

**Draft Final
Report
Wastewater Sites (Group 2)
Expanded Site Investigation
(Multiple Sites)
at
Fort Riley, Kansas**

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Prepared for



U.S. Army Corps of Engineers
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LIST OF ACRONYMS AND ABBREVIATIONS

AEHA	Army Environmental Hygiene Agency
bgs	below ground surface
BMcD	Burns & McDonnell Engineering Company, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DA	United States Department of the Army
DAF	Dilution Attenuation Factor
DRO	Diesel Range Organics
ECC	Environmental Chemical Corporation
ESI	Expanded Site Investigation
FFA	Federal Facility Agreement
FID	Flame Ionization Detector
ft	feet
gal/day	gallons per day
GRO	Gasoline Range Organics
HRS	Hazard Ranking System
IRP	Installation Restoration Program
IWSA	<i>Installation-Wide Site Assessment for Fort Riley, Kansas</i>
J	Estimated
KAL	Kansas Action Level
KDHE	Kansas Department of Health and Environment
LBA	Louis Berger and Associates
MAAF	Marshall Army Airfield
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
mg/L	milligrams per liter
MP	Malcolm Pirnie, Inc.
MPRC	Multipurpose Range Complex
NCP	National Contingency Plan
NPL	National Priorities List

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

PA	Preliminary Assessment
PAOC	Potential Areas of Concern
PCB	Polychlorinated Biphenyl
POL	Petroleum, Oil, and Lubricants
ppb	parts per billion
PRG	Preliminary Remedial Goal
PWE	Fort Riley Directorate of Public Works – Environmental Division
QCSR	Quality Control Summary Report
RCRA	Resource Conservation and Recovery Act
RSK	Risk-Based Standards for Kansas
SI	Site Investigation
SSL	Soil Screening Level
SVOC	Semivolatile Organic Compound
TES	Tactical Equipment Shops
TPH	Total Petroleum Hydrocarbons
µg /kg	micrograms per kilogram
µg/L	micrograms per liter
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

* * * * *

1.0 INTRODUCTION

1.1 PURPOSE OF EXPANDED SITE INVESTIGATION (ESI) REPORT

The Fort Riley Directorate of Public Works – Environmental Division (PWE) is performing the Installation Restoration Program (IRP) at Fort Riley, Kansas. This program, designed to identify and address potential threats to human health and the environment, has been underway for several years at the post. Numerous investigations, pilot studies, and environmental sampling events have been conducted by the United States Army Corps of Engineers (USACE) at several sites on the post to support the IRP effort.

Upon review of the public record, Fort Riley has determined that multiple potentially contaminated sites identified during previous investigations have not had a formal decision on their regulatory status signed by the parties to the Federal Facility Agreement (FFA). These multiple sites have been organized into five groups based on similar site characteristics or contaminants as indicated below:

- Pesticide / Polychlorinated Biphenyl (PCB) Sites
- Wastewater Sites
- Petroleum / Volatile Organic Compounds (VOC) Sites
- Former Landfill / Incinerator Sites
- Former Vehicle Maintenance Shops / Gas Stations / Petroleum Dispensing Stations
(collectively referred to as the Former Petroleum, Oil, and Lubricant [POL] Sites)

Table 1-1 presents a summary of the regulatory history for all of the sites investigated by group and includes the recommendation made for closed status. Any proposed additional sampling is also presented, if applicable.

This ESI Report presents the field results and recommendations for the following Wastewater Sites (Figure 1-1):

- Industrial Wastewater System Custer Hill (FTRI-020)
- Camp Funston Wastewater Treatment Plant (WWTP) Sludge Drying Beds (FTRI-022)
- Custer Hill WWTP Sludge Drying Beds (FTRI-023)
- Camp Forsyth WWTP Sludge Drying Beds (FTRI-024)
- Main Post WWTP Sludge Drying Beds (FTRI-025)
- Range Complex Wastewater Lagoons (FTRI-026)

This report includes a complete summary of all previous investigative work conducted at each of the Wastewater Sites, as well as the results of field work completed as part of the ESI. The evaluation includes an analysis of the new data with respect to the historical data. The analysis considers whether or not the new data are consistent with the historical data and includes possible explanations for any variance observed. A recommendation on the determination of the future status of each of the Wastewater Sites is made.

Malcolm Pirnie, Inc. (MP) has a contract with the USACE to conduct this investigation. MP has subcontracted Burns & McDonnell Engineering Company, Inc. (BMcD) to prepare work plan documents, execute the field work, and prepare the ESI Reports.

The following installation-wide documents provided general guidance for conducting ESI field activities during the summer of 2006:

- *Installation-Wide Sampling and Analysis Plan for Environmental Investigations at Fort Riley, Kansas* (MP-BMcD, 2004a), which consists of the following two volumes:
 - *Volume I, Installation-Wide Field Sampling Plan*
 - *Volume II, Installation-Wide Quality Assurance Project Plan*
- *Installation-Wide Site Safety and Health Plan for Environmental Investigations at Fort Riley, Kansas* (MP-BMcD, 2004b)
- *Installation-Wide Investigative-Derived Waste Management Plan for Environmental Investigations, Fort Riley, Kansas* (BMcD, 2003)

The following project-specific plan addenda were prepared specifically to support ESI field activities and data validation:

- *Sampling and Analysis Plan Addendum, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas* (MP-BMcD, 2006a), which consists of the following two volumes:
 - *Volume I, Field Sampling Plan Addendum*
 - *Volume II, Quality Assurance Project Plan*
- *Site-Specific Safety and Health Plan, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas* (MP-BMcD, 2006b)

- *Investigative-Derived Waste Management Plan Addendum, Expanded Site Investigation (Multiple Sites) at Fort Riley, Kansas (MP-BMcD, 2006c)*

1.2 SITE DESCRIPTION

General site conditions, including the physical setting, surface features, ecology, geology and hydrogeology, and climate have been summarized in the Installation-Wide Field Sampling Plan. Conditions specific to each ESI site are addressed in the individual site discussions.

1.3 REGULATORY HISTORY

Fort Riley was established in 1853 and has been owned and operated by the United States Department of the Army (DA) since that time. Environmental investigations and sampling events were performed at Fort Riley during the 1970s and 1980s. These investigations identified activities and facilities where hazardous substances had been released or had the potential to be released to the environment. Potential sources of contamination include a variety of landfills; printing, dry cleaning, and furniture shops; POL sites; and pesticide storage facilities. On July 14, 1989, the United States Environmental Protection Agency (USEPA) proposed inclusion of Fort Riley on the National Priorities List (NPL), and listed the installation on the USEPA NPL in August 1990, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The DA – Fort Riley, the Kansas Department of Health and the Environment (KDHE), and the USEPA entered into a FFA, to address environmental releases subject to Resource Compensation and Recovery Act (RCRA) and CERCLA or CERCLA alone.

The FFA, which became effective in June 1991, required Fort Riley to conduct a systematic site assessment to identify all potential areas of concern (PAOCs) at Fort Riley. The systematic site assessment was performed in 1992, with the results presented in the *Installation-Wide Site Assessment for Fort Riley, Kansas (IWSA)* dated 07 December 1992 and revised on 16 February 1993 (Louis Berger and Associates [LBA], 1993). The IWSA summarized existing data and identified 25 groups of PAOCs, with 23 sites being identified for further site investigation. Contaminants associated with these sites vary greatly from potential lead-contaminated soils at old firing ranges to potential releases of solvents due to practices at furniture repair shops. The IWSA was conducted consistent with the USEPA requirements for Preliminary Assessments (PA) under CERCLA. Based on USEPA's PA method, potential risk posed by PAOCs was estimated using the Hazard Ranking System (HRS). The IWSA identified PAOCs subject to RCRA corrective actions and/or CERCLA where a release of hazardous substances to the environment has occurred or is considered likely, migration pathways from the Site exist, and potential receptors are known to exist. Specifically, 23 PAOCs were identified and evaluated using the HRS PA score method.

As outlined in the National Contingency Plan (NCP), the results of the PA were used to identify sites requiring further investigation.

These PAOCs were addressed under a Multiple Site Investigations project which was further broken down into these groupings: the Sensitive Receptor Lead Sites; “High Priority” Sites; and “Other Sites”. The Sensitive Receptor Lead Sites investigation was expedited due to the accessibility of the areas to the general public (especially children). Only one area near the Coyler Manor Family Housing Area was identified as having elevated levels of lead in the soils; a removal action involving excavation and off-site disposal of soil was performed. The High Priority Sites field investigations were completed in November, 1993. The “Other Sites” grouping consisted of 14 sites which had very low PA HRS scores and had a low potential for release of contaminants to the environment. Field work for these “Other” sites was performed in the spring and summer of 1994. Site investigations for seven POL/underground storage tank (UST) sites were conducted from 1992 to 1995.

Fort Riley has a RCRA Part B permit that became effective October 1, 1998 and expires October 1, 2008. Part I of the permit allows Fort Riley to operate as a storage facility for hazardous waste. Part II of the permit defers corrective action requirements to those conditions specified in the Fort Riley FFA.

The permit states that the Installation-Wide Site Assessment and subsequent modifications thereto, shall constitute the identification of all known past and present sites/solid waste management units (SWMUs), effective with the issuance of Part II of the permit. Table 2.2 of the permit lists sites/SWMUs covered under the FFA and their current status (revised October 2000). The current status of the ESI sites/groupings listed in the permit are determined to not have the potential to pose a risk to human health or the environment. Although the RCRA permit states these sites pose no potential risk, the regulatory status under CERCLA is currently open; i.e., the sites have not received regulatory concurrence to terminate further response activities or to initiate a removal or to proceed to the next phase under CERCLA for a remedial investigation, if warranted.

1.4 RATIONALE AND TECHNICAL APPROACH

The objective of this ESI was to provide a defensible rationale for ending environmental investigations at the identified ESI sites, if that decision was supported by data. In the event that closed status was not indicated by the data, then future work required for closed status was proposed. This was accomplished using a three step process:

- Documents were reviewed in late 2005 to determine if existing data were sufficient to support a recommendation for the future status of a site. If not sufficient, then data gaps were

identified and additional fieldwork was planned. ESI sampling parameters were selected by Fort Riley.

- The project work plan was prepared (MP-BMcD, 2006d). This document presented the rationale for the collection of samples at each location and was approved by the regulatory agencies.
- Additional field sampling was conducted during the summer of 2006. Samples collected included surface and subsurface soil samples, groundwater samples, debris samples, and wipe samples. All results were validated and a Quality Control Summary Report (QCSR) was issued (BMcD, 2006e).
- The data were evaluated and an ESI Report was prepared. Data collected as part of the ESI were compared to existing risk-based screening criteria. This process is described in the following section. See Section 1.6 for a description of the ESI Report organization.

1.5 RISK-BASED SCREENING CRITERIA

Field data were screened against existing risk-based screening criteria in order to determine if contaminants detected in soil or groundwater present a hazard to potential receptors. No effort was made to perform a formal risk assessment for any of the ESI sites. The screening process was developed in collaboration with Fort Riley and is described in the following bullets:

- Data were screened initially against USEPA Region 9 Preliminary Remediation Goals (PRGs) (USEPA, 2004a). These are risk-based standards and are more stringent than other regulatory standards available. For soil, the residential PRGs were used initially. For groundwater, the tap water PRGs were applied. If leaching to groundwater appeared to be a potential issue, then the soil data were screened against the dilution attenuation factor (DAF) 20 standards for “migration to groundwater.”
- If soil at a site failed screening against the residential Region 9 PRGs, then the industrial PRGs were applied, assuming their use was justified based on current and/or future use of the site.
- If groundwater at a site failed screening against the tap water PRGs, then the USEPA Maximum Contaminant Levels (MCLs) (USEPA, 2004b) or action levels were applied.

- If soil failed screening against both residential and industrial PRGs, then the KDHE Risk-Based Standards for Kansas (RSK) screening standards (KDHE, 2003) were applied.
- If soil and/or groundwater failed screening against all regulatory standards, then an effort was made to justify closed status based on the lack of completed pathways to potential receptors. This was a qualitative assessment; no formal risk assessment was performed.

In the event that a recommendation for closed status could not be made, then recommendations were made for additional work at that location.

1.6 ESI REPORT ORGANIZATION

Each section of this ESI Report (Sections 2 through 7) consists of individual, stand alone descriptions of each site. Each discussion includes the following elements:

- Location and Setting – a brief description of the physical location of the site, including the nature of the surrounding area. A description of geology and hydrogeology is included. Any protected or special ecological and cultural features observed or known to occur at or near the site are described. Any significant receptors, especially water supply wells, are also described.
- Site Background and Previous Sampling Results – This section includes a brief history of the site. Also discussed are any previous site investigation activities and a discussion of analytical results from those activities.
- ESI Field Activities and Analytical Results – Significant observations which drove the sampling rationale are listed. The field activities are described in detail. A figure and table are provided showing the locations where samples were collected and listing the sampling media and analytes.
- Discussion and Recommendations – This section provides a discussion of both previous and ESI sampling results. Any anomalies in the data sets are described and explained, if possible. Based on a comparison of analytical data to screening criteria, a recommendation for closed status was made. If closed status was not indicated, then a recommendation for additional work was made.

This ESI Report, which addresses only the Wastewater Sites, is organized as follows:

- Section 1.0 Introduction
- Section 2.0 Industrial Wastewater System Custer Hill (FTRI-020)
- Section 3.0 Camp Funston WWTP Sludge Drying Beds
(FTRI-022)
- Section 4.0 Custer Hill WWTP Sludge Drying Beds (FTRI-023)
- Section 5.0 Camp Forsyth WWTP Sludge Drying Beds (FTRI-024)
- Section 6.0 Main Post WWTP Sludge Drying Beds (FTRI-025)
- Section 7.0 Range Complex Wastewater Lagoons (FTRI-026)
- Section 8.0 References

Additional reports will address the other four groups of ESI sites.

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2.0 INDUSTRIAL WASTEWATER SYSTEM CUSTER HILL (FTRI-020)

2.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

For the purposes of this ESI, the Custer Hill Industrial Wastewater System (FTRI-020) consists of the following elements:

- The North Wastewater Retention Ponds. These are located at the north side of the Custer Hill Cantonment area (Figures 1-1 and 2-1). This area includes the Central Vehicle Washing Facility.
- The West Wastewater Retention Pond. This pond is located just west of Kitty Drive and south of the Building 8390 Tactical Equipment Shop (TES) Compound (Figures 1-1 and 2-2).
- The East Wastewater Retention Pond. This pond is located just west of the intersection of First Division Road and Wells Street on Custer Hill (Figures 1-1 and 2-3).

These ponds have been or are elements of an integrated system designed to manage wastewater collected throughout Custer Hill. The East and West Ponds were replaced and subsequently taken out of service in 1997. The North Wastewater Retention Ponds are still in use. The primary source of water for these ponds is storm water runoff.

The North Wastewater Retention Ponds consist of five individual ponds (including cells 1-4 and the wash rack reservoir), with a combined surface area of approximately 32 acres and a storage capacity of 75 million gallons (Figure 2-1). The surface elevation of the ponds drops from south to north, since the direction of the natural drainage is also to the north. These ponds are located in the upland area of Fort Riley, and are underlain by bedrock (interbedded limestone and shale), with a thin layer of unconsolidated material. This unconsolidated material consists of residual soil and possibly loess. The actual depth to bedrock in the vicinity of the North Wastewater Retention Ponds is approximately 9 to 31 feet (ft) below ground surface (bgs). Groundwater in this area generally occurs at the interface between bedrock and the unconsolidated material, and within voids and fractures in the bedrock. Based on the local drainage, groundwater would be expected to flow towards the north. The area around these ponds is open, with few structures. The land cover is either mowed grass or wooded.

The West Wastewater Retention Pond is approximately 100 ft in diameter (Figure 2-2). The pond is surrounded by a chain-link fence and the area is covered with mowed grass. As mentioned previously,

this pond has been replaced and is no longer in use. The subsurface geology is similar to that as described for the North Wastewater Retention Ponds (above). The natural drainage in this area is to the west, towards Fourmile Creek and the Republican River.

The East Wastewater Retention Pond is approximately 65 ft by 225 ft in size (Figure 2-3). The pond is surrounded by a chain-link fence and the area is covered with mowed grass. As mentioned previously, this pond has been replaced and is no longer in use. The subsurface geology is similar to that as described for the North Wastewater Retention Ponds (above). The natural drainage is to the east, towards Forsyth Creek and the Kansas River.

No protected or special ecological or cultural features were observed or are known to occur at or near any of these ponds.

No water supply wells are located on Custer Hill. The well field for Fort Riley is located approximately three miles south of Custer Hill, in the floodplain of the Republican River.

2.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

Central Vehicle Wash Facility at the North Wastewater Retention Ponds

The new facility began operation around 1986. Prior to the construction of this central facility, vehicles were washed at the TESs. Wash racks at these shops were drained to one of the wastewater retention ponds feeding the central vehicle washing facility. At the new facility, the vehicles pass through a wash/dip area, and water cannons are used to direct high pressure water at the vehicles. Soap and detergents are sometimes used. Engine compartments are also cleaned. After the wash, the vehicles proceed to the adjacent rinse (post-wash) area where rinse water is used to remove the remaining dirt. Water from the wash area drains into a double sedimentation/oil-grit skimmer basin (Building 8555) (Figure 2-4). The skimmer removes floating oils, which are managed as waste oils. The water passes over to a retention pond (cell 1) (Figure 2-1). Similarly, the water from the rinse facility goes to a sedimentation pool (no skimmer) and then joins the water from the wash sedimentation pools before entering cell 1.

The waste oil is managed by Safety Kleen, who tests the waste oil prior to putting the oil in their truck to document that the waste oil is recyclable. If the waste oil fails the testing, it is shipped off-site as hazardous or special waste based on the toxicity characteristic leaching procedure (TCLP).

From 1985 to 1997, sediment was placed at a sediment disposal site west of the Central Vehicle Washing Facility system. Three 75 by 215 ft bermed retention cells were constructed at the disposal site in 1997. Each cell holds 577 cubic yards of sediment at a depth of one ft or 1,153 cubic yards of sediment at a depth of two ft. One of the sediment retention cells has a geotextile liner and is now in use to manage contaminated sediment removed from the closed East and West earthen sedimentation ponds. The management of those sediments is conducted in the same manner as the other sediments in the retention cells. KDHE required that samples be taken from the sides and bottoms of the retention cells after their construction. Composite samples from the three cells indicate that TPH levels in the bottoms were 130 mg/kg, while TPH levels in the berms were 50 mg/kg.

The sediment from the Central Vehicle Wash Facility grit chamber and sedimentation basins involves transporting the sediment, on an alternating basis, to one of the three bermed, earthen sediment retention cells located approximately one-half mile north of the sedimentation basins. The sediment management protocol is presented in Fort Riley's "Sediment Management Procedure for the Central Vehicle Wash Facility & Tactical Equipment Shop (TES) Sedimentation Basins." After placement in one of the earthen retention cells, the POL contaminated sediment is tilled on a quarterly basis to enhance TPH degradation. If TPH levels have decreased to an acceptable level determined by analytical results, the sediment is removed for use in land reclamation projects or as cover at a Fort Riley landfill. Sediments are held in the retention cells for a minimum of one year. If sampling indicates that allowable limits may not be reached within the managed time frame, other methods may be used to increase degradation rates.

Cell 1 is several acres and supports vegetation typical of wetlands, with cattails and abundant wildlife. Water from cell 1 flows over to a lower pond (cell 3) and then on to a still lower pond (cell 4). There is a precautionary oil boom where water enters cell 3 and cell 4. These ponds are not lined. Water from cell 4 is pumped back to the wash facility for reuse. Water pumped from cell 4 is split near the top of the hill with some going to the water cannon at the wash facility and some going to a wet well from which it is pumped to the rinse (post-wash) facility. In extremely rainy weather, water from cell 4 is released into the head waters of Threemile Creek. The system is largely self-contained. The facility is designed to prevent surface runoff from entering the systems. However, additions and subtractions from the system result from precipitation and evaporation.

The principal purpose of the central wash facility is to remove dirt and grime from vehicles as part of routine maintenance. The dirt picked up by the vehicles during use does not contain CERCLA or RCRA hazardous substances. However, there are numerous POLs associated with vehicle use and maintenance. Some of these POLs are removed from the vehicles during washing and enter the wash water collection

system. The contaminants of concern at the site are primarily petroleum hydrocarbons. Grab samples of water from the facility were collected by the KDHE in 1990 and 1991 and analyzed for VOCs and other parameters. The results indicated that petroleum hydrocarbons were present with total VOCs ranging from a high of approximately 350 parts per billion (ppb) to less than 20 ppb (LBA, 1993).

A Site Investigation (SI) was conducted in May 1993 at the Old Wash Rack Reservoir / Cells 1 through 4 to determine whether hazardous wastes were released to the ponds and in turn whether the ponds were releasing hazardous wastes to the surface and subsurface environments. No evidence of a hazardous waste release was found. The following sampling activities were conducted during the SI at the Old Wash Rack Reservoir / Cells 1 through 4.

- Thirty soil gas samples were collected around the perimeter of the ponds,
- Two water samples and three sediment samples were collected from each of the five ponds,
- Three monitoring wells were installed and groundwater samples were collected, and
- Three surface water samples and six sediment samples were collected from the two primary intermittent streams that flow along the eastern and western sides of the ponds and join into a common intermittent stream north of Cell 4.

Sample locations are presented on Figure 2-4. The soil gas samples were analyzed for VOCs using a flame ionization detector (FID). Of the 30 soil gas sampling locations, only three samples had positive detections. Specifically, toluene was detected at 1.6 micrograms per liter ($\mu\text{g/L}$) and 1.1 $\mu\text{g/L}$ in the 12-ft bgs soil gas samples at locations WR-FO and WR-H2, respectively. There was also a Total FID detection of 12 $\mu\text{g/L}$ at location WR-C2. All three of these detections were just above the detection limits of 1.0 $\mu\text{g/L}$ for toluene and 10 $\mu\text{g/L}$ for Total FID. They were also below the action levels and were not investigated further (LBA, 1994).

Water and sediment samples from the ponds were analyzed for VOCs, semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH) (gasoline range organics [GRO] and diesel range organics [DRO]), and priority pollutant metals. The positive surface water and sediment detections from the ponds are presented on Tables 2-1 and 2-2, respectively. Results from the analysis of surface water samples collected from the Old Wash Rack Reservoir / Cells 1 through 4 indicate the presence of TPH-DRO, bis(2-ethylhexyl)phthalate in one sample, lead in one sample, and silver in two samples. These detections were below the Kansas Action Levels (KALs) and MCLs. Organic compounds detected in the sediment

samples include TPH-DRO, TPH-GRO, methylene chloride, toluene, bis(2-ethylhexyl)phthalate, xylene, and di-n-butylphthalate. The diesel fraction was detected with greater frequency and at higher concentrations than the gasoline fraction and was present in all but one of the samples. Several metals, including arsenic, beryllium, cadmium, chromium, copper, lead, nickel, and zinc, were detected in the sediment samples, but none exceeded the risk-based concentrations for soils (LBA, 1994).

Monitoring Wells WR-93-01, WR-93-02, and WP-93-03 were installed at the Old Wash Rack Reservoir. One analyte was detected in the groundwater and is shown on Table 2-3. Groundwater samples were analyzed for VOCs, SVOCs, TPH-GRO, TPH-DRO, and priority pollutant metals. With the exception of an arsenic detection of 0.02 milligrams per liter (mg/L) in Monitoring Well WR-93-01, analytes exhibited chemical concentration values below levels of detection (LBA, 1994).

Detected analytes in the surface water and stream sediment samples are shown in Tables 2-4 and 2-5, respectively. Water and sediment samples from the streams were analyzed for VOCs, SVOCs, TPH-DRO, TPH-GRO, and priority pollutant metals. The only detections in the surface water were lead and zinc, which were detected at CVWF-CH-Stream AQ-5. In the sediments, TPH-DRO was detected at concentrations of 1,100 micrograms per kilogram ($\mu\text{g}/\text{kg}$) and 38 $\mu\text{g}/\text{kg}$ at CVWF-CH-Stream Sed 1 and CVWF-CH-Stream Sed 5, respectively. No other organic compounds were detected. Arsenic, beryllium, cadmium, copper, lead, nickel, and zinc were detected, but not above the risk-based guidelines for soils (LBA, 1994).

There are no CERCLA or RCRA hazardous substances associated with the central vehicle wash facility.

East and West Wastewater Retention Ponds

As previously mentioned, some vehicle washing was performed at the TES on Custer Hill. Water from these facilities was diverted to one of two wastewater retention ponds on the east and west of Custer Hill or was pumped to the reservoir directly.

The East Wastewater Retention Pond was built around 1988 and was rectangular (approximately 225 ft by 65 ft) and surrounded by an eight-ft high chain link fence. The inlet pipe was at the northwest end and was surrounded by several floating booms where oil was collected and skimmed while in operation. The waste oil was placed in tanks and managed as waste oil. The outfall was on the west side of the pond. Water was pumped to the Old Wash Rack Reservoir. The pond received water with associated waste oil from nine TESs, including water from vehicle washing activities conducted at the motor pools on the eastern portions of Custer Hill. As with the central vehicle wash facility, the contaminants associated

with washing at the TES were petroleum hydrocarbons. However, this pond also received water from drains at Building 8100, which used a variety of chemicals and cleaners. Residues from activities at this building had the potential to enter the drain system leading to the East Pond. In addition, water from the industrial sumps at the building was pumped to the East Pond. The solid residue in these sumps was stored and disposed as a hazardous waste, indicating that lesser amounts of the hazardous components were potentially present in the water. Therefore, the East Pond had the potential to receive wastewater contaminated with hazardous substances and discharge these substances to the reservoir and cell 2. The amount of CERCLA hazardous substances potentially received by this facility is unknown, but would be expected to be in low concentrations since there were no direct discharges of hazardous waste to the pond; rather, it received residuals via floor drains. In contrast, the pond received substantial quantities of petroleum hydrocarbons. Building 8100 was disconnected from the pond system in 1994. The East Pond had the potential to release contaminants to groundwater because there are no impermeable liners installed at the site to prevent infiltration of materials to groundwater.

The West Wastewater Retention Pond was located several hundred ft west of Track Vehicle Road. This pond was built around 1980 and entered into use around 1982. It was round with an approximate diameter of 100 ft and was enclosed by an eight-ft high chain link fence. Two inlet pipes were located on the north and east sides of the pond, with a single outlet on the south side which drained to the Old Wash Rack Reservoir. The operation of this pond was similar to the East Pond in that it received wash water collected from buildings on western Custer Hill. The predominant operations on the western part of Custer Hill are the TES, where the predominant wastes generated are petroleum. Oil booms were present on the pond during the 1994 SI conducted by LBA; however, staining was observed on the banks of the pond and oil was observed near the outlet. During a site visit in 1997, it was observed that the inlet on the north side of the West Pond was plugged with concrete. Floating oil has been reported on the pond. There are no CERCLA or RCRA hazardous substances associated with the west wastewater retention pond.

A SI was conducted in May 1993 at the East and West Ponds to determine whether hazardous wastes were released to the ponds and in turn whether the ponds were releasing hazardous wastes to the surface and subsurface environments. No evidence of a hazardous waste release was found.

In 1997, an investigation was conducted to determine which field activities were necessary to close the East and West Ponds (BMCD, 1998). The following activities were conducted as part of the closure evaluation:

- Soil samples were collected from beneath the sediment at each pond for chemical analysis;
- Soil samples were collected from the sidewalls of each pond for chemical analysis; and
- Sediment samples were collected from within the ponds and at the inlets and outlets of each pond for chemical analysis.

VOCs detected in soil and sediment samples included benzene, toluene, ethylbenzene, and xylene. SVOCs detected in soil and sediment samples included bis-2-ethylhexylphthalate, phenanthrene, naphthalene, and 2-methylnaphthalene. TPH (both diesel and motor oil) was detected in the soil and sediment samples. Metals detected included arsenic, barium, cadmium, chromium, lead, and mercury. In general, the levels of contaminants encountered were lower than those encountered during the 1993 SI (LBA, 1994 and BMcD, 1998).

In May 1999, both the East and West Wastewater Retention Ponds were dewatered, and the sediments were removed and disposed off the site by the Environmental Chemical Corporation ([ECC], 1999).

Groundwater was not encountered at the West Wastewater Retention Pond during the 2000 field activities. The direct-push boring log for the West Wastewater Retention Pond indicated refusal at 17.8 ft bgs. A total of 65 soil samples were collected from the pond excavation walls and subsurface at the East and West Wastewater Retention Ponds and analyzed. Borings were not advanced at the East Wastewater Retention Pond

2.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil and groundwater samples were collected at the Custer Hill Industrial Wastewater System as part of the ESI field activities during the summer of 2006. Direct-push soil samples were collected on July 13, 14, 17, and 18, 2006. Groundwater samples were collected on July 17, 18, and 25, 2006.

Twelve direct-push borings (DP01 through DP12) were advanced around the perimeter of the North Wastewater Retention Ponds (Figure 2-1). Four direct-push borings (DP013 through DP16) were advanced around the perimeter of the West Wastewater Retention Pond (Figure 2-2). Four direct-push borings (DP017 through DP20) were advanced around the perimeter of the East Wastewater Retention Pond (Figure 2-3). These direct-push borings were continuously sampled from the ground surface to the depth where groundwater was encountered using a 2-inch Macrocore™ sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in

Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced to the water table, and groundwater samples were collected, where possible, and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000; both filtered and unfiltered). Only Direct-Push Borings DP05, DP07, DP09, DP-10, DP-11, and DP12 from the North Wastewater Retention Ponds contained sufficient water for sampling. All of the borings from the West and East Wastewater Retention Ponds were dry. No soil samples were collected below a depth of 12 ft bgs. All planned subsurface soil samples were collected at the North Wastewater Retention Ponds and the West Wastewater Retention Pond. However, the 8- to 12-ft samples in locations DP17 through DP20 and the 4- to 8-ft sample at location DP20 could not be collected due to refusal at the East Wastewater Retention Pond.

Following the completion of field activities at this site, all direct-push boring locations were surveyed. The survey data are included in Appendix B.

Subsurface soil analytical results (positive detections only) for the Wastewater Retention Ponds are presented in Table 2-6. Soil results for each of the three wastewater retention ponds are summarized below:

- North Wastewater Retention Pond - Arsenic, barium, cadmium, chromium, lead, and selenium were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 milligrams per kilogram (mg/kg) and 1.6 mg/kg, respectively. Exceedences of the residential arsenic PRG were present in all of the direct-push boring locations and in 39 out of 40 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.4 mg/kg (DP02; 9 to 10 ft bgs) to 33 mg/kg (DP04; 7 to 8 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-push boring locations and in 37 out of 40 of the soil samples collected at various depths from those borings, with concentrations ranging from 3 mg/kg (DP07; 1 to 2 ft bgs) to 33 mg/kg (DP04; 7 to 8 ft bgs). Probe locations and detections are shown on Figure 2-5.

Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential and non-residential KDHE RSKs of 11 mg/kg and 38 mg/kg, respectively. Exceedences of the residential KDHE RSK were only present in 2 (including one duplicate) of the 40 soil samples collected at the 2- to 8-ft depth.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. The data were evaluated against the USEPA Region 9 soil screening levels (SSLs) to evaluate the potential for the migration to groundwater using the DAF of 20. As a result, exceedences of the SSL DAF 20 of 29 mg/kg for arsenic were present in only one sample (DP04, 7 to 8 ft bgs) at a concentration of 32 mg/kg (33 mg/kg in the duplicate). In addition, an exceedence of the SSL DAF 20 of 38 mg/kg for chromium was present in only one sample (DP04, 7 to 8 ft bgs) at a concentration of 40 mg/kg (39 mg/kg in the duplicate). The data were also evaluated against the residential and non-residential KDHE RSKs for the soil to groundwater pathway. As a result, exceedences of the residential and non-residential soil to groundwater pathway KDHE RSK of 5.84 mg/kg for arsenic were present in Borings DP04 (7 to 8 ft and 11 to 12 ft bgs), DP05 (1 to 2 ft bgs), DP06 (5 to 6 ft and 9 to 10 ft bgs), DP08 (8 to 9 ft bgs), DP09 (7 to 8 ft and 9 to 10 ft bgs), DP10 (7 to 8 ft bgs), and DP12 (9 to 10.5 ft bgs) at concentrations ranging from 6 mg/kg (DP09, 9 to 10 ft bgs) to 33 mg/kg (DP04, 7 to 8 ft bgs).

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

- West Wastewater Retention Pond - Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential and industrial arsenic PRGs were present in all of the direct-push boring locations and in all 13 of the soil samples collected at various depths from those borings, with concentrations ranging from 2.6 mg/kg (DP15; 7 to 8 ft bgs) to 41 mg/kg (DP13; 7 to 8 ft bgs). Probe locations and detections are shown on Figure 2-6.

Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential and non-residential KDHE RSKs of 11 mg/kg and 38 mg/kg, respectively. Exceedences of the residential KDHE RSK were only present in one of the 13 soil samples collected from Boring DP13 at the 2- to 8-ft depth.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. The data were evaluated against the USEPA Region 9 SSLs to evaluate the potential for the migration to groundwater using the DAF of 20. As a result, exceedences of the SSL DAF 20 of 29 mg/kg for arsenic were present in only one

sample (DP13, 7 to 8 ft bgs) at a concentration of 41 mg/kg. In addition, an exceedence of the SSL DAF 20 of 38 mg/kg for chromium were present in Borings DP13 (7 to 8 ft bgs) and DP15 (7 to 8 ft and 10-11 ft bgs) at concentrations ranging from 40 mg/kg to 140 mg/kg. Data were also evaluated against the residential and non-residential KDHE RSKs. As a result, exceedences of the residential and non-residential soil to groundwater pathway KDHE RSK of 5.84 mg/kg for arsenic were present in Borings DP13 (7 to 8 ft and 11 to 12 ft bgs), DP14 (6 to 7 ft bgs), DP15 (1 to 2 ft bgs), and DP16 (1 to 2 ft and 10.5 to 11.5 bgs) at a concentrations ranging from 6 mg/kg (DP16, 10.5 to 11.5 ft bgs) to 41 mg/kg (DP13, 7 to 8 ft bgs).

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

- East Wastewater Retention Pond - Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential and industrial arsenic PRGs were present in all of the direct-push boring locations and in all 8 of the soil samples collected at various depths from those borings, with concentrations ranging from 3.9 mg/kg (DP18; 0 to 2 ft bgs) to 5.8 mg/kg (DP20; 1 to 2 ft bgs). Probe locations and detections are shown on Figure 2-7.

Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential and non-residential KDHE RSKs of 11 mg/kg and 38 mg/kg, respectively, but no exceedences were noted.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. The data were evaluated against the USEPA Region 9 SSLs to evaluate the potential for the migration to groundwater using the DAF of 20, but no exceedences were noted. The data were also evaluated against the residential and non-residential KDHE RSKs for the soil to groundwater pathway, but no exceedences were noted.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

Groundwater analytical results (positive detections only) for the Wastewater Retention Ponds are presented in Table 2-7. Groundwater samples were only collected from the North Retention Pond, and the results are summarized below:

North Retention Pond - Arsenic, barium, cadmium, chromium, lead, and mercury were detected in unfiltered groundwater samples taken from the direct-push borings at the Custer Hill Industrial Wastewater System. No effort was made to compare these total metals concentrations against drinking water standards because all groundwater samples were very turbid. Only arsenic, barium, and lead were detected in filtered groundwater samples taken at this site. Only arsenic exceeded the USEPA Region 9 tap water PRGs in the filtered groundwater samples taken from Direct-Push Borings DP09 and DP12, which are both at the North Wastewater Retention Pond, in which arsenic was detected at concentrations of 0.016 and 0.022 mg/L, respectively (see Figure 2-8). Since no USEPA Region 9 tap water PRG exists for lead, the KDHE RSK of 0.015 mg/L was used as a screening tool. The KDHE RSK for lead was not exceeded in any groundwater sample collected from the Custer Hill Industrial Wastewater System.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

2.4 DISCUSSION AND RECOMMENDATIONS

Because the East and West Wastewater Retention Ponds were dewatered, sampled, and sediments removed, no effort will be made to compare the ESI data to historical sampling data. Additionally, during the ESI, soil samples were collected from the perimeter of the Central Vehicle Wash Facility and the North Wastewater Retention Ponds, not from the sediments within the ponds; therefore comparison of the ESI data to the previous sample results for this area is not comparable. The East and West Wastewater Retention Ponds are currently located within the Maintenance portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future.

ESI sampling results are summarized as follows:

- Only arsenic and chromium were detected above screening criteria.
- Arsenic exceeded screening criteria in many of the subsurface soil samples. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

- Chromium only exceeded the SSL DAF 20 in three borings – DP04 (7 to 8 ft bgs), DP13 (7 to 8 ft bgs), and DP15 (7 to 8 ft and 10 to 11 ft bgs). However, groundwater is not present in the unconsolidated material above bedrock across much of the Custer Hill area. The possibility of chromium leaching to groundwater appears to be minimal.
- Only arsenic exceeded the USEPA Region 9 tap water PRGs in the groundwater samples collected from the North Wastewater Retention Pond. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, present in Fort Riley formations and soil.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, all three wastewater retention ponds are recommended for closed status.

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3.0 CAMP FUNSTON WWTP SLUDGE DRYING BEDS (FTRI-022)

3.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Camp Funston WWTP was formerly located at the southeastern corner of Camp Funston, southeast of the intersections of L and Twelfth Streets (see Figures 1-1 and 3-1). The sludge drying beds were located at the southeast corner of the facility, approximately 1,800 ft from the Kansas River (LBA, 1993).

The Camp Funston WWTP site is located on the floodplain of the Kansas River; however, the location is protected by a levee. The 500-year floodplain does not extend beyond the levee (LBA, 1993). The site is generally flat and is presently covered by grass. The site is underlain by alluvial deposits. These deposits, which consist of clay, silt, and sand, have a thickness of approximately 50 to 60 ft, and overlie shale and limestone bedrock. Depth to groundwater is approximately 20 ft bgs. Groundwater flow is generally to the east, towards the Kansas River (United States Geological Survey [USGS], 2005).

The Kansas River alluvial aquifer is used as a source of drinking water by nearby communities. Fort Riley has no water supply wells located at Camp Funston. The nearest supply wells are those for the community of Ogden, which are located approximately 1.3 miles to the northeast of the site. There are no other public supply wells within 4 miles of the site. There are no identifiable overland migration pathways from the site to the river.

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

3.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The Camp Funston WWTP was built circa 1940 and had a design capacity for one to three million gallons per day (gal/day) with one anaerobic sludge digester and three sludge drying beds. The facility stopped operation in 1974 and began pumping its sewage to the Main Post WWTP at that time. A new lift station was built during 1986-1987. The digester was cleaned out during 1985-1987 and the sludge was applied to the land locally. It is unknown whether this was immediately adjacent to the plant site. The plant was totally demolished during 1988-1989. The dried material from the sludge beds was typically disposed in post landfills (LBA, 1993).

No previous sampling has been performed at this site.

3.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil and groundwater samples were collected at the Camp Funston WWTP Sludge Drying Beds as part of the ESI field activities during the summer of 2006. Direct-push soil samples were collected on July 10, 2006. Groundwater samples were collected on July 10 and 11, 2006.

Five direct-push borings (DP01-DP05) were advanced around the perimeter of the former sludge drying bed location (Figure 3-1). These direct-push borings were continuously sampled from the ground surface to the depth where groundwater was encountered using a 2-inch Macrocore™ sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced to the water table, and groundwater samples were collected, where possible, and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000; both filtered and unfiltered). No soil samples were collected below a depth of 12 ft bgs. All planned soil and groundwater samples were collected at the Camp Funston WWTP Sludge Drying Beds.

Following the completion of field activities at this site, all direct-push boring locations were surveyed. The survey data is included in Appendix B.

Direct-push soil analytical results (positive hits only) for the Camp Funston WWTP Sludge Drying Beds are presented in Table 3-1, and detections above screening criteria are presented in Figure 3-2. Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential arsenic PRG were present in all of the direct-boring locations and in 14 out of 17 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.2 mg/kg (DP04; 9 to 12 ft bgs) to 8.1 mg/kg (DP03; 7 to 8 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-boring locations and in 11 out of 17 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.7 mg/kg (DP01; 7 to 8 ft bgs) to 8.1 mg/kg (DP03; 7 to 8 ft bgs). Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential KDHE RSK for arsenic of 11 mg/kg, and no exceedences were present.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the USEPA Region 9 PRGs for migration to groundwater (DAF 20). However, a single soil sample did exceed the KDHE RSK soil to groundwater protection pathway of 5.84 mg/kg for arsenic. This sample had an arsenic concentration of 8.1 mg/kg (DP03; 10 to 11 ft bgs).

