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MEMORANDUM FOR MR. DAN FUQUA
SOLID WASTE BUREAU, PERMIT SECTION
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SANTA FE NM 87502

FROM: 377 SPTG/CEVR
2050 Wyoming Blvd SE, Suite 122
Kirtland AFB NM 87117-5270

SUBJECT: Groundwater Monitoring System Plan for the Kirtland AFB Landfill

1. We are forwarding one copy of the Monitoring Well Installation Report for the Groundwater Monitoring System Plan at the Kirtland AFB Landfill , CAU LF-268, and the Corrective Action Unit Assessment, Perched and Regional Groundwater, CAU-ST-105. There is no separate volume of appendices associated with this plan. Included is an electronic copy of the document on a compact disk.

2, This report formally documents installation of monitor well KAFB-0315. Information for recertification of the GMSP was submitted to you in our letter dated 13 Oct 01 as well as placed in KAFB's operating record.

3. Please contact me at (505)-846-9005, if you have any questions.

Mark D Holmes

MARK D. HOLMES
Project Manager, Restoration Section
Environmental Management Branch

Atch:
1. GMSP Report

KAFB2344

cc:
NMED-HWB (Mr. Kieling) w/o atch
NMED-HWB KAFB (Mr. Moats) w/o atch
EPA Region 6 (Ms. Tellez) w/o atch
HQ AFMC/CEVC (Mr. Fort) w/o atch
KAFB-EMV (Mr. Kitt) w atch
USACE Omaha District (Mr. Rowe) w/o atch
Foster Wheeler Env, Inc. (Ms. Moss) w/o atch

KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO

Monitoring Well Installation Report for the Groundwater Monitoring System Plan at Kirtland Air Force Base Landfill (LF-268) and Corrective Action Unit Assessment, Perched and Regional Groundwater (ST-105)

December 2001

377 SPT/CEVR
2050 Wyoming Blvd. SE
Kirtland AFB, New Mexico 87117-5270

COMMENT/RESOLUTION FORM

DOCUMENT TITLE: Draft Monitoring Well Installation Report for the Groundwater Monitoring System Plan at Kirtland Air Force Base Landfill (LF-268) and Corrective Action Unit Assessment, Perched and Regional Groundwater (ST-105) July 2001

ITEM NO.	PAGE NO.	REVIEWER'S COMMENT	COMMENT RESOLUTION: INCORPORATED-YES OR REASON WHY NOT INCORPORATED.
		REVIEWER: Mark Holmes, Kirtland AFB	
1. General Comments			
a.		Remove all references to Christopher Dewitt. Replace with Mark Holmes if appropriate.	Comment incorporated.
b.		In the Introduction and other appropriate sections, state the groundwater monitoring plans within which the monitor wells will be included and the sampling events that have occurred to date. Analytical results do not need to be included.	Comment incorporated.
c.		If possible, revise the key maps for Figures 2-1 and 2-2 to show the relationship of KAFB to the City of Albuquerque. NMED considers this to be an important feature of site maps, to aid the public's orientation.	Comment incorporated.
2. Specific Comments			
a.	Page vii	Replace Christopher Dewitt signature block with "Mark Holmes, Project Manager, Restoration Section"	Comment incorporated.
b.	Page ix, Para 1, Sent 2	Stop sentence at "...(ECP)." The compliance program is not conducted under the NMSWMR. The ECP funds projects that are conducted in accordance with both RCRA corrective action regulations and the NMSWMR.	Comment incorporated.
c.	Page ix, Bullet 3	Reword end of sentence to read "...attributable to a source upgradient of the Sewage Lagoons"	Comment incorporated.
d.	Page x, Para 1, Last sent	Reword to reflect that the new monitor well is a downgradient monitoring point for the regional aquifer at the Sewage Lagoons.	Comment incorporated.
e.	Page x, Para 2, Sent 4	Reword to read: "The Remedial Project Manager is Mr. Mark Holmes..."	Comment incorporated.
f.	Page 1-2, Para 2, Sent 1	Reword, the standard of 5 μg/l is a drinking water MCL in accordance with the NM Water Supply Regulations (and probably the Safe Drinking Water Act, please check SDWA to confirm). The WQCC standard for TCE is 100 μg/l.	Comment incorporated.
ff.	Page 1-2, Para 2, Sent 2	Reword sentence to read: "Concentrations of TCE exceeding the SDWA MCL have also been detected in the perched aquifer at KAFB."	Comment incorporated.

COMMENT/RESOLUTION FORM

DOCUMENT TITLE: Draft Monitoring Well Installation Report for the Groundwater Monitoring System Plan at Kirtland Air Force Base Landfill (LF-268) and Corrective Action Unit Assessment, Perched and Regional Groundwater (ST-105) July 2001

ITEM NO.	PAGE NO.	REVIEWER'S COMMENT	COMMENT RESOLUTION: INCORPORATED-YES OR REASON WHY NOT INCORPORATED.
g.	Page 1-2, Para 2, Sent 3	Delete sentence. The detections of TCE are limited to the perched aquifer. TCE has not been detected in the regional aquifer in which the KAFB production wells are completed. (With the exception of Wyo-1 and Wyo-2, a nested monitor well installed by SNL, completed in both the regional and perched. TCE has been detected in the regional aquifer at this well location that has been attributed to communication between the two aquifers within the wellbore)	Comment incorporated.
h.	Page 2-1, Section 2.1, Para 2, Sent 1	Reword sentence to state that the monitor well was installed in the regional aquifer downgradient of the Sewage Lagoons. The proposed completion in the perched aquifer at this same location would have been upgradient from the Sewage Lagoons.	Comment incorporated.
i.	Page 2-7, Section 2.2.1	Include a discussion of the zone of completion for KAFB-0315 in relation to the other completions in the perched aquifer, KAFBs-0313 and 0314. This should include correlation based on stratigraphy, geophysical logs, etc.	Comment incorporated.
j.	Page 2-9, Section 2.2.2	Include a discussion of the proposed completion in the perched aquifer, which changed to the regional aquifer completion because the perched aquifer was not discovered. Also, the second sentence may need to be revised. The sentence implies that water injection was used for the entire boring. Air injection is standard procedure through the depths of the projected perched aquifer and deeper if possible.	Comment incorporated.
k.	Page 3-3, Paras 1 and 2	Add "Groundwater Quality Bureau" to the NMED references.	Comment incorporated.
l.	Page 3-3, Para 3	Add text to explain that no hydraulic fluid was released to the actual surface soils.	Comment incorporated.

KIRTLAND AIR FORCE BASE
ALBUQUERQUE, NEW MEXICO

MONITORING WELL INSTALLATION REPORT FOR THE GROUNDWATER MONITORING SYSTEM PLAN AT KIRTLAND AIR FORCE BASE LANDFILL (LF-268) AND CORRECTIVE ACTION UNIT ASSESSMENT, PERCHED AND REGIONAL GROUNDWATER (ST-105)

DECEMBER 2001

Prepared For
U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
OMAHA, NEBRASKA

TERC CONTRACT NO. DACW45-94-D-0003
DELIVERY ORDER 30, WORK AUTHORIZATION DIRECTIVE 17

Prepared By
Foster Wheeler Environmental Corporation
143 Union Blvd., Suite 1010
Lakewood, Colorado 80228

NOTICE

This report has been prepared for the U.S. Army Corps of Engineers by Foster Wheeler Environmental Corporation for the purpose of aiding in the implementation of a final remedial action plan under the Air Force Environmental Compliance Program (ECP). Since the report relates to actual or possible releases of potentially hazardous substances, its release prior to an Air Force final decision on remedial action may be in the public's interest. The limited objectives of this report and the ongoing nature of the ECP, along with the evolving knowledge of site conditions and chemical effects on the environment and health, must be considered when evaluating this report since subsequent facts may become known that may make this report premature or inaccurate.

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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Foster Wheeler Environmental Corporation 143 Union Blvd., Suite 1010 Lakewood, Colorado 80228	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) USACE Omaha District 215 North 17th Street Omaha, Nebraska 68102-4978 Project Manager: Steven M. Rowe	10. SPONSORING/ MONITORING AGENCY REPORT NUMBER

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13. ABSTRACT (Maximum 200 words)

This report describes the monitoring well installation activities conducted at the Kirtland Air Force Base (AFB) Landfill (LF-268) and Corrective Action Unit (CAU) Assessment, Perched and Regional Groundwater (ST-105). One 477-foot (ft)-deep monitoring well was completed in the perched aquifer downgradient of LF-268 to support the Groundwater Monitoring System Plan at the site and one well was installed to a depth of 512.3 ft below ground surface in the regional aquifer downgradient of the Sewage Lagoons (ST-105) to support the CAU assessment of the perched and regional groundwater system at Kirtland AFB.

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Standard Form 298 (Rev 2-89)
Prescribed by ANSI Std 239-18 298-102

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Mark Holmes
Project Manager, Restoration Section
Environmental Management Branch

This document has been approved for public release.

Robert S. Milligan
Environmental Public Affairs Specialist

PREFACE

This report describes the monitoring well installation activities conducted at the Kirtland Air Force Base (AFB) Active Landfill (LF-268) and the perched and regional groundwater system (ST-105) at Kirtland AFB, New Mexico. The monitoring well installations were administered under the Kirtland AFB Environmental Compliance Program (ECP). The monitoring well installations were conducted to achieve the following objectives:

- Install a monitoring well in the perched aquifer downgradient of the Kirtland AFB Landfill to satisfy New Mexico Solid Waste Management Regulations (NMSWMR) requiring implementation of a groundwater monitoring system in the uppermost aquifer underlying existing landfill facilities that closed on or after May 14, 1989. A new well was required in response to the revised groundwater flow direction determined after installing monitoring wells KAFB-0313 and -0314. The new well will monitor the uppermost aquifer under the facility to assess the impact of the landfill on groundwater quality.

- Install a monitoring well in the perched aquifer, if present, upgradient of the Sewage Lagoons as part of a corrective action unit (CAU) assessment of the perched and regional aquifer groundwater system (ST-105). Historically, trichloroethene (TCE) has been detected in the perched groundwater system underlying Kirtland AFB.

- Determine if TCE detected in the perched aquifer downgradient of the Sewage Lagoons is attributable to a source upgradient of the lagoons.

- Provide information for future risk assessments, corrective measure studies, or determination of No Further Action status and future closure and/or presumptive remedies options.

One 477-foot (ft)-deep groundwater monitoring well was completed in a gravel zone of the perched aquifer downgradient of LF-268. The new well provides a downgradient monitoring point for the perched aquifer and is being monitored as part of the Groundwater Monitoring System Plan (USAF, 1997). To date, five groundwater sampling events have been conducted at the well. As part of the CAU assessment of perched and regional groundwater at Kirtland AFB (ST-105), one 512.3-ft-deep groundwater monitoring well was also completed in the regional aquifer downgradient of the Sewage Lagoons. The new well provides a downgradient monitoring point for the regional aquifer and has been sampled once under the Long-Term Groundwater Monitoring Program at Kirtland AFB (USAF, 1997). Future monitoring of the well will be conducted as part of the CAU assessment program.

This work was performed under the authority of the U.S. Army Corps of Engineers (USACE), Total Environmental Restoration Contract No. DACW45-94-D-0003. Fieldwork was conducted September–October 2000 and February–March 2001. Mr. Steven M. Rowe is the USACE Project Manager for this program. The Remedial Program Manager is Mr. Mark Holmes of Kirtland AFB, Environmental Management Branch, Restoration Section. Mr. Derek Johnson, P.E., of Foster Wheeler Environmental Corporation (Foster Wheeler) is the Delivery Order Manager, and Ms. Pamela Moss of Foster Wheeler is the Task Manager.

Pamela Moss
Task Manager, Foster Wheeler

Derek Johnson, P.E.
Delivery Order Manager, Foster Wheeler

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NATURAL RESOURCE INJURY

The Natural Resource Injury (NRI) program is a mechanism designed to restore natural resources injured by hazardous substance releases. The NRI program requires parties responsible for contamination and injuries to pay for losses. The NRI measures natural resource injuries and determines liability. An NRI demonstrates the nature of injury and any environmental pathways. It also measures the extent of injury and the necessary restoration measures and costs. In certain cases, restoration may include replacement or acquisition of equivalents for habitats, populations of wildlife, and human services including hunting, fishing, and recreational activities.

The NRI program is administered by various federal, state, and tribal trustees for fish, wildlife, other living resources, water, lands, and protected areas. Trusteeship is derived from treaties (federal and tribal), statutes (federal and state), and other regulations. Federal agencies responsible for land management include the National Park Service; United States Fish and Wildlife Service; Bureau of Land Management; United States Department of Agriculture, including the United States Forest Service; United States Department of Defense (DOD); and the United States Department of Energy.

The NRI program has established a restoration fund used to restore resources lost or injured by the release of hazardous materials and oil spills. The NRI program has been traditionally associated with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The CERCLA directed the Department of Interior to prepare rules for NRI at hazardous waste sites and for emergency incidents involving CERCLA substances. The DOD, under the proposed Range Rule, is currently considering the integration of the NRI with the Resource Conservation and Recovery Act (RCRA).

The CERCLA and RCRA provide tools to clean up contaminants from the environment. However, these cleanup programs focus on human health and environmental concerns related to human health. The United States Environmental Protection Agency (EPA), working with the states, primarily carries out the programs.

These programs do not concentrate on restoring natural resources, although cleanup may prevent further injuries to natural resources. The CERCLA and RCRA programs often do not deal with downstream- and offsite-contaminated sediments outside National Priority List and corrective action unit (CAU) boundaries. With regard to injuries to natural resources, the CERCLA states:

- Responsible parties are liable for compensatory damages for injuries to natural resources owned, managed, or controlled by government agencies or Indian tribes.
- Government agencies and Indian tribes may assess and collect the damages, acting on behalf of the public as trustees for the injured natural resources.
- Recovered damages must be used to restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources.

Therefore, the NRI program was established to ensure restoration and compensation where needed and appropriate.

Conclusions and Recommendations

Based on the above discussion and the site-specific conditions at the Kirtland Air Force Base (AFB), the well installation program is unlikely to require a NRI. The sampling and investigation derived waste management procedures emphasize no-impact practices to protect the environment by limiting the amount

of contamination that can enter the food chain. In addition, because of the arid climate there is a very low possibility of any surface water runoff that could damage resources. Because the terrestrial vegetation associations and wildlife found on and near the well installation sites are common and widely dispersed over Kirtland AFB, there would be no long-term impact to biodiversity. Restricted access and limited planned development at Kirtland AFB have benefited biological resources.

ENVIRONMENTAL JUSTICE CONSIDERATION

Presidential Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* requires identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations. For this report, the population within a 50-mile radius around Kirtland Air Force Base (AFB) was considered. Demographic and economic census information presented in *Addressing Environmental Justice Under the National Environmental Policy Act at Sandia National Laboratories/New Mexico* (SNL, 1997) was used as a primary reference.

The population living within a 50-mile radius of Kirtland AFB, which exceeds 49 percent of the state's population according to census data, was evaluated with regard to health and environmental effects from activities at the base. Similarly, low-income populations exceeding 21 percent of the general population were analyzed for effects from Kirtland AFB corrective measures activities.

Minority populations are considered to be *people of all color* except white people who are not Hispanic. In 1990, 49 percent (51 percent by 1996) of New Mexico's population was minority (Census, 1998). Neighborhoods having minority population percentages exceeding the minority population percentage of 49 percent (slightly more conservative than 51 percent) were identified on a block-by-block basis, with clusters of blocks known as block groups.

The Bureau of the Census characterizes individuals in poverty (low-income) as those whose incomes are less than the statistical poverty threshold. The threshold is a weighted average based on family size and age of family members. For instance, the 1990 census threshold for a family of four was based on a 1989 household income of $12,674 (Census, 1990). By 1996, the household income threshold rose to $16,036 (Census, 1997). In 1989, 21 percent of New Mexico's population was listed in poverty or designated as having low income (Census, 1996). By 1996, the estimated percentage stood at 24 percent (Census, 1997).

In this analysis, low-income block groups (same as above) occur where the low-income population percentage in the block group exceeds the New Mexico poverty percentage.

According to 1990 census data, approximately 280,360 minority individuals from an approximate total population of 609,500 reside in the 50-mile radius. This represents 46 percent of the total radius-of-influence (ROI) population (SNL, 1997).

Block groups having less than 21 percent low-income individuals were not considered to contain a large number of low-income neighborhoods because they contain less than or equal to the state average of 21 percent. Approximately 85,330 individuals were identified as low income, which represents approximately 14 percent of the ROI population.

This distribution of low-income population has a strong correlation to minority populations of Blacks, Native Americans, and Hispanics. For example, portions of the Pueblo of Isleta, south of the city, have high percentages of low-income individuals. To the southeast of Kirtland AFB, the rural Hispanic villages of Tajique, Torreon, and Escobosa are also low income. To the north of Kirtland AFB, high concentrations of low-income populations are located in the Pueblos of Jemez, Santo Domingo, and Cochiti, as well as in the rural Hispanic villages of La Cienaga and Jemez Springs. High concentrations of low-income populations occur west of Kirtland AFB, along the Rio Grande, in the predominately Hispanic South Valley neighborhoods. In addition, small pockets of low-income populations reflect the locations of Black neighborhoods such as the Kirtland Addition and South Broadway/East San Jose area.

The environmental and human health effects include potential impacts to surface and groundwater from contamination, restricted access by Native Americans to traditional cultural sites, biological resources, air quality, and noise. Since the environmental effects are localized at the site, there are no identified negative impacts that would pose adverse health effects on the general human populations. Based on the analysis of any potential impacts, there would be no disproportionately high or adverse impacts to minority and low-income populations. If there are any access restrictions to cultural sites, the U.S. Air Force and the local tribes will cooperatively develop processes to allow access during periods in which safety standards and practices are maintained. Accordingly, well installation operations would have no known disproportionately high or adverse effects to minority or low-income populations.

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ACRONYMS

AFB	Air Force Base
ARCH	Air Rotary Casing Hammer
AWG	American wire gauge
bgs	below ground surface
CAU	Corrective Action Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	cubic feet per second
DOD	Department of Defense
ECP	Environmental Compliance Program
EPA	United States Environmental Protection Agency
Foster Wheeler	Foster Wheeler Environmental Corporation
ft	feet/foot
GMSP	Groundwater Monitoring System Plan
gpm	gallons per minute
HGS	Hydrogeologic Services
IDW	investigation derived waste
lb	pound
MCL	Maximum Contaminant Level
µg/L	micrograms per liter
NMED	New Mexico Environment Department
NMSWMR	New Mexico Solid Waste Management Regulations
NRI	Natural Resource Injury
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
ROI	radius-of-influence

ACRONYMS (CONTINUED)

SDWA	Safe Drinking Water Act
SNL	Sandia National Laboratories
SOP	Standard Operating Procedure
TCE	Trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
TOC	top of casing
TRPH	total recoverable petroleum hydrocarbon
USAF	United States Air Force

1. INTRODUCTION

This report describes the monitoring well installation activities conducted at the Kirtland Air Force Base (AFB) Active Landfill (LF-268) and the perched and regional groundwater system (ST-105) at Kirtland AFB, New Mexico. The monitoring well installations were administered under the Kirtland AFB Environmental Compliance Program (ECP). The New Mexico Solid Waste Management Regulations (NMSWMR) (20 New Mexico Administrative Code 9.1, effective November 1995) require the implementation of a groundwater monitoring system in the uppermost aquifer underlying existing landfill facilities that closed on or after May 14, 1989.

One groundwater monitoring well was completed in a gravel zone of the uppermost perched aquifer downgradient from the Kirtland AFB Landfill to satisfy the NMSWMR. The new well is being monitored as part of the Groundwater Monitoring System Plan (GMSP) (USAF, 1997). Groundwater sampling events were conducted at the new well in September 2000, December 2000, February 2001, March 2001, and June 2001. Background concentrations and Assessment Monitoring Levels will be reported in the September 2001 GMSP report. One groundwater monitoring well was also completed in the regional aquifer downgradient from the Sewage Lagoons. The first sampling event at this well was conducted under the Long-Term Groundwater Monitoring (LTM) Program (USAF, 1997) in March 2001. Future monitoring will be included as part of the Corrective Action Unit (CAU) assessment of the perched and regional groundwater system at Kirtland AFB. Both wells were installed in accordance with procedures presented in the approved Monitoring Well Installation Work Plan (USAF, 2000a), Work Plan Addendum (USAF, 2000b), and Kirtland AFB Base-Wide Plans (USAF, 1996).

1.1 Background

Kirtland AFB established a GMSP for the Kirtland AFB Landfill in response to a directive from the New Mexico Environment Department (NMED) Solid Waste Bureau dated September 9, 1994, since portions of the landfills closed after May 14, 1989. Previously, nine wells had been installed at the landfill as part of the GMSP. The NMED Solid Waste Bureau required the installation of a new downgradient monitoring well in the perched aquifer in a letter dated December 3, 1998. The requirement was in response to the revised groundwater flow direction determined after installation of wells KAFB-0313 and -0314, which indicated that well KAFB-0310 was not located in a downgradient location and another downgradient monitoring well was necessary. The new well was constructed to monitor the uppermost aquifer to determine the impact of the facility on groundwater quality and will be sampled as part of the GMSP. The data collected during the well installation were also used to clarify the hydrogeology at LF-268.

Sandia National Laboratories (SNL) recently conducted hydrogeologic studies for the Department of Energy and Kirtland AFB that discovered a perched groundwater zone containing levels of trichloroethene (TCE) exceeding the New Mexico Water Supply Regulations standard and federal Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL) of 5 micrograms per liter (µg/L) (SNL, 1996; 1998). Concentrations of TCE exceeding the SDWA MCL have also been detected in the perched aquifer at Kirtland AFB. The completion of a well in the perched aquifer upgradient of the Sewage Lagoons was planned to provide additional data on TCE detected in the perched groundwater zone and determine if the contamination is due to a source upgradient of the lagoons. However, a perched zone was not encountered during drilling of the new well, and the well was completed in the regional aquifer downgradient of the lagoons. As part of the CAU assessment, the new well will better define and characterize the groundwater in the regional aquifer as well as help determine groundwater flow direction onsite.

1.2 Overview of Report

This report addresses all major issues relating to the monitoring well installations at LF-268 and perched and regional groundwater system (ST-105). The report is divided into the following sections:

- Section 1 presents an introduction to the project, summarizes background information for the GMSP and CAU assessment, and provides an overview of the report.
- Section 2 describes the monitoring well installation activities conducted at LF-268 and ST-105.
- Section 3 describes the segregation, characterization, documentation, and handling of investigation derived waste (IDW) generated as a result of monitoring well installation activities.

Six appendices accompany this report. Appendix A presents the lithologic boring logs for each monitoring well location. Appendix B contains the well construction diagrams and Appendix C contains the geophysical logs. Appendix D presents the well development logs and Appendix E contains the waste characterization analytical results. Appendix F includes the Daily Quality Control Reports documenting project activities.

2. MONITORING WELL INSTALLATION PROGRAM

2.1 Introduction

To support the GMSP at LF-268, groundwater monitoring well KAFB-0315 was completed downgradient and to the east of the Kirtland AFB Landfill (Figure 2-1). The well was installed to a total depth of 477 feet (ft) below ground surface (bgs) in a gravel zone of the uppermost perched aquifer and provides a downgradient monitoring point for the first underlying aquifer. In addition, geologic data gathered during the well installation were used to more clearly define the hydrogeology beneath the landfill.

As part of the CAU assessment of perched and regional groundwater at Kirtland AFB (ST-105), a monitoring well was installed in the regional aquifer downgradient of the Sewage Lagoons (Figure 2-2). The well was installed to a total depth of 512.3 ft bgs. Soil samples and geologic data collected during the well installation will be used to define the hydrogeology in the area and characterize TCE and nitrate contamination in the soils overlying the regional aquifer.

2.2 Monitoring Well Installation

The monitoring well installations were completed in accordance with Base-Wide Plan Standard Operating Procedure (SOP) A1.8, Monitoring Well Installation (USAF, 1996), Work Plan Addendum (USAF, 2000b), and NMED criteria. Final well construction diagrams for the completed wells are presented in Appendix B. Continuous soil logging and well development were completed in accordance with SOP A1.7, Borehole and Sample Logging (USAF, 1996). Appendix A contains the lithologic boring logs and Appendix D contains the well development logs. Geophysical logging using the neutron, natural gamma ray, induction, and gamma gamma density tools was completed at the new well locations. Geophysical logging was performed in accordance with SOP A3.8.2, Borehole and Geophysical Logging (USAF, 1996). The geophysical logs for the wells are presented in Appendix C. The coordinates and elevations for the wells were established as amended from SOP A3.15, Land Surveys (USAF, 1996). The coordinates were established to the closest 0.10 ft and referenced to the State Plane Coordinate System using the North America Datum for 1983. The ground elevation of each well and the elevation of the top of the well riser were determined to the nearest 0.10 ft. The positions and coordinates of permanent points within the control traverse were identified on a site map and tied to the nearest site benchmark.

Well KAFB-0315 was installed using a Speedstar 30K Air Rotary Casing Hammer (ARCH) drill rig; KAFB-0507 was installed using a Dresser ARCH drill rig. Both rigs were equipped with a two-stage, twin-screw, 1,000-cubic-feet-per-second (cfs), 350-pound-per-square-inch on-board air compressor. A supplemental 900-cfs compressor was used to assist drilling the 11 3/4-inch-diameter casing and when drilling in deep saturated zones.

2.2.1 KAFB-0315

The borehole at KAFB-0315 was drilled using 11 3/4-inch casing to a depth of 190 ft bgs. A 9 5/8-inch drive casing was telescoped through the larger diameter casing and advanced from 190 ft bgs to the total borehole depth of 481 ft bgs. Soil cuttings were collected from the cyclone and logged every 5 to 10 ft or when a change in lithology occurred (Appendix A). Water was first encountered in the borehole at a depth of approximately 405 ft bgs. The water level in the boring was allowed to stabilize for 14 hours and was then measured at 398.25 ft bgs. Drilling was continued to a depth of 429 ft bgs. After allowing the hole to stabilize for 1 hour, 25 minutes, a water level measurement was attempted; however, no water was present in the boring. Drilling was continued to a depth of 445 ft bgs. The hole was left to stabilize for

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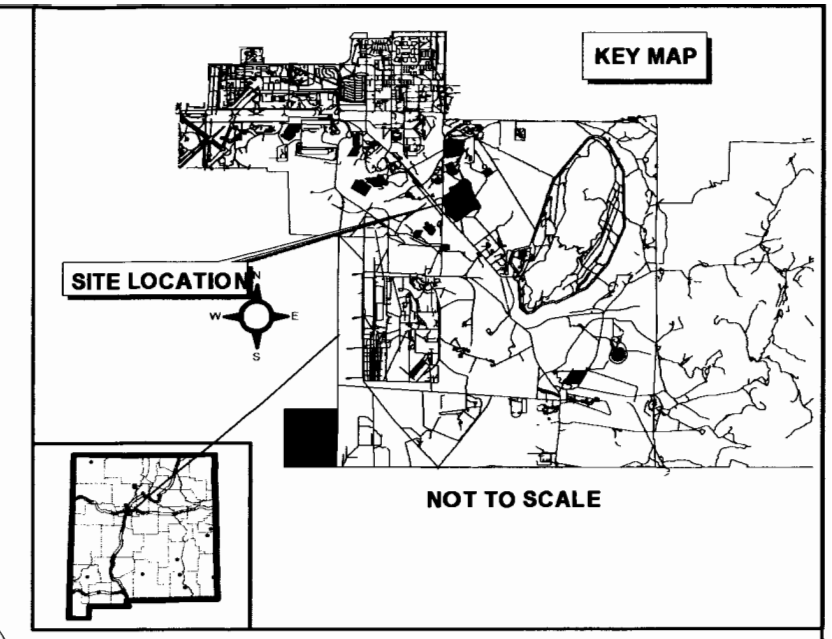
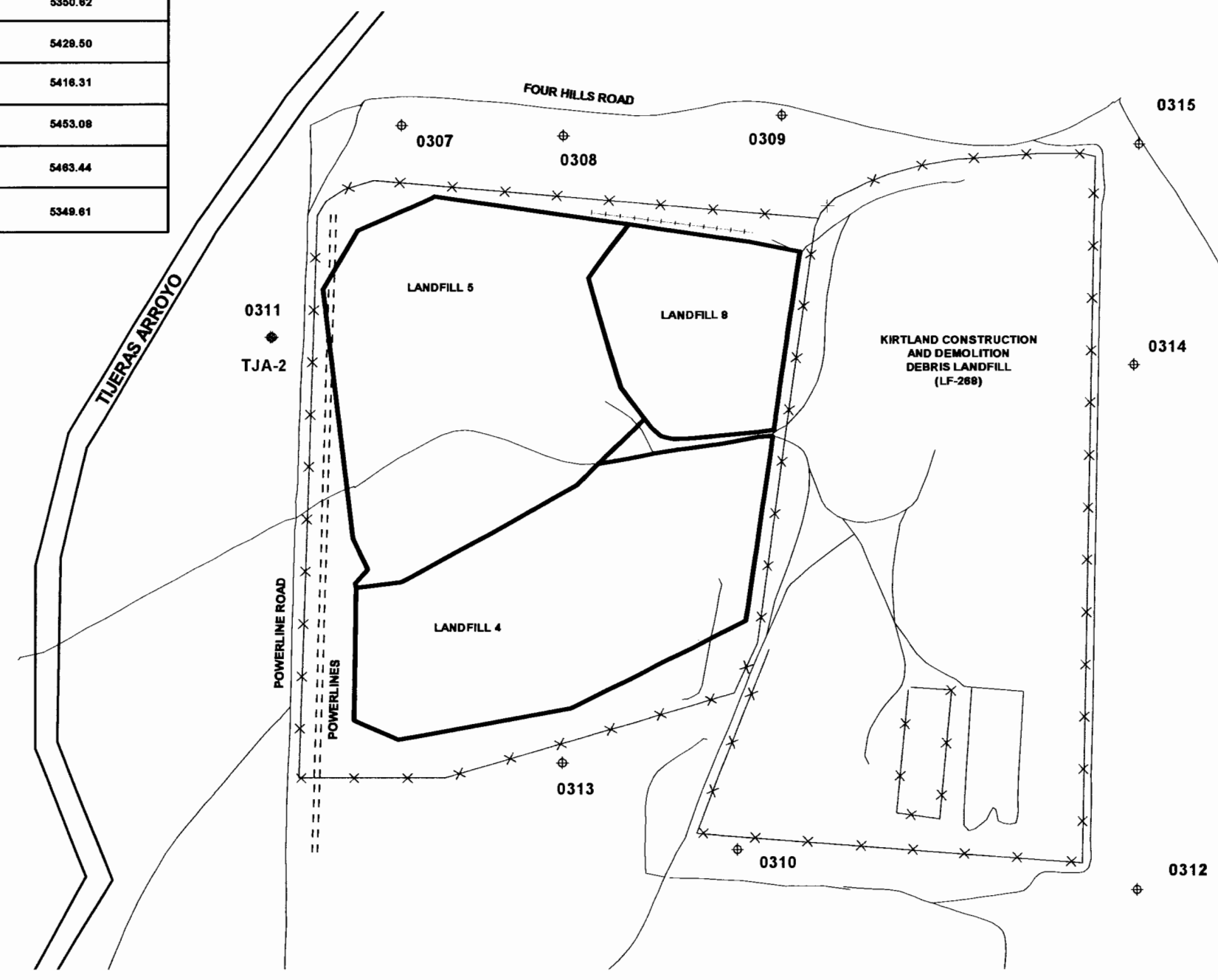
WELL	NORTHING	EASTING	TOP OF CASING ELEVATION (FT)
0307	1469370.79	415788.73	5361.86
0308	1469355.72	416372.33	5376.98
0309	1469407.71	417149.66	5409.13
0310	1466797.27	416996.42	5413.81
0311	1469620.30	415335.94	5350.62
0312	1466654.49	418411.09	5429.50
0313	1467106.12	416371.23	5416.31
0314	1469521.17	418395.37	5453.08
0315	1469305.61	418413.54	5463.44
TJA-2	1469620.36	415343.11	5349.61





NOTES:

MAP SOURCE IS SURVEY PERFORMED BY HALL ENGINEERING CO., INC., FEBRUARY 1997 AND SEPTEMBER 1996.
COORDINATES FOR WELL LOCATIONS ARE NEW MEXICO STATE PLANE GRID CENTRAL ZONE.

