWM

Sample Team: Allen, Short

Comments: Refusal @ 8'

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 1/27/99

Location Code: FTA-148-GP08

Collection Time: 17:35

Sample Number: DB3004

Sample Name: FTA-148-GP08-GW-DB3004-REG

Start Depth: \_\_\_\_\_

Sampling Method: PP

End Depth: \_\_\_\_\_

Analytical Suite	Containers		Qty	Size	Units	Type
	Flt	Frtn				
VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES	N	B	1	1	L	Amb. Glass
METALS-W	N	C	1	1	L	HDPE

Sample Team: Kevin Arnold  
Tim Mathis

## PURGE RECORD:

Initial	Time(24hr)	DepthtoWater (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
Sample:									

Logged BY / Date: [Signature] 1/27/99

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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# Sample Collection Log

**Project:** 774645 Fort McClellan

**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 1f

**Location Code:** FTA-148-GP09

**Collection Date:** 10-23-98

**Sample Number:** DB0013

**Collection Time:** 1110

**Sample Name:** FTA-148-GP09-DS-DB0013-REG

**Start Depth:** 4

**Sampling Method:** DP

**End Depth:** 7

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

**Sample Team:** Allen, Short

**Comments:** Refusal @ 7

**Sketch Location:**

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1c)

Collection Date: 10-23-98

Location Code: FTA-148-GP09

Collection Time: 1110

Sample Number: DB0013-MS

Sample Name: FTA-148-GP09-DS-DB0013-MS

Start Depth: 4

Sampling Method: DP

End Depth: 7

Analytical Suite	Containers			Units	Type
	Flt	Frtn	Qty		
VOLATILES_3	N	A	3	5	g EnCore
METALS-S	N	B	1	8	oz CWM
SEMIVOLATILES_N	N	B	1	8	oz CWM

Sample Team: Allen, Short

Comments: Refusal @ 7

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project: 774645 Fort McClellan**  
**Manager: Jeanie Yacoub**

RFA / COC Number: \_\_\_\_\_

Site: **Former Motor Pool Area 1300 (Parcel 148, 16**

Location Code: **FTA-148-GP09**

Sample Number: **DB0013-MSD**

Sample Name: **FTA-148-GP09-DS-DB0013-MSD**

Sampling Method: **DP**

Collection Date: 10-23-98

Collection Time: 1110

Start Depth: 4

End Depth: 7

Sample Team: Allen, Short

Analytical Suite	Containers				Units	Type
	Flt	Frtn	Qty	Size		
VOLATILES 3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Comments: Refusal @ 7'

\_\_\_\_\_

\_\_\_\_\_

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1c)

Collection Date: 10-23-98

Location Code: FTA-148-GP10

Collection Time: 1050

Sample Number: DB0014

Sample Name: FTA-148-GP10-DS-DB0014-REG

Start Depth: 4

Sampling Method: DP

End Depth: 8

### Containers

Analytical Suite    Flt Frtn Qty Size Units Type

Sample Team: Allen, Shom

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Comments: Refusal @ 8'

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1t)  
Location Code: FTA-148-GP10  
Sample Number: DB0015  
Sample Name: FTA-148-GP10-DS-DB0015-FD  
Sampling Method: DP

Collection Date: 10-23-98

Collection Time: 1050

Start Depth: 4

End Depth: 8

Analytical Suite	Containers			Units	Type
	Flt	Frtn	Qty		
VOLATILES_3	N	A	3	5	g EnCore
METALS-S	N	B	1	8	oz CWM
SEMIVOLATILES	N	B	1	8	oz CWM

Sample Team: Allen, Short

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Sketch Location:**

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-23-98

**Location Code:** FTA-148-GP11

Collection Time: 1130

**Sample Number:** DB0017

**Sample Name:** FTA-148-GP11-SS-DB0017-REG

Start Depth: Ø

**Sampling Method:** HA

End Depth: 1

**Containers**

Analytical Suite    Flt Frtn Qty    Size    Units    Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Sample Team: Allen, Short

**Comments:** COLLECTED w/ STAINLESS STEEL HAND AUGGER. NOT ON ASHED

**Sketch Location:**

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 16

**Collection Date:** 10-23-98

**Location Code:** FTA-148-GP11

**Collection Time:** 1130

**Sample Number:** DB0018

**Sample Name:** FTA-148-GP11-SS-DB0018-FD

**Start Depth:** ∅

**Sampling Method:** HA

**End Depth:** 1

**Containers**

Analytical Suite    Flt Frtn Qty Size Units Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES_N	N	B	1	8	oz	CWM

**Sample Team:** Allen, Short

**Comments:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Sketch Location:**

**Logged BY / Date:** \_\_\_\_\_

**Reviewed BY / Date:** \_\_\_\_\_



**INTERNATIONAL  
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CORPORATION**

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1f

Collection Date: 10-28-98

Location Code: FTA-148-GP11

Collection Time: 1145

Sample Number: DB0020

Sample Name: FTA-148-GP11-DS-DB0020-REG

Start Depth: 8

Sampling Method: DP

End Depth: 10

**Containers**

Analytical Suite    Flt Frtn Qty Size Units Type

VOLATILES_3	N A	3	5	g	EnCore
METALS-S	N B	1	8	oz	CWM
SEMIVOLATILES	N B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: Refusal @ 10' dry

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



ENTERED  
3/25/99

by sm

# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 1f

**Collection Date:** 1/28/99

**Location Code:** FTA-148-GP11

**Collection Time:** 8:50

**Sample Number:** DB3005

**Sample Name:** FTA-148-GP11-GW-DB3005-REG

**Start Depth:** \_\_\_\_\_

**Sampling Method:** PP

**End Depth:** \_\_\_\_\_

**Containers**

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES_3	N A	3	40	mL	VOA Vial
SEMIVOLATILES	N B	1	1	L	Amb. Glass
METALS-W	N C	1	1	L	HDPE

**Sample Team:** Kevin Arnold  
 Tim Mathis

**PURGE RECORD:**

Initial Time(24hr)	DepthtoWater (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
7:40	11:37	-83	6.90	890.7	105.2	1.04	15.13	.4 gal
7:46	11:48	-81	6.86	890.7	28.8	.59	15.16	1.2 gal
8:02	12:20	-78	6.81	890.1	29.3	.34	15.30	2.0 gal
8:09	12:36	-76	6.79	888.3	25.6	.28	15.35	2.8 gal
8:23	12:58	-66	6.75	886.6	1.1	.43	15.42	3.5 gal
8:32	12:69	-65	6.72	887.5	0.0	.35	15.51	4.2 gal
Sample:								

Tested the acid stick with metals sample - tested regular pH 2

Logged BY / Date: Kevin Arnold / 1/28/99

Reviewed BY / Date: \_\_\_\_\_



**INTERNATIONAL  
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# Sample Collection Log

**Project: 774645 Fort McClellan**  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 1/28/99

Location Code: FTA-148-GP11

Collection Time: 8:50

Sample Number: DB3006

Sample Name: FTA-148-GP11-GW-DB3006-FD

Start Depth: \_\_\_\_\_

Sampling Method: PP

End Depth: \_\_\_\_\_

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES	N	B	1	1	L	Amb. Glass
METALS-W	N	C	1	1	L	HDPE

Sample Team: Kevin Arnold  
Tim Mathis

**PURGE RECORD:**

Initial	Time(24hr)	DepthtoWater	Eh	pH	Conductivity	Turbidity	DissOxygen	Temperature	Purge Volume
		(ft)	(mV)	(SU)	(mS/cm)	(NTU)	(ppm)	(C)	(gal)
Sample:									

See FTA 148 - GP11 - Reg

Logged BY / Date: Kevin Arnold / 1/28/99 Reviewed BY / Date: \_\_\_\_\_





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# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 16

**Collection Date:** 10-22-98

**Location Code:** FTA-148-GP12

**Collection Time:** 0800

**Sample Number:** DB0021

**Sample Name:** FTA-148-GP12-SS-DB0021-REG

**Start Depth:** 0

**Sampling Method:** HA

**End Depth:** 1

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES 3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

**Sample Team:** Allen, Short

**Comments:** COLLECTED w/ STAINLESS Steel Hand Auger. NOT ON ASPHALT

**Sketch Location:**

**Logged BY / Date:** \_\_\_\_\_

**Reviewed BY / Date:** \_\_\_\_\_



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# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 1c)

**Location Code:** FTA-148-GP12

**Sample Number:** DB0022

**Sample Name:** FTA-148-GP12-DS-DB0022-REG

**Sampling Method:** DP

**Collection Date:** 10-22-98

**Collection Time:** 0810

**Start Depth:** 4

**End Depth:** 8

**Containers**

Analytical Suite    Flt Frtn Qty Size    Units    Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

**Sample Team:** Allen, Short

**Comments:** Refusal @ 8'

**Sketch Location:**

**Logged BY / Date:** \_\_\_\_\_

**Reviewed BY / Date:** \_\_\_\_\_



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3/25/99  
ky sm

# Sample Collection Log

**Project: 774645 Fort McClellan**  
Manager: Jeanie Yacoub

Site: Former Motor Pool Area 1300 (Parcel 148, 16)  
Location Code: FTA-148-GP12  
Sample Number: DB3008  
Sample Name: FTA-148-GP12-GW-DB3008-REG  
Sampling Method: PP

RFA / COC Number: \_\_\_\_\_  
Collection Date: 1/28/99  
Collection Time: 15:00  
Start Depth: \_\_\_\_\_  
End Depth: \_\_\_\_\_

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES_N	B		1	1	L	Amb. Glass
METALS-W	N	C	1	1	L	HDPE

Sample Team: Kevin Arnold  
Tim Mathis

**PURGE RECORD:**

Initial	Time(24hr)	DepthtoWater (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
✓	13:47	2.98	9	6.95	945.5	40.6	1.02	18.71	0
	14:05	3.66	34	6.77	957.7	0.0	.14	18.61	4.5 gal
	14:28	3.78	33	6.61	981.3	0.0	.08	18.73	9.0 gal
	14:50	3.86	33	6.57	988.6	0.0	.06	18.75	13.5 gal
Sample:									

preserved sample was less than 2

Logged BY / Date: Kevin Arnold 1/28/99 Reviewed BY / Date: \_\_\_\_\_



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# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16  
Location Code: FTA-148-GP13  
Sample Number: DB0023  
Sample Name: FTA-148-GP13-SS-DB0023-REG  
Sampling Method: HA

Collection Date: 10-21-98

Collection Time: 1600

Start Depth: 0

End Depth: 1

**Containers**

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: Collected w/ STAINLESS STEEL HAND AUGER, NOT ON ASPHALT

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



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# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-21-98

Location Code: FTA-148-GP13

Collection Time: 1610

Sample Number: DB0024

Sample Name: FTA-148-GP13-DS-DB0024-REG

Start Depth: 8

Sampling Method: DP

End Depth: 12

**Containers**

Analytical Suite    Flt Frtn Qty Size    Units    Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES_N	N	B	1	8	oz	CWM

Sample Team: Allen, Short

Comments: Refusal @ 10' Temp well Installed 5-10'

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



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CORPORATION**

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3/25/99  
by sm

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 1/28/99

Location Code: FTA-148-GP13

Collection Time: 11:10

Sample Number: DB3009

Sample Name: FTA-148-GP13-GW-DB3009-REG

Start Depth: \_\_\_\_\_

Sampling Method: PP

End Depth: \_\_\_\_\_

### Containers

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES_N	B	1	1	L	Amb. Glass	
METALS-W	N	C	1	1	L	HDPE

Sample Team: Kevin Arnold  
Tim Mathis

### PURGE RECORD:

Initial Time(24hr)	DepthtoWater (ft)	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
9:48	3.18	-57	7.22	127.3	399.6	1.80	16.08	0 - initial
10:11	5.48	-45	6.62	659.3	29.8	.50	15.75	2.77
10:33	6.61	-53	6.66	641.1	11.5	.51	15.83	5.40
10:57	7.06	-51	6.64	627.6	0	.45	15.97	7.10
Sample:								

Tested the pH and it is regular. pH 2

Logged BY / Date:

*Kevin Arnold* 1/28/99

Reviewed BY / Date: \_\_\_\_\_



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# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16

Collection Date: 10-22-98

Location Code: FTA-148-GP14

Collection Time: 0830

Sample Number: DB0025

Sample Name: FTA-148-GP14-SS-DB0025-REG

Start Depth: 0

Sampling Method: HA

End Depth: 1

### Containers

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES 3	N A	3	5	g	EnCore
METALS-S	N B	1	8	oz	CWM
SEMIVOLATILES	N B	1	8	oz	CWM

Sample Team: SHORT, Allen

Comments: COLLECTED w/ STAINLESS steel HAND Auger, NOT ON ASPHALT

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



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# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 16

**Collection Date:** 10-22-98

**Location Code:** FTA-148-GP14

**Collection Time:** 0940

**Sample Number:** DB0026

**Sample Name:** FTA-148-GP14-DS-DB0026-REG

**Start Depth:** 8

**Sampling Method:** DP

**End Depth:** 11

**Containers**

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES_3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

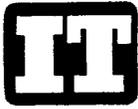
**Sample Team:** Allen, Short

**Comments:** Refusa @ 11' Temp well installed @ 9'1/2'

**Sketch Location:**

**Logged BY / Date:** \_\_\_\_\_

**Reviewed BY / Date:** \_\_\_\_\_



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11/12/99  
by sm

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 16)

Collection Date: 11-03-98

Location Code: FTA-148-GP14

Collection Time: 1615

Sample Number: DB3010

Start Depth: N/A

Sample Name: FTA-148-GP14-GW-DB3010-REG

End Depth: ↓ N/A

Sampling Method: PP

Sample Team: MSA/NOE / M=Carly

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES	N	B	1	1	L	Amb. Glass
METALS-W	N	C	1	1	L	HDPE

COLLECTED ALL PARAMETERS.

**PURGE RECORD:**

Initial	Time(24hr)	DepthtoWater (ft)	Eh (mV)	pH (SU)	Conductivity (µS/cm) MS	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)	Purge Volume (gal)
	1610	4.85	-52	6.35	588.5	507.5	1.69	20.88	
	1630		-56	6.40	559.1	34.2	1.49	20.78	
Sample:									

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1t

Collection Date: 11-11-98

Location Code: FTA-148-DEP01

Collection Time: 1100

Sample Number: DB0027

Sample Name: FTA-148-DEP01-DEP-DB0027-REG

Start Depth: 0

Sampling Method: HA

End Depth: 1

### Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES-3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM

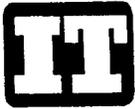
Sample Team: Allen

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



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by sm

# Sample Collection Log

**Project:** 774645 Fort McClellan  
Manager: Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1)  
Location Code: FTA-148-SW/SD01  
Sample Number: DB2001  
Sample Name: FTA-148-SW/SD01-SW-DB2001-REG  
Sampling Method: GRAB

Collection Date: 1/27/99  
Collection Time: 115  
Start Depth: N/A  
End Depth: N/A

### Containers

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES_3	N A	3	40	mL	VOA Vial
SEMIVOLATILES	N B	1	1	L	Amb. Glass
METALS-W	N C	1	1	L	HDPE

Sample Team: SP  
MN

Surface Water Parameters:	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
		6.75	68.0	5.4	11.20	12.88

Comments:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Sketch Location:

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



# Sample Collection Log

**Project:** 774645 Fort McClellan

**Manager:** Jeanie Yacoub

Parcel 148/6 RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 1)

**Location Code:** FTA-148-SW/SD01

**Collection Date:** 1/27/99

**Sample Number:** DB1001

**Collection Time:** 1115

**Sample Name:** FTA-148-SW/SD01-SD-DB1001-REG

**Start Depth:** 0.0'

**Sampling Method:** HA

**End Depth:** 0.5'

### Containers

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES 3	N A	3	5	g	EnCore
METALS-S	N B	1	8	oz	CWM
SEMIVOLATILES	N B	1	8	oz	CWM
TOC	N C	1	4	oz	CWM
GR. SIZE	N D	1	8	oz	CWM

**Sample Team:** SP  
MN

**Comments:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Sketch Location:**

**Logged BY / Date:** \_\_\_\_\_

**Reviewed BY / Date:** \_\_\_\_\_



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# Sample Collection Log

**Project: 774645 Fort McClellan**

**Manager: Jeanie Yacoub**

RFA / COC Number: \_\_\_\_\_

Site: Former Motor Pool Area 1300 (Parcel 148, 1

Location Code: FTA-148-SW/SD01

Sample Number: DB1002

Sample Name: FTA-148-SW/SD01-SD-DB1002-FD

Sampling Method: HA

Collection Date: 1/27/99

Collection Time: 1115

Start Depth: 0.0'

End Depth: 0.5'

Sample Team: SP

MN

### Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES 3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM
TOC	N	C	1	4	oz	CWM
GR. SIZE	N	D	1	8	oz	CWM

**Comments:**

**Sketch Location:**

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



# Sample Collection Log

**Project:** 774645 Fort McClellan

**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 1

**Location Code:** FTA-148-SW/SD01

**Sample Number:** DB1003

**Sample Name:** FTA-148-SW/SD01-SD-DB1003-FS

**Sampling Method:** HA

**Collection Date:** 1/27/99

**Collection Time:** 1115

**Start Depth:** 0.0'

**End Depth:** 0.5'

**Containers**

Analytical Suite Flt Frtn Qty Size Units Type

VOLATILES 3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM
TOC	N	C	1	4	oz	CWM
GR. SIZE	N	D	1	8	oz	CWM

**Sample Team:** SP

MN

**Comments:**

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**Sketch Location:**

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_



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3/25/99  
by sm

# Sample Collection Log

**Project: 774645 Fort McClellan**  
Manager: Jeanie Yacoub

**Site:** Former Motor Pool Area 1300 (Parcel 148, 1)  
**Location Code:** FTA-148-SW/SD02  
**Sample Number:** DB2002  
**Sample Name:** FTA-148-SW/SD02-SW-DB2002-REG  
**Sampling Method:** GRAB

RFA / COC Number: \_\_\_\_\_

**Collection Date:** 1/27/99  
**Collection Time:** 1410

**Start Depth:** N/A  
**End Depth:** N/A

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES_3	N	A	3	40	mL	VOA Vial
SEMIVOLATILES	N	B	1	1	L	Amb. Glass
METALS-W	N	C	1	1	L	HDPE

**Sample Team:** Sp  
mn

Surface Water Parameters:	Eh (mV)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	DissOxygen (ppm)	Temperature (C)
		6.68	71	6.3	11.21	13.78

**Comments:**

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**Sketch Location:**

Logged BY/ Date: \_\_\_\_\_

Reviewed BY/ Date: \_\_\_\_\_



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# Sample Collection Log

**Project:** 774645 Fort McClellan  
**Manager:** Jeanie Yacoub

RFA / COC Number: \_\_\_\_\_

**Site:** Former Motor Pool Area 1300 (Parcel 148, 1

**Location Code:** FTA-148-SW/SD02

**Collection Date:** 1/27/99

**Sample Number:** DB1004

**Collection Time:** 1410

**Sample Name:** FTA-148-SW/SD02-SD-DB1004-REG

**Start Depth:** 0.0'

**Sampling Method:** HA

**End Depth:** 0.5'

**Containers**

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
VOLATILES 3	N	A	3	5	g	EnCore
METALS-S	N	B	1	8	oz	CWM
SEMIVOLATILES	N	B	1	8	oz	CWM
TOC	N	C	1	4	oz	CWM
GR. SIZE	N	D	1	8	oz	CWM

**Sample Team:** sp  
 mn

**Comments:**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Sketch Location:**

Logged BY / Date: \_\_\_\_\_

Reviewed BY / Date: \_\_\_\_\_

**ANALYSIS REQUEST/CHAIN OF CUSTODY RECORDS**

165220112



# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 148-102198-QSK  
Page 1 of 2

Project Number: 774645

Samples Shipment Date: 21-OCT-98

Bill To: Duane Nielsen

Project Name: Fort McClellan

Lab Destination: Quanterra Environmental Services - Knoxville

Knoxville TN 37923

Sample Coordinator: John Andrew

Lab Contact: John Reynolds

Report To: Duane Nielsen

Turnaround Time: 10/21/98

Project Contact: Randy McBride

312 Directors Drive

Carrier/Maybill No.: Quality Express/ Courier

Knoxville TN 37923

### Special Instructions:

Possible Hazard Identification:

Non-hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal:

Return to Client  Disposal by Lab  Archive

1. Relinquished By John A. IT.Graf  
(Signature/Affiliation)

Date: 10/21/98  
Time: 1840

1. Received By Duane Nielsen  
(Signature/Affiliation)

Date: 10/21/98  
Time: 1850

2. Relinquished By Bill Mann  
(Signature/Affiliation)

Date: 10/22/98  
Time: 8:20

2. Received By Justin Willes  
(Signature/Affiliation)

Date: 10-22-98  
Time: 8:20

3. Relinquished By  
(Signature/Affiliation)

Date:  
Time:

3. Received By  
(Signature/Affiliation)

Date:  
Time:

### Comments:

*Recd at 2°C  
Custody Seals Intact  
GN 10-22-98*

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
DB0001 /	FTA-148-GP01-SS-DB0001-REG	21-OCT-98	14:15	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260B	N	
DB0001 /	FTA-148-GP01-SS-DB0001-REG	21-OCT-98	14:15	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0002 /	FTA-148-GP01-DS-DB0002-REG	21-OCT-98	14:30	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260B	N	
DB0002 /	FTA-148-GP01-DS-DB0002-REG	21-OCT-98	14:30	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0003 /	FTA-148-GP02-SS-DB0003-REG	21-OCT-98	15:20	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260B	N	
DB0003 /	FTA-148-GP02-SS-DB0003-REG	21-OCT-98	15:20	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	

148J04-01112

Sample No	Sample Name	Sample Date	Sample Time	Container	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
DB0004 /	FTA-148-GP02-DS-DB0004-REG	21-OCT-98	15:35	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0004 /	FTA-148-GP02-DS-DB0004-REG	21-OCT-98	15:35	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0005 /	FTA-148-GP03-SS-DB0005-REG	21-OCT-98	14:50	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0005 /	FTA-148-GP03-SS-DB0005-REG	21-OCT-98	14:50	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0006 /	FTA-148-GP03-DS-DB0006-REG	21-OCT-98	15:00	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0006 /	FTA-148-GP03-DS-DB0006-REG	21-OCT-98	15:00	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0023 /	FTA-148-GP13-SS-DB0023-REG	21-OCT-98	16:00	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0023 /	FTA-148-GP13-SS-DB0023-REG	21-OCT-98	16:00	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0024 /	FTA-148-GP13-DS-DB0024-REG	21-OCT-98	16:10	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0024 /	FTA-148-GP13-DS-DB0024-REG	21-OCT-98	16:10	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	

Quote # 25476

H8J230116



# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 148-102298-QSK  
Page 1 of 2

Project Number: 774645

Samples Shipment Date: 22-OCT-98

Bill To: Duane Nielsen

Project Name: Fort McClellan

Lab Destination: Quanterra Environmental Services - Knoxville

312 Directors Drive  
Knoxville TN 37923

Sample Coordinator: John Andrew

Lab Contact: John Reynolds

Turnaround Time: *Normal*

Project Contact: Randy McBride

Report To: Duane Nielsen

312 Directors Drive  
Knoxville TN 37923

Carrier/Maybill No.: Quality Express/ Courier

### Special Instructions:

### Possible Hazard Identification:

Non-hazard  Flammable  Skin Irritant  Poison B  Unknown

### Sample Disposal:

Return to Client  Disposal by Lab  Archive (mos.)