Groundwater analytical results (positive hits only) for the Camp Funston WWTP Sludge Drying Beds are presented in Table 3-2. Arsenic, barium, cadmium, chromium, lead, and selenium were detected in unfiltered groundwater samples taken from the direct-push borings at the Camp Funston WWTP Sludge Drying Beds. No effort was made to compare these total metals concentrations against drinking water standards because all groundwater samples were very turbid. Only barium and selenium were detected in filtered groundwater samples taken at this site, and concentrations detected were below the USEPA Region 9 tap water PRGs.

3.4 DISCUSSION AND RECOMMENDATIONS

The Camp Funston WWTP Sludge Drying Beds are currently located within the Supply/Storage portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results can be summarized as follows:

- Only arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs. However, all results were below the KDHE residential RSK for arsenic. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- There were no detections of dissolved metals in groundwater which exceeded the USEPA Region 9 PRGs for tap water.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, the Camp Funston WWTP Sludge Drying Beds site is recommended for closed status.

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4.0 CUSTER HILL WWTP SLUDGE DRYING BEDS (FTRI-023)

4.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Custer Hill WWTP is located along the eastern portion of the Custer Hill cantonment complex (Figures 1-1 and 4-1). The plant is located off of 1st Division Road. The Custer Hill WWTP is a new facility, with much of the original plant having been demolished. However, the original sludge drying beds were retained and are still in use. These are located on the northwestern portion of the facility and occupy a total area of approximately 300 ft by 200 ft (Figure 4-1) (LBA, 1993).

The site is located in an upland area of Fort Riley, and is underlain by bedrock (interbedded limestone and shale), covered by unconsolidated material. This unconsolidated soil consists of residual soil and possibly loess. The depth to bedrock in the vicinity of Building 8100 at the consolidated maintenance facility is approximately 4 to 9 feet bgs. Groundwater in this area generally occurs at the interface between bedrock and the unconsolidated material, and within voids and fractures in the bedrock. Based on the local topography, groundwater would be expected to flow to the east, towards the Forsyth Creek drainage. Cameron Spring is fed from springs derived from underlying limestone bedrock. The plant is located adjacent to Forsyth Creek, which is a perennial stream. Overland flow from the sludge drying area would enter this tributary. Forsyth Creek is a tributary to Threemile Creek, which discharges to the Kansas River approximately five miles downstream of the plant (LBA, 1993).

The Fort Riley well field is located approximately 2 ½ miles south-southwest of the Site, in the floodplain of the Republican River. The well field for the community of Ogden is located approximately 4 ½ miles east of the Site, in the floodplain of the Kansas River. The upland area does not support large capacity supply wells; therefore, there are no water supply wells located on Custer Hill.

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

4.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The plant began operation in the 1950s concurrent with the building of facilities on Custer Hill and remains in active operation. There have been major improvements to the plant around 1960, 1967, 1976, 1987, and 2005. The facility was originally designed to treat 2 million gal/day with 5 anaerobic digesters, 3 trickling filters, 16 concrete sludge drying beds, and 1 sludge overflow lagoon. This permitted

discharge of effluent flows into a branch of Threemile Creek below the Cameron Springs ponds. The biggest routine problem noted for this treatment plant has been cooking grease from the many mess halls and homes on Custer Hill. In the 1988 to 1989 time frame, there was a heating oil leak from a storage tank near Building 6223. The oil infiltrated the sewer system and was pumped from the local pump station (Building SP620) to the Custer Hill plant. The oil (1,200 gallons) was collected in a primary tank and removed by a water oil recycler.

Following the recently-completed renovation of this plant, the Custer Hill WWTP has become the primary wastewater treatment facility for virtually the entire post.

Extensive geological investigations were performed during 2001 through 2003 for the design and construction of the current WWTP at the Site. The thickness of the overburden varies between 3 ft to 8 ft throughout the WWTP area including the area covered by the sludge beds. No groundwater was encountered within the overburden. Groundwater was encountered in the bedrock at about 27 ft bgs. There is no record of any other previous site investigations having been conducted at the Custer Hill WWTP, including the sludge drying beds.

4.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil samples were collected at the Custer Hill WWTP Sludge Drying Beds as part of the ESI field activities during the summer of 2006. Direct-push soil samples were collected on July 11, 2006. Groundwater samples were planned, but could not be collected due to refusal prior to reaching groundwater.

Three direct-push borings (DP01-DP03) were advanced northeast of the former sludge drying bed location and one direct-push boring (DP04) was advanced southeast of the former sludge drying bed location (Figure 4-1). These direct-push borings were continuously sampled from the ground surface to refusal using a 2-inch Macrocore™ sampler. Three soil samples were to be collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. However, refusal was encountered prior to obtaining the 4- to 8-ft interval for Direct-Push Boring DP01 and the 8- to 12-ft interval for Direct-Push Boring DP02. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced in attempt to reach the water table, but refusal was obtained prior to reaching groundwater, so no groundwater samples were collected. No soil samples were collected below a depth of 12 ft bgs.

Following the completion of field activities at this site, all direct-push boring locations were surveyed. The survey data is included in Appendix B.

Direct-push soil analytical results (positive hits only) for the Custer Hill WWTP Sludge Drying Beds are presented in Table 4-1, and detections above screening criteria are presented in Figure 4-2. Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential and industrial arsenic PRGs were present in all of the direct-boring locations and in 8 out of 9 of the soil samples collected at various depths from those borings, with concentrations ranging from 2.6 mg/kg (DP03, 0 to 1 ft bgs) to 7 mg/kg (DP04, 4 to 6.5 ft bgs). Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential KDHE RSK of 11 mg/kg, and no exceedences were present.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the USEPA Region 9 PRGs for migration to groundwater (DAF 20). However, two soil samples did exceed the KDHE RSK soil to groundwater protection pathway of 5.84 mg/kg for arsenic. These samples had an arsenic concentration of 6.7 mg/kg (DP02, 1 to 2 ft bgs) and 7 mg/kg (DP04, 4 to 6.5 ft bgs).

4.4 DISCUSSION AND RECOMMENDATIONS

The Custer Hill WWTP Sludge Drying Beds are currently located within the Industrial portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results can be summarized as follows:

- Only arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs. However, all results were below the KDHE residential RSK for arsenic. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, the Custer Hill WWTP Sludge Drying Beds site is recommended for closed status.

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5.0 CAMP FORSYTH WWTP SLUDGE DRYING BEDS (FTRI-024)

5.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The former Camp Forsyth WWTP was located on the eastern edge of Camp Forsyth, occupying Building 2592 and adjacent areas (Figures 1-1 and 5-1). The site was on the floodplain of the Republican River, which lies about 1,200 ft east of the WWTP facility. The plant was located behind the levee of the Republican River, placing the Site on the 500-year floodplain. According to Fort Riley PWE personnel, the Camp Forsyth WWTP was demolished in 2005.

The site overlies alluvial deposits of the Republican River, which is the source of drinking water for Fort Riley and nearby communities. The well field for Fort Riley is located approximately 4,000 ft to the east-northeast of the Site. The depth to groundwater is approximately 17 to 19 ft bgs, with groundwater flow most likely to the east, towards the Republican River. Releases to the Republican River via overland transport of contaminants will be prevented by the levee, but releases may occur during flooding of the sludge drying area. The Republican River joins the Smoky Hill River to form the Kansas River a little over one mile below the Site (LBA, 1993).

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

5.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The plant received waste from Camp Forsyth, Colyer Manor, and on average, 30% of the waste from Custer Hill Family Housing. The plant began operations in about 1945, but was recently demolished in 2005. The average flow was about 450,000 gal/day in 1988, with peak flows of 700,000 gal/day occurring in the spring. This facility included an influent pump station, a primary clarifier, 2 trickling filters, 2 final clarifiers, a two-stage anaerobic digester, and 12 sludge drying beds. The permanent sludge drying beds were concrete, but temporary sludge drying beds have been used during times of repair. There were subdrains under the sludge beds that bring water back to the treatment plant. Sludge was disposed of in accordance with appropriate regulations. The outfall was about 1,000 ft east of the plant on the Republican River (LBA, 1993).

Wastes from Colyer Manor and Custer Hill Family Housing were not expected to contain RCRA or CERCLA hazardous substances. Although the sludge drying beds had subsurface drain returns to the

plant, earlier sludge drying practices did not employ such drains. Thus, the general area of the sludge drying beds was of potential concern due to past operations. The area of the sludge drying beds was south of the plant and occupied an area approximately 300 ft by 150 ft (LBA, 1993).

There was no record of any previous site investigations having been conducted at the Camp Forsyth WWTP, including the sludge drying beds.

5.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil and groundwater samples were collected at the Camp Forsyth WWTP Sludge Drying Beds as part of the ESI field activities during the summer of 2006. Direct-push soil and groundwater samples were collected on July 11, 2006.

Four direct-push borings (DP01-DP04) were advanced to the northeast, east, south, and southwest of the former sludge drying bed location (Figure 5-1). These direct-push borings were continuously sampled from the ground surface to the depth where groundwater was encountered using a 2-inch Macrocore™ sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced to the water table, and groundwater samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000; both filtered and unfiltered). No soil samples were collected below a depth of 12 ft bgs. All planned soil and groundwater samples were collected at the Camp Forsyth WWTP Sludge Drying Beds.

Following the completion of field activities at this site, all direct-push boring locations were surveyed. The survey data is included in Appendix B.

Direct-push soil analytical results (positive hits only) for the Camp Forsyth WWTP Sludge Drying Beds are presented in Table 5-1, and detections above screening criteria are presented in Figure 5-2. Arsenic, barium, cadmium, chromium, lead, and mercury were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential arsenic PRG were present in all of the direct-boring locations and in all 13 soil samples collected at various depths from those borings, with concentrations ranging from 1.1 mg/kg (DP03, 11 to 12 ft bgs) to 4.5 mg/kg (DP03, 0 to 1 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were

present in all of the direct-boring locations and in 11 out of 13 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.7 mg/kg (DP02, 7 to 8 ft bgs) to 4.5 mg/kg (DP03, 0 to 1 ft bgs). Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential KDHE RSK of 11 mg/kg, and no exceedences were present.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the USEPA Region 9 PRGs for migration to groundwater (DAF 20).

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

Groundwater analytical results (positive hits only) for the Camp Forsyth WWTP Sludge Drying Beds are presented in Table 5-2. Arsenic, barium, cadmium, chromium, and lead were detected in unfiltered groundwater samples taken from the direct-push borings at the Camp Forsyth WWTP Sludge Drying Beds. No effort was made to compare these total metals concentrations against drinking water standards because all groundwater samples were very turbid. Only barium and selenium were detected in filtered groundwater samples taken at this site at concentrations below the USEPA Region 9 tap water PRGs.

5.4 DISCUSSION AND RECOMMENDATIONS

The Camp Forsyth WWTP Sludge Drying Beds are currently located within the Industrial portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results can be summarized as follows:

- Only arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs. However, all results were below the KDHE residential RSK for arsenic. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- There were no detections of dissolved metals in groundwater which exceeded the USEPA Region 9 PRGs for tap water.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on this data, the Camp Forsyth WWTP Sludge Drying Beds are recommended for closed status.

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6.0 MAIN POST WWTP SLUDGE DRYING BEDS (FTRI-025)

6.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Main Post WWTP was located on the eastern edge of the Main Post and occupied Buildings 390 through 393 and adjacent areas (Figures 1-1 and 6-1). The sludge drying beds are located approximately 1,000 ft east of the plant on the floodplain of the Kansas River. The river is located approximately 600 ft east of the Site.

The sludge drying beds overlie alluvial deposits of the Kansas River. The Kansas River alluvial aquifer is used as a source of drinking water by nearby communities. The total thickness of alluvial sediments at this location is approximately 50 to 70 ft, and the depth to groundwater is approximately 21 to 23 ft bgs. The direction of groundwater flow is approximately to the east, towards the Kansas River. Overland flow from the site would enter the Kansas River directly. The sludge drying beds are located on the 100-year floodplain (LBA, 1993).

The nearest supply well is located at the west side of Marshall Army Airfield (MAAF), approximately 2 miles south of the Site. In addition, there are several private supply wells located on the opposite side of the Kansas River, to the east of the sludge drying beds. The closest supply well is approximately 2,000 ft east of the Site. All of these wells are on the other side of the Kansas River, which acts as a hydrologic boundary for the alluvial aquifer system.

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

6.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The Main Post WWTP commenced operation in 1945 and received approximately 600,000 gal/day of wastewater from Main Post, MAAF, Camp Whitside, and Camp Funston. The MAAF waste included effluent from their industrial waste treatment plant (Building 721). According to current operations personnel, the MAAF plant has skimming and coagulation capabilities, but these are not used as the MAAF water is of suitable quality to go directly to the WWTP. The effluent from the Main Post plant was discharged to the Kansas River via an underground pipeline one-half mile to the south. The sludge drying beds have water drains that originally went to the outfall, but were later redesigned to pump back to the plant. Dried sludge was normally disposed in the landfills; although, some may have been buried

locally. The general area of the sludge drying beds and the area between the sludge drying beds and the plant were evaluated because of past practices (LBA, 1993). As of late 2005, the Main Post WWTP was no longer operational and much of the facility has been demolished. Wastewater that formerly went to this plant is now pumped to the Custer Hill WWTP for treatment.

Wastewater from the Main Post may have included some petroleum products and automotive chemicals. In particular, this sludge had the potential to contain higher concentrations of heavy metals than typical sewage sludges since it received discharge from the industrial treatment plant at Building 721. In addition, print shops, photo-processing facilities, pesticide areas, paint shops, furniture repair and dental facilities were located at Main Post and discharged wastewater to this plant (LBA, 1993).

There is no record of any previous site investigations having been conducted at the Main Post WWTP, including the sludge drying beds.

6.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil and groundwater samples were collected at the Main Post WWTP Sludge Drying Beds as part of the ESI field activities during the summer of 2006. Direct-push soil and groundwater samples were collected on July 7, 2006.

Five direct-push borings (DP01-DP05) were advanced around the perimeter of the former sludge drying bed location (Figure 6-1). These direct-push borings were continuously sampled from the ground surface to the depth where groundwater was encountered using a 2-inch Macrocore™ sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site analytical laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced to the water table, and groundwater samples were collected and analyzed at an off-site analytical laboratory for RCRA metals (USEPA Method 6010/7000; both filtered and unfiltered). No soil samples were collected below a depth of 12 ft bgs. All planned soil and groundwater samples were collected at the Main Post WWTP Sludge Drying Beds.

Following the completion of field activities at this site, all direct-push boring locations were surveyed. The survey data is included in Appendix B.

Direct-push soil analytical results (positive hits only) for the Main Post WWTP Sludge Drying Beds are presented in Table 6-1, and detections above screening criteria are presented in Figure 6-2. Arsenic,

barium, cadmium, chromium, lead, mercury, and silver were detected in the direct-push boring soil samples. Arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively, for arsenic. Exceedences of the residential arsenic PRG were present in all of the direct-boring locations and in 15 out of 16 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.1 mg/kg (DP05; 11 to 12 ft bgs) to 8.8 mg/kg (DP05; 6 to 7 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-push boring locations and in 12 out of 16 of the soil samples collected at various depths from those borings, with concentrations ranging from 2.2 mg/kg (DP01, 10 to 11 ft bgs) to 8.8 mg/kg (DP05, 6 to 7 ft bgs). However, none of the arsenic detections exceeded either the industrial or residential RSK of 38 and 11 mg/kg, respectively. Mercury was detected in Direct-Push Borings DP01 (0- to 1-ft interval), DP03 (1- to 2-ft, 7- to 8-ft, and 8.5- to 9.5-ft intervals), and DP05 (1- to 2-ft interval) at concentrations ranging from 0.2 to 7.6 mg/kg. These concentrations did not exceed the residential and industrial PRGs or the industrial RSK for mercury. However, two detections did exceed the residential RSK for mercury of 2.0 mg/kg.

Arsenic exceedences are a result of naturally occurring, high concentrations which are ubiquitous throughout Fort Riley soils.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the Region 9 PRGs for migration to groundwater (DAF 20). An exceedence of the SSL DAF 20 of 38 mg/kg for chromium was present in two samples (DP03, 7 to 8 ft bgs and DP03, 8.5 to 9.5 ft bgs) at concentrations of 41 mg/kg and 47 mg/kg, respectively. In addition, an exceedence of the SSL DAF 20 of 34 mg/kg for silver was present in only one sample (DP03, 8.5 to 9.5 ft bgs) at a concentration of 38 J (estimated) mg/kg. The data were also evaluated against the residential and non-residential KDHE RSKs for the soil to groundwater pathway. As a result, exceedences of the residential and non-residential soil to groundwater pathway KDHE RSK of 5.84 mg/kg for arsenic were present in Borings DP02 (6.5 to 7.5 ft bgs), DP04 (7 to 8 ft bgs), and DP05 (6 to 7 ft bgs) at concentrations ranging from 7.2 (DP02, 6.5 to 7.5 ft bgs) to 8.8 mg/kg (DP05, 6 to 7 ft bgs).

Groundwater analytical results (positive hits only) for the Main Post WWTP Sludge Drying Beds are presented in Table 6-2, and detections above screening criteria are presented in Figure 6-3. Arsenic, barium, cadmium, chromium, lead, mercury, and selenium were detected in unfiltered groundwater samples taken from the direct-push borings at the Main Post WWTP Sludge Drying Beds. No effort was

made to compare these total metals concentrations against drinking water standards because all groundwater samples were very turbid. Only arsenic, barium, cadmium, chromium, and lead were detected in filtered groundwater samples taken at this site. Only arsenic exceeded the USEPA Region 9 tap water PRGs in the groundwater samples taken from Direct-Push Boring DP04, in which arsenic was detected at a concentrations of 0.027 mg/L and 0.018 mg/L (duplicate). Since no USEPA Region 9 tap water PRG exists for lead, the action level of 0.015 mg/L was used as a screening tool. The KDHE RSK for lead was only exceeded in Direct-Push Boring DP04, with a concentration of 0.018 mg/L.

6.4 DISCUSSION AND RECOMMENDATIONS

The Main Post WWTP Sludge Drying Beds are currently located within the Industrial portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results are summarized as follows:

- Only arsenic and mercury were detected above screening criteria.
- Arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs. Mercury in soil exceeded Region 9 residential PRGs. All results were below the KDHE industrial RSKs for arsenic and mercury. Exceedences of arsenic are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- Only arsenic exceeded the USEPA Region 9 tap water PRGs in the groundwater samples collected from the Main Post WWTP Sludge Drying Beds.
- The action level (KDHE RSK) of 0.015 mg/L for lead was just slightly exceeded in only one sample.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, the Main Post WWTP Sludge Drying Beds site is recommended for closed status.

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7.0 RANGE COMPLEX WASTEWATER LAGOONS (FTRI-026)

7.1 SITE LOCATION, LAND USE, POTENTIAL MIGRATION PATHWAYS, AND RECEPTORS

The Range Complex Wastewater Lagoons are located just west of the Multipurpose Range Complex (MPRC) on East West Road near Highway 77. The MPRC is located in the extreme northwest corner of Fort Riley (Figures 1-1 and 7-1). Three lagoons are present; the two eastern lagoons are approximately 200 ft square and the single western lagoon is approximately 300 ft square. The lagoons are surrounded by a perimeter fence, with the area inside the fence consisting of mowed grass. The three wastewater evaporation lagoons are lined with clay (Army Environmental Hygiene Agency [AEHA], 1988). During the October 2005 site visit, it was noted that only the southeastern lagoon contained water; the northeastern and western lagoons were dry.

The site is located in an upland area of Fort Riley, and is underlain by bedrock (interbedded limestone and shale), covered by unconsolidated material. This unconsolidated soil consists of residual soil and possibly loess. The depth to bedrock in the vicinity of the wastewater lagoons is approximately 12 to 33 ft bgs. Groundwater in this area generally occurs at the interface between bedrock and the unconsolidated material, and within voids and fractures in the bedrock. Based on the local topography, groundwater would be expected to flow to the west, towards the unnamed drainage located about 200 ft west of the west lagoon. Overland flow will also be to the west, towards this drainage.

Two water supply wells serve the MPRC. Water well 305 was constructed approximately 150 ft east of the waste water lagoons and Water Well 306 was constructed approximately 800 ft east of the waste water lagoons. According to the information provided by Fort Riley, Water Well 305 is located near Building 9305 and has a depth of 160 ft and the Water Well 306 is located near Building 9306 and has a depth of 126 ft and was screened at a depth of 100 to 120 ft bgs, and had a static water level of approximately 80 ft bgs at the time of construction (Figure 7-1). No other known supply wells are within a one-mile radius of the Site.

There were no protected or special ecological or cultural features observed or are known to occur at or near this Site and current and future land uses are expected to remain and will remain as such for the foreseeable future.

7.2 SITE BACKGROUND AND PREVIOUS SAMPLING RESULTS

The wastewater evaporation lagoons have been in use since 1987. Untreated wastewater is discharged directly to the evaporation lagoons. The untreated domestic wastewater flows to the lower evaporation lagoon via gravity as the solids are settled out (AEHA, 1988). During the October 2005 site visit, the lagoons appeared to be in good condition.

Wastewater management at the Range Complex Wastewater Lagoons is conducted in accordance with National Pollutant Discharge Elimination System permit F-KS97-P002. The permit specifies that no discharge is permitted from the lagoons to the surface waters of the State. Solids and sludge from the wash bays or lagoons are disposed of in a manner approved by KDHE. Runoff contained in the oil storage dike area(s) and tank farm secondary containment areas are visually inspected to determine if removal of oil and grease is necessary prior to discharge. All vegetation on the dikes and at the water's edge is properly maintained by regular mowing of grass, and the removal of cattails and trees.

There is no record of any environmental sampling being conducted in the vicinity of the wastewater lagoons.

7.3 ESI FIELD ACTIVITIES AND ANALYTICAL RESULTS

Direct-push soil samples were collected at the Range Complex Wastewater Lagoons as part of the ESI field activities during the summer of 2006. Direct-push soil samples were collected on July 19, 2006. Groundwater samples were planned, but could not be collected due to refusal prior to reaching groundwater.

Four direct-push borings (DP01-DP04) were advanced northwest of the West Lagoon (DP01), southwest of the West Lagoon (DP02), northwest of the Northeast Lagoon (DP03), and southwest of the Southeast Lagoon (DP04) (Figure 7-1). These direct-push borings were continuously sampled from the ground surface to refusal using a 2-inch Macrocore™ sampler. Three soil samples were collected from each direct-push boring at depth intervals of 0 to 2 ft bgs, 4 to 8 ft bgs, and 8 to 12 ft bgs. The field geologist prepared a lithologic log of each direct-push boring (Boring logs are included in Appendix A). Soil samples were collected and analyzed at an off-site laboratory for RCRA metals (USEPA Method 6010/7000). The probe was then advanced in attempt to reach the water table, but refusal was obtained prior to reaching groundwater, so no groundwater samples were collected. No soil samples were collected below a depth of 12 ft bgs.

Following the completion of field activities at this site, all direct-push boring locations were surveyed. The survey data is included in Appendix B.

Direct-push soil analytical results (positive hits only) for the Range Complex Wastewater Lagoons are presented in Table 7-1, and detections above screening criteria are presented in Figure 7-2. Arsenic, barium, cadmium, chromium, and lead were detected in the direct-push boring soil samples. Only arsenic exceeded the USEPA Region 9 residential and industrial PRGs of 0.39 mg/kg and 1.6 mg/kg, respectively. Exceedences of the residential and arsenic PRGs were present in all of the direct-boring locations and in 12 out of 13 of the soil samples collected at various depths from those borings, with concentrations ranging from 1.5 mg/kg (DP04, 9 to 11 ft bgs) to 8 mg/kg (DP01, 11 to 12 ft bgs). Due to the many exceedences of the residential arsenic PRG, the data were also screened against the USEPA Region 9 industrial PRG with a similar number of exceedences. Exceedences of the industrial arsenic PRG were present in all of the direct-boring locations and in 11 out of 13 of the soil samples collected at various depths from those borings, with concentrations ranging from 4.6 mg/kg (DP01, 7 to 8 ft bgs) to 8 mg/kg (DP01, 11 to 12 ft bgs). Due to the many exceedences of the residential and industrial PRGs, the data were also screened against the residential arsenic KDHE RSK of 11 mg/kg, and no exceedences were present.

These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.

The soil data were also evaluated to determine whether there were any issues regarding leaching of metals to groundwater. All metals concentrations in soil were below the USEPA Region 9 PRGs for migration to groundwater (DAF 20). However, four soil samples did exceed the KDHE RSK value for soil to groundwater protection pathway of 5.84 mg/kg for arsenic. These samples had arsenic concentrations of 8 mg/kg (DP01, 11 to 12 ft bgs), 6.3 mg/kg (DP03, 1 to 2 ft bgs), 7.1 mg/kg (DP03, 5 to 6 ft bgs), and 7.2 mg/kg (DP04, 1 to 2 ft bgs).

7.4 DISCUSSION AND RECOMMENDATIONS

The Range Complex Waste Water Lagoons are currently located within the Impact Area portion of the post as identified in the Land Use Section of the Fort Riley Environmental Overlay and will remain as such for the foreseeable future. ESI sampling results can be summarized as follows:

- Only arsenic in soil exceeded the USEPA Region 9 residential and industrial PRGs. However, all results were below the KDHE residential RSK for arsenic. These exceedences are a result of naturally occurring concentrations of arsenic at levels in excess of regulatory screening criteria, which are ubiquitous throughout Fort Riley soils.
- There are no historical sampling data with which to compare the ESI sampling data.

Based on these results, the Range Complex Wastewater Lagoons are recommended for closed status.

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8.0 REFERENCES

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Tables

Table 1-1
ESI Site Summary
Pesticide / PCB Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History		ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended		
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA			NPL August 1990/ FFA June 1991	SI Reports
Pesticide / PCB Sites (Group 1)	Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC				
DRMO Storage Area 1	FTRI- 006	Hazardous Waste Storage Facility AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 Elevated POL contamination in NW corner - Deferred to UST Program No PCB detects above 50 ppm in soil	Confirm SI conclusion of no threat to HH & E against new PCB RSK of 4.3 ppm in soil	No actions are necessary to protect HH & E Transfer northern portion of site to Former Bldg 1245 Dispensing Station - FTRI-066; Closed Status
PCB Storage Building 343	FTRI- 007	AEHA, 1988 SWMU-Proposed environmental sampling				Confirm no threat to HH & E	Sample concrete floor and exterior soil for PCBs If sampling results show levels are protective of HH & E request Closed Status
PCB Storage Conexes 348	FTRI- 008	Hazardous Waste Storage Facility - Clean Closed 1990 AEHA, 1988 SWMU-Proposed environmental sampling				Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Pesticide UST at Camp Funston	FTRI- 010	AEHA, 1988 SWMU-Proposed environmental sampling Tank removed and clean closed in 1991				Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
DRMO Storage Area 3	FTRI- 012	AEHA, 1988 SWMU-Proposed environmental sampling	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	No ESI field activities conducted	No actions are necessary to protect HH & E; Closed Status
DRMO Storage Area 2	FTRI- 015	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 One PCE GW result above MCL No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Former Livestock Dipping Facility	FTRI- 047		HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 Elevated levels of metals and pesticides in mixing pit No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Former Pesticides Facilities	FTRI- 048		HSWA, 1998 No potential risk to HH & E based on site visit of building 1022 and Camp Whiteside HSWA, 1998 No potential risk to HH & E based on SI for Custer Hill Golf Course Pesticide Facility	IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 No potential risk to HH & E for Golf Course Pesticide Facility	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Mercury Contamination Areas	FTRI- 049		HSWA, 1998 No potential risk to HH & E based on site visit	Mercury removal in 1991/1992 IWSA (LBA, 1993) Identified for Further Evaluation Vaults retrofitted with air	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status

Table 1-1
ESI Site Summary
Pesticide / PCB Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History				
		RCRA Regulatory History	CERCLA Regulatory History			
PCB Transformer Sites	FTRI- 050	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 No PCB detects above 50 ppm in soil No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Milford Campground / Marina	FTRI- 055	HSWA, 1998 No potential risk to HH & E based on SI		LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office
 ESI - Expanded Site Investigation
 FFA - Federal Facility Agreement
 HH&E - Human Health & Environment
 HSWA - Hazardous and Solid Waste Amendment
 IACH - Irwin Army Community Hospital
 IWSA - Installation Wide Site Assessment
 KDHE - Kansas Department of Health and Environment
 LBA - Louis Berger and Associates
 MCL - Maximum Contaminant Level

NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl
 PCE - Tetrachloroethene
 POL - Petroleum, Oil, and Lubricant
 PPM - Parts per Million
 RCRA - Resource Conservation and Recovery Act
 SI - Site Investigation
 SWMU - Solid Waste Management Unit
 TPH - Total Petroleum Hydrocarbons
 UST - Underground Storage Tank
 WWTP - Wastewater Treatment Plant

Table 1-1
ESI Site Summary
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History		ESI 2006-2007, Actions Taken/Recommended		
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA		NPL August 1990/ FFA June 1991	SI Reports
Wastewater Sites (Group 2)	Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC	SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended
Industrial Wastewater System Custer Hill	FTRI- 020 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) East and West Ponds Identified for Further Evaluation Central Vehicle Wash Facility Recommended No Further Action	LBA, 1994 No CERCLA contaminants East Pond Free Product in GW West Pond No threat to HH & E Central Vehicle Wash Facility found POL in sediment	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Camp Funston WWTP Sludge Drying Beds	FTRI- 022 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm PA/PAOC conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Custer Hill WWTP Sludge Drying Beds	FTRI- 023 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm PA/PAOC conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Camp Forsyth WWTP Sludge Drying Beds	FTRI- 024 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm PA/PAOC conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Main Post WWTP Sludge Drying Beds	FTRI- 025 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm PA/PAOC conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Range Complex Wastewater Lagoons	FTRI- 026 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (Clean Water Act)	IWSA (LBA, 1993) Recommended No Further Action		Confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office
 ESI - Expanded Site Investigation
 FFA - Federal Facility Agreement
 HH&E - Human Health & Environment
 HSWA - Hazardous and Solid Waste Amendment
 IACH - Irwin Army Community Hospital
 IWSA - Installation Wide Site Assessment
 KDHE - Kansas Department of Health and Environment
 LBA - Louis Berger and Associates
 MCL - Maximum Contaminant Level

NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl
 PCE - Tetrachloroethene
 POL - Petroleum, Oil, and Lubricant
 PPM - Parts per Million
 RCRA - Resource Conservation and Recovery Act
 SI - Site Investigation
 SWMU - Solid Waste Management Unit
 TPH - Total Petroleum Hydrocarbons
 UST - Underground Storage Tank
 WWTP - Wastewater Treatment Plant

Table 1-1
ESI Site Summary
Petroleum / VOC Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	RCRA Regulatory History		CERCLA Regulatory History			ESI 2006-2007, Actions Taken/Recommended
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA	NPL August 1990/ FFA June 1991	SI Reports	ESI 2006-2007	
Petroleum / VOC Sites (Group 3)	Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC	SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended	
Abandoned VOC Tanks - IACH	FTRI- 013	AEHA, 1988 SWMU-Proposed environmental sampling		Tanks removed in September 1990 Field test showed 110 ppm TPH in soil		Confirm conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Waste Oil AST, 3rd Battery	FTRI- 016	AEHA, 1988 SWMU-No evidence of release		After 1988, AST decommissioned and removed		Site visit to confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status
Waste Oil AST, 4th Battery	FTRI- 017	AEHA, 1988 SWMU-No evidence of release		After 1988, AST decommissioned and removed		Site visit to confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status
Fire Training Area Facility 892	FTRI- 018	AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 Recommends investigation, review, or remediation	IWSA (LBA, 1993) Recommended No Further Action	USTs removed 1996 with clean closure Ground-water contamination above MCLs for 1,2-DCA, benzene, and toluene in 1999	Confirm no threat to HH & E	Sample soil and groundwater for VOCs. If sampling results show levels are protective of HH & E request Closed Status
Fire Training Area, Camp Funston	FTRI- 028	1982 soil removal AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action Site investigated as part of Southwest Funston Landfill	Vinyl chloride above MCL in 2004 Below MCL in 2006 and 2007 in SFL wells	No ESI field activities	No actions are necessary to protect HH & E; Closed Status
Consolidated Maintenance Facility Building 8100	FTRI- 039			IWSA (LBA, 1993) Identified for Further Evaluation	All USTs and ASTs removed in 1994 with clean closure	Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Former Oil Testing Lab Building 1022	FTRI- 040		HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action		Confirm evidence of no release	No actions are necessary to protect HH & E; Closed Status
Furniture Repair Shops	FTRI- 041		HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation Building 1605 soil removed in 1993	LBA, 1994 Buildings 1301 & 1605 No evidence of releases LBA, 1995 Building 319 No threat to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Print and Publications Shop Building 263	FTRI- 045		HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Building 727 Waste Pit	FTRI- 051		HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	Sample groundwater for lead and arsenic If sampling results show levels are protective of HH & E, request Closed Status.

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office

NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl

Table 1-1
ESI Site Summary
Petroleum / VOC Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History	
ESI - Expanded Site Investigation FFA - Federal Facility Agreement HH&E - Human Health & Environment HSWA - Hazardous and Solid Waste Amendment IACH - Irwin Army Community Hospital IWSA - Installation Wide Site Assessment KDHE - Kansas Department of Health and Environment LBA - Louis Berger and Associates MCL - Maximum Contaminant Level		PCE - Tetrachloroethene POL - Petroleum, Oil, and Lubricant PPM - Parts per Million RCRA - Resource Conservation and Recovery Act SI - Site Investigation SWMU - Solid Waste Management Unit TPH - Total Petroleum Hydrocarbons UST - Underground Storage Tank WWTP - Wastewater Treatment Plant	

Table 1-1
ESI Site Summary
Former Landfill /
Incinerator Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History		ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended	
		RCRA Part A: Interim Status	RCRA Part B, Part II HSWA-defers to CERCLA			NPL August 1990/ FFA June 1991
Former Landfill/Incinerator Sites (Group 4)	Nov 1980-Sept 1998	Oct 1, 1998 to Oct 1, 2008	PA/PAOC	SI Reports		
Whitside C/D Landfill	FTRI- 002 AEHA, 1988 SWMU-Proposed environmental sampling	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (RCRA Subtitle D)	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Main Post Landfill	FTRI- 004 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Custer Hill Rubble Dump	FTRI- 005 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action		Confirm evidence of no release of hazardous substances and no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Hospital Incinerator - IACH	FTRI- 014 AEHA, 1988 SWMU-No evidence of release				Confirm evidence of no release of hazardous substances and no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Southeast Funston Landfill Incinerator	FTRI- 029 AEHA, 1988 SWMU-No evidence of release	HSWA, 1998 Recommends investigation, review, or remediation	IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 Detected lead in soil Removed impacted soil in 1999	Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Southeast Funston Landfill	FTRI- 036	HSWA, 1998 Recommends investigation, review, or remediation	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 Detected lead, antimony & VC above MCL in GW	Confirm no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Old Whitside Incinerator	FTRI- 037	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Recommended No Further Action	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status
Inactive Landfills - Camp Whitside	FTRI- 052	HSWA, 1998 No potential risk to HH & E based on SI	IWSA (LBA, 1993) Identified for Further Evaluation	LBA, 1995 No potential risk to HH & E	Confirm SI conclusion of no threat to HH & E	No actions are necessary to protect HH & E; Closed Status

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office
 ESI - Expanded Site Investigation
 FFA - Federal Facility Agreement
 HH&E - Human Health & Environment
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NPL - National Priorities List
 PA - Preliminary Assessment
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 PCB - Polychlorinated Biphenyl
 PCE - Tetrachloroethene
 POL - Petroleum, Oil, and Lubricant
 PPM - Parts per Million
 RCRA - Resource Conservation and Recovery Act
 SI - Site Investigation
 SWMU - Solid Waste Management Unit
 TPH - Total Petroleum Hydrocarbons
 UST - Underground Storage Tank
 WWTP - Wastewater Treatment Plant

Table 1-1
ESI Site Summary
POL Sites
Expanded Site Investigation
Fort Riley, Kansas

Site Name	RCRA Regulatory History	CERCLA Regulatory History		SI Reports	ESI 2006-2007	ESI 2006-2007, Actions Taken/Recommended
		RCRA Part A: Interim Status Nov 1980-Sept 1998	RCRA Part B, Part II HSWA-defers to CERCLA Oct 1, 1998 to Oct 1, 2008			
Tactical Vehicle Maintenance Shops	FTRI- 042		HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action - Deferred to UST Program		Site visits to confirm evidence of no release No actions are necessary to protect HH & E; Closed Status
Former Gas Stations/Garages	FTRI- 043		HSWA, 1998 No potential risk to HH & E based on site visit	IWSA (LBA, 1993) Recommended No Further Action - Deferred to UST Program		Confirm SI conclusion of no threat to HH & E No actions are necessary to protect HH & E; Closed Status except at Camp Forsyth I & 7th Streets location. Collect subsurface soil samples for VOCs.
6200 Area Fuel Oil Line	FTRI- 057				POL-contaminated soil removed in 1997 No potential risk to HH & E	Confirm conclusion of no threat to HH & E No actions are necessary to protect HH & E; Closed Status
Underground Storage Tanks	FTRI- 059	AEHA, 1988 SWMU-No evidence of release under obsolete FTRI-015	HSWA, 1998 No potential risk to HH & E or addressed under another regulatory program (RCRA Subtitle I)	IWSA (LBA, 1993) Recommended No Further Action - Deferred to UST Program	USTs removed in 1990s Residual POL contamination of soil and ground water No potential risk to HH & E	Confirm conclusion of no threat to HH & E No actions are necessary to protect HH & E for Closed Sites (See Table 5-1) Request Administrative Closure for Tanks 7903a & b and 7923 from KDHE, North Central District Office

AEHA - Army Environmental Hygiene Agency
 AST - Aboveground Storage Tank
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DRMO - Defense Reutilization Marketing Office
 ESI - Expanded Site Investigation
 FFA - Federal Facility Agreement
 HH&E - Human Health & Environment
 HSWA - Hazardous and Solid Waste Amendment
 IACH - Irwin Army Community Hospital
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NPL - National Priorities List
 PA - Preliminary Assessment
 PAOC - Potential Area of Concern
 PCB - Polychlorinated Biphenyl
 PCE - Tetrachloroethene
 POL - Petroleum, Oil, and Lubricant
 PPM - Parts per Million
 RCRA - Resource Conservation and Recovery Act
 SI - Site Investigation
 SWMU - Solid Waste Management Unit
 TPH - Total Petroleum Hydrocarbons
 UST - Underground Storage Tank
 WWTP - Wastewater Treatment Plant

Table 2-1
Pond Water Detections
Wash Rack Reservoir (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

AQUEOUS [organics µg/l] [inorganics mg/kg]									STANDARDS		
Old Wash Rack Reservoir			Cell 1	Cell 2	Cell 3		Cell 4	MCL	KAL	KNL	
CVWF- CH-S1- R	CVWF- CH-B-R	CVWF- CH-001- R ^A	CVWF- CH-C14	CVWF- CH-C22	CVWF- CH-C31 ^B	CVWF- CH-009-C3	CVWF- CH-43-C4				
Semi-Volatiles											
TPH-DRO	330	670	550	720	280	250	440	ND	---	---	---
Bis(2-Ethylhexyl) Phthalate	ND	23	ND	ND	ND	ND	ND	ND	---	---	---
Metals (Priority Pollutant)											
Lead	ND	ND	ND	ND	ND	ND	ND	0.004	0.015	0.05	---
Silver	ND	ND	ND	ND	0.03	.01	ND	ND	---	0.05	---

Note: all results in dry weight

ND: Not Detected.

---: Standard Not Available.

A: Duplicate of CVWF-CH-S1-R

B: Duplicate of CVWF-CH-009-C3

KAL: Kansas Action Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.

KNL: Kansas Notification Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.

MCL: Federal Maximum Contaminant Level. From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, December 1993.

Shaded areas represent those concentrations exceeding either the MCL and/or the KAL .