N
W E
S

500 0 500 1000 Feet

1 inch = 500 ft

LEGEND

- MONITORING WELL (PERCHED AQUIFER)
- MONITORING WELL (REGIONAL AQUIFER)
- ARROYO
- ROAD
- FENCE
- LANDFILL BOUNDARY

DATE: 6-27-01	FILE: LTM.APR

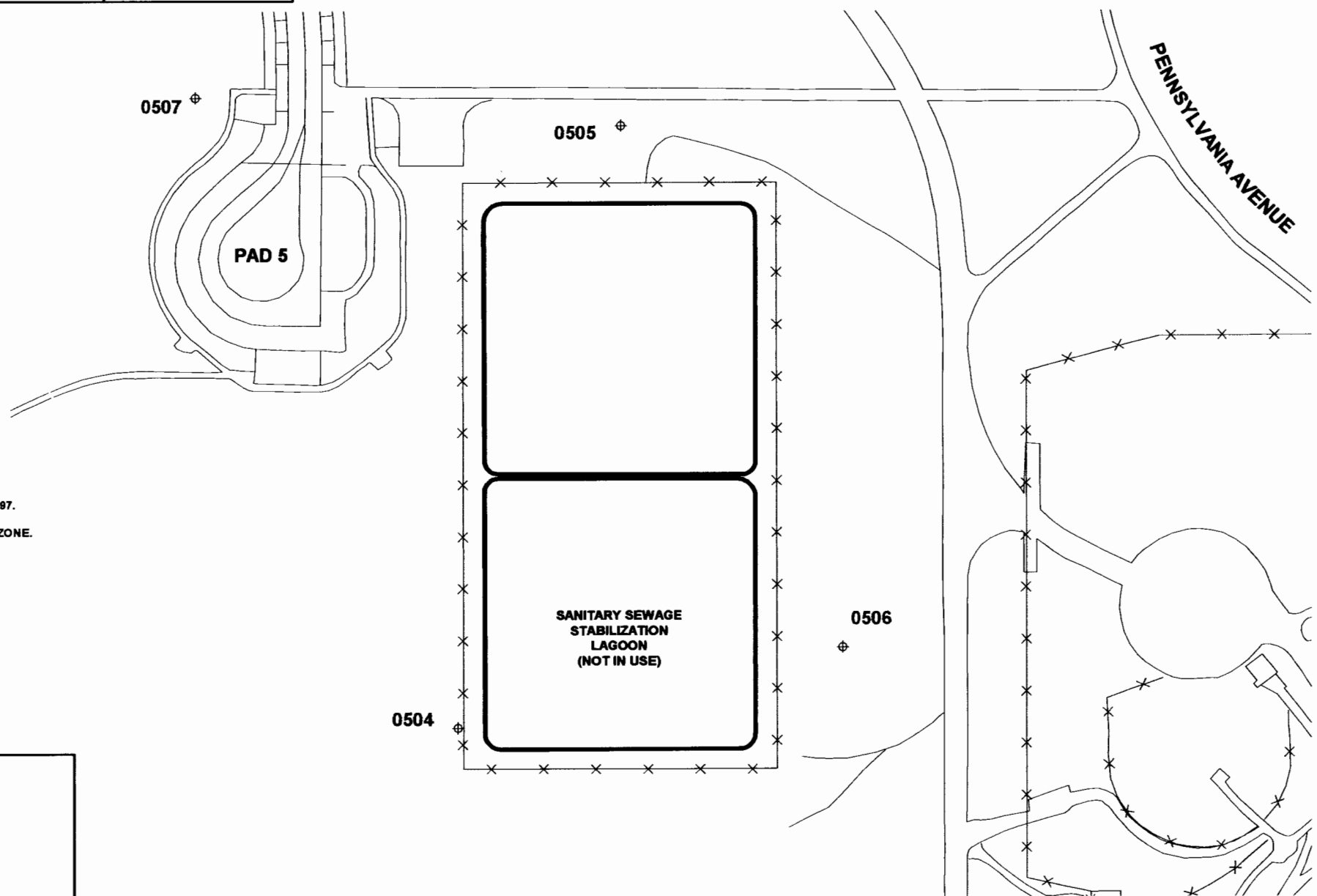
WELL LOCATION MAP FOR KIRTLAND AFB LANDFILL (LF-268)

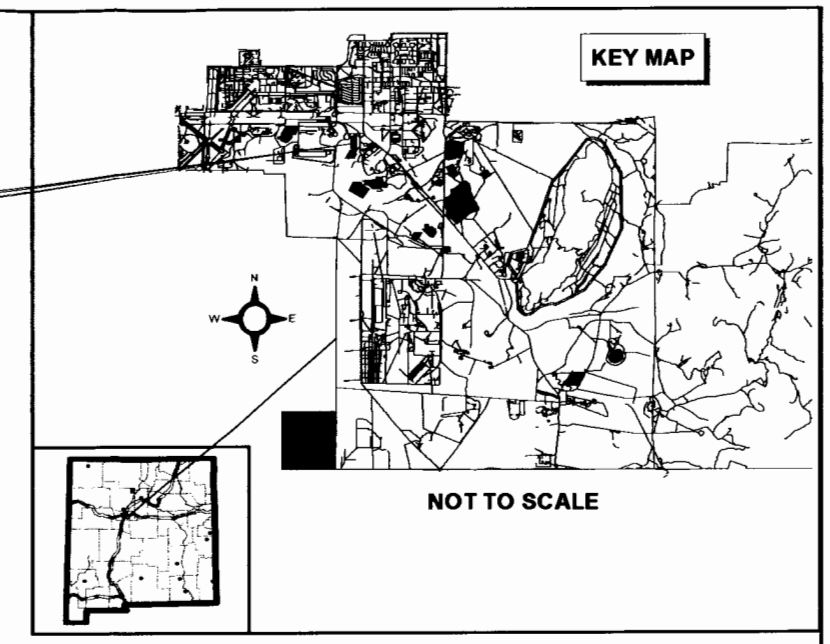
KIRTLAND AIR FORCE BASE

WELL INSTALLATION REPORT

FIGURE 2-1

WELL	NORTHING	EASTING	TOP OF CASING ELEVATION (FT)
0504	1468483.37	406086.89	5355.20
0505	1468786.69	406436.61	5360.14
0506	1468687.94	406914.23	5360.80
0507	1469856.46	405526.58	5356.15





NOTES:

MAP SOURCE IS SURVEY PERFORMED BY HALL ENGINEERING CO., INC., FEBRUARY 1997. COORDINATES FOR WELL LOCATIONS ARE NEW MEXICO STATE PLANE GRID CENTRAL ZONE.

N W E S

300 0 300 600 Feet

1 inch = 300 ft

LEGEND

- MONITORING WELL (PERCHED AQUIFER)
- MONITORING WELL (REGIONAL AQUIFER)
- ROAD
- FENCE
- LANDFILL BOUNDARY

DATE: 6-27-01	FILE: LTM.APR

WELL LOCATION MAP FOR KIRTLAND AFB CAU ASSESSMENT (ST-105)

KIRTLAND AIR FORCE BASE

WELL INSTALLATION REPORT

FIGURE 2-2

15 hours, at which time the depth to water was measured at 431 ft bgs. Because the water level did not rise as anticipated, an additional 20 ft was drilled to a depth of 465 ft bgs. After 20 minutes had elapsed, the water level was measured at 420 ft bgs. Three hours and 10 minutes after drilling had stopped, the water level was measured at 454 ft bgs. Perched aquifer water level data from well KAFB-0314, along with surface elevations from the site, were used to determine the gradient of the pieziometric surface in the aquifer. Based on these data, the depth to the perched aquifer was determined to be approximately 450 ft bgs, indicating that the wet zones encountered at shallower depths in the boring were probably saturated zones that contained an insufficient amount of water for productive monitoring. Southwest Geophysical performed neutron and natural gamma logging of the borehole (Appendix C); the results of the geophysical logging confirmed the presence of a perched zone approximately 454 ft bgs. Drilling was continued to a depth of approximately 481 ft bgs. Two hours after drilling was completed the water level was measured at 461 ft bgs.

On September 6, 2000, 5-inch-diameter, flush-threaded Schedule 80 polyvinyl chloride (PVC) well casing was installed to a total depth of 477 ft bgs. Twenty-five ft of 0.01-inch Schedule 80 slotted well screen was constructed from 447 to 472 ft bgs with a 5-ft sump extending below the screen. Centralizers were placed at the bottom and top of the screened interval. However, when lowering the casing the centralizer at the top of the screen caused problems and was removed. A filter pack of Colorado silica sand was placed using a tremie pipe and brought up to a depth of 442 ft bgs, 5 ft above the top of the screen. A 25-ft bentonite seal was installed and hydrated approximately every 2 ft. The remaining length of the annulus was filled with grout. The first three lifts of grout each consisted of three 50-pound (lb) bags of Quick-Grout®, one 94-lb bag of Type II cement, and approximately 85 gallons of water. The remaining lifts consisted of a Quick-Grout®/water mixture. The grout was injected using a tremie pipe. Grouting to the surface was completed using a cement/bentonite mixture and the well was left to set before beginning surface completion. Groundwater was measured at 444.5 ft bgs upon completion of the well. A detailed diagram of the well construction is provided in Appendix B.

On September 21, 2000, Hydrogeologic Services (HGS) began development of well KAFB-0315. Prior to bailing the well, the water level was measured at 446.5 ft bgs. After bailing 100 gallons of water, the water level was measured at 446.25 ft bgs. A Grundfos 5 SQ-450, 1-horsepower submersible pump was installed in the well at a depth of 470 ft bgs. Water was pumped at an average rate of 4 gallons per minute (gpm) for 45 minutes. Water level measurements were monitored and never fell below 456.6 ft bgs. The water level measured at 454 ft bgs when the pump was turned off. Fifteen minutes later, the water level rose to 448 ft bgs.

On September 26, 2000, HGS completed the development KAFB-0315. Five hundred gallons were purged over a 3-hour, 20-minute period. The rate of pumping ranged from 2.8 to 4.5 gpm and the water level was measured at a depth of 446 ft bgs. Stable water quality parameters were collected and results are shown in Appendix D.

On September 28, 2000, Southwest Geophysical Services performed the remaining geophysical tests at KAFB-0315. These tests measured induction using conductivity and resistivity technology, and 4 Pi (gamma gamma) density. All geophysical logging was performed in accordance with the Base-Wide Plans, SOP A3.8.2, Borehole and Geophysical Logging (USAF, 1996).

Stratigraphic correlation between boring and geophysical logs shows that well KAFB-0315 is screened across the base of the sand unit that contains perched groundwater, while both KAFB-0313 and KAFB-0314 are screened in the middle of this same sand unit. Although the zone of completion in KAFB-0315 is lower stratigraphically and in elevation than KAFB-0314 and KAFB-0313, all three wells are screened in an interval starting at or near the top of the water table in the perched aquifer. Therefore, these wells are all screened in the upper portion of the perched aquifer.

2.2.2 KAFB-0507A

KAFB-0507A was drilled with an ARCH drill rig using 9 5/8-inch drive casing to a depth of 525 ft bgs. This well was originally planned for completion in the perched aquifer, but was completed as a regional aquifer monitoring well instead. Based on samples obtained during drilling, a perched aquifer that could be monitored was not encountered nor was a saturated zone above the regional aquifer indicated by borehole geophysical logs. Cuttings were collected from the cyclone and logged every 5 to 10 ft or when a change in lithology occurred (Appendix A). Water injection was intermittently used during the drilling process to clear cuttings from the drive casing and discharge line. Water was injected several times between 400 ft bgs and the total depth of the borehole for this purpose, making it difficult to determine the exact depth at which water was encountered. Upon reaching the estimated total depth of 525 ft bgs, the borehole was left to stabilize for approximately 106 hours as a result of activity at Pad 5. At that point, a water level measurement was recorded at 488 ft bgs. On September 22, 2000, 5-inch-diameter, flush-threaded Schedule 80 PVC well casing was installed to a total depth of 515 ft bgs. Twenty-five ft of 0.01-inch Schedule 80 slotted well casing was constructed from 510 to 485 ft bgs with a 5-ft sump extending below the screen. A filter pack of 10/20 Colorado silica sand was placed using a tremie pipe to a depth of 477 ft bgs, 7 ft above the screen. A 30-ft bentonite seal was installed and hydrated approximately every 2 ft. The seal was allowed to set for 2 hours and the remaining length of the annulus was filled with grout. The first three lifts of grout consisted of three bags of Quick-Grout® and one bag of cement. A total of seven lifts of grout were installed. On September 24, 2000, 26 hours after the seventh lift of grout was placed, approximately 45 ft of grout was noted inside the well casing. It is assumed that because of the coarse lithology surrounding the borehole the grout spread into the formation, around the bentonite plug, and seeped through the sand pack into the well screen. Completion of the well was continued and 11 additional lifts of grout were added to the annulus. Upon completion of the well, the grout was observed visibly dropping in the annulus.

Because of grout intrusion through the well screen, KAFB-0507A was abandoned on February 13, 2001. The grout in the well was determined at 460 ft bgs inside the well casing and 55 ft bgs in the annulus. The top joint of the well casing was removed and approximately 700 gallons of grout was pumped into the borehole. Type I Portland cement was added to the Quick-Grout® in the upper 55 ft of the hole.

2.2.3 KAFB-0507

KAFB-0507 was drilled using 9 5/8-inch casing to a depth of 520 ft bgs. The cuttings were moist at approximately 490 ft bgs and wet at 495 ft bgs. Upon reaching total depth of 520 ft bgs the borehole was left to stabilize overnight. Southwest Geophysical performed neutron and natural gamma ray surveys in order to interpret subsurface conditions and avoid the events that occurred during the installation of KAFB-0507A. The neutron log indicated groundwater at 491 ft bgs with variable saturation to 448 ft bgs. No perched zone was observed. Based on the coarse lithology encountered in the borehole and lack of a zone or thin layer of fine silt or clay, a 50-ft bentonite plug was installed in accordance with the Work Plan Addendum (USAF, 2000b).

On February 14, 2001, the well was constructed using 4-inch-diameter Schedule 80 PVC well casing to a total depth of 512.3 ft bgs. Twenty-five ft of 0.01-inch slotted screen was installed from 507.3 to 482.3 ft bgs with a 5-ft sump extending below the screen. Centralizers were placed at the bottom and top of the screen and every 40 ft for the length of the well casing. The sand pack was placed to a depth of 470 ft bgs. The entire 50-ft bentonite plug was not placed because bentonite-pellet bridging occurred in the drive casing. Seal placement was discontinued at 440 ft bgs and the remaining portion of the annulus was filled with grout. The first lift of grout, which consisted of eight bags of Quick-Grout® and filled approximately 62 ft of the annulus, was left to set overnight. On February 15th, a 33 percent loss of grout for the first lift was determined. As a result, the next lift was increased by only 50 percent to fill

approximately 90 ft of annulus. After the second lift had set overnight, measurements collected on February 16 indicated no grout loss. The final lift was then completed to within 50 ft of the surface with Quick-Grout®. Grouting to the surface was completed using a cement-bentonite grout, and the well was left to set for approximately 5 hours before beginning surface completion. Upon completion of the well, groundwater was measured at 495.4 ft bgs. A detailed diagram of the well construction is provided in Appendix B.

On February 23, 2001, Water Development Corporation began well development. Swabbing and bailing activities were performed for approximately 1 hour. The purge water was relatively clear with only slight turbidity observed. After swabbing and bailing, a model 10 SQ/SQE-380 Grundfos pump was deployed in the well. However, the pump was not adequate at this depth and development was postponed until a more powerful pump could be obtained. On March 21, 2001, well development was completed using a 5 SQ-450 Grundfos pump and pump rig with 470 ft of No. 10 American wire gauge (AWG) wire and 50 ft of No. 12 AWG wire. Depth to water measured before pumping commenced was 495.40 ft below the top of casing (TOC). The well was pumped at a rate of approximately 5 gpm and stable water quality measurements were collected (Appendix D). A total of 385 gallons was purged during development. The water level measured 2 hours after the pump was turned off was 495.51 ft below TOC.

On March 1, 2001, Southwest Geophysical Services performed the remaining geophysical surveys at KAFB-0507. The logging tools used were the induction, gamma-gamma density, natural gamma ray, and neutron. All geophysical logging activities were performed in accordance with the Base-Wide Plans, SOP A3.8.2, Borehole and Geophysical Logging (USAF, 1996).

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3. INVESTIGATION DERIVED WASTE MANAGEMENT

3.1 Introduction

The IDW generated during the monitoring well installation program consisted of drill cuttings and water from purging and development of the well (Table 3-1). Each material was handled in a manner consistent with the Monitoring Well Installation Work Plan (USAF, 2000a) and the Base-Wide IDW Management Plan (USAF, 1996).

Table 3-1. Investigation Derived Waste Quantities

Well No.	Soil Cuttings (cu yd)	Development Water (gallons)
KAFB-0315	10.74	788
KAFB-0507A	9.82	NA
KAFB-0507	9.73	385

cu yd cubic yard
NA Not applicable

3.2 Drill Cuttings

3.2.1 KAFB-0315 and KAFB-0507A

Approximately 9.32 cubic yards of vadose zone drill cuttings and approximately 1.42 cubic yards of saturated zone soils were generated during the installation of KAFB-0315. Approximately 9.26 cubic yards of vadose zone drill cuttings and approximately 0.56 cubic yards of saturated zone soils were generated during the installation of KAFB-0507A. In accordance with the Monitoring Well Installation Work Plan (USAF, 2000a) and the Base-Wide IDW Management Plan (USAF, 1996), shallow pits were excavated and soil cuttings from the borehole were placed on 8-mil plastic sheeting. The cuttings were labeled with an indelible, nonclassified waste label indicating the date of accumulation, source of material, and the generator contact name and telephone number. Toxicity Characteristic Leaching Procedure (TCLP) analytical results for soil samples collected from each cuttings pit were provided to the Kirtland AFB Environmental Restoration Branch, Environmental Management Division for review. Upon approval, the cuttings were spread in the vicinity of each borehole location. The bermed soil in each area was graded to conform to the surrounding ground surface in accordance with NMED criteria. The soil cutting TCLP results are presented in Appendix E.

Plastic sheeting placed under the drill cuttings at the boreholes was taken to the Kirtland AFB Landfill for disposal. Soil cuttings used for field screening and visual classification were placed with the drill cuttings generated during drilling activities.

3.2.2 KAFB-0507

Approximately 9.26 cubic yards of vadose zone drill cuttings and approximately 0.47 cubic yards of saturated zone soils were generated during the installation of KAFB-0507. In accordance with the Monitoring Well Installation Work Plan (USAF, 2000a) and the Base-Wide IDW Management Plan (USAF, 1996), a shallow pit was excavated and soil cuttings from the borehole were placed on 8-mil plastic sheeting. The cuttings were labeled with an indelible, nonclassified waste label indicating the date of accumulation, source of material, and the generator contact name and telephone number. TCLP analytical results for soil samples collected from the cuttings pit were provided to the Kirtland AFB

Environmental Restoration Branch, Environmental Management Division for review. The base granted permission to Foster Wheeler Environmental Corporation to spread the cuttings in the vicinity of the borehole location. The bermed soil was graded to conform to the surrounding ground surface in accordance with NMED criteria.

Plastic sheeting used to store drill cuttings at the borehole was taken to the Kirtland AFB Landfill for disposal. Soil cuttings used for field screening and visual classification were placed with the drill cuttings generated during drilling activities.

3.3 Monitoring Well Development and Purge Water

3.3.1 KAFB-0315

Well development fluids were placed into a 500-gallon plastic tank adjacent to KAFB-0315. The tank was labeled with a nonclassified waste label that included the date of accumulation, tank contents and source, and generator contact name and telephone number. The groundwater analytical results were used to characterize the well development and purge water. Analytical results were provided to the Kirtland AFB Environmental Restoration Branch, Environmental Management Division for review. The base contacted NMED Groundwater Quality Bureau for approval to discharge the well development and purge water to the ground surface.

3.3.2 KAFB-0507

Well development fluids were placed into a 1,000-gallon plastic tank adjacent to KAFB-0507. The tank was labeled with a nonclassified waste label that included the date of accumulation, tank contents and source, and generator contact name and telephone number. The groundwater analytical results were used to characterize the well development and purge water. Analytical results were provided to the Kirtland AFB Environmental Restoration Branch, Environmental Management Division for review. The base contacted NMED Groundwater Quality Bureau for approval to discharge the well development and purge water to the ground surface.

On the second day of installation activities at KAFB-0507, a leak was discovered in the hydraulic line on the drill rig while performing the daily inspection. Soil berms were constructed on the plastic sheeting underlying the rig in order to contain the oil leak, and vermiculite was spread over the area. A bucket was also used to contain the hydraulic fluid leak. No hydraulic fluid was released to the actual surface soils at the site. Upon the completion of installation activities, the waste fluids and berm soils were placed in a drum with a nonclassified waste label indicating the date of accumulation, source of material, and the generator contact name and telephone number. Analytical results for a soil sample collected from the drum indicated a total recoverable petroleum hydrocarbon (TRPH) concentration of 4,800 milligrams per kilogram. As a result of the elevated TRPH concentration, the Kirtland AFB Hazardous Waste Contractor transported the drum to a permitted waste disposal facility. The plastic used to line the ground under the rig was removed from the site by Water Development Corporation for disposal.

3.4 Equipment Decontamination of Water and Sediment

Large pieces of drilling equipment (drill casing, drill stem, etc.) were decontaminated prior to beginning work, between uses, and prior to the equipment leaving the base. Decontamination was performed with a high-pressure steam cleaner at a decontamination pad located near production well 9. All water was allowed to evaporate from the decontamination pad as it was generated. Sediments from the decontamination pad were contained on a plastic decontamination pad liner, bundled in the liner, and

removed from the base by Water Development Corporation upon completion of well installation activities.

Decontamination of the water level indicator and hand-sampling equipment was performed onsite. The nominal amount of water derived from these activities was either poured into the soil cutting pits or the purge water tanks at the sampling location.

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USAF, 2000a (August). *Monitoring Well Installation Work Plan For Kirtland Air Force Base Landfill (LF-268) and CAU Assessment, Perched and Regional Groundwater (ST-105).* Kirtland Air Force Base, New Mexico.

USAF, 2000b (November). *Monitoring Well Installation Work Plan Addendum for Kirtland Air Force Base Landfill (LF-268) and CAU Assessment, Perched and Regional Groundwater (ST-105).* Kirtland Air Force Base, New Mexico.

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APPENDIX A

APPENDIX A

Lithologic Boring Logs

HTRW DRILLING LOG

DISTRICT Omaha	Speedstar 30K Air Rotary Casing Hammer Drill Rig	HOLE NUMBER KAFB-0315
1.COMPANY NAME Foster Wheeler Environmental	2.DRILL SUBCONTRACTOR Water Develpement Corporation	SHEET 1 OF SHEETS 50
3.PROJECT 5155.0030.0001 A1200	4.LOCATION KAFB Active Landfill (LF-268)	
NAME OF DRILLER Marion Phillips	6.MANUFACTURER'S DESIGNATION OF DRILL Sppedstar 30K Air Rotary Casing Hammer Drill Rig	
7.SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8.HOLE LOCATION NE of LF-268	
11' 3/4" steel casing from surface to 190' bgs 9' 5/8" steel casing from 190' to 481' (TD)	9.SURFACE ELEVATION	
9' 5/8" drill bit	10.DATE STARTED 8/28/00	11.DATE COMPLETED 9/8/00
12.OVERBURDEN THICKNESS	15.DEPTH GROUNDWATER ENCOUNTERED GW initially encountered at 405'. Geophysical logs show perched zone at 454'.	
13.DEPTH DRILLED INTO ROCK N/A	16.DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED 2 hours after drilling completed, DTW 455.5' bgs	
14.TOTAL DEPTH OF HOLE 481 feet	17.OTHER WATER LEVEL MEASUREMENTS (SPECIFY) a)47 hrs after drilling completed, DTW 445' bgs b)89 hrs after drilling completed, DTW 443'	

18.GEOTECHNICAL SAMPLES N/A	DISTURBED	UNDISTURBED	19.TOTAL NUMBER OF CORE BOXES N/A			
20.SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21.TOLAL CORE RECOVERY %
No samples were collected during drilling	N/A	N/A	N/A			
22.DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23.SIGNATURE OF INSPECTOR		
		KAFB-0315				

LOCATION SKETCH/COMMENTS

SCALE

PROJECT 5155.0030.0001 A1200	HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0315

PROJECT: 5155.0030.0001 A1200

INSPECTOR: Jill Jefferson

SHEET 2 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Medulm Brown Sandy SILT, dry (ML)					
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9	Same as Above					

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 3 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	11						
	12						
	13						
	14						
	15	Medium brown Sandy SILT with gravel, dry, coarse sand, (ML)					
	16						
	17						
	18						
	19	Same as Above					

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0315

PROJECT: 5155.0030.0001 A1200

INSPECTOR: Jill Jefferson

SHEET 4 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	21	light brown Silty SAND with gravel (<1") (SM)					
	22						
	23						
	24						
	25	Silty SAND with lots of gravel (<1/4") (SM)					
	26						
	27						
	28						
	29	Same as Above					

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 5 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	31	Same as above					
	32	reddish brown Sandy SILT, some fine gravel, some moisture (ML)					
	33						
	34						
	35	Tan Sandy SILT, less moisture, gravel (<1") (ML)					
	36						
	37	reddish brown SILT with some fine Sand, very little gravel, little moisture (ML)					
	38						
	39						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 6 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		reddish brown SILT, with little Sand, some moisture, very little gravel (ML)					
	41						
	42						
	43						
	44						
	45	Same as above					
	46	reddish brown SILT with Sand and gravel (<1/4"), less moisture (ML)					
	47						
	48	SILT and GRAVEL, light brown, dry (GP-ML)					
	49						

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 7 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	51	reddish brown SILT and GRAVEL (<1/2") (ML-GP)					
	52						
	53						
	54						
	55	reddish brown SILT with some fine Sand and gravel (<1/4") (2%) (ML)					
	56						
	57						
	58						
	59	Same as Above					

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 8 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	61	reddish brown SILT with some fine Sand and gravel (<1/2"), very little moisture (ML)					
	62						
	63						
	64						
	65	reddish brown SILT with fine sand, NO gravel, very little moisture (ML)					
	66						
	67	light brown SILT and GRAVEL with coarse Sand (ML-GP)					
	68						
	69						

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 9 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	71						
	72						
	73						
	74						
	75	reddish brown poorly graded GRAVEL with Silt and Sand(<1.5) (GP-GM)					
	76						
	77						
	78	Same as above but gravel size is smaller (GP-GM)					
	79						

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 10 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		reddish brown SILT with Sand and Gravel (<1/4"), little moisture (ML)					
	81						
	82						
	83						
	84						
	85	reddish brown SILT, little moisture, very little gravel (1" in size) (ML)					
	86						
	87						
	88						
	89	Same as Above					

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 11 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		GRAVEL (<1") with Silt and Sand (GP-GM)					
	91						
	92						
	93						
	94						
	95	Gravelly SILT with Sand, dry, light brown in color (ML)					
	96						
	97						
	98						
	99	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 12 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	101						
	102						
	103						
	104						
	105	poorly graded GRAVEL with Sand and Silt (GP-GM)					
	106						
	107	reddish brown gravelly SILT (ML)					
	108						
	109						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 13 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		reddish brown Sandy SILT with gravel (<1"), little moisture (ML)					
	111						
	112						
	113						
	114						
	115	reddish brown SILT with very little gravel and little moisture (ML)					
	116						
	117						
	118						
	119	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 14 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	121	reddish brown SILT, very little fine Sand little moisture (ML)					
	122						
	123						
	124						
	125	Same as above with a bit more moisture (ML)					
	126						
	127						
	128						
	129						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 15 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		reddish brown Sandy SILT, with some gravel, more moist (ML)					
	131	light brown Sandy SILT with gravel (<1/2"), less moist (ML)					
	132						
	133						
	134						
	135	reddish brown Sandy SILT with little gravel, little moisture (ML)					
	136						
	137						
	138						
	139						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 16 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	141	ligth brown gravelly SILT, with Sand, dry (ML)					
	142						
	143						
	144						
	145	poorly graded GRAVEL with Silt and Sand (GP-GM)					
	146						
	147						
	148						
	149						

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 17 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		poorly graded GRAVEL reddish brown Silt, and some Sand, little moisture (GP-GM)					
	151						
	152						
	153						
	154						
	155	tan Sandy SILT (ML)					
	156						
	157						
	158						
	159	Same as Above					

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 18 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	161	Same as above					
	162	reddish brown Clayey SILT, low plasticity (ML-CL)					
	163						
	164						
	165	reddish brown SILT with some Clay, no plasticity (ML-CL)					
	166						
	167						
	168						
	169	Same as Above					

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 19 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		reddish Brown SILT, little moisture (ML)					No clay, No gravel
	171						
	172						
	173						
	174						
	175	Gravelly SILT with Sand, dry (ML)					
	176						
	177						
	178						
	179	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0315

PROJECT: 5155.0030.0001 A1200

INSPECTOR: Jill Jefferson

SHEET 20 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Medium Brown Sandy SILT with little gravel, slightly moist (ML)					
	181						
							some clay was present between 180 and 185'
	182						
	183						
	184						
	185						
		light reddish brown Sandy SILT with some gravel, very slightly moist (ML)					
	186						
	187						
	188						
	189						
		Same as Above					

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 21 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		gravelly SILT with some Clay and Sand, Little moisture (ML)					
	191						
	192						
	193						
	194						
	195	gravelly SILT and some Sand, light brown in color, dry (ML)					
	196						possible conglomerate formation
	197						
	198						
	199	Same as Above					

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 22 OF SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	201	reddish Brown CLAY and SILT, a little moisture, low plasticity (CL)					
	202	reddish brown SILT with little Gravel and some Sand (ML)					
	203						
	204						
	205	reddish brown gravelly SILT, gravel <1" in size, some finew Sand, little moisture (ML)					
	206						
	207						
	208						
	209	reddish brown CLAY, silty, some gravel, a little moisture (CL)					

