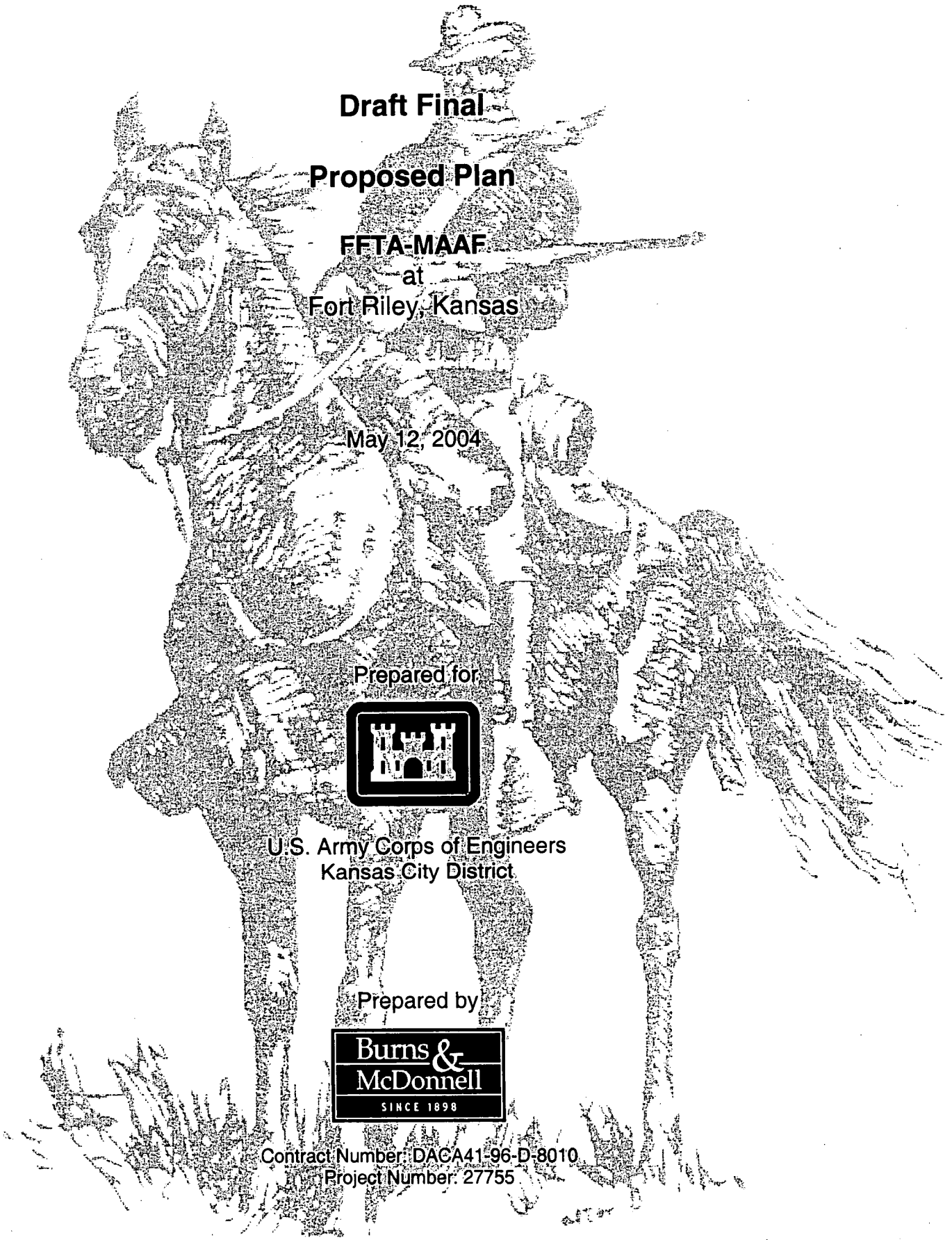


Draft Final

Proposed Plan

FFTA-MAAF
at
Fort Riley, Kansas

May 12, 2004

Prepared for

U.S. Army Corps of Engineers
Kansas City District

Prepared by

Burns & McDonnell
SINCE 1898

Contract Number: DACA41-96-D-8010
Project Number: 27755

FFTA_6_1_001

Draft Final Proposed Plan
Former Fire Training Area, Marshall Army Airfield
Fort Riley, Kansas