1. Relinquished By (Signature/Affiliation)	<i>[Signature]</i>	Date: 10/22/98 Time: 1800	1. Received By (Signature/Affiliation)	<i>[Signature]</i>	Date: 10-22-98 Time: 1800
2. Relinquished By (Signature/Affiliation)	<i>[Signature]</i>	Date: 10-23-98 Time: 8:15	2. Received By (Signature/Affiliation)	<i>[Signature]</i>	Date: 10-23-98 Time: 8:15
3. Relinquished By (Signature/Affiliation)		Date: Time:	3. Received By (Signature/Affiliation)		Date: Time:

### Comments:

*Recd at 2.0  
Custody Seals Intact  
JW 10-23-98*

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
DB0007	FTA-148-GP04-SS-DB0007-REG	22-OCT-98	09:05	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260B	N	
DB0007	FTA-148-GP04-SS-DB0007-REG	22-OCT-98	09:05	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0008	FTA-148-GP05-SS-DB0008-REG	22-OCT-98	09:05	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260B	N	
DB0008	FTA-148-GP05-SS-DB0008-REG	22-OCT-98	09:05	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0009	FTA-148-GP06-SS-DB0009-REG	22-OCT-98	09:40	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260B	N	
DB0009	FTA-148-GP06-SS-DB0009-REG	22-OCT-98	09:40	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	

48JZ30116



**INTERNATIONAL  
TECHNOLOGY  
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**ANALYSIS REQUEST AND  
CHAIN OF CUSTODY RECORD**

Reference Document No: 148-102298-QSK  
Page 2 of 2

Sample No	Sample Name	Sample Date	Sample Time	Container	Preservative	Requested Testing Program	FII CID	Condition On Receipt
DB0010	FTA-148-GP07-SS-DB0010-REG	22-OCT-98	09:30	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0010	FTA-148-GP07-SS-DB0010-REG	22-OCT-98	09:30	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0021	FTA-148-GP12-SS-DB0021-REG	22-OCT-98	08:00	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0021	FTA-148-GP12-SS-DB0021-REG	22-OCT-98	08:00	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0022	FTA-148-GP12-DS-DB0022-REG	22-OCT-98	08:10	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0022	FTA-148-GP12-DS-DB0022-REG	22-OCT-98	08:10	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0025	FTA-148-GP14-SS-DB0025-REG	22-OCT-98	08:30	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0025	FTA-148-GP14-SS-DB0025-REG	22-OCT-98	08:30	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0026	FTA-148-GP14-DS-DB0026-REG	22-OCT-98	08:40	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0026	FTA-148-GP14-DS-DB0026-REG	22-OCT-98	08:40	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	



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**ANALYSIS REQUEST AND  
CHAIN OF CUSTODY RECORD**

Reference Document No: 148-102398-QSK  
Page 1 of 2

Project Number: 774645

Samples Shipment Date: 23-OCT-98

Bill To: Duane Nielsen

Project Name: Fort McClellan

Lab Destination: Quanterra Environmental Services - Knoxville

312 Directors Drive  
Knoxville TN 37923

Sample Coordinator: John Andrew

Lab Contact: John Reynolds

Report To: Duane Nielsen

Project Contact: Randy McBride

312 Directors Drive

TN 37923

Turnaround Time: Normal

Carrier/Waybill No.: Hand Delivery/

TN 37923

**Special Instructions:**

**Possible Hazard Identification:**

Non-hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal: Return to Client  Disposal by Lab  Archive (mos.)

1. Relinquished By (Signature/Affiliation)	<i>[Signature]</i>	Date: 10/23/98 Time: 1800	1. Received By (Signature/Affiliation)	<i>William M Gonyea IT Corp</i>	Date: 10/23/98 Time: 1800
2. Relinquished By (Signature/Affiliation)	<i>William M Gonyea</i>	Date: 10/24/98 Time: 11:05	2. Received By (Signature/Affiliation)	<i>[Signature]</i>	Date: 10/24/98 Time: 11:05
3. Relinquished By (Signature/Affiliation)		Date: _____ Time: _____	3. Received By (Signature/Affiliation)		Date: _____ Time: _____

**Comments:**

*Curtesy subcontract  
returned at 2:00  
10-24-98*

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr	Qty	Preservative	Requested Testing Program	File CID	Condition On Receipt
DB0011 /	FTA-148-GP08-SS-DB0011-REG	23-OCT-98	10:30	5 g EnCore		3	None except cool to 4 C	Volatiles by 8260B	N	
DB0011 /	FTA-148-GP08-SS-DB0011-REG	23-OCT-98	10:30	8 oz CWM		1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0012 /	FTA-148-GP08-DS-DB0012-REG	23-OCT-98	10:40	5 g EnCore		3	None except cool to 4 C	Volatiles by 8260B	N	
DB0012 /	FTA-148-GP08-DS-DB0012-REG	23-OCT-98	10:40	8 oz CWM		1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0013 /	FTA-148-GP09-DS-DB0013-REG	23-OCT-98	11:10	5 g EnCore		3	None except cool to 4 C	Volatiles by 8260B	N	
DB0013 /	FTA-148-GP09-DS-DB0013-REG	23-OCT-98	11:10	8 oz CWM		1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	

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**INTERNATIONAL  
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**ANALYSIS REQUEST AND  
CHAIN OF CUSTODY RECORD**

Reference Document No: 148-102398-QSK  
Page 2 of 2

Sample No	Sample Name	Sample Date	Sample Time	Container	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
DB0013-MS	FTA-148-GP09-DS-DB0013-MS-MS	23-OCT-98	11:10	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0013-MS	FTA-148-GP09-DS-DB0013-MS-MS	23-OCT-98	11:10	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0013-MS	FTA-148-GP09-DS-DB0013-MSD-MSD	23-OCT-98	11:10	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0013-MS	FTA-148-GP09-DS-DB0013-MSD-MSD	23-OCT-98	11:10	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0014	FTA-148-GP10-DS-DB0014-REG	23-OCT-98	10:50	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0014	FTA-148-GP10-DS-DB0014-REG	23-OCT-98	10:50	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0015	FTA-148-GP10-DS-DB0015-FD	23-OCT-98	10:50	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0015	FTA-148-GP10-DS-DB0015-FD	23-OCT-98	10:50	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0017	FTA-148-GP11-SS-DB0017-REG	23-OCT-98	11:30	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0017	FTA-148-GP11-SS-DB0017-REG	23-OCT-98	11:30	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0018	FTA-148-GP11-SS-DB0018-FD	23-OCT-98	11:30	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	
DB0018	FTA-148-GP11-SS-DB0018-FD	23-OCT-98	11:30	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0020	FTA-148-GP11-DS-DB0020-REG	23-OCT-98	11:45	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB0020	FTA-148-GP11-DS-DB0020-REG	23-OCT-98	11:45	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N	

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# INTERNATIONAL TECHNOLOGY CORPORATION

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 148-102898-QSK  
Page 1 of 2



Project Number: 774645

Samples Shipment Date: 28-OCT-98

Bill To: Duane Nielsen

Project Name: Fort McClellan

Lab Destination: Quanterra Environmental Services - Knoxville

Knoxville TN 37923

Sample Coordinator: John Andrew

Lab Contact: John Reynolds

Turnaround Time: NORMAL

Project Contact: Randy McBride

Report To: Duane Nielsen

Carrier/Waybill No.: Quality Express/ Courier

312 Directors Drive

Knoxville TN 37923

312 Directors Drive

Knoxville TN 37923

### Special Instructions:

### Possible Hazard Identification:

Non-hazard  Flammable  Skin Irritant  Poison B  Unknown

### Sample Disposal:

Return to Client  Disposal by  Archive  (mos.)

1. Relinquished By Randy McBride, ITC  
(Signature/Affiliation)

Date: 10-28-98  
Time: 1800

1. Received By [Signature]  
(Signature/Affiliation)

Date: 10-28-98  
Time: 1800

2. Relinquished By  
(Signature/Affiliation)

Date:  
Time:

2. Received By [Signature]  
(Signature/Affiliation)

Date: 10-29-98  
Time: 8:15

3. Relinquished By  
(Signature/Affiliation)

Date:  
Time:

Date:  
Time:

### Comments:

*Acid at 20 C  
Perched 10-31-98  
Custody Seals Intact  
JWN 10-29-98*

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	File CID	Condition On Receipt
DB3003	FTA-148-GP03-GW-DB3003-REG	28-OCT-98	12:25	40 mL VOA Vial	3	HCl<math>pH < 2</math>	Volatiles by 8260B	N	
DB3003	FTA-148-GP03-GW-DB3003-REG	28-OCT-98	12:25	1 L Amb. Glass	1	None except cool to 4 C	Semivolatiles by 8270C	N	
DB3003	FTA-148-GP03-GW-DB3003-REG	28-OCT-98	12:25	1 L HDPE	1	HNO <sub>3</sub> <math>pH < 2</math> <u>PKA</u>	TAL Metals by 6010B/7470A - Water	N	
DB3003-MS	FTA-148-GP03-GW-DB3003-MS-MS	28-OCT-98	12:25	40 mL VOA Vial	3	HCl<math>pH < 2</math>	Volatiles by 8260B	N	
DB3003-MS	FTA-148-GP03-GW-DB3003-MS-MS	28-OCT-98	12:25	1 L Amb. Glass	1	None except cool to 4 C	Semivolatiles by 8270C	N	
DB3003-MS	FTA-148-GP03-GW-DB3003-MS-MS	28-OCT-98	12:25	1 L HDPE	1	HNO <sub>3</sub> <math>pH < 2</math> <u>PKA</u>	TAL Metals by 6010B/7470A - Water	N	
DB3003-MS	FTA-148-GP03-GW-DB3003-MSD-MSD	28-OCT-98	12:25	40 mL VOA Vial	3	HCl<math>pH < 2</math>	Volatiles by 8260B	N	
DB3003-MS	FTA-148-GP03-GW-DB3003-MSD-MSD	28-OCT-98	12:25	1 L Amb. Glass	1	None except cool to 4 C	Semivolatiles by 8270C	N	

H&S 290183



# INTERNATIONAL TECHNOLOGY CORPORATION

## ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 148-102898-QSK  
Page 2 of 2

Sample No	Sample Name	Sample Date	Sample Time	Container	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
DB3003-MSJF TA-148-GF03-GW-DB3003-MSD-MSD		28-OCT-98	12:25	1 L HDPE	1 HNO3<math>pH < 2</math> <i>pk/a</i>	TAL Metals by 6010B/7470A - Water	N	



# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H8K040125

Reference Document No: 148-110398-QSK  
Page 1 of 1

Project Number: 774645

Samples Shipment Date: 03-NOV-98

Bill To: TERC Accounting

Project Name: Fort McClellan

Lab Destination: Quanterra Environmental Services - Knoxville

312 Directors Drive  
Knoxville TN 37923

Sample Coordinator: John W. Andrew

Lab Contact: John Reynolds

Turnaround Time: **NORMAL**

Report To: Duane Nielsen  
312 Directors Drive  
Knoxville TN 37923

Carrier/Waybill No.: Quality Express/ Courier

### Special Instructions:

### Possible Hazard Identification:

Non-hazard  Flammable  Skin Irritant  Poison B  Unknown

### Sample Disposal:

Return to Client  Disposal by Lab  Archive

Relinquished By (Signature/Affiliation)	Date	Time	Received By (Signature/Affiliation)	Date	Time
<i>[Signature]</i>	11 03 98	1800	<i>[Signature]</i>	11 03 98	1800
<i>[Signature]</i>	11 04 98	0805	<i>[Signature]</i>	11 04 98	1800
<i>[Signature]</i>			<i>[Signature]</i>		

### Comments:

*Recd at DC  
Custody Seals Intact  
JW 11-4-98*

Sample No	Sample Name	Sample Date	Sample Time	Container	Qty	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
110398-TB	FIELDQC-BW-110398-TB-TB	03-NOV-98	12:00	40 ml VOA Vial	3	HCl<pH 2	Volatiles by 8260B	N	
DB3010	FTA-148-GP14-GW-DB3010-REG	03-NOV-98	16:15	40 ml VOA Vial	3	HCl<pH 2	Volatiles by 8260B	N	
DB3010	FTA-148-GP14-GW-DB3010-REG	03-NOV-98	16:15	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N	
DB3010	FTA-148-GP14-GW-DB3010-REG	03-NOV-98	16:15	1 L Amb. Glass	1	None except cool to 4 C	Semivolatiles by 8270C	N	

**INTERNATIONAL  
TECHNOLOGY  
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**ANALYSIS REQUEST AND  
CHAIN OF CUSTODY RECORD**

Reference Document No: 148-111198-QSK  
Page 1 of 1

H8K120107

Project Number: 774645      Samples Shipment Date: 11-NOV-98  
 Project Name: Fort McClellan      Lab Destination: Quanterra Environmental Services - Knoxville  
 Sample Coordinator: John W. Andrew      Lab Contact: John Reynolds  
 Turnaround Time: Norma      Project Contact: Randy McBride  
 Bill To: Duane Nielsen      312 Directors Drive      TN 37923  
 Knoxville  
 Report To: Duane Nielsen      312 Directors Drive      TN 37923  
 Knoxville

**Special Instructions:**

**Possible Hazard Identification:**

Non-hazard  Flammable  Skin Irritant  Poison B  Unknown  Archive

1. Relinquished By *DeKarr IT Group*      Date: 11-11-98  
 (Signature/Affiliation)      Time: 1730  
 2. Relinquished By *[Signature]*      Date: 11-12-98  
 (Signature/Affiliation)      Time: 820  
 3. Relinquished By      Date:      Time:      (Signature/Affiliation)

**Comments:**

*Rec'd at JG  
Custody Seals Intact  
JW 11-12-98*

Sample Disposal:  
 Return to Client  Disposal by Lab  Archive (mos.)  
 1. Received By *[Signature]*      Date: 11-11-98  
 (Signature/Affiliation)      Time: 1730  
 2. Received By *[Signature]*      Date: 11-12-98  
 (Signature/Affiliation)      Time: 820  
 3. Received By      Date:      Time:      (Signature/Affiliation)

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
DB0027	FTA-148-DEP01-DEP-DB0027-REG	11-NOV-98	11:00	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260B	N	
DB0027	FTA-148-DEP01-DEP-DB0027-REG	11-NOV-98	11:00	5 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	

Quote # 25476

H9A280233

# INTERNATIONAL TECHNOLOGY CORPORATION

# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 148-012799-QSK  
Page 1 of 2



Project Number: 774645

Samples Shipment Date: 28-JAN-99

Bill To: Duane Nielsen

Project Name: Fort McClellan

Lab Destination: Quanterra Environmental Services - Knoxville

312 Directors Drive  
Knoxville TN 37923

Sample Coordinator: John W. Andrew

Lab Contact: John Reynolds

Turnaround Time: **NOI/2MA**

Project Contact: Randy McBride

Report To: Duane Nielsen

312 Directors Drive  
Knoxville TN 37923

Carrier/Waybill No.: Quality Express/ Courier

**PK414805**

Special Instructions: **NOI/2MA**

Possible Hazard Identification:

Non-hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal:

Return to Client  Disposal by Lab  Archive

1. Relinquished By *[Signature]*  
(Signature/Affiliation)

Date: 01/28/99  
Time: 1300

1. Received By *[Signature]*  
(Signature/Affiliation)

Date: 1-28-99  
Time: 0900

2. Relinquished By *[Signature]*  
(Signature/Affiliation)

Date: 1-28-99  
Time: 1430

2. Received By *[Signature]*  
(Signature/Affiliation)

Date: 1-28-99  
Time: 14:30

3. Relinquished By  
(Signature/Affiliation)

Date:  
Time:

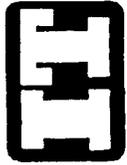
3. Received By  
(Signature/Affiliation)

Date:  
Time:

Comments: **NONE**

*Rec'd at 200  
Custody Seals Intact  
JW 1-28-99*

Sample No	Sample Name	Sample Date	Sample Time	Container	Qty	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
DB1001	FTA-148-SW/SD01-SD-DB1001-REG	27-JAN-99	11:15	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260E	N	
DB1001	FTA-148-SW/SD01-SD-DB1001-REG	27-JAN-99	11:15	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB1001	FTA-148-SW/SD01-SD-DB1001-REG	27-JAN-99	11:15	4 oz CWM	1	None except cool to 4 C	Total Organic Carbon by 9060	N	
DB1001	FTA-148-SW/SD01-SD-DB1001-REG	27-JAN-99	11:15	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N	
DB1002	FTA-148-SW/SD01-SD-DB1002-FD	27-JAN-99	11:15	5 g EnCore	3	None except cool to 4 C	Volatiles by 8260B	N	
DB1002	FTA-148-SW/SD01-SD-DB1002-FD	27-JAN-99	11:15	8 oz CWM	1	None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N	
DB1002	FTA-148-SW/SD01-SD-DB1002-FD	27-JAN-99	11:15	8 oz CWM	1	None Required	Grain Size by ASTM D421/D422	N	52



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TECHNOLOGY  
CORPORATION**

**ANALYSIS REQUEST AND  
CHAIN OF CUSTODY RECORD**

Reference Document No: 148-012799-QSK  
Page 2 of 2

H9A280233

Sample No	Sample Name	Sample Date	Sample Time	Container	Preservative	Requested Testing Program	Fill	CID	Condition On Receipt
DB1002	FTA-148-SW/SD01-SD-DB1002-FD	27-JAN-99	11:15	4 oz CWM	1 None except cool to 4 C	Total Organic Carbon by 9060	N		
DB1004	FTA-148-SW/SD02-SD-DB1004-REG	27-JAN-99	14:10	4 oz CWM	1 None except cool to 4 C	Total Organic Carbon by 9060	N		
DB1004	FTA-148-SW/SD02-SD-DB1004-REG	27-JAN-99	14:10	8 oz CWM	1 None except cool to 4 C	TAL Metals by 6010B/7471A - Soils, Semivolatiles by 8270C	N		
DB1004	FTA-148-SW/SD02-SD-DB1004-REG	27-JAN-99	14:10	5 g EnCore	3 None except cool to 4 C	Volatiles by 8260B	N		
DB1004	FTA-148-SW/SD02-SD-DB1004-REG	27-JAN-99	14:10	8 oz CWM	1 None Required	Grain Size by ASTM D421/D422	N		
DB2001	FTA-148-SW/SD01-SW-DB2001-REG	27-JAN-99	11:15	40 mL VOA Vial	3 HCl<pH 2	Volatiles by 8260B	N		
DB2001	FTA-148-SW/SD01-SW-DB2001-REG	27-JAN-99	11:15	1 L HDPE	1 HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
DB2001	FTA-148-SW/SD01-SW-DB2001-REG	27-JAN-99	11:15	1 L Amb. Glass	1 None except cool to 4 C	Semivolatiles by 8270C	N		
DB2002	FTA-148-SW/SD02-SW-DB2002-REG	27-JAN-99	14:10	40 mL VOA Vial	3 HCl<pH 2	Volatiles by 8260B	N		
DB2002	FTA-148-SW/SD02-SW-DB2002-REG	27-JAN-99	14:10	1 L Amb. Glass	1 None except cool to 4 C	Semivolatiles by 8270C	N		
DB2002	FTA-148-SW/SD02-SW-DB2002-REG	27-JAN-99	14:10	1 L HDPE	1 HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
DB3001	FTA-148-GP01-GW-DB3001-REG	27-JAN-99	14:10	40 mL VOA Vial	3 HCl<pH 2	Volatiles by 8260B	N		
DB3001	FTA-148-GP01-GW-DB3001-REG	27-JAN-99	14:10	1 L Amb. Glass	1 None except cool to 4 C	Semivolatiles by 8270C	N		
DB3001	FTA-148-GP01-GW-DB3001-REG	27-JAN-99	14:10	1 L HDPE	1 HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
DB3002	FTA-148-GP02-GW-DB3002-REG	27-JAN-99	15:40	1 L HDPE	1 HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		
DB3002	FTA-148-GP02-GW-DB3002-REG	27-JAN-99	15:40	1 L Amb. Glass	1 None except cool to 4 C	Semivolatiles by 8270C	N		
DB3002	FTA-148-GP02-GW-DB3002-REG	27-JAN-99	15:40	40 mL VOA Vial	3 HCl<pH 2	Volatiles by 8260B	N		
DB3004	FTA-148-GP08-GW-DB3004-REG	27-JAN-99	17:35	40 mL VOA Vial	3 HCl<pH 2	Volatiles by 8260B	N		
DB3004	FTA-148-GP08-GW-DB3004-REG	27-JAN-99	17:35	1 L Amb. Glass	1 None except cool to 4 C	Semivolatiles by 8270C	N		
DB3004	FTA-148-GP08-GW-DB3004-REG	27-JAN-99	17:35	1 L HDPE	1 HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N		

Quote # 25474

179A290251



# ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Reference Document No: 148-012899-QSK  
Page 1 of 2

Project Number: 774645

Samples Shipment Date: 29-JAN-99

Bill To: Duane Nielsen

Project Name: Fort McClellan

Lab Destination: Quanterra Environmental Services - Knoxville

312 Directors Drive  
Knoxville TN 37923

Sample Coordinator: John W. Andrew

Lab Contact: John Reynolds

Turnaround Time: **NORMAL**

Project Contact: Randy McBride

Report To: Duane Nielsen  
312 Directors Drive  
Knoxville TN 37923

Carrier/Waybill No.: Quality Express/ Courier **PK414806**

Special Instructions: **NONE**

Possible Hazard Identification:

Non-hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal:

Return to Client  Disposal by Lab  Archive  (mos.)