Table 2-2
Pond Sediment Detections
Wash Rack Reservoir (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

SEDIMENT [organics µg/kg] [inorganics mg/kg]																		EPA Risk-Based Levels ^D
Old Wash Rack Reservoir				Cell 1			Cell 2			Cell 3			Cell 4					
SED-CR; SED-CR1 ^A	005-R ^B	Sed- Outlet-R	Sed-Inlet-R	Sed Outlet- C10	Sed C11	Sed Inlet- C12	Sed Outlet- C20	Sed-Inlet C21	Sed C24	Sed Outlet C30	C34	C33	Sed Outlet-C40	041-C4 ^C	44-C4	45-C4	Commercial/ Industrial Soil	
Volatiles																		
Methylene Chloride (Dichloromethane)	ND	ND	ND	ND	ND	24	ND	ND	ND ^M	ND	ND	ND	ND	ND	ND	ND	ND	62,000-20,000,000
Toluene	ND ^M	ND	ND	ND	ND	ND	220	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	280,000-200,000,000
TPH-GRO	130,000	ND ^{H,M}	ND ^{H,M}	ND ^{H,M}	ND ^H	ND ^H	1,200 ^H	ND ^H	3,700 ^H	ND ^H	ND ^H	ND	ND	ND	ND ^H	ND	ND	---
m,p-Xylene	ND	ND	2,400	ND ^M	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	99,000-500,000,000
Semi-Volatiles																		
TPH-DRO	4,400,000	32,000,000	8,000,000	18,000,000	210,000	180,000	570,000	322,000	3,100,000	ND	87,000	17,000 ^H	31,000 ^H	14,000 ^H	20,000 ^H	15,000 ^H	10,000 ^H	---
Bis(2-Ethylhexyl) Phthalate	ND	25,000 ^M	27,000 ^M	51,000 ^M	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50,000-5,000,000
Di-n-butyl Phthalate	ND	ND	ND	21,000 ^M	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100,000-100,000,000
Metals (Priority Pollutant)																		
Arsenic	6 ^t	6 ^t	6 ^t	3 ^t	3 ^t	2 ^t	6 ^t	3 ^t	5 ^t	3 ^t	3 ^t	2 ^t	18 ^t	4 ^t	3 ^t	4 ^t	3 ^t	0.4-310
Beryllium	0.8 ^t	0.9 ^t	ND	0.5 ^t	ND	0.8 ^t	ND	ND	ND	0.9 ^t	0.5 ^t	0.5 ^t	0.5 ^t	0.7 ^t	0.6 ^t	0.6 ^t	0.7 ^t	0.1-1,000
Cadmium	4.7	8.4	7.5	4.7	0.8	1.0	4	0.8	4.3	1.0	1.1	0.8	1.5	0.8	0.7	0.7	0.7	100-1,000
Chromium	25	33	26	21	14	20	5	12	32	23	19	15	19	21	18	17	16	5,100-1,000,000
Copper	23	36	31	22	9	11	6	11	27	13	12	10	15	12	10	12	10	10,000-76,000
Lead	30	40	40	30	11	10	64	5	20	15	10	12	75	11	11	14	13	500-1,000 ^E
Nickel	19	21	18	14	12	15	4	12	25	21	16	13	17	18	15	16	13	5,000-41,000 ^F
Zinc	130	290	260	110	35	45	35	50	200	56	51	36	54	49	45	38	37	80,000-310,000

Shaded values represent concentrations that exceed carcinogen levels.

Note: All samples have the prefix "CVWF-CH-".

All results in dry weight.

ND: Not detected.

---: Standard Not Available.

H: Result is an estimated value. Recommended holding time was exceeded.

M: Reporting limit higher than normal due to matrix interference.

t: Sample concentration exceeded EPA Regions III, IX and X (10⁻⁶) risk based standard for Arsenic as a carcinogen.

x: Sample concentration exceeded EPA Regions III and X (10⁻⁶) risk based standard for Arsenic as a carcinogen.

I: Sample concentration exceeded EPA Regions III and X (10⁻⁶) risk based standard for Beryllium as a carcinogen.

α: Sample concentration exceeded EPA Region X (10⁻⁶) risk based standard for Beryllium as a carcinogen.

A: Resample; analyses included VOA, TPH-GRO only.

B: Duplicate of CVWF-CH-Sed Outlet-R.

C: Duplicate of CVWF-CH-Sed Outlet C40.

D: Risk-based guideline concentrations are based on a range to represent EPA Regions III, IX & X from the following citations: Region III Risk-based Concentration Table, 2nd quarter 1994, Roy L. Smith, Senior Toxicologist - Technical Support Section; Region IX Preliminary Remediation Goals (PRGs) 1st quarter 1993, Stanford J. Smucker, PhD, Regional Toxicologist; and Region X-Appendix II-Human Health Risk-based Preliminary Remediation Goals for Water and Soil, October 1992.

E: EPA Directive Number OSWER 9355.4-02, Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund

F: Soluble salts.

Table 2-3
Groundwater Detections
Wash Rack Reservoir (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

<u>Analyte</u> (μ g/l organics) (mg/l inorganics)	<u>Sample Location</u> Sample ID #			
	WR-93-01	Regulatory Comparison Values		
		KAL	KNL	MCL
Arsenic	0.02	0.05	---	0.05

---: Standard Not Available.

KAL: Kansas Action Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.

KNL: Kansas Notification Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.

MCL: Federal Maximum Contaminant Level. From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, December 1993.

Table 2-4
Stream Water Detections
North and East of the Cell Complex (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

	AQUEOUS (mg/L)			STANDARDS (mg/L)		
	CVWF-CH-Stream AQ-1	CVWF-CH-Stream AQ-5	CVWF-CH-Stream AQ 6	MCL	KAL	KNL
Metals (Priority Pollutant)						
Lead	ND	0.008	ND	0.015	0.05	---
Zinc	ND	0.04	ND	---	5.0	---

ND: Not detected.
 ---: Standard Not Available.

KAL: Kansas Action Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.
 KNL: Kansas Notification Level. From: Final 880607 Groundwater Contaminant Cleanup Target Concentrations.
 MCL: Federal Maximum Contaminant Level. From: Drinking Water Regulations and Health Advisories, Office of Water, United States Environmental Protection Agency, December 1993.

Table 2-5
Stream Sediment Detections
North and East of the Cell Complex (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

	SEDIMENT [organics µg/kg] [inorganics mg/kg]							EPA Risk-Based Levels ^B
	CVWF- CH-Stream Sed 1	CVWF- CH-101 ^A	CVWF-CH- Stream Sed 2	CVWF-CH- Stream Sed 3	CVWF-CH- Stream Sed 4	CVWF-CH- Stream Sed 5	CVWF-CH- Stream Sed 6	
Semi-Volatiles TPH-DRO	1,100 ^H	ND ^{H,R}	ND ^{H,R}	ND ^R	ND ^{H,R}	38 ^H	ND ^{H,R}	---
Metals (Priority Pollutant)								0.4-310
Arsenic	9 [†]	9 [†]	4 [†]	10 [†]	8 [†]	4 [†]	3 [†]	
Beryllium	1.1 [†]	0.8 [†]	0.7 [†]	ND	ND	0.6 ^α	0.7 [†]	0.1-1,000
Cadmium	1.3	0.9	0.8	1.1	1.0	0.8	0.7	100-1,000
Chromium	31	21	17	25	24	15	16	5,100-1,000,000
Copper	20	15	13	17	14	10	11	10,000-76,000
Lead	15	18	8	18	22	16	12	500-1,000 ^C
Nickel	27	21	16	22	21	13	18	5,000-41,000 ^D
Zinc	68	44	41	57	50	43	40	80,000-310,000

Note: all results in dry weight.

ND: Not detected.

---: Standard Not Available.

H: Result is an estimated value. Recommended holding time was exceeded.

R: Data rejected by data validator.

†: Sample concentration exceeded EPA Regions III, IX and X (10⁻⁴) risk based standard for Arsenic as a carcinogen.

λ: Sample concentration exceeded EPA Regions III and X (10⁻⁴) risk based standard for Arsenic as a carcinogen.

X: Sample concentration exceeded EPA Regions III and X (10⁻⁴) risk based standard for Beryllium as a carcinogen.

α: Sample concentration exceeded EPA Region X (10⁻⁴) risk based standard for Beryllium as a carcinogen.

A: Duplicate of CVWF-CH-Stream Sed 1.

B: Risk-based guideline concentrations are based on a range to represent EPA Regions III, IX & X from the following citations: Region III Risk-based Concentration Table, 2nd quarter 1994, Roy L. Smith, Senior Toxicologist - Technical Support Section; Region IX Preliminary Remediation Goals (PRGs) 1st quarter 1993, Stanford J. Smucker, PhD, Regional Toxicologist; and Region X-Appendix II-Human Health Risk-based Preliminary Remediation Goals for Water and Soil, October 1992.

C: EPA Directive Number OSWER 9355.4-02, Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites.

D: Soluble salts.

Shaded values represent concentrations that exceed carcinogen levels.

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP01/SB01 7/14/2006 0 - 2 ft 06070893	020-DP01/SB11 7/14/2006 0 - 2 ft 06070894 Duplicate	020-DP01/SB02 7/14/2006 7 - 8 ft 06070895	020-DP01/SB03 7/14/2006 11 - 12 ft 06070896
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	5.6	5.4	4.6	5.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	170	170	230	120
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.85	0.89	0.8	0.79
Chromium, Total	mg/kg	210 / 450	390 / 4,000	22	22	21	23
Lead, Total	mg/kg	400 / 800	400 / 1,000	12	12	11	11
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.3 U	1.2 U	1.2 U	1.2 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP02/SB01 7/14/2006 0 - 1 ft 06070897	020-DP02/SB02 7/14/2006 7 - 8 ft 06070898	020-DP02/SB03 7/14/2006 9 - 10 ft 06070899	020-DP03/SB01 7/14/2006 0 - 1 ft 06070900
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.7	1.2 U	1.4	3.3
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	210	100	62	100
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.8	0.95	0.81	0.88
Chromium, Total	mg/kg	210 / 450	390 / 4,000	22	34	22	25
Lead, Total	mg/kg	400 / 800	400 / 1,000	9.9	3.2	2.5	7
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.1 U	1.2 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

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NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP03/SB02 7/14/2006 6 - 7 ft 06070901	020-DP03/SB03 7/14/2006 10 - 11 ft 06070902	020-DP04/SB01 7/14/2006 0 - 1 ft 06070903	020-DP04/SB02 7/14/2006 7 - 8 ft 06070904
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.4	3.2	5.3	32
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	72	66	180	120
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2 U	0.97	0.94	1.4
Chromium, Total	mg/kg	210 / 450	390 / 4,000	27	26	22	40
Lead, Total	mg/kg	400 / 800	400 / 1,000	4.2	2.9	10	24
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.9	1.4	1.2 U	1.3 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP04/SB22 7/14/2006 7 - 8 ft 06070905 Duplicate	020-DP04/SB03 7/14/2006 11 - 12 ft 06070906	020-DP05/SB01 7/17/2006 1 - 2 ft 06071011	020-DP05/SB02 7/17/2006 6 - 7 ft 06071012
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	33	7.1	6.4	4.6
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	66	100	160
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.4	0.85	0.8	0.59 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	39	26	21	17.4
Lead, Total	mg/kg	400 / 800	400 / 1,000	28	6.5	8.8	11.3
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	2	1.2 U	1.2 U	1.2 U

Notes:

- All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded. All detections are in bold font. USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards
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 ft - feet
 NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
 U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP05/SB03 7/17/2006 9 - 10 ft 06071013	020-DP06/SB01 7/17/2006 1 - 2 ft 06071014	020-DP06/SB02 7/17/2006 5 - 6 ft 06071015	020-DP06/SB03 7/17/2006 9 - 10 ft 06071016
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	5.2	1.5	6.3	11
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	140	94	180	26
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	3.1 U	0.6	0.6	1.2 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	18	27	24	7.7
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	2.7	11	12.6
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.2 U	3.4

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

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KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point:		USEPA Region 9	KDHE RSKs	020-DP07/SB01	020-DP07/SB02	020-DP07/SB03	020-DP08/SB01
Date Sampled:		PRGs (res/ind)	(res/ind)	7/17/2006	7/17/2006	7/17/2006	7/17/2006
Sample Depth:				1 - 2 ft	7 - 8 ft	11 - 12 ft	1 - 2 ft
Laboratory Number:				06071017	06071018	06071019	06071020
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	3	3.1	3.8	5.6
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	140	140	130	140
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2 U	0.6 U	0.59 U	1.2
Chromium, Total	mg/kg	210 / 450	390 / 4,000	17	17	17	21
Lead, Total	mg/kg	400 / 800	400 / 1,000	7.8	7.7	9.1	8.9
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.2 U	1.1 U

Notes:

- All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded. All detections are in bold font. USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
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 res/ind - residential / industrial
 ft - feet
 NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
 U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP08/SB02 7/17/2006 6 - 7 ft 06071021	020-DP08/SB03 7/17/2006 8 - 9 ft 06071022	020-DP09/SB01 7/17/2006 0.5 - 1.5 ft 06071025	020-DP09/SB01 7/17/2006 0.5 - 1.5 ft 06071025R Reanalysis
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.5	6.2	5.7	NA
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	180	150	600	NA
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.7	1.1	3 U	NA
Chromium, Total	mg/kg	210 / 450	390 / 4,000	30	20	20	NA
Lead, Total	mg/kg	400 / 800	400 / 1,000	9	9.7	27	7.7
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.3 U	1.2 U	1.2 U	NA

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP09/SB02 7/17/2006 7 - 8 ft 06071026	020-DP09/SB03 7/17/2006 9 - 10 ft 06071027	020-DP10/SB01 7/18/2006 1 - 2 ft 06071105	020-DP10/SB02 7/18/2006 7 - 8 ft 06071106
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	7	6	4.3	14
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	170	150	90
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2	1.2 U	0.68	0.87
Chromium, Total	mg/kg	210 / 450	390 / 4,000	22	24	18	18
Lead, Total	mg/kg	400 / 800	400 / 1,000	10	10	11	20
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	2.3 U	1.3 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

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res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP10/SB22 7/18/2006 7 - 8 ft 06071107 Duplicate	020-DP10/SB03 7/18/2006 11 - 12 ft 06071108	020-DP11/SB01 7/18/2006 0 - 1 ft 06071109	020-DP11/SB02 7/18/2006 6 - 7 ft 06071110
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	8.5	4.7	5.8	3.7
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	80	160	130	96
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.3 U	0.9	1	0.82
Chromium, Total	mg/kg	210 / 450	390 / 4,000	13	17	21	25
Lead, Total	mg/kg	400 / 800	400 / 1,000	13	10	8.9	5.8
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	2.5 U	1.2 U	1.1 U	1.2 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
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Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP11/SB03 7/18/2006 8.5 - 10.5 ft 06071111	020-DP12/SB01 7/18/2006 1 - 2 ft 06071112	020-DP12/SB02 7/18/2006 7.5 - 8 ft 06071113	020-DP12/SB03 7/18/2006 9 - 10.5 ft 06071114
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.7	4.3	5.8	6.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	190	170	190	290
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2 U	0.74	0.65	1.2 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	23	18	19	22
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	10	12	14
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	2.4 U	1.1 U	1.2 U	2.5 U

Notes:

- All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded. All detections are in bold font.
 USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards
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 ft - feet
 NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
 U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP12/SB33 7/18/2006 9 - 10.5 ft 06071115 Duplicate	020-DP13/SB01 7/14/2006 1 - 2 ft 06070889	020-DP13/SB02 7/14/2006 7 - 8 ft 06070890	020-DP13/SB22 7/14/2006 7 - 8 ft 06070891 Duplicate
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.2	5.7	41	5.1
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	220	260	100	170
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.69	0.78	6.1	0.7
Chromium, Total	mg/kg	210 / 450	390 / 4,000	18	24	140	19
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	9.6	69	11
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	2.4 U	1.2 U	12 U	1.2 U

Notes:

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All detections are in bold font.

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ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
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Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP13/SB03 7/14/2006 11 - 12 ft 06070892	020-DP14/SB01 7/13/2006 1 - 2 ft 06070638	020-DP14/SB02 7/13/2006 6 - 7 ft 06070639	020-DP14/SB03 7/13/2006 11 - 12 ft 06070640
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	7.7	5.5	6.9	4.3
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	380	170	200	140
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2 U	0.64	0.75	0.66
Chromium, Total	mg/kg	210 / 450	390 / 4,000	25	20	27	30
Lead, Total	mg/kg	400 / 800	400 / 1,000	18	12	15	8.9
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	2.4 U	1.2 U	1.2 U	1.2 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP15/SB01 7/13/2006 1 - 2 ft 06070641	020-DP15/SB02 7/13/2006 7 - 8 ft 06070642	020-DP15/SB03 7/13/2006 10 - 11 ft 06070643	020-DP16/SB01 7/13/2006 1 - 2 ft 06070644
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	6.3	2.6	2.9	7.9
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	210	200	160	190
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.61	1.4	1.4	1.2 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	26	46	40	34
Lead, Total	mg/kg	400 / 800	400 / 1,000	12	3.8	3.2	16
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.2 U	1.2 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

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res/ind - residential / industrial

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NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP16/SB02 7/13/2006 7 - 8 ft 06070645	020-DP16/SB03 7/13/2006 10.5 - 11.5 ft 06070646	020-DP17/SB01 7/13/2006 1 - 2 ft 06070630	020-DP17/SB02 7/13/2006 5 - 6 ft 06070631
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	5.8	6	4.1	4.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	200	220	160	150
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.63	0.64	0.57 U	0.62 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	25	22	19	22
Lead, Total	mg/kg	400 / 800	400 / 1,000	10	13	9.4	10
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U	1.1 U	1.2 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP18/SB01 7/13/2006 0 - 2 ft 06070632	020-DP18/SB11 7/13/2006 0 - 2 ft 06070633 Duplicate	020-DP18/SB02 7/13/2006 6 - 7 ft 06070634	020-DP19/SB01 7/13/2006 0 - 1 ft 06070635
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	3.9	4.2	5.5	4.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	120	140	140	180
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.56 U	0.58 U	0.79	0.59 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	18	20	27	19
Lead, Total	mg/kg	400 / 800	400 / 1,000	9.1	9.3	11	11
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.1 U	1.2 U	1.2 U	1.2 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 2-6
Soil Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	020-DP19/SB02 7/13/2006 6 - 7 ft 06070636	020-DP20/SB01 7/13/2006 1 - 2 ft 06070637
Metals, Total	UNITS				
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4	5.8
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	120	170
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.62 U	0.58 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	19	24
Lead, Total	mg/kg	400 / 800	400 / 1,000	8.3	13
Selenium, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1.2 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

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res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 2-7
Groundwater Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs/ Action Level	020-DP05/GW01 7/17/2006 LIQUID 06071023	020-DP07/GW01 7/17/2006 LIQUID 06071024	020-DP09/GW01 7/17/2006 LIQUID 06071028	020-DP10/GW01 7/25/2006 LIQUID 06071767
Metals, Total	UNITS						
Arsenic, Total	mg/L	NA	NA	0.277	0.316	0.141	0.031
Barium, Total	mg/L	NA	NA	2.46	15	2.28	1.19
Cadmium, Total	mg/L	NA	NA	0.019	0.118	0.009	0.004
Chromium, Total	mg/L	NA	NA	0.33	1.37	0.314	0.149
Lead, Total	mg/L	NA	NA	0.731	0.949	0.23	0.044
Mercury, Total	mg/L	NA	NA	0.0008	0.0002 U	0.0002 U	0.0002 U
Metals, Dissolved	UNITS						
Arsenic, Dissolved	mg/L	0.000045	0.01	0.01 U	0.01 U	0.016	0.01 U
Barium, Dissolved	mg/L	2.6	2	0.37	0.41	0.55	0.96
Lead, Dissolved	mg/L	NA	0.015*	0.005 U	0.005 U	0.005 U	0.006

Notes:

1. All data screened against the USEPA Region 9 PRGs (tap water). All exceedances are shaded.

* Value is an action level, not an MCL.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels

NA - not applicable / not analyzed

mg/L - milligrams per liter

U - compound was not detected

Table 2-7
Groundwater Detections
Industrial Wastewater System (FTRI-020)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs/ Action Level	020-DP11/GW01 7/18/2006 LIQUID 06071116	020-DP12/GW01 7/18/2006 LIQUID 06071117
Metals, Total	UNITS				
Arsenic, Total	mg/L	NA	NA	0.17	0.46
Barium, Total	mg/L	NA	NA	6.6	5.4
Cadmium, Total	mg/L	NA	NA	0.23	0.15
Chromium, Total	mg/L	NA	NA	0.56	0.58
Lead, Total	mg/L	NA	NA	0.32	0.69
Mercury, Total	mg/L	NA	NA	0.0002 U	0.0002 U
Metals, Dissolved	UNITS				
Arsenic, Dissolved	mg/L	0.000045	0.01	0.01 U	0.022
Barium, Dissolved	mg/L	2.6	2	0.36	0.57
Lead, Dissolved	mg/L	NA	0.015*	0.005 U	0.005 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (tap water). All exceedances are shaded.

* Value is an action level, not an MCL.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels

NA - not applicable / not analyzed

mg/L - milligrams per liter
U - compound was not detected

Table 3-1
Soil Detections
Camp Funston WWTP (FTRI-022)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	022-DP01/SB01 7/10/2006 0 - 1 ft 06070304	022-DP01/SB02 7/10/2006 7 - 8 ft 06070305	022-DP01/SB03 7/10/2006 8 - 12 ft 06070306	022-DP01/SB33 7/10/2006 8 - 12 ft 06070307 Duplicate
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	1.9	1.7	1 U	1 U
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	63	68	26	39
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.56 U	0.57 U	0.51 U	0.51 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	6.2	5.4	1 U	1.2
Lead, Total	mg/kg	400 / 800	400 / 1,000	6.2	3.2	1.3	1.4

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 3-1
Soil Detections
Camp Funston WWTP (FTRI-022)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	022-DP02/SB01 7/10/2006 0 - 1 ft 06070291	022-DP02/SB02 7/10/2006 7 - 8 ft 06070292	022-DP02/SB03 7/10/2006 11 - 12 ft 06070293	022-DP03/SB01 7/10/2006 0 - 1 ft 06070294
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	2.1	2.3	1 U	3.4
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	84	89	31	83
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.56 U	0.6 U	0.51 U	0.56 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	9	7.2	1.2	9.6
Lead, Total	mg/kg	400 / 800	400 / 1,000	52	4.2	1.2	6.6

Notes:

- All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded. All detections are in bold font.
- USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards
 res/ind - residential / industrial
 ft - feet
 NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
 U - compound was not detected

Table 3-1
Soil Detections
Camp Funston WWTP (FTRI-022)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	022-DP03/SB02 7/10/2006 7 - 8 ft 06070295	022-DP03/SB03 7/10/2006 10 - 11 ft 06070296	022-DP04/SB01 7/10/2006 0 - 1 ft 06070297	022-DP04/SB02 7/10/2006 5 - 6 ft 06070298
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	3.2	8.1	3.7	5.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	140	200	140	210
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.62 U	0.85	0.56 U	0.74
Chromium, Total	mg/kg	210 / 450	390 / 4,000	14	21	12	22
Lead, Total	mg/kg	400 / 800	400 / 1,000	8.3	10	6.3	10

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 3-1
Soil Detections
Camp Funston WWTP (FTRI-022)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	022-DP04/SB03 7/10/2006 9 - 12 ft 06070299	022-DP04/SB33 7/10/2006 9 - 12 ft 06070300 Duplicate	022-DP05/SB01 7/10/2006 0 - 1 ft 06070301	022-DP05/SB02 7/10/2006 6 - 7 ft 06070302
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	1.3	1.2	2.3	2.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	49	40	75	110
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.51 U	0.52 U	0.54 U	0.59 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	2	2	6.2	8.4
Lead, Total	mg/kg	400 / 800	400 / 1,000	1.8	2	4.4	4

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 3-1
Soil Detections
Camp Funston WWTP (FTRI-022)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point:		USEPA Region 9	KDHE RSKs	022-DP05/SB03
Date Sampled:		PRGs (res/ind)	(res/ind)	7/10/2006
Sample Depth:				11 - 12 ft
Laboratory Number:				06070303
Metals, Total	UNITS			
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	1.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	24
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.51 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	1.4
Lead, Total	mg/kg	400 / 800	400 / 1,000	1.5

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 3-2
Groundwater Detections
Camp Funston WWTP (FTRI-022)
Wastewater Sites
Expanded Site Investigations
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs	022-DP01/GW01 7/10/2006 LIQUID 06070285	022-DP02/GW01 7/10/2006 LIQUID 06070286	022-DP02/GW11 7/10/2006 LIQUID 06070287 Duplicate	022-DP03/GW01 7/10/2006 LIQUID 06070288
Metals, Total	UNITS						
Arsenic, Total	mg/L	NA	NA	0.229	0.088	0.123	0.135 R
Barium, Total	mg/L	NA	NA	5.01	3.59	5.36	3.54
Cadmium, Total	mg/L	NA	NA	0.018	0.011	0.016	0.011 R
Chromium, Total	mg/L	NA	NA	0.846 J	0.581 J	0.66 J	0.542 J
Lead, Total	mg/L	NA	NA	0.315 J	0.183 J	0.271 J	0.215 J
Selenium, Total	mg/L	NA	NA	0.02 U M	0.036	0.044	0.037 R
Metals, Dissolved	UNITS						
Barium, Dissolved	mg/L	2.6	2	0.35	0.43	0.43	0.26
Selenium, Dissolved	mg/L	0.18	0.05	0.01	0.01 U	0.01 U	0.01 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (tap water). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels

NA - not applicable / not analyzed

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

U - compound was not detected

Table 3-2
Groundwater Detections
Camp Funston WWTP (FTRI-022)
Wastewater Sites
Expanded Site Investigations
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs	022-DP03/GW01 7/10/2006 LIQUID 06070288R Reanalysis	022-DP04/GW01 7/10/2006 LIQUID 06070289	022-DP05/GW01 7/10/2006 LIQUID 06070290
Metals, Total	UNITS					
Arsenic, Total	mg/L	NA	NA	0.142	1.01	0.124
Barium, Total	mg/L	NA	NA	NA	10.3	5.44
Cadmium, Total	mg/L	NA	NA	0.016	0.028	0.017
Chromium, Total	mg/L	NA	NA	0.663 J	0.774 J	0.7 J
Lead, Total	mg/L	NA	NA	NA	0.424 J	0.275 J
Selenium, Total	mg/L	NA	NA	0.059	0.05 U M	0.05 U M
Metals, Dissolved	UNITS					
Barium, Dissolved	mg/L	2.6	2	NA	0.38	0.26
Selenium, Dissolved	mg/L	0.18	0.05	NA	0.01 U	0.01 U

Notes:

- All data screened against the USEPA Region 9 PRGs (tap water). All exceedances are shaded.
 All detections are in bold font.
 USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels
 NA - not applicable / not analyzed

- mg/L - milligrams per liter
 J - qualified as estimated during QC evaluation
 R - data was rejected
 U - compound was not detected

Table 4-1
Soil Detections
Custer Hill WWTP (FTRI-023)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	023-DP01/SB01 7/11/2006 1 - 2 ft 06070409	023-DP02/SB01 7/11/2006 1 - 2 ft 06070401	023-DP02/SB02 7/11/2006 5 - 6 ft 06070402	023-DP03/SB01 7/11/2006 0 - 1 ft 06070406
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.8	6.7	12 U	2.6
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	190	88	410	170
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.6	0.62	3 U	0.62
Chromium, Total	mg/kg	210 / 450	390 / 4,000	15	26	7.9	26
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	4.6	6.4	5.5

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 4-1
Soil Detections
Custer Hill WWTP (FTRI-023)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	023-DP03/SB02 7/11/2006 5 - 6 ft 06070407	023-DP03/SB03 7/11/2006 8 - 9 ft 06070408	023-DP04/SB01 7/11/2006 0 - 1 ft 06070403	023-DP04/SB02 7/11/2006 4 - 6.5 ft 06070404
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.7	5.2	4	5.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	150	150	110	120
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.3 U	0.63	0.55 U	0.57 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	16	26	16	20
Lead, Total	mg/kg	400 / 800	400 / 1,000	10	7.7	16	11

Notes:

- All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded. All detections are in bold font.
- USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards
 res/ind - residential / industrial
 ft - feet
 NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
 U - compound was not detected

Table 4-1
Soil Detections
Custer Hill WWTP (FTRI-023)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point:		USEPA Region 9	KDHE RSKs	023-DP04/SB22
Date Sampled:		PRGs (res/ind)	(res/ind)	7/11/2006
Sample Depth:				4 - 6.5 ft
Laboratory Number:				06070405 Duplicate
Metals, Total	UNITS			
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	7
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	220
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.87
Chromium, Total	mg/kg	210 / 450	390 / 4,000	34
Lead, Total	mg/kg	400 / 800	400 / 1,000	10

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 5-1
Soil Detections
Camp Forsyth WWTP (FTRI-024)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	024-DP01/SB01 7/11/2006 1 - 2 ft 06070388	024-DP01/SB02 7/11/2006 7 - 8 ft 06070389	024-DP01/SB03 7/11/2006 9 - 10 ft 06070390	024-DP01/SB33 7/11/2006 9 - 10 ft 06070391 Duplicate
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	2.4	2.4	3.9	3.6
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	140	140	210	180
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.56 U	0.62 U	0.65 U	0.65 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	12	9.4	15	13
Lead, Total	mg/kg	400 / 800	400 / 1,000	6.4	4.5	6.8	5.8
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U	0.1 U	0.1 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 5-1
Soil Detections
Camp Forsyth WWTP (FTRI-024)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

		Sample Point: Date Sampled: Sample Depth: Laboratory Number:	USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	024-DP02/SB01 7/11/2006 1 - 2 ft 06070398	024-DP02/SB02 7/11/2006 7 - 8 ft 06070399	024-DP02/SB03 7/11/2006 10 - 11 ft 06070400	024-DP03/SB01 7/11/2006 0 - 1 ft 06070392
Metals, Total	UNITS							
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	2.1	1.7	2	4.5	
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	81	93	160	
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.52 U	0.56 U	0.61 U	0.65	
Chromium, Total	mg/kg	210 / 450	390 / 4,000	7.9	6.3	6.8	19	
Lead, Total	mg/kg	400 / 800	400 / 1,000	4.3	4.4	3.6	10	
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U	0.1 U	0.1 U	

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 5-1
Soil Detections
Camp Forsyth WWTP (FTRI-024)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	024-DP03/SB02 7/11/2006 7 - 8 ft 06070393	024-DP03/SB03 7/11/2006 11 - 12 ft 06070394	024-DP04/SB01 7/11/2006 1 - 2 ft 06070395	024-DP04/SB02 7/11/2006 7 - 8 ft 06070396
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	2.4	1.1	2.2	2.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	42	108	79
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.57 U	0.52 U	0.65 U	0.56 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	9.1	3	94	6.8
Lead, Total	mg/kg	400 / 800	400 / 1,000	4.6	2.4	5.8	4
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U	0.2	0.1 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 5-1
Soil Detections
Camp Forsyth WWTP (FTRI-024)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point:		USEPA Region 9	KDHE RSKs	024-DP04/SB03
Date Sampled:		PRGs (res/ind)	(res/ind)	7/11/2006
Sample Depth:				11 - 12 ft
Laboratory Number:				06070397
Metals, Total	UNITS			
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	1.2
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	43
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.54 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	3.6
Lead, Total	mg/kg	400 / 800	400 / 1,000	2.4
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 5-2
Groundwater Detections
Camp Forsyth WWTP (FTRI-024)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs	024-DP01/GW01 7/11/2006 LIQUID 06070410	024-DP02/GW01 7/11/2006 LIQUID 06070414	024-DP02/GW01 7/11/2006 LIQUID 06070414R Reanalysis	024-DP03/GW01 7/11/2006 LIQUID 06070411
Metals, Total	UNITS						
Arsenic, Total	mg/L	NA	NA	0.046 J	0.088 J	0.096 J	0.176 J
Barium, Total	mg/L	NA	NA	3.25	8.18 R	8.73	8.38
Cadmium, Total	mg/L	NA	NA	0.004 J	0.006 J	0.011 J	0.02 J
Chromium, Total	mg/L	NA	NA	1.91 J	0.442 J	0.613 J	1.33 J
Lead, Total	mg/L	NA	NA	0.101 J	0.111 J	0.123 J	0.321 J
Metals, Dissolved	UNITS						
Barium, Dissolved	mg/L	2.6	2	0.82	0.13	NA	0.29
Selenium, Dissolved	mg/L	0.18	0.05	0.01 U	0.012 J	NA	0.01 U

Notes:

- 1. All data screened against the USEPA Region 9 PRGs (tap water). All exceedances are shaded.
- All detections are in bold font.
- USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
- USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels
- NA - not applicable / not analyzed

- mg/L - milligrams per liter
- J - qualified as estimated during QC evaluation
- R - data was rejected
- U - compound was not detected

Table 5-2
Groundwater Detections
Camp Forsyth WWTP (FTRI-024)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs	024-DP03/GW11 7/11/2006 LIQUID 06070412 Duplicate	024-DP04/GW01 7/11/2006 LIQUID 06070413
Metals, Total	UNITS				
Arsenic, Total	mg/L	NA	NA	0.048 J	0.043 J
Barium, Total	mg/L	NA	NA	1.99	2.88
Cadmium, Total	mg/L	NA	NA	0.003 J	0.007 J
Chromium, Total	mg/L	NA	NA	1.49 J	0.837 J
Lead, Total	mg/L	NA	NA	0.071 J	0.156 J
Metals, Dissolved	UNITS				
Barium, Dissolved	mg/L	2.6	2	0.24	0.34
Selenium, Dissolved	mg/L	0.18	0.05	0.01 U	0.01 U

Notes:

- All data screened against the USEPA Region 9 PRGs (tap water). All exceedances are shaded. All detections are in bold font.
- USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels
 NA - not applicable / not analyzed

- mg/L - milligrams per liter
 J - qualified as estimated during QC evaluation
 R - data was rejected
 U - compound was not detected

Table 6-1
Soil Detections
Main Post WWTP (FTRI-025)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point:		USEPA Region 9	KDHE RSKs	025-DP01/SB01	025-DP01/SB02	025-DP01/SB03	025-DP02/SB01
Date Sampled:		PRGs (res/ind)	(res/ind)	7/7/2006	7/7/2006	7/7/2006	7/7/2006
Sample Depth:				0 - 1 ft	7 - 8 ft	10 - 11 ft	1 - 2 ft
Laboratory Number:				06070254	06070255	06070256	06070241
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	2.6	3.6	2.2	2.8
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	150	210	150	140
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2	0.62 U	0.62 U	0.53 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	18	13	10	12
Lead, Total	mg/kg	400 / 800	400 / 1,000	39	7.1	4.9	7
Mercury, Total	mg/kg	23 / 310	2 / 20	1.6	0.1 U	0.1 U	0.1 U
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	7.3	1.2 U	1.2 U	1.1 U

Notes:

- All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded. All detections are in bold font. USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards
res/ind - residential / industrial
ft - feet
NA - not applicable / not analyzed

- mg/kg - milligrams per kilogram
J - qualified as estimated during QC evaluation
R - data was rejected
U - compound was not detected

Table 6-1
Soil Detections
Main Post WWTP (FTRI-025)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	025-DP02/SB02 7/7/2006 6.5 - 7.5 ft 06070242	025-DP02/SB03 7/7/2006 11 - 12 ft 06070243	025-DP03/SB01 7/7/2006 1 - 2 ft 06070244	025-DP03/SB02 7/7/2006 7 - 8 ft 06070245
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	7.2	1 U	4	3.3
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	230	29	160	240
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.2	0.51 U	0.63	3.3
Chromium, Total	mg/kg	210 / 450	390 / 4,000	28	1.4	15	41
Lead, Total	mg/kg	400 / 800	400 / 1,000	15	1.6	9.1	96
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U	0.2	7.6
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	1.2 U	1 U	1.1 U	12 J

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.
All detections are in bold font.
USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards
res/ind - residential / industrial
ft - feet
NA - not applicable / not analyzed

- mg/kg - milligrams per kilogram
J - qualified as estimated during QC evaluation
R - data was rejected
U - compound was not detected

Table 6-1
Soil Detections
Main Post WWTP (FTRI-025)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

		Sample Point: Date Sampled: Sample Depth: Laboratory Number:	USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	025-DP03/SB02 7/7/2006 7 - 8 ft 06070245R Reanalysis	025-DP03/SB03 7/7/2006 8.5 - 9.5 ft 06070246	025-DP03/SB03 7/7/2006 8.5 - 9.5 ft 06070246R Reanalysis	025-DP04/SB01 7/7/2006 1 - 2 ft 06070247
Metals, Total	UNITS							
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	NA	5.1	NA	3.4	
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	NA	290	NA	100	
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	NA	4.4	NA	0.55 U	
Chromium, Total	mg/kg	210 / 450	390 / 4,000	NA	47	NA	9.7	
Lead, Total	mg/kg	400 / 800	400 / 1,000	NA	120	NA	8.1	
Mercury, Total	mg/kg	23 / 310	2 / 20	NA	5.5	NA	0.1 U	
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	11 R	38 J	28 R	1.1 U	

Notes:

- All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded. All detections are in bold font. USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals
 KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards
 res/ind - residential / industrial
 ft - feet
 NA - not applicable / not analyzed

- mg/kg - milligrams per kilogram
 J - qualified as estimated during QC evaluation
 R - data was rejected
 U - compound was not detected

Table 6-1
Soil Detections
Main Post WWTP (FTRI-025)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	025-DP04/SB02 7/7/2006 7 - 8 ft 06070248	025-DP04/SB03 7/7/2006 8 - 12 ft 06070249	025-DP04/SB33 7/7/2006 8 - 12 ft 06070250 Duplicate	025-DP05/SB01 7/7/2006 1 - 2 ft 06070251
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	7.9	1.2	1.5	2.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	340	43	61	120
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.6	0.56 U	0.54 U	0.58
Chromium, Total	mg/kg	210 / 450	390 / 4,000	31	3.9	4.3	12
Lead, Total	mg/kg	400 / 800	400 / 1,000	15	2.7	2.7	11
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U	0.1 U	0.2
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	1.4 U	1.1 U	1.1 U	1.1 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

J - qualified as estimated during QC evaluation

R - data was rejected

U - compound was not detected

Table 6-1
Soil Detections
Main Post WWTP (FTRI-025)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point:		USEPA Region 9	KDHE RSKs	025-DP05/SB02	025-DP05/SB03
Date Sampled:		PRGs (res/ind)	(res/ind)	7/7/2006	7/7/2006
Sample Depth:				6 - 7 ft	11 - 12 ft
Laboratory Number:				06070252	06070253
Metals, Total	UNITS				
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	8.8	1.1
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	220	39
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.4	0.52 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	29	2
Lead, Total	mg/kg	400 / 800	400 / 1,000	14	2
Mercury, Total	mg/kg	23 / 310	2 / 20	0.1 U	0.1 U
Silver, Total	mg/kg	390 / 5,100	390 / 10,000	1.3 U	1 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

J - qualified as estimated during QC evaluation

R - data was rejected

U - compound was not detected

Table 6-2
Groundwater Detections
Main Post WWTP (FTRI-025)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs/ Action Level	025-DP01/GW01 7/7/2006 LIQUID 06070261	025-DP02/GW01 7/7/2006 LIQUID 06070257	025-DP03/GW01 7/7/2006 LIQUID 06070258	025-DP04/GW01 7/7/2006 LIQUID 06070259
Metals, Total	UNITS						
Arsenic, Total	mg/L	NA	NA	0.339	0.212	0.327	0.22 R
Barium, Total	mg/L	NA	NA	9.68	5.86	6.28	3.04
Cadmium, Total	mg/L	NA	NA	0.04 J	0.021 J	0.033 J	0.015 J
Chromium, Total	mg/L	NA	NA	0.887 J	0.922 J	0.961 J	0.629 J
Lead, Total	mg/L	NA	NA	0.658	0.41	0.638	0.397
Mercury, Total	mg/L	NA	NA	0.0008	0.0004	0.0004	0.0003
Selenium, Total	mg/L	NA	NA	0.023	0.163	0.262	0.042 R
Metals, Dissolved	UNITS						
Arsenic, Dissolved	mg/L	0.000045	0.01	0.01 U	0.01 U	0.01 U	0.027
Barium, Dissolved	mg/L	2.6	2	0.17	0.25	0.51	0.81
Cadmium, Dissolved	mg/L	0.18	0.005	0.003 U	0.003 U	0.003	0.004
Chromium, Dissolved	mg/L	55 / 0.11*	0.1	0.005 U	0.005 U	0.005 U	0.016
Lead, Dissolved	mg/L	NA	0.015**	0.005 U	0.005 U	0.005 U	0.018

Notes:

1. All data screened against the USEPA Region 9 PRGs (tap water). All exceedances are shaded.

* Value is for trivalent chromium / hexavalent chromium.