UNITED STATES DEPARTMENT OF THE ARMY ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the preferred alternative for cleaning up the contaminated groundwater associated with the Former Fire Training Area (FFTA) at Marshall Army Airfield (MAAF), Fort Riley, Kansas (Site); and provides the rationale for this preference. In addition, this Plan includes summaries of other cleanup alternatives evaluated for use at this Site. This document is issued by the United States Department of the Army (Army), the lead agency for Site activities, with consultation with the United States Environmental Protection Agency, Region VII (EPA), and the Kansas Department of Health and Environment (KDHE), the support agencies. A final remedy will be selected for the Site after reviewing and considering all information submitted during the 30-day public comment period on the Proposed Plan (Figure 1). The Army, in conjunction with the EPA and the KDHE, may modify the preferred alternative or select another response action presented in this plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

Dates to Remember:

Public Comment Period:
July 13 – August 11, 2004
The Army will accept written comments on the Proposed Plan during the public comment period.

Public Meeting:
July 20, 2004
The Army will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at 407 Pershing Court, Fort Riley, Kansas at 7 p.m. in conjunction with the Restoration Advisory Board.

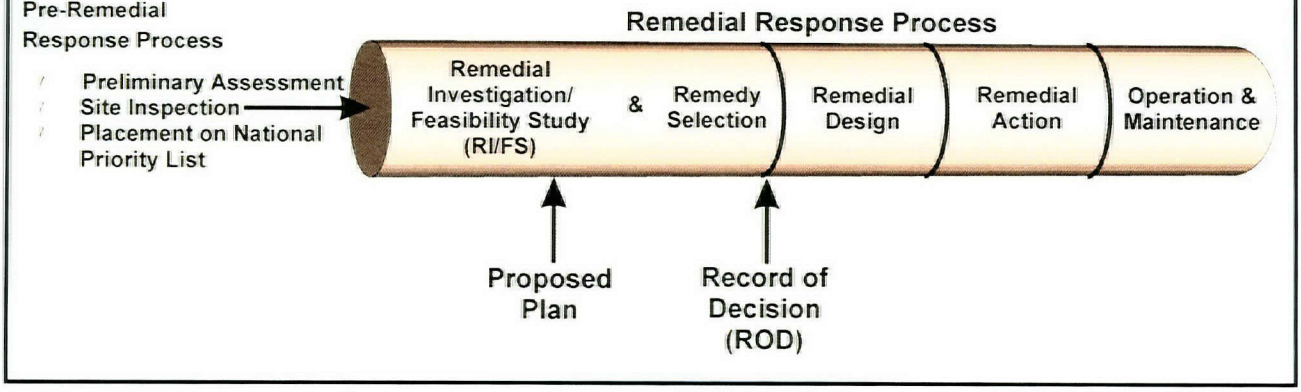
Copies of the RI and FS reports and Proposed Plan are available for viewing at the following locations:

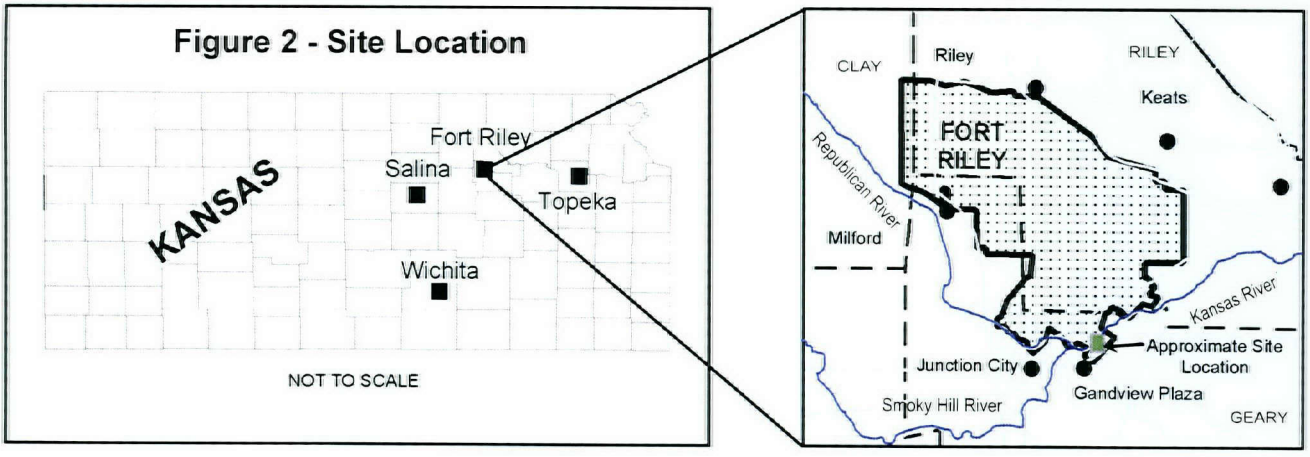
Dorothy Bramlage Public Library
230 West Seventh Street, Junction City, Kansas
(785) 238-4311
Hours: Mon-Sat 9:30 a.m. – 6 p.m.
Sun 1 p.m. – 6 p.m.