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 23 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	211	reddish Brown CLAY, with Sand and Gravel, low plasticity (CL)					
	212	reddish brown SILT with some Sand, a little moisture (ML)					
	213	light reddish brown Sandy SILT with Gravel, dry (ML)					
	214						
	215						
	216						
	217	reddish brown SILT with Gravel up to 3/4" in size, a little moisture (ML)					
	218						
	219						

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 24 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		light brown Sandy SILT, with some Clay and some fine Gravel, dry (ML)					
	221						
	222						
	223						
	224						
	225	Same as above but has more gravel, dry (ML)					
	226						
	227						
	228						
	229	Same as Above					

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 25 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	231	GRAVEL with Silt and Sand, gravel up to 1.5' in size, dry (GP-GM)					
	232						
	233						
	234						
	235	reddish brown SILT with very little gravel and some Sand (ML)					
	236						
	237						
	238						
	239	Same as Above					

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 26 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	241	reddish brown SILT, some moisture, no gravel (ML)					
	242	gravelly SILT with Sand, less moisture (ML)					
	243						
	244						
	245	gravelly SILT with Sand and large gravels up to 1.75' in size (ML)					
	246						
	247						
	248						
	249	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 27 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		light brown Sandy SILT, with gravel (<1") (ML)					
	251	reddish brown SILT slightly moist, a few coarse gravels (ML)					
	252						
	253	very fine light brown SILT with very fine Sand, very little gravel, dry (ML)					
	254						
	255	light reddish brown SILT, little moisture, some coarse gravels (ML)					
	256						
	257						
	258	gravelly SILT with Sand, dry (ML)					
	259						

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 28 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	261						
	262						
	263						
	264						
		reddish brown SILT, slightly moist, very little gravel (<1%)					
	265						
	266						
	267						
	268						
	269						
		Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 29 OF SHEETS 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	271	reddish brown SILT, slightly moist (ML)					
	272						
	273						
	274	gravelly SILT, with Sand, light brown in color, dry (ML)					
	275						
	276						
	277						
	278						
	279	reddish brown SILT with gravel and Sand, slightly moist (ML)					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 30 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above with less gravel (ML)					
	281						
	282						
	283						
	284	GRAVEL with Silt and Sand, dry (GP-GM)					
	285	redish brown SILT, slightly moist, some fine Sand and Gravel (<1%) (ML)					
	286						
	287						
	288						
	289	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 31 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	291						
	292						
	293						
	294						
	295						
	296						
	297						
	298						
	299	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 32 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	301	GRAVEL with Silt and Sand, dry, light brown in color (GP-GM)					
	302						
	303	reddish brown SILT with little fine Sand and very little gravel (<1%) (ML)					
	304						
	305						
	306						
	307						
	308						
	309	Same as above with a little more gravel (white and jagged)					

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 33 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	311						
	312						
	313						
	314						
	315						
	316						
	317						
	318						
	319	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 34 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	321	Same as above with larger gravel (1-3"), less moisture (ML)					
	322	Same as above with no coarse gravel, more moisture (ML)					
	323						
	324						
	325	gravelly SILT, some conglomerate rocks present in soil, (ML)					
	326						
	327						
	328	reddish brown SILT, slightly moist (ML)					
	329						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 35 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	331	reddish brown CLAY, low plasticity (CL)					
	332						
	333	reddish brown SILT with some Sand (ML)					
	334						
	335	reddish brown CLAY and SILT, low plasticity, very little gravel (ML-CL)					
	336						
	337						
	338	Same as above with more silt than clay					
	339						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 36 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above but more gravel and no clay (ML)					
	341						
	342						
	343						
	344						
	345	reddish brown SILT with some Clay and fine Sand, very little gravel (ML)					
	346						
	347						
	348						
	349	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 37 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	351	reddish brown SILT, slightly moist, some fine Sand (ML)					
	352						
	353						
	354						
	355						
	356	Same as above but more moist					
	357						
	358						
	359						

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 38 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	361	Same as above					
	362	GRAVEL with Silt and Sand, slightly moist (GP-GM)					
	363	fine SAND with Silt, slightly moist (SM)					
	364						
	365	Fine SAND with Silt with fine to medium Gravel, trace of Clay balls, light brown color (SM)					
	366						
	367						
	368						
	369	reddish brown SILT with gravel and sand, moist					

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 39 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		SAme as above but more moist					
	371	SAme as above but even more moist					
	372						
	373	Same as above, a bit less moist					
	374						
	375	light brown GRAVEL with Silt and Sand, some moisture, (fine gravel) (GP-GM)					
	376						
	377						
	378	Same as above with medium gravel (GP-GM)					
	379	reddish brown SILT with Gravel and Sand, a little moisture (ML)					

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 40 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		reddish brown SILT, with no gravel, moist (ML)					
	381						
	382						
	383						
	384	very fine reddish brown SILT, moist (ML)					
	385	Same as above, but some medium grvel (ML)					
	386						
	387						
	388						
	389	Same as Above					

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 41 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	391	reddish brown SILT, moist (ML)					
	392						
	393	Same as above with fine gravel (ML)					
	394						
	395						
	396	SAme as above with medium gravel (ML)					
	397	reddish brown gravelly SILT and SAND, wet, coarse to fine gravel (SM)					
	398						
	399						

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200 | INSPECTOR Jill Jefferson | SHEET 42 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	401	Same as above					
	402						
	403						
	404						
	405	Same as above with less medium gravel, more fine gravel, wet					when drilling recommenced after adding another 20'drive casing, suttings came out of the cyclone wet and spitting water (bit was at about 405-406')
	406						
	407						
	408						
	409						

PROJECT 5155.0030.0001 A1200 | HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0315

PROJECT: 5155.0030.0001 A1200

INSPECTOR: Jill Jefferson

SHEET 43 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	411 412	fine to medium GRAVEL (<1"), wet (GW)					Silt is probably present at this depth but the water has washed it away and a sample can not be collected from the cyclone
	413 414 415 416	GRAVEL (<1") with Silt and Sand, wet (GP-GM)					
	417 418 419	GRAVEL with Silt and Sand, wet (GP-GM)					Began adding water to facilitate the drilling process

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0315

PROJECT: 5155.0030.0001 A1200

INSPECTOR: Jill Jefferson

SHEET 44 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	421	Fine GRAVEL with coarse Sand and Silt, wet, brown in color (GP-GM)					
	422						
	423	fine to coarse GRAVEL with coarse Sand and Silt, wet (GW-GM)					
	424						Stopped drilling at 425' and let hole sit and stabilize.
	425						
	426						
	427						
	428						
	429	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 45 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	431	Same as above					
	432	brown SILT with gravel(fine, <10%), wet (ML)					
	433						
	434						
	435	Same as above with medium Gravel, wet (ML)					
	436	GRAVEL with Silt and some Sand, wet, (GP-GM)					
	437	Same as above with a trace of Clay					
	438						
	439						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 46 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		fine to coarse GRAVEL with Silt and Sand, wet (GW-GM)					
	441						
	442						
	443						
	444						
	445	Same as above with more medium and coarse Gravels, wet (GP-GM)					
	446						
	447						
	448						
	449	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 47 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	451	fine to medium GRAVEL and coarse SAND, subangular, wet (GP)					
	452	SAme as above with more gravel and more silt, wet, subangular (GP)					
	453						
	454						injected water to facilitate drilling
	455	Same as above with more silt (GP-GM)					
	456						
	457						
	458						
	459						

PROJECT 5155.0030.0001 A1200 HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 48 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	461	brown SILT with Gravel and some coarse Sand, wet (ML)					
	462						
	463						
	464						
	465	Same as above with more gravel (ML)					TD drilled as of 9/1 @1000hrs is 465' bgs
	466						
	467						
	468						
	469	Same as Above					

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0315

PROJECT 5155.0030.0001 A1200

INSPECTOR Jill Jefferson

SHEET 49 OF 50

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	471	brown Sandy SILT with gravel (fine to medium), wet, trace Clay (ML)					
	472						
	473						
	474	gravelly SILT with Sand, trace clay, wet (ML)					
	475						
	476	GRAVEL (fine to medium), coarse Sand and some Silt, subangular grains of sand and gravel, wet (GW-GM)					
	477						
	478						
	479						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0315

PROJECT: 5155.0030.0001 A1200

INSPECTOR: Jill Jefferson

SHEET 50 OF 50 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					Bit at 481' bgs- drilling stopped
	481						
	482						
	483						
	484						
	485						
	486						
	487						
	488						
	489						

PROJECT 5155.0030.0001 A1200

HOLE NO. KAFB-0315

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT Omaha		HOLE NUMBER KAFB-0507
1.COMPANY NAME Foster Wheeler Environmental	2.DRILL SUBCONTRACTOR Water Develpement Corporation	SHEET 1 OF SHEETS 53
3.PROJECT 5155.0030.0017 A2002	4.LOCATION ST-105	
5.NAME OF DRILLER Kevin Jones	6.MANUFACTURER'S DESIGNATION OF DRILL Dresser Air Rotary Casing Hamner Drill Rig	
7.SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8.HOLE LOCATION South west of WP-26, Sewage Lagoons	
9 5/8" steel drive casing	9.SURFACE ELEVATION	
9" 5/8" drill bit	10.DATE STARTED 2/11/01	11.DATE COMPLETED 2/21/01
12.OVERBURDEN THICKNESS	15.DEPTH GROUNDWATER ENCOUNTERED Geophysical logs show groundwater at 491' bgs.	
13.DEPTH DRILLED INTO ROCK N/A	16.DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED Unable to obtain a reading- neutron logging indicated water at 491 bgs 20 hrs after reaching TD	
14.TOTAL DEPTH OF HOLE 520 feet	17.OTHER WATER LEVEL MEASUREMENTS (SPECIFY) Aprox. 96 hrs after drilling water was measured at a depth of 502 ' bgs	

18.GEOTECHNICAL SAMPLES N/A	DISTURBED	UNDISTURBED	19.TOTAL NUMBER OF CORE BOXES N/A

20.SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21.TOLAL CORE RECOVERY %
No samples were collected during drilling	N/A	N/A	N/A			

22.DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23.SIGNATURE OF INSPECTOR
		KAFB-0507		

LOCATION SKETCH/COMMENTS	SCALE

PROJECT 5155.0030.0017 A2002	HOLE NO. KAFB-0507

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAF B-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 2 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		SILT with very fine to fine grains, tan, dry, slightly cohesive (ML/SM)	0 ppm				
	1						
	2						
	3						
	4						
	5	Same as above	0 ppm				
	6						
	7						
	8						
	9	Same as Above but with more sand and gravel, brown	0 ppm				Headspace reading on cuttings

PROJECT 5155.0030.0017 A2002 HOLE NO. KAF B-0507

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 3 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19	very fine SAND, fine to medium gravel (SM)	0 ppm				PID reading on casing

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 4 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	21						
	22						
	23						
	24						
	25	Same as above					
	26						
	27						
	28						
	29	Gravelly silty SAND (SM/GM)	0 ppm				PID reading on casing

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAF B-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 5 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Brown to light brown dry GRAVEL and fine SAND, angular to subangular to subround (GM/SM)					
	31						
	32						
	33						
	34						
	35	Very silty SAND, very fine to coarse light brown minor gravel; sand mostly very fine to fine (SM)					
	36						
	37						
	38						
	39	Same as above	0 ppm				PID reading on casing

PROJECT: 5155.0030.0017 A2002

HOLE NO. KAF B-0507

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 6 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	41						
	42						
	43						
	44						
	45	Same as above with more fine to medium gravel (SM/GM)					
	46						
	47						
	48						
	49						
		Same as above	0 ppm				Headspace reading on cuttings

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

PROJECT 5155.0030.0017 A2002

INSPECTOR Jim Harden

SHEET 7 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	51						
	52						
	53						
	54	Very silty, very gravelly SAND, fine to coarse gravel; basalt granite, quartz lenses (GM).					
	55						
	56						
	57						
	58	Very silty fine SAND becomes light brown to sandy silt, medium gravel; clay seams (SM/ML)					
	59		0 ppm				PID at casing

PROJECT 5155.0030.0017 A2002

HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAF B-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 8 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	61	Fine GRAVEL with some medium sand (GP)					
	62						
	63						
	64	Silty SAND, medium gravel to very sandy silt (SM)					
	65						
	66						
	67						
	68		0 ppm				headspace at cuttings
	69	GRAVEL, fine; sandy and silty (GM)					

PROJECT 5155.0030.0017 A2002 HOLE NO. KAF B-0507

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

PROJECT 5155.0030.0017 A2002

INSPECTOR Jim Harden

SHEET 9 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	71						
	72						
	73						
	74						
		slightly clayey medium brown SILT, medium gravel, dry to damp with clay seams (slightly plastic and silty) (ML)					
	75						
	76						
	77						
		Same as above with more gravel and sand					
	78						
	79		0 ppm				PID reading at casing

PROJECT 5155.0030.0017 A2002

HOLE NO. KAFB-0507

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 10 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					Drilling at 80ft/hr
	81						
	82						
		sandy fine GRAVEL, slightly silty, tan to light brown; sand medium to coarse and angular to subrounded (GP)					
	83						
	84						
	85						
	86						
		Clayey SILT with very fine sand, reddish brown (ML)					
	87						
	88						
	89						
		GRAVEL, fine to medium, sandy (GW/GP)					

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 11 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	91						
	92						
	93						
	94						
	95	Gravelly, sandy, clayey SILT, brown to light reddish brown with very gravelly seams increasing with depth (ML/GC)					
	96						
	97						
	98	predominantly GRAVEL, sandy and silty; tan to light brown, angular to subrounded (GM)					
	99		0 ppm				PID from casing

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 12 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	101						
	102						
	103	SILT, clayey with very fine sand, brownish red to reddish brown clay seams (SC)					
	104						
	105						
	106						
	107						
	108						
	109						
		same as above but becomes more gravelly	0 ppm				headspace at cuttings

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 13 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	111						
	112	Sandy silty GRAVEL to gravelly silty SAND, dry (GM)					
	113						
	114	gravelly to sandy SILT, reddish brown, damp to dry; reddish brown to tan occasional gravelly seam becoming very silty with fine to medium grained sand (ML/GM)					
	115						
	116						
	117						
	118						
	119	Same as Above	0 ppm				PID at cuttings

PROJECT 5155.0030.0017 A2002

HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAF B-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 14 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	121						
	122						
	123	SILT, clayey and slightly sandy, reddish brown; medium gravel becoming very clayey with depth (ML)					
	124						
	125						
	126						
	127						
	128						
	129	CLAY, very silty, medium sand, plastic, reddish brown to brownish red to red (CL)					

PROJECT 5155.0030.0017 A2002 HOLE NO. KAF B-0507

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 15 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	131						Cyclone clogged
	132						
	133	becomes very silty, Clayey SILT (CL/ML)					
	134						
	135	GRAVEL, sandy and silty with clayey seams (GM)					
	136						
	137	gravelly sandy SILT to very silty sandy GRAVEL with gravelly clay seams (GM/GC)					
	138						
	139		2.7 ppm				hit of 2.7 ppm is probably due to exhast (cuttings = 0 ppm)

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

PROJECT 5155.0030.0017 A2002 | INSPECTOR Jim Harden | SHEET 16 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		less silt and clay, more sand					
	141						
	142	Sandy GRAVEL to gravelly SAND, some silt (GP)					
	143						
	144						
	145	sandy SILT to clayey silt and silt, reddish brown to tan, damp to dry (ML)					
	146						
	147						
	148	grades into tan SILT (ML)					
	149						
		becomes gravelly					

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HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	151						
	152						
	153						
	154	no gravel but sandy					
	155						
	156	minor gravel					
	157	Clayey sandy SILT, reddish brown with reddish clay seams, damp (ML)					
	158						
	159	minor gravel					

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HTRW DRILLING LOG (CONTINUATION SHEET)

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	161	clayey SILT/ silty CLAY; minor to fine to coarse sand, fine gravel; reddish brown (ML/CL)					
	162						
	163						
	164						
	165	increasing sand content, mica flakes; becomes light brown and more silty					
	166						
	167	SILT with clayey silt, minor sand and gravel, reddish brown (ML)					
	168						
	169						

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HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		same as above but becoming more sandy (very fine to fine sandy silt/ silty sand)					
	171						
	172						
	173						
	174						
	175	Clayey SILT, some sand, very little gravel, reddish brown to light brown, damp (ML)					
	176						
	177						
	178						
	179	Same as Above	0 ppm				PID reading at casing

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

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INSPECTOR Jim Harden

SHEET 20 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		very silty, very fine SAND, slightly clayey (SM)					
	181						
	182						
	183						
	184						
	185	clayey SAND (SC)					
	186	CLAY to sandy clay, damp to slightly moist; minor gravel, silty, slightly plastic, reddish brown to brown (CL/SC)					
	187						
	188						
	189	increasing in gravel, mica flakes					

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

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INSPECTOR Jim Harden

SHEET 21 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		moist					
	191						
	192	more clay. much less sand and no gravel					
	193						
	194						
		sandy, very silty					
	195						
	196	very sandy (silty CLAY / very clayey SAND)					
	197						
	198						
	199	mostly silty CLAY, minor sand, brown to tan; mica					drilling rate slower (40 to 50 ft/hr)

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ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

SHEET 22 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	201						
	202						
	203						
	204	sandy with gravel (CL/SC)					
	205						
	206						
	207	no gravel					
	208						
	209	less sand					

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

SHEET 23 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	211						
	212						
	213						
	214	clayey SAND/ sandy CLAY (CL/SC)					
	215	very fine to fine SAND, damp, silty with minor clay (SW/SM)					
	216						
	217	reddish brown SILT with Gravel up to 3/4" in size, a little moisture (ML)					
	218						
	219						

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ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

SHEET 24 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above but well sorted (SP)					
	221						
	222						
	223						
	224						
	225						
	226						
	227						
	228	Same as above but very silty (SM)					
	229						

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ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

SHEET 25 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		less silt, becoming coarser; fine to coarse SAND with minor fine gravel, light brown (SW)					cyclone and line clogged with cuttings
	231						
	232						
	233						
	234						
	235						
		same as above with more fines and less coarse grains					
	236						
	237						
	238						
	239						after cleaning the cyclone and line, checked for water- none indicated
		Same as above but coarser with more fine gravel	0 ppm				PID at casing and cuttings

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HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		fine to medium SAND, occasional clay clasts, minor gravel (SW/SP)					
	242	gravelly SILT with Sand, less moisture (ML)					
	243						
	244						
	245	gravelly SAND, fine to coarse (SP/GP)					
	246	Very clayey SILT; whitish layer; mostly redish brown (ML)					
	247						
	248						
	249	Same as above but slightly sandy, damp to moist					

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

SHEET 27 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		some as above					
	251						
	252						
	253						
	254						
	255						
	256						
	257						
	258						
	259		0 ppm				PID at casing and cuttings

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

SHEET 28 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	261						
	262						
	263						
	264						
	265	same as above but less clay and more very fine sand					
	266						
	267						
	268						
	269	Same as Above					

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ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

SHEET 29 OF SHEETS 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		same as above					
	271						
	272						
	273						
	274						
	275						
	276						
	277						
	278	clayey SILT/ silty CLAY to sandy CLAY, minor clayey sand, brown, damp (ML/CL)					
	279		0 ppm				PID at casing and cuttings

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HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	281						
	282						
	283						
	284	same as above with an increase in sand					
	285						
	286	clayey, very silty, very fine SAND, brown to light brown (SM/SC)					
	287						
	288						
	289	grayish clayey sandy SILT to silty, very fine SAND (ML/ SM)					

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

SHEET 31 OF SHEETS 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		slightly gravelly, silty, fine to coarse SAND, tan, dry to damp (SW/SM)					
	291						
	292						
	293						
	294	less silt					
	295						
	296						
	297	less coarse sand, more fine to medium					
	298						
			0 ppm				PID at cuttings and casing
	299	fine to coarse SAND (SW)					

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ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

SHEET 32 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		SAND, grayish to light brown, angular to subangular (SW)					
	301						
	302						
	303						
	304	mostly medium to coarse SAND (SP)					
	305						
	306						
	307						
	308						
	309	minor gravel					

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HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

SHEET 33 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	311						
	312						
	313						
	314	Same as above but becomes finer; fine to coarse (SW)					
	315						
	316						
	317						
	318						
	319						

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SHEET 34 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	321	Sandy fine to medium, slightly silty, angular to subrounded GRAVEL; some lithic grains; slightly micaceous; minor fine gravel (SP)					
	322						
	323						
	324						
	325	abundant light matrix grains, finer, a little more silt					
	326						
	327						
	328						
	329						
		fine silty SAND (SM)					

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		some medium to coarse grains, otherwise, same as above (no gravel)					
	331						
	332						
	333						
	334						
	335	fine to coarse SAND, more fine gravel (SW)					
	336						
	337						
	338	increasing in gravel					
	339						

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

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INSPECTOR Jim Harden

SHEET 36 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	341	Sandy silty GRAVEL, angular to subrounded; fine to medium (up to 1"); some minor clay balls, dry (GM)					
	342						
	343						
	344						
	345	GRAVEL, medium, some fine, dry (GP)					
	346						
	347	Clayey GRAVEL, to gravelly CLAY, light brown to brown (mostly clay) (GC/CL)					
	348						
	349	sandy and silty					

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ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

SHEET 37 OF SHEETS 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	351	silty fine SAND to coarse sand with fine gravel, tan to brown, dry to damp (SW/SM)					
	352						
	353						
	354						
	355	mostly fine sand to very fine sand, slightly silty					
	356	becomes coarse and slightly gravelly					
	357						
	358	back to fine to very fine SAND, becomes very light (whitish)	0 ppm				PID at casing and cuttings
	359						

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HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

SHEET 38 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		SAND, fine to coarse (SW)					0730, 2/12/01- start drilling
	361						
	362						
	363						
	364						
	365						
	366						
	367						
	368						
	369	Same as above with occasional fine gravel					

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ENG FORM 5056A-R, AUG 94

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HTRW DRILLING LOG (CONTINUATION SHEET)

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SHEET 39 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	371	Mostly fine to medium SAND, damp, minor silt (SP)					
	372						
	373						
	374						
	375						
	376						
	377						
	378	Same as above with gravel up to 1-2 cm.					
	379						

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

SHEET 40 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	381						
	382						
	383						
	384						
	385						
	386						
	387						
	388						
	389	Same as Above					

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HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	391						
	392						
	393						
	394						
	395	Gravel content increasing					
	396						
	397						
	398	gravelly SAND to sandy GRAVEL; angular to subrounded, gravel up to 3 cm; sand mostly fine to medium, some coarse (GP)	0 ppm				PID at casing and cuttings
	399						

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ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		fine to coarse SAND with fine gravel; angular to subrounded, dry to damp (SW)					
	401						
	402						
	403						
	404	fine to medium SAND, minor gravel; angular to subrounded, damp (SP)					
	405						
	406						
	407						
	408						
	409	fine to medium SAND, abundant pea (0.5-1cm) gravel; angular to subrounded, damp (SP)					

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HTRW DRILLING LOG (CONTINUATION SHEET)

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SHEET 43 OF SHEETS 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above but sand coarsening, gravel angular to rounded, dry					
	411						
	412						
	413	Becoming medium to coarse SAND, less gravel (SP)					
	414						
	415						
	416	pea gravel increasing					
	417						
	418						
	419						

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ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR: Jim Harden

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above but decreasing in gravel; sand coarse to very coarse					
	421						
	422						
	423						
	424						
	425	very coarse SAND with fine GRAVEL (<0.5 cm), angular to subrounded, light gray to brown, dry (SP/GP)					
	426						
	427						
		Same as above but very gravelly (up to 2 cm), slightly silty					
	428						
	429						
		less silty					

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ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

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INSPECTOR Jim Harden

SHEET 45 OF SHEETS 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
							drilling at approx. 50 ft/hr
	431	Same as above with little or no silt					
	432						
	433						
	434						
	435	GRAVEL up to 1 cm, SAND medium to coarse; pebbles of quartzite, volcanics, and granite					
	436						
	437						
	438	SAND, fine to very coarse, damp (SP)					
	439						

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HTRW DRILLING LOG (CONTINUATION SHEET)

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ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	441						
	442	fine to medium SAND with some coarse to very coarse sand and fine gravel; light brown to grayish tan, damp, angular to subrounded (SP)					
	443						
	444						
	445	coarse to very coarse SAND; little fine gravel (SW)					
	446						
	447						
	448						
	449	Same as Above					

PROJECT 5155.0030.0017 A2002

HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

PROJECT 5155.0030.0017 A2002 | INSPECTOR Jim Harden | SHEET 47 OF SHEETS 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		abundant fine GRAVEL. dry (SP/GP)					
	451						
	452						
	453	fine to medium SAND, damp					
	454	Sandy GRAVEL; fine gravel, medium to coarse sand					
	455						
	456	very gravelly; medium to very coarse sand					
	457	micaceous					
	458						
	459		0 ppm				PID reading at casing and cuttings

PROJECT 5155.0030.0017 A2002 | HOLE NO. KAFB-0507

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAF B-0507

PROJECT 5155.0030.0017 A2002

INSPECTOR Jim Harden

SHEET 48 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	461						
		gravelly fine to medium SAND, light brown to tan pebbles (5 cm or less), damp, slightly silty, mostly basaltic gravel (GP/SP)					
	462						
	463						
		same as above but becoming fine to medium SAND and much less gravel, damp to slightly moist (SP)					
	464						
	465						
	466						
	467						
	468						
	469						
		pea gravel					

PROJECT 5155.0030.0017 A2002

HOLE NO. KAF B-0507

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

PROJECT 5155.0030.0017 A2002

INSPECTOR Jim Harden

SHEET 49 OF SHEETS 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	471						
	472						
	473						
	474						
	475	Same as above with less gravel					
	476						
	477						
	478						
	479						
		Same as above with more fine sand					

PROJECT 5155.0030.0017 A2002

HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 50 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	481						
	482	Same as above with abundant gravel 0.5 to 2 cm.					
	483	SAND, fine to coarse (SW)					
	484						
	485	same as above with occasional "pumaceous" gravel up to 1 cm.					
	486	much less gravel, mostly fine to medium SAND, minor gravel, micaeous, moderately well sorted, some coarse grains, tan, damp to moist (SP)					
	487						
	488						
	489	clay balls present					

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER KAFB-0507

PROJECT 5155.0030.0017 A2002

INSPECTOR Jim Harden

SHEET 51 OF SHEETS 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		probably clay seams with fine to medium sand					
	491						
	492	fine SAND with very coarse grains of sand and fine gravel, damp to moist (SP/GP)					
	493						
	494						
	495	same as above but moist to wet					
	496						
	497	same as above but wet					
	498		0 ppm				PID reading at casing and cuttings
	499						

PROJECT 5155.0030.0017 A2002

HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 52 OF 53 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		visible water on pebbles					
	501						
	502						
	503						
	504						
	505	gravelly SAND/ sandy GRAVEL; gravel up to 5 cm., sand fine to very coarse (GP)					
	506						
	507						
	508						
	509						

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: KAFB-0507

PROJECT: 5155.0030.0017 A2002

INSPECTOR: Jim Harden

SHEET 53 OF 53

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
		Same as above					
	511						
	512						
	513						
	514						
	515	silty to clayey gravelly SAND					soupy returns to surface
	516						
							injecting water to lift cuttings
	517						
			0 ppm				PID reading at cuttings
	518						
	519	Gravelly SAND					

PROJECT 5155.0030.0017 A2002 HOLE NO. KAFB-0507

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

APPENDIX B

APPENDIX B

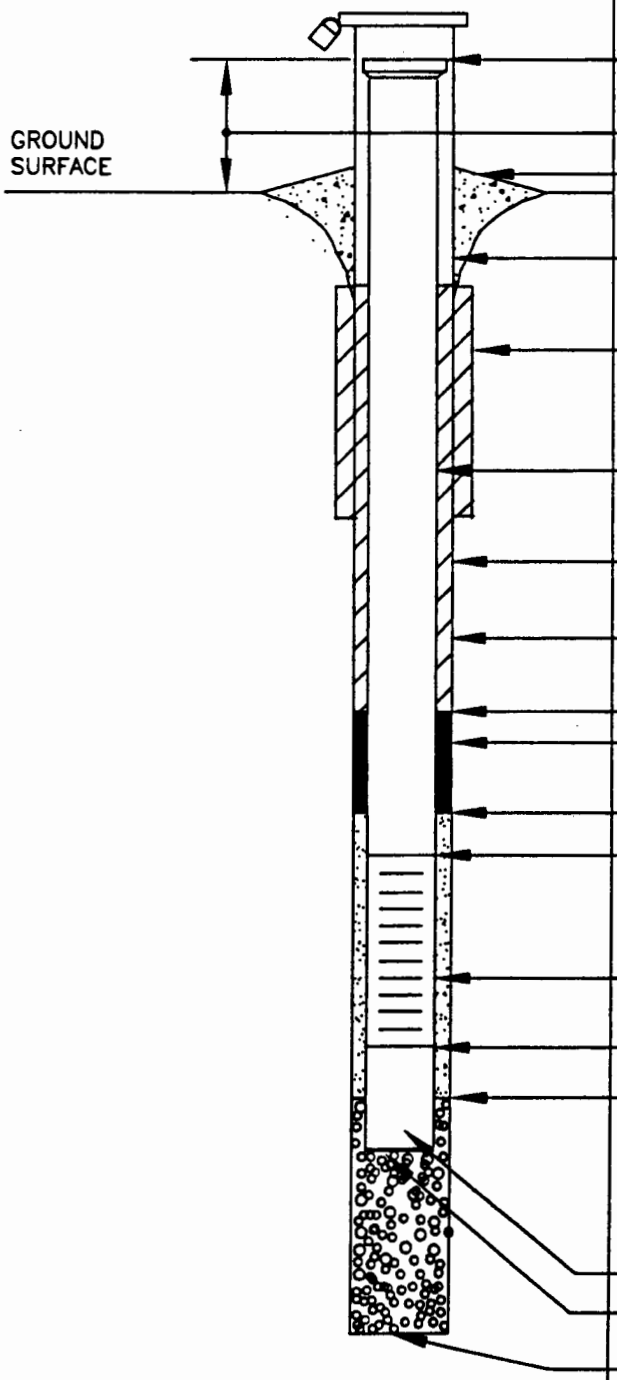
Monitoring Well Construction Diagrams

FIGURE
OVERBURDEN
MONITORING WELL SHEET

WELL NO. KAFB - 0315

PROJECT: KIRTLAND AFB Landfill (LF-268)
PROJECT NO.: 5155.0030.0001 BORING NO.: KAFB - 0315
ELEVATION: 5463.44 DATE: 9/6/00 - 9/8/00
FIELD GEOLOGIST: Bill Whaley (HGS) / Jill Jefferson (FWENC)

DRILLER: Marion Phillips
DRILLING METHOD: AIR ROTARY/CASING HAMMER
DEVELOPMENT METHOD: SUBMERSIBLE PUMP/SURGE



ELEVATION OF TOP OF RISER PIPE: 5463.44

STICK-UP RISER PIPE: 2.0 feet

TYPE OF SURFACE SEAL: CONCRETE

I.D. OF SURFACE CASING: 10-INCH
TYPE OF SURFACE CASING: CARBON STEEL

BOREHOLE DIAMETER: 11 3/4-INCH (0-190')

RISER PIPE I.D.: 4 1/2-INCH
TYPE OF RISER PIPE: 5-INCH SCHEDULE 80 PVC

BOREHOLE DIAMETER: 9 5/8-INCH(190'-477')

TYPE OF BACKFILL: CEMENT/BENTONITE GROUT

ELEVATION/DEPTH TOP OF SEAL: 5046.44/417'
TYPE OF SEAL: BENTONITE CHIPS

DEPTH TOP OF SAND PACK: 442'

ELEVATION/DEPTH TOP OF SCREEN: 5016.44/447'
TYPE OF SCREEN: 5-INCH SCHEDULE 80 PVC
SLOT SIZE X LENGTH: 0.010-INCH x 25 FT.