** Value is an action level, not an MCL.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels

NA - not applicable / not analyzed

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

U - compound was not detected

Table 6-2
Groundwater Detections
Main Post WWTP (FTRI-025)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (tap water)	USEPA MCLs/ Action Level	025-DP04/GW01 7/7/2006 LIQUID 06070259R	025-DP04/GW11 7/7/2006 LIQUID 06070260 Duplicate	025-DP05/GW01 7/7/2006 LIQUID 06070262
Metals, Total	UNITS					
Arsenic, Total	mg/L	NA	NA	0.231	0.441	0.157
Barium, Total	mg/L	NA	NA	NA	6.94	10.5
Cadmium, Total	mg/L	NA	NA	0.018 J	0.024 J	0.025 J
Chromium, Total	mg/L	NA	NA	0.928 J	1.08 J	1.29 J
Lead, Total	mg/L	NA	NA	NA	0.82	0.456
Mercury, Total	mg/L	NA	NA	NA	0.0004	0.0002 U
Selenium, Total	mg/L	NA	NA	0.074	0.062	0.037
Metals, Dissolved	UNITS					
Arsenic, Dissolved	mg/L	0.000045	0.01	NA	0.018	0.01 U
Barium, Dissolved	mg/L	2.6	2	NA	0.6	0.53
Cadmium, Dissolved	mg/L	0.18	0.005	NA	0.003 U	0.003 U
Chromium, Dissolved	mg/L	55 / 0.11*	0.1	NA	0.021	0.005 U
Lead, Dissolved	mg/L	NA	0.015**	NA	0.014	0.005 U

Notes:

1. All data screened against the USEPA Region 9 PRGs (tap water). All exceedances are shaded.

* Value is for trivalent chromium / hexavalent chromium.

** Value is an action level, not an MCL.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

USEPA MCLs - U.S. Environmental Protection Agency Maximum Contaminant Levels

NA - not applicable / not analyzed

mg/L - milligrams per liter

J - qualified as estimated during QC evaluation

R - data was rejected

U - compound was not detected

Table 7-1
Soil Detections
Range Complex Wastewater Lagoons (FTRI-026)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	026-DP01/SB01 7/19/2006 1 - 2 ft 06071277	026-DP01/SB02 7/19/2006 7 - 8 ft 06071278	026-DP01/SB03 7/19/2006 11 - 12 ft 06071279	026-DP02/SB01 7/19/2006 1 - 2 ft 06071274
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	5.1	4.6	8	4.6
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	150	190	99	130
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	1.1 U	1.1	2.1	0.79
Chromium, Total	mg/kg	210 / 450	390 / 4,000	21	23	20	18
Lead, Total	mg/kg	400 / 800	400 / 1,000	12	15	13	11

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 7-1
Soil Detections
Range Complex Wastewater Lagoons (FTRI-026)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	026-DP02/SB02 7/19/2006 7 - 8 ft 06071275	026-DP02/SB03 7/19/2006 10 - 11 ft 06071276	026-DP03/SB01 7/19/2006 1 - 2 ft 06071271	026-DP03/SB02 7/19/2006 5 - 6 ft 06071272
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	4.8	5.2	6.3	7.1
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	170	130	170	180
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.95	1.2	0.93	1.2 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	25	27	20	25
Lead, Total	mg/kg	400 / 800	400 / 1,000	10	9.3	11	13

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram

U - compound was not detected

Table 7-1
Soil Detections
Range Complex Wastewater Lagoons (FTRI-026)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point: Date Sampled: Sample Depth: Laboratory Number:		USEPA Region 9 PRGs (res/ind)	KDHE RSKs (res/ind)	026-DP03/SB03 7/19/2006 11 - 12 ft 06071273	026-DP04/SB01 7/19/2006 1 - 2 ft 06071267	026-DP04/SB02 7/19/2006 7 - 8 ft 06071268	026-DP04/SB03 7/19/2006 9 - 11 ft 06071269
Metals, Total	UNITS						
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	5.8	7.2	5.1	2.5 U
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	100	170	130	110
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.98	1.4	1	1.3 U
Chromium, Total	mg/kg	210 / 450	390 / 4,000	20	30	24	23
Lead, Total	mg/kg	400 / 800	400 / 1,000	11	13	10	2.2

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Table 7-1
Soil Detections
Range Complex Wastewater Lagoons (FTRI-026)
Wastewater Sites
Expanded Site Investigation
Fort Riley, Kansas

Sample Point:		USEPA Region 9	KDHE RSKs	026-DP04/SB33
Date Sampled:		PRGs (res/ind)	(res/ind)	7/19/2006
Sample Depth:				9 - 11 ft
Laboratory Number:				06071270 Duplicate
Metals, Total	UNITS			
Arsenic, Total	mg/kg	0.39 / 1.6	11 / 38	1.5
Barium, Total	mg/kg	5,400 / 67,000	5,500 / 140,000	71
Cadmium, Total	mg/kg	37 / 450	39 / 1,000	0.96
Chromium, Total	mg/kg	210 / 450	390 / 4,000	20
Lead, Total	mg/kg	400 / 800	400 / 1,000	1.5

Notes:

1. All data screened against the USEPA Region 9 PRGs (industrial). All exceedances are shaded.

All detections are in bold font.

USEPA Region 9 PRGs - U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals

KDHE RSKs - Kansas Dept of Health and Environment Risk-Based Standards

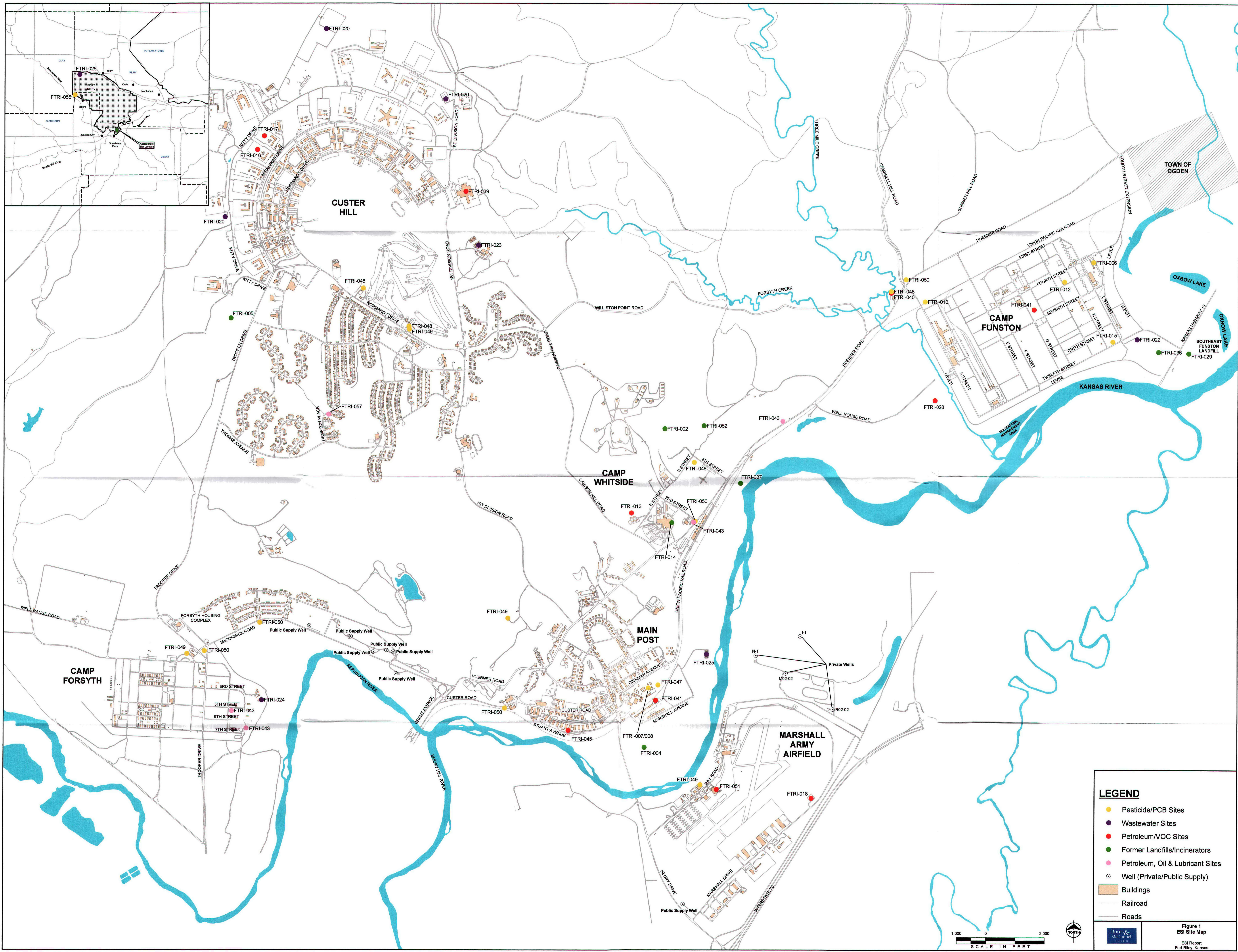
res/ind - residential / industrial

ft - feet

NA - not applicable / not analyzed

mg/kg - milligrams per kilogram
U - compound was not detected

Figures



LEGEND

- Pesticide/PCB Sites
- Wastewater Sites
- Petroleum/VOC Sites
- Former Landfills/Incinerators
- Petroleum, Oil & Lubricant Sites
- Well (Private/Public Supply)
- Buildings
- Railroad
- Roads



Figure 1
ESI Site Map
 ESI Report
 Fort Riley, Kansas

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LEGEND

- Roads
- ×—× Fences
- ▭ Buildings
- ▲ Direct-Push Borings

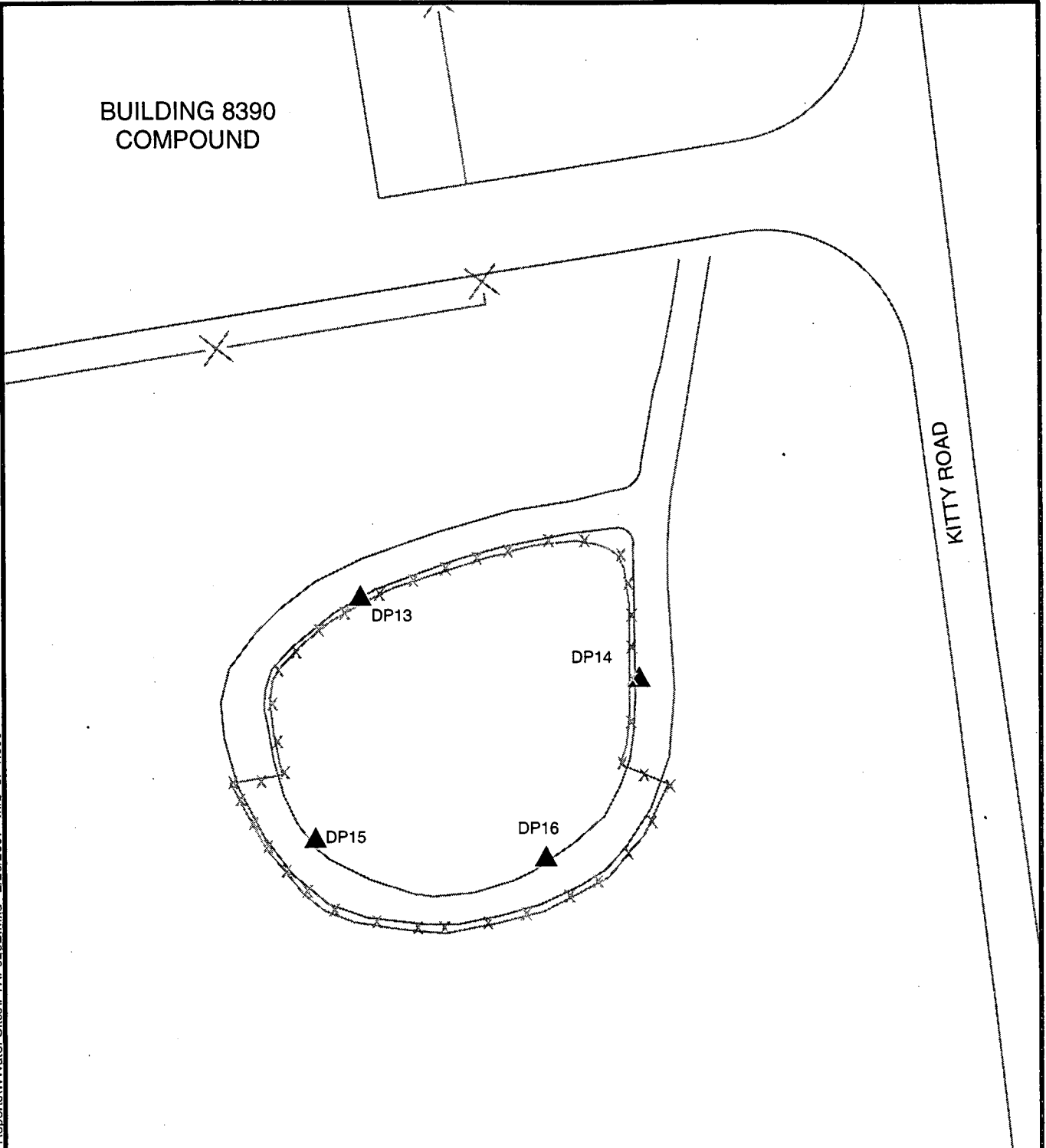
300 150 0 300
SCALE IN FEET

NORTH



Figure 2-1
FTRI-020
Industrial Wastewater System
North Wastewater Retention Ponds
ESI Report
Fort Riley, Kansas

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LEGEND

- Roads
- *—* Fences
- ▲ Direct-Push Borings

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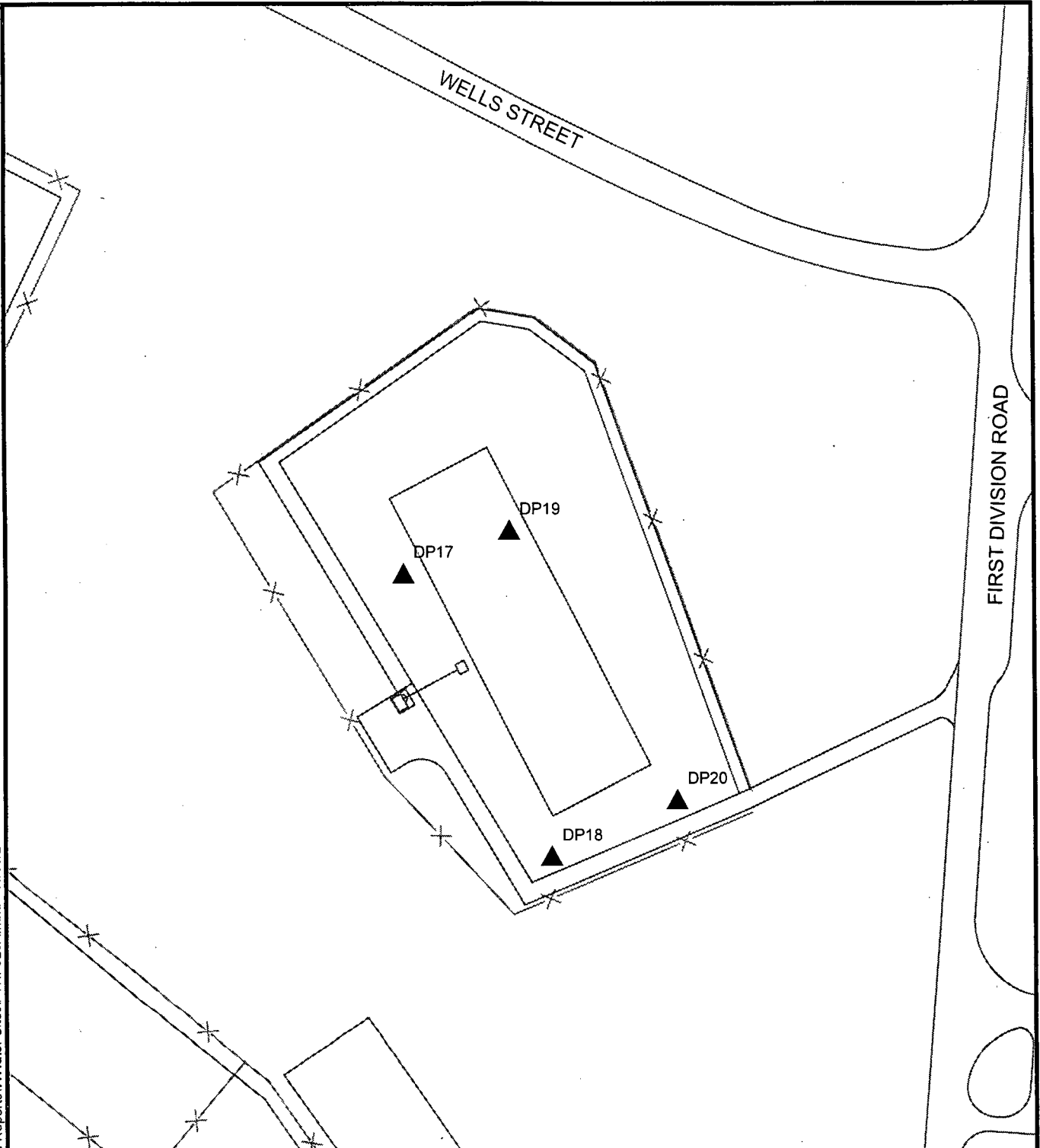
SCALE IN FEET

NORTH



Figure 2-2
FTRI-020
 Industrial Wastewater System
 West Wastewater Retention Pond
 ESI Report
 Fort Riley, Kansas

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LEGEND

- Roads
- *—* Fences
- ▲ Direct-Push Borings



Figure 2-3
FTRI-020
Industrial Wastewater System
East Wastewater Retention Pond
ESI Report
Fort Riley, Kansas

LEGEND:

- SOIL GAS SAMPLING LOCATIONS
- * AQUEOUS SAMPLES
- ▲ SEDIMENT SAMPLES
- ⊗ GROUNDWATER MONITOR WELL
- ══ PAVED ROAD
- - - UNPAVED ROAD
- - - FENCE LINES

GRAPHIC SCALE IN FEET
0 200' 400'

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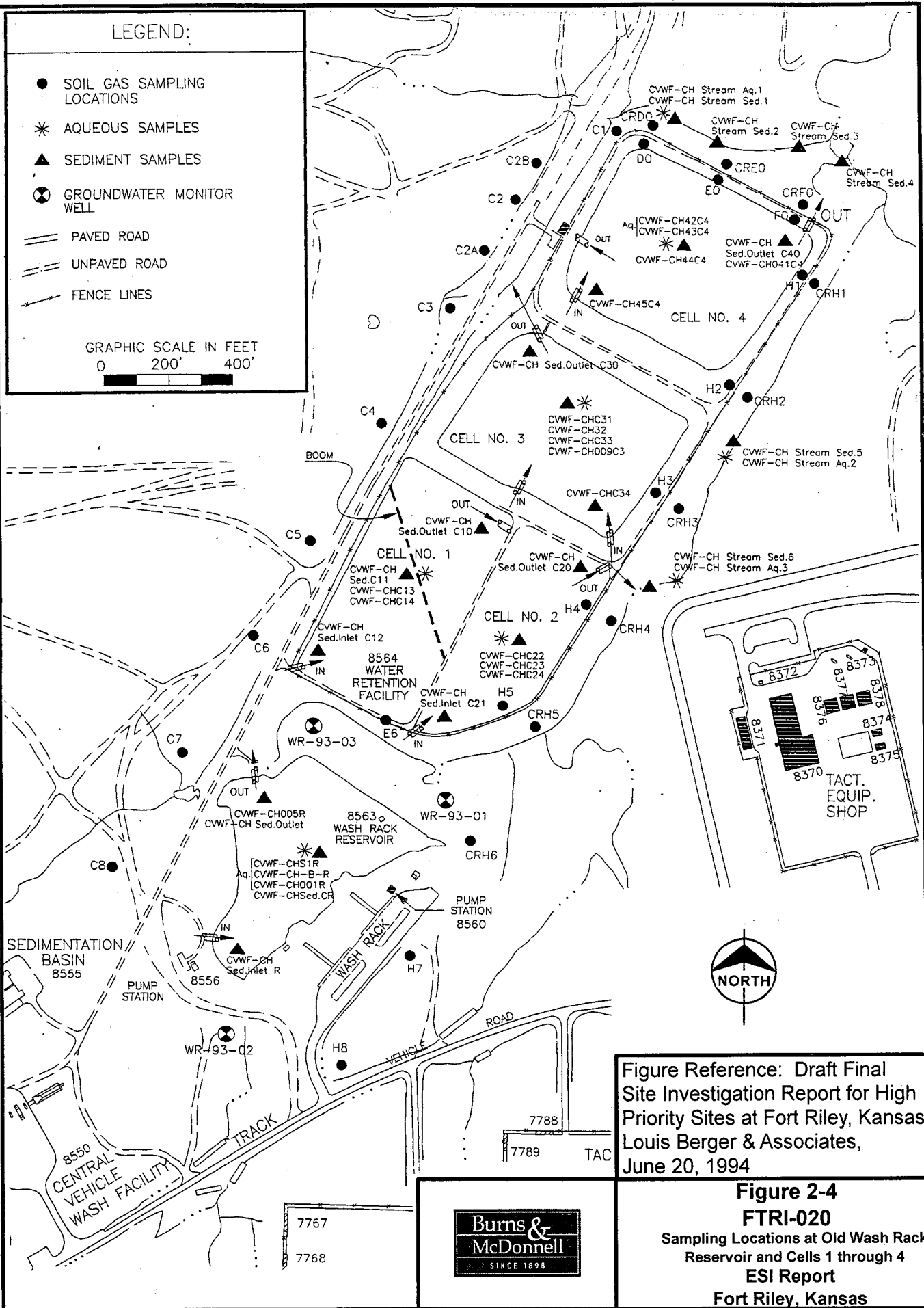
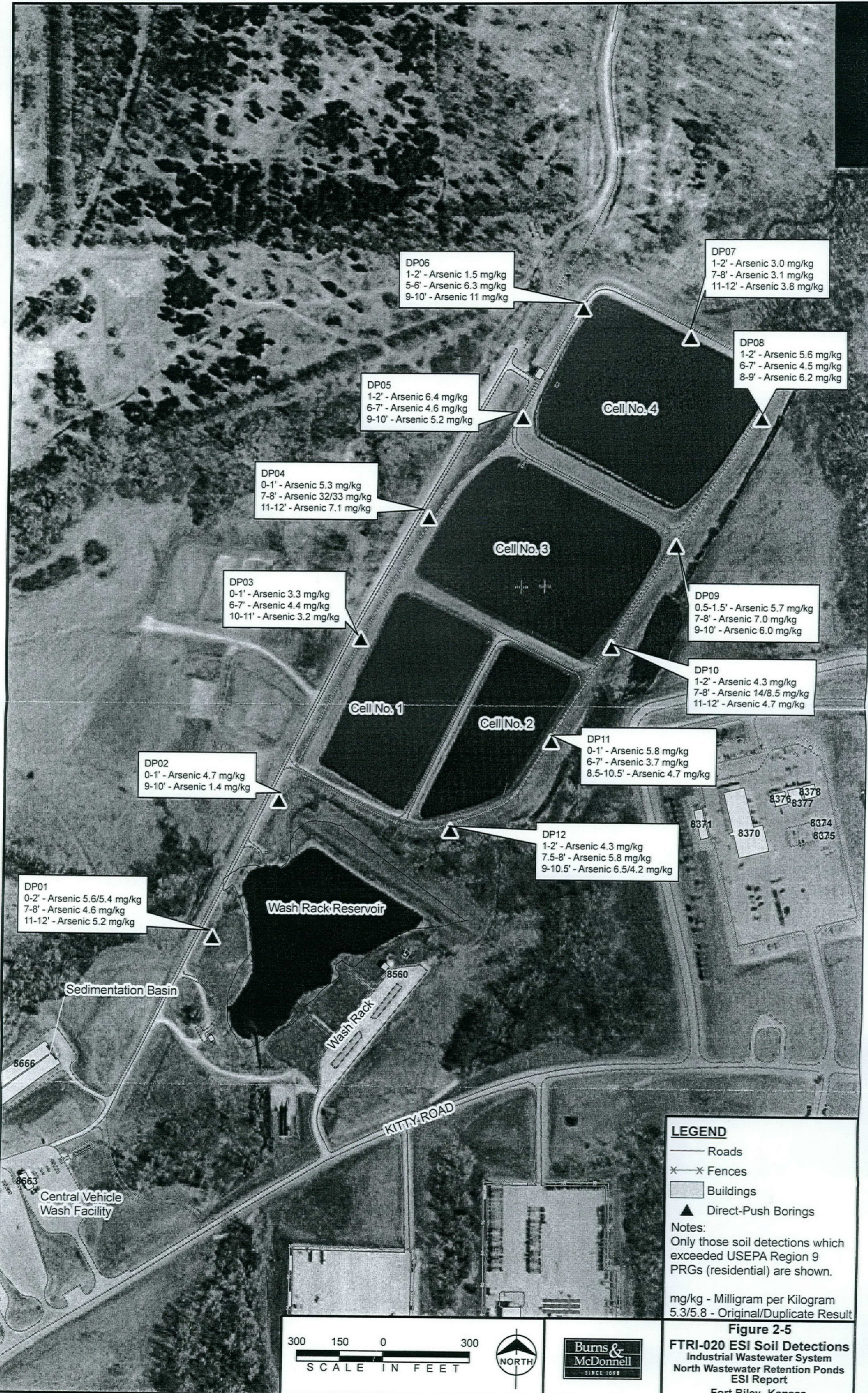


Figure Reference: Draft Final Site Investigation Report for High Priority Sites at Fort Riley, Kansas Louis Berger & Associates, June 20, 1994



Figure 2-4
FTRI-020
Sampling Locations at Old Wash Rack Reservoir and Cells 1 through 4
ESI Report
Fort Riley, Kansas

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DP06
1-2' - Arsenic 1.5 mg/kg
5-6' - Arsenic 6.3 mg/kg
9-10' - Arsenic 11 mg/kg

DP07
1-2' - Arsenic 3.0 mg/kg
7-8' - Arsenic 3.1 mg/kg
11-12' - Arsenic 3.8 mg/kg

DP08
1-2' - Arsenic 5.6 mg/kg
6-7' - Arsenic 4.5 mg/kg
8-9' - Arsenic 6.2 mg/kg

DP05
1-2' - Arsenic 6.4 mg/kg
6-7' - Arsenic 4.6 mg/kg
9-10' - Arsenic 5.2 mg/kg

DP04
0-1' - Arsenic 5.3 mg/kg
7-8' - Arsenic 32/33 mg/kg
11-12' - Arsenic 7.1 mg/kg

DP03
0-1' - Arsenic 3.3 mg/kg
6-7' - Arsenic 4.4 mg/kg
10-11' - Arsenic 3.2 mg/kg

DP09
0.5-1.5' - Arsenic 5.7 mg/kg
7-8' - Arsenic 7.0 mg/kg
9-10' - Arsenic 6.0 mg/kg

DP10
1-2' - Arsenic 4.3 mg/kg
7-8' - Arsenic 14/8.5 mg/kg
11-12' - Arsenic 4.7 mg/kg

DP02
0-1' - Arsenic 4.7 mg/kg
9-10' - Arsenic 1.4 mg/kg

DP11
0-1' - Arsenic 5.8 mg/kg
6-7' - Arsenic 3.7 mg/kg
8.5-10.5' - Arsenic 4.7 mg/kg

DP12
1-2' - Arsenic 4.3 mg/kg
7.5-8' - Arsenic 5.8 mg/kg
9-10.5' - Arsenic 6.5/4.2 mg/kg

DP01
0-2' - Arsenic 5.6/5.4 mg/kg
7-8' - Arsenic 4.6 mg/kg
11-12' - Arsenic 5.2 mg/kg

LEGEND

- Roads
- * * * Fences
- ▭ Buildings
- ▲ Direct-Push Borings

Notes:
Only those soil detections which exceeded USEPA Region 9 PRGs (residential) are shown.

mg/kg - Milligram per Kilogram
5.3/5.8 - Original/Duplicate Result



Figure 2-5
FTRI-020 ESI Soil Detections
Industrial Wastewater Retention System
North Wastewater Retention Ponds
ESI Report
Fort Riley, Kansas

BUILDING 8390
COMPOUND

KITTY ROAD

DP13
1-2' Arsenic 5.7 mg/kg
7-8' Arsenic 41/5.1 mg/kg
11-12' Arsenic 7.7 mg/kg

DP14
1-2' Arsenic 5.5 mg/kg
6-7' Arsenic 6.9 mg/kg
11-12' Arsenic 4.3 mg/kg

DP15
1-2' Arsenic 6.3 mg/kg
7-8' Arsenic 2.6 mg/kg
10-11' Arsenic 2.9 mg/kg

DP16
1-2' Arsenic 7.9 mg/kg
7-8' Arsenic 5.8 mg/kg
10.5-11.5' Arsenic 6.0 mg/kg

LEGEND

- Roads
- x—x Fences
- ▲ Direct-Push Borings

Notes:
Only those soil detections which exceeded USEPA Region 9 PRGs (residential) are shown.

J - Estimated Value
mg/kg - Milligram per Kilogram
5.3/5.8 - Original/Duplicate Result

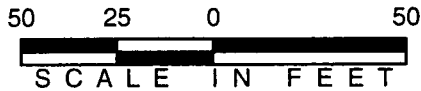
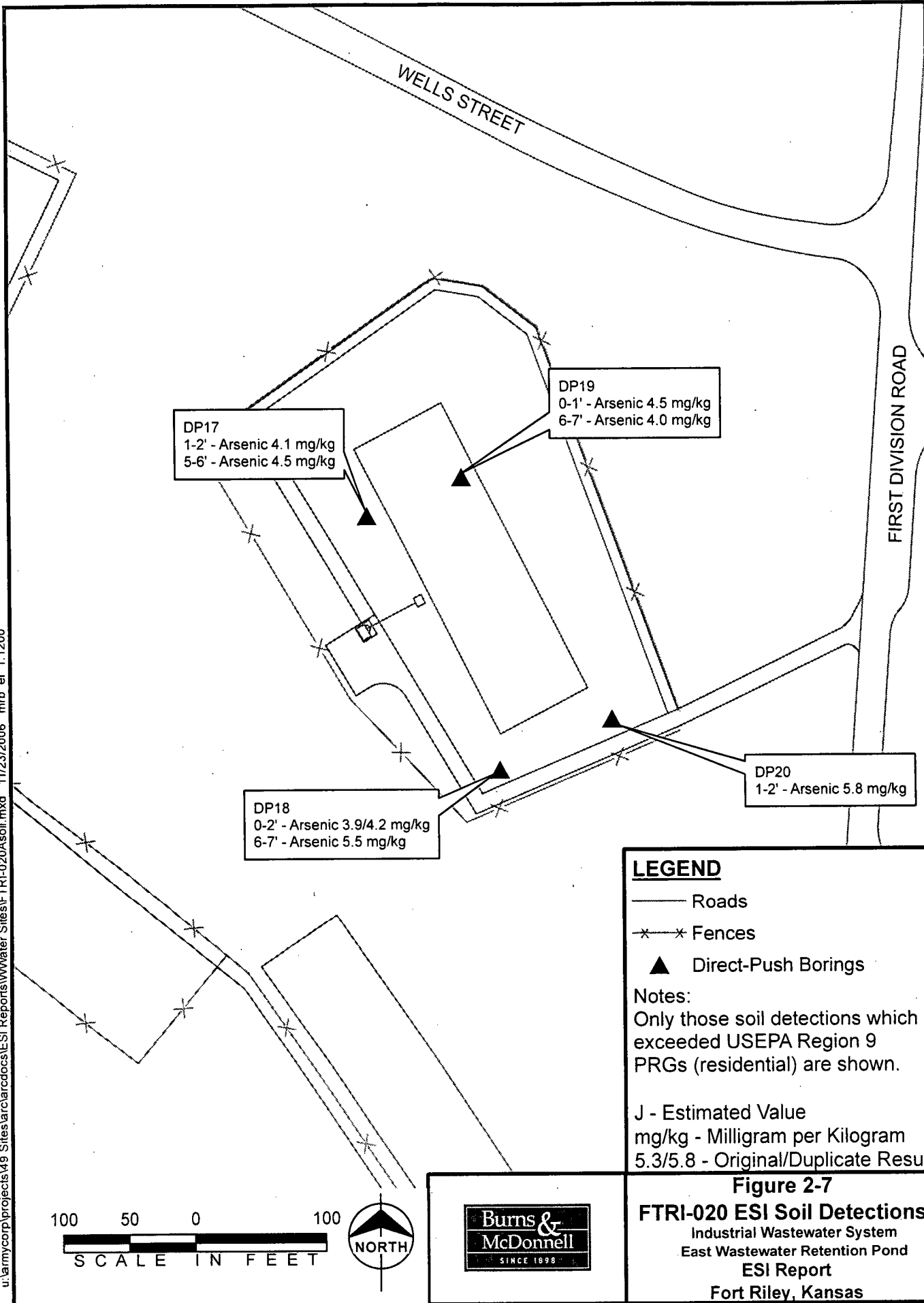


Figure 2-6
FTRI-020 ESI Soil Detections
Industrial Wastewater System
West Wastewater Retention Pond
ESI Report
Fort Riley, Kansas

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LEGEND

- Roads
- ✕✕ Fences
- ▲ Direct-Push Borings

Notes:
Only those soil detections which exceeded USEPA Region 9 PRGs (residential) are shown.

J - Estimated Value
mg/kg - Milligram per Kilogram
5.3/5.8 - Original/Duplicate Result

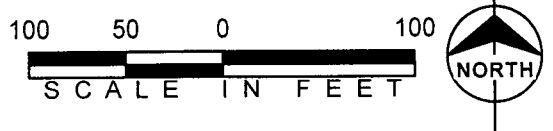
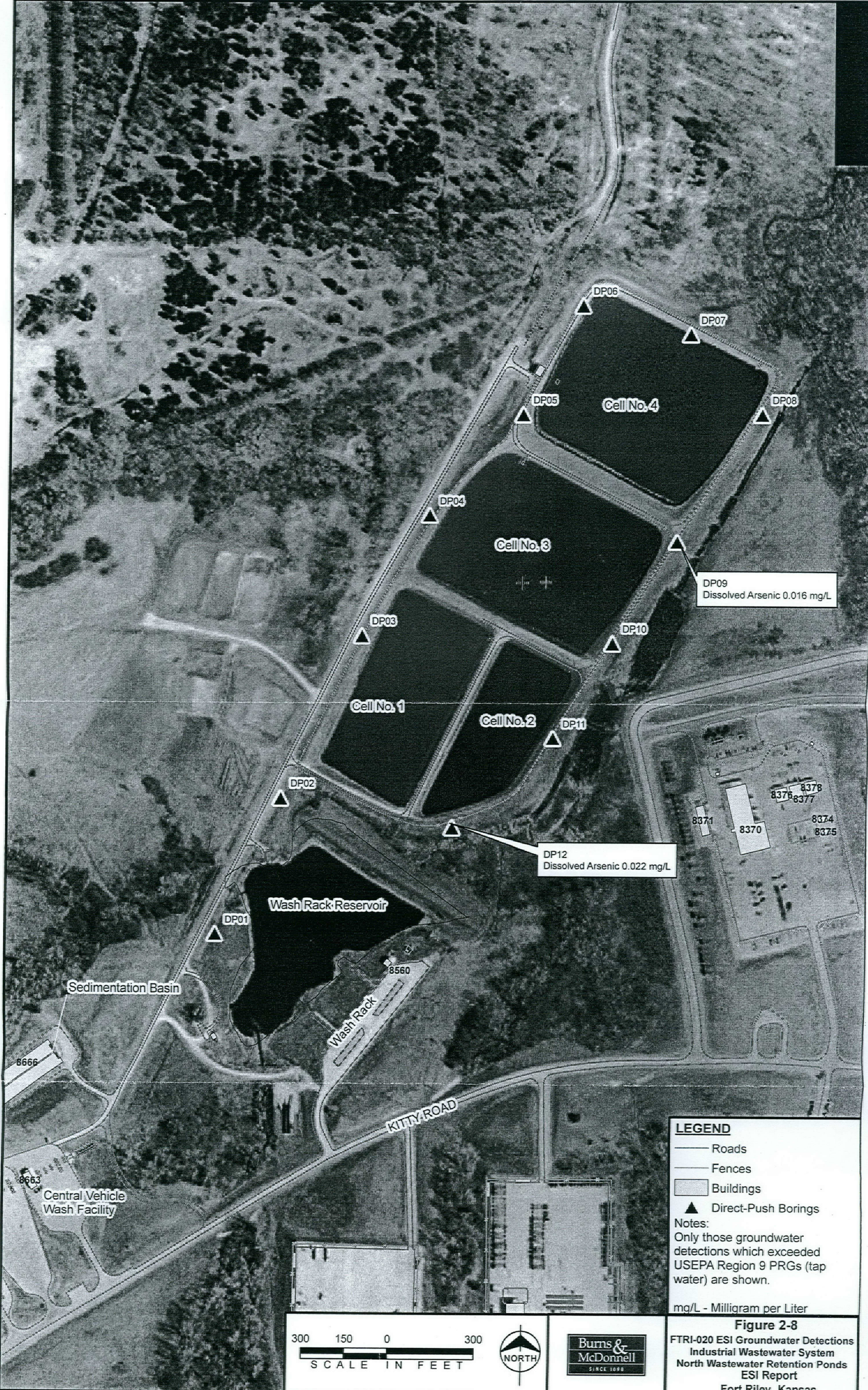


Figure 2-7
FTRI-020 ESI Soil Detections
Industrial Wastewater System
East Wastewater Retention Pond
ESI Report
Fort Riley, Kansas

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LEGEND

- Roads
- Fences
- ▭ Buildings
- ▲ Direct-Push Borings

Notes:
Only those groundwater detections which exceeded USEPA Region 9 PRGs (tap water) are shown.

mg/L - Milligram per Liter

300 150 0 300

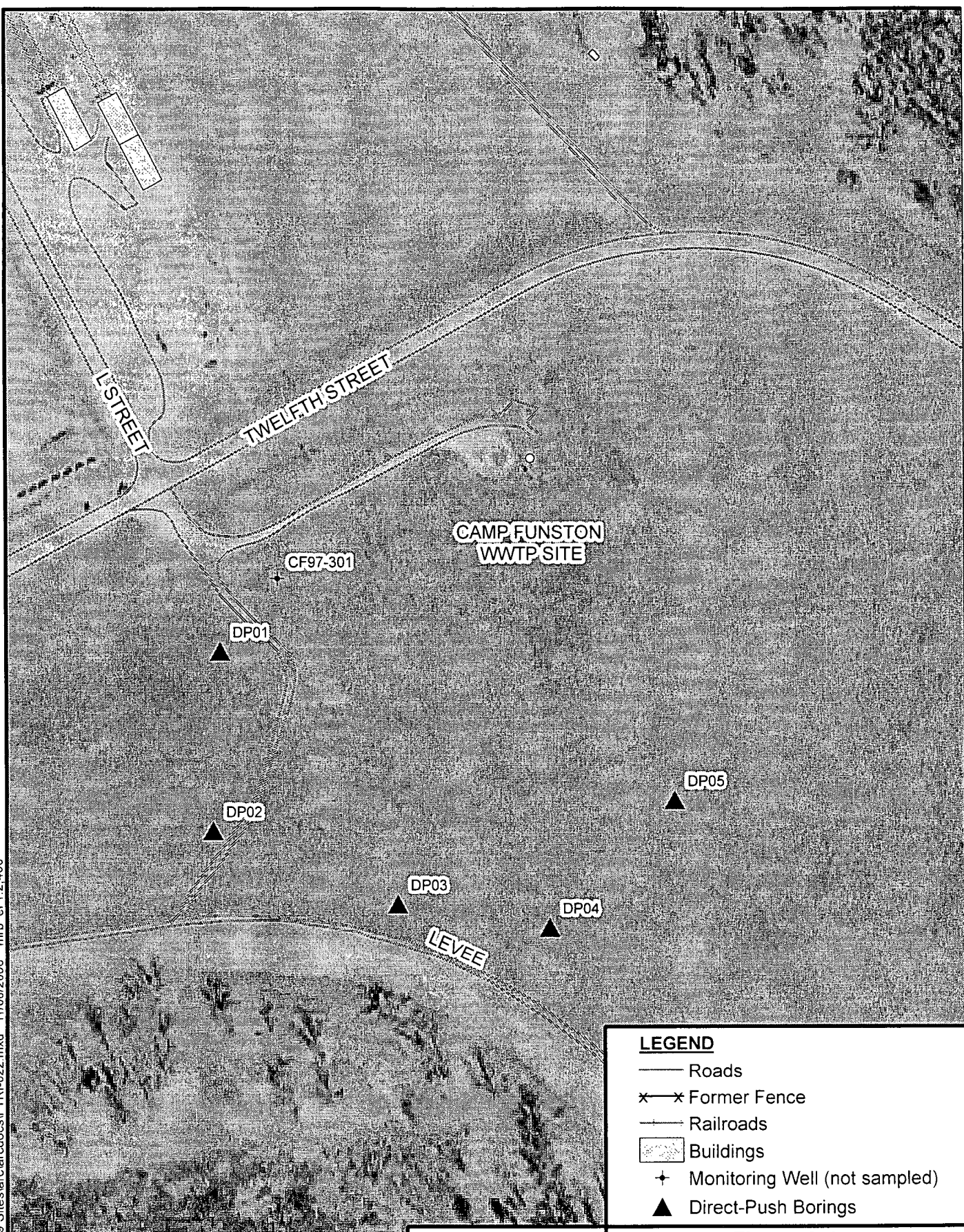
SCALE IN FEET

NORTH



Figure 2-8
FTRI-020 ESI Groundwater Detections
Industrial Wastewater System
North Wastewater Retention Ponds
ESI Report
Fort Riley, Kansas