Manhattan Public Library
Manhattan Kansas 66502
(785) 776-4741
Hours: Mon – Thurs 9 a.m. – 9 p.m
Fri 9 a.m. – 6 p.m.
Sat 9 a.m. – 6 p.m.
Sun 1 p.m. – 6 p.m.

The Administrative Record can be viewed at:
Directorate of Environment and Safety
AFZN-ES-OM (IRP)
Building 407 Pershing Court
Fort Riley, Kansas 66442-6016
(785) 239-8619
Hours: Mon – Fri 9 a.m. – 4 p.m.

Figure 1
The CERCLA Process



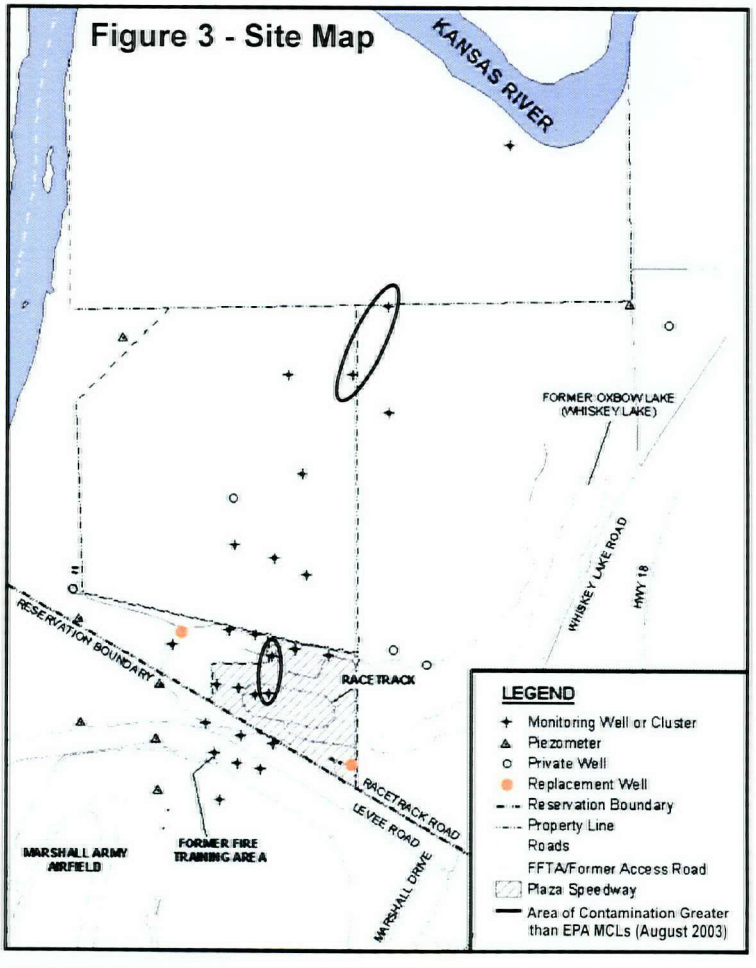


The Army is issuing this Proposed Plan as part of its public participation responsibilities under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Remedial Investigation (RI) and Feasibility Study (FS) Reports and other documents contained in the Administrative Record for this Site. The Army encourages the public to review these documents to gain a more comprehensive understanding of the Site and investigation activities that have been conducted at the Site.

SITE SETTING AND HISTORY

Fort Riley is located along the Republican and Kansas Rivers in Geary and Riley Counties (Figure 2). MAAF is in the southern region of Fort Riley, south of the Kansas River. The FFTA is located at the north end of MAAF, approximately 300 feet southwest of the Fort Riley reservation boundary (Figure 3). The term Site is used in this report to refer to the general area extending from the FFTA north to the Kansas River.