TYPE OF SAND PACK: 10/20 SILICA SAND

ELEVATION/DEPTH BOTTOM OF SCREEN: 4991.44/472'

ELEVATION/DEPTH BOTTOM OF SAND PACK: 4986.44/477'
TYPE OF BACKFILL BELOW OBSERVATION WELL: native formation caved in when bit was removed making the borehole TD=477'

TYPE OF SUMP: 5-INCH SCHEDULE 80 PVC

LENGTH OF SUMP 5 FT.

ELEVATION/DEPTH OF HOLE: 4982.44/481'

NOT TO SCALE

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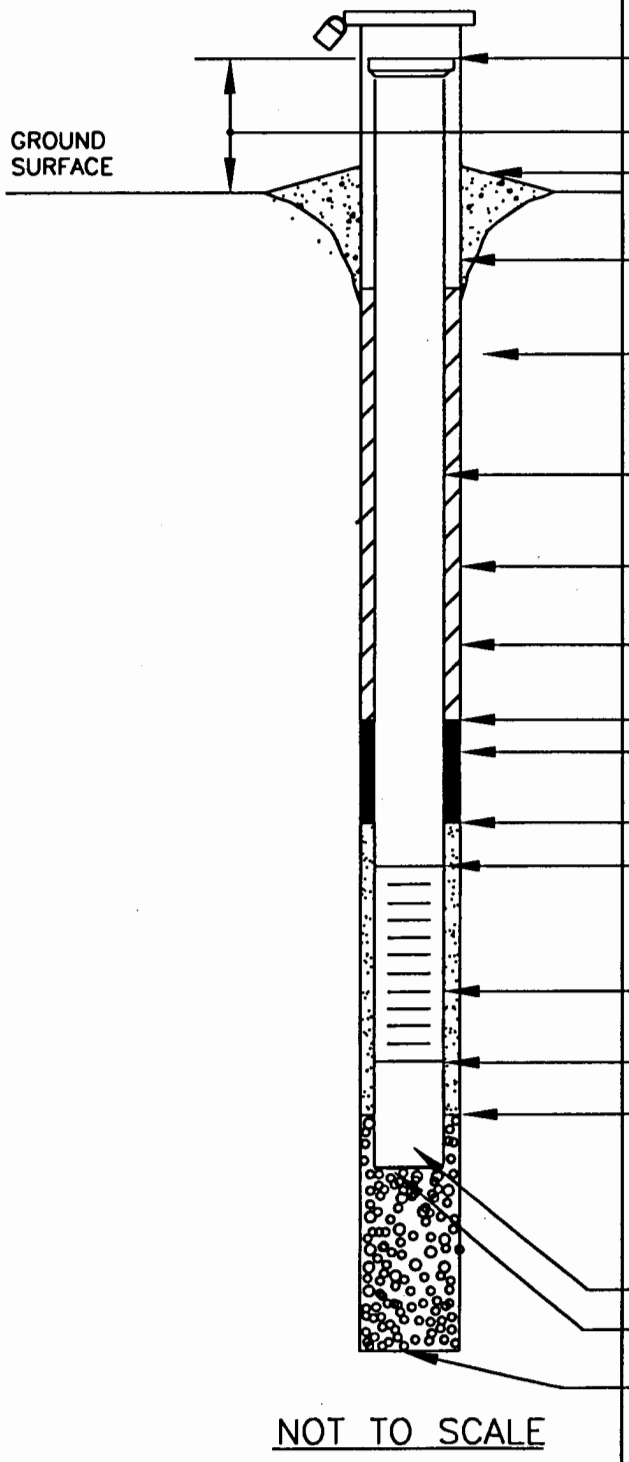
FIGURE
OVERBURDEN
MONITORING WELL SHEET

WELL NO. KAFB - 0507

PROJECT: ST-105
PROJECT NO.: 5155.0030.0017 A2002 BORING NO.: KAFB-0507
ELEVATION: 5353.15' above S.L. DATE: 2/11/01 - 2/21/01
FIELD GEOLOGIST: Jim Horden, FWENC

DRILLER: Kevin Jones
DRILLING METHOD: AIR ROTARY/CASING HAMMER
DEVELOPMENT METHOD: SUBMERSIBLE PUMP/SURGE



ELEVATION OF TOP OF RISER PIPE: 5356.15

STICK-UP RISER PIPE: 3.0 feet

TYPE OF SURFACE SEAL: CONCRETE

I.D. OF SURFACE CASING: 10-INCH
TYPE OF SURFACE CASING: CARBON STEEL

BOREHOLE DIAMETER: 9 5/8-INCH

RISER PIPE I.D.: 3 1/2-INCH
TYPE OF RISER PIPE: 4-INCH SCHEDULE 80 PVC

BOREHOLE DIAMETER: 9 5/8-INCH

TYPE OF BACKFILL: CEMENT/BENTONITE GROUT

ELEVATION/DEPTH TOP OF SEAL: 4913.15/440'
TYPE OF SEAL: BENTONITE CHIPS

DEPTH TOP OF SAND PACK: 470'

ELEVATION/DEPTH TOP OF SCREEN: 4870.85/482.3'
TYPE OF SCREEN: 4-INCH SCHEDULE 80 PVC
SLOT SIZE X LENGTH: 0.010-INCH x 25 FT.

TYPE OF SAND PACK: 10/20 and 20/40 Silica Sand

ELEVATION/DEPTH BOTTOM OF SCREEN: 4845.85/507.3

ELEVATION/DEPTH BOTTOM OF SAND PACK: 4840.85/512.3'
TYPE OF BACKFILL BELOW OBSERVATION WELL: native formation caved in when bit was removed making the borehole TD=512.3'

TYPE OF SUMP: 4-INCH SCHEDULE 80 PVC

LENGTH OF SUMP 5 FT.

ELEVATION/DEPTH OF HOLE: 4833.15/520'

J:\PROJECTS\KIRTLAND\LTM\FY00WELLS\MW constrdiag.DWG

APPENDIX C

APPENDIX C

Geophysical Logs

Southwest Geophysical Services, Inc.

4200 Skyline Drive • Farmington, New Mexico 87401 • (505) 325-8531

REPORT ON

DOWNHOLE GEOPHYSICAL LOGGING

AT

KIRTLAND AIR FORCE BASE, NM

WELL # KAFB O315

OCTOBER 17, 2000

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INTRODUCTION

On September 1, 2000 and September 28, 2000 Southwest Geophysical Services, Inc. performed downhole geophysical logging on monitor well KAFB 0315 located off the northeast corner of the Kirtland Air Force Base landfill. In addition to driller's notes and the logs of the cuttings, downhole surveys were another useful means to help determine the water bearing formations. The logging tools used on September 1st were the natural gamma ray and the thermal neutron. On September 28, 2000 the completed well was logged with the induction and gamma-gamma density probe.

LOGGING PROCEDURE

The logging procedure was the same for all tools. Each tool was first aligned to the ground level, which was the zero point for each log. Then the tools were lowered to the bottom of the hole. Data was acquired as the tools were hoisted out of the hole. The gamma-neutron was logged at 20 feet per minute through 9 & 5/8 inch drive casing. On the second trip to the well the induction and gamma-gamma density was logged through 4 inch PVC casing. The induction was logged at 50 feet per minute, and the density at 20 feet per minute. At the surface, each tool was removed from the hole, wiped off, and put back on the logging vehicle.

DESCRIPTION OF EQUIPMENT

LOGGING TOOLS

INDUCTION TOOL

The induction tool was manufactured by Geonics. It is 6.0 feet long, and 1.4 inches in diameter. This tool generates a magnetic field to measure conductivity, which is then converted into a resistivity reading. The vertical resolution is 24 inches, and the radius of investigation is maximized at 11 inches.

COMBO TOOL

This tool was manufactured by Comprobe, Inc. and consists of two sections; a natural gamma ray detector and a thermal neutron source detector. This tool is 12 feet long and 1.25 inches in diameter.

NATURAL GAMMA RAY SECTION

The gamma ray section of this tool contains a sodium-iodide scintillation crystal located 3.9 feet above the neutron detector. This section detects natural gamma rays emitted from the formations. The gamma rays are measured in American Petroleum Institute units or API units. The vertical resolution is 24 inches, and the depth of investigation is less than 12 inches.

THERMAL NEUTRON SECTION

The neutron section of this tool consists of a 37 GBq Americium^{241}-Beryllium source and a Helium^{3} detector located 17 inches above the source. The detector measures the thermal energy level neutrons. The neutrons are measured in American Petroleum Institute units or API units. The vertical resolution of this section is 18 inches, and the depth of investigation is inversely proportional to the porosity, usually less than 12 inches.

GAMMA-GAMMA DENSITY

This tool was manufactured by Comprobe Inc. It is five feet long and 1.25 inches in diameter.

GAMMA-GAMMA DETECTOR

The gamma-gamma density tool consists of a scintillation crystal located 18 inches above a 4.625 GBq cesium^{137} gamma emitting source. The vertical resolution of this tool is 18 inches, and the depth of investigation is less than 12 inches.

SURFACE EQUIPMENT

The surface equipment included an electric hoist with approximately 2100 feet of 0.1875 inch, four conductor, steel armored cable. The data signals are transmitted up this cable through the control panel then digitized and stored on the computer.

TOOL CALIBRATION

All tools were calibrated at the Farmington shop, prior to the job.

INDUCTION

The induction probe is calibrated with a resistivity loop. A two point calibration between the values of 0 and 345 ohm-meters is used.

COMBO

GAMMA RAY

The gamma ray detector is calibrated with a two point linear procedure. The first point is a background reading. Then a 120 API gamma ray calibration standard is placed on the tool for the second calibration point.

NEUTRON

The thermal neutron calibration is also a two point linear procedure. The first point is a zero API reading. The second calibration point is a 1000 API reading, induced by a Plexiglas calibration sleeve placed on the sourced tool over the neutron detector. This sleeve simulates a 7.876-inch diameter limestone borehole filled with fresh water.

GAMMA-GAMMA DENSITY

This tool is a qualitative tool, so there is no calibration procedure. However, in the field the tool is checked for operation by inducing readings of zero and 100 counts per second with a pulse generator module.

DATA

The data was recorded in standard ASCII format and presented in rows and columns. See Figure 1. The first row denoted the name of the curve for each column of data. The second row denoted the units of each column of data. The data was recorded five times per foot, or every 0.20 of a foot. The value -9999.99 was a point where no data for that curve was collected. This was due to the fact that the detectors were located at different depths on the tools. In Figure 1, the deepest reading taken by the Density was 13.95 counts at 479.40 feet.

See Figure 2 for a complete list of file names.

THEORETICAL LOG RESPONSES

Interpretation of the logs was aided by a description of the completion methods and drilling procedures.

LOG INTERPRETATION PRINCIPLES

CLAYS

Clays are characterized by several different curves. The gamma ray reads high, the neutron reads low and the induction reads low.

SANDS

Low gamma ray, high neutron, and higher induction readings characterize sands.

SILTS

Silts are the gradations between the clays and the sands. The silts have readings between the sand and clay readings described previously.

EFFECTS FROM COMPLETION METHODS

CASING

Gamma, neutron, and density readings were attenuated approximately 30% by the drive casing and PVC casing in these wells. The PVC has no effect on the induction curve.

VOIDS

Washouts or voids in the borehole are characterized by high density readings.

FLUID LEVEL

Fluid level on run one is determined by the low count rate of the neutron probe. Fluid level on the second trip to the well is determined by the low count rate of the density probe.

LOG INTERPRETATION

Please see Figure 3 for the discussion of the results.

LITHOLOGY

The gamma-neutron curves show from surface to TD that the formation is interbedded clays, silts and thin sands. The neutron shows a static water level of 455 feet on the first trip to the well. Static water level during the second trip to the well is indicated by the decrease in counts of the density log. There is one notable clay zone: 426 to 430 feet. The neutron reads notably lower than the rest of the air logged portion. The induction is reading lower while the average gamma ray reading is higher in this zone. Another notable clay zone indicated by higher gamma and lower induction readings is from 332 to 354 feet.

WATER SAMPLE ZONES

The induction, neutron and gamma ray curves show a possible saturated sand zone from 456 to 462 feet. This zone has a lower reading on the gamma and increased readings on the induction and neutron curves. These responses indicate a possible water bearing sand.

COMPLETION METHOD EFFECTS

The decrease in the gamma and neutron at 192 feet is indicative of the 11 & 3/4 inch surface string of casing. The density curve shows the sand pack to be uniform from 418 up to 188 feet with no apparent voids through this interval. The bentonitic grout material is shown to be uniform from 418 feet to TD. The density indicates void spaces from 6 to 48 feet, 52 to 102 feet and 143 to 178 feet. All three intervals show an increase in the void going from bottom of the interval to the top.

DEPTH	NEUTRON	GAMMA	INDUCTION	GAMMA-GAMMA
FEET	API	API	OHM-M	CPS
479.40	-9999.99	-9999.99	-9999.99	13.95
479.20	-9999.99	-9999.99	-9999.99	13.83
479.00	-9999.99	-9999.99	-9999.99	13.7
478.80	-9999.99	-9999.99	-9999.99	13.7
478.60	-9999.99	-9999.99	-9999.99	13.75
478.40	-9999.99	-9999.99	-9999.99	13.81
478.20	-9999.99	-9999.99	-9999.99	13.88
478.00	-9999.99	-9999.99	0.21	13.85
477.80	-9999.99	-9999.99	-0.12	13.75
477.60	-9999.99	-9999.99	-0.47	13.91
477.40	-9999.99	-9999.99	0.17	14.27
477.20	-9999.99	-9999.99	1.85	14.76
477.00	-9999.99	-9999.99	4.42	15.05
476.80	-9999.99	-9999.99	7.29	15.2
476.60	-9999.99	-9999.99	9.68	15.2
476.40	-9999.99	-9999.99	11.41	15.01
476.20	-9999.99	-9999.99	12.36	14.68
476.00	-9999.99	-9999.99	12.74	14.48
475.80	-9999.99	-9999.99	12.92	14.42
475.60	-9999.99	-9999.99	12.91	14.62
475.40	-9999.99	-9999.99	12.89	14.78
475.20	-9999.99	-9999.99	12.88	14.97
475.00	-9999.99	-9999.99	12.89	15.03
474.80	-9999.99	-9999.99	12.89	15.1
474.60	-9999.99	-9999.99	12.95	15.12
474.40	-9999.99	-9999.99	12.96	15.09
474.20	-9999.99	-9999.99	12.98	15.16
474.00	-9999.99	-9999.99	12.96	15.33
473.80	-9999.99	-9999.99	12.97	15.7
473.60	-9999.99	-9999.99	12.99	16.04
473.40	-9999.99	-9999.99	13	16.16
473.20	-9999.99	-9999.99	13	16.06
473.00	-9999.99	-9999.99	13.03	15.95
472.80	-9999.99	-9999.99	13.09	16.09
472.60	-9999.99	-9999.99	13.14	16.26
472.40	-9999.99	-9999.99	13.12	16.37
472.20	-9999.99	-9999.99	13.01	16.32
472.00	-9999.99	-9999.99	12.87	16.35

Figure 1. Sample Data File

TOOL TYPE	DATA FILE NAME	PLOT FILE NAME	HEADER FILE NAME
Induction	KAFB.CR0	NGIND4PI.PLP	KAFB2.HDP
Gamma-Neutron			
Density			

FIGURE 2. NAMES OF DATA FILES

Southwest Geophysical Services, Inc.

GEOPHYSICAL WELL LOG:	PERM. DATUM: GROUND LEVEL	OTHER SERVICES:
Induction 4PI Density Gamma Neutron	LOG MEASURED FROM: Top Csg. ELEVATION:	

COMPANY: Foster Wheeler
PROJECT/FIELD:
WELL: KAFB 0315
LOCATION: SEC: T: R:
NORTH= EAST=
COUNTY: Bernalillo STATE: New Mexico

ELEVATION KB:
DF:
GL:

	RUN NO. 1		RUN NO. 1
DATE	9/28/2000	FLUID LEVEL	455-Neu./445Den
DEPTH DRILLER	477 ft.	FLUID NATURE	Water
DEPTH LOGGER	479 ft.	FLUID VISCOSITY	
BOTTOM LOGGED	478 ft.	FL. RESISTIVITY	
TOP LOGGED INT.	0 ft.	FL. RES. @ B.H.T.	
CASING LEVEL	477 ft.	CIRCULATION TEMP.	
CASING SIZE	4in.PVC/Ind.4PI	BOT HOLE TEMP.	
CASING SIZE	9 5/8in./G-N	TOOL #	Ind./4PI/Combo
BIT SIZE		LOGGED BY:	S.HASH
BIT SIZE		WITNESSED BY:	J.Jefferson

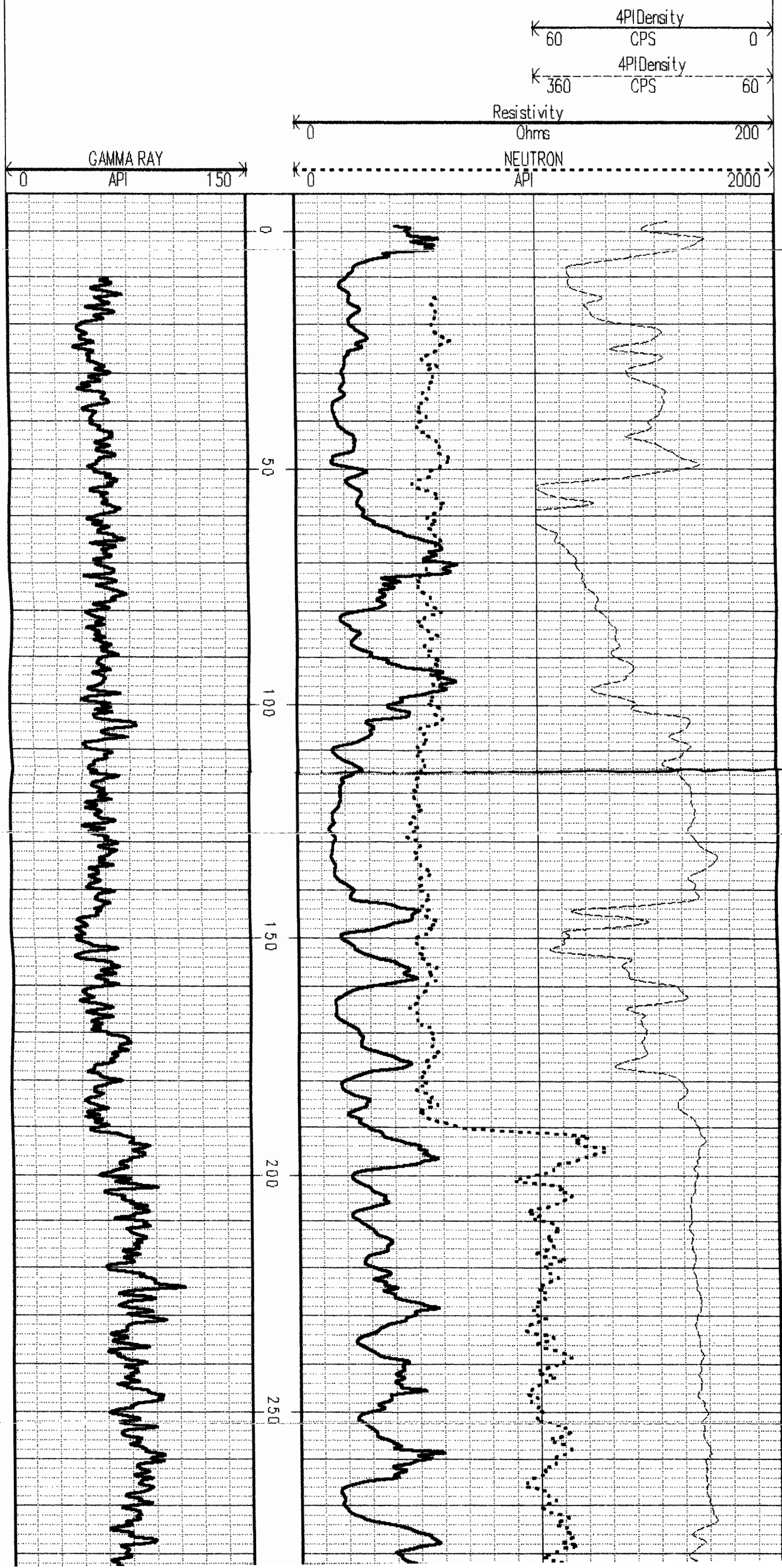
REMARKS:
Location:

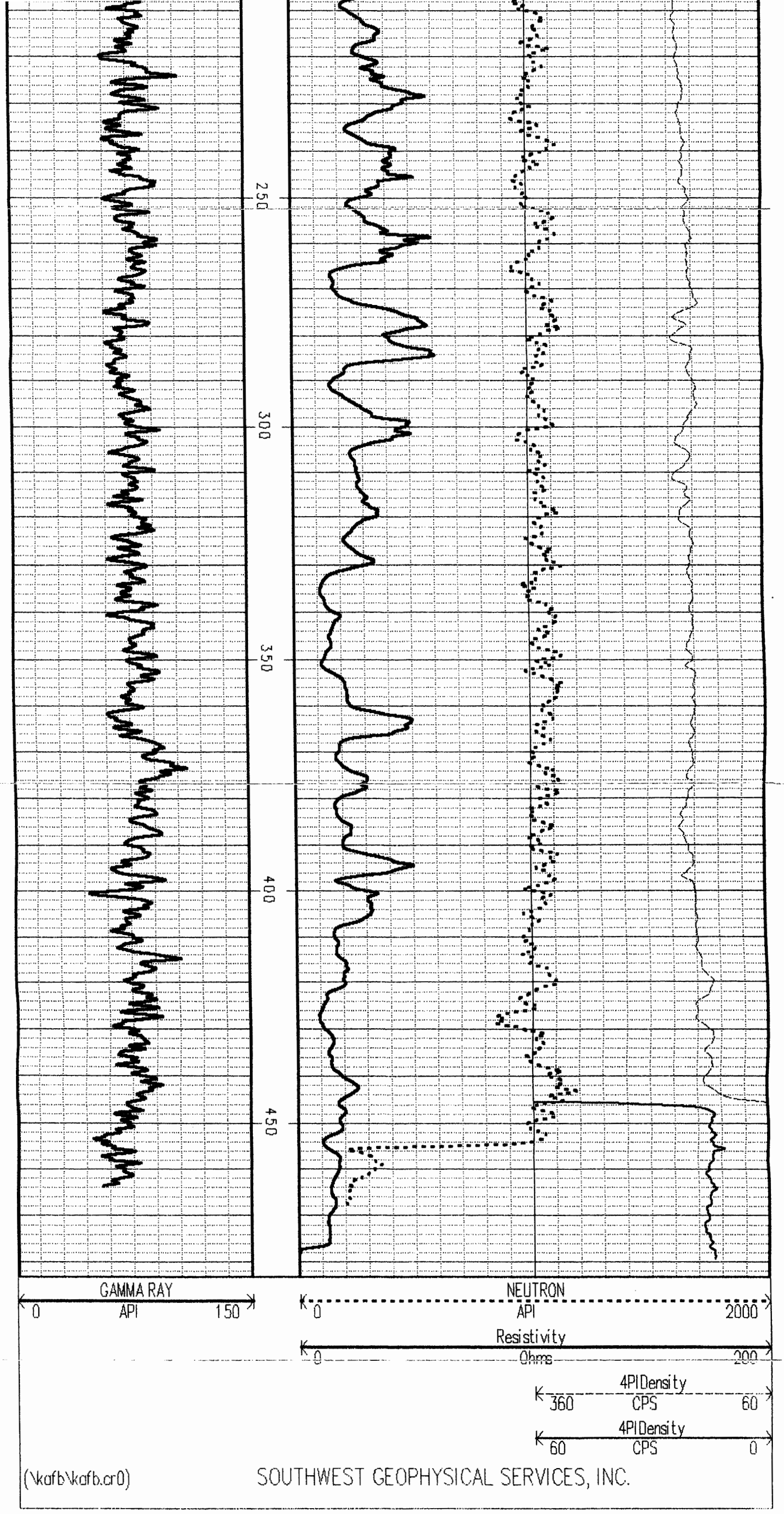
THANK YOU

COMPANY: Foster Wheeler
WELL: KAFB 0315

(\kafb\kafb.cr0)

SOUTHWEST GEOPHYSICAL SERVICES, INC.




250
300
350
400
450
GAMMA RAY
0
API
150
NEUTRON
0
API
2000
Resistivity
0
Ohms
200
4PIDensity
360
CPS
60
4PIDensity
60
CPS
0
(\kafb\kafb.cr0)
SOUTHWEST GEOPHYSICAL SERVICES, INC.

Southwest Geophysical Services, Inc.

4200 Skyline Drive • Farmington, New Mexico 87401 • (505) 325-8531

REPORT ON

DOWNHOLE GEOPHYSICAL LOGGING

AT

KIRTLAND AIR FORCE BASE, NM

WELL # KAFB 0507

February & March, 2001

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INTRODUCTION

On February 13 and March 1, 2001 Southwest Geophysical Services, Inc. performed downhole geophysical logging on monitor well KAFB 0507 located near ST105 on Kirtland Air Force Base. In addition to driller's notes and the logs of the cuttings, downhole surveys were another useful means to help determine the water bearing formations. The logging tools used on February 13th were the natural gamma ray and the thermal neutron, which were run in 9-inch, steel drive casing. On March 1st the well, completed with 4-inch PVC casing was logged with the same gamma ray and thermal neutron tool in addition to the induction and gamma-gamma density probes.

LOGGING PROCEDURE

The logging procedure was the same for all tools. Each tool was first aligned to the ground level, which was the zero point for each log. Then the tools were lowered to the bottom of the hole. Data was acquired as the tools were hoisted out of the hole. The gamma-neutron was logged at 20 feet per minute through 9 & 5/8-inch drive casing. On the second trip to the well the gamma ray, neutron, induction and gamma-gamma density were logged through 4 inch PVC casing. The induction was logged at 50 feet per minute, and the gamma ray, neutron and density at 20 feet per minute. At the surface, each tool was removed from the hole, wiped off, and put back on the logging vehicle.

DESCRIPTION OF EQUIPMENT

LOGGING TOOLS

INDUCTION TOOL

The induction tool was manufactured by Geonics. It is 6.0 feet long, and 1.4 inches in diameter. This tool generates a magnetic field to measure conductivity, which is then converted into a resistivity reading. The vertical resolution is 24 inches, and the radius of investigation is maximized at 11 inches.

COMBO TOOL

This tool was manufactured by Comprobe, Inc. and consists of two sections, a natural gamma ray detector and a thermal neutron source detector. This tool is 12 feet long and 1.25 inches in diameter.

NATURAL GAMMA RAY SECTION

The gamma ray section of this tool contains a sodium-iodide scintillation crystal located 3.9 feet above the neutron detector. This section detects natural gamma rays emitted from the formations. The gamma rays are measured in American Petroleum Institute units or API units. The vertical resolution is 24 inches, and the depth of investigation is less than 12 inches.

THERMAL NEUTRON SECTION

The neutron section of this tool consists of a 37 GBq Americium^{241}-Beryllium source and a Helium^{3} detector located 17 inches above the source. The detector measures the thermal energy level neutrons. The neutrons are measured in American Petroleum Institute units or API units. The vertical resolution of this section is 18 inches, and the depth of investigation is inversely proportional to the porosity, usually less than 12 inches.

GAMMA-GAMMA DENSITY

This tool was manufactured by Comprobe Inc. It is five feet long and 1.25 inches in diameter.

GAMMA-GAMMA DETECTOR

The gamma-gamma density tool consists of a scintillation crystal located 18 inches above a 4.625 GBq cesium^{137} gamma emitting source. The vertical resolution of this tool is 18 inches, and the depth of investigation is less than 12 inches.

SURFACE EQUIPMENT

The surface equipment included an electric hoist with approximately 5700 feet of 0.1875 inch, four conductor, steel armored cable. The data signals are transmitted up this cable through the control panel then digitized and stored on the computer.

TOOL CALIBRATION

All tools were calibrated at the Farmington shop, prior to the job.

INDUCTION

The induction probe is calibrated with a resistivity loop. A two point calibration between the values of 0 and 345 ohm-meters is used.

COMBO

GAMMA RAY

The gamma ray detector is calibrated with a two point linear procedure. The first point is a background reading. Then a 120 API gamma ray calibration standard is placed on the tool for the second calibration point.

NEUTRON

The thermal neutron calibration is also a two point linear procedure. The first point is a zero API reading. The second calibration point is a 1000 API reading, induced by a Plexiglas calibration sleeve placed on the sourced tool over the neutron detector. This sleeve simulates a 7.876-inch diameter limestone borehole filled with fresh water.

GAMMA-GAMMA DENSITY

This tool is a qualitative tool, so there is no calibration procedure. However, in the field the tool is checked for operation by inducing readings of zero and 100 counts per second with a pulse generator module.

DATA

The data was recorded in standard ASCII format and presented in rows and columns. See Figure 1. The first row denoted the name of the curve for each column of data. The second row denoted the units of each column of data. The data was recorded five times per foot, or every 0.20 of a foot. The value -9999.99 was a point where no data for that curve was collected. This was due to the fact

that the detectors were located at different depths on the tools. In Figure 1, the deepest reading taken by the Density was 15.10 counts at 510.40 feet.

THEORETICAL LOG RESPONSES

Interpretation of the logs was aided by a description of the completion methods and drilling procedures.

LOG INTERPRETATION PRINCIPLES

CLAYS

Clays are characterized by several different curves. The gamma ray reads high, the neutron reads low and the induction reads low.

SANDS

Low gamma ray, high neutron, and higher induction readings characterize sands.

SILTS

Silts are the gradations between the clays and the sands. The silts have readings between the sand and clay readings described previously.

EFFECTS FROM COMPLETION METHODS

CASING

Gamma, neutron, and density readings were attenuated approximately 30% by the drive casing and PVC casing in these wells. The PVC has no effect on the induction curve.

VOIDS

Washouts or voids in the borehole are characterized by high density readings.

FLUID LEVEL

Fluid level on run one and two is determined by the low count rate of the neutron probe. Fluid level on the second trip to the well is determined by the low count rate of the density probe.

LOG INTERPRETATION

Please refer to the log in the pocket at the end of this report.

LITHOLOGY

On the first and second runs in the well the gamma-neutron curves show from surface to TD that the formation is composed of interbedded clays, silts and thin sands. The neutron shows a static water level of 491 feet on both the first and second trip to the well. The density log is dominated by well completion material and yields no lithilogical information. The water level at 491 feet is shown by an increase in counts on the density curve. The induction log shows the same dirty sands with higher resistivities in the perched and dry sediments. Between 190 and 405 feet the induction curve is overwhelmed by the well completion material.