1. Relinquished By *[Signature]* Date: 01/29/99  
 (Signature/Affiliation) Time: 0830

2. Relinquished By *[Signature]* Date: 1345  
 (Signature/Affiliation) Time: 1345

3. Relinquished By  
 (Signature/Affiliation) Date: Time:

1. Received By *[Signature]* Date: 1549  
 (Signature/Affiliation) Time: 0830

2. Received By *[Signature]* Date: 1-29-99  
 (Signature/Affiliation) Time: 1345

3. Received By  
 (Signature/Affiliation) Date: Time:

Comments: **NONE**

*Rec'd @ 12  
Custody transferred, 1-29-99*

Sample No	Sample Name	Sample Date	Sample Time	Container	Ctr Qty	Preservative	Requested Testing Program	File CID	Condition On Receipt
DB3005	FTA-148-GP11-GW-DB3005-REG	28-JAN-99	08:50	1 L Amb. Glass	1	None except cool to 4 C	Semivolatiles by 8270C	N	
DB3005	FTA-148-GP11-GW-DB3005-REG	28-JAN-99	08:50	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N	<i>PK4</i>
DB3005	FTA-148-GP11-GW-DB3005-REG	28-JAN-99	08:50	40 mL VOA Vial	3	HCl<pH 2	Volatiles by 8260B	N	
DB3006	FTA-148-GP11-GW-DB3006-FD	28-JAN-99	08:50	40 mL VOA Vial	3	HCl<pH 2	Volatiles by 8260B	N	
DB3006	FTA-148-GP11-GW-DB3006-FD	28-JAN-99	08:50	1 L Amb. Glass	1	None except cool to 4 C	Semivolatiles by 8270C	N	
DB3006	FTA-148-GP11-GW-DB3006-FD	28-JAN-99	08:50	1 L HDPE	1	HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N	<i>PK4</i>
DB3008	FTA-148-GP12-GW-DB3008-REG	28-JAN-99	15:00	40 mL VOA Vial	3	HCl<pH 2	Volatiles by 8260B	N	
DB3008	FTA-148-GP12-GW-DB3008-REG	28-JAN-99	15:00	1 L Amb. Glass	1	None except cool to 4 C	Semivolatiles by 8270C	N	

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**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

**ANALYSIS REQUEST AND  
CHAIN OF CUSTODY RECORD**

Reference Document No: 148-012899-QSK  
Page 2 of 2

Sample No	Sample Name	Sample Date	Sample Time	Container	Preservative	Requested Testing Program	Fill CID	Condition On Receipt
DB3008	FTA-148-GP12-GW-DB3008-REG	28-JAN-99	15:00	1 L HDPE	1 HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N	PK2
DB3009	FTA-148-GP13-GW-DB3009-REG	28-JAN-99	11:10	40 mL VOA Vial	3 HCl<pH 2	Volatiles by 8260B	N	
DB3009	FTA-148-GP13-GW-DB3009-REG	28-JAN-99	11:10	1 L Amb. Glass	1 None except cool to 4 C	Semivolatiles by 8270C	N	
DB3009	FTA-148-GP13-GW-DB3009-REG	28-JAN-99	11:10	1 L HDPE	1 HNO3<pH 2	TAL Metals by 6010B/7470A - Water	N	PK2

**APPENDIX C**  
**BORING LOGS AND WELL LOGS**

**BORING LOGS**

# HTRW DRILLING LOG

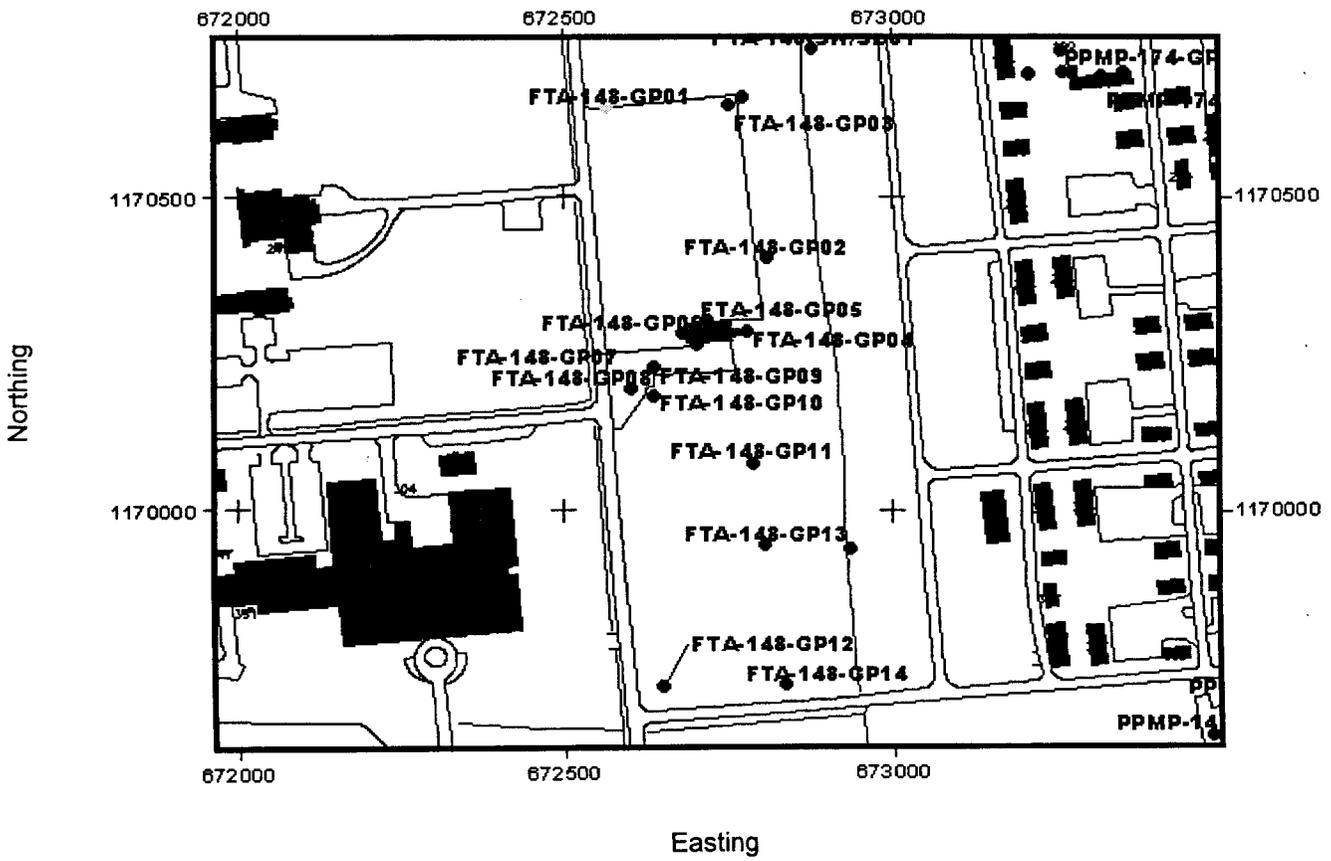
HOLE NUMBER

FTA-148-GP01

1. Company name: <b>IT Corporation</b>		2. Drill Subcontractor: <b>TEG/ MILLER DRILLING CO.</b>		Sheet 1 of 3 sheets	
3. Project: <b>Fort McClellan</b>			4. Location: <b>Former Motor Pool Area 1300</b>		
5. Name of driller: <b>Sammy McDaniels/Ron Gerrish</b>			6. Mfr. designation of drill: <b>Geoprobe/Mobile drill B-57</b>		
7. Sizes and types of drilling and sampling equipment: Direct Push, Hollow Stem Auger DP- 4' x 2" acetate-lined sampler HSA- 5' x 8"od, 2' x 2" steel split spoons			8. Hole location <b>FTA-148-GP01</b>		
			9. Surface elevation (feet above mean sea level): <b>754.93</b>		
12. Overburden thickness (feet bgs): <b>&gt;13.5</b>			15. Depth groundwater encountered (feet bgs): <b>-13.0'</b>		
13. Depth drilled into rock (feet bgs):			16. Depth to water and elapsed time after drilling completed (feet bgs):		
14. Total depth of hole (feet bgs): <b>13.5</b>			17. Other water level measurements (specify):		

18. Geotechnical samples:	Disturbed:			Undisturbed:			19. Total no. of core boxes:		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:		
	X	X	TCL VOCs	TCL SVOCs	TAL Metals	N/A			
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:					
		Temp. well		C. SHORT					

**LOCATION SKETCH/COMMENTS:**



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP01

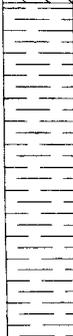
# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP01

Project: Fort McClellan

Geologist: C. SHORT

Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	cl: Dry to damp, soft, CLAY, some Silt, Sand, yellowish brown.	cl		Organic Vapor = 0.2ppm		DB0001		Rec 1.0'
	1	cl: Dry, hard, CLAY, mottled, light yellowish brown, light gray, dark red.			Organic Vapor = 0.3ppm				Rec 20"
	2								
	3								
	4	cl: Hard to soft, damp, CLAY, grading to highly weathered Shale, yellowish brown, dark brown, reddish brown, light gray.	cl		Organic Vapor = 0.3ppm				Rec 48"
	5								
750	6								
	7								
	8	sh: SHALE, hard, dry, black, mottled yellowish red, brown, bluish gray, pinkish gray, yellowish brown, dark brown.	cl		Organic Vapor = 0.0ppm				Blow 10 18 20 Rec 6", direct push refusal at 8.0'.
	9								

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP01

Project: Fort McClellan

Geologist: C. SHORT

Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
745	10		sh						
	11								
	12								
	13	sh: SHALE, some Clay, damp, soft, plastic, black, mottled.	sh						Auger refusal at 13.5', bottom of borehole 13.5ft.

# HTRW DRILLING LOG

HOLE NUMBER

FTA-148-GP02

1. Company name: **IT Corporation**

2. Drill Subcontractor: **TEG/ MILLER DRILLING CO.**

Sheet 1 of 3 sheets

3. Project: **Fort McClellan**

4. Location: **Former Motor Pool Area 1300**

5. Name of driller: **Sammy McDaniels/Ron Gerrish**

6. Mfr. designation of drill: **Geoprobe/Mobile Drill rig B-57**

7. Sizes and types of drilling and sampling equipment:

Direct Push, Hollow Stem Auger

DP- 4'x 2" acetate-lined sampler

HSA- 5' x 8"od augers, 2' x 2" steel split spoons

8. Hole location **FTA-148-GP02**

9. Surface elevation (feet above mean sea level): **750.51**

10. Date started: **10/21/98**

11. Date completed: **12/15/98**

12. Overburden thickness (feet bgs): **>19.0**

15. Depth groundwater encountered (feet bgs): **7.5 Ft**

13. Depth drilled into rock (feet bgs):

16. Depth to water and elapsed time after drilling completed (feet bgs):

14. Total depth of hole (feet bgs): **19.0**

17. Other water level measurements (specify):

18. Geotechnical samples:

Disturbed:

Undisturbed:

19. Total no. of core boxes:

20. Samples for chemical analysis:

VOC

Metals

Other (specify)

Other (specify)

Other (specify)

21. Total core recovery:

X

X

TCL VOCs

TCL SVOCs

TAL Metals

N/A

22. Disposition of hole:

Backfilled

Monitoring well

Other (specify)

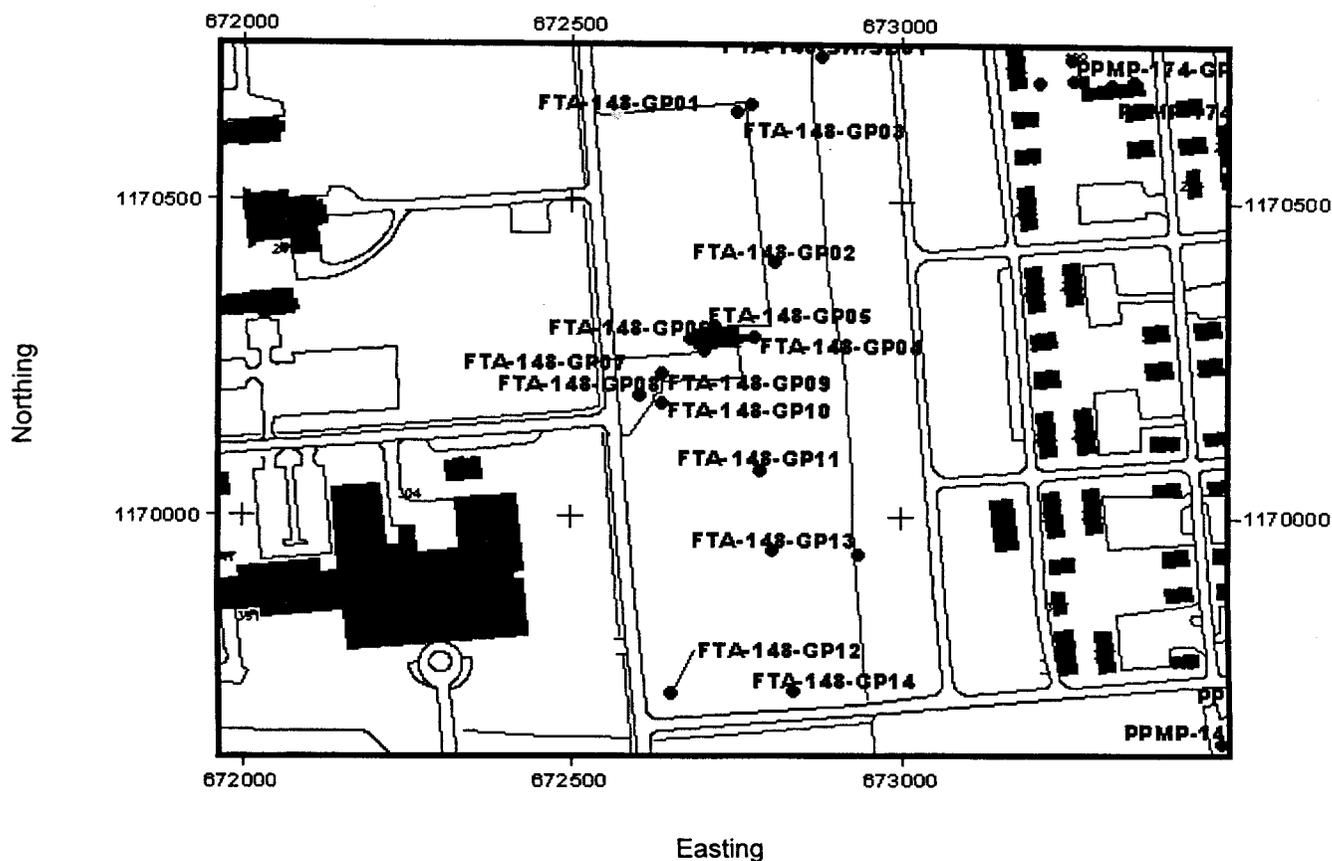
Geologist:

X

Temp. well

C. SHORT

## LOCATION SKETCH/COMMENTS:



Project: **Fort McClellan**

bgs= below ground surface  
NA = Not applicable

Hole no.: **FTA-148-GP02**



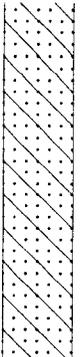
# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP02

Project: Fort McClellan

Geologist: C. SHORT

Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	10		cl-sc				DB0004		
740	11								
	12	sh: SHALE, hard, dry, some Clay, soft wet, black, yellowish brown, greenish gray, reddish yellow. water in spoon.							
	13							Blow 30 Rec 6"	
	14								
735	15		sh						
	16								
	17								
	18								
	19								Auger refusal at 19.0' Set well at 19.0'.

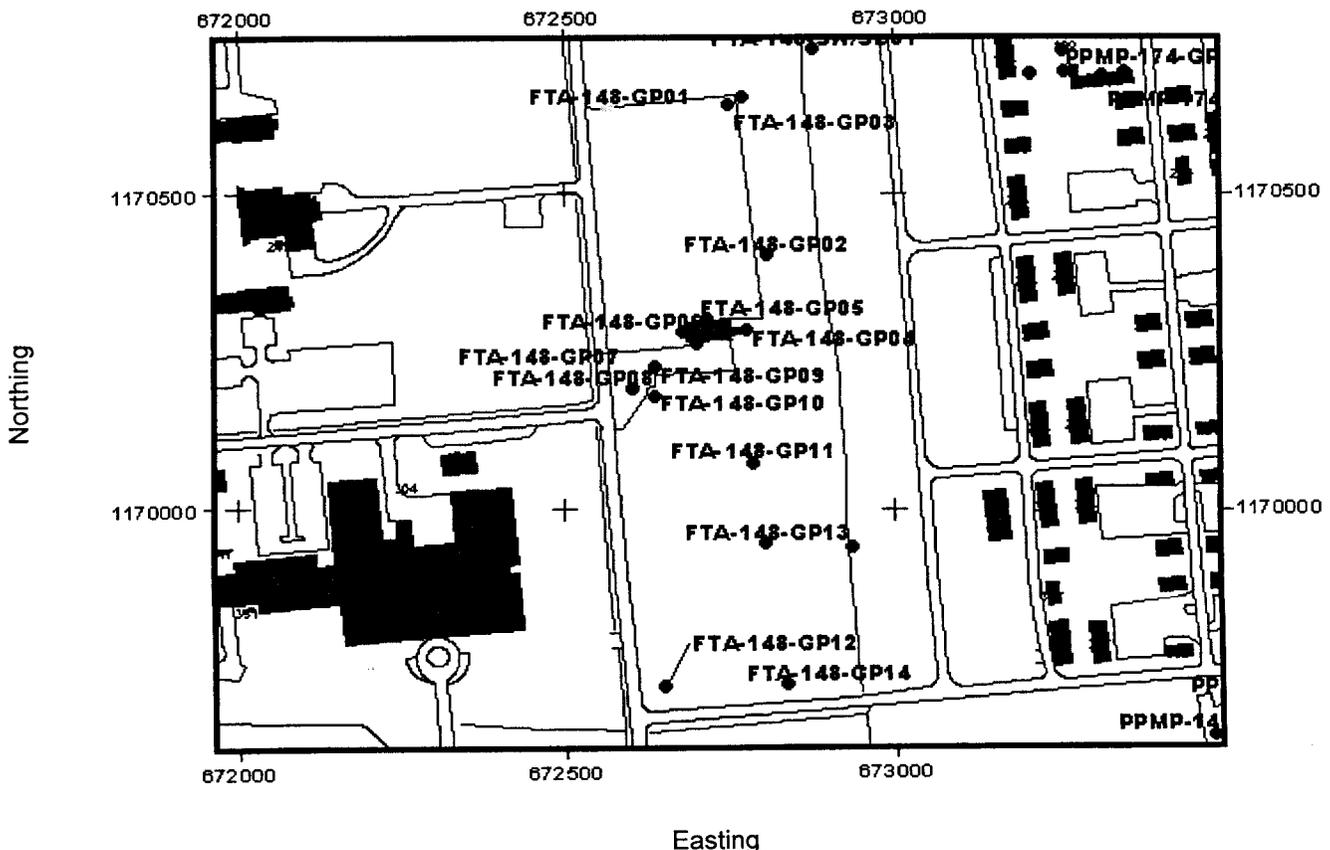
# HTRW DRILLING LOG

HOLE NUMBER

FTA-148-GP03

1. Company name: <b>IT Corporation</b>		2. Drill Subcontractor: <b>TEG</b>		Sheet 1 of 3 sheets			
3. Project: <b>Fort McClellan</b>		4. Location: <b>Former Motor Pool Area 1300</b>					
5. Name of driller: <b>Sammy McDaniels</b>		6. Mfr. designation of drill: <b>Geoprobe</b>					
7. Sizes and types of drilling and sampling equipment: Direct Push		8. Hole location <b>FTA-148-GP03</b>					
		9. Surface elevation (feet above mean sea level): <b>749.04</b>					
4' x 2" acetate-lined sampler		10. Date started: <b>10/21/98</b>	11. Date completed: <b>10/21/98</b>				
12. Overburden thickness (feet bgs): <b>&gt;10</b>		15. Depth groundwater encountered (feet bgs): <b>8.0 Ft</b>					
13. Depth drilled into rock (feet bgs):		16. Depth to water and elapsed time after drilling completed (feet bgs):					
14. Total depth of hole (feet bgs): <b>10</b>		17. Other water level measurements (specify):					
18. Geotechnical samples:	Disturbed:			Undisturbed:		19. Total no. of core boxes:	
20. Samples for chemical analysis:	VOC	Metals	Other (specify)		Other (specify)	Other (specify)	21. Total core recovery:
	X	X	TCL VOCs		TCL SVOCs	TAL Metals	N/A
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)		Geologist:		
	X	Temp. well			C. SHORT		

## LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP03

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP03

Project: Fort McClellan

Geologist: C. SHORT

Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	cl: Damp, soft, CLAY, some Sand, Silt, reddish brown, abundant small gravel, trace of tar, Chert, Quartzite.	cl		Organic Vapor = 0.4ppm		DB0005		Rec 1.0'
	1	sc: Dry to damp, soft SAND to CLAY mottled white, orange, light gray, yellowish brown, black.	sc		Organic Vapor = 0.2ppm				Rec 20"
	2		sc						
	3		sc						
745	4	sc: Soft, damp, SAND, some CLAY mottled dark gray, yellowish gray, yellowish brown, black. wet from 7.0'.	sc		Organic Vapor = 0.2ppm				Rec 33"
	5		sc						
	6		sc						
	7		sc						
	8	sc: Soft, damp, SAND, trace Clay grayish brown.	sc		Organic Vapor = 0.2ppm				Rec 26"
740	9	cl: Soft wet CLAY, bluish-gray.	cl				DB0006		Bottom of borehole is 10.0'. Refusal at 10.0'.