The FFTA was operated from the mid-1960s through 1984 to conduct fire-training exercises. During these exercises, flammable liquids were poured into the FFTA, ignited, and then extinguished. The predominant fuels used for the fire training exercises were JP-4 (jet fuel), diesel, and MOGAS (a generic term for leaded motor gasoline). In August 1982, reportedly 55 gallons of tetrachloroethene (PCE) were inadvertently poured into a pit at the FFTA. The next day it was pumped out of the pit and into 55-gallon drums. Fire fighting training has not been conducted at the FFTA since 1984. Contaminants at the Site are believed to have entered the environment through the FFTA and moved downward through the soil to the groundwater. Some of these contaminants have



migrated in the groundwater northward from the FFTA, and currently exist under private property.

On July 14, 1989, the EPA proposed inclusion of Fort Riley on the National Priorities List (NPL) pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The EPA included the Site on the NPL in August 1990. Effective June 1991, the Army entered into a Federal Facility Agreement (FFA), Docket No. VII 90-F-0015, with the EPA and KDHE to address environmental pollution subject to the Resource Conservation and Recovery Act (RCRA) and/or CERCLA. In 1996, the Army began a RI/FS to identify the types, quantities, and locations of the contaminants at this Site and to develop a plan to address the contamination problem. The EPA and KDHE approved of the RI and FS Reports in 2001 and 2003, respectively.

RESPONSE ACTIONS

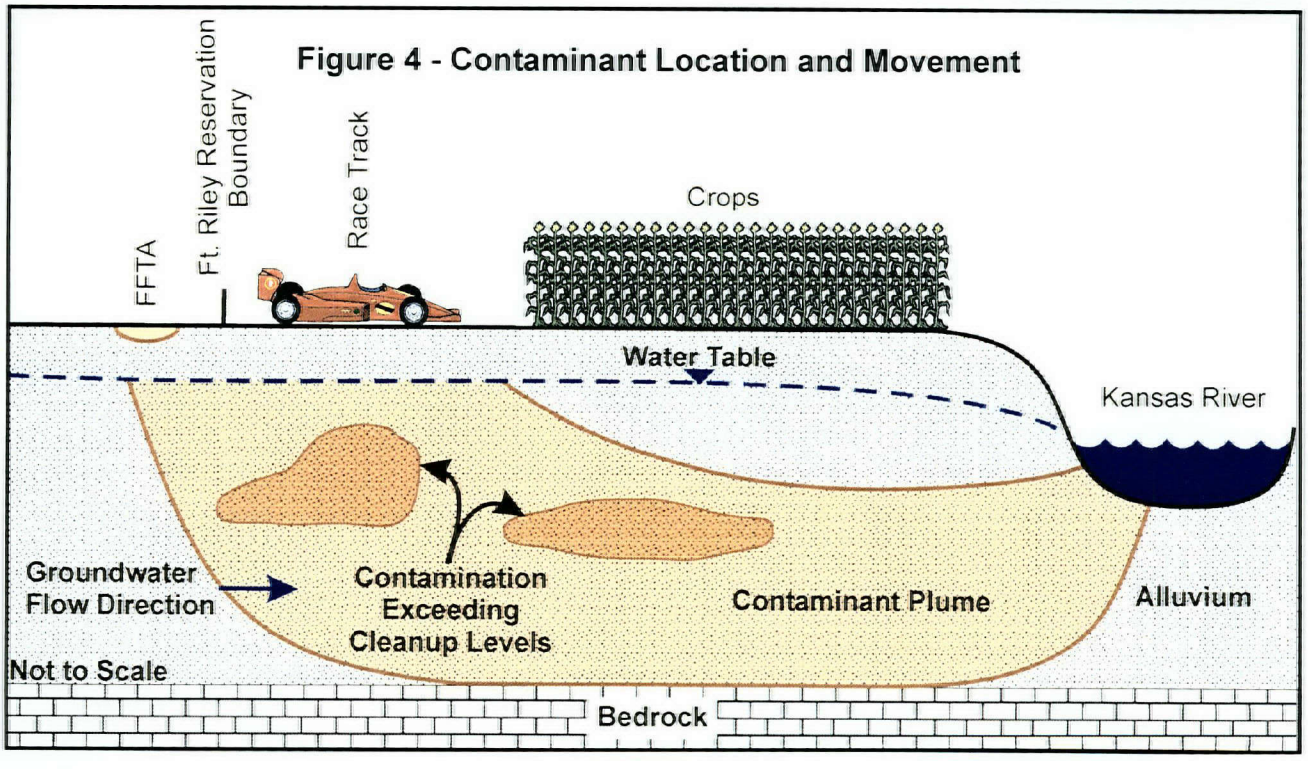
A source removal pilot test study was performed at the FFTA in November 1994 through May 1995. This remediation effort was successful in removing from the soil an estimated 1,896 lbs. of contaminants (primarily petroleum hydrocarbon compounds) from one area and an estimated 472 lbs. of contaminants (primarily PCE) from a second area.