WATER SAMPLE ZONES

The induction, neutron and gamma ray curves show a possible saturated sand zone from 490 to TD. This zone has a lower reading on the gamma and moderate readings on the induction and neutron curves. These responses indicate a possible water bearing sand.

COMPLETION METHOD EFFECTS

The decrease in the gamma and neutron counts is indicative of readings through casing. The neutron and density curves in the 4-inch PVC well react to voids behind the pipe with higher counts. Note the zones from 79 to 175 feet and 327 to 381 feet. Metal casing centralizers affect the induction curve by reading below zero. These can be seen at 450, 403 to 413, 370, 307, 245, 208, 165 and 106 feet. The induction also reads low from 190 to 405 possibly due to a bentonite slurry material in the annular space between the casing and the borehole.

DEPTH feet	Neut2-13 API	Gamma2-13 API	Neut3-1 API	Gamma3-1 API	Density CPS	Ind-Res ohm-m
511.00	456.40	-9999.99	465.80	-9999.99	-9999.99	-0.45
510.80	454.70	-9999.99	467.04	-9999.99	-9999.99	-0.46
510.60	451.30	-9999.99	467.45	-9999.99	-9999.99	-0.50
510.40	451.30	-9999.99	468.38	-9999.99	15.10	0.67
510.20	449.60	-9999.99	473.51	-9999.99	15.17	2.21
510.00	441.03	-9999.99	476.93	-9999.99	15.29	2.16
509.80	432.50	-9999.99	475.22	-9999.99	15.37	0.73
509.60	434.20	-9999.99	476.06	-9999.99	15.35	-1.17
509.40	459.83	-9999.99	480.35	-9999.99	15.30	-0.90
509.20	480.33	-9999.99	485.48	-9999.99	15.25	0.50
509.00	500.83	-9999.99	486.33	-9999.99	15.11	1.58
508.80	504.27	-9999.99	482.90	-9999.99	14.92	1.68
508.60	511.10	-9999.99	482.03	-9999.99	14.73	1.18
508.40	505.97	-9999.99	481.18	-9999.99	14.54	1.71
508.20	497.43	-9999.99	482.90	-9999.99	14.40	2.70
508.00	483.77	-9999.99	488.88	-9999.99	14.28	5.28
507.80	470.10	-9999.99	498.28	-9999.99	14.23	9.47
507.60	459.83	-9999.99	505.98	-9999.99	14.21	15.81
507.40	453.00	-9999.99	506.00	-9999.99	14.18	21.10
507.20	451.30	-9999.99	502.59	-9999.99	14.18	24.77
507.00	449.60	-9999.99	502.57	-9999.99	14.18	26.57
506.80	451.30	26.61	503.40	51.03	14.23	27.66
506.60	451.30	27.19	504.25	50.30	14.37	28.29
506.40	453.00	27.91	505.12	49.65	14.56	28.52
506.20	447.87	28.46	506.83	49.28	14.73	28.51
506.00	442.73	28.82	509.40	49.77	14.85	28.45
505.80	444.43	28.66	510.25	50.63	14.94	28.51
505.60	442.73	28.22	511.10	51.38	14.97	28.63
505.40	444.43	28.81	510.25	51.88	14.92	28.78
505.20	439.30	30.04	511.96	51.83	14.89	29.12
505.00	439.30	31.92	516.25	51.27	14.89	29.42
504.80	446.13	33.63	524.80	51.27	14.89	29.60
504.60	459.83	34.00	538.46	51.89	14.85	29.56
504.40	482.07	33.12	550.41	53.19	14.84	29.67
504.20	497.47	30.91	558.10	55.20	14.91	30.02
504.00	507.70	29.08	557.25	56.59	14.94	30.15
503.80	511.10	27.86	555.55	57.23	14.94	30.14
503.60	512.80	26.78	557.27	56.72	14.90	30.00
503.40	516.23	26.87	558.12	55.12	14.85	30.14
503.20	523.07	26.63	557.25	53.55	14.78	30.29
503.00	519.67	27.18	555.53	52.47	14.70	30.31
502.80	509.40	28.73	557.25	52.59	14.70	30.28
502.60	495.73	29.53	558.97	53.69	14.72	30.35
502.40	485.47	30.29	558.97	54.66	14.66	30.58
502.20	475.20	29.14	558.97	55.14	14.52	30.97
502.00	471.80	26.56	558.12	55.13	14.47	31.20
501.80	482.07	24.23	552.99	55.00	14.63	31.11
501.60	488.93	21.95	545.29	55.64	14.84	31.08
501.40	482.07	20.56	539.30	57.07	14.94	31.17
501.20	470.10	20.22	538.45	58.89	14.97	31.51
501.00	466.67	20.51	541.87	60.47	14.94	31.64
500.80	466.67	21.74	546.98	61.19	14.94	31.70
500.60	461.53	23.73	550.40	61.07	14.90	31.81
500.40	454.70	26.22	552.11	59.82	14.85	31.84
500.20	451.30	29.21	553.83	57.42	14.85	31.75
500.00	451.30	32.53	555.53	54.63	14.95	31.43

Figure 1. Sample Data File

Southwest Geophysical Services, Inc.

GEOPHYSICAL WELL LOG:	PERM. DATUM: GROUND LEVEL	OTHER SERVICES:
Gamma Neutron 4 Pi Density Induction Resistivity	LOG MEASURED FROM: Top of Csg ELEVATION:	

COMPANY: Kirtland AFB / Foster Wheeler
PROJECT/FIELD: Kirtland Air Force Base/ST105
WELL: KAFB 0507
LOCATION: SEC: T: R:
NORTH= EAST=
COUNTY: Bernalillo **STATE:** New Mexico

ELEVATION KB:
DF:
GL:

	RUN NO. 1		RUN NO. 1
DATE	3/1/2001	FLUID LEVEL	491 ft.
DEPTH DRILLER	520 ft.	FLUID NATURE	Water
DEPTH LOGGER	514 ft.	FLUID VISCOSITY	
BOTTOM LOGGED	513 ft.	FL. RESISTIVITY	
TOP LOGGED INT.	Surface	FL. RES. @ B.H.T.	
CASING LEVEL	ALL	CIRCULATION TEMP.	
CASING SIZE	4 in. PVC	BOT HOLE TEMP.	
CASING SIZE		TOOL #	Combo/4Pi/Geon
BIT SIZE	10 in. Drive	LOGGED BY:	M.Peterson
BIT SIZE	Casing	WITNESSED BY:	J.Harden

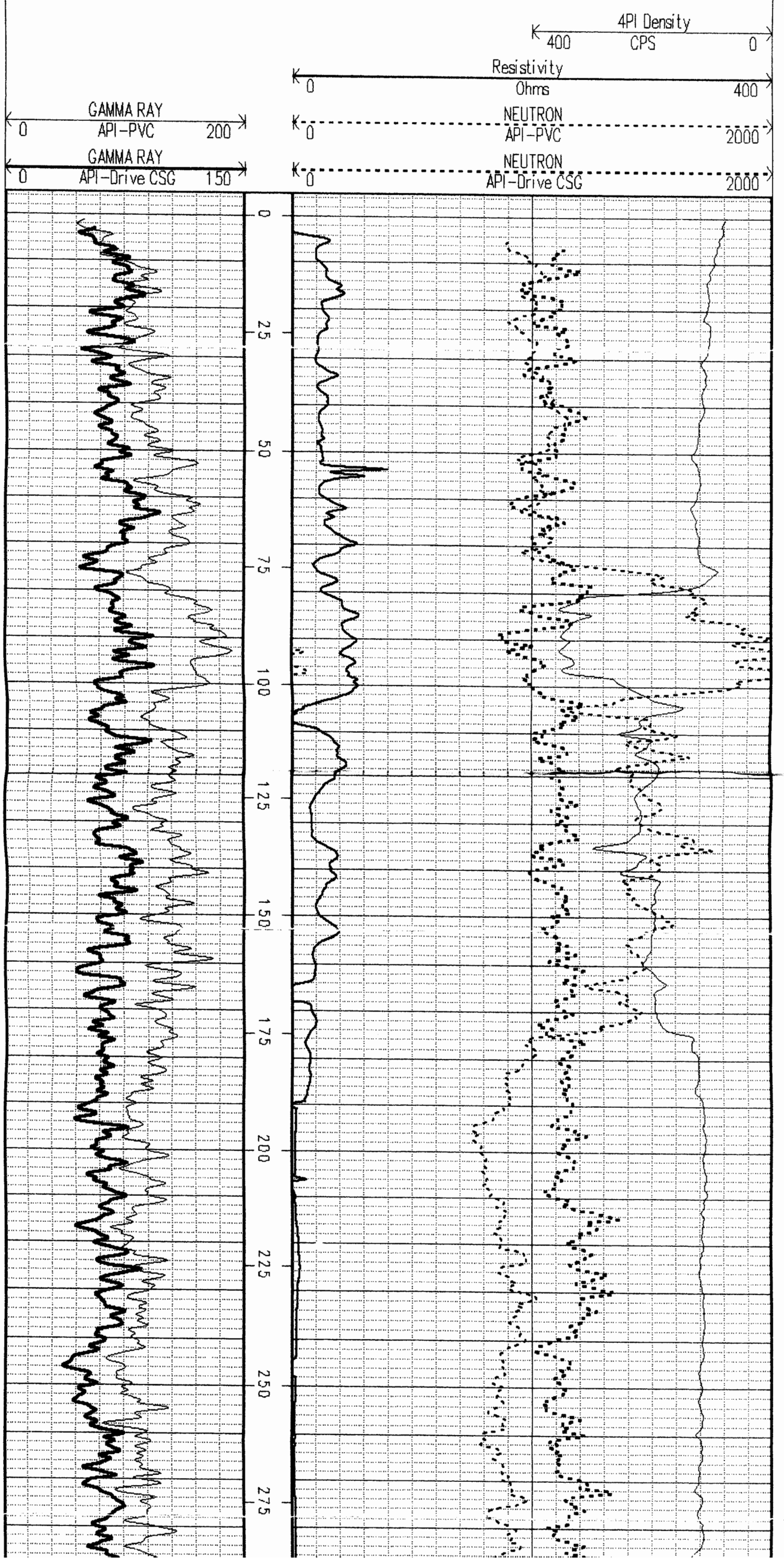
REMARKS:
Note This is a merged log of runs made on 2/13 and 3/1/2001.

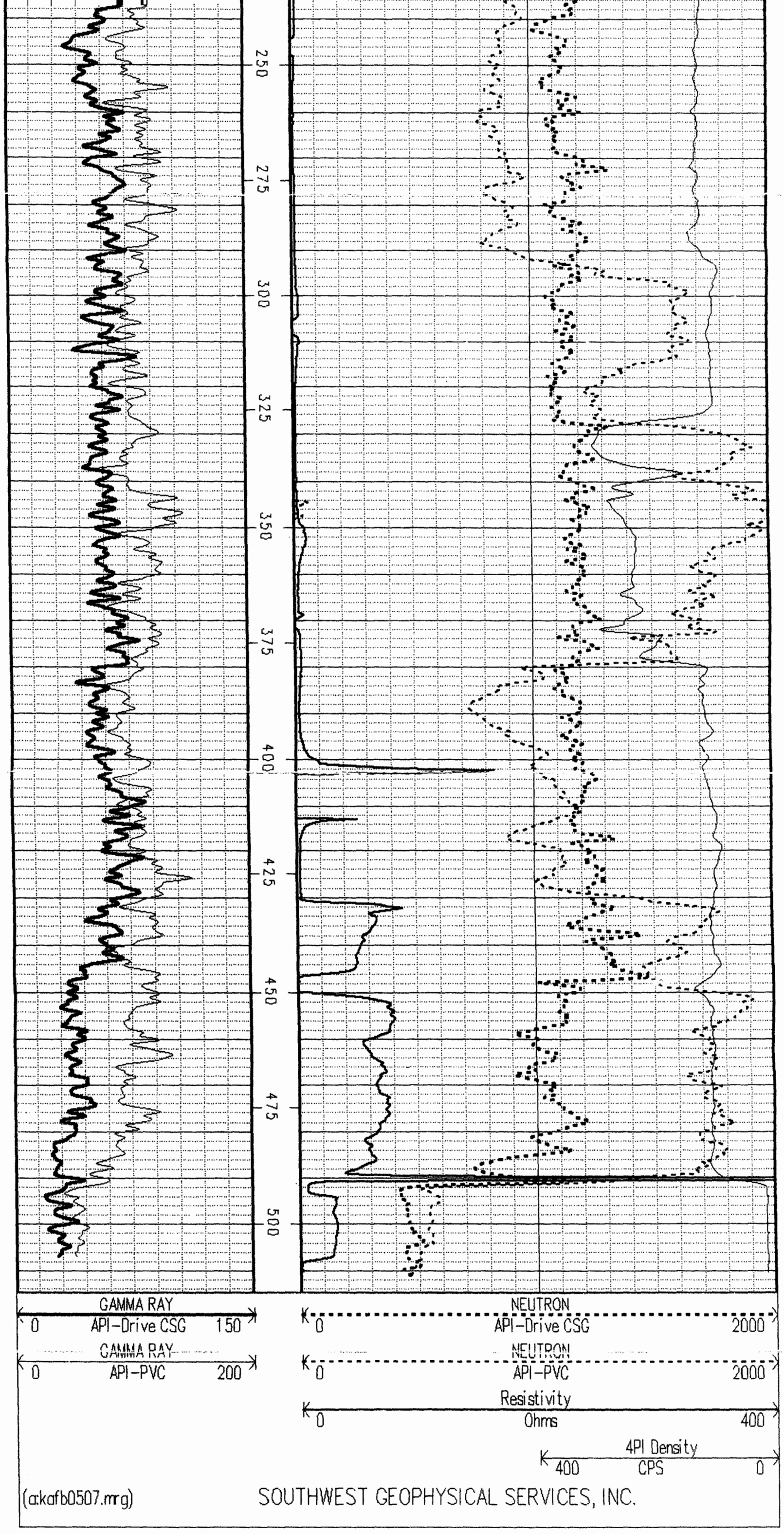
THANK YOU

COMPANY: Kirtland Air Force Base
WELL: KAFB 0507

(a:kafb0507.mrg)

SOUTHWEST GEOPHYSICAL SERVICES, INC.




250
275
300
325
350
375
400
425
450
475
500
GAMMA RAY
0 API-Drive CSG 150
GAMMA RAY
0 API-PVC 200
NEUTRON
0 API-Drive CSG 2000
NEUTRON
0 API-PVC 2000
Resistivity
0 Ohms 400
4PI Density
400 CPS 0
(a:kafb0507.mrg)
SOUTHWEST GEOPHYSICAL SERVICES, INC.

APPENDIX D

APPENDIX D

Well Development Logs

Well Development Record Form

Project: Monitoring Well Installation
Delivery Order 30/WAD1

Site: KAFB Landfill (LF-268)

Well ID: KAFB-0315

Well Depth: 477 ft

Date Installed: 8/28/00 - 9/29/00

Name of Driller: Marion Phillips
Water Development Corp.

Well Diameter: 5 inches

Name of Geologist: Bill Whaley
HydroGeologic Services

Static Water Level:
Upon Completion: 444.5 ft **After Development:** 446 ft

Height of water in well: 32.5 ft (well depth - static water level)

Well Volume: 34 gal. [C X Height of water in well X (well radius (in))^2]

Well Construction Details: Total depth = 477 ft, screened interval = 447 - 442 ft, sandpack comes up to 442 ft, bentonite seal is 25 ft and comes to 417 ft and the rest of the borehole is grouted to the surface with a cement/bentonite (20%) mixture.

Well Development Details: Installed a 5-square-inch, 1-hp submersible pump at a depth of 470 ft, and pumped a total of 500 gallons into a tank. Rate of pumping began at 4.5 gal/min and slowly decreased, ending at a rate of 2.8 gal/min.

Water Quality:	pH (Su)	Specific Conductivity (umhos/cm)	Temperature (o C)	Turbidity (NTU)	Time (Hrs)
Initial:	6.61	630	19.9	0	1240
Volume 1	6.97	598	19.6	0	1250
Volume 2	7.09	596	19.6	0	1300
Volume 3	7.12	596	19.5	0	1310
Volume 4	7.18	596	19.5	0	1320
Volume 5	7.17	594	19.6	0	1330
Volume 6	7.19	595	19.7	0	1340
Volume 7	7.19	594	19.7	0	1350

Well Development Record Form

Project: 5155.0030.0017 **Site:** KAFB ST-105

Well ID: KAFB-0507 **Well Depth:** 515 ft.

Date Installed: 2/11/01 - 2/16/01 **Name of Driller:** Oscar Montezuma

Well Diameter: 4 in. **Name of Geologist:** Charles Madewell

Static Water Level:
Upon Completion: 495.4 **ft.** **After Development:** 495.51 **ft.**

Height of water in well: 19.6 **ft.** (well depth - static water level)

Well Volume: 13 **gal.** [C X Height of water in well X (well radius (in))^2]

Well Construction Details: Total depth = 512.3 ft., screened interval = 507.3 - 482.3 ft., sandpack comes up to 507.3 ft., bentonite seal is 30 ft from 470 - 440 ft. The rest of the borehole is grouted to the surface with a cement/bentonite grout mixture.

Well Development Details: A 3 in by 10 ft stainless steel bailer was initially used to remove 150 gallons. A Grundfos 5 SQ-450 1 HP submersible pump was employed at a flow rate of 5 gallons per minute. A total of 385 gallons of water was purged during development.

Water Quality:	pH (Su)	Specific Conductivity (umhos/cm)	Temperature (o C)	Turbidity (NTU)	Time (Hrs)
Initial:	7.75	403	19.2	66	959
Volume 1	7.76	401	19.5	39	1000
Volume 2	7.90	400	19.8	35	1005
Volume 3	7.99	401	20.2	3	1017
Volume 4	7.85	400	20.2	3	1024
Volume 5	7.83	401	20.2	0	1033
Volume 6	7.89	400	20.2	1	1036
Volume 7	7.85	400	20.3	1	1040

APPENDIX E

APPENDIX E

Well Characterization Analytical Results

LAUCKS TESTING LABORATORIES
SAMPLE DATA PACKAGE

FOSTER WHEELER ENVIRONMENTAL

LABORATORY NO.: 0010250

SDG NO.: FWK66

NOVEMBER 16, 2000

JVG-FWKL6L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Chain-of-Custody Record

11

AFID:AFB -Kirtland	Project: KAFB LTM	Sample Date: 10/9/00
Method Type:	Samplers: Jill Jefferson	

	Location Type	Location Identification	Time (Military Standard)	Sample Depth (Feet)	Preservative A HNO3	B H2SO4	C NaOH	D HCL	Sampling Method	No. of Containers	Gross Alpha/Beta	Radium 226	Radium 228	Gamma Spectroscopy	Isotopic Uranium	Radon 222	TCLP VOCs	TCLP SVOCs TCLP Metals	Sample Tag No.
1		KAFB0315CUT	1500	—					grab	2							1	1	
2		KAFB0507CUT	1530	—					grab	2							1	1	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	10/9/00/1600	Ted Matts	10/10/00 0830
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Remarks: LIMS NO.
RW-06

FEDERAL EXPRESS #: 824188519300

MATRIX:
LABCODE:
LOGCODE:

LABORATORY USE ONLY	Y	N
Package Received/Custody Seals Intact		
Sample Labels/C-O-C Agree		
Temperature Within Specification ____ °C		
Corrected Copy Attached		
Problems or Discrepancies		

SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

KAFB0315CUT

Lab Name: Laucks Testing Labs

SDG No.: FWK66

Matrix: (soil/water) WATER

Lab Sample ID: 0010250-01

Sample wt/vol: 5.0 (g/ml) ML

Lab File ID: O1020012.D

Level: (low/med) LOW

Date Received: 10/10/00

% Moisture: not dec. _____

Date Analyzed: 10/20/00

GC Column: DB-624 ID: 0.45 (mm)

Dilution Factor: 50.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl chloride	150	U
75-35-4	1,1-Dichloroethene	150	U
78-93-3	2-Butanone (MEK)	500	U
67-66-3	Chloroform	150	U
56-23-5	Carbon tetrachloride	150	U
71-43-2	Benzene	150	U
107-06-2	1,2-Dichloroethane	150	U
79-01-6	Trichloroethene	150	U
127-18-4	Tetrachloroethene	150	U
108-90-7	Chlorobenzene	150	U

FORM I VOA

SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

KAFB0507CUT

Lab Name: Laucks Testing Labs

SDG No.: FWK66

Matrix: (soil/water) WATER

Lab Sample ID: 0010250-02

Sample wt/vol: 5.0 (g/ml) ML

Lab File ID: O1020013.D

Level: (low/med) LOW

Date Received: 10/10/00

% Moisture: not dec. _____

Date Analyzed: 10/20/00

GC Column: DB-624 ID: 0.45 (mm)

Dilution Factor: 50.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl chloride	150	U
75-35-4	1,1-Dichloroethene	150	U
78-93-3	2-Butanone (MEK)	500	U
67-66-3	Chloroform	150	U
56-23-5	Carbon tetrachloride	150	U
71-43-2	Benzene	150	U
107-06-2	1,2-Dichloroethane	150	U
79-01-6	Trichloroethene	150	U
127-18-4	Tetrachloroethene	150	U
108-90-7	Chlorobenzene	150	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

KAFB0315CUT

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: FWK66

Matrix: (soil/water) WATER Lab Sample ID: 0010250-01

Sample wt/vol: 250 (g/ml) ML Lab File ID: D1020008.D

Level: (low/med) LOW Date Received: 10/10/00

% Moisture: _____ decanted:(Y/N) N Date Extracted: 10/18/00

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/20/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
106-46-7	1,4-Dichlorobenzene	4	U
95-48-7	o-Cresol	4	U
67-72-1	Hexachloroethane	8	U
106-44-5	m,p-Cresol	4	U
98-95-3	Nitrobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
88-06-2	2,4,6-Trichlorophenol	8	U
95-95-4	2,4,5-Trichlorophenol	12	U
110-86-1	Pyridine	110	U
121-14-2	2,4-Dinitrotoluene	8	U
118-74-1	Hexachlorobenzene	8	U
87-86-5	Pentachlorophenol	40	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

KAFB0507CUT

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: FWK66

Matrix: (soil/water) WATER Lab Sample ID: 0010250-02

Sample wt/vol: 250 (g/ml) ML Lab File ID: D1020011.D

Level: (low/med) LOW Date Received: 10/10/00

% Moisture: decanted:(Y/N) N Date Extracted: 10/18/00

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/20/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
106-46-7	1,4-Dichlorobenzene	4	U
95-48-7	o-Cresol	4	U
67-72-1	Hexachloroethane	8	U
106-44-5	m,p-Cresol	4	U
98-95-3	Nitrobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
88-06-2	2,4,6-Trichlorophenol	8	U
95-95-4	2,4,5-Trichlorophenol	12	U
110-86-1	Pyridine	110	U
121-14-2	2,4-Dinitrotoluene	8	U
118-74-1	Hexachlorobenzene	8	U
87-86-5	Pentachlorophenol	40	U

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.: A315CU

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: FWK66T

Matrix (soil/water): WATER Lab Sample ID: 10250-01

Level (low/med): LOW Date Received: 10/10/00

% Solids: 0.0

ConcentrationUnits (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	27.	U		P
7440-39-3	Barium	1130.	B		P
7440-41-7	Beryllium				
7440-43-9	Cadmium	3.	B		P
7440-70-2	Calcium				
7440-47-3	Chromium	21.	B		P
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	16.	U		P
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	1.	U		AV
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium	17.	U		P
7440-22-4	Silver	3.	U		P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
7439-98-7	Molybdenum				

Color Before: COLORLESS Clarity Before: CLEAR Texture: ___

Color After: COLORLESS Clarity After: CLEAR Artifacts: _

Comments:

ENT ID: KAFB0315CUT

FORM I - IN

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.: B507CU

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: FWK66T

Matrix (soil/water): WATER Lab Sample ID: 10250-02

Level (low/med): LOW Date Received: 10/10/00

% Solids: 0.0

ConcentrationUnits (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	27.	U		P
7440-39-3	Barium	2110.			P
7440-41-7	Beryllium				
7440-43-9	Cadmium	2.	U		P
7440-70-2	Calcium				
7440-47-3	Chromium	24.	B		P
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	16.	U		P
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	1.	U		AV
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium	17.	U		P
7440-22-4	Silver	3.	U		P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
7439-98-7	Molybdenum				

Color Before: COLORLESS Clarity Before: CLEAR Texture: ___

Color After: COLORLESS Clarity After: CLEAR Artifacts:. _

Comments:

CLIENT ID: KAFB0507CUT

FORM I - IN

LAUCKS TESTING LABORATORIES
SAMPLE DATA PACKAGE

FOSTER WHEELER ENVIRONMENTAL

LABORATORY NO.: 0102460

SDG NO.: FWK70

MARCH 20, 2001

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WO# 01-02-460
SDG- FWK70

Chain-of-Custody Record

11

AFIID:	Project: USACE Kirtland AFB	Sample Date: 2/22/01
Method Type:	Samplers: Jill Jefferson	

	Location Type	Location Identification	Time (Military Standard)	Sample Depth (Feet)	HNO3	H2SO4	NaOH	HCL	Sampling Method	No. of Containers	Nitrate nitrogen	Nitrate/nitrite nitrogen	TKN	Ammonia nitrogen	Total nitrogen	TCLP VOCs	TCLP SVOCs	TCLP Metals	418.1	Sample Tag No.
1		KAFB0507CUT	1610	–					grab	2						X	X	X		
2		KAFB0507drum	1625	–					grab	1									X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	2/22/01 1700	Ted Matta	2/23/01 820
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Remarks:

FEDERAL EXPRESS #: 824188519491

MATRIX:
LABCODE:
LOGCODE:

LABORATORY USE ONLY	Y	N
Package Received/Custody Sealed		
Sample Labels/COC Agree		
Temperature Within Specification ___ °C		
Corrected Copy Attached		
Problems or Discrepancies		

SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

KAFB0507CUT

Lab Name: Laucks Testing Labs

SDG No.: FWK70

Matrix: (soil/water) WATER

Lab Sample ID: 0102460-01

Sample wt/vol: 5.0 (g/ml) ML

Lab File ID: M0306016.D

Level: (low/med) LOW

Date Received: 02/23/01

% Moisture: not dec. _____

Date Analyzed: 03/06/01

GC Column: RTX-624 ID: 0.25 (mm)

Dilution Factor: 50.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl chloride	150	U
75-35-4	1,1-Dichloroethene	150	U
78-93-3	2-Butanone (MEK)	500	U
67-66-3	Chloroform	150	U
56-23-5	Carbon tetrachloride	150	U
71-43-2	Benzene	150	U
107-06-2	1,2-Dichloroethane	150	U
79-01-6	Trichloroethene	150	U
127-18-4	Tetrachloroethene	150	U
108-90-7	Chlorobenzene	150	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

KAFB0507CUT

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: fwk70

Matrix: (soil/water) WATER Lab Sample ID: 0102460-01

Sample wt/vol: 250 (g/ml) ML Lab File ID: L0313014.D

Level: (low/med) LOW Date Received: 02/23/01

% Moisture: decanted:(Y/N) N Date Extracted: 03/09/01

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 03/13/01

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	Q
106-46-7	1,4-Dichlorobenzene	4	U
95-48-7	o-Cresol	4	U
67-72-1	Hexachloroethane	8	U
106-44-5	m,p-Cresol	4	U
98-95-3	Nitrobenzene	4	U
87-68-3	Hexachlorobutadiene	4	U
88-06-2	2,4,6-Trichlorophenol	8	U
95-95-4	2,4,5-Trichlorophenol	12	U
110-86-1	Pyridine	110	U
121-14-2	2,4-Dinitrotoluene	8	U
118-74-1	Hexachlorobenzene	8	U
87-86-5	Pentachlorophenol	40	U

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.: A07CUT

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: FWK70T

Matrix (soil/water): WATER Lab Sample ID: 02460-01

Level (low/med): LOW Date Received: 02/23/01

% Solids: 0.0

ConcentrationUnits (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	29.	U		P
7440-39-3	Barium	871.	B		P
7440-41-7	Beryllium				
7440-43-9	Cadmium	24.	B	N	P
7440-70-2	Calcium				
7440-47-3	Chromium	5.	B		P
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	16.	U		P
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	1.	U	N	AV
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium	15.	B		P
7440-22-4	Silver	7.	U		P
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
7439-98-7	Molybdenum				

Color Before: COLORLESS Clarity Before: CLEAR Texture: ___

Color After: COLORLESS Clarity After: CLEAR Artifacts: _

Comments:

CLIENT ID: KAFB0507CUT

FORM I - IN

INORGANICS ANALYSIS DATA SHEET

Lab Name: Laucks Testing Labs
SDG No. : FWK70
Matrix : SOIL

Sample ID : KAFB0507DRUM
Lab Sample ID: 0102460-02
Date Received: 02/23/01

Analyte	Result	Units	Prepped	Analyzed	Limit	Method
TPH (418.1)	4800	mg/kg DB	02/26/01	03/02/01	24.	EPA 418 1

APPENDIX F

APPENDIX F

Daily Quality Control Reports

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 01 Date: 8/28/00

Contract No.: 5155.0030.0001 A1200

Project Title & Location: Monitoring Well Installation, LF-268, KAFB

Weather: Sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 58 Max.: 100

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	hydrogeologist	10	HydroGeologic Service	Lead geologist/LF-268
3	1 driller 2 helpers	10	Water Development	Driller/Driller's helpers/LF-268
1	geologist	10	FWENC	logger/LF-268
1	geologist/lead	~~10~~ 8 DW 9/6/00	FWENC	oversight at well location LF-268

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary Drill Rig	8/28/00	8/28/00	1.5	2 - went to get new larger compressor which arrived from their company.	

Deborah Wilson, Ad Manager, 9/6/00

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drillers set up rig on well, drilled 60 ft.

~~Geologist~~ QD 9/6/00

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Drill Rig Safety Inspection – OK
Project kick off meeting, daily safety briefing
Set up exclusion zone around work area

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

N/A

6. Material Received: Note inspection results and storage provided.

N/A

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

N/A

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Meeting, review of base-wide and site-specific health and Safety Plans.

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Drillers had to de-mob from last job and set up here at LF-268. Didn't begin drilling until 1320. Drilled until 1450 when drillers went to pick up new, larger compressor.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

8/28/00
DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name LF-268 Well Installation Project # 5155.0030.0001 A1200

Your Name Jill Jefferson 8/28/00 Drillers Name Marion E. Phillips
Signature [signature] Signature [signature]

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

N/A Have any fiber optic lines been identified on-site?

N/A If so, do you have a copy of the fiber optics plan?

N/A Is someone from Health and Safety and the Fiber Optics Company involved?

N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

13.0 FIELD TEAM REVIEW SHEET

Each field team member shall sign this sheet after site-specific training is completed and before being permitted to work on site.

I have read and understood the project-specific addendum for:_____ _____. I will comply with the provisions contained therein.