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP03

Project: Fort McClellan

Geologist: C. SHORT

Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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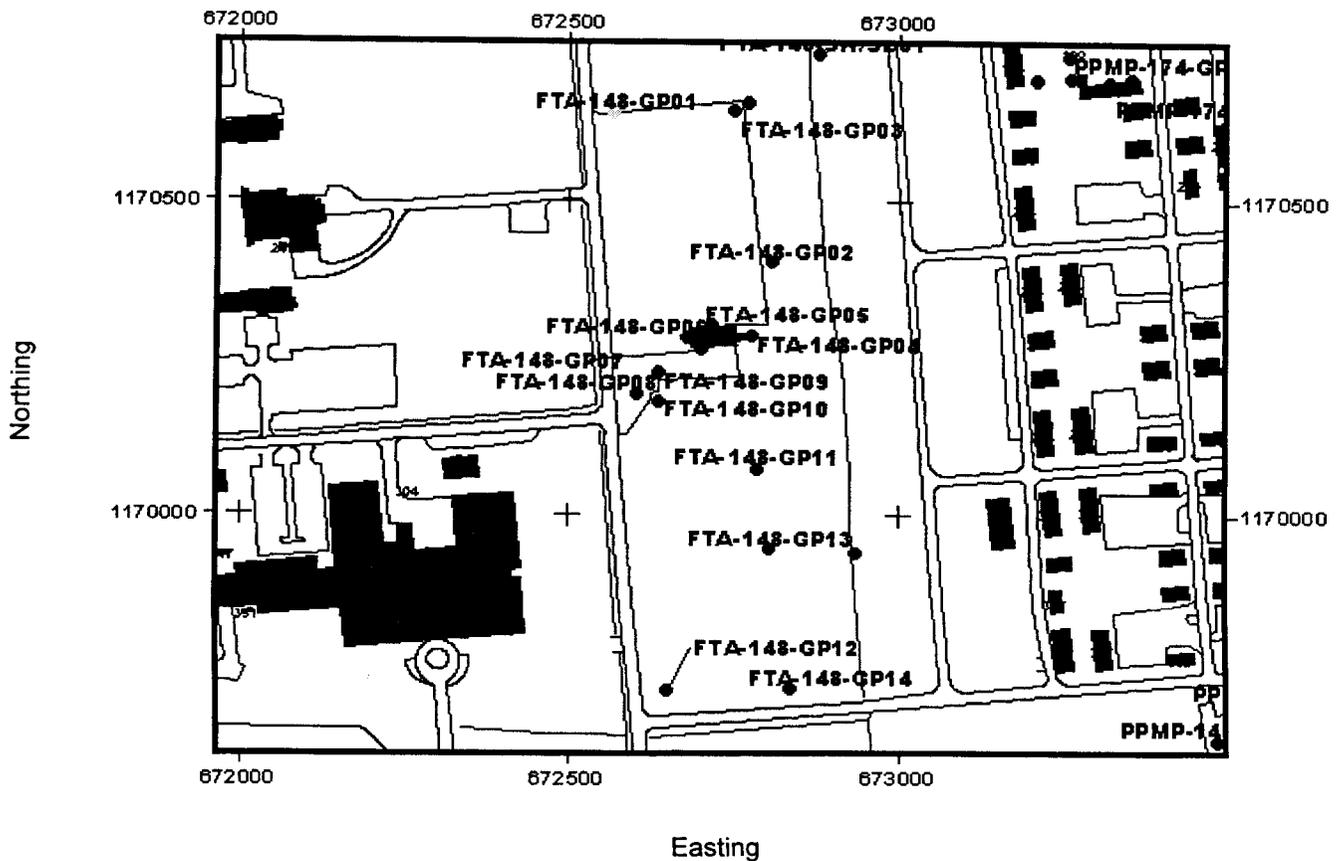
# HTRW DRILLING LOG

HOLE NUMBER

FTA-148-GP04

1. Company name: <b>IT Corporation</b>		2. Drill Subcontractor: <b>TEG</b>		Sheet 1 of 2 sheets	
3. Project: <b>Fort McClellan</b>			4. Location: <b>Former Motor Pool Area 1300</b>		
5. Name of driller: <b>Sammy McDaniels</b>			6. Mfr. designation of drill: <b>geoprobe</b>		
7. Sizes and types of drilling and sampling equipment: <b>Direct Push</b>			8. Hole location <b>FTA-148-GP04</b>		
			9. Surface elevation (feet above mean sea level): <b>756.923</b>		
4' x 2" acetate-lined sampler			10. Date started: <b>10/22/98</b>	11. Date completed: <b>10/22/98</b>	
12. Overburden thickness (feet bgs): <b>&gt;1</b>			15. Depth groundwater encountered (feet bgs):		
13. Depth drilled into rock (feet bgs):			16. Depth to water and elapsed time after drilling completed (feet bgs):		
14. Total depth of hole (feet bgs): <b>1</b>			17. Other water level measurements (specify):		
18. Geotechnical samples:		Disturbed:		Undisturbed:	
19. Total no. of core boxes:					
20. Samples for chemical analysis:		VOC	Metals	Other (specify)	
		X	X	TCL VOCs	
				TCL SVOCs	TAL Metals
21. Total core recovery:				N/A	
22. Disposition of hole:		Backfilled	Monitoring well	Other (specify)	
		X			
				Geologist: <b>C. SHORT</b>	

**LOCATION SKETCH/COMMENTS:**



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP04

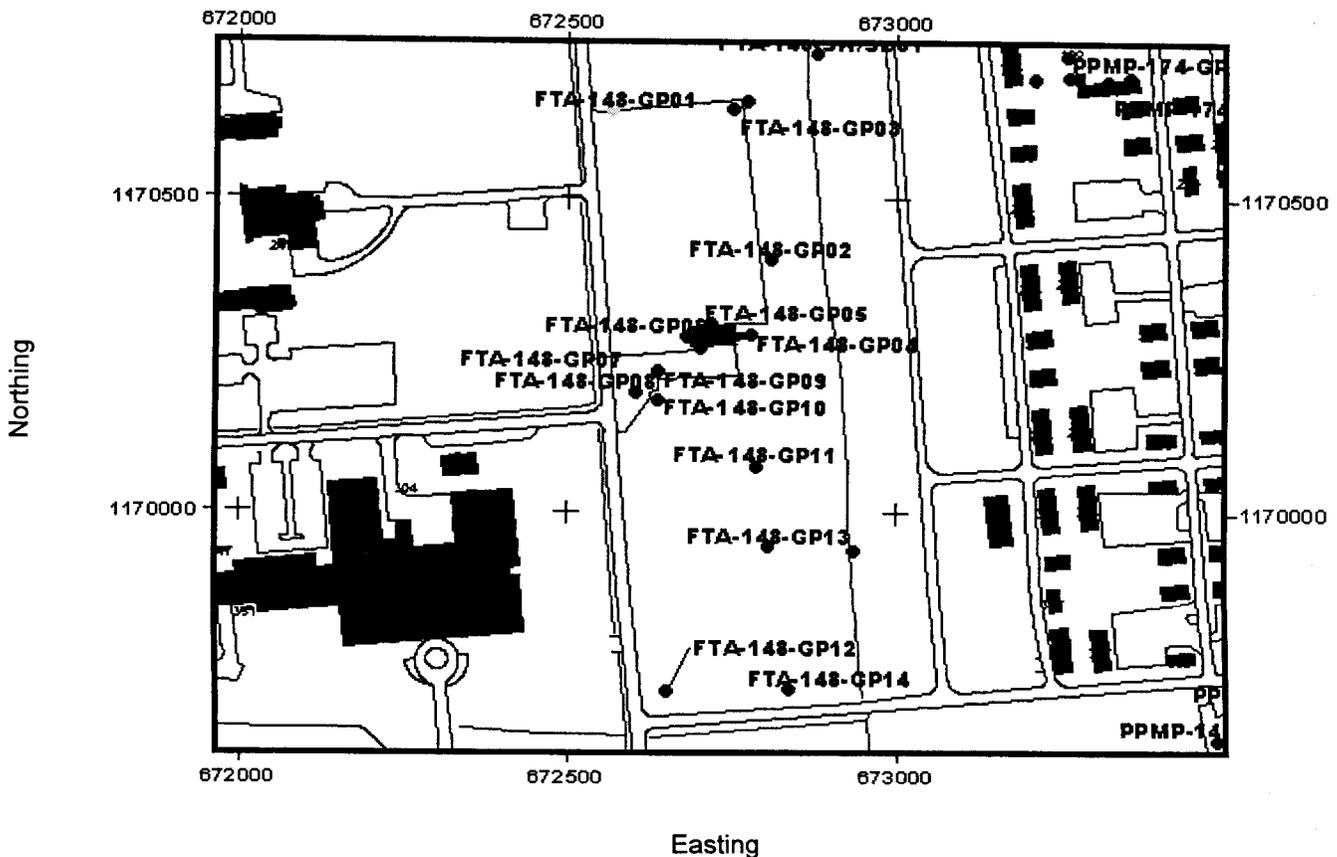


# HTRW DRILLING LOG

HOLE NUMBER  
FTA-148-GP05

1. Company name: <b>IT Corporation</b>		2. Drill Subcontractor: <b>TEG</b>		Sheet 1 of 2 sheets	
3. Project: <b>Fort McClellan</b>			4. Location: <b>Former Motor Pool Area 1300</b>		
5. Name of driller: <b>Sammy McDaniels</b>			6. Mfr. designation of drill: <b>geoprobe</b>		
7. Sizes and types of drilling and sampling equipment: Direct Push			8. Hole location <b>FTA-148-GP05</b>		
			9. Surface elevation (feet above mean sea level): <b>754.973</b>		
4' x 2" acetate-lined sampler			10. Date started: <b>10/22/98</b>	11. Date completed: <b>10/22/98</b>	
12. Overburden thickness (feet bgs): <b>&gt;1</b>			15. Depth groundwater encountered (feet bgs):		
13. Depth drilled into rock (feet bgs):			16. Depth to water and elapsed time after drilling completed (feet bgs):		
14. Total depth of hole (feet bgs): <b>1</b>			17. Other water level measurements (specify):		
18. Geotechnical samples:		Disturbed:		Undisturbed:	
19. Total no. of core boxes:					
20. Samples for chemical analysis:		VOC	Metals	Other (specify)	21. Total core recovery:
		X	X	TCL VOCs	N/A
				TCL SVOCs	TAL Metals
22. Disposition of hole:		Backfilled	Monitoring well	Other (specify)	Geologist:
		X			<b>C. SHORT</b>

**LOCATION SKETCH/COMMENTS:**



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP05

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP05

Project: Fort McClellan

Geologist: C. SHORT

Sheet 2 of 2 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
0 1		gm: Damp, soft to hard angular GRAVEL, medium to small coarse SAND, well sorted, some Clay, hard, mottled, (fill).	gm		Organic Vapor = 0.2ppm	DB0008		Rec 1.0' Direct-push refusal and bottom at 1.0'.	

# HTRW DRILLING LOG

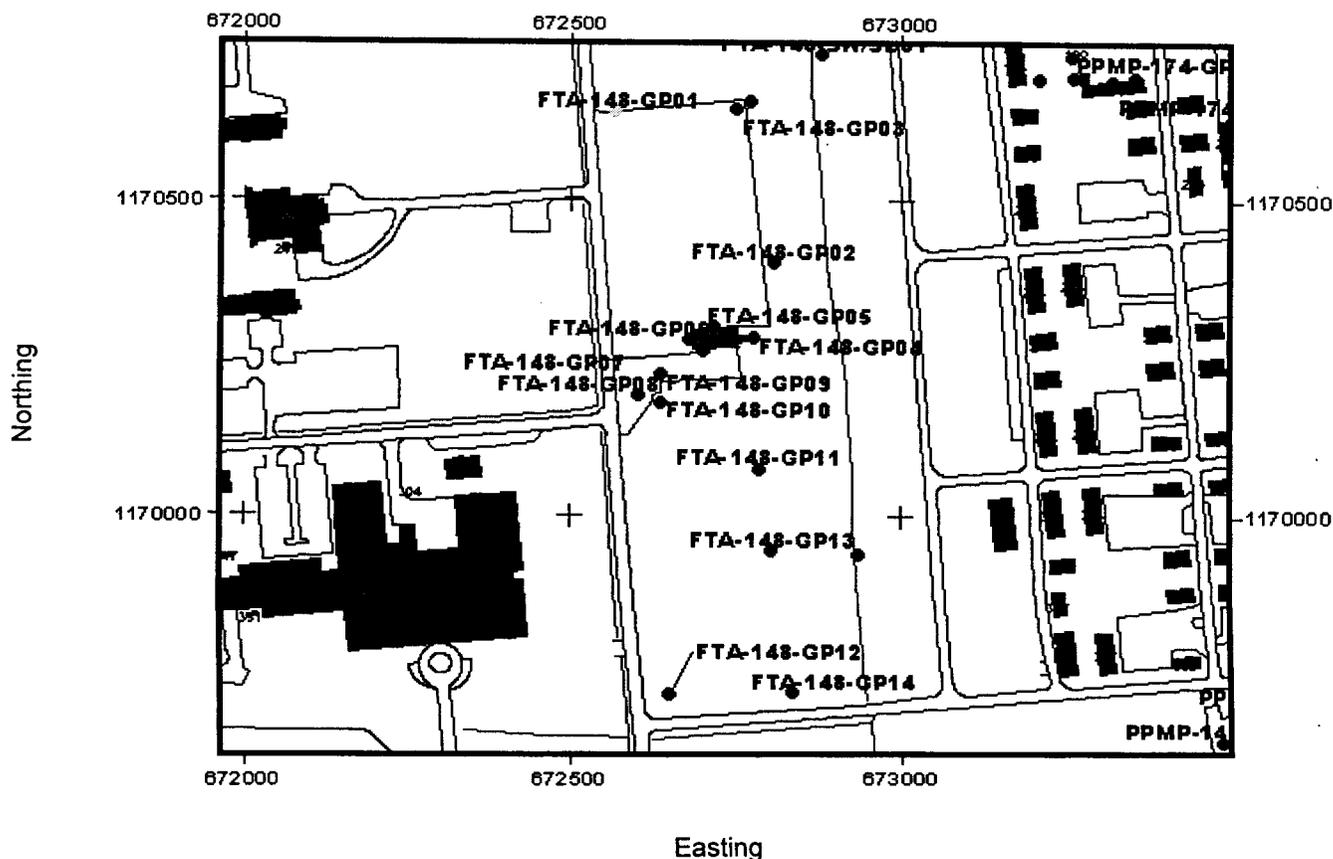
HOLE NUMBER

FTA-148-GP06

1. Company name: <b>IT Corporation</b>	2. Drill Subcontractor: <b>TEG</b>	Sheet 1 of 2 sheets
3. Project: <b>Fort McClellan</b>	4. Location: <b>Former Motor Pool Area 1300</b>	
5. Name of driller: <b>Sammy McDaniels</b>	6. Mfr. designation of drill: <b>geoprobe</b>	
7. Sizes and types of drilling and sampling equipment: Direct Push	8. Hole location <b>FTA-148-GP06</b>	
	9. Surface elevation (feet above mean sea level): <b>754.803</b>	
4' x 2" acetate-lined sampler	10. Date started: <b>10/22/98</b>	11. Date completed: <b>10/22/98</b>
12. Overburden thickness (feet bgs): <b>&gt;1</b>	15. Depth groundwater encountered (feet bgs):	
13. Depth drilled into rock (feet bgs):	16. Depth to water and elapsed time after drilling completed (feet bgs):	
14. Total depth of hole (feet bgs): <b>1</b>	17. Other water level measurements (specify):	

18. Geotechnical samples:	Disturbed:			Undisturbed:			19. Total no. of core boxes:		
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:			
	X	X	TCL VOCs	TCL SVOCs	TAL Metals	N/A			
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:					
	X			C. SHORT					

**LOCATION SKETCH/COMMENTS:**



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP06

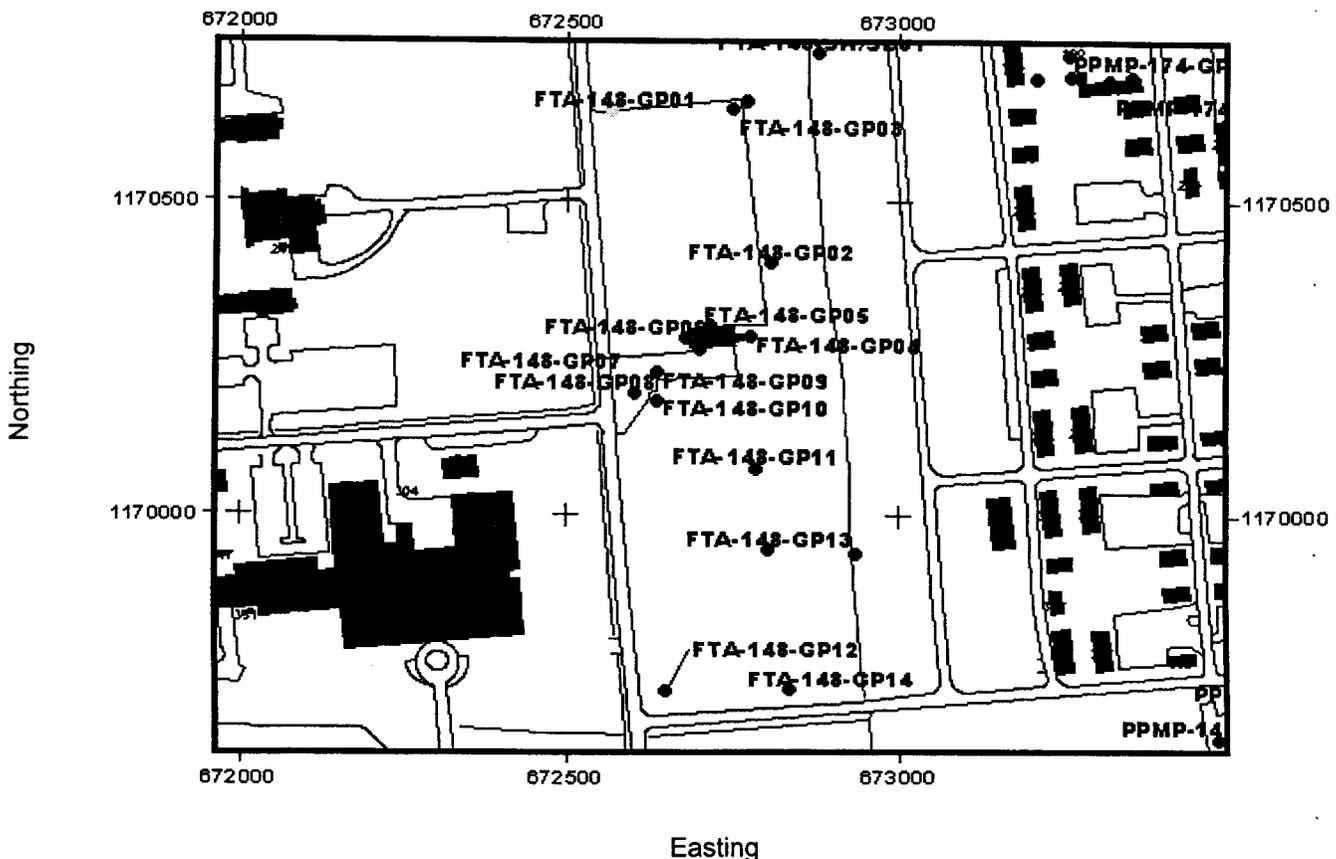


# HTRW DRILLING LOG

**HOLE NUMBER**  
FTA-148-GP07

1. Company name: <b>IT Corporation</b>		2. Drill Subcontractor: <b>TEG</b>		Sheet 1 of 2 sheets	
3. Project: <b>Fort McClellan</b>			4. Location: <b>Former Motor Pool Area 1300</b>		
5. Name of driller: <b>Sammy McDaniels</b>			6. Mfr. designation of drill: <b>geoprobe</b>		
7. Sizes and types of drilling and sampling equipment: Direct Push  4' x 2" acetate-lined sampler			8. Hole location <b>FTA-148-GP07</b>		
			9. Surface elevation (feet above mean sea level): <b>758.657</b>		
12. Overburden thickness (feet bgs): <b>&gt;1</b>			15. Depth groundwater encountered (feet bgs):		
13. Depth drilled into rock (feet bgs):			16. Depth to water and elapsed time after drilling completed (feet bgs):		
14. Total depth of hole (feet bgs): <b>1</b>			17. Other water level measurements (specify):		
18. Geotechnical samples:		Disturbed:		Undisturbed:	
19. Total no. of core boxes:		20. Samples for chemical analysis:		21. Total core recovery:	
		VOC	Metals	Other (specify)	Other (specify)
		X	X	TCL VOCs	TCL SVOCs    TAL Metals    N/A
22. Disposition of hole:		Backfilled	Monitoring well	Other (specify)	Geologist:
		X			C. SHORT