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LEGEND

- Roads
- x-x Former Fence
- Railroads
- ▭ Buildings
- + Monitoring Well (not sampled)
- ▲ Direct-Push Borings

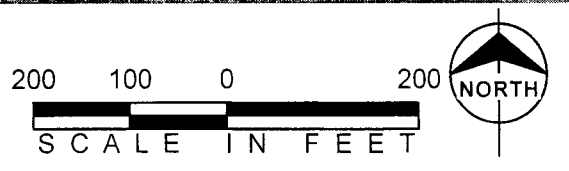
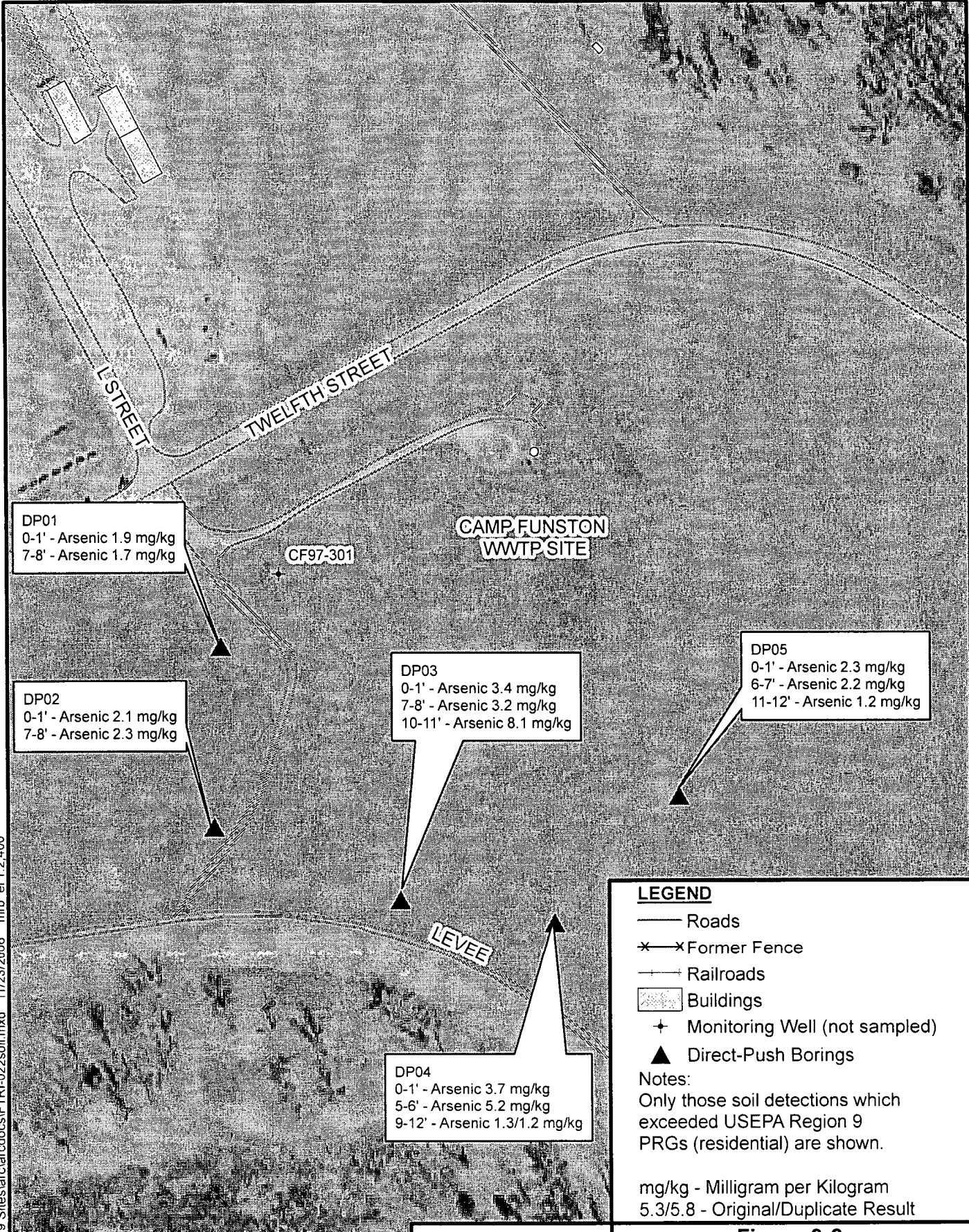


Figure 3-1
FTRI-022
 Camp Funston WWTP
 Sludge Drying Beds
 ESI Report
 Fort Riley, Kansas

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LEGEND

- Roads
- *—* Former Fence
- Railroads
- ▨ Buildings
- + Monitoring Well (not sampled)
- ▲ Direct-Push Borings

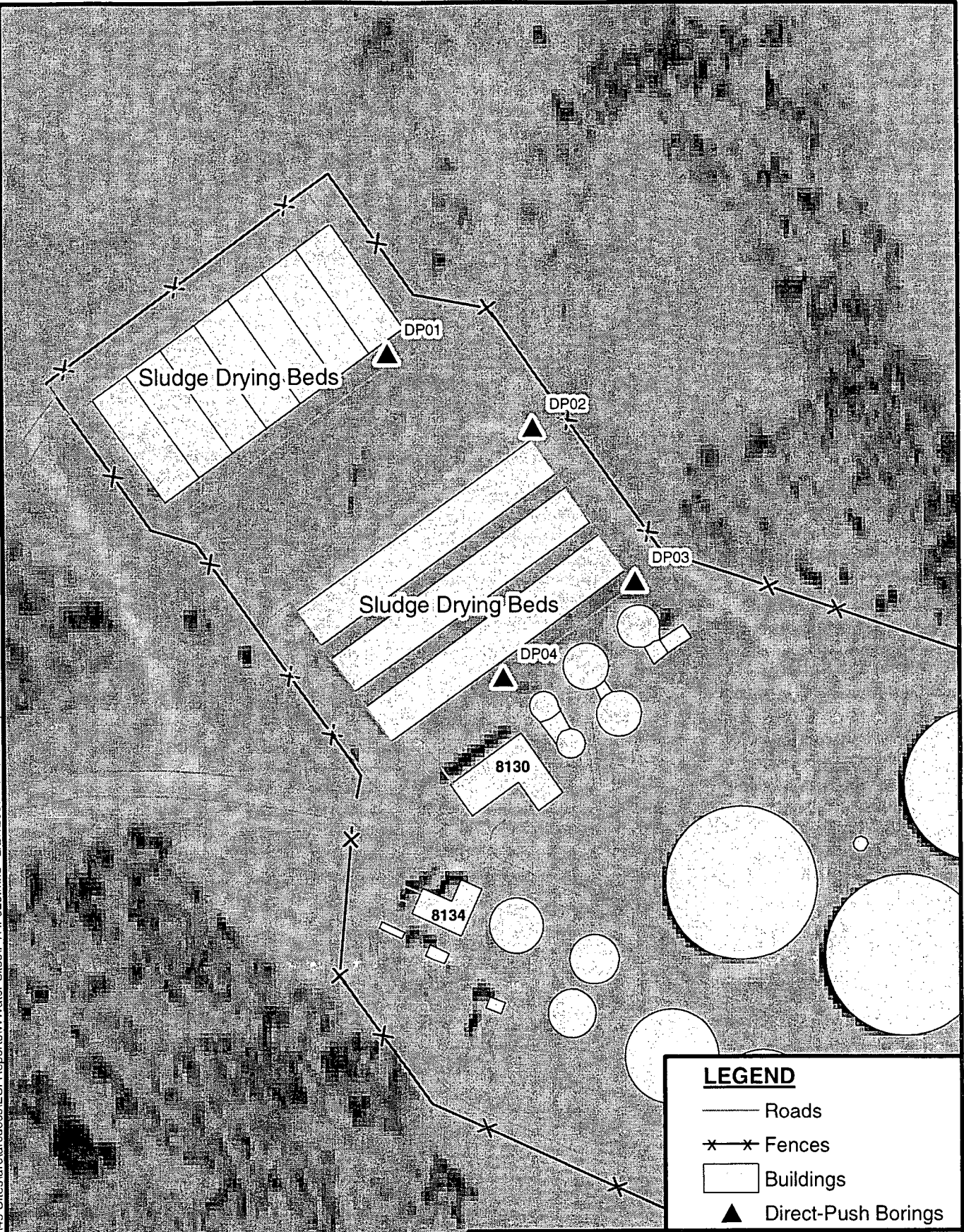
Notes:
Only those soil detections which exceeded USEPA Region 9 PRGs (residential) are shown.

mg/kg - Milligram per Kilogram
5.3/5.8 - Original/Duplicate Result



Figure 3-2
FTRI-022 ESI Soil Detections
Camp Funston WWTP
Sludge Drying Beds
ESI Report
Fort Riley, Kansas

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LEGEND

- Roads
- x-x Fences
- Buildings
- ▲ Direct-Push Borings

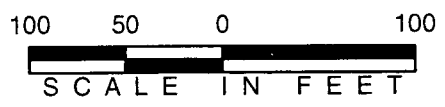
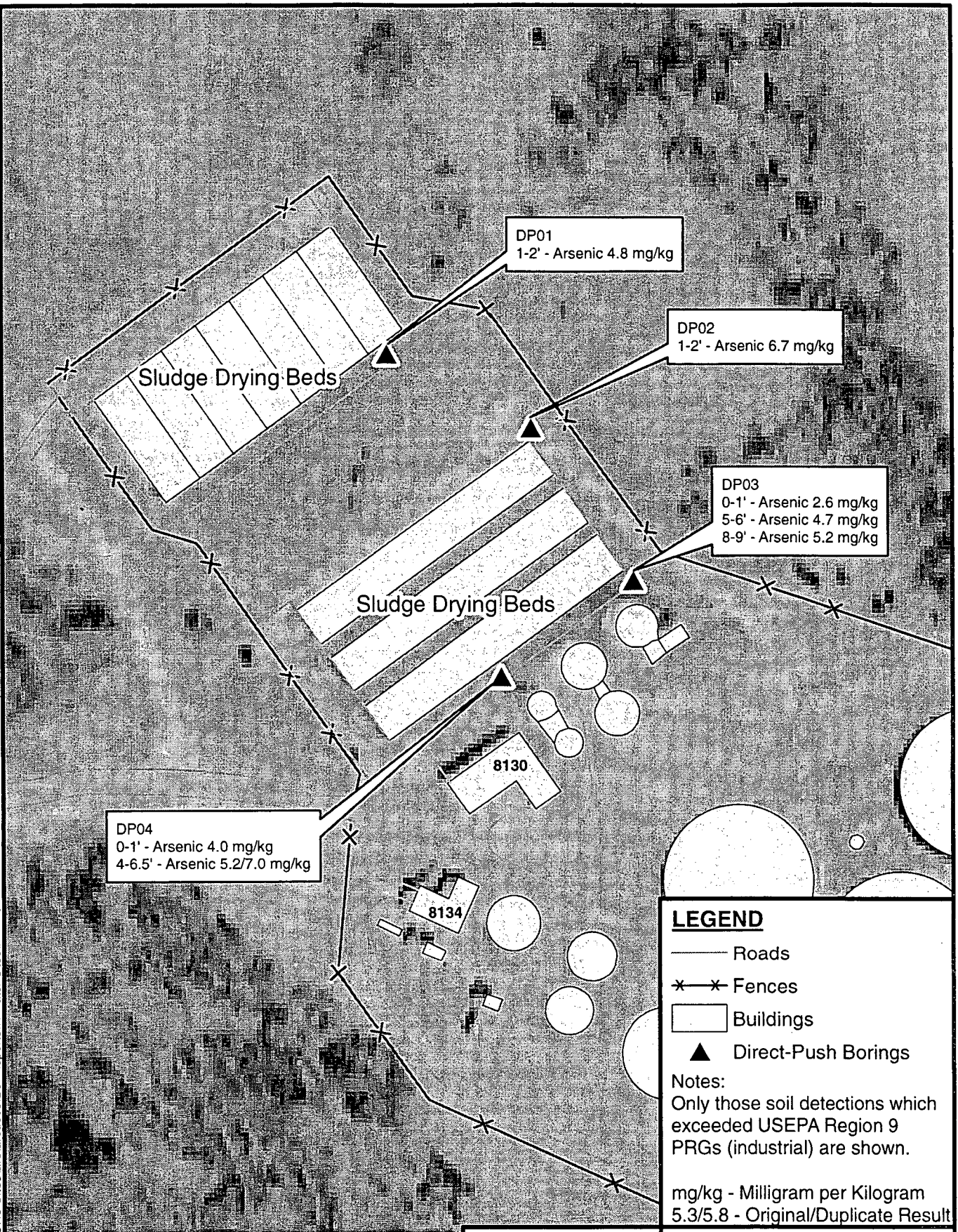


Figure 4-1
FTRI-023
 Custer Hill WWTP
 Sludge Drying Beds
 ESI Report
 Fort Riley, Kansas

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LEGEND

- Roads
- ✕✕ Fences
- ▭ Buildings
- ▲ Direct-Push Borings

Notes:

Only those soil detections which exceeded USEPA Region 9 PRGs (industrial) are shown.

mg/kg - Milligram per Kilogram
5.3/5.8 - Original/Duplicate Result

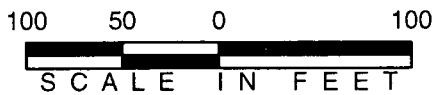
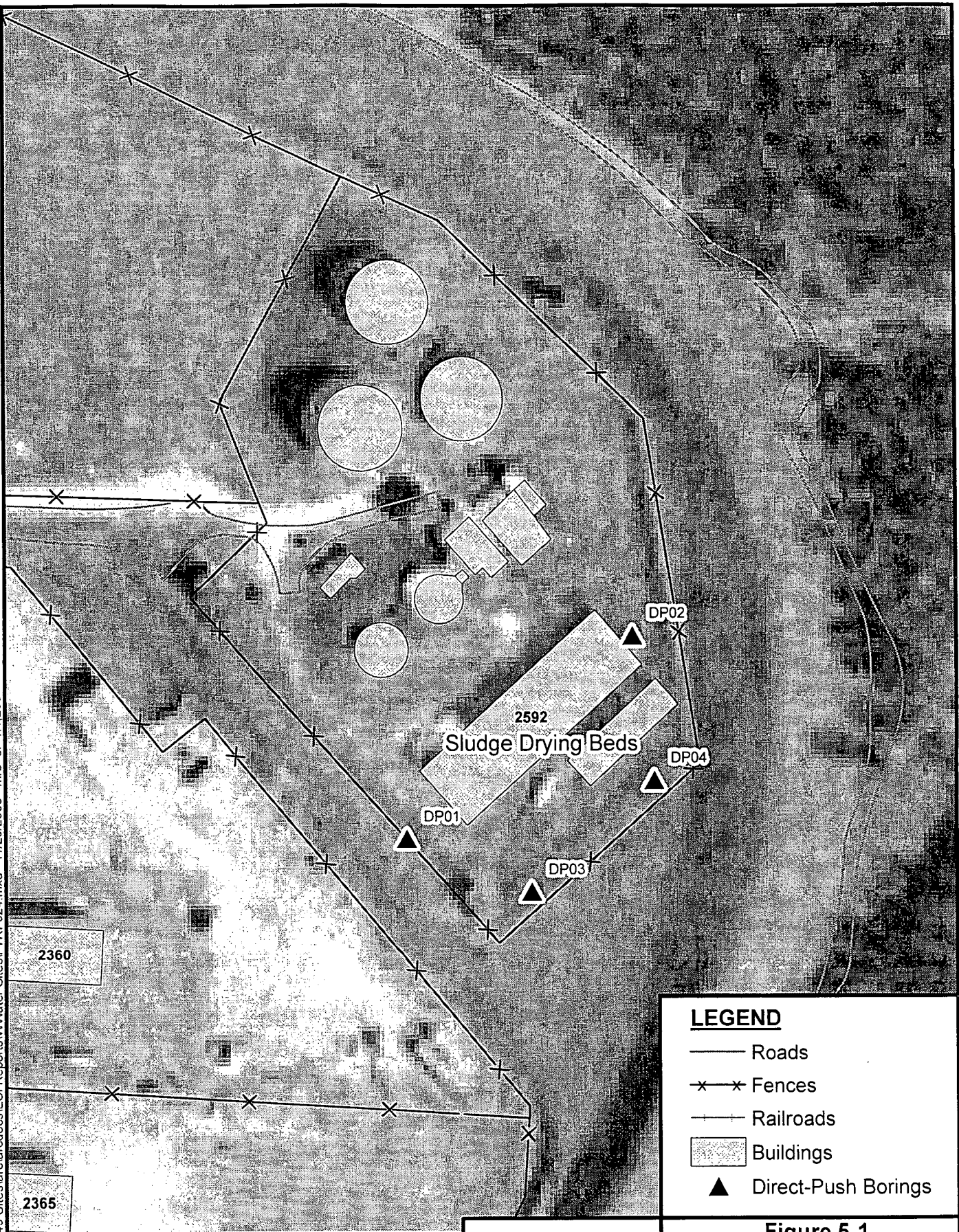


Figure 4-2
FTRI-023 ESI Soil Detections
Custer Hill WWTP
Sludge Drying Beds
ESI Report
Fort Riley, Kansas

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LEGEND

- Roads
- × × Fences
- +— Railroads
- ▭ Buildings
- ▲ Direct-Push Borings

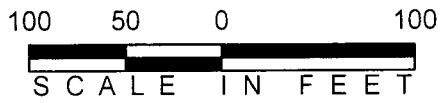
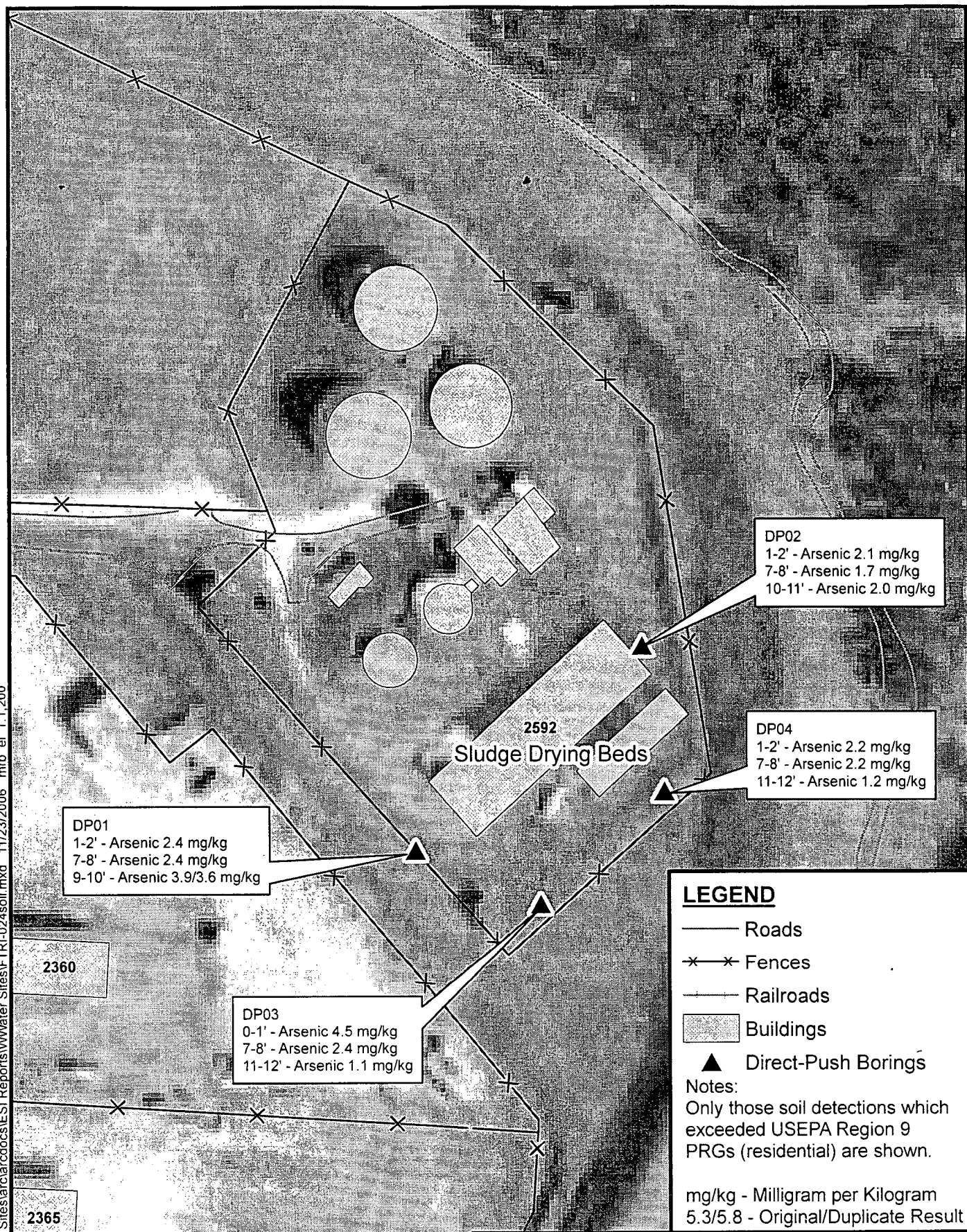


Figure 5-1
FTRI-024
Camp Forsyth WWTP
Sludge Drying Beds
ESI Report
Fort Riley, Kansas

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LEGEND

- Roads
- ✕✕ Fences
- +— Railroads
- ▭ Buildings
- ▲ Direct-Push Borings

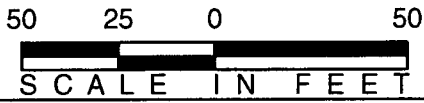
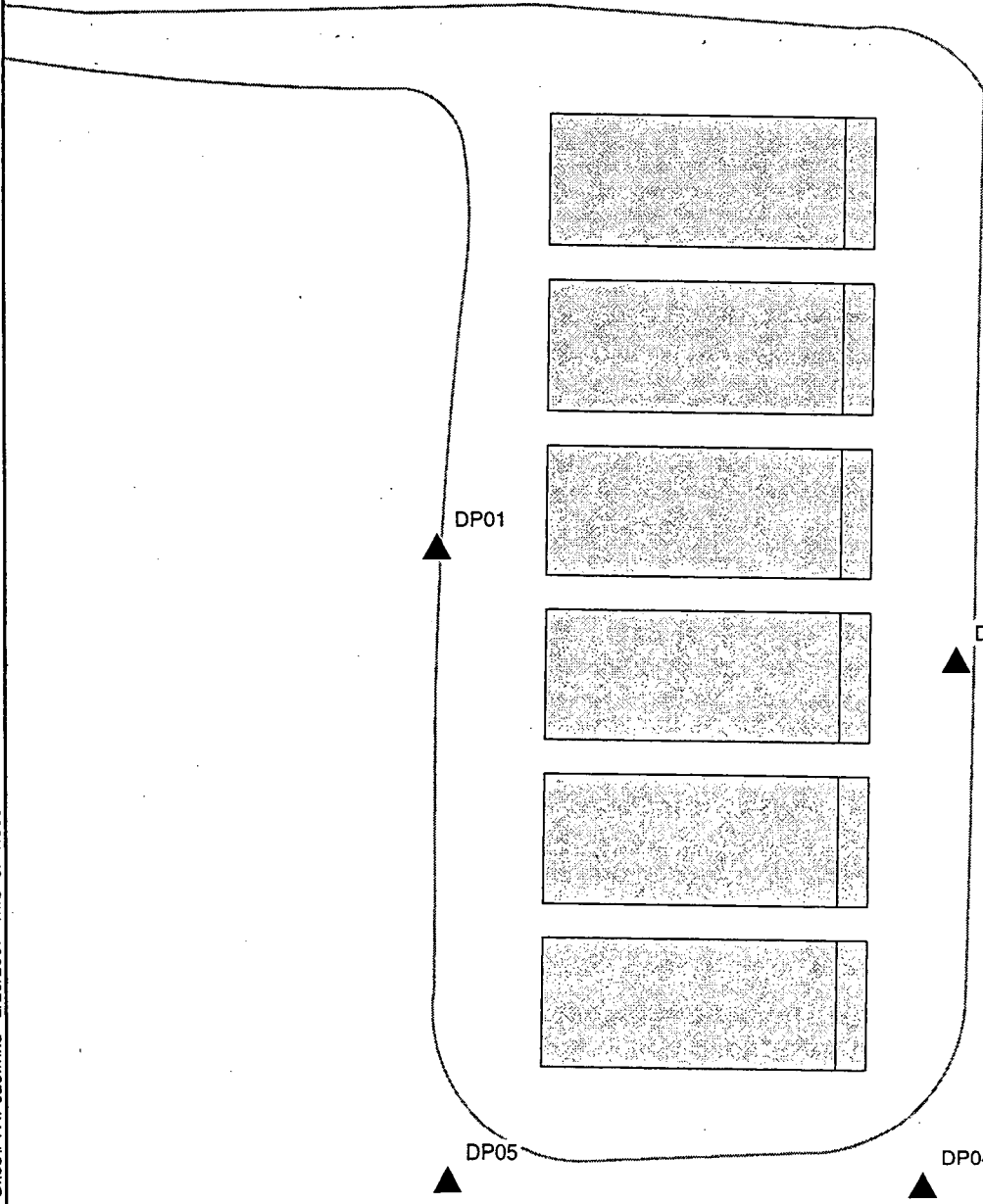
Notes:
Only those soil detections which exceeded USEPA Region 9 PRGs (residential) are shown.

mg/kg - Milligram per Kilogram
5.3/5.8 - Original/Duplicate Result



Figure 5-2
FTRI-024 ESI Soil Detections
Camp Forsyth WWTP
Sludge Drying Beds
ESI Report
Fort Riley, Kansas

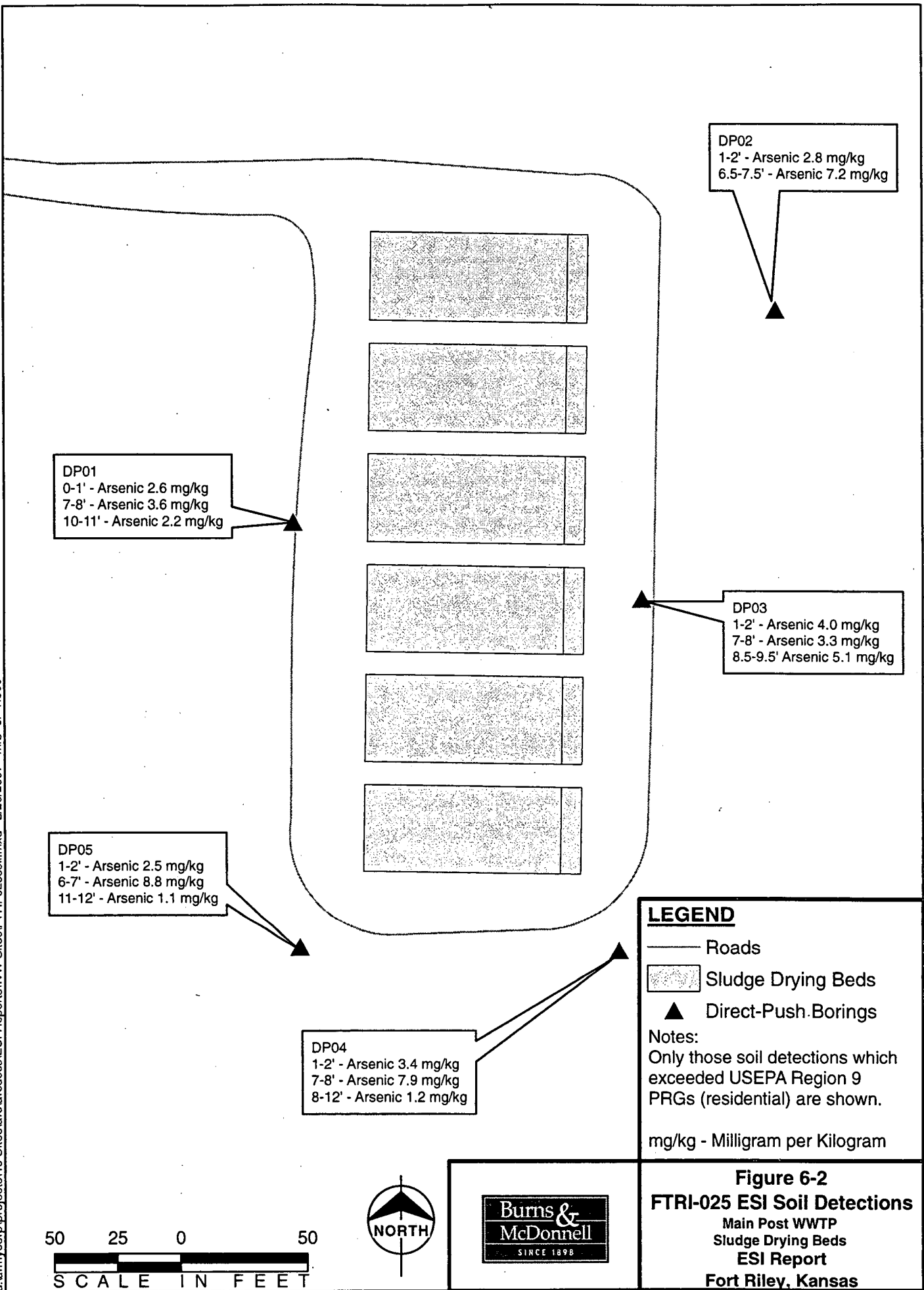
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LEGEND

- Roads
- ▨ Sludge Drying Beds
- ▲ Direct-Push Borings

Figure 6-1
FTRI-025
Main Post WWT
Sludge Drying Beds
ESI Report
Fort Riley, Kansas



LEGEND

- Roads
- Sludge Drying Beds
- Direct-Push Borings

Notes:
Only those soil detections which exceeded USEPA Region 9 PRGs (residential) are shown.

mg/kg - Milligram per Kilogram

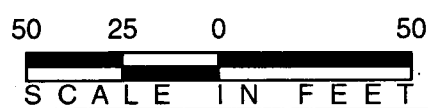
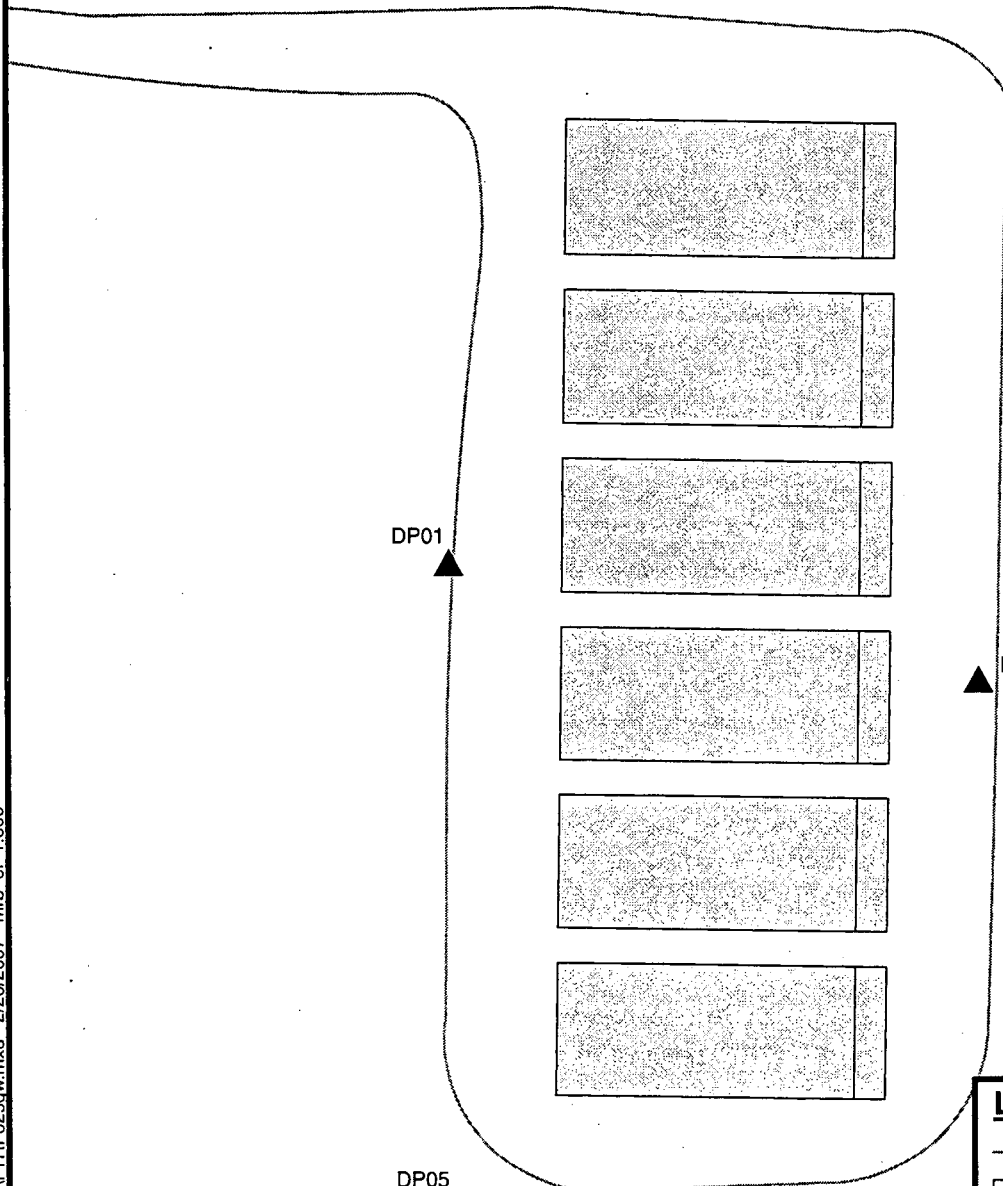


Figure 6-2
FTRI-025 ESI Soil Detections
Main Post WWTP
Sludge Drying Beds
ESI Report
Fort Riley, Kansas



DP04
Dissolved Arsenic 0.027/0.018 mg/L
Dissolved Lead 0.018 mg/L

LEGEND

- Roads
- ▨ Sludge Drying Beds
- ▲ Direct-Push Borings

Notes:
Only those groundwater detections which exceeded USEPA Region 9 PRGs (tap water) are shown.

mg/L - Milligram per Liter
5.3/5.8 - Original/Duplicate Result

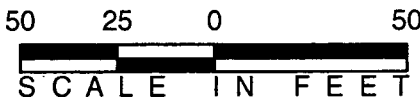
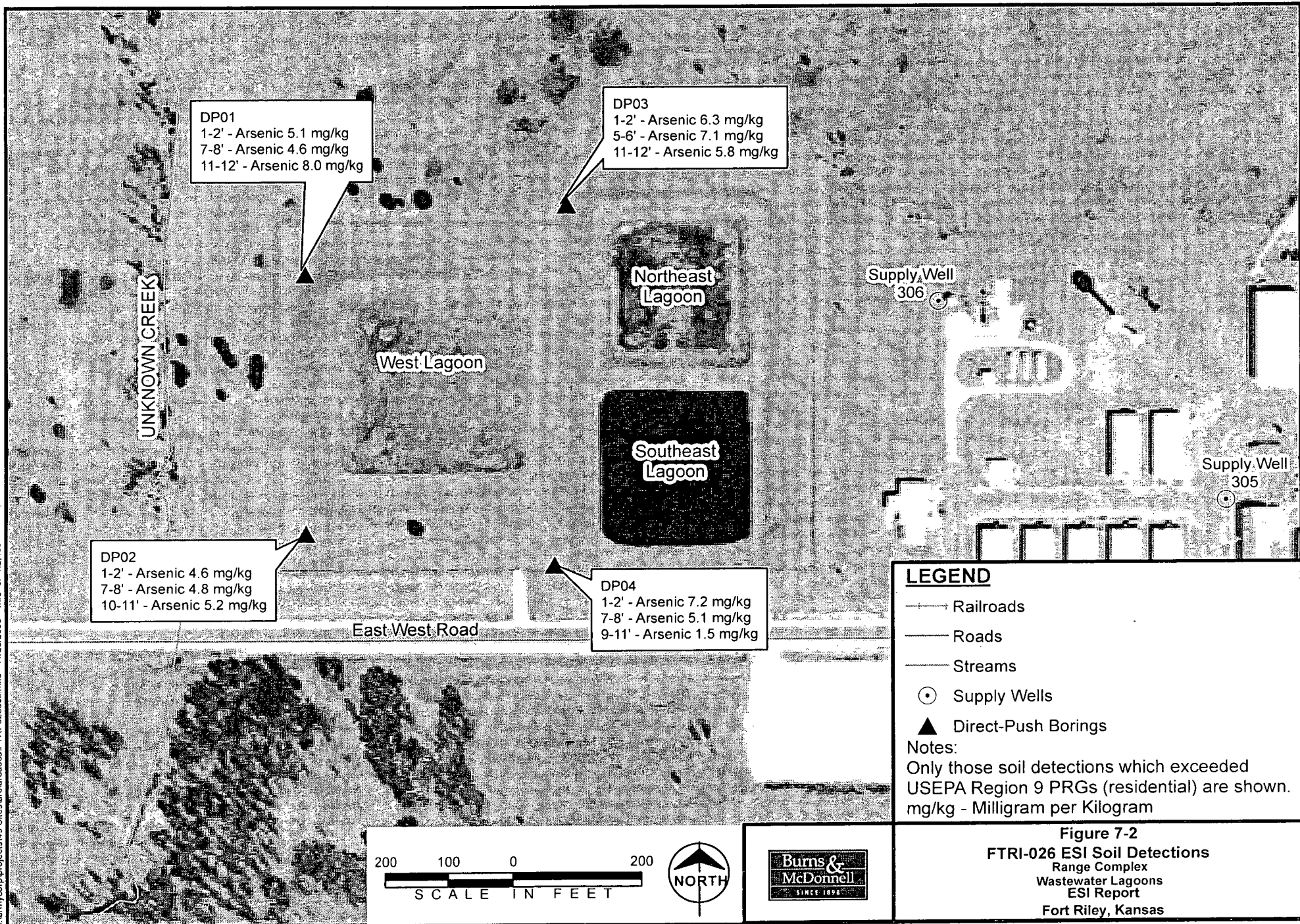


Figure 6-3
FTRI-025 ESI Groundwater Detections
Main Post WWTP
Sludge Drying Beds
ESI Report
Fort Riley, Kansas

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**Appendix A
Boring Logs**

Boring Logs
Industrial Wastewater System Custer Hill (FTRI-020)