Name		Date
Marion E. Phillips	Marion E. Phillips	8/28/00
Myron Tycksen	Myron Tycksen	8/28/00
Walter Cox E/C	[illegible]	8/28/00
Jill Jefferson	[illegible]	8/28/00
Bill Whaley	[illegible]	8/28/00
Bruce S. Wedgeworth	Bruce S. Wedgeworth	8/28/00

HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT

This form serves as documentation that field personnel have read, have been informed, and understand the provisions of the Cannon AFB Basewide Health and Safety Plan (HASP) and the project-specific Addendum to the HASP for the Corrective Measures Study (CMS) of the Sewage Lagoons (SWMU 101).

Each field team member, including subcontractors, will read the Basewide HASP and the project-specific addendum. Once the plans have been read each person will sign this form after the site-specific training is complete before being permitted to work on site. In signing this form each person will understand the following statement:

I have read, or have been informed of, the Cannon AFB Basewide HASP and the project-specific addendum for CMS of SWMU 101. I understand the information presented and will comply the provisions contained therein.

Name	Signature	Date
Werner R. Cornejo	[illegible]	8/28/00
Myron Tyersen	Myron Tyersen	8/28/00
Marion E. Phillips	Marion E. Phillips	8/28/00
Bill Whaley	Bill Whaley	8/28/00
Jill Jefferson	[illegible]	8/28/00
Bruce Wedgeworth	Bruce L. Wedgeworth	8/28/00

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 02 Date: 8/29/00

Contract No.: 5155.0030.0001 A1200

Project Title & Location: Monitoring Well Installation, LF-268, KAFB

Weather: mix Precipitation: yes In.: <1 Temp.: °F Min.: 56 Max.: 90

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	10	Hydrogeologic Serv.	LF-268 - MW Installation
1	Geologist and Health + Safety Officer	10	FWENC	logging @ LF-268 MW Inst.
1	Driller	10	Water Development	Driller @ LF-268-0315
2	Driller's helpers	10		Driller's helpers @ LF-268-0315

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Drill Rig (Air Rotary)	8/29/00	8/29/00	3 4		1

Deborah Wilson, QA Manager, 9/6/00

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drilled from 60' to 190' at 0315 in well location @ CF-26B. At 190' the drill casing size changes to 9 5/8. Drillers removed the drill bit loaded new casing and lowered to 110'. The remainder will be lowered in the morning

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Meeting
Drill Rig Inspection checklist

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

received 500' well casing from Baroid

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety meeting
Drill Rig Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Work stopped at 1705 due to lightening.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

8/29/00
DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

e Name LF-268 (well 0315) Project # 5155.0030.0001

Your Name Jill Jefferson 8/29/00 Drillers Name [illegible]
Signature [illegible] Signature [illegible]

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

Has the Site Safety Plan been reviewed and signed?

___ Have you identified where the nearest pay phone and emergency equipment is located?

___ Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?
- ___ pink: temporary survey markings
- ___ green: sewer
- ___ yellow: natural gas, oil, steam
- ___ blue: water
- ___ orange: communications
- ___ red: electric
- ___ white: proposed excavation/boring locations

Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

Are you prepared to hand dig to 5 feet?

No Have any fiber optic lines been identified on-site?

N/A If so, do you have a copy of the fiber optics plan?

N/A Is someone from Health and Safety and the Fiber Optics Company involved?

N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 8/29/00

Project Number: 5155.0030.0001 A1200 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☐ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☑ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☐ electrical ground fault
- ☑ public safety and fences
- ☐ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☐ vibration related injuries
- ☑ fire extinguisher locations
- ☐ eye wash station locations
- ☐ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☐ parking and laydown
- ☐ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☐ backing up hazards
- ☑ accidents are costly
- ☐ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Marion Phillips	Marion Phillips	WDC
Myron Tyckson	Myron Tyckson	WDC
Werner Coenen	[illegible]	W.O.C
Bruce Wedgeworth	Bruce Wedgeworth	Foster Wheeler
Carol Bieniulis	Carol Bieniulis	Foster Wheeler
Bill Whaley	Bill Whaley	HGS
Jill Jefferson	[illegible]	FWENC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 03 Date: 8/30/00

Contract No.: 5155.0030.0001

Project Title & Location: Monitoring Well Installation @ LF-268, KAFB

Weather: sunny Precipitation: ____ In.: __ Temp.: °F Min.: 60° Max.: 90°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	10.5	HGS	Oversight of drilling activities
1	Geologist	10.5	FWENC	Logging of borehole/ESS
1	Drill Rig Operator	11.5	WDC	drill rig operations
2	Driller's helper	11.5	WDC	" " " assistance

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary Drill Rig	8/20/00	8/30/00	7		1

Deborah Wilson, QA Manager, 9/6/00

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drillers prepared equip for today's drilling activities. Drilled to 406 feet when we hit water. Allowing to settle overnight.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

Received bentonite grout from Baroid.

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

N/A

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection check list

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Drillers dropped 9 5/8" casing down ~10' into 11 5/8" casing, retrieved it and continued. Drillers also needed to repair a cracked rod in the hammer part of the rig causing only a minor delay.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

8/30/00
DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name LF-268, KAFB0315 Project # 5155.0030.0001

Your Name Jill Jefferson 8/30/00 Drillers Name Dwayne E Phillips

Signature [signature] Signature [signature]

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?

- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?

- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

N/A Have any fiber optic lines been identified on-site?

____ If so, do you have a copy of the fiber optics plan?

____ Is someone from Health and Safety and the Fiber Optics Company involved?

____ Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 8/30/00

Project Number: 5155.0030.0001 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☐ electrical ground fault
- ☑ public safety and fences
- ☐ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☐ vibration related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☐ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Jill Jefferson	[signature]	FWEWC
Bill Whaley	[signature]	HGS
Marion E Phillips	[signature]	WDC
Myron Tycksen	[signature]	WDC
DEINER CORNEIO	[signature]	WDC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 04 Date: 8/31/00

Contract No.: 5155.0030.0001 A1200

Project Title & Location: Monitoring Well Installation, LF-268, KAFB

Weather: sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 60° Max.: 88°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	9.5 ~~+0.5~~	HGS	oversight of drilling
1	Geologist/ESS	10.	FWENC	logging of borehole
1	Drill Rig Operator	10.5	WDC	rig operation
2	Driller's helpers	10.5	WDC	rig operation assistance

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary Drill Rig	8/31/00	8/31/00	5		.5

Deborah Walsing, QA Manager, 9/6/00

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

· First thing in the morning - measured DTW in borehole ~398' bgs
· Drilled from 405' to 425' and allowed the hole to sit for ~1 hr.
· A DTW measurement was not able to be obtained due to the indicator probe getting hung up on the bit/ build-up of cuttings in the casing
· removed bit, measured water at ~424', replaced bit, decided to continue drilling. Drilled to 445' - allowing to sit overnight

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety meeting
Drill Rig Inspection
Spoke w/ Mark Holmes regarding all decisions made involving drilling and well installation.

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection Check List

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Discussions as far as where the perched aquifer took place. It was decided that what we thought was a perched aquifer was actually just a small saturated zone that wouldn't produce enough water for the well to be effective.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

8/31/00
DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name LF-268 XAFB0315 Project # 5155.0030.0001 A/2000

Your Name J. Jefferson 8/31/00 Drillers Name Marvin Phillips

Signature [signature] Signature [signature]

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?

- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?

- Y 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- Y 5 feet away from non-natural gas utilities?
- Y 10 feet away from natural gas lines?
- Y 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

Have any fiber optic lines been identified on-site?

If so, do you have a copy of the fiber optics plan?

Is someone from Health and Safety and the Fiber Optics Company involved?

Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

- yes Are all the visible belts and hoses in good working condition?
- yes Have you eliminated all tripping hazards to the best of your ability?
- yes Has your driller and his helper removed all of their jewelry?
- yes Are you prepared to monitor for vapors?
- yes Have you calibrated your PID/FID and O2/LEL?
- YES Is someone CPR qualified in case of an emergency?
- YES Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 8/31/00

Project Number: 3155.0030.0001 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☐ electrical ground fault
- ☑ public safety and fences
- ☐ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☐ vibration related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☐ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions: _____

NAME	SIGNATURE	COMPANY
Manuel Phillips	Manuel Phillips	WDC
Werner Cornejo	[illegible]	WDC
Myron Tycksen	Myron Tycksen	WDC
Bill Whaley	Bill Whaley	HGS
Jill Jefferson	[illegible]	FWENC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 05 Date: 9/1/00

Contract No.: 5155.0030.0001 A1200

Project Title & Location: Monitoring Well Installation, LF-26B, KAFB

Weather: Sunny Precipitation: ____ In.: ____ Temp.: °F Min.: 64° Max.: 90°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	7	HGS	oversight/expertise
1	Geologist	8*	FLUENC	oversight/comm. b/t FW + client
1	Geologist	7*	FLUENC	logging of boreholes / ESS
3	drillers/helpers	7.5	WDC	drilling / helping
		* b/f going out @ 6 to		meet Sta Geophysical Services

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary drill Rig	9/1/00	9/1/00	2		0

Deborah Wilson, QA Manager, 9/6/00

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Measured DTW in the morning and decided to drill an additional 20'. Measured a DTW of ~420' bgs. Removed bit from hole and allowed to sit. Measured DTW again depth = 453'. Southwest Geophysical Services is coming out at 6 tonight for geophysical logging. Hole will sit until Tuesday.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Drill Rig Inspection
Daily Safety briefing

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill rig Inspection
Weekly EHS inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Had to drill to 465', 35' deeper than specified in the scope. Depth approved by Mark Holmes in a phone call w/ B. Widgeworth.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

9/1/00
DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

'te Name LF-26B

Project # 5155.0030.0001A1200

Your Name Jill Jefferson 9/1/00

Signature

Drillers Name Marion E Phillips

Signature Marion E Phillips

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?

- y Hard Hats
- y Ear protection
- y Safety Glasses
- y Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?

- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

N/A Have any fiber optic lines been identified on-site?

N/A If so, do you have a copy of the fiber optics plan?

N/A Is someone from Health and Safety and the Fiber Optics Company involved?

N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 8/9/1/00

Project Number: 5155.0030. 0001 A1200 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☐ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☐ electrical ground fault
- ☑ public safety and fences
- ☐ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☑ vibration related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☑ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Myron Tyckson	Myron Tyckson	WDC
Bill Whaley	Bill Whaley	HRS
Werner Cabrejo	[illegible]	WDC
Lawrence Phillips	Lawrence Phillips	WDC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 06 Date: 9/5/00

Contract No.: 5155.0030.0001 A120C

Project Title & Location: Monitoring well Installation, LF-268, KAFB

Weather: sunny Precipitation: ____ In.: ___ Temp.: °F Min.: 62° Max.: 102°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	4.5	HGS	LF-268 lead geologist
1	Geologist	9.5	FWENC	LF-268 ass. geologist/ESS
1	Drill rig operator	5.5	WDC	rig operation, LF-268
2	Drillers helpers	5.5	WDC	assist drillers

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary Drill Rig	9/5/00	9/5/00	4	1.5	0

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

after studying the neutron log, a decision was made to drill to 480'. Drilled to 481', took water measurement, allowed the hole to sit overnight.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety meeting
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection checklist

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Plan to set well w/ a TD of 477', screened interval from 447' - 472'.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/5/00 DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

"Look up and Live"

.e Name LF26E, MW Installation Project # 5155.0030.0001 ARCO

Your Name Jill Jefferson Drillers Name Aaron E Phillips
Signature Signature Aaron E Phillips

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

N/A Have any fiber optic lines been identified on-site?

N/A If so, do you have a copy of the fiber optics plan?

N/A Is someone from Health and Safety and the Fiber Optics Company involved?

N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/5/00

Project Number: 5155.0030.0001 A1200 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☑ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☑ electrical ground fault
- ☑ public safety and fences
- ☑ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☑ vibration-related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☑ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Myron Tucksen	[signature]	WDC
Marion Phillips	[signature]	WDC
Werner Correjo	[signature]	W.D.C
Bill Whaley	[signature]	HGS
Jill Jefferson	[signature]	FWENC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 07 Date: 9/6/00

Contract No.: 5155.0030.0001 A1200

Project Title & Location: Monitoring Well Installation, LF-26B, KAFB

Weather: sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 60° Max.: 102°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	9.5	HGS	Oversight of well Installation
1	Geologist / ESS	9.5	FWENC	ESS, assist. geologist
1	Drill Rig Operator	$70 11	WDC	rig operations
2	Driller's helpers	11	WDC	rig operation assistance

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary Drill Rig	9/6/00	9/6/00	9	2	0

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Took a water level measurement. Began installation of well PVC casing. Installed 480' of casing (477' bgs). Filled borehole w/ Colorado Silica Sand to a depth of 442', 5' above the screen. Water level was then measured - 445' = DTW. A bentonite seal was installed from 442' to 438', the remaining 26' of bentonite will be installed tomorrow.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Drill rig inspection
Daily Safety Meeting

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

9/6/00
DATE

Jill Jefferson

1/6/00

DRILLING SAFETY CHECKLIST

"Look up and Live"

ite Name LF-268, KAFB0315 Project # 5155.0030.0001 A1208

Your Name Jill Jefferson
Signature

Drillers Name Marion E Phillipson
Signature Marion E Phillipson

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- y Hard Hats
- y Ear protection
- y Safety Glasses
- y Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

yes Are you prepared to hand dig to 5 feet?

9/6/00 yes Have any fiber optic lines been identified on-site?

yes If so, do you have a copy of the fiber optics plan?

yes Is someone from Health and Safety and the Fiber Optics Company involved?

yes Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/6/00

Project Number: 5155.0030.0001 A1200 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☑ electrical ground fault
- ☑ public safety and fences
- ☐ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☑ vibration related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☑ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☐ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Marion Phillips	Marion Phillips	WDC
Myron Tycksen	Myron Tycksen	WDC
Werner Conklin	[illegible]	W.D.C
Bill Whaley	Bill Whaley	HGS
Jill Jefferson	[illegible]	FWENC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 08 Date: 9/7/00

Contract No.: 5155.0030.0001 A1200

Project Title & Location: Monitoring Well Installation, LF-268, KAFB

Weather: sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 64° Max.: 90°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	9	HGS	oversight of well Installation
1	Geologist	11.5	FWENC	assis. geologist / ESS
1	drill rig operator	12	WDC	operation of rig/Installation
2	driller's helpers	12	WDC	of grout / bentonite seal

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary drill rig	9/7/00	9/7/00	11	1	0

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Installed an additional 21 ft of bentonite seal. Top of seal is at 417'. ~~Removed~~ Grout was installed to an approximate depth of 190' bgs (w/ casing in hole). Removed all (480') of 9 5/8 casing.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection
Weekly Safety Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily safety meeting
Drill rig Inspection
Weekly site Safety Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

A 30' bentonite seal had been the goal but it continued to plug the trimmy pipe so ~25' was installed.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

9/7/00
DATE

Jill Jefferson

7/7/00

DRILLING SAFETY CHECKLIST

"Look up and Live"

ite Name LF-268 Project # 5155.0030.0001 A1200

Your Name Jill Jefferson Drillers Name Marvin Phillips

Signature Signature

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?

- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

Are your borings?

- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

N/A Have any fiber optic lines been identified on-site?

N/A If so, do you have a copy of the fiber optics plan?

N/A Is someone from Health and Safety and the Fiber Optics Company involved?

N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/7/00

Project Number: S155.0036.0001 A1200 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- [x] safety glasses, hard hat, safety boots
- [x] site safety plan review and location
- [x] equipment and machinery familiarization
- [x] employee Right-To-Know/MSDS location
- [x] open pits, excavations, and site hazards
- [x] vehicle safety and driving/road conditions
- [x] portable tool safety and awareness
- [x] overhead utility locations and clearance
- [x] first aid, safety, and PPE location
- [x] sharp object, rebar, and scrap metal hazards
- [x] safety is everyone's responsibility
- [x] latex gloves inner/nitrile gloves outer
- [ ] excavation/trenching inspections/documentation
- [ ] full face respirators with proper cartridges
- [ ] upgrade to level c at: PID (___ eV) > ___ ppm
- [ ] work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- [x] slips, trips, and falls
- [x] directions to hospital
- [x] anticipated visitors
- [x] electrical ground fault
- [x] public safety and fences
- [x] excavator swing and loading
- [x] orderly site and housekeeping
- [x] smoking in designated areas
- [x] leather gloves for protection
- [x] effects of the night before
- [x] vibration related injuries
- [x] fire extinguisher locations
- [x] eye wash station locations
- [x] decontamination procedures
- [x] daily work scope
- [x] emergency protocol
- [x] parking and laydown
- [x] hot work permits
- [x] strains and sprains
- [x] noise hazards
- [x] no horseplay
- [x] heat and cold stress
- [x] backing up hazards
- [x] accidents are costly
- [x] dust and vapor control
- [ ] refueling procedures
- [ ] confined space entry
- [ ] flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Bill Whaley	Bill Whaley	HGS
Werner Cortejo	[illegible]	W.D.C
Marvin E Phillips	Marvin E Phillips	WDC
Myron Tycksen	[illegible]	WDC
Jill Jefferson	[illegible]	FWENC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 09 Date: 9/8/00

Contract No.: 5155 0030 0001 A1200

Project Title & Location: Monitoring Well Installation, LF-268, KAFB

Weather: Sunny Precipitation: ____ In.: __ Temp.: °F Min.: 60° Max.: 80°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	10	FLUENC	oversight of grouting process
1	Drill Rig Operator	10	WDC	rig operation/grouting
2	Drillers Helpers	10	WDC	grouting
				LF-268, KAFB 0315

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary Drill Rig	9/8/00	9/8/00	7	1	0

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Continued grouting around well casing. Removed all the 11 3/4" casing @ (190'). Finished grouting to ground surface. Began decon of equipment

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Safety checklist

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

Baroid delivered more Quik-Grout, Quikrete, and the surface completion materials (Sec 0315).

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Meeting
Drill Rig Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/8/00 DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name LF-268, KAFB 0315 Project # 5155 0030 0001A/200

Your Name Jill Jefferson
Signature

Drillers Name Marion E Phillips
Signature

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- X Hard Hats
- X Ear protection
- X Safety Glasses
- X Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

N/A Have any fiber optic lines been identified on-site?

N/A If so, do you have a copy of the fiber optics plan?

N/A Is someone from Health and Safety and the Fiber Optics Company involved?

N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/8/00

Project Number: 5155.0030.0001 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☑ electrical ground fault
- ☑ public safety and fences
- ☑ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☑ vibration related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☑ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Marland Phillips	Marland Phillips	WDC
Myron Tycksen	Myron Tycksen	WDC
[illegible]	[illegible]	W.O.C
Jill Jefferson	[illegible]	FWENC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 10 Date: 9/9/00

Contract No.: 5155.0030.0001 A1200

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 65° Max.: 89°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	10	HGS	oversight of drilling-0507
1	Geologist	7	FWENC	ESS/logging of soils-0507
1	Drill Rig Operator	12	WDC	Rig Operation
2	Driller's helpers	12	WDC	drilling assistance

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary Drill Rig	9/9/00	9/9/00	5.0	5.0	1.5

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drillers decontaminated equipment. Set up on KAFB0507 location. Drilled a total of 225'. Plan to drill another 40' tomorrow after letting the hole sit overnight.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

none

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Big Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

9/9/00
DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

"Look up and Live"

te Name ST-105, Sewage Lagoons Project # 5155.0030.0001 H1200

Your Name Jill Jefferson Drillers Name [illegible]

Signature [illegible] Signature [illegible]

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?

- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?

- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

Have any fiber optic lines been identified on-site?

If so, do you have a copy of the fiber optics plan?

Is someone from Health and Safety and the Fiber Optics Company involved?

Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

Yes Are all the visible belts and hoses in good working condition?

Yes Have you eliminated all tripping hazards to the best of your ability?

Yes Has your driller and his helper removed all of their jewelry?

Yes Are you prepared to monitor for vapors?

Yes Have you calibrated your PID/FID and O2/LEL?

Yes Is someone CPR qualified in case of an emergency?

Yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/9/00

Project Number: 5155.0030.0001 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☑ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☑ electrical ground fault
- ☑ public safety and fences
- ☑ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☑ vibration related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☑ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Bill Whaley	Bill Whaley	HGS
Marion Phillips III	Marion Phillips	WDC
Myron Tyckson	[illegible]	WDC
Wayne Corbelli	[illegible]	WDC
Jill Jefferson	[illegible]	FLSEWC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 11 Date: 9/10/00

Contract No.: 5155.0030.0001 A1200

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: sunny Precipitation: Ø In.: Ø Temp.: °F Min.: 65° Max.: 95°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	8	HGS	oversight of drilling
1	Geologist	8	FLUENC	ESS/logging
1	Drill Rig Operator	8	WDC	Rig operation
2	Driller's helpers	8	WDC	drilling assistance

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Air Rotary Drill Rig	9/10/00	9/10/00	2.5	4.5	1

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drilled to 305'. Stopped there as per B. Wedgeworth. Have not encountered any water as of yet. Waiting to discuss w/ Mark Holmes.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. **Submittals Reviewed:**

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

None

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Water was expected to be encountered at ~220', however no water has been observed yet (down to 305'). Decisions will be made when all parties are available to participate (FWENC, Mark Holmes, ACOE)

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

9/10/00
DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

"Look up and Live"

ite Name ST-105 Project # 5155.0030.0001A/200

Your Name Jill Jefferson Drillers Name Marion E Phillips

Signature Signature Marion E Phillips

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?

- x Hard Hats
- x Ear protection
- x Safety Glasses
- x Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?

- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

Have any fiber optic lines been identified on-site?

If so, do you have a copy of the fiber optics plan?

Is someone from Health and Safety and the Fiber Optics Company involved?

Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/10/00

Project Number: 5155.0030.0001 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- [x] safety glasses, hard hat, safety boots
- [x] site safety plan review and location
- [x] equipment and machinery familiarization
- [x] employee Right-To-Know/MSDS location
- [x] open pits, excavations, and site hazards
- [x] vehicle safety and driving/road conditions
- [x] portable tool safety and awareness
- [x] overhead utility locations and clearance
- [x] first aid, safety, and PPE location
- [x] sharp object, rebar, and scrap metal hazards
- [x] safety is everyone's responsibility
- [x] latex gloves inner/nitrile gloves outer
- [ ] excavation/trenching inspections/documentation
- [ ] full face respirators with proper cartridges
- [ ] upgrade to level c at: PID (___ eV) > ___ ppm
- [ ] work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- [x] slips, trips, and falls
- [x] directions to hospital
- [x] anticipated visitors
- [x] electrical ground fault
- [x] public safety and fences
- [x] excavator swing and loading
- [x] orderly site and housekeeping
- [x] smoking in designated areas
- [ ] leather gloves for protection
- [ ] effects of the night before
- [x] vibration related injuries
- [x] fire extinguisher locations
- [x] eye wash station locations
- [x] decontamination procedures
- [x] daily work scope
- [x] emergency protocol
- [x] parking and laydown
- [x] hot work permits
- [x] strains and sprains
- [x] noise hazards
- [x] no horseplay
- [x] heat and cold stress
- [x] backing up hazards
- [x] accidents are costly
- [x] dust and vapor control
- [x] refueling procedures
- [x] confined space entry
- [x] flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Marion Phillips	Marion Phillips	WDC
Myron Tucker	[illegible]	WDC
Bill Whaley	[illegible]	HGS
Nestor Cortez	[illegible]	W.D.C
Jill Jefferson	[illegible]	FWEWC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 12 Date: 9/11/00

Contract No.: 5155.0030-0001 A1200

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: Sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 60° Max.: 100°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist		HGS	
1	Geologist		FWENC	
1	Drill Rig Operator	10	WDC	stand-by
2	Drillers helpers	10	WDC	stand-by

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ARCH Rig					

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

No work performed today. Discussions of where we are and where to go from here. Waiting for Mark Holmes to return to work tomorrow to make a final decision.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

None

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

None

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Hold off on field activities until decisions are made involving all parties.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

9/11/00
DATE

Jill Jefferson

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 13 Date: 9/12/00

Contract No.: 5155.0030.0001 A1200 6 SH 9/15/00

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: Sunny Precipitation: 0 In.: 0 Temp.: °F Min.: ____ Max.: ____

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist		HGS	
1	Geologist		FLUENC	
1	Drill Rig Operator	10	WDC	stand-by
2	Driller's helpers	10	WDC	stand-by

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ASCH Rig					

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drillers on standby. No field activities were performed today. A decision was made by M. Holmes to install a well in this location in the regional aquifer. This will involve drilling to an estimated depth of 550'.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

None

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

None

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Mark Holmes decided to install the well as a regional well.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

Jill Jefferson

9/12/00
DATE

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 14 Date: 9/13/00

Contract No.: 5155.0030.0001 A1700 6 hr 9/15/00

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: Sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 54° Max.: 101°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	8	HGS	oversight of drilling
1	Geologist	10	FWENC	logging of cuttings ~~HGS~~
1	Drill Rig Operator	10	WDC	rig operations
2	Drillers helpers	10	WDC	drilling assistance

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ARCH Drill Rig	9/13/00	9/13/00	2.5	1.5	6

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drilled from 305' to 385' (80 feet). The casing plugged up and they's a possible problem w/ valves. The rig was in a state of repair for the remainder of the day. Moved all equipment end of the area as per Sgt. Faulkner due to an "exercise" at Pad 5 on Thursday, Saturday, and Monday.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

We were instructed to have all equipment except the rig itself removed from the site for Emerson's "exercise" at pad 5.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/13/00 DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

"Look up and Live"

ite Name ST-105 Project # 5755.0030-0001A1200

Your Name Jill Jefferson Drillers Name Marion Phillips

Signature Signature

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?

- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?

- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

Have any fiber optic lines been identified on-site?

If so, do you have a copy of the fiber optics plan?

Is someone from Health and Safety and the Fiber Optics Company involved?

Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?
yes Have you eliminated all tripping hazards to the best of your ability?
yes Has your driller and his helper removed all of their jewelry?
yes Are you prepared to monitor for vapors?
yes Have you calibrated your PID/FID and O2/LEL?
yes Is someone CPR qualified in case of an emergency?
yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/13/00

Project Number: 5155.0030.0001 A1200 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- [x] safety glasses, hard hat, safety boots
- [x] site safety plan review and location
- [x] equipment and machinery familiarization
- [x] employee Right-To-Know/MSDS location
- [x] open pits, excavations, and site hazards
- [x] vehicle safety and driving/road conditions
- [x] portable tool safety and awareness
- [x] overhead utility locations and clearance
- [x] first aid, safety, and PPE location
- [x] sharp object, rebar, and scrap metal hazards
- [x] safety is everyone's responsibility
- [x] latex gloves inner/nitrile gloves outer
- [x] excavation/trenching inspections/documentation
- [ ] full face respirators with proper cartridges
- [ ] upgrade to level c at: PID (___ eV) > ___ ppm
- [ ] work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- [x] slips, trips, and falls
- [x] directions to hospital
- [x] anticipated visitors
- [x] electrical ground fault
- [x] public safety and fences
- [x] excavator swing and loading
- [x] orderly site and housekeeping
- [ ] smoking in designated areas
- [x] leather gloves for protection
- [x] effects of the night before
- [x] vibration related injuries
- [x] fire extinguisher locations
- [x] eye wash station locations
- [x] decontamination procedures
- [x] daily work scope
- [x] emergency protocol
- [x] parking and laydown
- [x] hot work permits
- [x] strains and sprains
- [x] noise hazards
- [x] no horseplay
- [x] heat and cold stress
- [x] backing up hazards
- [x] accidents are costly
- [x] dust and vapor control
- [ ] refueling procedures
- [ ] confined space entry
- [x] flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Werner Cortez	[illegible]	W.D.C
Marion Phillips	[illegible]	WDC
Myron Tycksen	[illegible]	WDC
Bill Whaley	[illegible]	HGS
Jill Jefferson	[illegible]	FWEADC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 15 Date: 9/14/00

Contract No.: 5155.0030.0001 A1600

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: Sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 60° Max.: 90°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist		HGS	
1	Geologist		FWENC	
1	Drill Rig Operator	10	WDC	Stand-by
2	Driller's Helpers	10	WDC	Stand-by

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Driller's on stand-by. No field activities due to "exercise" at Pad 5.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

None

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

None

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

We were unable to access the well location due to an "exercise" at Pad 5. Drilling will re-commence tomorrow.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/14/00 DATE

Jill Jefferson

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 16 Date: 9/15/00

Contract No.: 5155.0030.0001 A1600

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: Sunny Precipitation: ____ In.: ___ Temp.: °F Min.: 54° Max.: ____

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	10	HGS	oversight of drilling
1	Geologist	11.5	FLOENX	Logging of cuttings / EXS
1	Drill Rig Operator	12	WDC	rig operations
2	Driller Helpers	12	WDC	driller's assistance

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ARCH drill rig	9/15/00	9/15/00	7	3	1

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drilled to 525' which is the estimated total Depth. Hole will sit until tuesday morning. Drillers move all equipment, except for the rig, out of the area due to a "scheduled" exercise" at Pad 5.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Meeting
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety meeting
Drill rig Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Were asked to move everything but the rig offsite for the exercises on saturday and Monday.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

9/15/00
DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name ST-105 Project # 5155.0030.0001 A1L00

Your Name Jill Jefferson Drillers Name Marion E Phillips

Signature Signature

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?

- y Hard Hats
- y Ear protection
- y Safety Glasses
- y Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?

- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

N/A Have any fiber optic lines been identified on-site?

N/A If so, do you have a copy of the fiber optics plan?

N/A Is someone from Health and Safety and the Fiber Optics Company involved?

N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

_____ Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/15/00

Project Number: 5155.0030.0001 A1600 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- [x] safety glasses, hard hat, safety boots
- [x] site safety plan review and location
- [x] equipment and machinery familiarization
- [x] employee Right-To-Know/MSDS location
- [x] open pits, excavations, and site hazards
- [x] vehicle safety and driving/road conditions
- [x] portable tool safety and awareness
- [x] overhead utility locations and clearance
- [x] first aid, safety, and PPE location
- [x] sharp object, rebar, and scrap metal hazards
- [x] safety is everyone's responsibility
- [x] latex gloves inner/nitrile gloves outer
- [x] excavation/trenching inspections/documentation
- [x] full face respirators with proper cartridges
- [ ] upgrade to level c at: PID (___ eV) > ___ ppm
- [ ] work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- [x] slips, trips, and falls
- [x] directions to hospital
- [x] anticipated visitors
- [x] electrical ground fault
- [x] public safety and fences
- [x] excavator swing and loading
- [x] orderly site and housekeeping
- [x] smoking in designated areas
- [x] leather gloves for protection
- [x] effects of the night before
- [x] vibration related injuries
- [x] fire extinguisher locations
- [x] eye wash station locations
- [x] decontamination procedures
- [x] daily work scope
- [x] emergency protocol
- [x] parking and laydown
- [x] hot work permits
- [x] strains and sprains
- [x] noise hazards
- [x] no horseplay
- [x] heat and cold stress
- [x] backing up hazards
- [x] accidents are costly
- [x] dust and vapor control
- [x] refueling procedures
- [ ] confined space entry
- [x] flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Jill Jefferson	[illegible]	FWENC
Werner Cordero	[illegible]	W.D.C.
Myron Tyckson	[illegible]	W.D.C.
Marian E Phillipson	[illegible]	WDC
Bill Whaley	Bill Whaley	HGS

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 17 Date: 9/19/00

Contract No.: 5155.0030.0001 A1600

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: Sunny, breezy Precipitation: 0 In.: 0 Temp.: °F Min.: 48° Max.: 85°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist		HGS	
1	Geologist		FLEENC	
1	Drill Rig Operator	10	WDC	stand-by
2	Driller's Helpers	10	WDC	stand-by

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ARCH Drill Rig	9/19/00	9/15/00	0	10	0

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

No work was performed today due to an aircraft on PAD 3. The plane was scheduled to leave at 1200 but never left. We received word that departure was delayed to 4am

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

None

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

Received the PVC well casing from Baroid.