**LOCATION SKETCH/COMMENTS:**



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP07



# HTRW DRILLING LOG

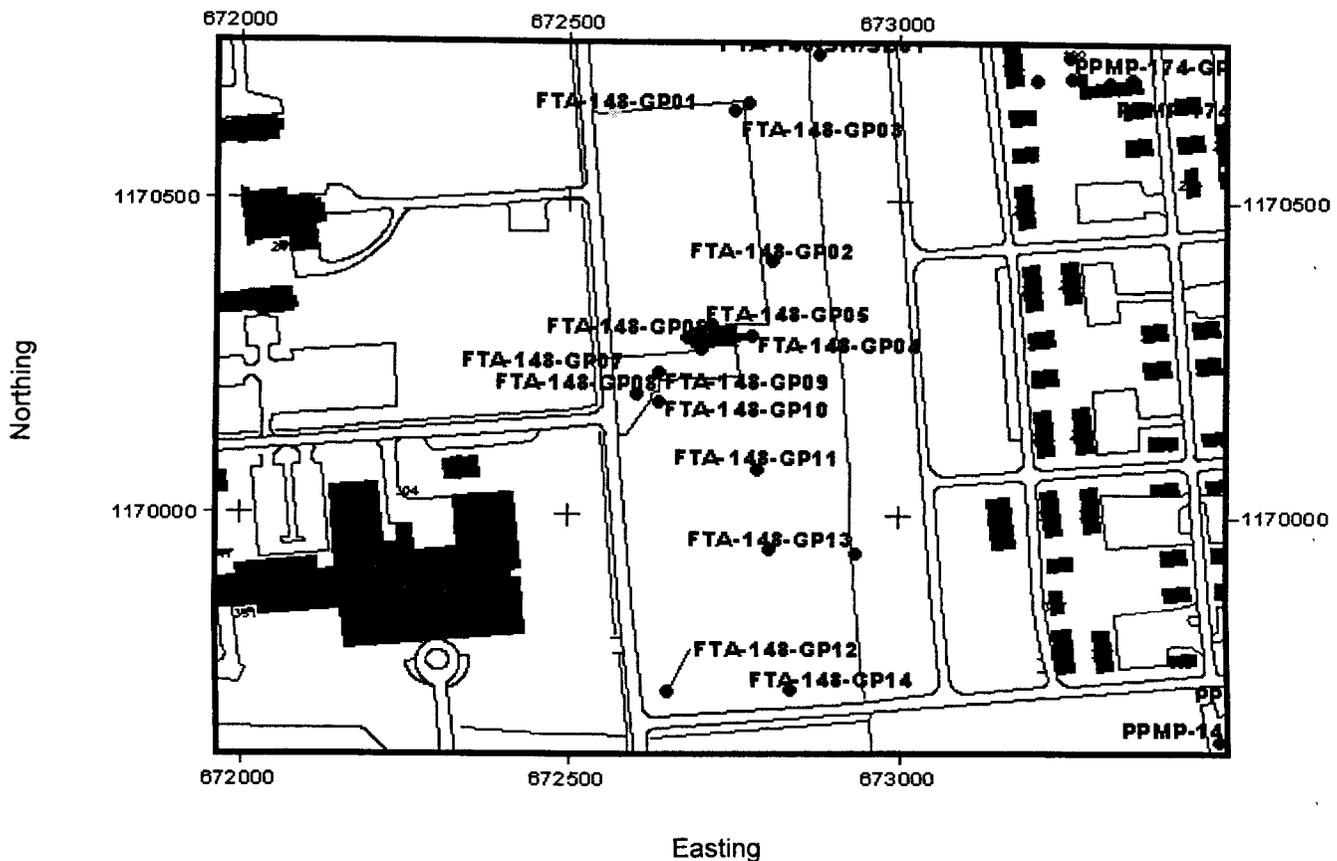
HOLE NUMBER

FTA-148-GP08

1. Company name: <b>IT Corporation</b>		2. Drill Subcontractor: <b>TEG / MILLER DRILLING CO.</b>		Sheet 1 of 3 sheets	
3. Project: <b>Fort McClellan</b>			4. Location: <b>Former Motor Pool Area 1300</b>		
5. Name of driller: <b>Sammy McDaniels/Ron Gerrish</b>			6. Mfr. designation of drill: <b>Geoprobe/Mobile Drill Rig B-57</b>		
7. Sizes and types of drilling and sampling equipment: Direct Push/Hollow Stem Auger DP- 4' x 2" acetate-lined sampler HSA- 5' x 8" od augers, 2' x 2" steel split spoons			8. Hole location <b>FTA-148-GP08</b>		
			9. Surface elevation (feet above mean sea level): <b>760.09</b>		
12. Overburden thickness (feet bgs): <b>&gt;18</b>			15. Depth groundwater encountered (feet bgs): <b>12.0'</b>		
13. Depth drilled into rock (feet bgs):			16. Depth to water and elapsed time after drilling completed (feet bgs):		
14. Total depth of hole (feet bgs): <b>18</b>			17. Other water level measurements (specify):		

18. Geotechnical samples:	Disturbed:			Undisturbed:		19. Total no. of core boxes:
20. Samples for chemical analysis:	VOC	Metals	Other (specify)		Other (specify)	21. Total core recovery:
	X	X	TCL VOCs		TCL SVOCs	TAL Metals
						N/A
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)		Geologist:	
	X	Temp. well			C. SHORT	

**LOCATION SKETCH/COMMENTS:**



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP08



# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP08

Project: Fort McClellan

Geologist: C. SHORT

Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
750	10		cl						Rec 20"
	11								
	12								
	13	sh: SHALE, hard, dry, black, some Clay, soft, moist, black, yellowish brown, dark reddish brown, wet at 16.0'.							
	14								
745	15		sh						
	16								
	17								
	18								bottom of borehole at 18.0'.

# HTRW DRILLING LOG

HOLE NUMBER

FTA-148-GP09

1. Company name: **IT Corporation**

2. Drill Subcontractor: **TEG**

Sheet 1 of 2 sheets

3. Project: **Fort McClellan**

4. Location: **Former Motor Pool Area 1300**

5. Name of driller: **Sammy McDaniels**

6. Mfr. designation of drill: **geoprobe**

7. Sizes and types of drilling and sampling equipment:  
Direct Push

8. Hole location **FTA-148-GP09**

9. Surface elevation (feet above mean sea level): **757.779**

4' x 2" acetate-lined sampler

10. Date started: **10/23/98**

11. Date completed: **10/23/98**

12. Overburden thickness (feet bgs): **>7**

15. Depth groundwater encountered (feet bgs):

13. Depth drilled into rock (feet bgs):

16. Depth to water and elapsed time after drilling completed (feet bgs):

14. Total depth of hole (feet bgs): **7**

17. Other water level measurements (specify):

18. Geotechnical samples:

Disturbed:

Undisturbed:

19. Total no. of core boxes:

20. Samples for chemical analysis:

VOC

Metals

Other (specify)

Other (specify)

Other (specify)

21. Total core recovery:

X

X

TCL VOCs

TCL SVOCs

TAL Metals

N/A

22. Disposition of hole:

Backfilled

Monitoring well

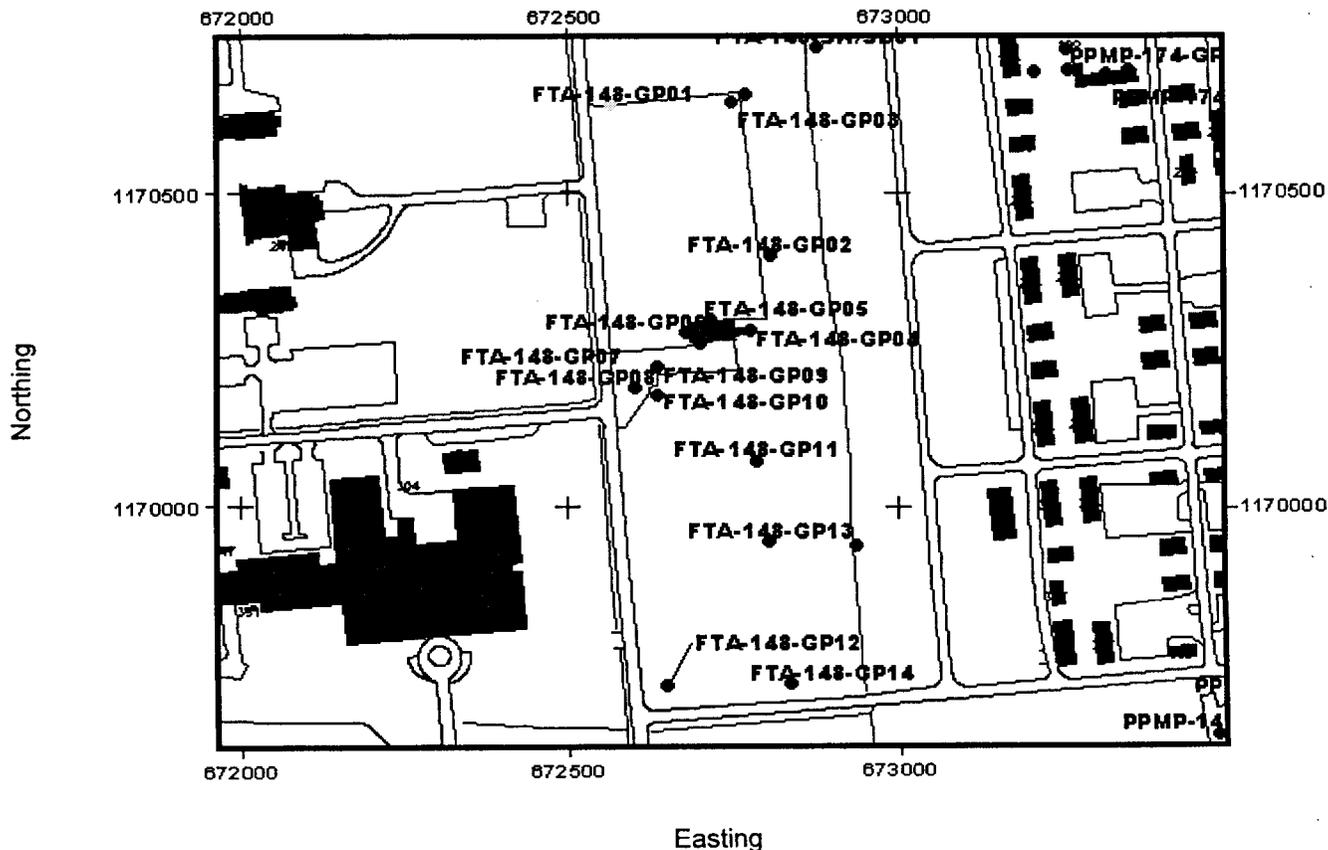
Other (specify)

Geologist:

X

C. SHORT

## LOCATION SKETCH/COMMENTS:



Project: **Fort McClellan**

bgs= below ground surface  
NA = Not applicable

Hole no.: **FTA-148-GP09**

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP09

Project: Fort McClellan

Geologist: C. SHORT

Sheet 2 of 2 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	sh: Dry, brittle SHALE, some Clay, some Sand, yellowish brown, grayish brown, mottled dark brown.							
	1				Organic Vapor = 0.2ppm				Rec 45"
	2								
755	3		sh						
	4	sh: Dry, brittle SHALE, some Clay, some Sand, yellowish brown, grayish brown, mottled dark brown.			Organic Vapor = 0.2ppm				Rec 33"
	5								
	6		sh				DB0013		
	7								Direct-push refusal and bottom of borehole at 7.0'.

# HTRW DRILLING LOG

HOLE NUMBER  
FTA-148-GP10

1. Company name: **IT Corporation**

2. Drill Subcontractor: **TEG**

Sheet 1 of 2 sheets

3. Project: **Fort McClellan**

4. Location: **Former Motor Pool Area 1300**

5. Name of driller: **Sammy McDaniels**

6. Mfr. designation of drill: **geoprobe**

7. Sizes and types of drilling and sampling equipment:  
Direct Push

8. Hole location **FTA-148-GP10**

9. Surface elevation (feet above mean sea level): **756.598**

4' x 2" acetate-lined sampler

10. Date started: **10/23/98**

11. Date completed: **10/23/98**

12. Overburden thickness (feet bgs): **>8**

15. Depth groundwater encountered (feet bgs):

13. Depth drilled into rock (feet bgs):

16. Depth to water and elapsed time after drilling completed (feet bgs):

14. Total depth of hole (feet bgs): **8**

17. Other water level measurements (specify):

18. Geotechnical samples:

Disturbed:

Undisturbed:

19. Total no. of core boxes:

20. Samples for chemical analysis:

VOC

Metals

Other (specify)

Other (specify)

Other (specify)

21. Total core recovery:

X

X

TCL VOCs

TCL SVOCs

TAL Metals

N/A

22. Disposition of hole:

Backfilled

Monitoring well

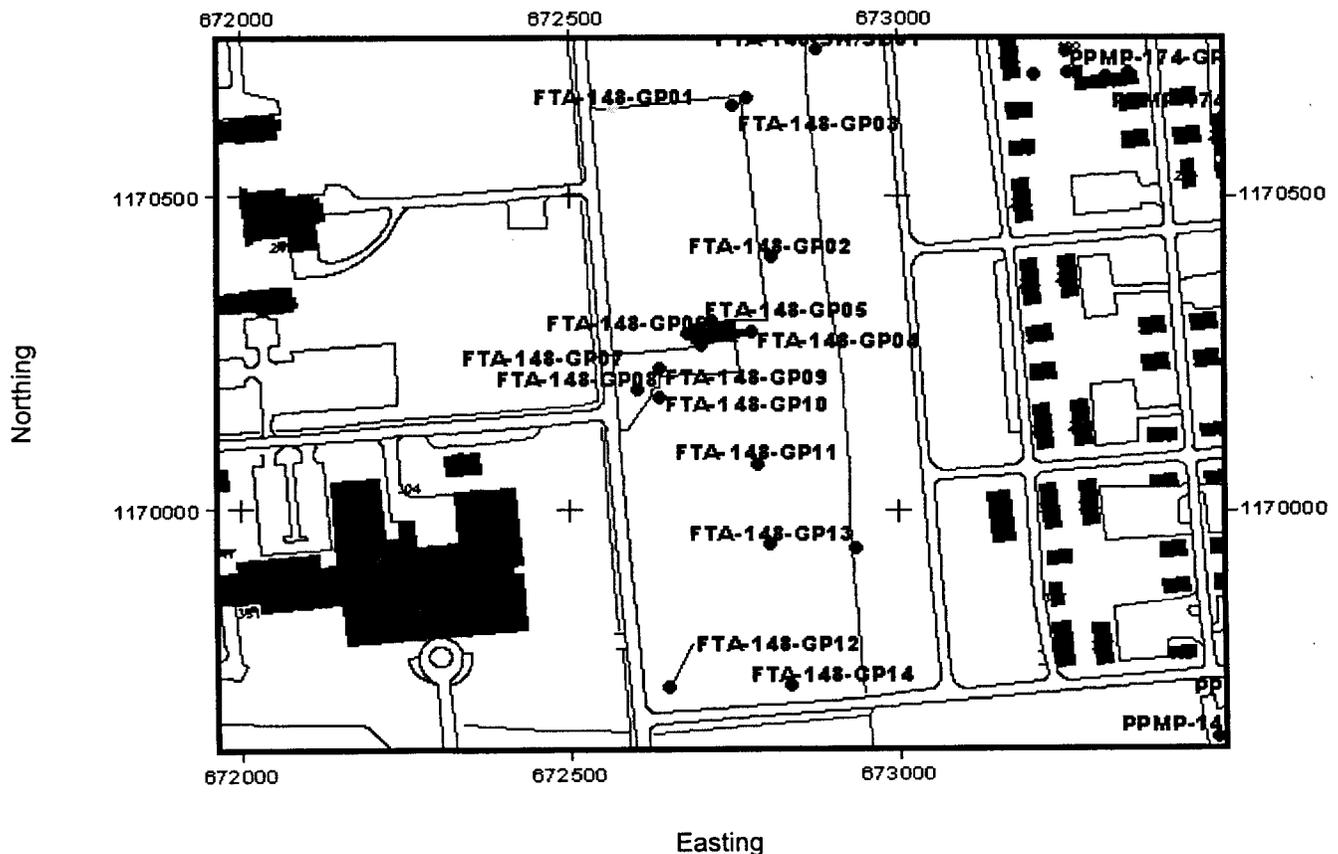
Other (specify)

Geologist:

X

C.SHORT

## LOCATION SKETCH/COMMENTS:



Project: **Fort McClellan**

bgs= below ground surface  
NA = Not applicable

Hole no.: **FTA-148-GP10**

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP10

Project: Fort McClellan

Geologist: C.SHORT

Sheet 2 of 2 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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	0	ml: Dry to damp, soft SILT, some Clay, dark brown, dark reddish brown, gray, black, few small Quartzite, Gravel.	ml		Organic Vapor = 0.3ppm				Rec 1.0'
	1	sh: Dry brittle SHALE, highly weathered, mottled dark brown, dark reddish brown, gray, black, stains in partings, dark orange/ red layering evident.	sh		Organic Vapor = 0.3ppm				Rec 48"
755	2								
	3								
	4	sh: Dry brittle SHALE, highly weathered, mottled dark brown, dark reddish brown, gray, black, stains in partings, dark orange/ red layering evident.	sh		Organic Vapor = 0.3ppm				
	5								
	6								
	7						DB0014		
750									
	8								Bottom of borehole and direct-push refusal at 8.0'.