Two alternate water supply wells were installed in August 2002 to replace private wells impacted by the contaminant plume at this Site. The impacted private wells were then removed. With the removal of these wells, there are no longer any private wells impacted by the contaminant plume at the Site.

SITE CHARACTERISTICS

The major findings of the RI and FS Reports are as follows:

- Soil contamination was detected over a 120 foot by 240 foot area to a depth of 15 feet in the FFTA. The level of the soil contaminants, including chlorinated solvents and petroleum hydrocarbons, were reduced at the FFTA through a pilot study in 1995. Soil at the FFTA is not a medium of concern at the Site.
- Groundwater is a medium of concern at this Site, and trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) are the contaminants of potential concern (COPCs). TCE and cis-1,2-DCE are the degradation products of the PCE spilled at this Site.
- The groundwater contamination at this Site extends from the FFTA to the Kansas River and



generally sinks with distance from the FFTA (Figure 4). Analytical samples from the Kansas River were nondetect for the COPCs. Current conditions (as of August 2003) show less contamination than existed at the time of the RI and FS Reports (Figure 3).

- Natural attenuation of contaminants is the dominant mechanism for the decrease in contaminant levels in groundwater, thus far, at this Site. Natural attenuation was determined to be occurring at the Site due to the presence of degradation products of PCE and favorable natural attenuation parameters.

SUMMARY OF SITE RISKS

As part of the RI/FS, the Army conducted a baseline risk assessment to determine the current and future effects of contaminants on human health and the environment. The baseline risk assessment at this Site consisted of a human health risk assessment and an ecological risk assessment.

Human Health Risks

The human health risk assessment focused on health effects for on-post populations through direct contact with soil and inhalation of dust and vapors and for off-post populations through exposure to groundwater. The on-post populations (those within the Fort Riley Army Reservation) included pedestrians/joggers and utility excavation workers. The off-post populations included racetrack workers and racetrack patrons (adults and children), and residents (adults and children). It is the lead agency's current judgment that the preferred alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare, or the environment from actual or threatened releases of hazardous substances into the environment.

The potential for human health risk due to exposure to chemicals at the Site was considered for soil, water, and air media. Based on observed Site conditions at the time of the RI Report, it was concluded that chemical exposure was possible to off-post populations through contact with groundwater.

What is Risk and How is it Calculated?

A CERCLA human health risk assessment estimates the "baseline risk." This is an estimate of the likelihood of health problems occurring if no cleanup action were taken at a site. To estimate the baseline risk at a CERCLA site, EPA identifies a four-step process:

Step 1: Identify Chemicals of Potential Concern
Step 2: Estimate Exposure
Step 3: Assess Potential Health Effects
Step 4: Characterize Site Risk

In Step 1, the risk assessor compiles all the chemical data for a site to identify what chemicals were detected in each medium (i.e. soil and groundwater). Chemicals that are detected frequently at high concentrations, or are considered highly toxic, are considered "chemicals of potential concern" and are evaluated in the risk assessment

In Step 2, the risk assessor considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of exposure. Using this information, the risk assessor calculates a "reasonable maximum exposure" (RME) scenario, which portrays the highest level of human exposure that could reasonably be expected to occur.