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Instructed not to perform work of any kind near Pad 5 due to the aircraft still being there.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/19/00 DATE

Jill Jefferson

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 18 Date: 9/20/00

Contract No.: 5155.0030.0001 A1600

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: windy, sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 54° Max.: 80°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist		HGS	oversight of Installation
1	Geologist		FWENC	" " /ESS
1	Drill Rig Operator		WDC	rig operation
2	Drillers Helpers		WDC	~~installation of well casing~~

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ARCH Drill Rig	9/20/00	9/20/00	2		

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

The aircraft departed from Pad 5 at 1345 and we were able to resume work. A water level measurement taken read 488', therefore the screened interval is 483' - 508' and TD = 513'. Drillers jacked the casing and are prepared to install the well casing on friday. All equip. was removed from the site, except the casing + jack, due to an "exercise".

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Bruce Wedgeworth of FWENC was called and approved the proposed TD of ~513' based on a water level of 488' bgs.
Everything but the rig must be removed from the site due to another "exercise" tomorrow, thursday 9/21/00.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/20/00 DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

"Look up and Live"

e Name ST-105 Project # 5155.0030.0001 A/1600

Your Name Jill Jefferson
Signature

Drillers Name Marion Phillips
Signature Marion E Phillips

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

Have any fiber optic lines been identified on-site?

If so, do you have a copy of the fiber optics plan?

Is someone from Health and Safety and the Fiber Optics Company involved?

Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: Monitoring Well Installation Date: 9/20/00

Project Number: 5155 0030. 0001 A1600 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☑ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☑ electrical ground fault
- ☑ public safety and fences
- ☑ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☑ vibration related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☑ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☑ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Jill Jefferson		FWENC
Myron Tyckson		WDC
MARK JONES		WDC
Aaron Phillips		WDC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 19 Date: 9/21/00

Contract No.: 5155.0030.0001 A1600

Project Title & Location: Monitoring Well Installation, ST-105, KAFB
+KAFB0315, LF2C8

Weather: breezy, sunny Precipitation: ____ In.: ____ Temp.: ____ Min.: 54° Max.: ____

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist		HGS	
1	Geologist	8	FWENC	oversight of pumping / ESS
1	Drill Rig Operator	10	WDC	stand-by
2	Driller's helpers	10	WDC	stand-by
2	Rig operator/deck hp	6	HGS	pumped well 0315

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ABCH Drill Rig				10	

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

No work was performed at ST-105 due to an "exercise" at Pad 5.
Well 0315 was bailed (~100gal) and pumped for 45 minutes. Water is beginning to become clear. Well had very good recharge

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

No work could be performed at ST-105 due to an "exercise" at Pad 5

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/21/00 DATE

Jill Jefferson

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/21/00

Project Number: 5155.0030.0001 A1600 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated vishors
- ☐ electrical ground fault
- ☐ public safety and fences
- ☑ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☐ vibration related injuries
- ☑ fire extinguisher locations
- ☑ eye wash station locations
- ☐ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☐ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☑ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Jill Jefferson		FWENC
M. Adrian Reyes		HGS
Orlando Lopez		HGS

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 20 Date: 9/22/00

Contract No.: 5155.0030.0001 A1600

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: sunny, windy Precipitation: 0 In.: 0 Temp.: °F Min.: 60° Max.: 82°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	1	HGS	oversight of installation
1	Geologist	13	FWENC	" " /ESS
1	drill rig operator	13	WDC	rig operation/well install.
2	driller's helpers	13	WDC	assistance / well installation

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ARCH rig	9/22/00	9/22/00	7	6	

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Installed well casing. ID = 515, screened interval = 510'-485'. Filled borehole w/ Colorado Silica Sand to 488'. Will continue tomorrow to a depth of 480'.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. **Submittals Reviewed:**

(a) Submittal No	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

None

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Drill rig inspection
Daily Safety Briefing

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Delayed due to aircraft on Pad 5. It was due to depart at 0730 but left at 0910.
Drillers had to meet a truck driver sent to pick up thin wall equipment. Delayed our start to 1330 (3.5 hrs)

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

Jill Jefferson

9/22/00
DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

te Name ST-105 Project # 5155.0030.0001 A1600

Your Name Jill Jefferson Drillers Name Marion Phillips
Signature Signature

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- y Hard Hats
- y Ear protection
- y Safety Glasses
- y Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

____ Have any fiber optic lines been identified on-site?

____ If so, do you have a copy of the fiber optics plan?

____ Is someone from Health and Safety and the Fiber Optics Company involved?

____ Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

Yes Are all the visible belts and hoses in good working condition?

Yes Have you eliminated all tripping hazards to the best of your ability?

Yes Has your driller and his helper removed all of their jewelry?

Yes Are you prepared to monitor for vapors?

Yes Have you calibrated your PID/FID and O2/LEL?

Yes Is someone CPR qualified in case of an emergency?

Yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/22/00

Project Number: 5155.0030.0001 A1600 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- ☑ safety glasses, hard hat, safety boots
- ☑ site safety plan review and location
- ☑ equipment and machinery familiarization
- ☑ employee Right-To-Know/MSDS location
- ☑ open pits, excavations, and site hazards
- ☑ vehicle safety and driving/road conditions
- ☑ portable tool safety and awareness
- ☑ overhead utility locations and clearance
- ☑ first aid, safety, and PPE location
- ☑ sharp object, rebar, and scrap metal hazards
- ☑ safety is everyone's responsibility
- ☑ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) > ___ ppm
- ☐ work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- ☑ slips, trips, and falls
- ☑ directions to hospital
- ☑ anticipated visitors
- ☑ electrical ground fault
- ☑ public safety and fences
- ☑ excavator swing and loading
- ☑ orderly site and housekeeping
- ☑ smoking in designated areas
- ☑ leather gloves for protection
- ☑ effects of the night before
- ☑ vibration related injuries
- ☑ fire extinguisher locations
- ☐ eye wash station locations
- ☑ decontamination procedures
- ☑ daily work scope
- ☑ emergency protocol
- ☑ parking and laydown
- ☑ hot work permits
- ☑ strains and sprains
- ☑ noise hazards
- ☑ no horseplay
- ☑ heat and cold stress
- ☑ backing up hazards
- ☑ accidents are costly
- ☑ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☑ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Jill Jefferson		FWENC
Marion E Phillipson	Marion E Phillipson	WAC
MARK F JONES	Mark F Jones	WAC
Myron Tychsen		WPC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 21 Date: 9/~~24~~ 23/00

Contract No.: 5155 0030.0001 A1600

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: p. cloudy very windy Precipitation: 0 In.: 0 Temp.: °F Min.: 58° Max.: 80°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	11.5	HGS	available by phone
1	Geologist	11.5	FWENC	oversight of Installation/ESS
1	Drillrig operator	11.5	WDC	Installation of well
2	Driller's helpers	11.5	WDC	" "

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ARCH Drill Rig	9/23/00	9/23/00	8	3.5	0

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Finished Installing sand pack to 477'. Installed bentonite plug to 447' (300 gallons of water used to hydrate). Waited 2 hrs before installing seven loads of grout. Removed 365' of casing.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER

9/23/00
DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

7/23/00

"Look up and Live"

e Name ST-105 Project # 5155.0030.0001 A1600

Your Name Jill Jefferson Drillers Name Annie Phillips

Signature Signature Annie Phillips

Do not proceed with todays work until this checklist is completed.

Yes Are your sub-contractors wearing Level-D personal protection equipment?

- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

Yes Have you designated a smoking and eating area?

Yes Have you completed a Tailgate Safety Meeting?

Yes Has the Site Safety Plan been reviewed and signed?

Yes Have you identified where the nearest pay phone and emergency equipment is located?

Yes Do you have a copy of the Utilities Locate Checklist?

Yes Do you have enough barricades/cones?

Yes Have the utilities been marked out?

Yes Have you notified the Site/Project Manager if the utilities haven't been marked?

- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

Are your borings?

- Yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- Yes 5 feet away from non-natural gas utilities?
- Yes 10 feet away from natural gas lines?
- Yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

Have any fiber optic lines been identified on-site?

If so, do you have a copy of the fiber optics plan?

Is someone from Health and Safety and the Fiber Optics Company involved?

Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

Yes Do you have a copy of all access agreements?

Yes Have you inspected the cable/rope on the drill rig?

Yes Have you checked the "kill" switches on the drill rig?

Yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

Yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/23/00

Project Number: 5155.0030.001 A 16CC Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- [x] safety glasses, hard hat, safety boots
- [x] site safety plan review and location
- [x] equipment and machinery familiarization
- [x] employee Right-To-Know/MSDS location
- [x] open pits, excavations, and site hazards
- [x] vehicle safety and driving/road conditions
- [x] portable tool safety and awareness
- [x] overhead utility locations and clearance
- [x] first aid, safety, and PPE location
- [x] sharp object, rebar, and scrap metal hazards
- [x] safety is everyone's responsibility
- [x] latex gloves inner/nitrile gloves outer
- [x] excavation/trenching inspections/documentation
- [x] full face respirators with proper cartridges
- [ ] upgrade to level c at: PID (___ eV) > ___ ppm
- [ ] work stoppage at: PID(___ eV) > ___ ppm, % LEL > 10%
- [x] slips, trips, and falls
- [x] directions to hospital
- [x] anticipated visitors
- [x] electrical ground fault
- [x] public safety and fences
- [x] excavator swing and loading
- [x] orderly site and housekeeping
- [x] smoking in designated areas
- [x] leather gloves for protection
- [x] effects of the night before
- [ ] vibration-related injuries
- [x] fire extinguisher locations
- [x] eye wash station locations
- [x] decontamination procedures
- [x] daily work scope
- [x] emergency protocol
- [x] parking and laydown
- [x] hot work permits
- [x] strains and sprains
- [x] noise hazards
- [x] no horseplay
- [x] heat and cold stress
- [x] backing up hazards
- [x] accidents are costly
- [x] dust and vapor control
- [ ] refueling procedures
- [ ] confined space entry
- [x] flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Marion E Phillips	Marion E Phillips	WDC
Myron Tucker	[illegible]	WDC
MARK F JONES	Mark F Jones	WDC
Jill Jefferson	[illegible]	FWENC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 22 Date: 9/24/00

Contract No.: 5155.0030.0001 A1600

Project Title & Location: Monitoring Well Installation, ST-105, KAFB

Weather: Sunny Precipitation: ____ In.: ___ Temp.: °F Min.: 50° Max.: ____

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	7	HGS	available by phone
1	Geologist	7	FWENC	oversight of installation / ESS
1	Drill Rig Operator	7*	WDC	installation of well / rig operation
2	Driller's helpers	7*	WDC	installation of well

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
ARCH Drill Rig	9/24/00	9/24/00	7		

*prior to demobilization

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Continued grouting well to the surface. Cleaned up site and de-mobed.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing
Drill Rig Inspection

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing
Drill Rig Inspection

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Drillers measured depth to grout - seemed too low for the amount they had installed. Measured inside well and found that approximately 45 ft of grout has seeped into the well. The cause of this is due to the nature of the formation, mostly gravel. The grout seeped around the bentonite plug and found a path of weakness and entered the well there. Instructed by Bruce Hedgecoth to continue setting the well to completion - tomorrow decisions will be made

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/24/00 DATE

Jill Jefferson

DRILLING SAFETY CHECKLIST

"Look up and Live"

e Name ST-105 Project # _____

Your Name Jill Jefferson
Signature _____

Drillers Name Marion E Phillips
Signature Marion E Phillips

Do not proceed with todays work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Ear protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

yes Have you designated a smoking and eating area?

yes Have you completed a Tailgate Safety Meeting?

yes Has the Site Safety Plan been reviewed and signed?

yes Have you identified where the nearest pay phone and emergency equipment is located?

yes Do you have a copy of the Utilities Locate Checklist?

yes Do you have enough barricades/cones?

yes Have the utilities been marked out?

Have you notified the Site/Project Manager if the utilities haven't been marked?
- _____ pink: temporary survey markings
- _____ green: sewer
- _____ yellow: natural gas, oil, steam
- _____ blue: water
- _____ orange: communications
- _____ red: electric
- _____ white: proposed excavation/boring locations

Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities?
- yes 10 feet away from natural gas lines?
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?

Have any fiber optic lines been identified on-site?

If so, do you have a copy of the fiber optics plan?

Is someone from Health and Safety and the Fiber Optics Company involved?

Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

yes Do you have a copy of all access agreements?

yes Have you inspected the cable/rope on the drill rig?

yes Have you checked the "kill" switches on the drill rig?

yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

yes Have you checked the rig for hydraulic fluid/oil leaks?

yes Are all the visible belts and hoses in good working condition?

yes Have you eliminated all tripping hazards to the best of your ability?

yes Has your driller and his helper removed all of their jewelry?

yes Are you prepared to monitor for vapors?

yes Have you calibrated your PID/FID and O2/LEL?

yes Is someone CPR qualified in case of an emergency?

yes Do your drillers have all the supplies required to complete today's activities?

DAILY SAFETY MEETING

Project Name: MW Installation Date: 9/24/00

Project Number: 5155.0030.0001 A1606 Presented by: Jill Jefferson

Check the Topics/Information Reviewed:

- [x] safety glasses, hard hat, safety boots
- [x] site safety plan review and location
- [x] equipment and machinery familiarization
- [x] employee Right-To-Know/MSDS location
- [x] open pits, excavations, and site hazards
- [x] vehicle safety and driving/road conditions
- [x] portable tool safety and awareness
- [x] overhead utility locations and clearance
- [x] first aid, safety, and PPE location
- [x] sharp object, rebar, and scrap metal hazards
- [x] safety is everyone's responsibility
- [x] latex gloves inner/nitrile gloves outer
- [ ] excavation/trenching inspections/documentation
- [ ] full face respirators with proper cartridges
- [ ] upgrade to level c at: PID (___ eV) >___ ppm
- [ ] work stoppage at: PID(___ eV) >___ ppm, % LEL > 10%
- [x] slips, trips, and falls
- [x] directions to hospital
- [x] anticipated visitors
- [x] electrical ground fault
- [x] public safety and fences
- [x] excavator swing and loading
- [x] orderly site and housekeeping
- [x] smoking in designated areas
- [x] leather gloves for protection
- [x] effects of the night before
- [x] vibration related injuries
- [x] fire extinguisher locations
- [x] eye wash station locations
- [x] decontamination procedures
- [x] daily work scope
- [x] emergency protocol
- [x] parking and laydown
- [x] hot work permits
- [x] strains and sprains
- [x] noise hazards
- [x] no horseplay
- [x] heat and cold stress
- [x] backing up hazards
- [x] accidents are costly
- [x] dust and vapor control
- [ ] refueling procedures
- [ ] confined space entry
- [x] flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Marion Phillips	Marion Phillips	WDC
MARK F JONES	Mark F Jones	WDC
Myron Tjeksen	Myron Tjeksen	WDC
Jill Jefferson	Jill Jefferson	FWENC

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 23 Date: 9/26/00

Contract No.: 5155.0030.0001 A1~~20~~ 0 (1156100)

Project Title & Location: Monitoring Well Installation, LF-26B, KAFB

Weather: Sunny Precipitation: Ø In.: Ø Temp.: °F Min.: 43° Max.: 76°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist	4	HGS	development of KAFB0315
1	Geologist	3.5	FWENC	"
1	helper	4	HGS	"

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
small pump rig	9/26/00	9/26/00	1	3	

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

With a submersible pump, pumped 500 gallons at a rate averaging ~3 gallons/minute. Water appears clear.

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

Daily Safety Briefing

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/26/00 DATE

Jill Jefferson

Figure 7-1

DAILY QUALITY CONTROL REPORT

Daily Report No.: 24 Date: 9/28/00

Contract No.: 5155.0030.0001 A12 00 11 4/28/00

Project Title & Location: Monitoring Well Installation

Weather: Sunny Precipitation: 0 In.: 0 Temp.: °F Min.: 60° Max.: 90°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION OF WORK
1	Geologist		FWENC	
1	Geophysical logger		SW Geophysical	Geophy. logging of KAFB0315

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Geophysical logging equipment	9/28/00				

Figure 7-1 (Continued)
DAILY QUALITY CONTROL REPORT

3. Work Performed Today: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Performed geophysical logging, specifically induction and 4π density.

HGS was also present to do the surface completion at this well (0315).

4. Control Activities Performed:

- Preparatory Inspections: Identify feature of work and attach minutes.
- Initial Inspections: Identify feature of work and attach minutes.
- Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

None

5. Tests Performed and Test Results: Identify test requirement by paragraph number in specifications and/or sheet number in plans.

None

6. Material Received: Note inspection results and storage provided.

None

Figure 7-1 (Concluded)
DAILY QUALITY CONTROL REPORT

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

None

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

None

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEMS MANAGER — 9/28/00 DATE

Jill Jefferson

FOSTER WHEELER
ENVIRONMENTAL
CORPORATION
(FIRM NAME)

DAILY QUALITY CONTROL REPORT

Daily Report No: 001 Date: 2-6-01
Contract No.: DACW 45-94-D-0003
Project Title & Location: MW Installation @ LF-268 + ST-105
Weather: Sunny Precipitation: None In.: — Temp.: °F Min.: 35
Max: 50

1. **Contract/Subcontractors and Area of Responsibility:**

NUMBER	TRADE	HOURS	EMPLOYER	LOCATION/DESCRIPTION WORK
1	Ass. Geoscient.	4	FWENC	LF-268/ST-105 Soil Sampling
1	OE	4	"	" " " "

2. **Operating Plant or Equipment** (not hand tools):

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
Backhoe	2-6-01	2-6-01	4	0	

3. **Work Performed Today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Site ST-105 (Sewage Lagoons) cleaned out soil cuttings pit of previous cuttings, placed on berm around pit and removed plastic. Well KAFB0507-A 4-268 Well KAFB0315 cuttings pit cleaned out of plastic lining and spread soils and filled in pit.

4. **Control Activities Performed:**

Preparatory Inspections:	Identify feature of work and attached minutes.
Initial Inspections:	Identify feature of work and attach minutes.
Follow-up Inspections:	List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted.

NONE

5. **Tests Performed and Test Results:** Identify test requirement by paragraph number in specifications and/or sheet number in plans.

NONE

6. **Material Received:** Note inspection results and storage provided.

NONE

7. Submittals Reviewed: None

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

None

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

Daily Safety Meeting

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEM MANAGER 2-6-01 DATE

DAILY SAFETY MEETING

Project Name: KAFB Date: 2-6-01

Project Number: 5155 00300017 Presented by: Charles Madeira II

Check the Topics/Information Reviewed:

- ☒ safety glasses, hard hat, safety boots
- ☐ site safety plan review and location
- ☐ equipment and machinery familiarization
- ☐ employee Right-To-Know/MSDS location
- ☒ open pits, excavations, and site hazards
- ☒ vehicle safety and driving/road conditions
- ☒ portable tool safety and awareness
- ☐ overhead utility locations and clearance
- ☐ first aid, safety, and PPE location
- ☐ sharp object, rebar, and scrap metal hazards
- ☒ safety is everyone's responsibility
- ☐ latex gloves inner/nitrile gloves outer
- ☐ excavation/trenching inspections/documentation
- ☐ full face respirators with proper cartridges
- ☐ upgrade to level c at: PID (___ eV) >___ ppm
- ☐ work stoppage at: PID(___ eV) >___ ppm, % LEL > 10%
- ☐ slips, trips, and falls
- ☒ directions to hospital
- ☐ anticipated visitors
- ☐ electrical ground fault
- ☐ public safety and fences
- ☐ excavator swing and loading
- ☐ orderly site and housekeeping
- ☐ smoking in designated areas
- ☒ leather gloves for protection
- ☐ effects of the night before
- ☐ vibration related injuries
- ☒ fire extinguisher locations
- ☐ eye wash station locations
- ☐ decontamination procedures
- ☒ daily work scope
- ☒ emergency protocol
- ☒ parking and laydown
- ☐ hot work permits
- ☐ strains and sprains
- ☒ noise hazards
- ☒ no horseplay
- ☒ heat and cold stress
- ☒ backing up hazards
- ☐ accidents are costly
- ☐ dust and vapor control
- ☐ refueling procedures
- ☐ confined space entry
- ☐ flying debris hazards

Discussion/Comments/Follow-up Actions:

NAME	SIGNATURE	COMPANY
Sam Cordova	Sam Cordova	Foster Wheeler

Instructions:

- Conduct a daily safety meeting prior to beginning each day's site activities.
- Complete form, obtain signatures, and file with the Daily Summary.
- Follow-up on any noted items and document resolution of any action items.

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 001 Date: 2-10-01
Contract No.: DACW 45-94-D-0003
Project Title & Location: Monitor Well 0507 Installation, ST-105, Kirtland AFB
Weather: Windy, clear Precipitation: None In.: — Temp.: °F Min: 31 Max: 55

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
3	drilling	4/12	Warten Development Corp.	ST-105, Kirtland AFB
1	Geo/SSHO	4	FWENC	" "

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
Forklift	2-10-01	2-10-01	3	1

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Unloading materials and equipment for well installation
Setting up drilling rig

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

None

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

N/A

6. **Material Received:** Note inspection results and storage provided.

PVC Well casing and screen, stored on site, Received in good condition

7. **Submittals Reviewed:** None

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

None

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Site Health and Safety orientation

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

None

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James T. Harder 2-10-01

CQC SYSTEM MANAGER DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name: ST-105, KAFB Project #: 5155.0030.0017.D2003
Your Name: James Harden Drillers Name: Kevin Jones
Signature: James T. Harden Signature: Kevin Jones

Do not proceed with today's work until this checklist is completed.

✓ Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Safety Glasses
- ✓ Ear Protection
- ✓ Steel Toed Boots

✓ Have you designated a smoking and eating area?
✓ Have you completed a Daily Safety Meeting?
✓ Has the Site Safety Plan been reviewed and signed?
✓ Have you identified where the nearest pay phone and emergency equipment is located?
✓ Do you have a copy of the Utilities Locate Checklist?
✓ Do you have enough barricades/cones?
✓ Have the utilities been marked out?
N/A Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

✓ Are your borings?
- ✓ 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- ✓ 5 feet away from non-natural gas utilities
- ✓ 10 feet away from natural gas lines
- ✓ 3 feet away from concrete/asphalt scars/joints or repaved areas?

✓ Are you prepared to hand dig to 5 feet?
N/A Have any fiber optic lines been identified on-site?
____ If so, do you have a copy of the fiber optics plan?
____ Is someone from Health and Safety and Fiber Optics Company involved?
✓ Are your borings a minimum of 15 feet away from the fiber optic line mark outs?
✓ Do you have a copy of all access agreements?
✓ Have you inspected the cable/rope on the drill rig?
✓ Have you checked the "kill" switches on the drill rig?
✓ Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?
✓ Have you checked the rig for hydraulic fluid/oil leaks?
✓ Are all the visible belts and hoses in good working condition?
✓ Have you eliminated all tripping hazards to the best of your ability?
✓ Has your driller and their helper removed all of their jewelry?
✓ Are you prepared to monitor for vapors?
✓ Have you calibrated your PID/FID and O2/LEL?
✓ Is someone CPR qualified in case of an emergency?
✓ Do your drillers have all the supplies required to complete today's activities?

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2-10-01 Project Name/Location: ST-105 MW Installation

Shift/Department: — Person Conducting Briefing: C. Madewell

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Hospital, site safety, overheads, weather, noise, rev. of plans, IDW, hot work, emergency phone nos.

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

NA

3. ATTENDEES (Print Name):

1. James Harden	20.
2. Kevin Jones	21.
3. Myron Tycksen	22.
4. Carlos Sanchez Jr	23.
5. Charles Madewell	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 002 Date: 2-11-01
Contract No.: DACW 45-94-D-0003
Project Title & Location: MW 0507 Installation ST-105 KAFB
Weather: Windy, Clear Precipitation: None In.: — Temp.: °F Min: 33 Max: 60

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
3	drilling	10/30	Water Development Corp	ST-105, Kirtland AFB
1	Geo / SSHO	10	FWENC	" "

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
Forklift	2-10-01	2-11-01	4	6
ARCH drilling Rig	2-10-01	2-11-01	9.5	0.5
Compressor	2-10-01	2-11-01	9.5	0.5

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drilled from 360' to 520' at ST-105
Prepared equipment for pulling drive casing and well installation at ST-105

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

None

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

None

6. **Material Received:** Note inspection results and storage provided.

None

7. **Submittals Reviewed:** N/A

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

N/A

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Health and safety meeting, hospital route, Reviewed work activities and associated hazards - noise, potential exposure to constituents of concern Conducted daily equipment inspection

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

None

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James T. Harder 2-11-01

CQC SYSTEM MANAGER DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name: ST-105 Project #: ST-105 MW Installation
Your Name: James Harden Drillers Name: Kevin Jones
Signature: James T. Harden Signature: Kevin Jones

Do not proceed with today's work until this checklist is completed.

✓ Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Ear Protection
- ✓ Safety Glasses
- ✓ Steel Toed Boots

✓ Have you designated a smoking and eating area?
✓ Have you completed a Daily Safety Meeting?
✓ Has the Site Safety Plan been reviewed and signed?
✓ Have you identified where the nearest pay phone and emergency equipment is located?
✓ Do you have a copy of the Utilities Locate Checklist?
N/A Do you have enough barricades/cones?
✓ Have the utilities been marked out?
N/A Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

✓ Are your borings?
- ✓ 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- ✓ 5 feet away from non-natural gas utilities
- ✓ 10 feet away from natural gas lines
- ✓ 3 feet away from concrete/asphalt scars/joints or repaved areas?

✓ Are you prepared to hand dig to 5 feet?
N/A Have any fiber optic lines been identified on-site?
N/A If so, do you have a copy of the fiber optics plan?
N/A Is someone from Health and Safety and Fiber Optics Company involved?
N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?
✓ Do you have a copy of all access agreements?
✓ Have you inspected the cable/rope on the drill rig?
✓ Have you checked the "kill" switches on the drill rig?
✓ Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?
✓ Have you checked the rig for hydraulic fluid/oil leaks?
✓ Are all the visible belts and hoses in good working condition?
✓ Have you eliminated all tripping hazards to the best of your ability?
✓ Has your driller and their helper removed all of their jewelry?
✓ Are you prepared to monitor for vapors?
✓ Have you calibrated your PID/FID and O2/LEL?
✓ Is someone CPR qualified in case of an emergency?
✓ Do your drillers have all the supplies required to complete today's activities?

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2-11-01 Project Name/Location: ST-105 MW Installation

Shift/Department: DAY Person Conducting Briefing: Charles Madewell

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Hosp. Direction, Emergency #'s

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

NA

3. ATTENDEES (Print Name):

1. Carlos Sanchez Jr	20.
2. Kevin Jones	21.
3. James Hardin	22.
4. Myron Tyckson	23.
5. Charles Madewell	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 003 Date: 2-12-01
Contract No.: DACW 45-94-D-0003
Project Title & Location: Monitoring Well Installation, ST-105, Kirtland AFB
Weather: Clear, Precipitation: None In.: — Temp.: °F Min: 32 Max: 60

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
3	Drilling	10/30	Water Development Corp.	ST-105 KAFB/drilling
1	Geologist	10/10	Foster Wheeler ENVR.	ST-105 KAFB/drilling supervision

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
ARCH drilling Rig	2/10/01	2/12/01	7	3
Fork lift	2/10/01	2/12/01	4	6

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Drilled from 360' to 520' at ST-105
Prepared equipment for pulling drive casing and well installation at ST-105

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

None

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

None

6. **Material Received:** Note inspection results and storage provided.

None

7. **Submittals Reviewed:** N/A

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

N/A

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Reviewed ZIP, zero incidence performance, Reviewed proper lifting techniques, emergency route to hospital, working from elevated surfaces

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

None

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James T. Harden 2-12-01

CQC SYSTEM MANAGER DATE

FW

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2-12-01 Project Name/Location: MW Installation, ST-125, KAFB

Shift/Department: — Person Conducting Briefing: J. Harden

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

ZIP, proper lifting, hospital location, working from elevated areas

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

Leaks, planes

3. ATTENDEES (Print Name):

1. Carol Smalley Jr.	20.
2. Kevin Jones.	21.
3. Myron Tycksen	22.
4. Jill Jefferson	23.
5. Carol Bieniulis	24.
6. James Harden	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 004 Date: 2-13-01
Contract No.: DACW45-94-D-0003
Project Title & Location: ST-105 MW Installation, Kirtland AFB
Weather: Partly Cloudy Windy Precipitation: None In.: — Temp.: °F Min: 32 Max: 60

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
3	drilling/well inst.	8/24	Waton Development Corp.	ST-105, Kirtland AFB/ drilling, well instl. + aband.
1	geophysics	3/3	Southwestern Geophysical	ST-105 Kirtland AFB/ borehole geophysical logging
1	geologist	8/8	Foster Wheeler Environ.	ST-105 Kirtland AFB/ supervision + interpretation

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
ARCH Drilling Rig	2/10/01	2/13/01	4	4
Forklift	2/10/01	2/13/01	3	5
Borehole geophysical tools	2/13/01	2/13/01	1	2

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Conducted borehole geophysical logging of borehole at ST-105
Kirtland AFB
Tripped drill pipe out of borehole and plugged and abandoned
well 0507A

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

None

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

None

6. **Material Received:** Note inspection results and storage provided.

168 sacks (26lbs/sk) of Quick grout
48 sacks (50lbs/sk) 10/20 silica sand
49 sacks (50lbs/sk) portland cement Type I
15 sacks (26lbs/sk) Holeplug
15 sacks (50lbs/sk) Ready Mix cement

Received in good condition, stored on site

7. **Submittals Reviewed:** None

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

N/A

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Reviewed PPE Requirements discussed specific Requirements for eye protection and hearing protection

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

None

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James T. Hunter 2-13-01

CQC SYSTEM MANAGER DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name: ST-105, KAFB SJ# Project #: MW Installation

Your Name: James Hander Drillers Name: Kevin Jones

Signature: James Hander Signature: Kevin Jones

Do not proceed with today's work until this checklist is completed.

✓ Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Safety Glasses
- ✓ Ear Protection
- ✓ Steel Toed Boots

✓ Have you designated a smoking and eating area?

✓ Have you completed a Daily Safety Meeting?

✓ Has the Site Safety Plan been reviewed and signed?

✓ Have you identified where the nearest pay phone and emergency equipment is located?

✓ Do you have a copy of the Utilities Locate Checklist?

N/A Do you have enough barricades/cones?

✓ Have the utilities been marked out?

N/A Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

✓ Are your borings?
- ✓ 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- ✓ 5 feet away from non-natural gas utilities
- ✓ 10 feet away from natural gas lines
- ✓ 3 feet away from concrete/asphalt scars/joints or repaved areas?

✓ Are you prepared to hand dig to 5 feet?

N/A Have any fiber optic lines been identified on-site?