# HTRW DRILLING LOG

HOLE NUMBER

FTA-148-GP11

1. Company name: **IT Corporation**

2. Drill Subcontractor: **TEG/ MILLER DRILLING CO**

Sheet 1 of 3 sheets

3. Project: **Fort McClellan**

4. Location: **Former Motor Pool Area 1300**

5. Name of driller: **Sammy McDaniels/Jeff Brownfield**

6. Mfr. designation of drill: **Geoprobe/ CME-85 mobile drill rig**

7. Sizes and types of drilling and sampling equipment:

Direct Push, Hollow Stem Auger

DP- 4' x 2" acetate-lined sampler

HSA- 5' x 8"od augers, 2' x 2" steel split spoons

8. Hole location **FTA-148-GP11**

9. Surface elevation (feet above mean sea level): **752.06**

10. Date started: **10/23/98**

11. Date completed: **12/15/98**

12. Overburden thickness (feet bgs): **14**

15. Depth groundwater encountered (feet bgs): **5.0 Ft**

13. Depth drilled into rock (feet bgs): **0**

16. Depth to water and elapsed time after drilling completed (feet bgs):

14. Total depth of hole (feet bgs): **14**

17. Other water level measurements (specify):

18. Geotechnical samples:

Disturbed:

Undisturbed:

19. Total no. of core boxes:

20. Samples for chemical analysis:

VOC

Metals

Other (specify)

Other (specify)

Other (specify)

21. Total core recovery:

X

X

TCL VOCs

TCL SVOCs

TAL Metals

N/A

22. Disposition of hole:

Backfilled

Monitoring well

Other (specify)

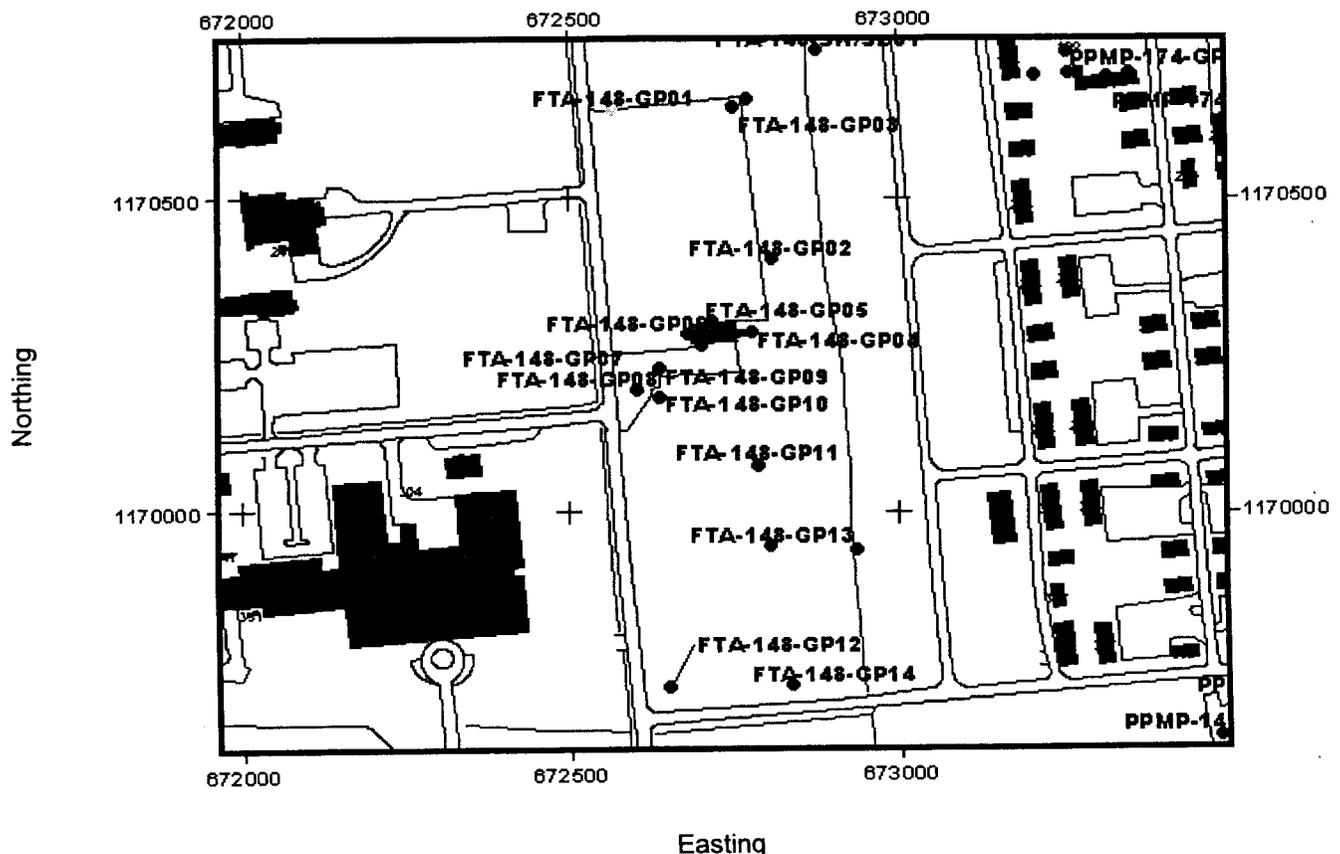
Geologist:

X

Temp. well

C. SHORT, B. RHODES

## LOCATION SKETCH/COMMENTS:



Project: **Fort McClellan**

bgs= below ground surface  
NA = Not applicable

Hole no.: **FTA-148-GP11**

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP11

Project: Fort McClellan

Geologist: C. SHORT, B. RHODES

Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
0		sc: Soft, dry SAND, some Clay, yellow brown, grayish brown some large to small Quartzite, Gravel, round.	sc		Organic Vapor = 0.5ppm		DB0017		Rec 1.0'
1		cl: Approximately 12", hard, firm CLAY, dark reddish brown, damp.	cl		Organic Vapor = 0.4ppm				Rec 24"
750	2	cl: Firm, damp to moist CLAY, dark gray to grayish brown.	cl						
3		cl: Firm to stiff, damp CLAY, yellowish brown, reddish brown.	cl						
4		cl: Hard damp CLAY, some Silt, mottled yellowish brown, grayish brown, light gray, dark red.	cl		Organic Vapor = 0.4ppm				Rec 48"
5			cl						
6			cl						
745	7		cl						
8		cl: Dry to damp, hard CLAY, some Sand throughout, coarse mottled yellowish brown, grayish brown, light gray.	cl		Organic Vapor = 0.4ppm				Rec 23"
9			cl				DB0020		

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP11

Project: Fort McClellan

Geologist: C. SHORT, B. RHODES

Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	10	sh: Soft, damp, gray, weathered SHALE.							Direct push refusal at 10.0'
	11								
740	12		sh						
	13								
	14								bottom of borehole at 14.0'

# HTRW DRILLING LOG

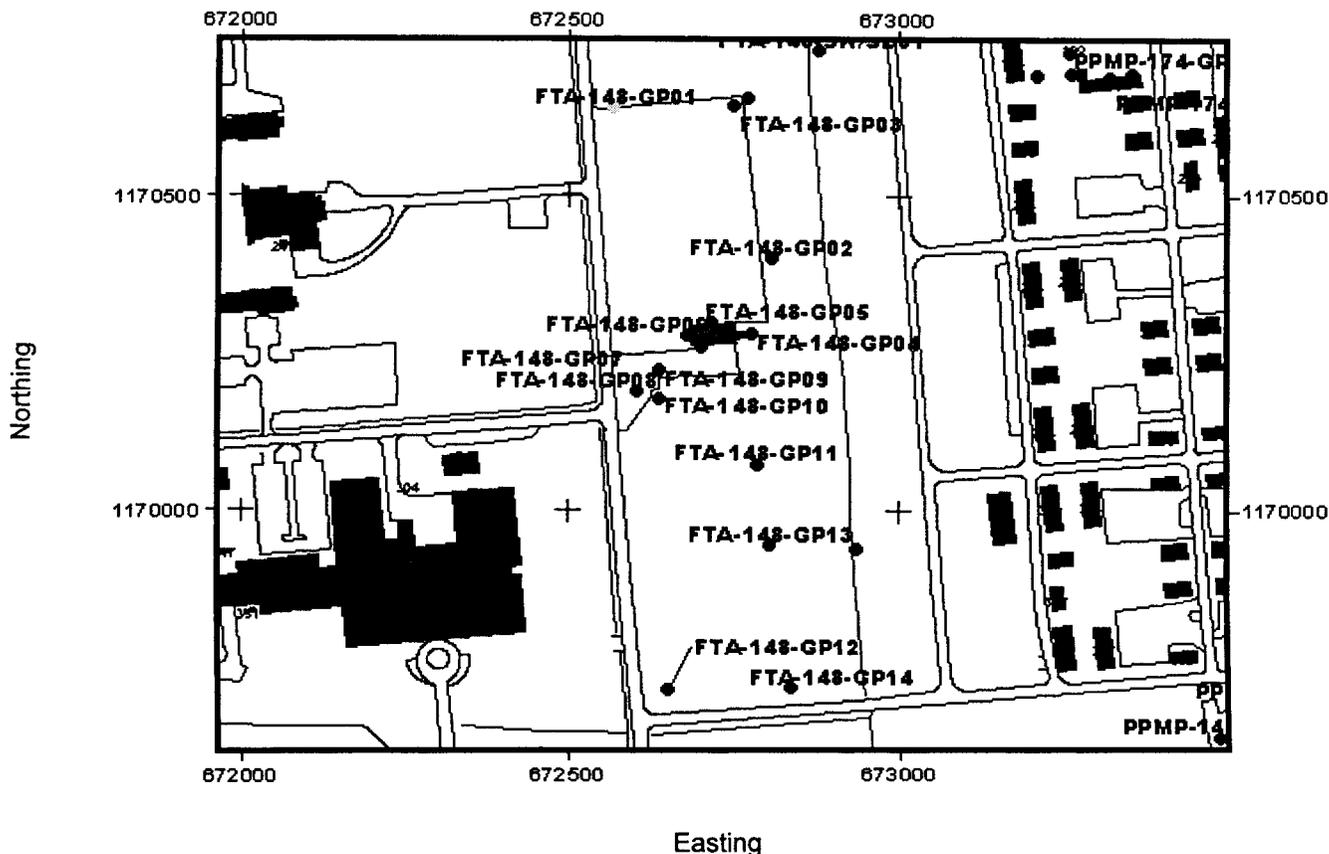
HOLE NUMBER

FTA-148-GP12

1. Company name: <b>IT Corporation</b>	2. Drill Subcontractor: <b>TEG/ MILLER DRILLING CO.</b>	Sheet 1 of 4 sheets
3. Project: <b>Fort McClellan</b>	4. Location: <b>Former Motor Pool Area 1300</b>	
5. Name of driller: <b>Sammy McDaniels/Jeff Brownfield</b>	6. Mfr. designation of drill: <b>Geoprobe/CME-85 mobile drill rig</b>	
7. Sizes and types of drilling and sampling equipment: Direct Push, Hollow Stem Auger DP- 4' x 2" acetate-lined sampler HSA- 5' x 8" augers, 2' x 2" steel split spoons	8. Hole location <b>FTA-148-GP12</b>	
	9. Surface elevation (feet above mean sea level): <b>755.39</b>	
	10. Date started: <b>10/22/98</b>	11. Date completed: <b>12/15/98</b>
12. Overburden thickness (feet bgs): <b>&gt;28</b>	15. Depth groundwater encountered (feet bgs): <b>20.0 Ft</b>	
13. Depth drilled into rock (feet bgs):	16. Depth to water and elapsed time after drilling completed (feet bgs):	
14. Total depth of hole (feet bgs): <b>28</b>	17. Other water level measurements (specify):	

18. Geotechnical samples:	Disturbed:	Undisturbed:	19. Total no. of core boxes:			
20. Samples for chemical analysis:	VOC	Metals	Other (specify)	Other (specify)	Other (specify)	21. Total core recovery:
	X	X	TCL VOCs	TCL SVOCs	TAL Metals	N/A
22. Disposition of hole:	Backfilled	Monitoring well	Other (specify)	Geologist:		
	X	Temp. well		C. SHORT, B. RHODES		

**LOCATION SKETCH/COMMENTS:**



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP12

# HTRW DRILLING LOG (Continuation Sheet)

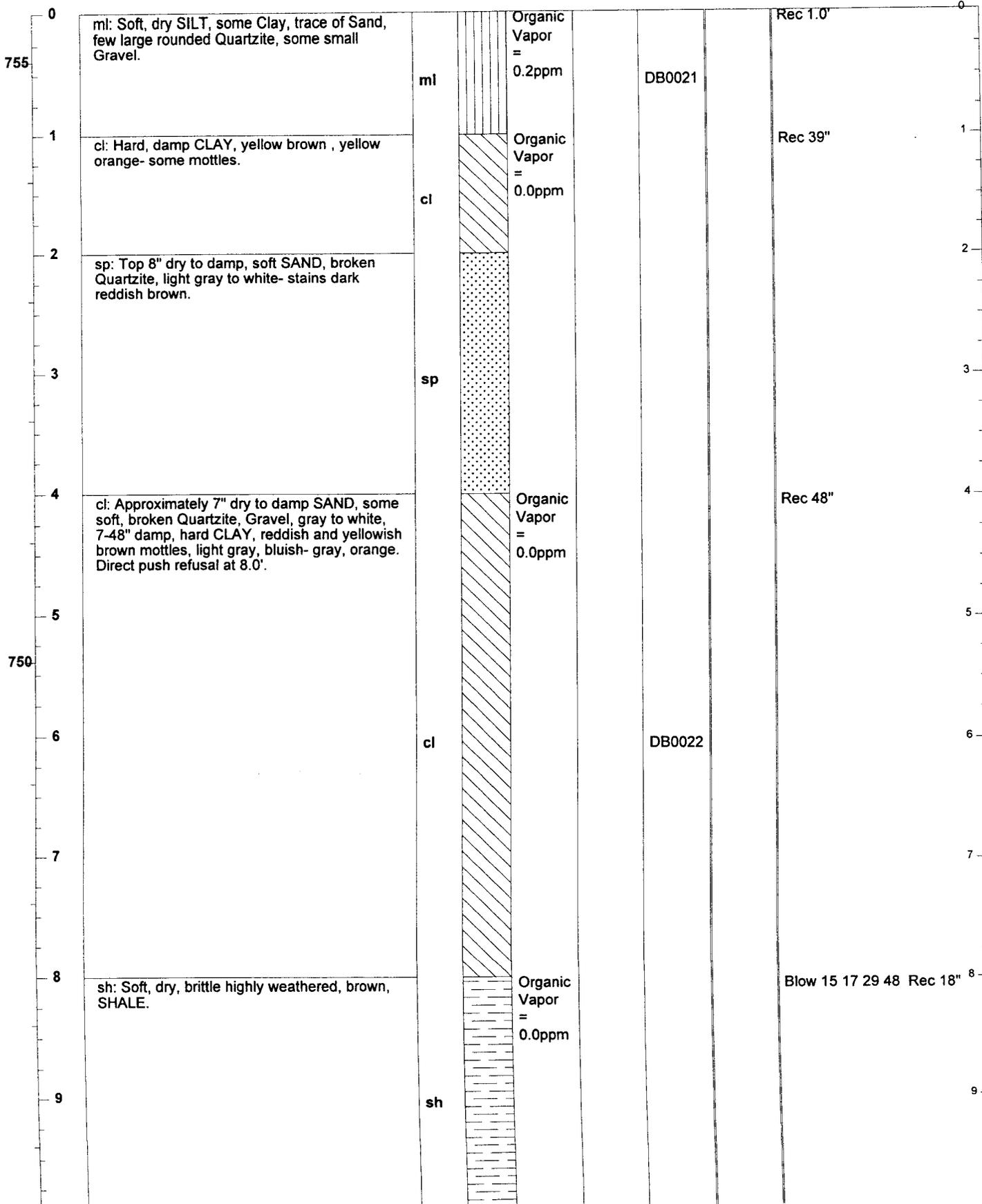
HOLE NUMBER: FTA-148-GP12

Project: Fort McClellan

Geologist: C. SHORT, B. RHODES

Sheet 2 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP12

Project: Fort McClellan

Geologist: C. SHORT, B. RHODES

Sheet 3 of 4 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	10	sh: Soft, dry, brittle, highly weathered, brown, SHALE, some Quartzite.							
745					Organic Vapor = 0.0ppm				Blow 19 29 34 29 Rec 2.0'
	11								
	12								
	13		sh						
	14								
740	15	sh: Brown to gray, soft, brittle, weathered, SHALE.							
	16		sh						
	17								
	18	sh: Soft, dry, brittle, highly weathered, gray, SHALE.			Organic Vapor = 0.0ppm				Blow 16 48 50 Rec 18"
	19	sh: Damp, soft, weathered, gray, SHALE.	sh						

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP12

Project: Fort McClellan

Geologist: C. SHORT, B. RHODES

Sheet 4 of 4 sheets

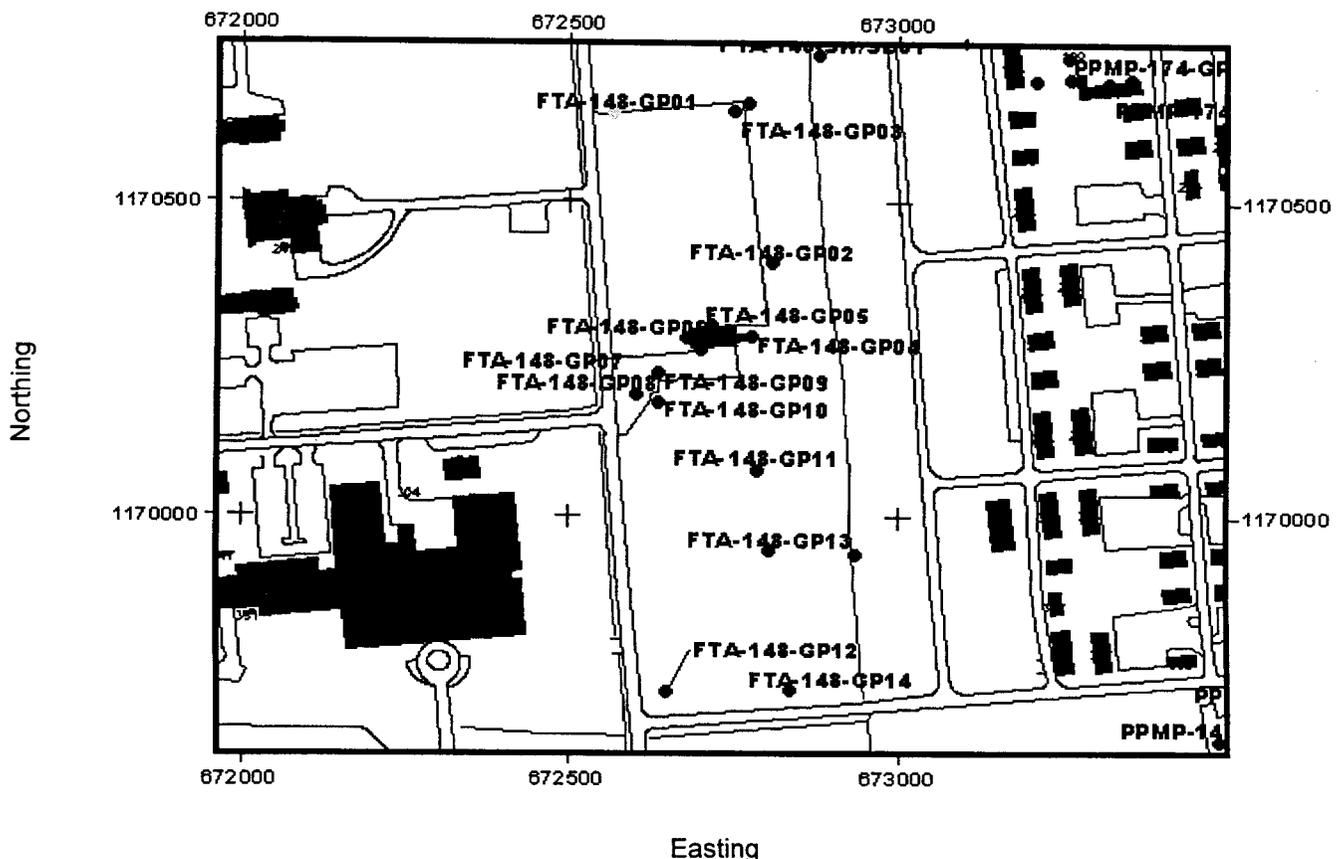
Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	20	sh: Damp, soft, weathered, gray, SHALE.			Organic Vapor = 0.0ppm				
735									
	21								
	22								
	23								Split spoon refusal at 23.0'.
	24		sh						
	25								
730									
	26								
	27								
	28								Bottom of borehole at 28.0'.

# HTRW DRILLING LOG

HOLE NUMBER  
FTA-148-GP13

1. Company name: <b>IT Corporation</b>		2. Drill Subcontractor: <b>TEG/ MILLER DRILLING CO</b>		Sheet 1 of 3 sheets	
3. Project: <b>Fort McClellan</b>			4. Location: <b>Former Motor Pool Area 1300</b>		
5. Name of driller: <b>Sammy McDaniels/Jeff Brownfield</b>			6. Mfr. designation of drill: <b>Geoprobe/CME-85 mobile drill rig</b>		
7. Sizes and types of drilling and sampling equipment: Direct Push, Hollow Stem Auger DP- 4' x 2" acetate lined samplers. HSA- 5' x 8"od augers, 2' x 2" steel split spoons			8. Hole location <b>FTA-148-GP13</b>		
			9. Surface elevation (feet above mean sea level): <b>751.59</b>		
12. Overburden thickness (feet bgs): <b>&gt;19</b>			15. Depth groundwater encountered (feet bgs): <b>8.0'</b>		
13. Depth drilled into rock (feet bgs):			16. Depth to water and elapsed time after drilling completed (feet bgs):		
14. Total depth of hole (feet bgs): <b>19</b>			17. Other water level measurements (specify):		
18. Geotechnical samples:		Disturbed:		Undisturbed:	
19. Total no. of core boxes:					
20. Samples for chemical analysis:		VOC	Metals	Other (specify)	21. Total core recovery:
		X	X	TCL VOCs	N/A
				TCL SVOCs	TAL Metals
22. Disposition of hole:		Backfilled	Monitoring well	Other (specify)	Geologist:
					C. SHORT, B. RHODES

## LOCATION SKETCH/COMMENTS:



Project: Fort McClellan

bgs= below ground surface  
NA = Not applicable

Hole no.: FTA-148-GP13

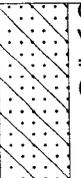
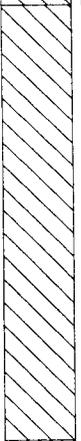
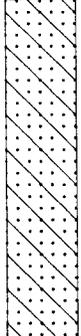
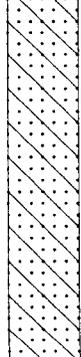
# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP13

Project: Fort McClellan

Geologist: C. SHORT, B. RHODES

Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	sc: Damp, soft SAND, white, some Clay, dark brown, large to small rounded Quartzite, Gravel white to yellowish white.	sc		Organic Vapor = 0.2ppm		DB0023		Rec 1.0'
	1	cl: Approximately 5" damp, soft SAND, white.	cl		Organic Vapor = 0.3ppm				Rec 34"
750	2	cl: Firm to hard CLAY, some Silt, Sand, yellowish brown, grayish brown.	cl						
	4	sc: Wet, soft SAND, some Clay, dark gray, white, dark red.	sc		Organic Vapor = 0.2ppm				Rec 17"
	6		sc						
745	7								
	8	sc: Wet, soft SAND, dark gray, some mottling.	sc		Organic Vapor = 0.2ppm				Rec 34"
	9		sc						

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP13

Project: Fort McClellan

Geologist: C. SHORT, B. RHODES

Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	10	sc: Wet, soft, gray SAND.	sc		Organic Vapor = 0.0ppm	DB0024		Rec 48". Direct push refusal at 10.0'.	
	11								
740	12								
	13	sh: Soft, wet, weathered, gray SHALE.	sh					Bottom of borehole at 19.0'.	
	14								
	15								
735	16								
	17								
	18								
	19								