HTW DRILLING LOG

HOLE NO.
FRT-020 DP01
 SHEET 1
 OF 3 SHEETS


1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>	
PROJECT <i>40747 EST 49 sites</i>		4. LOCATION <i>Fort Riley</i>	
5. NAME OF DRILLER <i>Eric Merhoff</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / D. sect. push</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 5400</i>		8. HOLE LOCATION <i>NA</i>
	<i>4' max core</i>		9. SURFACE ELEVATION <i>NA</i>
			10. DATE STARTED <i>7/14/06</i>
			11. DATE COMPLETED <i>7/14/06</i>
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>	
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>	
14. TOTAL DEPTH OF HOLE <i>22'</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>	
18. GEOTECHNICAL SAMPLES <i>0</i>	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>	VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>
	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>
	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	1	CLAY, very dark grayish brown (3/20YR) soft, damp, trace plasticity	0	3.7 4	5B01 0-2		
	2		0				
	3	CLAY, brown (4/310YR), stiff, damp, medium plasticity trace silt	0				
	4		0				
	5		0				#1110

HTW DRILLING LOG

HOLE NO.
FTRI-020 DPO1
 SHEET # **2**
 OF **3** SHEETS

PROJECT
40747 ESL 49 sites

INSPECTOR


ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME As Above	0	3.8 4	SB02 7-8		
	7	CLAY, dark yellowish brown (3/10YR) stiff, trace plasticity, trace clay	0				
	8		0				1115
	9	becomes medium ^w medium plasticity	0	3.8 4			
	10		0				
	11		0		SB03 11-12		
	12	CLAY, dark yellowish brown (4/6 10YR), soft, damp, highly plastic	0				1120
	13		0	4 4			
	14	CLAY, pale brown 6/5 10YR, soft medium plasticity, damp	0				

HTW DRILLING LOG

HOLE NO.
FTRI-020 DPO1
 SHEET *6*
 OF *3* SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	15	SAME AS ABOVE	0				
	16		0				
	17	CLAY, light yellowish brown (6/4104R) medium, damp, trace plasticity, w/ silt	0	3 / 3			1125
	18		0				
	19	CLAY, dark yellowish brown (6/4104R) soft, damp, non plastic	0				1130
	20		0	3 / 3			
	21	CLAY, gray (6/54) stiff, damp, non plastic, w/ weathered shale	0				
	22		0				1140
		Bottom of hole					
	20						

HTW DRILLING LOG

HOLE NO
FTRI-020 BPOZ

1. COMPANY NAME *Burns & McDonnell* 2. DRILLING SUBCONTRACTOR *EPS* SHEET 1 OF 3 SHEETS

PROJECT *40747 ESI 49 sites* 4. LOCATION *Fort Riley*

5. NAME OF DRILLER *Eric Markhoff* 6. MANUFACTURER'S DESIGNATION OF DRILL *Geoprobe / Direct Push*

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
Geoprobe 5400
4' macrocore
 8. HOLE LOCATION *NA*
 9. SURFACE ELEVATION *NA*
 10. DATE STARTED *7/14/06* 11. DATE COMPLETED *7/14/06*

12. OVERBURDEN THICKNESS *NA* 15. DEPTH GROUNDWATER ENCOUNTERED *NA*

13. DEPTH DRILLED INTO ROCK *NA* 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED *NA*

14. TOTAL DEPTH OF HOLE *19* 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) *NA*

18. GEOTECHNICAL SAMPLES
 DISTURBED *0* UNDISTURBED *0* 19. TOTAL NUMBER OF CORE BOXES *0*

20. SAMPLES FOR CHEMICAL ANALYSIS
 VOC *—* METALS *3* OTHER (SPECIFY) *—* OTHER (SPECIFY) *—* OTHER (SPECIFY) *—* 21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE
N/A BACKFILLED *Bentonite* MONITORING WELL *NA* OTHER (SPECIFY) *NA* 23. SIGNATURE OF INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, brown (1/3 to 1/2) medium damp, highly plastic	0		SB01 01		
	2		0	3.4 4			
	3		0				
	4	CLAY, dark yellowish brown (3/4 to 1) stiff, damp highly plastic.	0				1245
	5		0				

HTW DRILLING LOG

HOLE NO.
FTRI-020 DPOZ

PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

SHEET 2
OF 3 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 COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	5		0	3.7 / 4			
	6		0				
	7	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Limestone cobble</div> CLAY, gray (6/1 SY) soft, damp, non plastic	0		SB02 7-8		
	8						1250
	9	CLAY, brown (1/4 ZSYR) soft damp, non plastic 1/2 silt	0	3.7 / 4			
	10		0				
	11	SILT, light gray (7/10 YR) soft, damp, non plastic	0				
	12	SILT, dark yellowish brown (3/6 10YR) damp, medium, non plastic 1/2 clay	0		SB03 9-10		1255
	13		0				

HTW DRILLING LOG

HOLE NO.
FIRE-020 DFOZ

SHEET *3*
OF 3 SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		<i>SAME AS ABOVE</i>	0	<i>3/3</i>			
	<i>14</i>	<i>CLAY, dark reddish brown (3/3 5/8 YR) soft, damp, non plastic w/ silt</i>	0				
	<i>15</i>		0				<i>1300</i>
	<i>16</i>	<i>SILT, light gray (7/1 10 YR) soft, damp, non plastic, r silt</i>	0	<i>3/3</i>			
	<i>17</i>	<i>CLAY, dark reddish brown (3/3 5/4 YR) damp, medium, trace plastic, some silt</i>	0				
	<i>18</i>	<i>CLAY, olive gray (5/2 5 Y) stiff, damp, trace plastic trace shale pieces</i>	0				<i>1305</i>
	<i>19</i>	<i>Refusal bottom of hole</i>	0	<i>1/1</i>			

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP03

1. COMPANY NAME *Burns & McDonnell* 2. DRILLING SUBCONTRACTOR *EPS* SHEET 1 OF 2 SHEETS

PROJECT *40747 ESI 49 sites* 4. LOCATION *Fort Riley*

5. NAME OF DRILLER *Eric Merhoff* 6. MANUFACTURER'S DESIGNATION OF DRILL *Geoprobe/Direct Push*

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
Geoprobe 5400
4' macrocable

8. HOLE LOCATION *NA*

9. SURFACE ELEVATION *NA*

10. DATE STARTED *7/14/06* 11. DATE COMPLETED *7/14/06*

12. OVERBURDEN THICKNESS *NA* 15. DEPTH GROUNDWATER ENCOUNTERED *NA*

13. DEPTH DRILLED INTO ROCK *NA* 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED *NA*

14. TOTAL DEPTH OF HOLE *13* 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) *NA*

18. GEOTECHNICAL SAMPLES 19. TOTAL NUMBER OF CORE BOXES

0	DISTURBED 0	UNDISTURBED 0	0
---	----------------	------------------	---

20. SAMPLES FOR CHEMICAL ANALYSIS 21. TOTAL CORE RECOVERY %

3	VOC —	METALS 3	OTHER (SPECIFY) —	OTHER (SPECIFY) —	OTHER (SPECIFY) —	—
---	----------	-------------	----------------------	----------------------	----------------------	---

22. DISPOSITION OF HOLE 23. SIGNATURE OF INSPECTOR

NA	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	<i>[Signature]</i>
----	--------------------------------	------------------------------	------------------------------	--------------------

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		CLAY, brown (1/3 10YR) soft damp, medium plasticity	0		5601 0-1		
	1	CLAY very dark grayish brown (1/2 10YR) soft, damp, non plastic <i>limestone cobble</i>	0	2/4			
	2	CLAY, brown (1/3 10YR) stiff damp, non plastic <i>limestone cobble</i>	0				
	3	NO Recovery					
	4	CLAY, reddish brown (4/4 5YR) stiff damp, non plastic, some silt	0				1335
	5						

HTW DRILLING LOG

HOLE NO.
FTRI-020 DPO3
 SHEET # **2**
 OF **2** SHEETS

PROJECT 40747		INSPECTOR <i>[Signature]</i>					
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0		SB02		
	7	CLAY, light gray (1/5y) stiff damp, medium plasticity 1/5.H	0	2.8 4	6-7		
	8		0				1340
	9		0		SB03		
	10		0	3 3	10-11		
	11		0				1345
	12		0	1.7 2			
	13	Bottom of hole Refusal	0				

HTW DRILLING LOG

HOLE NO
FTRL-020 DP04
SHEET 01
OF 3 SHEETS

1 COMPANY NAME: Burns & McDonnell
2 DRILLING SUBCONTRACTOR: EPS

PROJECT: 40747 EST 49 sites
4 LOCATION: Fort Riley

5. NAME OF DRILLER: Eric Mehnoff
6 MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe / Direct Push

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Geoprobe 5400, 4" macroprobe
8. HOLE LOCATION: NA
9. SURFACE ELEVATION: NA
10. DATE STARTED: 7/14/06
11. DATE COMPLETED: 7/14/06

12. OVERBURDEN THICKNESS: NA
15. DEPTH GROUNDWATER ENCOUNTERED: NA

13. DEPTH DRILLED INTO ROCK: NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA

14. TOTAL DEPTH OF HOLE: 14.6
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA

18. GEOTECHNICAL SAMPLES: 0 DISTURBED, 0 UNDISTURBED
19. TOTAL NUMBER OF CORE BOXES: 0

20. SAMPLES FOR CHEMICAL ANALYSIS: 3
VOC: —, METALS: 3, OTHER (SPECIFY): —, OTHER (SPECIFY): —, OTHER (SPECIFY): —
21. TOTAL CORE RECOVERY: %

22. DISPOSITION OF HOLE: NA
BACKFILLED: Bentonite, MONITORING WELL: NA, OTHER (SPECIFY): NA
23. SIGNATURE OF INSPECTOR: [Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, very dark gray to brown (3/2 10YR) soft, damp, medium plasticity	0		5801 0-1		
	1	CLAY, brown (3/3 10YR) stiff, damp, trace plastic	0	3/4			
	2		0				
	3		0				
	4		0				1450
	5		0				

HTW DRILLING LOG

HOLE NO.
FTRI-020 DPOH
 SHEET **2**
 OF **3** SHEETS


PROJECT **40747** INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME As Above	0	3.8 4			
	7	CLAY, pld olive (6/3 SY) medium, damp, trace plasticity, w/silt	0		5802 7-8		
	8		0				1455
	9		0	4 4			
	10		0				
	11		0				
	12	CLAY, brownish yellow (6/6 10YR) soft, damp, highly plastic w/silt	0		5803 11-12		1500
	13	SILT, light gray (7/2 2.5Y) stiff, damp, non plastic trace clay	0	2 2.5			
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP01
 SHEET **03**
 OF **3** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR


ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME AS Above	0				1305
	5	Refusal					

HTW DRILLING LOG

HOLE NO.
FTRI-020 BPOS

1 COMPANY NAME *Burns + McDonnell* 2 DRILLING SUBCONTRACTOR *EPS* SHEET 1 OF 3 SHEETS

PROJECT *40747 EST 49 sites* 4. LOCATION *Fort Riley*

5. NAME OF DRILLER *Eric Merhoff* 6 MANUFACTURER'S DESIGNATION OF DRILL *Geoprobe / Direct Push*

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
Geoprobe 5400
4' macroprobe

8. HOLE LOCATION *NA*

9. SURFACE ELEVATION *NA*

10. DATE STARTED *7/17/06* 11. DATE COMPLETED *7/17/06*

12. OVERBURDEN THICKNESS *NA* 15. DEPTH GROUNDWATER ENCOUNTERED *NA*

13. DEPTH DRILLED INTO ROCK *NA* 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED *NA*

14. TOTAL DEPTH OF HOLE *20.2* 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) *NA*

18. GEOTECHNICAL SAMPLES 19. TOTAL NUMBER OF CORE BOXES

0	DISTURBED 0	UNDISTURBED 0	0
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20. SAMPLES FOR CHEMICAL ANALYSIS 21. TOTAL CORE RECOVERY %

3	VOC —	METALS 3	OTHER (SPECIFY) 0	OTHER (SPECIFY) 0	OTHER (SPECIFY) 0	%
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22. DISPOSITION OF HOLE 23. SIGNATURE OF INSPECTOR

NA	BACKFILLED <i>Bentonite</i>	MONITORING WELL NA	OTHER (SPECIFY) NA	
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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 COUNTS g	REMARKS h
	1	<i>Fill clay</i>	0	<i>4/4</i>	<i>SB01</i>		
	2	<i>CLAY, dark yellowish brown (3/4104R) medium, medium plasticity, damp</i>	0		SB01 <i>1-2</i>		
	3	<i>CLAY, dark brown (3/3104R) medium, medium plasticity damp</i>	0				
	4		0				<i>0830</i>
	5	<i>CLAY, very dark brown (3/2104R) stiff, medium plasticity damp</i>	0	<i>3/3</i>			

HTW DRILLING LOG

HOLE NO
FTRI-020 DP05
 SHEET **6**
 OF **3** SHEETS

PROJECT		INSPECTOR					
40747 ESI 49 sites		<i>Paul C.</i>					
ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	6	CLAY, slack (3/104R) stiff trace plastic	0		SB02 6-7		
	7		0				0835
	8	SILT, light yellowish brown (6/4104R) medium, damp, trace plasticity	0	3/3			
	9	CLAY, dark yellowish brown (3/4104R) soft, damp, highly plastic, trace silt	0				
	10	CLAY, pale brown, (6/3104R) damp, soft, highly plastic w/silt	0		SB03 9-10		0840
	11	CLAY, very dark brown (2/3104R) medium, highly plastic, damp	0	2.3 2.5			
	12		0				0850
	13		0				

HTW DRILLING LOG

HOLE NO
 FRI-020 DRS
 SHEET 03
 OF 3 SHEETS

PROJECT 40747 EST 49 sites

INSPECTOR *[Signature]*

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	14		0	32 / 35			
	15		0				
	16		0				
	16						0855
	17	CLAY, very dark grayish brown (3/2 104R) soft, damp highly plastic	0				
	17		0				
	18	CLAY, strong brown (4/6 7.54R) medium, damp, medium plasticity	0	4 / 4			
	18		0				
	19		0				
	19	shale cobbles					
	20						water
	20						0705
	20						0715
		Refusal bottom of hole					

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO
FIRE-020 0906

1. COMPANY NAME Burns & McDonnell 2. DRILLING SUBCONTRACTOR EPS SHEET 1 OF 2 SHEETS

PROJECT 40747 ESI 49 sites 4. LOCATION Fort Riley

5. NAME OF DRILLER Eric Merhoff 6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT Geoprobe 5400 8. HOLE LOCATION NA
4" macroprobe

9. SURFACE ELEVATION NA

10. DATE STARTED 7/17/06 11. DATE COMPLETED 7/17/06

12. OVERBURDEN THICKNESS NA 15. DEPTH GROUNDWATER ENCOUNTERED NA

13. DEPTH DRILLED INTO ROCK NA 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA

14. TOTAL DEPTH OF HOLE 10 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

18. GEOTECHNICAL SAMPLES
DISTURBED 0 UNDISTURBED 0 19. TOTAL NUMBER OF CORE BOXES 0

20. SAMPLES FOR CHEMICAL ANALYSIS
VOC — METALS 3 OTHER (SPECIFY) — OTHER (SPECIFY) — OTHER (SPECIFY) — 21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE NA BACKFILLED benlonite MONITORING WELL NA OTHER (SPECIFY) NA 23. SIGNATURE OF INSPECTOR [Signature]

22. DISPOSITION OF HOLE NA BACKFILLED benlonite MONITORING WELL NA OTHER (SPECIFY) NA 23. SIGNATURE OF INSPECTOR [Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		CLAY, fill	0				
	1	CLAY, dark brown (3/3 10YR) stiff, damp, medium plasticity, trace silt	0	4 1/4	SB01 1-2		
	2	CLAY, dark reddish brown (3/3 5YR) soft, damp, medium plasticity	0				
	3		0				
	4		0				0950
	5	CLAY, very dark grayish brown stiff, damp, non plastic ammonia odor	0	3.7 4	SB02 5-6		

HTW DRILLING LOG

HOLE NO
FTRI-020 DP06
 SHEET # **2**
 OF **2** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
Paul Lee

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	6		0				
	7		0				
	8	SILT, very pale brown (8/2104R) soft, damp; trace plastic	0				9955
	9	Shale	0	2/2	5503 9-10		
	10	CLAY, 7/6 yellow (7/6 104R) soft, damp, medium plasticity w/shale	0				1000
		Refusal Bottom of hole					

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP07
 SHEET 1
 OF 4 SHEETS

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR EPS			
PROJECT 40747 EST 49 sites		4. LOCATION Fort Riley			
5. NAME OF DRILLER Eric Merhoff		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION NA		9. SURFACE ELEVATION NA		
	10. DATE STARTED 7/17/06			11. DATE COMPLETED 7/17/06	
	12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED 23'		
	13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA		
14. TOTAL DEPTH OF HOLE 26'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA			
18. GEOTECHNICAL SAMPLES 6	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0		
20. SAMPLES FOR CHEMICAL ANALYSIS 3	VOC —	METALS 3	OTHER (SPECIFY) —	OTHER (SPECIFY) —	21. TOTAL CORE RECOVERY %
	22. DISPOSITION OF HOLE				
NA		BACKFILLED Bentonite	MONITORING WELL NA	OTHER (SPECIFY) NA	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	0	Fill					
	1	clay, brown (4/4 7.5 YR) medium damp, trace plasticity	0				
	2		0	39	5801		
	3		0	4	1-2		
	4		0				1175
	5		0				

HTW DRILLING LOG

HOLE NO.
FTRL-020 DP07
 SHEET **03**
 OF **4** SHEETS

PROJECT			INSPECTOR				
ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0		SB02		
	7		0	4 / 4	7-8		
	8	CLAY, strong brown (4/6 7.54R) soft, damp, medium plasticity, trace silt	0				1150
	9		0	2.7 / 4			
	10		0				
	11		0		SB03 11-12		
	12		0				1155
	13		0				
	14		0				

HTW DRILLING LOG

HOLE NO
FTRI-020 DP07

PROJECT
40747 ESI H9 Sites

INSPECTOR
[Signature]

SHEET 03
OF 4 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 COUNTS g	REMARKS h
		SAME AS ABOVE	0	$\frac{4}{4}$			
	15		0				
	16		0				1200
	17		0				
	18		0	$\frac{3.6}{4}$			
	19	CLAY, strong brown (1/6 2.5VR) soft, damp, highly plastic	0				
	20	CLAY, very dark gray (3/1 7.5VR) stiff, damp medium plastic	0				1205
	21		0	$\frac{3}{3}$			
	22		0				
	23	shale	0				1210 footer

HTW DRILLING LOG

HOLE NO
FTRI-020 DPO7

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

SHEET 4
OF 4 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 COUNTS g	REMARKS h
	24		0	$\frac{2.6}{2.8}$			
	25		0				
	26	Bottom of hole	0				1720

HTW DRILLING LOG

HOLE NO.
 FTAL-020 DP08
 SHEET 1
 OF 2 SHEETS

1 COMPANY NAME *Burns & McDonnell* 2 DRILLING SUBCONTRACTOR *EPS*

PROJECT *40747 EST 49 sites* 4 LOCATION *Fort Riley*

5 NAME OF DRILLER *Eric Merhoff* 6. MANUFACTURER'S DESIGNATION OF DRILL *Geoprobe / Direct Push*

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 5400</i>	8. HOLE LOCATION	<i>NA</i>		
	<i>41 macrocore</i>		9. SURFACE ELEVATION	<i>NA</i>	
				10. DATE STARTED	<i>11/7/06</i>
					11. DATE COMPLETED

12 OVERBURDEN THICKNESS *NA* 15 DEPTH GROUNDWATER ENCOUNTERED *NA*

13. DEPTH DRILLED INTO ROCK *NA* 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED *NA*

14. TOTAL DEPTH OF HOLE *9'* 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) *NA*

18. GEOTECHNICAL SAMPLES

0	DISTURBED 0	UNDISTURBED 0	19 TOTAL NUMBER OF CORE BOXES 0
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20 SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	<i>—</i>	<i>3</i>	<i>—</i>	<i>—</i>	<i>—</i>	

22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>
	<i>Bentonite</i>	<i>NA</i>	<i>NA</i>	

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<i>fill clay</i>	0				
	1	<i>CLAY, (1/4^{SYR}) reddish brown, stiff damp, trace plasticity</i>	0	<i>3-8 4</i>	<i>SB01 1-2</i>		
	2	<i>CLAY, dark reddish brown (3/2 SYR) stiff, damp non-plastic</i>	0				
	3	<i>CLAY, dark reddish brown (3/5 SYR) medium, trace plasticity</i>	0				
	4		0				<i>HIS</i>
	5		0				

HTW DRILLING LOG

HOLE NO.
FTR1-020 DP08
 SHEET **1**
 OF **2** SHEETS

PROJECT **40747 ESI 49 sites**

INSPECTOR *[Signature]*

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	6	CLAY, brown (1/3 10YR) soft damp, highly plastic	0	3/4	JB02 6-7		
	7		0				
	8	CLAY; very dark grayish brown (3/2 10YR) st. H, damp, non plastic	0	1/1.1	JB03 8-9		1920
	9	shale					1925
		Refusal Bottom of hole					

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP09
SHEET 1
OF 3 SHEETS

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>	
PROJECT <i>40747 EST 49 sites</i>		4. LOCATION <i>Fort Riley</i>	
5. NAME OF DRILLER <i>Eric Merhoff</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geopole / Direct Push</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geopole 5400</i>	8. HOLE LOCATION <i>NA</i>	
	<i>4 macrocone</i>	9. SURFACE ELEVATION <i>NA</i>	
		10. DATE STARTED <i>7/17/06</i>	11. DATE COMPLETED <i>7/17/06</i>
		12. OVERBURDEN THICKNESS <i>NA</i>	
13. DEPTH DRILLED INTO ROCK <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>21.1</i>	
14. TOTAL DEPTH OF HOLE <i>22</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>	
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>		18. GEOTECHNICAL SAMPLES	
18. GEOTECHNICAL SAMPLES <i>0</i>		DISTURBED <i>0</i>	UNDISTURBED <i>0</i>
19. TOTAL NUMBER OF CORE BOXES <i>0</i>		20. SAMPLES FOR CHEMICAL ANALYSIS	
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>		VOC <i>—</i>	METALS <i>3</i>
21. TOTAL CORE RECOVERY %		OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>		BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>
23. SIGNATURE OF INSPECTOR		OTHER (SPECIFY) <i>NA</i>	<i>[Signature]</i>

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		<i>Fill clay</i>	<i>0</i>				
	<i>1</i>	<i>CLAY, dark brown (3/10YR) stiff damp, non plastic</i>	<i>0</i>	<i>4/4</i>	<i>SB01 0.5-1.5</i>		
	<i>2</i>	<i>SILT, very pale brown (7/10YR) soft, damp, trace plastic w/clay</i>	<i>0</i>				
	<i>3</i>	<i>CLAY, dark yellowish brown (7.5/10YR) medium, damp, non plastic w/silt</i>	<i>0</i>				
	<i>4</i>	<i>CLAY, dark brown, (9/10YR) medium, damp, medium plasticity</i>	<i>0</i>				<i>1450</i>
	<i>5</i>	<i>CLAY, brown (9/10YR) medium damp, highly plastic w/silt</i>	<i>0</i>	<i>21/4</i>			

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP09
 SHEET **2**
 OF **3** SHEETS

PROJECT
40747 ESI 47 sites

INSPECTOR
[Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0				
	7		0		SB02 7-8		
	8		0				1455
	9		CLAY, very dark grayish brown (3/2104R) soft, damp highly plastic	0	2 1/2		
	10		0		SB03 9-10		1500
	11		0				
	12	SILT, pale olive (6/3 SY) soft, damp, trace plasticity trace clay	0				
	13		0				
	14	CLAY, olive (5/4 SY) soft, damp highly plastic w/ silt, & shale pebbles	0	3.7 4			1505

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP09

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

SHEET 03
OF 3 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 COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15	CLAY, dark brown (3/3 10YR) stiff, damp, highly plastic	0	2.3 / 2.5			
	16	CLAY, very dark grayish brown (3/2 10YR) stiff, damp, medium plasticity	0				
	17	CLAY, dark yellowish brown (3/6 10YR) stiff, damp, medium plasticity	0				1510
	18		0	3.1 / 3.5			
	19	CLAY, very dark gray, stiff damp, non plastic	0				
	20		0				1515
	21	Shale + gravel	0	1.6 / 2			water
	22		0				1525
		Bottom of hole					

HTW DRILLING LOG

HOLE NO.
FRI-020 DP10
SHEET 1
OF 3 SHEETS

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>	
PROJECT <i>40747 ESI 49 sites</i>		4. LOCATION <i>Ford Riley</i>	
5. NAME OF DRILLER <i>Eric Merhoff</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 5400</i>		8. HOLE LOCATION <i>NA</i>
	<i>4" macro core</i>		9. SURFACE ELEVATION <i>NA</i>
			10. DATE STARTED <i>7/18/06</i>
			11. DATE COMPLETED <i>7/18/06</i>
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>20.8</i>	
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>	
14. TOTAL DEPTH OF HOLE <i>20.8 20.8</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>	
18. GEOTECHNICAL SAMPLES <i>0</i>	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>	VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>
			OTHER (SPECIFY) <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>Temporary Piezometer</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	1	<i>Fill</i> CLAY, dark yellowish brown (3/4 10YR) medium, damp, medium plasticity	0	3.8 /4	SB01 1-2		
	2	CLAY, dark yellowish brown (7/4 10YR) stiff, damp, non plastic w/silt	0				
	3		0				
	4	SILT, pale brown (6/3 RYR) soft damp, trace plastic w/silt	0				0835
	5	CLAY, dark yellow brown (3/6 10YR) soft, damp, medium plasticity trace silt	0				

HTW DRILLING LOG

HOLE NO.
FTRL-020 DP10
 SHEET **02**
 OF **3** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0	3.7 / 4			
	7	CLAY, pale olive (6/4 10YR) soft, damp, highly plastic w/silt	0		5B02 7-8		
	8		0				0840
	9	CLAY, dark brown (3/3 10YR) stiff, damp, medium highly plastic, trace silt	0	3.2 / 4			
	10		0				
	11		0		5B03 11-12		
	12	CLAY, brown (4/3 10YR) medium, damp, medium plasticity, trace silt	0				0845
	13	CLAY, very dark grayish brown (3/2 10YR) stiff, damp medium plasticity	0	2.8 / 3			
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP10
 SHEET **03**
 OF **3** SHEETS

PROJECT **40747 EST 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15	CLAY, very dark brown (2/2104R) stiff, damp, trace plasticity trace silt	0				0850
	16			2.5 / 2.5			
	17	CLAY, very dark gray (3/1104R) stiff, damp, trace plasticity	0				
	18	CLAY, dark brown (3/3104R) medium, damp, medium plasticity	0				0900
	19		0	2.1 / 2.5			
	20	CLAY, pink brown (6/3104R) soft, damp, highly plastic w/ silt & shale	0	0.6 / 0.8			0910
	21	Refusal, will set piezometer				B	Water 0915

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP11
SHEET 1
OF 1 SHEETS

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>	
PROJECT <i>40747 EST 49 sites</i>		4. LOCATION <i>Faci Riley</i>	
5. NAME OF DRILLER <i>Eric Merhoff</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe Direct Push</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 5400</i>		8. HOLE LOCATION <i>NA</i>
	<i>4" MBR-00000</i>		9. SURFACE ELEVATION <i>NA</i>
			10. DATE STARTED <i>7/18/06</i>
			11. DATE COMPLETED <i>7/18/06</i>
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>27.2</i>	
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>	
14. TOTAL DEPTH OF HOLE <i>31</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>	
18. GEOTECHNICAL SAMPLES <i>0</i>	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>	VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>
	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>
	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		<i>top soil</i>					
		<i>CLAY, dark yellowish brown (3/4 10YR) stiff, damp, non plastic</i>	<i>0</i>		<i>S801</i>		
	<i>1</i>	<i>SILT, pale brown (6/3 10YR) soft damp, non plastic, trace clay</i>	<i>0</i>	<i>3.5</i>	<i>0-1</i>		
		<i>CLAY, dark yellowish brown (4/4 10YR) stiff, damp, non plastic w/silt</i>	<i>0</i>	<i>4</i>			
	<i>2</i>	<i>limestone cobble</i>	<i>0</i>				
		<i>CLAY, dark yellowish brown (4/4 10YR) stiff, damp, non plastic w/silt</i>	<i>0</i>				
	<i>3</i>		<i>0</i>				
			<i>0</i>				
	<i>4</i>	<i>CLAY, dark yellowish brown (4/4 10YR) medium, damp, medium plasticity, w/silt</i>	<i>0</i>				<i>1025</i>
	<i>5</i>		<i>0</i>				

HTW DRILLING LOG

HOLE NO.
FTRI-076 DP11

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

SHEET # 2
OF 4 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 COUNTS g	REMARKS h
	6	SAME AS ABOVE	0		SB02 6-7		
	7		0				
	8	CLAY, very dark grayish brown (3/2 10YR) stiff, damp highly plastic	0				1030
	9	CLAY, dark brown (3/3 10YR) medium, damp, highly plastic	0	3/3			
	10		0		SB03 9-5-10.5		
	11		0				1035
	12		0	2.7/3			
	13		0				
	14	CLAY, very dark gray (3/1 10YR) soft, damp; medium plasticity trace silt.	0				1040

HTW DRILLING LOG

HOLE NO.
FTR-020 GP11

PROJECT
40747 EST 49 sites

INSPECTOR
John W.

SHEET #3
OF 4 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 COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0	2 / 2.5			
	16	CLAY, very dark grayish brown (3/2 104R) stiff, damp non plastic	0				1050
	17		0	2.4 / 2.5			
	18		0				
	19		0				1100
	20	CLAY, dark grayish brown (4/2 104R) soft, damp medium plasticity w/silt	0	35 / 4			
	21		0				
	22		0				
	23		0				1105

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP11
 SHEET *89*
 OF 4 SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		<i>SAME AS ABOVE</i>	0				
	24		0	<i>3.8 / 4</i>			
	25	<i>CLAY, dark grayish brown (1/2 10YR) soft, damp, highly plastic, w/silt</i>	0				
	26		0				
	27	<i>Gravel wet</i>	0				<i>1125</i>
	28		0	<i>3.8 / 4</i>			
	29		0				
	30		0				
	31		0				<i>1125</i>
	32	<i>Bottom of hole</i>					

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP12

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>		SHEET 1 OF 3 SHEETS	
PROJECT <i>40747 EST 49 sites</i>			4. LOCATION <i>Fort Riley</i>		
5. NAME OF DRILLER <i>Eric Merhoff</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Concrete / Direct Push</i>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<i>Geopora 5400</i>		8. HOLE LOCATION <i>NA</i>	
		<i>4' macrocore</i>		9. SURFACE ELEVATION <i>NA</i>	
				10. DATE STARTED <i>7/18/06</i>	
				11. DATE COMPLETED <i>7/18/06</i>	
12. OVERBURDEN THICKNESS <i>NA</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>18.1</i>		
13. DEPTH DRILLED INTO ROCK <i>NA</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>		
14. TOTAL DEPTH OF HOLE <i>18.1 22</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>		
18. GEOTECHNICAL SAMPLES		DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>	
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<i>—</i>	<i>3</i>	<i>—</i>	<i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>		BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		<i>Topsoil</i>					
	<i>1</i>	<i>CLAY, dark yellowish brown (1/4 104R) stiff, damp, non plastic w/silt</i>	<i>0</i>	<i>3.7 / 4</i>	<i>SB01 1-2</i>		
	<i>2</i>		<i>0</i>				
	<i>3</i>	<i>SILT, light yellowish brown (6/4 104R) soft, damp, non plastic, trace clay</i>	<i>0</i>				
	<i>4</i>		<i>0</i>				<i>1200</i>
	<i>5</i>		<i>0</i>				

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP12
SHEET # 2
OF 3 SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	6		0	3.9 / 4			
	7	CLAY, brown (4/3 104R), stiff damp, medium plasticity trace silt	0		SB02 7.5-8		
	8	CLAY, very dark grayish brown (3/2 104R) medium damp, medium plasticity trace silt	0				1205
	9	CLAY, dark yellowish brown (3/4 104R) stiff, damp, medium plastic w/silt	0	3 / 3			
	10		0		SB03 9-10.5		
	11	CLAY, very dark gray (3/1 104R) stiff, damp, trace plastic trace silt	0				1210
	12		0	2.9 / 3			
	13		0				
	14	CLAY, very dark brown (2/2 104R) medium, damp, trace plastic, w/silt	0				1215

HTW DRILLING LOG

HOLE NO
FTR-020 DP12

SHEET # 3
OF 3 SHEETS

PROJECT
40747 EST. 49 sites

INSPECTOR
Just W

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0	3.6 / 4			
	16		0				
	17	CLAY, very dark gray (3/10YR) soft, damp, highly plastic some silt	0				
	18	gravel wet	0				1225 DNALR
	19		0	3.3 / 4			
	20		0				
	21	CLAY, brown (4/3 10YR) soft damp, highly plastic	0				
	22	Bottom of hole	0				1235

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP13

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>		SHEET 1 OF 4 SHEETS	
PROJECT <i>40747 EST 49 sites</i>			4. LOCATION <i>Fort Riley</i>		
5. NAME OF DRILLER <i>Eric Marhoff</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Benpave / Direct Push</i>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<i>Geopole 540C</i>		8. HOLE LOCATION <i>NA</i>	
		<i>4' macrocote</i>		9. SURFACE ELEVATION <i>NA</i>	
				10. DATE STARTED <i>7/14/06</i>	
				11. DATE COMPLETED <i>7/14/06</i>	
12. OVERBURDEN THICKNESS <i>NA</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>		
13. DEPTH DRILLED INTO ROCK <i>NA</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>		
14. TOTAL DEPTH OF HOLE <i>30</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>		
18. GEOTECHNICAL SAMPLES <i>6</i>		DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>	
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>		VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>		BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>
21. TOTAL CORE RECOVERY %					

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		<i>Fill</i>	<i>0</i>				
	<i>1</i>	<i>CLAY, very dark grayish brown (3/2104R) stiff, damp, medium plasticity</i>	<i>0</i>	<i>3.3 / 4</i>	<i>SBS1 1-2</i>		
	<i>2</i>	<i>CLAY, dark yellowish brown (7/4104R) stiff, damp, medium plasticity</i>	<i>0</i>				
	<i>3</i>		<i>0</i>				
	<i>4</i>		<i>0</i>				
	<i>5</i>		<i>0</i>				<i>0930</i>

HTW DRILLING LOG

HOLE NO. **13**
FTRI-020 DP16

PROJECT **40747 ESI 49 sites**

INSPECTOR *[Signature]*

SHEET **2**
 OF **4** 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 COUNTS g	REMARKS h
			0				
	6	CLAY, very dark grayish brown (3/3 10YR) medium, damp, trace plastic/silt	0	3.9 / 4			
		SAND, yellowish brown (5/6 10YR) medium grained	0				
	7	CLAY, very dark brown (7/2 10YR) medium damp, trace plastic	0		SB07 7-8		
	8						0935
	9	CLAY, very dark grayish brown (3/2 10YR) stiff, damp highly plastic	0	3.8 / 4			
	10		0		SB09 11-12		
	11	CLAY, dark brown (3/3 10YR) stiff, medium plasticity trace silt, damp	0				
	12						0940
	13	CLAY, dark yellowish brown (4/4 10YR) stiff, damp, highly plastic, w/ shale cobbles	0	3 / 3			
	14	end of shale cobbles	0				

HTW DRILLING LOG

HOLE NO.
FTR-020 DFL3

SHEET 03
OF 4 SHEETS

PROJECT 40747 ESI 49 sites

INSPECTOR *[Signature]*

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0				0950
	16	CLAY, yellowish brown (5/4 10YR) stiff, damp, highly plastic	0	2/2			
	17	CLAY, dark reddish brown (3/3 10YR), damp, stiff, medium plastic, trace silt	0				1900
	18		0				
	19	CLAY, olive yellow (2.5Y 6/6) soft, damp, highly plastic w/silt	0	3/3			
	20	CLAY, dark reddish brown (3/3 5YR) damp, soft, highly plastic	0				
	21	CLAY, grayish brown (1/2 5YR) soft, trace plastic, w/silt	0				1010
	22	CLAY, dark reddish brown (3/3 5YR) soft, non plastic w/silt, damp	0	3.2 / 3.5			
	23		0				

HTW DRILLING LOG

HOLE NO
FTRI-020 DP13
 SHEET **04**
 OF **4** SHEETS

PROJECT **40747 ESI 49 sites**

INSPECTOR *[Signature]*

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		CLAY, light grayish brown (1/2 2.5Y) damp, stiff, non plastic, w/silt	0				1020
	24		0				
	25		0	3.3 / 3.5			
	26		0				
	27	CLAY, dark reddish brown (3/3 5YR) medium, damp, trace plastic w/silt	0				1030
	28	CLAY, light grayish brown (1/2 2.5Y) damp, stiff, non plastic w/silt	0	3 / 3			
	29	CLAY, dark reddish brown (3/3 5YR) stiff, damp, non plastic, w/silt	0				
	30	Refusal Bottom of hole					1045
	31						
	32						

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP14
 SHEET 1
 OF 3 SHEETS

1 COMPANY NAME Burns + McDonnell		2 DRILLING SUBCONTRACTOR EPS				
PROJECT 40747 EST 49 sites		4. LOCATION EPS				
5. NAME OF DRILLER Eric Markhoff		6. MANUFACTURER'S DESIGNATION OF DRILL Geopole / Direct Push				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geopole 5400		8. HOLE LOCATION NA			
	4" macrocore					
9. SURFACE ELEVATION NA		10. DATE STARTED 7/13/06	11. DATE COMPLETED 7/13/06			
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED NA				
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA				
14. TOTAL DEPTH OF HOLE 18		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA				
18. GEOTECHNICAL SAMPLES 0	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0			
20. SAMPLES FOR CHEMICAL ANALYSIS 3	VOC —	METALS 3	OTHER (SPECIFY) —	OTHER (SPECIFY) —	OTHER (SPECIFY) —	21. TOTAL CORE RECOVERY %
	22. DISPOSITION OF HOLE NA					
BACKFILLED Bentonite		MONITORING WELL NA	OTHER (SPECIFY) NA	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Topsoil	0				
	1'	CLAY, dark brown (3/3 104R), damp stiff, highly plastic, trace silt	0	37 / 4	5B01 / 1-2		
	2'		0				
	3'	CLAY, very dark grayish brown (3/2 104R) stiff, trace plastic 1/2 silt	0				
	4'		0				1100
	5'		0				

HTW DRILLING LOG

HOLE NO.
FTRZ-020 DP14

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

SHEET # 2
OF 3 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 COUNTS g	REMARKS h
	6	SAME AS ABOVE	0				
	7	CLAY, brown (1/3 10YR) damp, stiff, medium plasticity w/ silt	0	3.8 / 4	S802 6-7		
	8		0				1105
	9	CLAY, dark brown (3/3 10YR) damp stiff, highly plastic,	0				
	10	CLAY, dark yellowish brown (4/4 10YR) medium, highly plastic, trace silt,	0	4 / 4	S803 11-12		
	11		0				
	12	shale & quartz cobbles	0				1115
	13		0	3 / 3			
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP14
 SHEET **3**
 OF **3** SHEETS

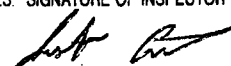
PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		CLAY, very pale brown (1/2-10YR) damp, soft, medium plastic	0				
	15	CLAY, dark reddish brown (5YR) damp, medium, trace plasticity, trace silt	0				115
	16		0	3/3			
	17	CLAY, reddish brown (4.5YR) medium, medium plasticity, damp, trace silt, trace shale cobbles	0				
	18	Refusal Bottom of hole	0				1120
	19						

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP15
 SHEET 1
 OF 2 SHEETS

1. COMPANY NAME Burns + McDonnell		2. DRILLING SUBCONTRACTOR EPS		3. HOLE NO. FTRI-020 DP15			
PROJECT 40747 EPS 49 sites			4. LOCATION Fort Riley				
5. NAME OF DRILLER Eric Marchoff			6. MANUFACTURER'S DESIGNATION OF DRILL Genproba / Direct Push				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION NA		9. SURFACE ELEVATION NA			
		10. DATE STARTED 7/13/06				11. DATE COMPLETED 7/13/06	
		12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED NA		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
		13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA			
14. TOTAL DEPTH OF HOLE 11.5							
18. GEOTECHNICAL SAMPLES 0		DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0			
20. SAMPLES FOR CHEMICAL ANALYSIS 3		VOC —	METALS 3	OTHER (SPECIFY) —	OTHER (SPECIFY) —		
		OTHER (SPECIFY) —	OTHER (SPECIFY) —	21. TOTAL CORE RECOVERY %			
22. DISPOSITION OF HOLE NA		BACKFILLED Bentonite	MONITORING WELL NA	OTHER (SPECIFY) NA	23. SIGNATURE OF INSPECTOR 		