____ If so, do you have a copy of the fiber optics plan?

____ Is someone from Health and Safety and Fiber Optics Company involved?

✓ Are your borings a minimum of 15 feet away from the fiber optic line mark outs?

✓ Do you have a copy of all access agreements?

✓ Have you inspected the cable/rope on the drill rig?

✓ Have you checked the "kill" switches on the drill rig?

✓ Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?

✓ Have you checked the rig for hydraulic fluid/oil leaks?

✓ Are all the visible belts and hoses in good working condition?

✓ Have you eliminated all tripping hazards to the best of your ability?

✓ Has your driller and their helper removed all of their jewelry?

✓ Are you prepared to monitor for vapors?

✓ Have you calibrated your PID/FID and O2/LEL?

✓ Is someone CPR qualified in case of an emergency?

✓ Do your drillers have all the supplies required to complete today's activities?

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2-13-01 Project Name/Location: ST-105 PIW Installation

Shift/Department: N/A Person Conducting Briefing: J. Harden

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Review PPE requirements, discuss specific req. regarding eye protection + hearing protection

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

trash handled separately from cuttings not disposed of in pit

3. ATTENDEES (Print Name):

1. Kevin Jones	20.
2. Carlos Sanchez Jr.	21.
3. Myron Tucker	22.
4. James Harden	23.
5. Michael J. [illegible]	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 005 Date: 2-14-01
Contract No.: DACW45-94-D-0003
Project Title & Location: ST-105 MW Installation, Kirtland AFB
Weather: Cloudy, cold, windy Precipitation: Rain, Snow In.: — Temp.: 33 °F Min: 33 Max: 46

JT 4/2/31/01

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
3	Drilling/ Well Installation	10/(30)	Water Development Corp	ST-105 Kirtland AFB/ Well Installation
1	Geologist	10	Foster Wheeler Enviro	"

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
ARCH Drilling Rig	2/10/01	2/14/01		
Forklift	2/10/01	2/14/01		

3. **Work performed today**: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Installed well CASING AND SCREEN, sand pack and bentonite seal

4. **Control Activities Performed**:

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

N/A

5. **Tests Performed and Test Results**: (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

N/A

6. **Material Received**: Note inspection results and storage provided.

N/A

7. **Submittals Reviewed:** N/A

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

N/A

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Reviewed issues of dust inhalation associated with silica sand and bentonite used in well completions, puncture slips, trips and falls; hypothermia.

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Unable to install full 50ft bentonite seal due to bridge, placed 30ft seal, and slurried bentonite above bridge in drive casing before removing casing above bridge.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

Jana T. Harden 2/14/01

CQC SYSTEM MANAGER DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name: ST-105 MW Installation Project #: 5155.0030.0017.D2002
Your Name: James Harden Drillers Name: Kevin Jones
Signature [signature] Signature [signature]

Do not proceed with today's work until this checklist is completed.

✓ Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Safety Glasses
- ✓ Ear Protection
- ✓ Steel Toed Boots

✓ Have you designated a smoking and eating area?
✓ Have you completed a Daily Safety Meeting?
✓ Has the Site Safety Plan been reviewed and signed?
✓ Have you identified where the nearest pay phone and emergency equipment is located?
✓ Do you have a copy of the Utilities Locate Checklist?
✓ Do you have enough barricades/cones?
✓ Have the utilities been marked out?
N/A Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

✓ Are your borings?
- ✓ 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- ✓ 5 feet away from non-natural gas utilities
- ✓ 10 feet away from natural gas lines
- ✓ 3 feet away from concrete/asphalt scars/joints or repaved areas?

✓ Are you prepared to hand dig to 5 feet?
N/A Have any fiber optic lines been identified on-site?
____ If so, do you have a copy of the fiber optics plan?
____ Is someone from Health and Safety and Fiber Optics Company involved?
✓ Are your borings a minimum of 15 feet away from the fiber optic line mark outs?
✓ Do you have a copy of all access agreements?
✓ Have you inspected the cable/rope on the drill rig?
✓ Have you checked the "kill" switches on the drill rig?
✓ Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?
✓ Have you checked the rig for hydraulic fluid/oil leaks?
✓ Are all the visible belts and hoses in good working condition?
✓ Have you eliminated all tripping hazards to the best of your ability?
✓ Has your driller and their helper removed all of their jewelry?
✓ Are you prepared to monitor for vapors?
N/A Have you calibrated your PID/FID and O2/LEL?
✓ Is someone CPR qualified in case of an emergency?
✓ Do your drillers have all the supplies required to complete today's activities?

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2-14-01 Project Name/Location: ST-105 MW Installation/Kirtland

Shift/Department: N/A Person Conducting Briefing: James Harden

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Discussed dust inhalation problems involving placement of sand pack (silica) and bentonite; slips, trips and falls and preventing hypothermia

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

None

3. ATTENDEES (Print Name):

1. James Harden	20.
2. Kevin Jones	21.
3. Myron Tycksen	22.
4. Carlos Salcher Jr.	23.
5.	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 006 Date: 2-15-01
Contract No.: DACW45-94-D0003
Project Title & Location: MW Installation at ST-105 Kirtland AFB
Weather: Clear to Partly Cloudy Precipitation: None In.: — Temp.: °F Min: 27 Max: 54

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
3	Drilling and well installation	10/30	Water Development Corp.	ST-105, Kirtland AFB/ Well installation
1	Geologist	10/10	Foster Wheeler Envir.	"

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
ARCH Drilling Rig	2/10/01	2/15/01	8	2
Forklift	2/10/01	2/15/01	3	7

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Grouting of well Annulus, 2nd lift

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

None

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

N/A

6. **Material Received:** Note inspection results and storage provided.

None

7. **Submittals Reviewed:** N/A

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

N/A

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Discussed icy cold conditions: freezing of skin to metal surfaces, and slippery surfaces. Pinch points & hand tool safety

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

None

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James T. Hardy 2-15-01

CQC SYSTEM MANAGER DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name: ST-105 Project #: 5155.0030.0017.D2002
Your Name: James Harden Drillers Name: Kevin Jones
Signature: James T. Harden Signature: Kevin Jones

Do not proceed with today's work until this checklist is completed.

✓ Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Safety Glasses
- ✓ Ear Protection
- ✓ Steel Toed Boots

✓ Have you designated a smoking and eating area?
✓ Have you completed a Daily Safety Meeting?
✓ Has the Site Safety Plan been reviewed and signed?
✓ Have you identified where the nearest pay phone and emergency equipment is located?
✓ Do you have a copy of the Utilities Locate Checklist?
✓ Do you have enough barricades/cones?
✓ Have the utilities been marked out?
N/A Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

✓ Are your borings?
- ✓ 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- ✓ 5 feet away from non-natural gas utilities
- ✓ 10 feet away from natural gas lines
- ✓ 3 feet away from concrete/asphalt scars/joints or repaved areas?

✓ Are you prepared to hand dig to 5 feet?
N/A Have any fiber optic lines been identified on-site?
____ If so, do you have a copy of the fiber optics plan?
____ Is someone from Health and Safety and Fiber Optics Company involved?
____ Are your borings a minimum of 15 feet away from the fiber optic line mark outs?
✓ Do you have a copy of all access agreements?
✓ Have you inspected the cable/rope on the drill rig?
✓ Have you checked the "kill" switches on the drill rig?
✓ Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?
✓ Have you checked the rig for hydraulic fluid/oil leaks?
✓ Are all the visible belts and hoses in good working condition?
✓ Have you eliminated all tripping hazards to the best of your ability?
✓ Has your driller and their helper removed all of their jewelry?
✓ Are you prepared to monitor for vapors?
✓ Have you calibrated your PID/FID and O2/LEL?

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2/15/01 Project Name/Location: ST-105 MW Installation, Kirtland AFB

Shift/Department: — Person Conducting Briefing: James Harden

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Icy, cold conditions: freezing of skin to metal surfaces, slippery surfaces, etc. Pinch points, hand tool safety.

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

Metal spines & splinters on pipes & casings: wear proper hand protection. Also on cables, minimize contact w/ cables

3. ATTENDEES (Print Name):

1. James Harden	20.
2. Kevin Jones	21.
3. Carlos Sanchez Jr	22.
4. Myron Tycksen	23.
5.	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 007 Date: 2-16-01
Contract No.: DACW45-94-D0003
Project Title & Location: ST-105 Monitoring Well Installation, Kirtland Air Force Base
Weather: Hazy Precipitation: None In.: – Temp.: 27 Min: 27 Max: 56

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
3	Drilling/Well Installation	8/24	Water Development Corp	ST-105 Kirtland AFB/ Well Installation
1	Geologist	8/8	Foster Wheeler Environ	"

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
ARCH Drilling Rig	2/10/01	2/16/01	6	8
Fork lift	2/10/01	2/16/01	4	4

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Grouting well annulus
Decontaminating equipment

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

None

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

N/A

6. **Material Received:** Note inspection results and storage provided.

None

7. **Submittals Reviewed:** N/A

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

N/A

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Reviewed safety requirements for decontamination, IDW handling and disposal.

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

None

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

James T. Harder 2-16-01

CQC SYSTEM MANAGER DATE

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name: ST-105 Project #: 5155.0030.007.D2002
Your Name: James Harden Drillers Name: Kevin Jones
Signature James T. Harden Signature Kevin Jones

Do not proceed with today's work until this checklist is completed.

✓ Are your sub-contractors wearing Level-D personal protection equipment?
- ✓ Hard Hats
- ✓ Safety Glasses
- ✓ Ear Protection
- ✓ Steel Toed Boots

✓ Have you designated a smoking and eating area?
✓ Have you completed a Daily Safety Meeting?
✓ Has the Site Safety Plan been reviewed and signed?
✓ Have you identified where the nearest pay phone and emergency equipment is located?
✓ Do you have a copy of the Utilities Locate Checklist?
✓ Do you have enough barricades/cones?
✓ Have the utilities been marked out?
N/A Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ yellow: natural gas, oil, steam
- ____ orange: communications
- ____ white: proposed excavation/boring locations
- ____ green: sewer
- ____ blue: water
- ____ red: electric

✓ Are your borings?
- ✓ 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- ✓ 5 feet away from non-natural gas utilities
- ✓ 10 feet away from natural gas lines
- ✓ 3 feet away from concrete/asphalt scars/joints or repaved areas?

✓ Are you prepared to hand dig to 5 feet?
N/A Have any fiber optic lines been identified on-site?
____ If so, do you have a copy of the fiber optics plan?
____ Is someone from Health and Safety and Fiber Optics Company involved?
✓ Are your borings a minimum of 15 feet away from the fiber optic line mark outs?
✓ Do you have a copy of all access agreements?
✓ Have you inspected the cable/rope on the drill rig?
✓ Have you checked the "kill" switches on the drill rig?
✓ Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?
✓ Have you checked the rig for hydraulic fluid/oil leaks?
✓ Are all the visible belts and hoses in good working condition?
✓ Have you eliminated all tripping hazards to the best of your ability?
✓ Has your driller and their helper removed all of their jewelry?
✓ Are you prepared to monitor for vapors?
✓ Have you calibrated your PID/FID and O2/LEL?
✓ Is someone CPR qualified in case of an emergency?
✓ Do your drillers have all the supplies required to complete today's activities?

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2-16-01 Project Name/Location: ST-155 MW Installation

Shift/Department: Person Conducting Briefing: James Harden

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Decontamination safety - face shields; avoid contact w/ overspray; pressurized & heated water steam, PPE requirements. IDW handling, disposal.

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

Demobilization.

3. ATTENDEES (Print Name):

1. James Harden	20.
2. Kevin Jones	21.
3. Myron Tycksen	22.
4. Carlos Sanchez Jr	23.
5.	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 08 Date: 2/21/01
Contract No.: 5155.0030.00 / DACW 45-94-D-0003
Project Title & Location: Monitoring Well Installation @ ST-105, well 0507, Kirtland AFB
Weather: sunny, breezy Precipitation: — In.: 0 Temp.: °F Min: 41° Max: 62°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
1	Driller	10.5	WDC	well completion + surface comp. ST-105, KAFB-0507
2	Driller's Helpers	10.5	WDC	"
1	assistant Geoscientist	10.5	FWENC	"

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
water truck	2/21/01	2/21/01	3	6

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Finished grouting the annulus to the surface. Allowed to set and finished the surface completion.

Depth to water in the well is approx. 492' bgs.

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

Daily drill rig and site inspection

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

None

6. **Material Received:** Note inspection results and storage provided.

None

7. **Submittals Reviewed:** NA

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

None

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

As per Pam Moss and Jim Harden → allow grout to set while installing posts and install steel casing and concrete pad mid-late afternoon (As per Jim Harden → grout should be set in 4-6 hrs.

Oscar from WDC arrived in Abq to perform well developement on friday. I will meet him on base tomorrow so he can safely park his trailer

Ordered Horiba from Pine for developement parameters - will arrive tomorrow.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEM MANAGER — DATE 2/21/07

DRILLING SAFETY CHECKLIST

"Look up and Live"

Site Name: ST-105 Project #: 5155.0030.0017 A2001
Your Name: Jill Jeffersen Drillers Name: Kevin Jones
Signature [signature] Signature [signature]

Do not proceed with today's work until this checklist is completed.

yes Are your sub-contractors wearing Level-D personal protection equipment?
- x Hard Hats
- x Ear Protection
- ✓ Safety Glasses
- x Steel Toed Boots

yes Have you designated a smoking and eating area?
yes Have you completed a Daily Safety Meeting?
yes Has the Site Safety Plan been reviewed and signed?
yes Have you identified where the nearest pay phone and emergency equipment is located?
yes Do you have a copy of the Utilities Locate Checklist?
yes Do you have enough barricades/cones?
N/A Have the utilities been marked out?
N/A Have you notified the Site/Project Manager if the utilities haven't been marked?
- ____ pink: temporary survey markings
- ____ green: sewer
- ____ yellow: natural gas, oil, steam
- ____ blue: water
- ____ orange: communications
- ____ red: electric
- ____ white: proposed excavation/boring locations

✓ Are your borings?
- yes 10/20 feet away from overhead lines (shielded and unshielded respectively)?
- yes 5 feet away from non-natural gas utilities
- yes 10 feet away from natural gas lines
- yes 3 feet away from concrete/asphalt scars/joints or repaved areas?

N/A Are you prepared to hand dig to 5 feet?
no Have any fiber optic lines been identified on-site?
N/A If so, do you have a copy of the fiber optics plan?
N/A Is someone from Health and Safety and Fiber Optics Company involved?
N/A Are your borings a minimum of 15 feet away from the fiber optic line mark outs?
yes Do you have a copy of all access agreements?
yes Have you inspected the cable/rope on the drill rig?
yes Have you checked the "kill" switches on the drill rig?
yes Has the driller showed you that all the gauges, levers, safety devices, and switches are working properly?
yes Have you checked the rig for hydraulic fluid/oil leaks? - plastic under rig
yes Are all the visible belts and hoses in good working condition?
yes Have you eliminated all tripping hazards to the best of your ability?
yes Has your driller and their helper removed all of their jewelry?
N/A Are you prepared to monitor for vapors?
N/A Have you calibrated your PID/FID and O2/LEL?
yes Is someone CPR qualified in case of an emergency?
yes Do your drillers have all the supplies required to complete today's activities?

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2/21/01 Project Name/Location: MW Installation

Shift/Department: — Person Conducting Briefing: Jill Jefferson

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Wear hardhats, ST boots, safety glasses. Use proper lifting techniques. Use caution around rig and other equip + vehicles

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

3. ATTENDEES (Print Name):

1. Jill Jefferson	20.
2. Kevin Jones	21.
3. Myron Tucker	22.
4. Coby Wilhelm	23.
5.	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 09 Date: 2/22/01
Contract No.: DACW 45-94-D-0003
Project Title & Location: Monitoring Well Installation, ST-105, well 0507
Weather: P. cloudy Precipitation: NONE In.: — Temp.: °F Min: 46° Max: 65°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
1	well developer	2	WDC	ST-105 - set trailer up for development tomorrow
1	assistant geoscientist	2	FWENC	

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
NA				

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Met well developer so he could drop off his supply trailer on site. Rented a water tank for development water from Hydrogeologic Services.

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

NA

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

NA

6. **Material Received:** Note inspection results and storage provided.

Received water tank - Charles met and brought delivery truck to ST-105 - set up tank

7. **Submittals Reviewed:** NA

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

NA

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

NA

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Asked Jim Harden + Carol Bienivlis about 8-hr pumping minimum stated in the work plan - both think it is a misprint and should read "maximum". Jim is getting in touch w/ Carl Nardia to verify and will relay message to field on Friday (am).

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEM MANAGER — DATE 2/22/01

Jill Jefferson

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 10 Date: 2/23/01
Contract No.: DACW 45-94-D-0003
Project Title & Location: Monitoring Well Installation at ST-105
Weather: p. cloudy Precipitation: None In.: — Temp.: °F Min: 45° Max: 62°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
1	well developer	12	WDC	well development at ST-105, KAFB-0507
1	assistant geoscientist	11	FWENC	"

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
Pump Rig	2/23/01	2/23/01		

7. **Submittals Reviewed:** NA

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

None

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Daily Safety Briefing

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

As Per Jim Harden (regarding the pumps not working) we did not bail or get a more powerful pump in order to complete development. It is thought that the pump pumped at a rate that was too rapid for the formation and the well was not able to hold sufficient water for pumping. Brian of WDC said they have people coming out to KAFB soon and when we settle on a method of development they will be available.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEM MANAGER

2/23/01
DATE

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 2/23/01 Project Name/Location: ST-105 MW Development

Shift/Department: — Person Conducting Briefing: Jill Jefferson

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Wear proper PPE (ST boots, safety glasses, gloves, hard hat), directions to hospital, proper lifting techniques etc.

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

NA

3. ATTENDEES (Print Name):

1. Jill Jefferson	20.
2. Oscar M. Montezuma	21.
3.	22.
4.	23.
5.	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 11 Date: 3/1/01
Contract No.: DACW 45-94-D-0003
Project Title & Location: Monitoring Well Installation at ST-105
Weather: Mostly Cloudy Precipitation: 0.0 In.: 0 Temp.: °F Min: 48° Max: 48°

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
1	Geophysical equip operator	5 + 2 hrs for phone	Southwest Geophysical Services	ST-105, well RAFB0507 geophysical logging
1	assistant geoscientist	5	FWENC	oversight, SHSO

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
Geophysical equipment	3/1/01			

3. **Work performed today:** (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Southwest Geophysical Services performed geophysical logging of KAFB-0507.

A water level measurement was taken + read 493.7ft below TOC. This measurement matched the geophysical data.

4. **Control Activities Performed:**

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

None

5. **Tests Performed and Test Results:** (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

Geophysical tests for resistivity and conductivity

6. **Material Received:** Note inspection results and storage provided.

None

7. **Submittals Reviewed:** NA

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

None

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Safety Briefing

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

At 1305 we were instructed to leave the site by the USAF due to a plane arriving with a weapons delivery. We were told the plane would be gone by 4. Left site and returned @ 1600 hrs. The plane was still on the pad but we were given permission to cross-over to KAFB0507 to complete our work. The plane departed while we were on site.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEM MANAGER

3/1/01
DATE

EHS 1-6 ATTACHMENT B

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 3/1/01 Project Name/Location: ST-105, MW Development

Shift/Department: — Person Conducting Briefing: Jill Jefferson

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Use proper precautions w/ geophysical equipment. Wear appropriate PPE.
Directions to Hospital

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

NA

3. ATTENDEES (Print Name):

1. Jill Jefferson	20.
2. Mick Peterson	21.
3.	22.
4.	23.
5.	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 01 Date: 3/20/01
Contract No.: DACW 45-94-D-0003
Project Title & Location: Well Installation @ ST-105
Weather: Sunny Precipitation: None In.: — Temp.: °F Min: 55 Max: 70

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
1	Asst. Geoscientist	11.5	FWENC	Developing well ST-105
1	Well Developer	11.5	Water Develop. Corp	" " "

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
Field Vehicle	3/20/01	3/20/01	11.5	—
Pump Rig	↓	↓	11.5	—
Water level meter	↓	↓	6	5
Water Quality Meter	↓	↓	3	8

3. **Work performed today**: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

Well Development activities @ ST-105 well 0507. Bailed well for ≈ 3 hrs. removing approximately 140 gallons of water. Installed Grundfos's 10SQ/SQE15C-380 on well @ ≈ 515 Below TOC. Started pump and initially pumped well dry due to the high flow rate. Pumped shut off, reset pump & allowed well to recharge. Came back to 495' within minutes. Attempted several 20 minute pump cycles to have water pumped into Tank. Pump can not pump the water to surface when there is a full drop pipe of water. Removed pump + WDC in purchasing a Grundfos's 5SQ/10C-450

4. **Control Activities Performed**:

Preparatory Inspections: Identify features of work and attach minutes.
Initial Inspections: Identify features of work and attach minutes.
Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

NONE

5. **Tests Performed and Test Results**: (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

Water Quality parameters
Water level measurements

6. **Material Received**: Note inspection results and storage provided.

NONE

7. **Submittals Reviewed:** NONE

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

NONE

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Daily Safety meeting

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Installing the Grundfos pump 10 SQ/15C-380 again after another model was recommended. However, well performance was not determined during the first/last development attempt

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEM MANAGER

3-20-01
DATE

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: ~~3-19-01~~ 3/20/01 Project Name/Location: KAFB ST-105

Shift/Department: DAY Person Conducting Briefing: Charles Maderwell

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Planes (noise) overhead hazards, pinching hazards, directions to HOSP - Emergency #'s & procedures

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

3. ATTENDEES (Print Name):

1. Charles Maderwell	20.
2. Gene M. Montgomery	21.
3.	22.
4.	23.
5.	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

3/19/01 Monday
KAFB ST-105 well 0507
well Development
Field: Charles Madewell
PM: Pam Moss
0645 Mob / Enroute Site
waiting for wgl personnel
KAFB 0507
DTW 495.42
Water level meter S/N 3725
Horiba U10 water Quality
meter S/N 610054
Calibrated Horiba U-10

Called from WDC
Cannot make it today
rescheduled
0930 Close

3/19/01

3/20/01 Tuesday
KAFB ST-105 well 0507
Weather: Sunny 55°F
0730 Mob / Enroute
Field: Charles Madewell
PM: Pam Moss
Sub: Water Development Corp
Oscar Montezuma
0800 On Site
Daily Safety Meeting
DTW 495.42
Water level meter S/N 3725
Horiba U-10 meter S/N 610054
Calibrated
0830 Start Bailing
3.7 gallon bailer SS
3" x 10'
START water Quality check
Water is very cloudy fines
Brown in color. Checked Chemo
to get idea of water parameters
1000 Transfered 55 gallons to
1200 gallon Tank
1020 DTW 495.55 No evidence
of going dry at this time

3-20-01

3-20-01 Tuesday
Weather: Sunny 60°F
Well 0504 Bailing
water still very cloudy
>999 NTU's However color intensity is dropping to a lighter brown
1135 Transferred 58 gallons to 1200 gallon Tank
water still Lt Brown high Turbidity
1145 DTW 495.54.
Called Jim Hardin about current conditions. Recommended to install WDC pump + start purging with the pump. The pump should initially pump the well dry due to a high start up flow rate. The real test of the pump will be once the drop pipe is full + the well has recharged. Once this is done the pump will be started + should start at a lower flow rate initially.

3-20-01

3-20-01 Tuesday
Weather: Sunny >0°F

1230 Installing 1 1/2 HP Grundfos's pump. Pipe run 1" pipe ≈ 300' + 1 1/4" pipe ≈ 205' wire 470' 10 AWG + remainder 12 AWG. Deployed water probe with pipe assembly.
1430 Site Visit by Mark Holm & Bob Flint of EMR-KAFB
1435 Started pump
water in well quickly dropped when started.
1445 water recovered to static
Attempted to have Pump work several starts + stops couldn't pump the water column up drop Tube. WDC ~~decided to~~ purchase a Grundfos's ~~5 SQ 200~~ pump. Removed pump ~~from well~~
1830 close

3-20-01

Well Development Record Form

Project: 5155.0030.0001 **Site:** ST-105

Well ID: KAFB-0507 **Well Depth:** 516

Date Installed: 2-16-01 **Name of Driller:** Oscar Montezuma

Well Diameter: ~~5 in.~~ 4 in **Name of Geologist:** C. Mudewell

Static Water Level:
Upon Completion: 495.42 ft. **After Development:** 495.54 ft.

Height of water in well: 20.5 ft. (well depth - static water level)

Well Volume: 14 gal. [C X Height of water in well X (well radius (in))^2]

Well Construction Details:

Well Development Details: Bailed: Bailer SS (3"x10' - 3.7 gallons)

Water Quality:	Gallons	pH (Su)	Specific Conductivity (umhos/cm)	Temperature (o C)	Turbidity (NTU)	Time (Hrs)
Initial:	3.0	7.72	429	18.2	485	0845
Volume 1	14	7.87	395	18.5	>999	0855
Volume 2	28	8.04	397	18.3	>999	0925
Volume 3		—	—	—		—
Volume 4		—	—	—		—
Volume 5		—	—	—		—
Volume 6	140 g.	—	—	—	>999	—
Volume 7						

FOSTER WHEELER ENVIRONMENTAL

DAILY QUALITY CONTROL REPORT

Daily Report No: 02 Date: 3/21/01
Contract No.: DACW 45-94-D-0003
Project Title & Location: well Installation @ ST-105
Weather: Sunny Precipitation: None In.: — Temp.: °F Min: 55 Max: 75

1. Contract/Subcontractors and Area of Responsibility:

NUMBER	TRADE	HOURS/TOT	EMPLOYER	LOCATION/DESCRIPTION WORK
1	Ast. Geoscientist	6.5	FWENC	ST-105/0507 Development
1	Well Developer	6.5	WDC	" " "

2. Operating Plant or Equipment (not hand tools):

Plant/Equipment	Date of Arrival Or Departure	Date of Safety Check	Hours Used	Hours Idle
Pump Rig	3/21/01	3/21/01	6.5	—
Water level Meter	↓	↓	3	3.5
Water Quality meter	↓	↓	2	4.5

3. **Work performed today**: (Indicate location and description of work performed by prime and/or subcontractors. When network analysis is used, identify work by NAS activity number).

well Development activity @ ST-105 well 0507: Installed Grundfos pump 5SQ110C-450. Pumped @ 5 gpm, drawdown minimal @ this rate. Drawdown - 2-5' max. Took water quality measures. Stopped development when parameters stabilized. Removed pump + pipe De-rig off of well

4. **Control Activities Performed**:

Preparatory Inspections: Identify features of work and attach minutes.

Initial Inspections: Identify features of work and attach minutes.

Follow-up Inspections: List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

NONE

5. **Tests Performed and Test Results**: (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

water Quality parameters
water level measurements

6. **Material Received**: Note inspection results and storage provided.

NONE

7. **Submittals Reviewed:** NONE

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. **Off-Site Surveillance Activities, Including Action Taken:**

NONE

9. **Job Safety:** List items checked, results, instructions, and corrective actions taken.

Daily Safety Meeting

10. **Remarks:** Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

NONE

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC SYSTEM MANAGER — DATE 3-21-01

FW

FOSTER WHEELER ENVIRONMENTAL CORPORATION

DAILY BRIEFING SIGN-IN SHEET

Date: 3/21/01 Project Name/Location: ST-105 Sewage Lagoon

Shift/Department: DAY Person Conducting Briefing: Charles Madewell

1. AWARENESS (e.g., special EHS concerns, pollution prevention, recent incidents, etc.):

Hosp. directions. Emergency #'s, overhead hazards, PPE

2. OTHER ISSUES (EHS Plan changes, attendee comments, etc.):

3. ATTENDEES (Print Name):

1. Oscar M. Montezuma	20.
2. Charles Madewell	21.
3.	22.
4.	23.
5.	24.
6.	25.
7.	26.
8.	27.
9.	28.
10.	29.
11.	30.
12.	31.
13.	32.
14.	33.
15.	34.
16.	35.
17.	36.
18.	37.
19.	38.

Revision Date 10/15/99

3-21-01 Wednesday
KAFB ST-105
Field: Charles Madewell
0700 WDC: Oscar Muntezuma
Weather: Sunny 55-60°F
Daily Safety meeting
Installing
5 SQ-45D Grundfo's pump
using 470' 10 AWG x = 50' 12 AWG wire
Horiba U-10 water meter
S/N 610054
Water level meter S/N 3725
DTW 495.40
0950
1000 Start pump

0955 water to surface
Drawdown ≈ 1-2'
Flow rate 5 gpm

Taking Water Quality measurements

Drawdown ≈ 2.5' unable to get probe down - hung up

3-21-01

3-21-01 Wednesday
weather: Sunny 65-70°F

Time	GAL	pH	Cond	Temp	Turb.
0959	20	7.75	403	19.2	66
1000	25	7.76	401	19.5	39
1002	35	7.90	402	19.7	35
1005	50	7.90	400	19.8	35
1012	85	8.02	400	20.2	20
1017	110	7.99	401	20.2	3
1020	125	7.95	400	20.2	3
1024	155	7.85	400	20.2	3
1030	185	7.84	399	20.2	0
1033	200	7.83	401	20.2	0
1036	215	7.89	400	20.2	1
1040	235	7.85	400	20.3	1

Called Jim Hardin discussed parameters + agreed well is depeloped & to pull pump. collected jar of water for picture.
Volume of water Bailed on 3/20/01 + Transfered to Tank 140-150 gallons
Volume of water Pumped on 3/21/01 + Transfered to Tank 240-250 gallons
Total volume in Tank 400-450 gallons

3-21-01

3-21-01 Wednesday
weather: Sunny 70-75°F
Labeled 1000 gallon Tank

Finished pulling pump & pipe

1230 DTW 495.51

Took picture of jar of water

1300 WDC off site

1400 Close

3-21-01

Well Development Record Form

Project: 5155.0030.0001 Site: ST-105

Well ID: KAFB-0507 Well Depth: 516

Date Installed: 2-16-01 Name of Driller: Oscal Montezuma

Well Diameter: 5 in. Name of Geologist: C. Madewell

Static Water Level:
Upon Completion: 495.40 ft. After Development: 495.51 ft.

Height of water in well: ~~[illegible]~~ 20.6 ft. (well depth - static water level)

Well Volume: 14 gal. [C X Height of water in well X (well radius (in))^2]

Well Construction Details:

Well Development Details: Grundfo's 5SQ-450 1HP Sub. Pump
5 Gpm Flow rate (3/21/01)
Bailed 55 3'x 10' 3 hrs (140-150 gallons) (3/20/01)

	Water Quality:	Gallons	pH (Su)	Specific Conductivity (umhos/cm)	Temperature (o C)	Turbidity (NTU)	Time (Hrs)
	Initial:	20	7.75	403	19.2	66	0959
14	Volume 1	25	7.76	401	19.5	39	1000
28	Volume 2	36	7.90	402	19.7	35	1002
42	Volume 3	50	7.90	400	19.9	35	1005
56	Volume 4	85	8.02	400	20.2	20	1012
70	Volume 5	110	7.99	401	20.2	3	1017
84	Volume 6	125	7.95	400	20.2	3	1020
98	Volume 7	155	7.85	400	20.2	3	1024
		185	7.84	399	20.2	0	1030
		200	7.83	401	20.2	0	1033
		215	7.89	400	20.2	1	1036
		235	7.85	400	20.2	1	1040