# HTRW DRILLING LOG

HOLE NUMBER

FTA-148-GP14

1. Company name: **IT Corporation**

2. Drill Subcontractor: **TEG**

Sheet 1 of 3 sheets

3. Project: **Fort McClellan**

4. Location: **Former Motor Pool 1300**

5. Name of driller: **Sammy McDaniels**

6. Mfr. designation of drill: **Geoprobe**

7. Sizes and types of drilling and sampling equipment:

8. Hole location **FTA-148-GP14**

Direct Push

9. Surface elevation (feet above mean sea level): **751.99**

4' x 2" acetate-lined sampler

10. Date started: **10/22/98**

11. Date completed: **10/22/98**

12. Overburden thickness (feet bgs): **>10**

15. Depth groundwater encountered (feet bgs): **8.0 Ft**

13. Depth drilled into rock (feet bgs):

16. Depth to water and elapsed time after drilling completed (feet bgs):

14. Total depth of hole (feet bgs): **10**

17. Other water level measurements (specify):

18. Geotechnical samples:

Disturbed:

Undisturbed:

19. Total no. of core boxes:

20. Samples for chemical analysis:

VOC

Metals

Other (specify)

Other (specify)

Other (specify)

21. Total core recovery:

X

X

TCL VOCs

TCL SVOCs

TAL Metals

N/A

22. Disposition of hole:

Backfilled

Monitoring well

Other (specify)

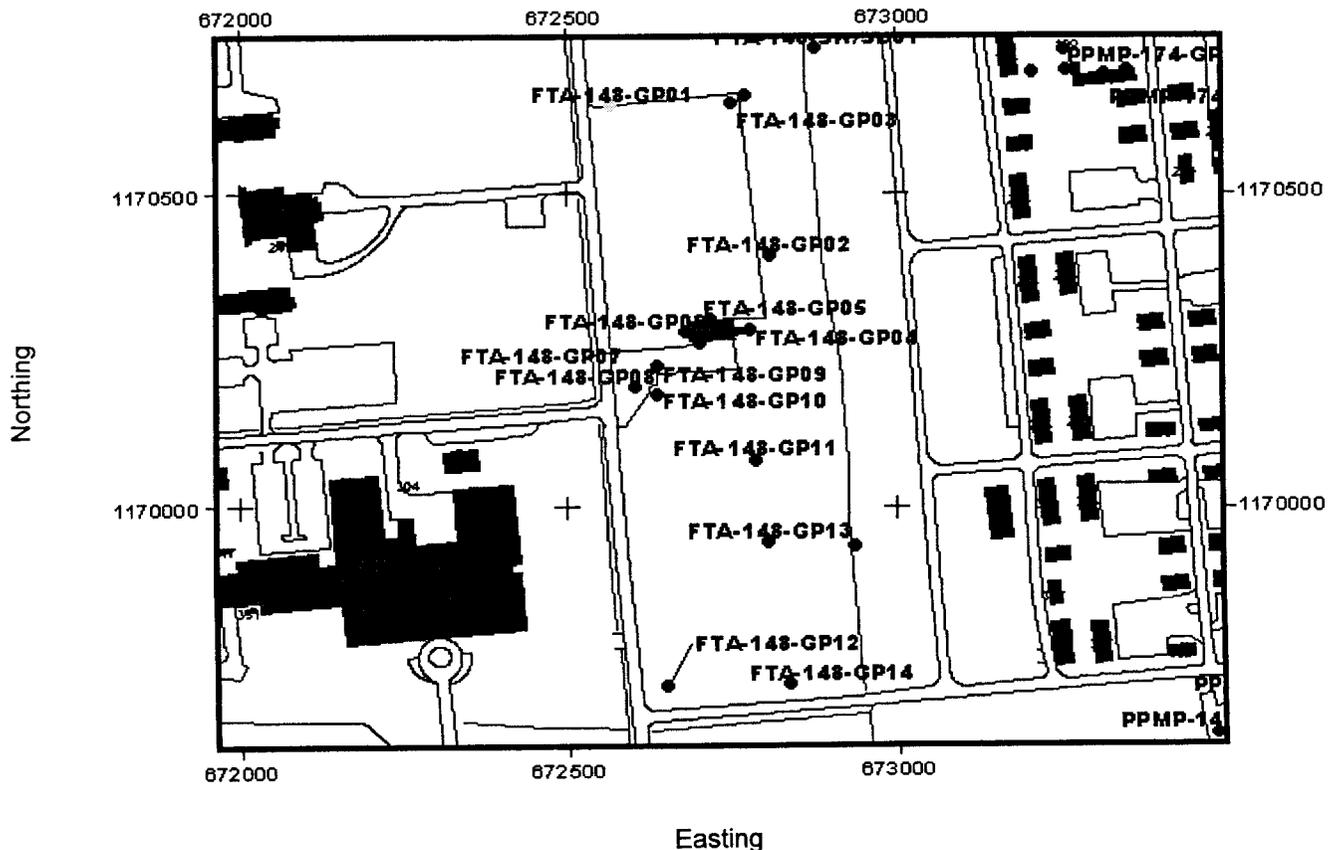
Geologist:

X

Temp well

C. SHORT

## LOCATION SKETCH/COMMENTS:



Project: **Fort McClellan**

bgs= below ground surface  
NA = Not applicable

Hole no.: **FTA-148-GP14**

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP14

Project: Fort McClellan

Geologist: C. SHORT

Sheet 2 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
	0	sc: Soft, damp SAND, some Silt, Cobbles-Quartzite yellowish brown and grayish brown.	sc		Organic Vapor = 0.1ppm		DB0025		Rec 1.0'
	1	cl: 0-25" dry, hard CLAY, mottled dark yellowish red, grayish brown, black.	cl		Organic Vapor = 0.1ppm				Rec 36"
750	2	cl: 25-36" firm to stiff CLAY, dark gray to black, damp to moist.	cl						
	3	cl: 25-36" firm to stiff CLAY, dark gray to black, damp to moist.	cl						
	4	cl: Firm to soft, moist CLAY, grayish brown, yellowish gray.	cl		Organic Vapor = 0.1ppm				Rec 32"
	5	sc: Moist SAND, soft, dark gray to black layering.	sc						
745	6	sc: Moist SAND, soft, dark gray to black layering.	sc						
	7	sc: Moist SAND, soft, dark gray to black layering.	sc						
	8	cl: Wet, soft SAND, dark gray, mottled.	cl		Organic Vapor = 0.1ppm				Rec 33"
		cl: Wet, soft CLAY, bluish-gray to black.	cl						
	9	sh: Soft to firm dry SHALE, highly weathered, mottled yellowish, (cont. on the next page) dark reddish yellow, light gray.	sh				DB0026		Refusal and bottom at 10.0'.

# HTRW DRILLING LOG (Continuation Sheet)

HOLE NUMBER: FTA-148-GP14

Project: Fort McClellan

Geologist: C. SHORT

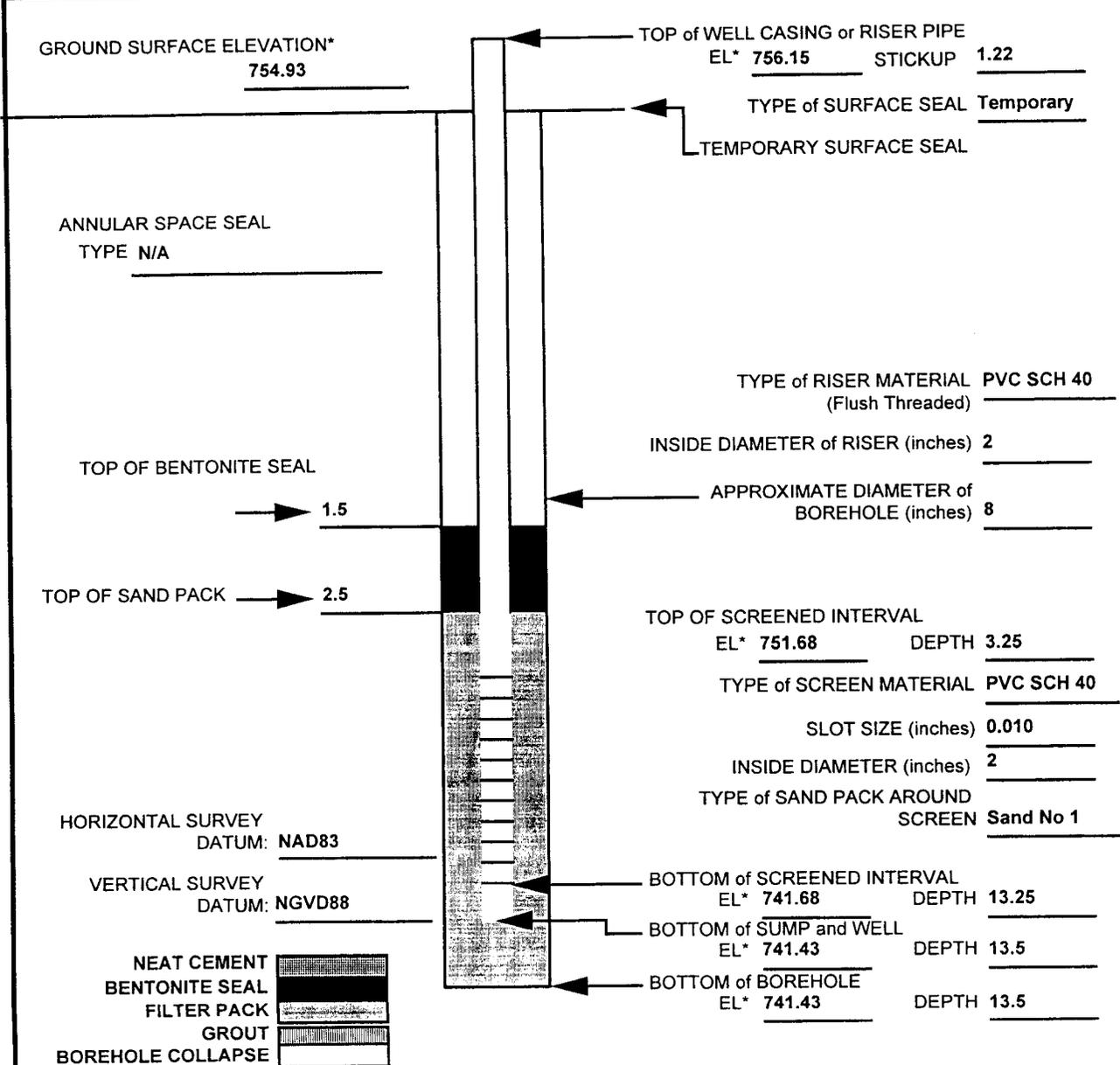
Sheet 3 of 3 sheets

Elev. (a)	Depth (b)	Description of Materials (c)	USCS / Lithology	Graphic	Field screening results (d)	Geotech sample or core box no. (e)	Analytical sample no. (f)	Blow counts (g)	Remarks (h)
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**WELL CONSTRUCTION LOGS**

## MONITORING WELL INSTALLATION DETAIL

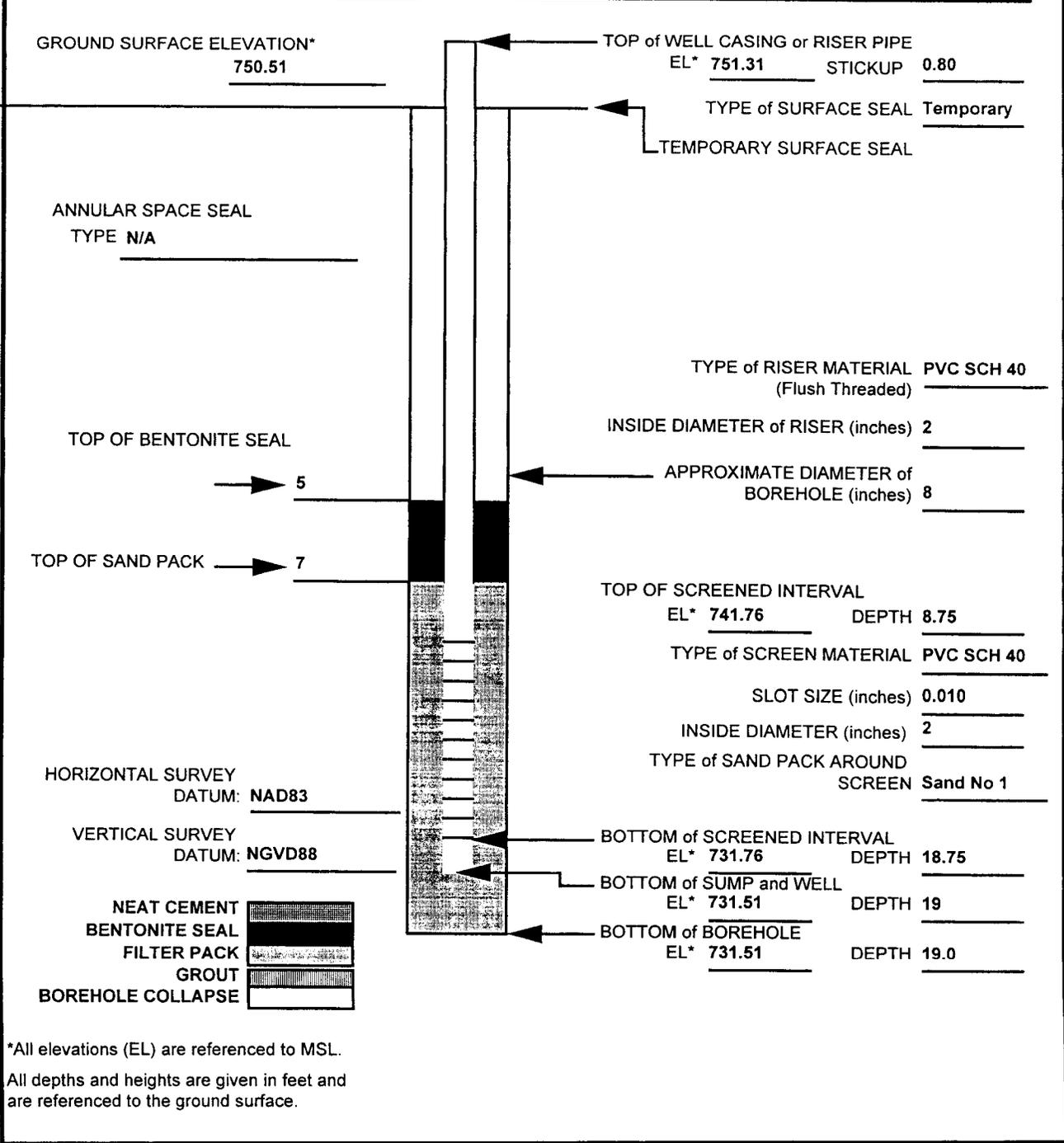
<b>PROJECT:</b> Fort McClellan, SAD TERC <b>LOCATION:</b> Anniston, AL <b>CLIENT:</b> USACE Mobile District <b>CONTRACTOR:</b> MILLER DRILLING <b>DRILLER:</b> R. GERRISH <b>IT FIELD REPRESENTATIVE:</b> C. SHORT	<b>WELL NO:</b> FTA-148-GP01 <b>DRILLING METHOD:</b> Hollow Stem Auger <b>INSTALLATION DATE:</b> 12/15/98 <b>NORTHING:</b> 1176091.79 <b>EASTING:</b> 669079.93 <b>JOB NO:</b> 774645A
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\*All elevations (EL) are referenced to MSL.  
 All depths and heights are given in feet and are referenced to the ground surface.

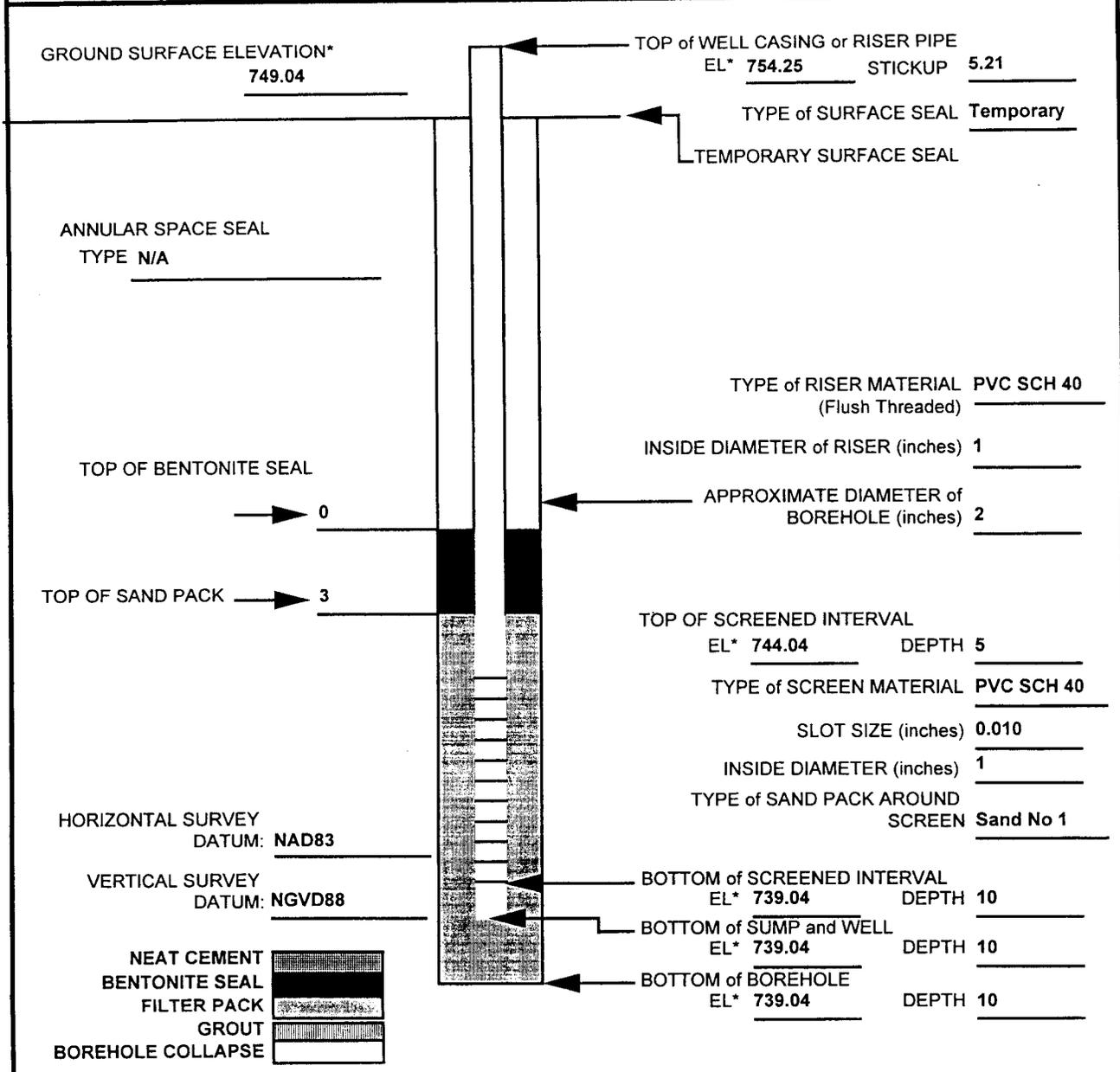
## MONITORING WELL INSTALLATION DETAIL

<b>PROJECT:</b> Fort McClellan, SAD TERC	<b>WELL NO:</b> FTA-148-GP02
<b>LOCATION:</b> Anniston, AL	<b>DRILLING METHOD:</b> Hollow Stem Auger
<b>CLIENT:</b> USACE Mobile District	<b>INSTALLATION DATE:</b> 12/15/98
<b>CONTRACTOR:</b> MILLER DRILLING	<b>NORTHING:</b> 1175791.02
<b>DRILLER:</b> R. GERRISH	<b>EASTING:</b> 669377.69
<b>IT FIELD REPRESENTATIVE:</b> C. SHORT	<b>JOB NO:</b> 774645A