In Step 3, the risk assessor compiles toxicity information on each chemical, including numeric values for assessing cancer and noncancer adverse health affects. The EPA identifies two types of risk: cancer risk and noncancer risk. The likelihood of any kind of cancer resulting from a CERCLA site is generally expressed as an upper bound probability; for example, a "1 in 10,000 chance." In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. For non-cancer health effects, the risk assessor calculates a "hazard index." The key concept here is that a "threshold level" (measured usually as a hazard index of less than 1) exists below which non-cancer health effects are no longer predicted.

In Step 4, the risk assessor uses the exposure information from Step 2 and toxicity information from Step 3 to calculate potential cancer and noncancer health risks. The results are compared to EPA acceptable levels of risk to determine whether site risks are great enough to potentially cause health problems for populations at or near the CERCLA site.

For the future scenarios, the highest potential risk for adverse health effects was for an off-post child resident scenario at a hazard index of 1 (noncancer adverse health effects). The EPA level of concern for noncancer health effects is a hazard index greater than 1. Most of the potential for risk in this scenario was posed by cis-1,2-DCE in groundwater.

The highest potential cancer risk posed by contamination for an off-post future resident farmer was 4×10^{-05} (or 4 in 100,000), which is still within the EPA acceptable excess lifetime cancer risk of 1×10^{-04} to 1×10^{-06} (or 1 in 10,000 to 1 in a million).

Excess lifetime cancer risk means cancer risk posed by a contaminated site in excess of the lifetime probability of developing cancer from other causes. Most of the potential for cancer risk was posed by vinyl chloride in groundwater, which is no longer detected at the Site.

In the event that chemical concentrations and/or land use at the Site change in a manner that could result in a greater exposure potential than that evaluated in the RI Report, the Army will conduct a comprehensive review of all factors related to the potential risk to ensure adequate protection of human receptors at the Site into the future.

Ecological Risks

The FFTA was evaluated for the presence of ecological receptors (plants, animals, and soil organisms) and completed ecological exposure pathways. Although a completed exposure pathway from soil to small mammals may be present, the habitat provided by the FFTA was marginal for these receptors. All other receptors, including plants and soil organisms, were qualitatively determined to have no observable adverse effects.

Contaminant migration in groundwater was modeled to evaluate ecological risk to aquatic species in the Kansas River. The estimated maximum present and future concentrations for each chemical were below all available aquatic life toxicity benchmarks, thus indicating minimal risk to the environment.

In the event that conditions at the Site change in a manner that could result in a greater exposure potential than that evaluated in the RI Report, ecological risk will be reviewed to ensure adequate protection of ecological receptors at the Site into the future.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are the cleanup objectives for protection of human health and the environment. The RAOs for this Site are to:

- Prevent ingestion and inhalation (through showering) of groundwater and dermal contact with groundwater containing contaminants exceeding the Preliminary Remedial Goals (PRGs).

What are the "Contaminants of Potential Concern"?

The Army has identified two contaminants that pose the greatest potential risk to human health at this Site. COPCs were identified as contaminants in groundwater exceeding the Safe Drinking Water Act Maximum Contaminant Levels (MCLs). MCLs are set by the EPA to be protective of human health. Trichloroethene (TCE) has an MCL of 5 parts per billion (ppb), and cis-1,2-dichloroethene (cis-1,2-DCE) has an MCL of 70 ppb.

Trichloroethene (TCE): TCE is a degradation product of PCE (a halogenated organic compound historically used as a degreaser in many industries). TCE in groundwater at this Site ranges from non-detect to 10.5 ppb. Exposure to this compound has been associated with deleterious health effects in humans, including anemia, skin rashes, diabetes, liver conditions, and urinary tract disorders. Based on laboratory studies, TCE is considered a probable human carcinogen.

cis-1,2-Dichloroethene (cis-1,2-DCE): cis-1,2-DCE is also a degradation product of PCE (a halogenated organic compound historically used as a degreaser in many industries). cis-1,2-DCE in groundwater at this Site ranges from non-detect to 125 ppb. Exposure to this compound has been associated with deleterious health effects in humans, including blindness, pulmonary hemorrhage, and skin rashes. Based on laboratory studies, cis-1,2-DCE is also considered a probable human carcinogen.

- Reduce contaminant levels, to the extent practicable and appropriate, through natural and/or active remedial processes.