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Fill	0				
	1	CLAY, dark gray brown (3/310YR) stiff, damp, trace plastic trace silt	0	4/4	SB01 1-2		
	2		0				
	3		0				
	4		0				1145
	5		0				

HTW DRILLING LOG

HOLE NO
FTRI-020 0P15
 SHEET **02**
 OF **2** SHEETS

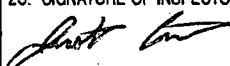
PROJECT
40747 EPS 49 sites

INSPECTOR
[Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0				
	7	CLAY, brown (1/3 10VR) st. ff medium plasticity, w/ shale cobbles	0	4/4	5802 7-8		
	8	CLAY, dark brown (3/3 10VR) st. ff, non plastic, damp trace silt	0				1150
	9		0	3.5 3.5			
	10		0		5803 10-11		
	11	CLAY; reddish brown (1/4 5VR) soft, damp, non plastic w/ silt, trace shale cobbles	0				1155
	12	Refusal bottom of hole					

HTW DRILLING LOG

HOLE NO.
FTRI-020 DF16
 SHEET 1
 OF 6 SHEETS

1. COMPANY NAME Burns + McDonnell		2. DRILLING SUBCONTRACTOR EPS	
PROJECT 40747 EST 49 sites		4. LOCATION EPS	
5. NAME OF DRILLER Eric Merhoff		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 5400		8. HOLE LOCATION NA
	4" macrocore		9. SURFACE ELEVATION NA
			10. DATE STARTED 7/13/06
			11. DATE COMPLETED 7/13/06
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED 40.7	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 41		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0
20. SAMPLES FOR CHEMICAL ANALYSIS 3	VOC —	METALS 3	OTHER (SPECIFY) —
	OTHER (SPECIFY) —	OTHER (SPECIFY) —	21. TOTAL CORE RECOVERY % —
22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL Temporary Piezometer	23. SIGNATURE OF INSPECTOR 
	OTHER (SPECIFY) NA		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Fill	0	3.5 4	S801 1-2		
	1	CLAY, very dark brown (1/2 stiff) damp, medium plasticity	0				
	2	CLAY, brown, (4/5 10YR), medium damp, highly plastic	0				
	3		0				
	4	CLAY, very dark gray (3/10YR) medium, medium plasticity, trace silt, damp	0				1250
	5		0				

HTW DRILLING LOG

HOLE NO.
FTRL-020 DP16
 SHEET **2**
 OF **6** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	6	CLAY, very dark grayish brown (2/210YR) damp, medium, medium plasticity	0	4 / 4	5802 7-8		
	7		0				
	8	CLAY, brown (4/310YR) damp stiff, non trace plastic trace silt	0				1253
	9		0				
	10		0	4 / 4			
	11	CLAY, dark grayish (brown 7/2 10YR) damp, medium, highly plastic trace silt	0		5803 105-115		
	12	CLAY, brown (4/310YR) damp soft, highly plastic,	0				1300
	13		0	3.4 / 4			
	14		0				

HTW DRILLING LOG

HOLE NO
FTR-020 DF16

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

SHEET #3
OF 6 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 COUNTS g	REMARKS h
	15	SAME AS ABOVE	0				1310
	16	CLAY, dark yellowish brown 4/4 10YR; soft, damp, highly plastic	0	3 / 3			
	17		0				
	18	CLAY, pale brown (6/9 10YR) stiff, damp, non plastic w/ silt.	0				1315
	19		0	28 / 3			
	20	CLAY, dark reddish brown 3/4 5YR; stiff, damp, trace plastic, with silt	0				
	21		0				1320
	22		0	3.1 / 4			
	23		0				

HTW DRILLING LOG

HOLE NO
FTRI-020 DF16
 SHEET **e 4**
 OF **6** SHEETS

PROJECT **40747 ESI 49 sites**

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	24		0				
	25	CLAY, light olive gray (9/25Y) medium, medium plastic w/silt, damp And clay dark reddish brown 3/4 5YR	0				1340
	26		0	4/4			
	27		0				
	28		0				
	29		0				1400
	30		0	3.1/4			
	31		0				
	32		0				

HTW DRILLING LOG

HOLE NO.
FTR-020 0P16

SHEET 05
OF 6 SHEETS

PROJECT
40747 EST. 49 sites

INSPECTOR
John [unclear]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	53						1420
			0				
	34		0	2.8 / 3			
			0				
	35	CLAY, pale olive (64 54) soft, highly plastic, some silt	0				
	36						1435
			0				
	37		0	3.6 / 4			
	38	CLAY, olive yellow (76 254) soft, non trace plastic, some silt	0				
			0				
	39						
			0				
	40						1450
			0	1 / 1			
		SAND lens					water

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO.
FTRI-020 DP16

PROJECT 40747 ESI 49 sites

INSPECTOR *[Signature]*

SHEET 06
OF 6 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 COUNTS g	REMARKS h
	41	CLAY, yellow (7/25%) wet Soft, highly plastic, w/ sand + silt	0				1505
		Refusal set temporary piezometer Bottom of hole					

HTW DRILLING LOG

HOLE NO.
DF FRI-020 DP17

1. COMPANY NAME *Burns & McDonnell* 2. DRILLING SUBCONTRACTOR *EPS* SHEET 1 OF 2 SHEETS

PROJECT *40747 EST 49 sites* 4. LOCATION *Fort Riley*

5. NAME OF DRILLER *Eric Merhoff* 6. MANUFACTURER'S DESIGNATION OF DRILL *MR Geoprobe / Direct Push*

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
Geoprobe 5400 8. HOLE LOCATION *NA*
7' MASSENADE

9. SURFACE ELEVATION *NA*

10. DATE STARTED *7/13/06* 11. DATE COMPLETED *7/13/06*

12. OVERBURDEN THICKNESS *6'* 15. DEPTH GROUNDWATER ENCOUNTERED *NA*

13. DEPTH DRILLED INTO ROCK *NA* 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED *NA*

14. TOTAL DEPTH OF HOLE *6'* 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) *NA*

18. GEOTECHNICAL SAMPLES 19. TOTAL NUMBER OF CORE BOXES

DISTURBED	UNDISTURBED	
<i>0</i>	<i>0</i>	<i>0</i>

20. SAMPLES FOR CHEMICAL ANALYSIS 21. TOTAL CORE RECOVERY %

VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	
<i>2</i>	<i>2</i>	<i>—</i>	<i>—</i>	<i>—</i>	<i>%</i>

22. DISPOSITION OF HOLE 23. SIGNATURE OF INSPECTOR

BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	
<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>[Signature]</i>

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
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		<i>CLAY, dark brown 7/8 104R damp, st. ff, medium plasticity</i>	<i>0</i>				
<i>1</i>	<i>1</i>	<i>CLAY, dark yellowish brown (1/6 104R) damp, st. ff, medium plasticity, trace silt</i>	<i>0</i>	<i>3.5 / 4</i>	<i>SBD1 1-2</i>		
<i>2</i>	<i>2</i>		<i>0</i>				
<i>3</i>	<i>3</i>		<i>0</i>				
<i>4</i>	<i>4</i>		<i>0</i>				<i>0825</i>
<i>5</i>	<i>5</i>		<i>0</i>	<i>1 1/2</i>			

HTW DRILLING LOG

HOLE NO
FTRI-020 0F17
SHEET *02*
OF *2* SHEETS

PROJECT *40747 EST 49 sites*

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		<i>SAME AS ABOVE</i>	<i>0</i>		<i>S802 5-6</i>		
	<i>6</i>	<i>Weathered bedrock</i>	<i>0</i>				<i>0630</i>
		<i>Refusal Bottom of hole</i>					

HTW DRILLING LOG

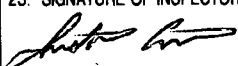
HOLE NO
FRI-020 DP20

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>		SHEET 1 OF 1 SHEETS	
PROJECT <i>40747 EST. 49 sites</i>			4. LOCATION <i>Fort Riley</i>		
5. NAME OF DRILLER <i>Eric Merhoff</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe Direct Push</i>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<i>Geoprobe 5400</i>		8. HOLE LOCATION <i>NA</i>	
		<i>4' MACROCORE</i>		9. SURFACE ELEVATION <i>NA</i>	
				10. DATE STARTED <i>7/13/06</i>	
				11. DATE COMPLETED <i>7/13/06</i>	
12. OVERBURDEN THICKNESS <i>4</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>		
13. DEPTH DRILLED INTO ROCK <i>NA</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>		
14. TOTAL DEPTH OF HOLE <i>4</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>		
18. GEOTECHNICAL SAMPLES		DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>	
20. SAMPLES FOR CHEMICAL ANALYSIS <i>1</i>		VOC <i>—</i>	METALS <i>1</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>
		OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	21. TOTAL CORE RECOVERY %
22. DISPOSITION OF HOLE <i>NA</i>		BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	1	CLAY, dark brown (3/10YR) soft, damp medium plasticity	0				
	1	CLAY, dark yellowish brown (4/10YR) medium, highly plastic, damp	0				
	2	CLAY, very dark brown (3/2 10YR) stiff, damp medium plastic	0	3.7 4	SB02 1-2		
	3	CLAY, very pale brown (9/2 10YR) soft, medium plastic, damp	0				
	3	weathered bedrock	0				
	4	Refusal bottom of hole	0				1505

HTW DRILLING LOG

HOLE NO.
FTRI-020 DFI8
 SHEET 1
 OF 2 SHEETS

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR EPS		
PROJECT 40747 ESI 49 silos		4. LOCATION Fort Riley		
5. NAME OF DRILLER Eric Merhoff		6. MANUFACTURER'S DESIGNATION OF DRILL Geopack / Direct Push		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geopack 5400		8. HOLE LOCATION NA	
	4' macro.012			
9. SURFACE ELEVATION NA		10. DATE STARTED 7/13/06	11. DATE COMPLETED 7/13/06	
12. OVERBURDEN THICKNESS 7		15. DEPTH GROUNDWATER ENCOUNTERED NA		
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA		
14. TOTAL DEPTH OF HOLE 7		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA		
18. GEOTECHNICAL SAMPLES	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0	
20. SAMPLES FOR CHEMICAL ANALYSIS 2	VOC —	METALS 2	OTHER (SPECIFY) —	21. TOTAL CORE RECOVERY % —
22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL NA	OTHER (SPECIFY) NA	23. SIGNATURE OF INSPECTOR 

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	1	CLAY, brown (4/3 10YR) medium medium plasticity, trace grass roots	0				
	1	CLAY, yellowish brown (5/8 10YR) stiff, medium plasticity, trace silt	0	3.3 / 4	SB01 0-2		
	2		0				
	3		0				
	4		0				
	5		0				0855

HTW DRILLING LOG

HOLE NO.
FTAL-020 6219
 SHEET **2**
 OF **2** SHEETS

PROJECT
40747 EST. 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0	$\frac{3}{13}$	SD02 6-7		
	7	<u>WEATHERED MATERIALS</u>	0				0900

HTW DRILLING LOG

HOLE NO
FRI-020 DP19
 SHEET **1**
 OF 2 SHEETS

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR EPS	
PROJECT 40747 EST 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER Eric Markhoff		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 5400		8. HOLE LOCATION NA
	1/2" macro core		9. SURFACE ELEVATION NA
			10. DATE STARTED 7/13/06
			11. DATE COMPLETED 7/13/06
12. OVERBURDEN THICKNESS 7.5		15. DEPTH GROUNDWATER ENCOUNTERED NA	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 7.5		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC —	METALS 2	OTHER (SPECIFY) —
			OTHER (SPECIFY) —
			OTHER (SPECIFY) —
21. TOTAL CORE RECOVERY %			
22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL NA	OTHER (SPECIFY) NA
23. SIGNATURE OF INSPECTOR <i>[Signature]</i>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		CLAY, brown (1/3 (10YR) medium medium plasticity, damp	0				
	1	CLAY, dark yellowish brown (3/4 (10YR) medium, medium plasticity, damp	0	3.7 4	SB01 0-1		
	2		0				
	3		0				
	4		0				
	5	CLAY, dark yellowish brown (1/4 (10YR) soft, highly plastic, damp	0				0945

HTW DRILLING LOG

HOLE NO.
FAI-020 019
 SHEET **02**
 OF **2** SHEETS

PROJECT
40747 ESL 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0	3.3 / 3.3	5802 6-7		
	7	weathered bedrock	0				0950
		Bottom of hole					

HTW DRILLING LOG

HOLE NO.
FRI-020 DP20

1 COMPANY NAME *Burns & McDonnell* 2. DRILLING SUBCONTRACTOR *EPS* SHEET 1 OF 1 SHEETS

PROJECT *40747 EST 49 sites* 4. LOCATION *Fort Riley*

5 NAME OF DRILLER *Eric Merhoff* 6 MANUFACTURER'S DESIGNATION OF DRILL *Geoprobe / Direct Push*

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT *Geoprobe 540c* 8. HOLE LOCATION *NA*
4' MACROCORE

9. SURFACE ELEVATION *NA*

10. DATE STARTED *7/13/06* 11. DATE COMPLETED *7/13/06*

12. OVERBURDEN THICKNESS *4* 15. DEPTH GROUNDWATER ENCOUNTERED *NA*

13. DEPTH DRILLED INTO ROCK *NA* 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED *NA*

14. TOTAL DEPTH OF HOLE *4* 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) *NA*

18. GEOTECHNICAL SAMPLES DISTURBED *0* UNDISTURBED *0* 19. TOTAL NUMBER OF CORE BOXES *0*

20. SAMPLES FOR CHEMICAL ANALYSIS VOC *—* METALS *i* OTHER (SPECIFY) *—* OTHER (SPECIFY) *—* OTHER (SPECIFY) *—* 21. TOTAL CORE RECOVERY %

22. DISPOSITION OF HOLE *NA* BACKFILLED *Bentonite* MONITORING WELL *NA* OTHER (SPECIFY) *NA* 23. SIGNATURE OF INSPECTOR *[Signature]*

ELEV. a DEPTH b DESCRIPTION OF MATERIALS c FIELD SCREENING RESULTS d GEOTECH SAMPLE OR CORE BOX NO. e ANALYTICAL SAMPLE NO. f BLOW COUNTS g REMARKS h

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, dark brown (3/10YR) soft, damp medium plasticity	0				
	1	CLAY, dark yellowish brown (4/10YR) medium, highly plastic, damp	0				
	2	CLAY, very dark brown (2 1/2 10YR) stiff, damp medium plastic	0	3.7 / 4	SB02 1-2		
	3	CLAY, very pale brown (9/2 10YR) soft, medium plastic, damp	0				
	3	weathered bedrock	0				
	4	Refusal bottom of hole					1800

Boring Logs
Camp Funston WWTP Sludge Drying Beds (FTRI-022)

HTW DRILLING LOG

HOLE NO.
FTRI-022 DP0
SHEET 0
OF 3 SHEETS

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>		3. PROJECT <i>40747 Est 49 sites</i>		4. LOCATION <i>Fort Riley</i>	
5. NAME OF DRILLER <i>Dennis Elier / Eric Merhoff</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Genprok / Direct Push</i>		7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>Genprok 4200 4" macro core</i>		8. HOLE LOCATION <i>NA</i>	
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>19.6</i>		9. SURFACE ELEVATION <i>NA</i>		10. DATE STARTED <i>7/10/06</i>	
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>		11. DATE COMPLETED <i>7/10/06</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>	
14. TOTAL DEPTH OF HOLE <i>20</i>		18. GEOTECHNICAL SAMPLES		19. TOTAL NUMBER OF CORE BOXES		20. SAMPLES FOR CHEMICAL ANALYSIS	
		DISTURBED <i>0</i>		UNDISTURBED <i>0</i>			
		VOC <i>—</i>		METALS <i>3</i>		OTHER (SPECIFY) <i>—</i>	
		OTHER (SPECIFY) <i>—</i>		OTHER (SPECIFY) <i>—</i>		21. TOTAL CORE RECOVERY % <i>—</i>	
22. DISPOSITION OF HOLE <i>NA</i>		BACKFILLED <i>Bentonite</i>		MONITORING WELL <i>NA</i>		OTHER (SPECIFY) <i>N/A</i>	
						23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	0	CLAY, very dark grayish brown (3/2 10YR) soft, medium plastic damp w/ grass roots	0		SB01 0-1		
	1	CLAY; very dark brown (4/2 10YR) medium, medium plastic, damp, trace silt	0				
	2	SILT, brown (5/3 10YR) soft non plastic, some sand trace clay, damp	0	22 /4			
	3		0				
	4		0				1310
	5		0				

HTW DRILLING LOG

HOLE NO
FTRI-022 DPOI
 SHEET **2**
 OF **3** SHEETS

PROJECT **40747 ESI 49 sites**

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAND AS Above SAME	0				
	7		0	3/4			
	8		0		5802 7-8		
	8	SAND, pale brown (1/3 10YR) loose, fine grained, damp trace silt; poorly graded	0				1315
	9		0	3.1/4			
	10		0		5803 8-12		
	11		0				
	12		0				1325
	13	SAND, yellowish brown (5/4 10YR) fine-coarse grained well graded damp	0	3.8/4			
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI-022 DPO1
 SHEET # **3**
 OF **3** SHEETS

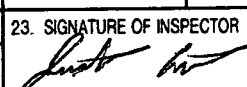
PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS Above	0				
	15		0				
	16		0				1335
	17	SAND, ^{dark} yellowish brown (4/6104R) fine - coarse graded, well graded, damp trace silt	0	3.6 / 4			
	18		0				
	19		0				
	20		0				Water 1345
	21	Bottom of hole					
	22						
	23						

HTW DRILLING LOG

HOLE NO.
FTRI-022 DP02
 SHEET 1
 OF 4 SHEETS

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR EPS	
3. PROJECT 40747 EST 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER Dennis Eller / Eric Merhoff		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 4200		8. HOLE LOCATION NA
	4' macrocore		9. SURFACE ELEVATION NA
			10. DATE STARTED 7/10/06
			11. DATE COMPLETED 7/10/06
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED 22'	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 24'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES 0	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0
20. SAMPLES FOR CHEMICAL ANALYSIS 3	VOC —	METALS 3	OTHER (SPECIFY) —
	OTHER (SPECIFY) —	OTHER (SPECIFY) —	OTHER (SPECIFY) —
22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL NA	23. SIGNATURE OF INSPECTOR 
	OTHER (SPECIFY) NA	OTHER (SPECIFY) NA	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		CLAY, very dark brown 3/4 10% soft, medium plasticity, damp	0		SB01 0-1		
	1	CLAY, dark grayish brown 1/2 10% soft, non plastic, w/silt damp	0	3.7 / 4			
	2	SILT, brown (1/3 10%) soft, non plastic, some sand damp	0				
	3		0				
	4		0				
	5		0				0845

HTW DRILLING LOG

HOLE NO.
FRT-022 DPOJ
 SHEET **2**
 OF **4** SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	6	SAND, pale brown (6/3 10YR) loose, fine grained, damp	0	3.1 / 4			
	7		0		5802 7-8		
	8	SAND, pale brown (6/3 10YR) loose, medium grained, damp. quartz & feldspar	0				0850
	9		0	4 / 4			
	10		0				
	11		0		5803 11-12		
	12		0				1855
	13		0	3.8 / 4			
	14		0				

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO.
FRTJ-022 DP02
 SHEET **3**
 OF **4** SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0				
	16		0				0900
	17		0	4/4			
	18	SAND, yellowish brown (5/4 104R) fine-coarse grained well graded damp	0				
	19		0				
	20		0				0905
	21		0	3.5 / 4			
	22		0				DNADA
	23		0				

HTW DRILLING LOG

HOLE NO
FTRI-022 DR02
SHEET # *4*
OF *4* SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
John G.

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		<i>SAME AS ABOVE</i>	<i>0</i>				<i>0910</i>
	<i>24</i>	<i>Bottom of hole</i>					

HTW DRILLING LOG

HOLE NO.
 FTR-222 DPO3
 SHEET 001
 OF 4 SHEETS

1. COMPANY NAME <i>Burns & McDowell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>			
3. PROJECT <i>40747 EST. 49 sites</i>		4. LOCATION <i>Fort Riley</i>			
5. NAME OF DRILLER <i>Dennis Elks / Eric Merhoff</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geopack / Direct Push</i>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geopack 4200</i>		8. HOLE LOCATION <i>NA</i>		
	<i>4' macro core</i>		9. SURFACE ELEVATION <i>NA</i>		
			10. DATE STARTED <i>7/19/06</i>		
			11. DATE COMPLETED <i>7/10/06</i>		
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>23</i>			
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>			
14. TOTAL DEPTH OF HOLE <i>24</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>			
18. GEOTECHNICAL SAMPLES <i>0</i>	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>		
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>	VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	21. TOTAL CORE RECOVERY %
	22. DISPOSITION OF HOLE <i>NA</i>				
BACKFILLED <i>Bentonite</i>		MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, dark brown (3/3 10YR) soft, non plastic, damp, with grass roots	0		5B01 0-1		
	2	SILT, brown (5/3 10YR) soft, non plastic, damp trace clay, with sand	0	4/4			
	3		0				
	4		0				
	5		0				0940

HTW DRILLING LOG

HOLE NO.
FTRI-022 DP03
 SHEET **02**
 OF **4** SHEETS

PROJECT
40747 ESI 49 S, 125

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME as Above					
	6	SILT, dark gray (4/10YR) medium, non plastic	0	4/4			
	7.3	CLAY, black (2/10YR) soft, damp, medium plasticity	0		SB02 7-8		0945
	8		0				
	9		0				
	10	CLAY, dark brown (3/10YR) medium, damp, high plasticity	0	4/4	SB03 10-11		
	11		0				
	12	SILT, brown 5/10YR soft, trace plastic	0				0950
	13	SAND, brown (5/10YR) loose, fine-medium grained trace silt.	0	3.1/4			
	14		0				

PROJECT

HOLE NO.

HTW DRILLING LOG

HOLE NO.
FTRI-022 DPO3

PROJECT
40747 EST 49 sites

INSPECTOR
Justin [Signature]

SHEET 003
OF 84 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 COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	5		0				
	16						0935
	17	SAND, light yellowish brown (6/4 104R) damp, fine- medium grained, poorly graded	0				
	18		0	2/4			
	19		0				
	20		0				1000
	21		0	36/4			
	22	SAND, light yellowish brown (6/4 104R) damp, fine- coarse grained, well graded	0				
	23	net	0				Water

HTW DRILLING LOG

HOLE NO.
FTRI-012 D903
SHEET **64**
OF **4** SHEETS

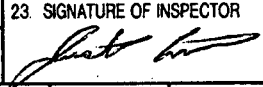
PROJECT **40747 ESI 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				1016
	24	Bottom of hole					

HTW DRILLING LOG

HOLE NO.
FTRI-022 DP04
SHEET 1
OF 3 SHEETS

1. COMPANY NAME Burns & McDermott		2. DRILLING SUBCONTRACTOR EPS		3. PROJECT 40747 ESI 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER Dennis Eller		6. MANUFACTURER'S DESIGNATION OF DRILL Geopole / Direct Push		7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT Geopole 4200 4' macrocore		8. HOLE LOCATION NA	
		9. SURFACE ELEVATION NA		10. DATE STARTED 7/10/06		11. DATE COMPLETED 7/10/06	
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED 19.6		13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 20'		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA		18. GEOTECHNICAL SAMPLES		19. TOTAL NUMBER OF CORE BOXES	
		DISTURBED 0		UNDISTURBED 0			
20. SAMPLES FOR CHEMICAL ANALYSIS 3		VOC —		METALS 3		OTHER (SPECIFY) —	
		OTHER (SPECIFY) —		OTHER (SPECIFY) —		21. TOTAL CORE RECOVERY % —	
22. DISPOSITION OF HOLE NA		BACKFILLED Bentonite		MONITORING WELL NA		OTHER (SPECIFY) NA	
						23. SIGNATURE OF INSPECTOR 	

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, very dark gray (2/10YR) soft, trace plastic damp, some grass roots trace silt	0		SB01 0-1		
	2	SELT, dark brown (3/3 10YR) soft, medium plasticity, damp, trace clay, some sand	0	3.6 4			
	3		0				
	4		0				1046
	5		0		SB02 5-6		

HTW DRILLING LOG

HOLE NO.
FTRI-022 DFO4
 SHEET **2**
 OF **3** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR


ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0	3.7 / 4			
	7	SILT, very dark gray (3/10YR) soft, medium plastic, trace clay	0				
	8		0				1045
	9		0				
	10		0	3.2 / 4	3803 9-12		
	11		0				
	12	SILT, brown (4/3 10YR) soft, medium plastic trace clay, some sand	0				1050
	13		0	2.9 / 4			
	14	SAND, yellowish brown (5/4 10YR) loose, fine grained	0				

HTW DRILLING LOG

HOLE NO.
FTRI-022 DPO4
 SHEET **3**
 OF **3** SHEETS

PROJECT **40747 EST 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0				
	16						1055
	17		0	1/4			
	18	SAND, light yellowish brown (5/8 104R) damp, fine-course grained, well graded	0				
	19		0				
	20		0				Water
		Bottom of hole					1100

HTW DRILLING LOG

HOLE NO
FTRI-022 DPO5
 SHEET 1
 OF 3 SHEETS

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR EPS	
3. PROJECT 40747 EST 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER Dennis Eller / Eric Merhoff		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT Geoprobe 4200 4" macroprobe		8. HOLE LOCATION NA	
		9. SURFACE ELEVATION NA	
		10. DATE STARTED 7/19/06	11. DATE COMPLETED 7/19/06
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED 19.5	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 20		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	

18. GEOTECHNICAL SAMPLES 0	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0		
20. SAMPLES FOR CHEMICAL ANALYSIS 3	VOC —	METALS 3	OTHER (SPECIFY) —	OTHER (SPECIFY) —	21. TOTAL CORE RECOVERY % —
	22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL NA	OTHER (SPECIFY) NA	

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	0	CLAY, very dark grayish brown (3/2 10YR) medium, medium plastic damp, w/ grass roots, trace silt	0	4/4	SBO1 D-1		
	1	SILT, brown (4/3 10YR) soft non plastic, damp, trace sand, some clay	0				
	2		0				
	3		0				
	4		0				1205
	5		0				

HTW DRILLING LOG

HOLE NO.
FTRI-022 DPOS
 SHEET **2**
 OF **3** SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0				
	7		0				
	8	SILT, dark brown (3/3 104R) soft, medium, non plastic, w/sand	0	4 1/4	SBO2 6-7		1210
	9		0				
	10		0				
	11		0				
	12		0		SBO3 11-12		1215
	13	SILT, brown (4/3 104R) soft, medium plastic, some sand	0	3.8 4			
	14		0				

HTW DRILLING LOG

HOLE NO
FTRI-022 DPUS
 SHEET **03**
 OF **3** SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR


ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	15		0				
	16	SAND, light yellowish brown (5/4 10YR) damp fine-coarse grained well graded	0				1220
	17		0	3.1 / 4			
	18		0				
	19		0				
	20		0				Water
	20	Bottom of hole					1225
	21						
	22						
	23						

Boring Logs
Custer Hill WWTP Sludge Drying Beds (FTRI-023)

HTW DRILLING LOG

HOLE NO.
FTRI-023 DPO1
SHEET 1
OF 1 SHEETS

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>				
3. PROJECT <i>40747 ESD 49 sites</i>		4. LOCATION <i>Fort Riley</i>				
5. NAME OF DRILLER <i>Dennis Eller / Eric Merhoff</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 4200</i>		8. HOLE LOCATION <i>NA</i>			
	<i>4' macrocone</i>		9. SURFACE ELEVATION <i>NA</i>			
			10. DATE STARTED <i>7/11/06</i>			
			11. DATE COMPLETED <i>7/11/06</i>			
12. OVERBURDEN THICKNESS <i>3'</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>				
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>				
14. TOTAL DEPTH OF HOLE <i>5</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>				
18. GEOTECHNICAL SAMPLES <i>0</i>	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS <i>1</i>	VOC <i>—</i>	METALS <i>1</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	21. TOTAL CORE RECOVERY %
	22. DISPOSITION OF HOLE <i>NA</i>		BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	0	<i>Top soil</i>	0				
	1	<i>CLAY, dark brown 3/410YR damp, stiff, non plastic</i>	0	<i>4/4</i>	<i>SB01</i>		
	2		0		<i>1-2</i>		
	3	<i>CLAY, dark yellowish brown (3/410YR) damp, stiff, non plastic, trace bedrock in end</i>	0				
	4	<i>Weathered bedrock</i>					<i>1515</i>
	5		0				<i>Refusal Bottom of hole @ 5'</i>

HTW DRILLING LOG

HOLE NO.
FTRI-023 DFOZ

1. COMPANY NAME <i>Benns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>		SHEET 1 OF 2 SHEETS	
3. PROJECT <i>40747 EST 49 sites</i>			4. LOCATION <i>Fort Riley</i>		
5. NAME OF DRILLER <i>Dennis Eiler / Eric Mershoff</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 4200</i>		8. HOLE LOCATION <i>NA</i>		
	<i>4" macrocore</i>		9. SURFACE ELEVATION <i>NA</i>		
			10. DATE STARTED <i>7/11/06</i>		
			11. DATE COMPLETED <i>7/11/06</i>		
12. OVERBURDEN THICKNESS <i>6</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>		
13. DEPTH DRILLED INTO ROCK <i>NA</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>		
14. TOTAL DEPTH OF HOLE <i>6</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>		
18. GEOTECHNICAL SAMPLES <i>0</i>	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>		
20. SAMPLES FOR CHEMICAL ANALYSIS <i>2</i>	VOC <i>—</i>	METALS <i>2</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	21. TOTAL CORE RECOVERY % <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		<i>Fill clay</i>	<i>0</i>				
	<i>1</i>	<i>CLAY, light gray (1/2 10YR) stiff, medium plasticity some gravel, damp</i>	<i>0</i>	<i>7/4</i>	<i>5B01 1-2</i>		
	<i>2</i>		<i>0</i>				
	<i>3</i>		<i>0</i>				
	<i>4</i>		<i>0</i>				<i>1345</i>
	<i>5</i>		<i>0</i>	<i>7/2</i>			

HTW DRILLING LOG

HOLE NO.
FTRI-023 0002

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

SHEET 1
OF 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 COUNTS g	REMARKS h
	6	SAME AS ABOVE	0		5B02 5-6		1355
		Refusal Tried @ other location Near area & refusal was at same location					

HTW DRILLING LOG

HOLE NO.
FTR-023 DPO
 SHEET 1
 OF 2 SHEETS

1. COMPANY NAME Burns + McDonnell		2. DRILLING SUBCONTRACTOR EPS	
3. PROJECT 40747 EST 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER Dennis Eller / Eric Merhoff		6. MANUFACTURER'S DESIGNATION OF DRILL Geopole / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geopole 4200		8. HOLE LOCATION NA
	4" macrocore		9. SURFACE ELEVATION NA
			10. DATE STARTED 7/11/06
			11. DATE COMPLETED 7/11/06
12. OVERBURDEN THICKNESS ID		15. DEPTH GROUNDWATER ENCOUNTERED NA	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 10		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES 0	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0
20. SAMPLES FOR CHEMICAL ANALYSIS 3	VOC —	METALS 3	OTHER (SPECIFY) —
	OTHER (SPECIFY) —		OTHER (SPECIFY) —
22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL NA	OTHER (SPECIFY) NA
	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Topsoil CLAY, dark yellowish brown (3/4 to 1 1/4), damp, stiff, medium plastic	0		5801 0-1		
	2		0	3.6 4			
	3	CLAY, very dark grayish brown (3/2 to 1 1/4) damp stiff trace plasticity	0				
	4		0				1455
	5		0				

HTW DRILLING LOG

HOLE NO.
FTRI-023 DP03
 SHEET **02**
 OF **2** SHEETS

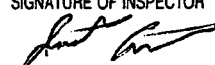
PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0				
	7	CLAY, dark yellowish brown (3/6 10:1A) stiff, medium plasticity	0	4/4	SB02 5-6		
	8		0				1500
	9		0	1.2/2	SB03 8-9		
	10	Weathered bedrock	0				1505
	10	Bottom of hole					

HTW DRILLING LOG

HOLE NO.
FTRI-023 DPO4
SHEET 1
OF 2 SHEETS

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR EPS	
3. PROJECT 40747 EST 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER Dennis Elias		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 4200		8. HOLE LOCATION NA
	4" macrocore		
			9. SURFACE ELEVATION NA
			10. DATE STARTED 7/11/06
		11. DATE COMPLETED 7/11/06	
12. OVERBURDEN THICKNESS 7.5		15. DEPTH GROUNDWATER ENCOUNTERED NA	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 7.5		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0
20. SAMPLES FOR CHEMICAL ANALYSIS 2	VOC —	METALS 2	OTHER (SPECIFY) —
			OTHER (SPECIFY) —
22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL NA	23. SIGNATURE OF INSPECTOR 
		OTHER (SPECIFY) NA	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<u>Top Soil</u> CLAY, dark brown (3/3 10YR) medium, medium plasticity trace limestone cobbles damp	0		1601 0-1		
	2	CLAY, dark yellowish brown (2/4 10YR) medium, non plastic, damp	0	3.1 4			
	3		0				
	4	CLAY, dark yellowish brown (3/6 10YR) medium, trace plasticity, damp, possible iron banding	0				1425
	5		0				

HTW DRILLING LOG

HOLE NO.
FTR-023 DPJ4
 SHEET **02**
 OF **2** SHEETS

PROJECT
40747 EST 49 Sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	6		0	3.5 / 3.5	5802 4-6.5		
	7	weathered limestone clay (6 1/2 10YR) very pale brown	0				
	8	Refusal Bottom of hole					1430

Boring Logs
Camp Forsyth WWTP Sludge Drying Beds (FTRI-024)

HTW DRILLING LOG							HOLE NO. FTR-024 DP01		
1. COMPANY NAME <i>Burns + McDonnell</i>			2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF 3 SHEETS			
3. PROJECT <i>40747 EST 49 sites</i>				4. LOCATION <i>Fort Riley</i>					
5. NAME OF DRILLER <i>Denniss Keller / Eric Merhoff</i>				6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geopole / Direct Push</i>					
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<i>Geopole 4200</i>		8. HOLE LOCATION <i>NA</i>		9. SURFACE ELEVATION <i>NA</i>			
		<i>4' macro core</i>		10. DATE STARTED <i>7/11/06</i>				11. DATE COMPLETED <i>7/11/06</i>	
		12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>18.6</i>				16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>	
		13. DEPTH DRILLED INTO ROCK <i>NA</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>					
14. TOTAL DEPTH OF HOLE <i>20</i>		18. GEOTECHNICAL SAMPLES		19. TOTAL NUMBER OF CORE BOXES					
0		DISTURBED 0	UNDISTURBED 0	0					
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %		
3		—	3	—	—	—	%		
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR				
<i>NA</i>		<i>Bentonite</i>	<i>NA</i>	<i>NA</i>	<i>[Signature]</i>				
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h	
		<i>Topsoil</i>							
		<i>Fill, clay & gravel w/ cobbles</i>		0					
	1			0	<i>3.6 / 4</i>	<i>SB01</i>			
	2	<i>SILT, dark brown (3/3 104R) medium, damp, medium plasticity, trace sand</i>		0					
	3	<i>SILT, brown (5/2 104R) soft damp, non plastic w/sand</i>		0					
	4			0				<i>OB15</i>	
	5			0					

HTW DRILLING LOG

HOLE NO.
FTRI-C24 DFO1
 SHEET **02**
 OF **3** SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	5	SAME As Above	0				
	6		0	3.8 /4			
	7	CLAY, soft, brown (1/3 10YR) medium plasticity, w/silt + sand	0		5802 7-8		
	8		0				0920
	9		0	3.0 /4	5803 9-10		
	10		0				
	11	SAND, light yellowish brown (6/4 10YR) fine medium grained, loose damp	0				
	12		0				0925
	13		0				

HTW DRILLING LOG

HOLE NO
FTRE-024 DP01
 SHEET **03**
 OF **3** SHEETS

PROJECT
40747 - ESI 49 sites

INSPECTOR
Frank R...