## MONITORING WELL INSTALLATION DETAIL

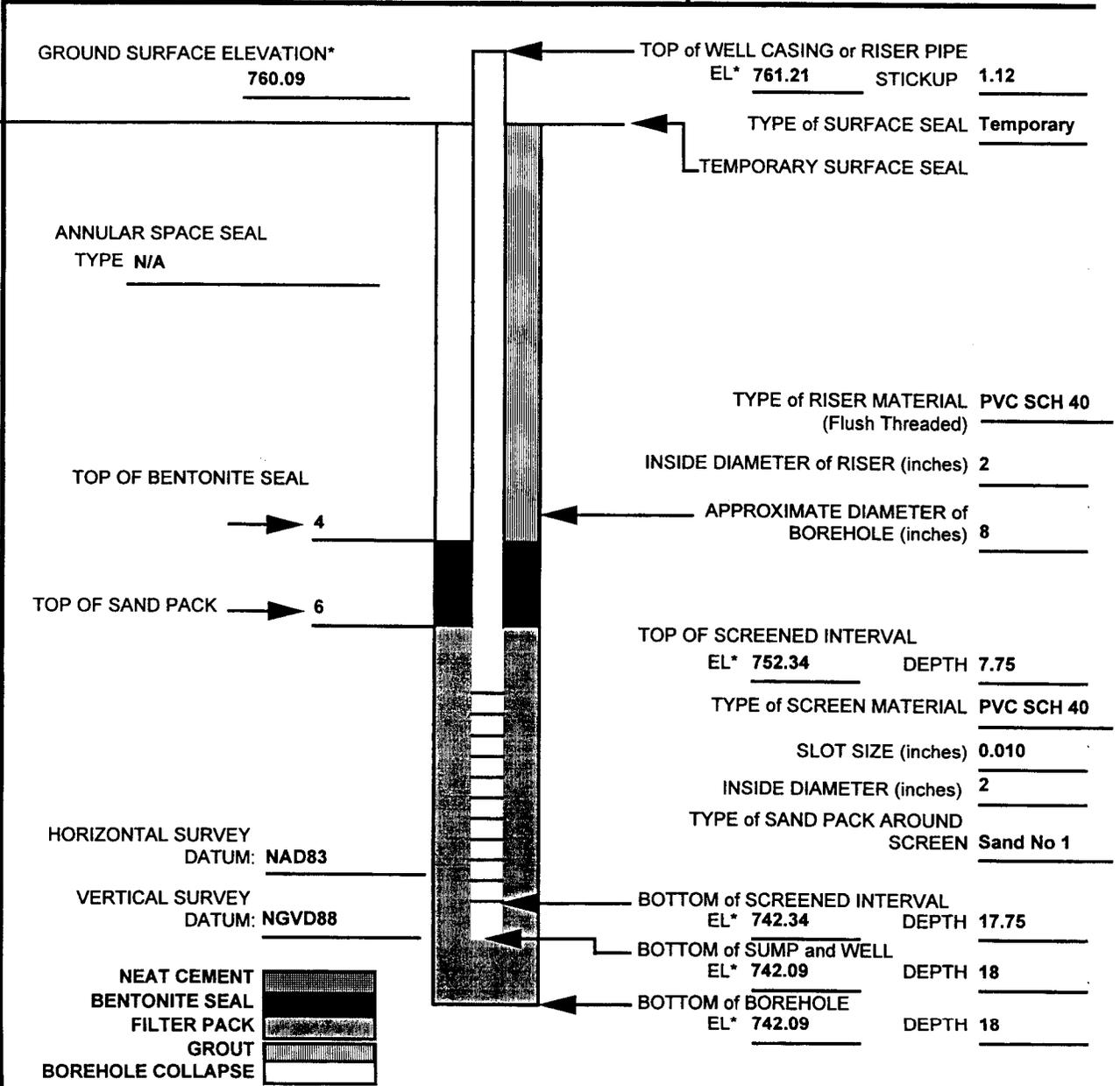
<b>PROJECT:</b> Fort McClellan, SAD TERC <b>LOCATION:</b> Anniston, AL <b>CLIENT:</b> USACE Mobile District <b>CONTRACTOR:</b> TEG DRILLING <b>DRILLER:</b> S. MCDANIEL <b>IT FIELD REPRESENTATIVE:</b> C.SHORT	<b>WELL NO:</b> FTA-148-GP03 <b>DRILLING METHOD:</b> Direct Push <b>INSTALLATION DATE:</b> 10/21/98 <b>NORTHING:</b> 1176097.03 <b>EASTING:</b> 669306.6 <b>JOB NO:</b> 774645A
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## MONITORING WELL INSTALLATION DETAIL

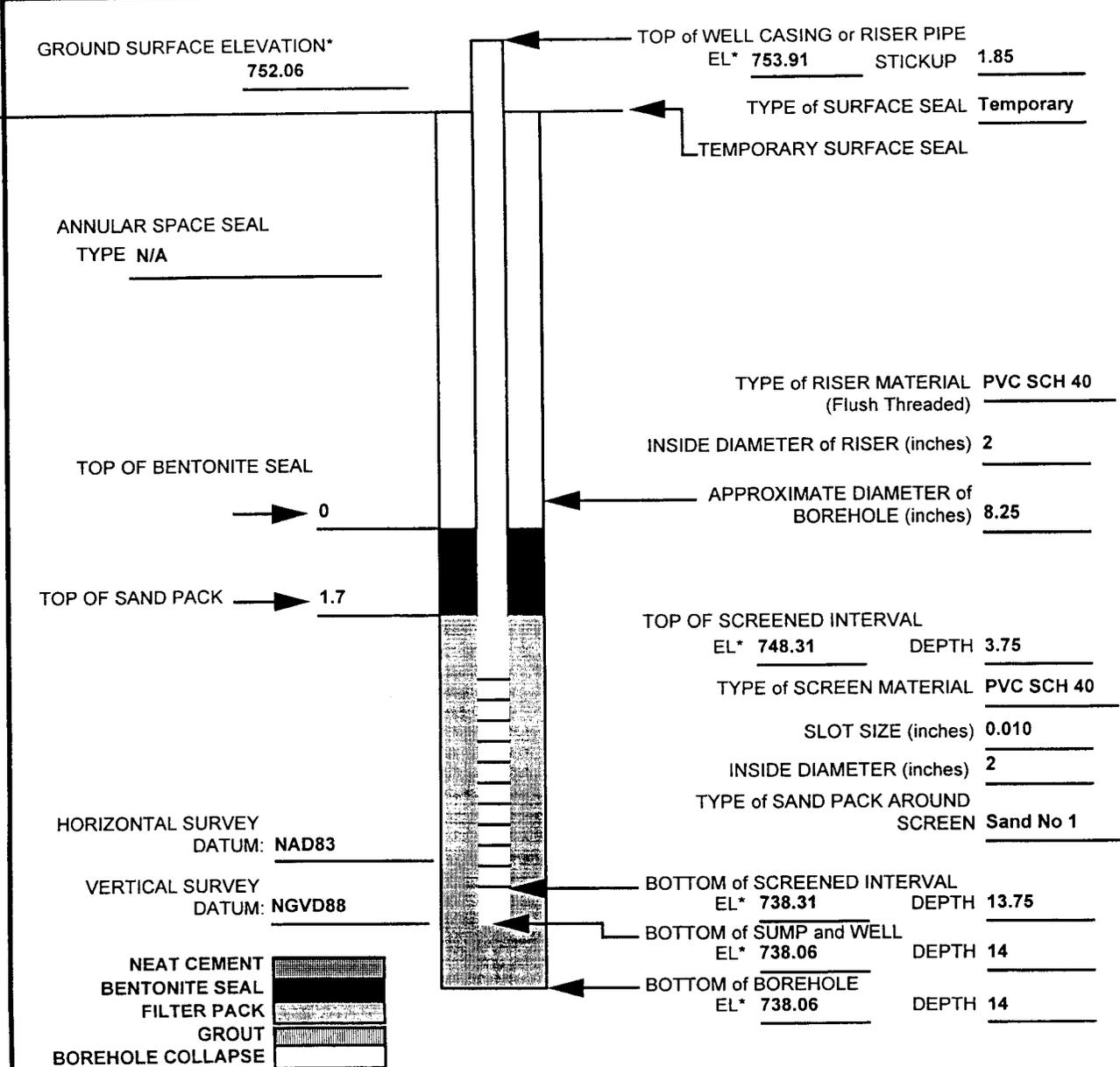
<b>PROJECT:</b> Fort McClellan, SAD TERC	<b>WELL NO:</b> FTA-148-GP08
<b>LOCATION:</b> Anniston, AL	<b>DRILLING METHOD:</b> Hollow Stem Auger
<b>CLIENT:</b> USACE Mobile District	<b>INSTALLATION DATE:</b> 12/16/98
<b>CONTRACTOR:</b> MILLER DRILLING	<b>NORTHING:</b> 1175527.13
<b>DRILLER:</b> R. GERRISH	<b>EASTING:</b> 669126.44
<b>IT FIELD REPRESENTATIVE:</b> C.SHORT	<b>JOB NO:</b> 774645A



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All depths and heights are given in feet and are referenced to the ground surface.

## MONITORING WELL INSTALLATION DETAIL

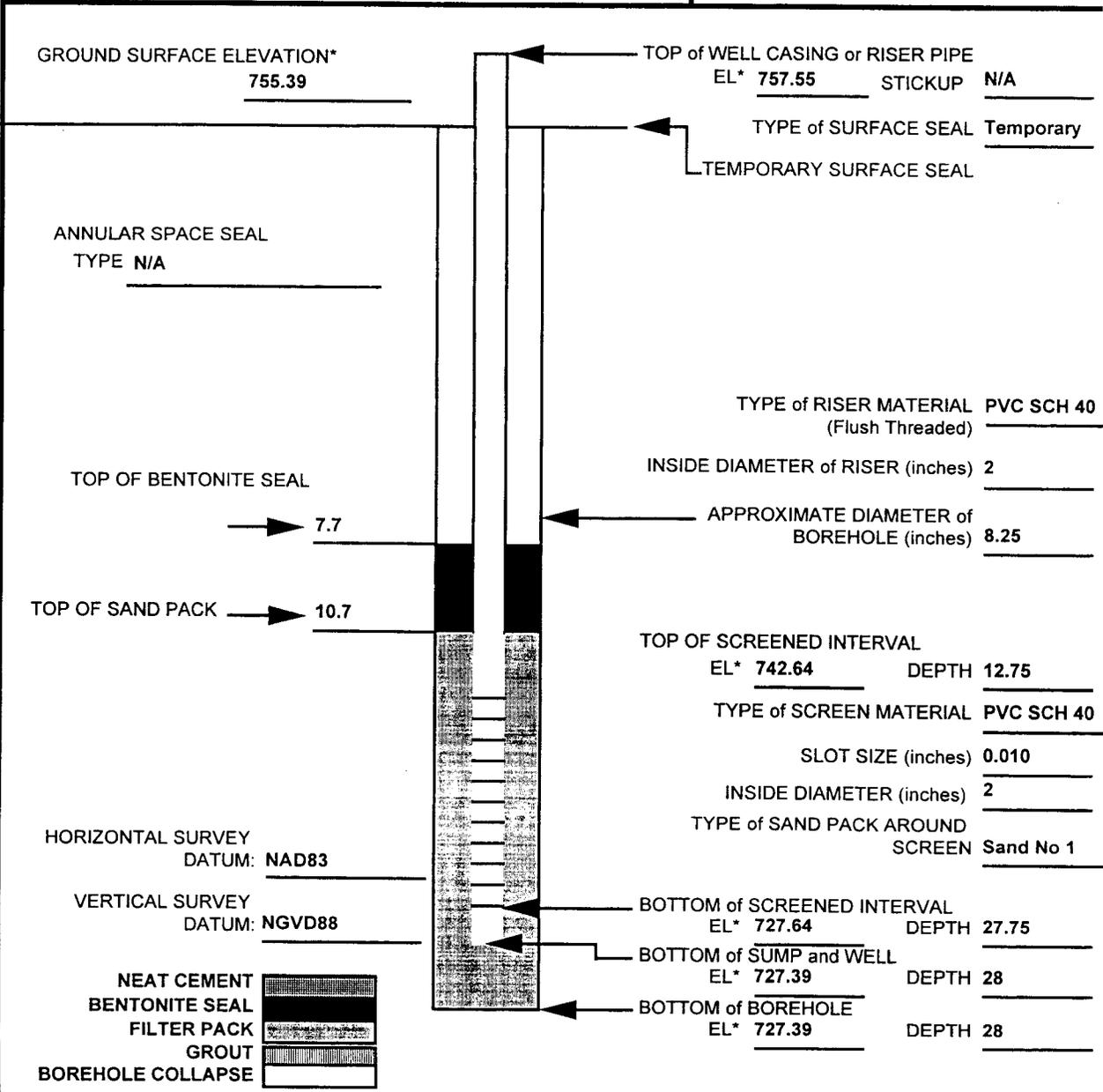
<b>PROJECT:</b> Fort McClellan, SAD TERC <b>LOCATION:</b> Anniston, AL <b>CLIENT:</b> USACE Mobile District <b>CONTRACTOR:</b> MILLER DRILLING <b>DRILLER:</b> J. BROWNFIELD <b>IT FIELD REPRESENTATIVE:</b> C. SHORT, B. RHODES	<b>WELL NO:</b> FTA-148-GP11 <b>DRILLING METHOD:</b> Hollow Stem Auger <b>INSTALLATION DATE:</b> 12/15/98 <b>NORTHING:</b> 1175381.22 <b>EASTING:</b> 669352.19 <b>JOB NO:</b> 774645A
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\*All elevations (EL) are referenced to MSL.  
 All depths and heights are given in feet and are referenced to the ground surface.

## MONITORING WELL INSTALLATION DETAIL

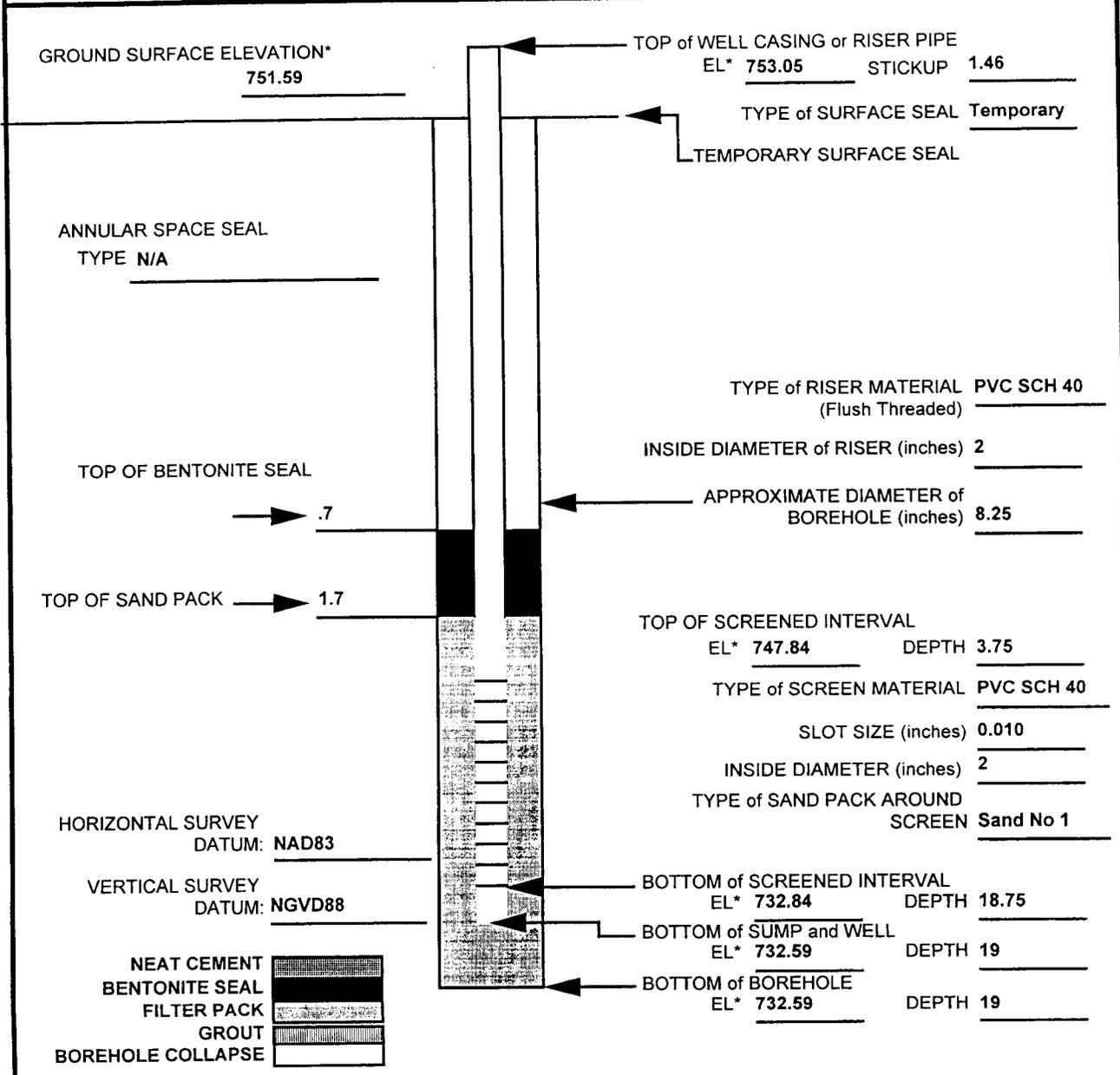
<b>PROJECT:</b> Fort McClellan, SAD TERC	<b>WELL NO:</b> FTA-148-GP12
<b>LOCATION:</b> Anniston, AL	<b>DRILLING METHOD:</b> Hollow Stem Auger
<b>CLIENT:</b> USACE Mobile District	<b>INSTALLATION DATE:</b> 12/15/98
<b>CONTRACTOR:</b> MILLER DRILLING	<b>NORTHING:</b> 1174926
<b>DRILLER:</b> J. BROWNFIELD	<b>EASTING:</b> 669184.42
<b>IT FIELD REPRESENTATIVE:</b> B. RHODES	<b>JOB NO:</b> 774645A



\*All elevations (EL) are referenced to MSL.  
 All depths and heights are given in feet and are referenced to the ground surface.

## MONITORING WELL INSTALLATION DETAIL

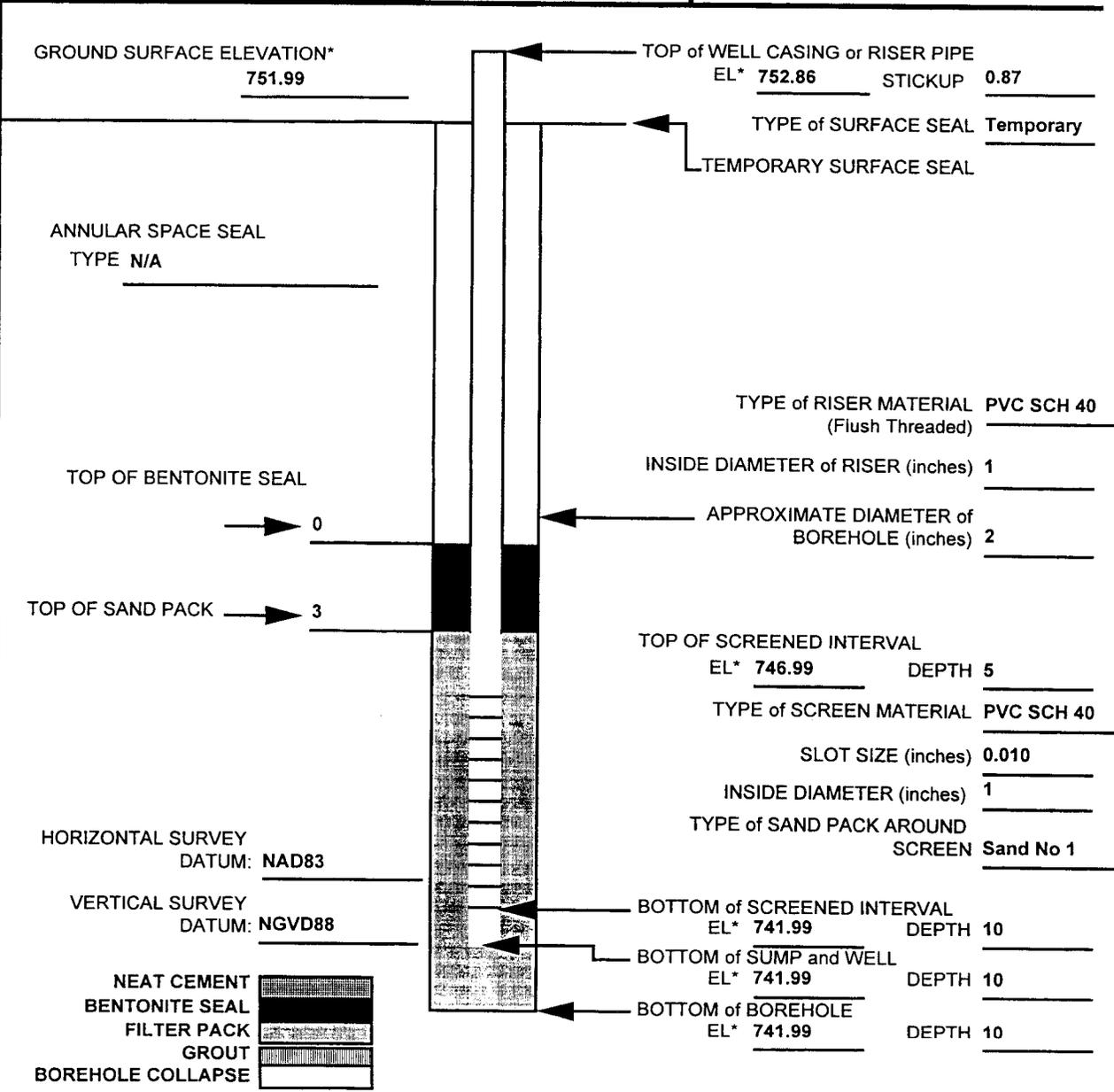
<b>PROJECT:</b> Fort McClellan, SAD TERC <b>LOCATION:</b> Anniston, AL <b>CLIENT:</b> USACE Mobile District <b>CONTRACTOR:</b> MILLER DRILLING <b>DRILLER:</b> J. BROWNFIELD <b>IT FIELD REPRESENTATIVE:</b> B. RHODES	<b>WELL NO:</b> FTA-148-GP13 <b>DRILLING METHOD:</b> Hollow Stem Auger <b>INSTALLATION DATE:</b> 12/15/98 <b>NORTHING:</b> 1175216.02 <b>EASTING:</b> 669377.11 <b>JOB NO:</b> 774645A
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\*All elevations (EL) are referenced to MSL.  
 All depths and heights are given in feet and are referenced to the ground surface.

## MONITORING WELL INSTALLATION DETAIL

<b>PROJECT:</b> Fort McClellan, SAD TERC	<b>WELL NO:</b> FTA-148-GP14
<b>LOCATION:</b> Anniston, AL	<b>DRILLING METHOD:</b> Direct Push
<b>CLIENT:</b> USACE Mobile District	<b>INSTALLATION DATE:</b> 10/22/98
<b>CONTRACTOR:</b> TEG DRILLING	<b>NORTHING:</b> 1174928.77
<b>DRILLER:</b> S. MCDANIEL	<b>EASTING:</b> 669412.37
<b>IT FIELD REPRESENTATIVE:</b> C.SHORT	<b>JOB NO:</b> 774645A



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 All depths and heights are given in feet and are referenced to the ground surface.