Based on current and potential future use, one beneficial use of groundwater at this Site is as a drinking water source. The PRGs for groundwater then would be the chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs) for drinking water. The PRGs for groundwater at this Site are the levels determined safe for drinking water (EPA Maximum Contaminant Levels [MCLs]) of:

- TCE: 5 parts per billion (ppb)
- cis-1,2-DCE: 70 ppb

SUMMARY OF REMEDIAL ALTERNATIVES

Common Elements

Many of the alternatives evaluated for this Site include common components, including institutional controls and other controls. The purpose of institutional controls is to limit exposure to contaminants in the groundwater. Institutional controls at this Site will likely consist of State

Environmental Use Controls to restrict drilling or using water wells for domestic or other purposes, as well as requiring groundwater monitoring.

Other controls, including alternate supply (i.e., replacement) wells, community awareness, and groundwater monitoring, are also components of most alternatives. Groundwater monitoring is intended to provide a level of protection to ensure that risk levels are adequate at the Site during the remediation period. Two alternate water supply wells (replacement wells) were installed in August 2002 to replace five private wells located within or near the contaminated groundwater.

Also should conditions change from those anticipated, additional remedial actions could be implemented if unexpected monitoring results (e.g., increases in contaminant levels) or land use changes indicate that such action is warranted.

Remedial alternatives considered for this Site are summarized below. The alternatives are numbered to correspond with the numbers in the FS Report.

Alternative 1 - No Action
CERCLA generally requires that the "no action" alternative be evaluated to establish a baseline for comparison with the other alternatives considered. Under this alternative, the Army would take no action at this Site to prevent exposure to the groundwater contamination.

Alternative 2 - Monitored Natural Attenuation with Institutional Controls (MNA)
Natural attenuation refers to naturally-occurring processes in soil and groundwater environments that act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in those media. These in-situ processes include biodegradation, dispersion, dilution, adsorption, volatilization, and chemical or biological stabilization or destruction of contaminants. Microorganisms play a significant role in the degradation and destruction of toxic compounds. Monitored natural attenuation (MNA) refers to the periodic sampling and monitoring of geochemical and contaminant conditions at a site.

Contaminant concentrations and natural attenuation parameters will be monitored periodically to evaluate if the natural attenuation process continues to reduce contaminant concentrations to RAOs in the time frame predicted by modeling at the Site.

Alternative 3 - Enhanced Anaerobic Bioremediation with Institutional Controls and Monitored Natural Attenuation (EAB)
This alternative consists of the injection of a carbon source into the groundwater at several locations along the length of the plume. A carbon source will enhance the degradation of contaminants by microorganisms. A carbon source, such as lactate, molasses, or vegetable oil, will stimulate increased degradation of the contaminants. The carbon source to be used at this Site will be determined during the design phase of the project.

Alternative 4 - Zero-Valent Iron Permeable Reactive Barrier with Institutional Controls and Monitoring (Fe^0 PRB)
This alternative consists of constructing an iron filings permeable reactive barrier to remediate the most contaminated area(s) of the plume. The iron filings chemically react with contaminants, as the water passes through the barrier, to yield non-toxic and non-chlorinated by-products. The Fe^0 PRB is a trench, two-foot wide, 67-feet deep, and 250-feet long, filled with a mixture of granular iron (iron filings) and sand.

Alternative 5 - In-Situ Redox Manipulation with Institutional Controls and Monitoring (ISRM)
This alternative consists of the injection of a chemical reagent which reacts with naturally present iron to form a ferrous iron (Fe^{+2}) treatment zone. The alternative would be used to remediate the most contaminated area(s) of the plume. Ferrous iron chemically reacts with contaminants, as the water passes through the treatment zone, to yield non-toxic and non-chlorinated by-products. ISRM is an in-situ treatment zone created by injecting chemical reagents into the subsurface through temporary groundwater wells to create a reactive barrier for contaminated groundwater to flow through.

Alternative 6 - Bimetallic Nanoscale Particles with Institutional Controls and Monitored Natural Attenuation (BNP)
This alternative consists of injection at several locations along the length of the plume. Bimetallic nanoscale particles of 99.9% zero-valent iron (Fe^0) and 0.1% pallidium will be injected into the groundwater to destroy the contaminants. Zero-

valent iron chemically reacts with contaminants to yield non-toxic and non-chlorinated by-products. The BNP technology differs from a Fe^0 PRB because the BNP can be injected at multiple locations but its reactive ability is much shorter lived than the Fe^0 PRB.