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	14		0	3.4 / 4			
	15		0				
	16		0				0630
	17	SAND, yellow (1/6 10YR) fine medium grained mostly quartz, poorly graded	0	4 / 4			
	18		0				
	19	SAND, dark gray (4/1 10YR) fine grained, wet	0				water
	20		0				0635
		Bottom of hole					

HTW DRILLING LOG							HOLE NO. FTR-024 DP02		
1. COMPANY NAME <i>Burns & McDonnell</i>				2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF 3 SHEETS		
3. PROJECT <i>40747 ESL 49 sites</i>				4. LOCATION <i>Fort Riley</i>					
5. NAME OF DRILLER <i>Dennis Elter / Eric Markoff</i>				6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>					
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<i>Geoprobe 420C</i>		8. HOLE LOCATION <i>NA</i>					
		<i>4" macro core</i>							
9. SURFACE ELEVATION <i>NA</i>				10. DATE STARTED <i>7/11/06</i>		11. DATE COMPLETED <i>7/11/06</i>			
12. OVERBURDEN THICKNESS <i>NA</i>				15. DEPTH GROUNDWATER ENCOUNTERED <i>19.1</i>					
13. DEPTH DRILLED INTO ROCK <i>NA</i>				16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>					
14. TOTAL DEPTH OF HOLE <i>20</i>				17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>					
18. GEOTECHNICAL SAMPLES <i>0</i>		DISTURBED <i>0</i>		UNDISTURBED <i>0</i>		19. TOTAL NUMBER OF CORE BOXES <i>0</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>		VOC <i>—</i>		METALS <i>3</i>		OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	
22. DISPOSITION OF HOLE <i>NA</i>		BACKFILLED <i>Bentonite</i>		MONITORING WELL <i>NA</i>		OTHER (SPECIFY) <i>NA</i>		23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	
ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c			FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		<i>Top soil</i>							
		<i>Fill; clay & gravel</i>			<i>0</i>				
	<i>1</i>						<i>SB01</i>		
		<i>SILT, pale brown (1/3 10YR) soft, damp, with sand non plastic</i>			<i>0</i>	<i>39</i>	<i>1-2</i>		
	<i>2</i>				<i>0</i>				
					<i>0</i>				
	<i>3</i>	<i>SILT, dark grayish brown (4 1/2 10YR) stiff, damp, trace plasticity</i>			<i>0</i>				
	<i>4</i>				<i>0</i>				<i>1935</i>
	<i>5</i>				<i>0</i>				

HTW DRILLING LOG

HOLE NO.
FRI-024 002
SHEET 2
OF 3 SHEETS

PROJECT 40747 ⁴⁹ ESI Sites

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	6	CLAY, very dark grayish brown (3/2 OVR) damp, soft medium plastic; w/silt + sand	0	3.6 4			
	7	SILT, brown (1/2 OVR), damp with sand, non plastic	0		SB02 7-8		
	8		0				1140
	9		0				
	10		0	3.1 4			
	11		0		SB03 10-11		
	12	SAND, pale brown (6/3 OVR) fine grained; damp, loose poorly graded	0				1145
	13		0				
	14		0				

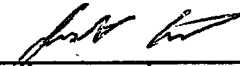
HTW DRILLING LOG

HOLE NO.
FTRL-024 DP02
 SHEET 1
 OF SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15	SAND, light yellowish brown (6/4 10YR) fine-medium grained, poorly graded, damp	0	3.1 4			
	16		0				1150
	17		0				
	18		0	3.3 4			
	19	SAND, brown (5/3 10YR) fine- coarse grained, wet, well graded	0				Water
	20	Bottom of hole					1155

HTW DRILLING LOG							HOLE NO.	
1. COMPANY NAME <i>Burns & McDonnell</i>			2. DRILLING SUBCONTRACTOR <i>EPS</i>			FTRI-024 DR3 SHEET 1 OF 3 SHEETS		
3. PROJECT <i>40747 EPS 49 siks</i>			4. LOCATION <i>Fort Riley</i>					
5. NAME OF DRILLER <i>Dennis Eller / Eric Merhoff</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>					
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<i>Geoprobe 4200</i>		8. HOLE LOCATION <i>NA</i>				
		<i>4" macrocore</i>		9. SURFACE ELEVATION <i>NA</i>				
				10. DATE STARTED <i>7/11/06</i>		11. DATE COMPLETED <i>7/11/06</i>		
				12. OVERBURDEN THICKNESS <i>NA</i>				
13. DEPTH DRILLED INTO ROCK <i>NA</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>18</i>					
14. TOTAL DEPTH OF HOLE <i>20</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>					
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>			18. GEOTECHNICAL SAMPLES					
		DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>2</i>				
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>		VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>		
						21. TOTAL CORE RECOVERY %		
22. DISPOSITION OF HOLE <i>NA</i>		BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR 			
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<i>CLAY, very dark brown (2/3 10YR) stiff, trace plastic damp</i>		<i>0</i>		<i>S801 0-1</i>		
	2	<i>SECT, pale brown (6/5 10YR) soft, w/ sand, damp non plastic</i>		<i>0</i>	<i>3/ 4</i>			
	3			<i>0</i>				
	4			<i>0</i>				<i>0910</i>
	5			<i>0</i>				

HTW DRILLING LOG

HOLE NO.
FTRI-014 DP03
 SHEET **2**
 OF **3** SHEETS

PROJECT **40747** ^{EST} **49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME AS ABOVE	0				
	7		0	4 4			
	8	SAND, brown (5/3 10YR) loose, fine grained, damp	0		5802 7-8		0915
	9		0	2.6 4			
	10	SAND, pale brown (6/3 10YR) damp, fine-grained, damp intermittent silt bindings	0				
	11		0				
	12		0		5803 11-12		0920
	13	SAND, very pale brown (7/3 10YR) fine-medium grained loose, mostly quartz + feldspar	0	3 4			
	14		0				

HTW DRILLING LOG

HOLE NO. **FTRI-024 DRS**
 SHEET **03**
 OF **3** SHEETS

PROJECT **40747 EST 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0				
	16		0				0925
	17		0	3.7 / 4			
	18	CLAY, dark gray (4/11 104R) soft high plasticity, w/ sand	0				water
	19	SAND, brown (4/3 104R) wet coarse grained, some pebbles	0				
	20	SAND, grayish brown (5/2 104R) fine-coarse grained, well graded	0				0930
		Bottom of hole					

HTW DRILLING LOG

HOLE NO.
FTRI-024 DPO4

1. COMPANY NAME Burns & McDonnell		2. DRILLING SUBCONTRACTOR EPS		SHEET 1 OF 3 SHEETS	
3. PROJECT 40747 EST 49 sites			4. LOCATION Fort Riley		
5. NAME OF DRILLER Dennis Eller / Eric Markhoff			6. MANUFACTURER'S DESIGNATION OF DRILL Geopack / Direct Push		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		Geopack 4200		8. HOLE LOCATION NA	
		4' macrocore		9. SURFACE ELEVATION NA	
				10. DATE STARTED 7/11/06	
				11. DATE COMPLETED 7/11/06	
12. OVERBURDEN THICKNESS NA			15. DEPTH GROUNDWATER ENCOUNTERED 17.3		
13. DEPTH DRILLED INTO ROCK NA			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA		
14. TOTAL DEPTH OF HOLE 20			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA		
18. GEOTECHNICAL SAMPLES		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES	
0		0	0	0	
20. SAMPLES FOR CHEMICAL ANALYSIS 3		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		—	3	—	—
22. DISPOSITION OF HOLE NA		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>
		Bentonite	NA	NA	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Topsoil SILT, brown (4/3 10YR) soft non plastic, trace sand	0	3.7 / 4	5801 1-2		
	2	SILT, light brownish gray (6/2 10YR) soft non plastic w/sand	0				
	3		0				
	4	CLAY, dark brown (3/3 10YR) medium, medium plastic some silt	0				1300
	5		0				

HTW DRILLING LOG

HOLE NO
FTRI-024 DP04
 SHEET **03**
 OF **3** SHEETS

PROJECT **40747 ESI 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	PEAT, light brownish gray (6/2 10YR) soft, with sand dump	0				
	7		0	3.1 / 4			
	8	CLAY, very dark brown (4/2 10YR) soft highly plastic	0		SB02 7-8		
	8	SAND, pale brown (6/3 10YR) soft, damp. Fine grained	0				1005
	9		0				
	10	SAND, light brownish gray (6/2 10YR) damp fine grained	0	2.4 / 4			
	11		0		SB03 11-12		
	12		0				1010
	13		0	3/4			
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI-024 DP04
 SHEET **03**
 OF **3** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15	SAND, yellowish brown (5/4 104R) fine-medium, damp grained, mostly, mostly quartz	0				
	16		0				1015
	17	SAND light yellowish brown (6/4 104R) fine-coarse grained well graded	0	32 / 4			water
	18		0				
	19		0				
	20	Bottom of hole	0				

Boring Logs
Main Post WWTP Sludge Drying Beds (FTRI-025)

HTW DRILLING LOG

HOLE NO
FTRI-025 DP01
SHEET 1
OF 4 SHEETS

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>	
3. PROJECT <i>40747 EST 49 sites</i>		4. LOCATION <i>Fort Riley</i>	
5. NAME OF DRILLER <i>Dennis Eller</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 4200</i>		8. HOLE LOCATION <i>NA</i>
	<i>4" macrocore</i>		9. SURFACE ELEVATION <i>NA</i>
			10. DATE STARTED <i>7/7/06</i>
			11. DATE COMPLETED <i>7/7/06</i>
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>22.5</i>	
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>	
14. TOTAL DEPTH OF HOLE <i>24</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>	
18. GEOTECHNICAL SAMPLES <i>0</i>	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>	VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>
	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	21. TOTAL CORE RECOVERY % <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>
	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, brown (5/3 10YR) damp, trace plasticity stiff, trace silt	0		SB01 0-1		
	2		0	$\frac{3.7}{4}$			
	3	SILT, brown (5/3 10YR) damp, soft, non plastic soft, some sand, trace clay	0				
	4		0				1415
			0				

HTW DRILLING LOG

HOLE NO.
FTRI-025 DP01
SHEET 02
OF 4 SHEETS

PROJECT		INSPECTOR			HOLE NO.		
40747 ESI 49 sites		<i>Just to</i>			FTRI-025 DP01		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	6		0	4/4			
	7	CLAY, brown (4/3 10YR) soft, trace plasticity trace silt.	0		5B02 7-8		
	8		0				1420
	9	SILT, light grayish brown (6/2 10YR) soft, damp, trace plastic, trace clay	0	3.6/4			
	10		0		5B03 10-11		
	11	SAND, pale brown (6/3 10YR) loose, fine grained, damp poorly graded	0				
	12		0				1425
	13		0	3.1/4			
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI-025 DP01
 SHEET **83**
 OF **4** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
Justin [Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	SAME AS ABOVE	0				
	16		0				
	17	SAND, light brownish gray (1/2 10YR) fine grained damp, loose, mostly quartz, some feldspar	0	4/4			1435
	18		0				
	19		0				
	20	SAND, brown (1/3 10YR) loose, fine-medium, damp grained, mostly quartz & feldspar	0				1440
	21		0	3.3/4			
	22		0				
	23	wet	0				Water

HTW DRILLING LOG

HOLE NO
FTRI-025 DFO1
 SHEET **4**
 OF **4** SHEETS

PROJECT **40747 ESI 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	24	SAME AS ABOVE	0				1450
		Bottom of hole					

HTW DRILLING LOG

HOLE NO.
FTRI-025 DP02
 SHEET 1
 OF 4 SHEETS

1. COMPANY NAME Burns + McDonnell		2. DRILLING SUBCONTRACTOR EPS	
3. PROJECT 40747 ESI 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER Dennis Eller		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 4200		8. HOLE LOCATION NA
	4" macrocore		9. SURFACE ELEVATION NA
			10. DATE STARTED 5/7/06
			11. DATE COMPLETED 7/7/06
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED 21	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 24		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC 3	METALS 3	OTHER (SPECIFY) —
			OTHER (SPECIFY) —
			OTHER (SPECIFY) —
21. TOTAL CORE RECOVERY %			
22. DISPOSITION OF HOLE	BACKFILLED NA	MONITORING WELL NA	OTHER (SPECIFY) NA
	Bentonite		
			23. SIGNATURE OF INSPECTOR <i>Justin [Signature]</i>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Fill clay w/ gravel					
	1	Silt, brown (1/3 10YR) dry non plastic, trace clay soft	0				
	2		0	3.8 / 4	SB01 1-2'		
	3		0				
	4	Silt, pale brown (6/3 10YR) dry non plastic, trace clay, trace sand, soft	0				
	5		0				0785

HTW DRILLING LOG

HOLE NO.
FTR-025 DPOZ
 SHEET **02**
 OF **4** SHEETS

PROJECT **40747 ESI 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	6	SAND, light gray (7/2 104R) loose, dry, fine graded	0				
	7	CLAY, very dark grayish brown (3/2 104R) damp, stiff, medium plasticity	0	4/4	5802 6.5-7.5		
	8	Silt, pale brown (6/3 104R) damp, trace plasticity soft	0				0800
	9	SAND, yellowish brown (5/4 104R) loose, damp fine graded, poorly graded	0	3.1/4			
	10		0				
	11		0		5803 11-12		
	12		0				0805
	13		0	2/4			
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI-025 DPOZ

PROJECT 40747 ESI 49 sites

INSPECTOR *frank*

SHEET 3
OF 4 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 COUNTS g	REMARKS h	
		SAME AS ABOVE	0					
	15			0				
	16			0			0815	
	17			0	$\frac{36}{4}$			
	18			0				
	19			0				
	20			0			0825	
	21		SAND, yellowish brown (5/4 10YR) fine - coarse grain well graded wet, quartz & feldspar	0	$\frac{35}{4}$			Water
	22				0			
	23				0			

HTW DRILLING LOG

HOLE NO.
FTRI-025 DPOZ
 SHEET *94*
 OF *4* SHEETS

PROJECT *40747 ESI 49 sites*

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	<i>24</i>	<i>SAME As Above</i>	<i>0</i>				<i>0835</i>

HTW DRILLING LOG

HOLE NO
FTRI-025 DP03
SHEET 1
OF 4 SHEETS

1. COMPANY NAME Burns + McDonnell		2. DRILLING SUBCONTRACTOR EAS	
3. PROJECT 40747 ES 49 sites		4. LOCATION Fort Riley	
5. NAME OF DRILLER Dennis Eller		6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 4203		8. HOLE LOCATION NA
	4' maccocore		9. SURFACE ELEVATION NA
			10. DATE STARTED 7/2/06
			11. DATE COMPLETED 7/7/06
12. OVERBURDEN THICKNESS NA		15. DEPTH GROUNDWATER ENCOUNTERED 21.3	
13. DEPTH DRILLED INTO ROCK NA		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
14. TOTAL DEPTH OF HOLE 24		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA	
18. GEOTECHNICAL SAMPLES	DISTURBED 0	UNDISTURBED 0	19. TOTAL NUMBER OF CORE BOXES 0
20. SAMPLES FOR CHEMICAL ANALYSIS 3	VOC —	METALS 3	OTHER (SPECIFY) —
			OTHER (SPECIFY) —
22. DISPOSITION OF HOLE NA	BACKFILLED Bentonite	MONITORING WELL NA	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, brown (4/3 10YR) damp, trace plasticity, medium, trace silt	0	4 1/4	5801 1-2		
	2						
	3	SILT, brown (5/3 10YR) damp trace plasticity, soft, trace clay	0				
	4						
	5		0				0925

HTW DRILLING LOG

HOLE NO.
FTRI-025-DF03
 SHEET # **2**
 OF **4** SHEETS

PROJECT		INSPECTOR					
40747 ESI 49 sites		<i>[Signature]</i>					
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME as Above	0	4/4			
	7	CLAY, brown (4/3 10YR) damp soft, medium plasticity w/ silt	0		SB02 7-9		
	8		7.2				0930
	9	CLAY, black (2/1 10YR) soft medium plasticity, hydro carbon odor	35.2	3.7/4	SB03 8.5-9.5		
	10	SILT, grayish brown (5/2 10YR) soft, damp non plastic	0				
	11	SAND, pale brown (6/3 10YR) loose fine grained, damp poorly graded	0				
	12		0				0935
	13		0	3.1/4			
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI-025 D003
 SHEET **03**
 OF **4** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0				
	16	SAND, grayish brown (5/2 10YR) fine grained, damp, loose	0				0970
	17	SAND, pale brown (6/3 10YR) fine grained, damp, loose mostly quartz	0				
	19		0	2.6 / 4			
	19		0				
	20	SAND, brown (5/3 10YR) loose, fine grained, damp mostly quartz	0				0950
	21	wet		3.3 / 4			water
	22						
	23						

HTW DRILLING LOG

HOLE NO.
FTR1-025 DR03
SHEET 034
OF 4 SHEETS

PROJECT
43747

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
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		SAME AS ABOVE					
--	--	---------------	--	--	--	--	--

24

1000

HTW DRILLING LOG

HOLE NO.
FTRI-025 DFO4
 SHEET 1
 OF 4 SHEETS

1. COMPANY NAME Burns + McDonnell		2. DRILLING SUBCONTRACTOR EPS	
3. PROJECT 40747 EST 49 silos		4. LOCATION Fort Riley	
5. NAME OF DRILLER Dennis Eller		6. MANUFACTURER'S DESIGNATION OF DRILL NA Geoprobe / Direct Push	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe 4200	8. HOLE LOCATION NA	
	4' macrocore	9. SURFACE ELEVATION NA	
		10. DATE STARTED 7/7/06	11. DATE COMPLETED 7/7/06
		12. OVERBURDEN THICKNESS NA	
13. DEPTH DRILLED INTO ROCK NA		15. DEPTH GROUNDWATER ENCOUNTERED 22.5	
14. TOTAL DEPTH OF HOLE 24		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA	
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA		18. GEOTECHNICAL SAMPLES	
19. TOTAL NUMBER OF CORE BOXES 0		20. SAMPLES FOR CHEMICAL ANALYSIS	
21. TOTAL CORE RECOVERY %		22. DISPOSITION OF HOLE	
23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		24. BACKFILLED Bentonite	
25. MONITORING WELL NA		26. OTHER (SPECIFY) NA	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, brown (4/3 DWR), damp medium plasticity, medium trace silt, trace grass roots	0				
	2		0	3.1 4	SB01 1-2		
	3	SILT, brown (4/3 10'R) damp non plastic, soft trace clay	0				
	4		0				1055
	5		0				

HTW DRILLING LOG

HOLE NO.
FRI-025 DPO4
SHEET 42
OF 4 SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
Justin [Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	6	CLAY, dark brown (3/3 10YR) damp, stiff, high plasticity w/ silt, trace sand	0	4 / 4			
	7		0		SB02 7-8		
	8		0				1100
	9		0	3.6 / 4			
	10	SILT, gray (5/1 10YR), soft damp, non plastic	0		SB03 9-12		
	11		0				
	12	SAND, pale brown (6/3 10YR) loose, fine grained damp	0				1105
	13		0				
	14		0				

HTW DRILLING LOG

HOLE NO.
FTRI 025 DP04
 SHEET **3**
 OF **4** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
Justin Cant

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0	3.4 / 5			
	16	SAND, dark grayish brown (5/2 10YR) fine-medium grained, damp, loose	0				1115
	17		0				
	18	SAND, pale brown (6/3 10YR) fine-medium grained damp, loose, mostly quartz	0	4 / 4			
	19		0				
	20		0				1130
	21	SAND, brown (4/3 10YR) fine grained, loose, damp mostly quartz	0	4 / 4			
	22		0				
	23	wet	0				Water

HTW DRILLING LOG

HOLE NO.
FTRI-025 DP04
 SHEET *04*
 OF *4* SHEETS

PROJECT <i>40747</i>		INSPECTOR <i>[Signature]</i>					
ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	<i>24</i>	<i>SAME AS ABOVE</i>	<i>0</i>				<i>1140</i>
		<i>Bottom of hole</i>					

HTW DRILLING LOG

HOLE NO
FTRI-025 DPSS
SHEET 1
OF 4 SHEETS

1. COMPANY NAME <i>Burns + McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>	
3. PROJECT <i>40747 ESI 49 sites</i>		4. LOCATION <i>Fort Riley</i>	
5. NAME OF DRILLER <i>Dennis Eller</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 4200</i>		8. HOLE LOCATION <i>NA</i>
	<i>4" macrocore</i>		9. SURFACE ELEVATION <i>NA</i>
			10. DATE STARTED <i>7/7/06</i>
			11. DATE COMPLETED <i>7/7/06</i>
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>23</i>	
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>23 NA</i>	
14. TOTAL DEPTH OF HOLE <i>24</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>	
18. GEOTECHNICAL SAMPLES	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC <i>3</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>
	<i>—</i>	<i>—</i>	OTHER (SPECIFY) <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>
			23. SIGNATURE OF INSPECTOR <i>[Signature]</i>

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	CLAY, brown (4/3 10YR) damp, trace plasticity medium, trace grass roots	0	3.7 / 4	SBO1 1-2		
	2	SILT, dark grayish brown (4/2 10YR) damp, trace plasticity, soft, trace clay	0				
	3		0				
	4		0				1305
	5		0				

HTW DRILLING LOG

HOLE NO. **FTRI-025 DP05**
 SHEET **2**
 OF **24** SHEETS

PROJECT **40747**

INSPECTOR *John C. [Signature]*

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	6	CLAY, brown (4/3 10YR) damp medium, medium plasticity trace silt	0	4/4	SB02 6-7		
	7		0				
	8		0				1310
	9		0				
	10	SLT, brown (5/3 10YR) soft, damp, non plastic w/sand	0	4/4			
	11		0				
	12	SAND, pale brown (6/3 10YR) loose, fine grained, damp poorly graded	0		SB03 11-12		1315
	13		0	3.2/4			
	14		0				

HTW DRILLING LOG

HOLE NO. **FTRI-025 DP05**
 SHEET **03**
 OF **4** SHEETS

PROJECT **40747 ESI 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	0				
	15		0				
	16		0				
	16	SAND, very pale brown (1/3 10YR) fine grained, damp, loose	0	3.1			1320
	17		0	1/4			
	18	SAND, pale brown (4/3 10YR) fine-medium grained damp, loose, mostly quartz + feldspar	0				
	19		0				
	19		0				
	20		0				1330
	21	SAND, brown (5/3 10YR) loose, fine-coarse grained damp, mostly quartz + feldspar	0	2.9 1/4			
	22		0				
	23	wet					Water

HTW DRILLING LOG

HOLE NO.
FTRI-025 DPOS
 SHEET **+** **+**
 OF **4** SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
JLW CMR

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		same as Above	0				
	24	Bottom of hole					

Boring Logs
Range Complex Wastewater Lagoons (FTRI-026)

HTW DRILLING LOG							HOLE NO. FTRE-026 DP01	
1. COMPANY NAME <i>Burns & McDonnell</i>			2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF 2 SHEETS		
3. PROJECT <i>40747 ESI 49 piles</i>				4. LOCATION <i>Fort Riley</i>				
5. NAME OF DRILLER <i>Dennis Eller</i>				6. MANUFACTURER'S DESIGNATION OF DRILL <i>Genprole / Direct Push</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<i>Genprole 5400</i>		8. HOLE LOCATION <i>NA</i>				
		<i>4" macrocore</i>		9. SURFACE ELEVATION <i>NA</i>				
				10. DATE STARTED <i>7/19/06</i>		11. DATE COMPLETED <i>7/19/06</i>		
				12. OVERBURDEN THICKNESS <i>NA</i>				
13. DEPTH DRILLED INTO ROCK <i>NA</i>				15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>				
14. TOTAL DEPTH OF HOLE <i>12.5</i>				16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>				
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>				18. GEOTECHNICAL SAMPLES				
18. GEOTECHNICAL SAMPLES <i>0</i>		DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>				
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>		VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	21. TOTAL CORE RECOVERY %	
		22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>Temporary Piezometer</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		
ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<i>TOP SOIL CLAY, brown (4/3 10YR) dry, stiff non plastic</i>		0	<i>3.8 /</i>	<i>SB01 1-2</i>		
	2	<i>CLAY; very dark grayish brown (3/2 10YR) damp, medium, non plastic, trace silt</i>		0				
	3			0				
	4	<i>CLAY, very dark grayish brown 3/2 10YR, soft, damp, medium plasticity</i>		0				<i>1245</i>
	5			0				

HTW DRILLING LOG

HOLE NO. **FRI-026 DF01**
 SHEET **2**
 OF **2** SHEETS

PROJECT **40747 EST 49 sites**

INSPECTOR *[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6		○	3.8 / 4			
	7	CLAY, dark yellowish brown (3/6 104R) soft, damp, highly plastic, trace silt	○		5802 7-8		
	8		○				1250
	9		○				
	10		○	3.6 / 4			
	11	CLAY, pale olive (6/4 54) damp; medium, medium plasticity	○		5803 11-12		
	12	SILT, brownish yellow (6/6 104R) stiff, damp, non plastic, 1/4 clay trace shale	○	6.2 / 0.5			1235
		Refusal, Bottom of hole Set temporary piezometer					1300



051601
Form MRK-55-2

PROJECT **40747**

HOLE NO. **FRI-026 DF01**

HTW DRILLING LOG

HOLE NO.
FTRI-026 DPO2
SHEET 1
OF 3 SHEETS

1. COMPANY NAME <i>Burns & McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>	
3. PROJECT <i>40747 EST 49 sites</i>		4. LOCATION <i>Fort Riley</i>	
5. NAME OF DRILLER <i>Dennis Eller</i>		6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 5400</i>		8. HOLE LOCATION <i>NA</i>
	<i>4" macroprobe</i>		9. SURFACE ELEVATION <i>NA</i>
			10. DATE STARTED <i>7/19/06</i>
			11. DATE COMPLETED <i>7/19/06</i>
12. OVERBURDEN THICKNESS <i>NA</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>	
13. DEPTH DRILLED INTO ROCK <i>NA</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>	
14. TOTAL DEPTH OF HOLE <i>16.3</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>	
18. GEOTECHNICAL SAMPLES <i>0</i>	DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>	VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>
			OTHER (SPECIFY) <i>—</i>
22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>Temporary Piezometer</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>
		OTHER (SPECIFY) <i>NA</i>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	1	<i>CLAY, brown (4/3 104R) stiff damp, non plastic</i>	<i>0</i>	<i>3.2 / 4</i>	<i>SB01 1-2</i>		
	2		<i>0</i>				
	3		<i>0</i>				
	4	<i>CLAY, dark brown (3/3 104R) stiff damp, trace plasticity</i>	<i>0</i>				<i>1150</i>
	5		<i>0</i>				

HTW DRILLING LOG

HOLE NO.
 FTRI-026 DP02
 SHEET 2
 OF 3 SHEETS

PROJECT
 40747 EST. 49 sites

INSPECTOR
John Law

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	6		0	4/4			
	7		0				
	8		0		SB02 7-8		1155
	9	CLAY, dark yellowish brown (3/4 10YR) medium, damp, medium plasticity, w/silt.	0	4/4			
	10		0				
	11		0		SB03 10-11		
	12	CLAY, pale olive (4/10YR) medium, damp, non plastic	0				1200
	13		0	4/4			
	14	CLAY, brown (3/4 7.5YR) soft damp, highly plastic, w/silt	0				



051601
 Form MRK-55-2

PROJECT
 40747

HOLE NO.
 FTRI-026 DP02

HTW DRILLING LOG

HOLE NO.
FRT-026 DFO2
SHEET # 3
OF 3 SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	15		0				
	16	SILT, brownish yellow (w/10%R) soft, damp, non plastic w/ clay trace silt	0				1205
	17	Refusal Bottom of hole Set a temporary piezometer					1210
	18						
	19						



051601
Form MRK-55-2

PROJECT
40747

HOLE NO.
FRT-026 DFO2

HTW DRILLING LOG							HOLE NO. FTRE-026 DP03	
1. COMPANY NAME <i>Burns & McDonnell</i>			2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF 5 SHEETS		
3. PROJECT <i>40747</i>			4. LOCATION <i>EPS</i>					
5. NAME OF DRILLER <i>Dennis Eller</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>					
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<i>Geoprobe 5400</i>			8. HOLE LOCATION <i>NA</i>			
		<i>4' macro core</i>						
		9. SURFACE ELEVATION <i>NA</i>			10. DATE STARTED <i>7/19/06</i>		11. DATE COMPLETED <i>7/19/06</i>	
		12. OVERBURDEN THICKNESS <i>NA</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>			
13. DEPTH DRILLED INTO ROCK <i>NA</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>					
14. TOTAL DEPTH OF HOLE <i>32.7</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>					
18. GEOTECHNICAL SAMPLES		DISTURBED <i>0</i>	UNDISTURBED <i>0</i>	19. TOTAL NUMBER OF CORE BOXES <i>0</i>				
20. SAMPLES FOR CHEMICAL ANALYSIS <i>3</i>		VOC <i>—</i>	METALS <i>3</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	OTHER (SPECIFY) <i>—</i>	21. TOTAL CORE RECOVERY %	
		22. DISPOSITION OF HOLE <i>NA</i>	BACKFILLED <i>Bentonite</i>	MONITORING WELL <i>Temporary Piezometer</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c		FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
		<i>Top soil</i>						
		<i>CLAY brown (4/3 104R) dry, very stiff, non plastic</i>		<i>0</i>		<i>5601</i>		
	<i>1</i>	<i>CLAY, dark brown (3/3 104R) damp, stiff, trace plastic</i>		<i>0</i>	<i>3.2 / 4</i>	<i>1-2</i>		
	<i>2</i>			<i>0</i>				
	<i>3</i>			<i>0</i>				
	<i>4</i>	<i>CLAY, very dark grayish brown (3/2 104R) damp, soft, medium plastic, trace silt</i>		<i>0</i>				<i>0955</i>
	<i>5</i>	<i>CLAY, brown (4/3 104R) soft damp, highly plastic, trace silt</i>		<i>0</i>				

HTW DRILLING LOG

HOLE NO. **FTRL-026 DP08**
 SHEET **02**
 OF **5** SHEETS

PROJECT **40747 E92 49 sites**

INSPECTOR **John Gentry**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME AS ABOVE	○		5802 56		
	6		○	4/4			
	7	CLAY, dark yellowish brown (4/4 10YR) medium, damp, medium plasticity	○				
	8	CLAY, brown (4/3 10YR) soft damp, medium plastic	○				1000
	9		○	3.8 /4			
	10	CLAY, dark yellowish brown (4/4 10YR) soft, damp, highly plastic	○				
	11		○				
	12	CLAY, dark brown (3/3 10YR) soft, damp, trace plasticity trace silt	○		5803 11-12		1025
	13	CLAY, dark yellowish brown (4/6 10YR) soft, damp, highly plastic	○	3.9 /4			
	14		○				



051601
Form MRK-55-2

PROJECT **40747**

HOLE NO. **FTRL-026 DP08**

HTW DRILLING LOG

HOLE NO.
 FTR-026 DP02
 SHEET 03
 OF 5 SHEETS

PROJECT
 40747 ESI 49 sites

INSPECTOR
Jack Cox

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	15		0				
	16	CLAY, dark yellowish brown (4/4 104R) soft, damp, highly plastic	0				1010
	17		0	3.7 /4			
	18	CLAY, dark yellowish brown (3/4 104R) soft, damp, highly plastic	0				
	19		0				
	20	CLAY, yellowish red (5/6 54R) soft, damp, medium, plastic, w/shale cobbles w/silt	0				1020
	21		0	3.3 /4			
	22		0				
	23	gravel	0				



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 Form MRK-55-2

PROJECT
 40747

HOLE NO.
 FTR-026 DP02

HTW DRILLING LOG

HOLE NO
FTRI-026 DFW
 SHEET **04**
 OF **5** SHEETS

PROJECT
40747 EST 49 sites

INSPECTOR
John C...

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	CLAY, light gray (1/2 10YR) Soft, damp, highly plastic w/silt, trace gravel	0				1090
	25	CLAY, dark yellowish brown (4/4 10YR) damp, soft, trace plasticity, w some silt	0	4/4			
	26		0				
	27		0				
	28		0				1045
	29		0				
	30		0	3.8 / 4			
	31		0				
	32		0				1100



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PROJECT
40747

HOLE NO.
FTRI-026 DFW

HTW DRILLING LOG

HOLE NO.
FTR-026 DPB
SHEET 5
OF 5 SHEETS

PROJECT
40747 ESI 49 sites

INSPECTOR
[Signature]

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		SAME As Above	0				
	33	Refusal Bottom of hole Set A temporary piezometer					115



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Form MRK-55-2

PROJECT
40747

HOLE NO.
FTR-026 DPB

HTW DRILLING LOG

HOLE NO.
FTRI-026 DF04
SHEET 1
OF 2 SHEETS

1. COMPANY NAME <i>Benns & McDowell</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>			
3. PROJECT <i>40747 ESI 49 giles</i>			4. LOCATION <i>Fort Riley</i>		
5. NAME OF DRILLER <i>Dennis Eller</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe / Direct Push</i>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<i>Geoprobe 5400</i>		8. HOLE LOCATION <i>NA</i>		
	<i>4' macrocore</i>		9. SURFACE ELEVATION <i>NA</i>		
			10. DATE STARTED <i>7/19/06</i>		11. DATE COMPLETED <i>7/19/06</i>
			12. OVERBURDEN THICKNESS <i>NA</i>		
13. DEPTH DRILLED INTO ROCK <i>NA</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>		
14. TOTAL DEPTH OF HOLE <i>14</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>		
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>					
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES		
<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>		
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	<i>3</i>	<i>3</i>	<i>—</i>	<i>—</i>	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	
	<i>NA</i>	<i>Bentonite</i>	<i>Temporary Piezometer</i>		

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO f	BLOW COUNTS g	REMARKS h
	0	Top Soil	0				
	1	CLAY, brown (4/30YR) dry, very stiff, non plastic w/ gravel	0	3.4 / 4	SBO1 1-2		
	2	CLAY, dark brown (3/310YR) damp, stiff, trace plastic	0				
	3		0				
	4	CLAY, brown (4/310YR) damp stiff, trace plastic	0				
	5		0				0905

HTW DRILLING LOG

HOLE NO
FTRI-026 DFO4
 SHEET # 2
 OF 2 SHEETS

PROJECT
40747 ESD 49 sites

INSPECTOR
[Signature]

ELEV a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	SAME As Above	0				
	7	CLAY, dark yellowish brown (3/410YR) damp, medium trace plasticity	0	3.6 / 4	5802 7-8		
	8		0				0910
	9	CLAY, olive gray (5/2.5Y) damp, medium, trace plasticity, w/ silt	0	3.7 / 9.5			
	10		0		5803 10-11 9-11		
	11	CLAY, reddish brown (7.5YR) damp, soft, trace plasticity and silt, trace shale	0				0915
	12		0	2.5 / 2.5			
	13		0				
	14	Shale	0				Refusal Bottom of hole 14' 0925



051601
 Form MRK-55-2

PROJECT
40747

HOLE NO.
FTRI-026 DFO4

Appendix B
Survey Data

2319 N. Jackson, PO Box 1304
Junction City, Kansas 66441
www.kveng.com



Tel: 785-762-5040
Fax: 785-762-7744
E-mail: JC@kveng.com

KAW VALLEY ENGINEERING, INC.

FT. RILEY BORING LOCATIONS
DATUM = UTM Zone 14, NAD83 US SURVEY FEET
NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
6	DP01	14208376.505	2287408.367	1048.756
6	DP02	14208381.456	2287504.721	1047.943
6	DP03	14208431.877	2287593.007	1047.543
6	DP04	14207730.390	2287660.026	1048.259
6	S01	14207686.994	2287565.951	1049.288
6	S02	14207599.816	2287596.384	1045.594
6	S03	14207505.263	2287614.691	1044.987
6	S04	14207418.418	2287653.955	1044.954
6	S05	14207365.259	2287690.683	1044.762
8	S01	14193629.305	2272150.873	1080.205
10	DP01	14206804.229	2281176.617	1066.719
15	DP01	14205319.511	2287608.715	1047.200
15	DP02	14205364.243	2287700.360	1047.236
15	DP03	14205558.968	2287634.359	1047.847
47	DP01	14193817.289	2272262.635	1067.713
47	DP02	14193868.099	2272281.361	1069.249
47	DP03	14193871.592	2272338.808	1077.090
47	DP04	14193797.142	2272320.512	1072.063
47	DP05	14193766.053	2272363.992	1074.293
47	S01	14193843.424	2272331.183	1077.672
47	S02	14193819.956	2272350.436	1076.708
47	S03	14193817.656	2272372.372	1076.971
47	S04	14193790.460	2272373.007	1077.930
48	DP01	14207157.512	2262364.171	1333.163
48	DP02	14205816.147	2263972.003	1326.366
48	DP03	14201262.083	2273586.383	1121.195

other locations

1333 N.E. Barry Road Kansas City, Missouri 64155 Tel: 816-468-5858 KC@kveng.com
14700 W. 114th Terrace Lenexa, Kansas 66215 Tel: 913-894-5150 LX@kveng.com

FT. RILEY BORING LOCATIONS
DATUM = UTM Zone 14, NAD83 US SURVEY FEET
NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
50	S01	14194972.082	2256880.541	1070.159
50	S02	14194972.194	2256894.831	1070.426
50	S03	14194909.461	2256887.285	1069.471
50	S04	14194845.744	2256876.687	1071.476
50	S05	14194845.058	2256889.514	1071.411
50	S06	14195884.658	2258697.805	1080.352
50	S07	14195899.161	2258754.334	1079.695
50	S08	14195858.878	2258743.954	1080.669
50	S09	14195845.745	2258707.515	1080.657
50	S10	14195859.104	2258762.227	1080.302
50	S11	14193016.267	2267148.094	1087.008
50	S12	14192990.158	2267155.300	1086.062
50	S13	14193011.334	2267170.828	1086.555
50	S14	14193031.671	2267194.800	1087.602
50	S15	14193012.606	2267199.358	1086.575
50	S16	14199319.381	2273499.470	1100.237
50	S17	14199263.933	2273456.322	1100.560
50	S18	14199273.482	2273500.342	1099.653
50	S19	14199284.574	2273547.441	1099.082
50	S20	14199226.725	2273503.483	1099.098
50	S21	14207488.067	2280715.017	1071.344
50	S22	14207480.783	2280736.466	1071.466
50	S23	14207460.263	2280721.092	1070.942
50	S24	14207448.579	2280703.024	1070.683
50	S25	14207437.541	2280733.590	1070.171
20	DP01	14214435.121	2259673.953	1289.758
20	DP02	14214899.952	2259897.904	1295.065
20	DP03	14215453.812	2260175.200	1286.147
20	DP04	14215864.913	2260406.977	1272.983
20	DP05	14216206.838	2260726.902	1264.191
20	DP06	14216576.333	2260933.624	1256.688
20	DP07	14216480.082	2261304.192	1255.386
20	DP08	14216209.447	2261549.040	1255.435
20	DP09	14215776.275	2261262.854	1272.968
20	DP10	14215432.162	2261043.910	1275.827
20	DP11	14215106.193	2260841.222	1279.396
20	DP12	14214803.951	2260494.335	1279.345
20	DP13	14209618.231	2257473.237	1290.823
20	DP14	14209578.681	2257572.693	1291.510
20	DP15	14209531.301	2257473.316	1300.655
20	DP16	14209520.260	2257529.561	1289.617
20	DP17	14213651.062	2264920.772	1273.824
20	DP18	14213461.114	2265021.220	1273.685
20	DP19	14213680.216	2264993.297	1274.487
20	DP20	14213499.353	2265107.146	1277.704

FT. RILEY BORING LOCATIONS
DATUM = UTM Zone 14, NAD83 US SURVEY FEET
NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
22	DP01	14205206.575	2288136.306	1047.985
22	DP02	14204940.978	2288125.389	1048.827
22	DP03	14204832.227	2288405.146	1050.720
22	DP04	14204797.820	2288635.093	1046.938
22	DP05	14204986.546	2288823.601	1047.631
23	DP01	14208798.885	2266065.662	1275.268
23	DP02	14208764.370	2266162.061	1256.806
23	DP03	14208634.392	2266238.525	1259.403
23	DP04	14208560.847	2266138.269	1260.795
24	DP01	14193208.646	2258653.500	1072.482
24	DP02	14193358.947	2258825.277	1065.425
24	DP03	14193168.978	2258748.216	1064.545
24	DP04	14193252.025	2258841.294	1065.308
25	DP01	14194833.090	2273889.635	1058.048
25	DP02	14194915.370	2274079.787	1057.389
25	DP03	14194802.933	2274026.533	1057.754
25	DP04	14194665.039	2274017.322	1058.282
25	DP05	14194666.723	2273892.057	1058.286
26	DP01	14276373.567	2226137.084	1280.764
26	DP02	14275965.236	2226137.645	1285.592
26	DP03	14276482.952	2226546.154	1301.016
26	DP04	14275913.896	2226527.359	1303.105
13	DP01	14200416.246	2271150.251	1254.247
13	DP02	14200391.107	2271206.536	1255.964
13	DP03	14200364.935	2271111.676	1256.444
13	DP04	14200333.216	2271187.297	1256.555
39	DP01	14210872.411	2265406.896	1288.890
39	DP02	14211235.762	2265529.682	1281.037
39	DP03	14211344.589	2265857.569	1278.483
39	DP04	14210964.763	2265997.712	1288.688
39	DP05	14210553.565	2266058.667	1292.252
39	DP06	14210076.879	2266251.831	1290.152
39	DP07	14209911.317	2266018.310	1289.237
39	DP08	14209792.091	2265653.887	1288.902
40	DP01	14207103.516	2280239.619	1067.882
40	DP02	14207039.677	2280253.396	1068.880
40	DP03	14206998.143	2280224.720	1068.496
40	DP04	14207037.717	2280187.602	1067.570

FT. RILEY BORING LOCATIONS
DATUM = UTM Zone 14, NAD83 US SURVEY FEET
NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
41	DP01	14193241 008	2272346 837	1061 614
41	DP02	14193171 830	2272374 887	1060 710
41	DP03	14193080 468	2272250 149	1060 735
41	DP04	14206674 963	2285007 242	1052 031
41	DP05	14206616 269	2284955 970	1052 388
41	DP06	14206539 675	2284986 653	1052 609
41	DP07	14206310 229	2285089 663	1051 466
41	DP08	14206225 251	2285167 864	1050 837
41	DP09	14206349 896	2285201 869	1051 959
45	DP01	14192378 953	2269278 723	1125 500
45	DP02	14192359 330	2269370 160	1126 962
45	DP03	14192218 839	2269250 236	1123 491
45	DP04	14192208 121	2269346 907	1125 319
51	DP01	14190188 194	2274396 879	1061 150
51	DP02	14190191 496	2274360 534	1061 375
52	DP01	14201651 123	2273085 716	1181 923
52	DP02	14201891 640	2272215 134	1184 110
52	DP03	14201566 984	2272327 857	1171 548
52	S01	14201818 662	2273439 937	1142 787
52	S02	14201624 341	2273426 000	1139 820
52	S03	14201549 059	2273480 738	1130 635
5	S01	14206305 913	2257792 766	1293 040
14	S01	14199239 550	2272787 321	1123 614
14	S02	14199238 430	2272772 051	1124 821
14	S03	14199250 928	2272772 521	1124 826
36	DP01	14204558 334	2288817 482	1050 761
36	DP02	14204350 562	2289382 088	1047 908
36	DP03	14204728 536	2289638 780	1046 514
37	SB01	14200373 276	2274885 084	1075 807
37	SB02	14200336 726	2274952 453	1075 382

FT. RILEY BORING LOCATIONS
DATUM = UTM Zone 14, NAD83 US SURVEY FEET
NAVD88 US SURVEY FEET

FTRI #	DP/SS #	NORTHING	EASTING	ELEVATION
43	DP01	14192927 314	2257709 516	1068 491
43	DP02	14192921 518	2257792 787	1067 624
43	DP03	14192840 041	2257702 623	1069 184
43	DP04	14192822 943	2257784 472	1068 806
43	DP05	14192266 464	2258201 278	1067 532
43	DP06	14192263 336	2258269 872	1067 819
43	DP07	14192171 355	2258192 295	1067 471
43	DP08	14192158 279	2258265 081	1067 651
43	DP09	14199314 126	2273505 435	1099 991
43	DP10	14199284 241	2273543 303	1099 155
43	DP11	14199266 910	2273467 907	1100 294
43	DP12	14199235 324	2273504 847	1099 038
43	DP13	14202641 783	2276307 306	1069 826
43	DP14	14202713 995	2276405 927	1068 879
43	DP15	14202555 759	2276354 527	1067 861
43	DP16	14202626 759	2276468 487	1066 940
57	DP01	14202940 341	2261091 911	1265 152
57	DP02	14202922 358	2261021 712	1262 338