Alternative 7 - Air Sparge/Soil Vapor Extraction with Institutional Controls and Monitoring (Air Sparge)

This alternative consists of installing a treatment system at several locations along the length of the plume. Air sparging is a groundwater technology that involves the injection of air under pressure into the groundwater. The injected air volatilizes contaminants that are dissolved in the groundwater. The volatilized contaminants migrate upward into the soil, where they are removed by a soil vapor extraction system.

Alternative 8 Groundwater Extraction and Ex-Situ Treatment with Institutional Controls and Monitoring (Pump & Treat)

This alternative consists of installing a groundwater extraction system (a.k.a., Pump & Treat) to remediate the most contaminated area(s) of the plume. This system removes the contaminated groundwater, treats it on site, and then discharges the clean water back to the environment. The extraction rate is anticipated to be approximately 150 gallons per minute. The treated groundwater will be discharged to the Kansas River.

Remedial Alternatives Considered

No.	Short Name	Full Name
1	No Action	No Action
2	MNA	Monitored Natural Attenuation with Institutional Controls
3	EAB	Enhanced Anaerobic Bioremediation with Institutional Controls, and Monitored Natural Attenuation
4	Fe^0 PRB	Zero-Valent Iron Permeable Reactive Barrier with Institutional Controls and Monitoring
5	ISRM	In-Situ Redox Manipulation with Institutional Controls and Monitoring
6	BNP	Bimetallic Nanoscale Particles with Institutional Controls, and Monitored Natural Attenuation
7	Air Sparge	Air Sparge/Soil Vapor Extraction with Institutional Controls and Monitoring
8	Pump & Treat	Groundwater Extraction and Ex-Situ Treatment with Institutional Controls and Monitoring

Table 1 - Comparative Evaluation Summary

Evaluation Criteria	Alternatives							
	1 - No Action	2 - MNA	3 - EAB	4 - Fe^0 PRB	5 - ISRM	6 - BNP	7 - Air Sparge	8 - Pump & Treat
Protection of Human Health and the Environment	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Compliance with ARARs	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Long-term Effectiveness and Permanence	NC	1	1	1	1	1	3	4
Reduction of Toxicity, Mobility, or Volume	NC	1	1	1	1	1	5	5
Short-term Effectiveness	NC	6	4	7	5	5	3	4
Implementability	NC	1	2	7	5	4	7	5
Cost	NC	1	2	6	5	3	5	5
Total of Rankings	NC	10	10	22	17	14	23	23
Overall Ranking	NC	1	1	5	4	3	6	6

Notes:

Ranking	1	Most favorable alternative
	3	Good, generally favorable
	5	Fair, potentially unfavorable
	7	Poor, unfavorable
	10	Completely fails the criteria
	Yes	Meets the requirements of the threshold criteria.
	No	Does not meet the requirements of the threshold criteria.
	NC	Not considered. Does not meet the threshold criteria.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. Table 1 summarizes the comparative evaluation.

Overall Protection of Human Health and the Environment

Based on the baseline risk assessments (human health and ecological) performed in the RI Report, all of the alternatives are protective of human health and the environment because the risk estimates for current and future scenarios do not exceed the EPA accepted risk levels.

Compliance with ARARs

All of the remedial alternatives, except Alternative 1 (No Action), are anticipated to comply with ARARs (ARARs are regulatory requirements set by the state and federal governments.) Alternative 1 does not comply with chemical-specific ARARs (i.e., MCLs) because contaminant levels are currently above MCLs and this alternative takes no action to address the ARAR. Therefore, Alternative 1 is dropped from further consideration because it does not meet one of the threshold criteria (i.e., either Overall Protection of Human Health and the Environment; or Compliance with ARARs).

Long-Term Effectiveness and Permanence

Since there is not an ongoing source at this Site (see RI and FS Reports), once RAOs are met, Alternatives 2 through 8 are anticipated to provide similar long-term effectiveness and permanence at the Site. However, due to the known rebounding effects associated with Alternatives 7 (Air Sparge) and 8 (Pump & Treat), these alternatives are considered less favorable in terms of long-term effectiveness and permanence than Alternatives 2 through 6. Rebounding effects occur when the system is shut down and contaminants return to the groundwater.

Reduction of Toxicity, Mobility, or Volume

Alternatives 2 through 8 are anticipated to provide similar levels of reduction in toxicity, mobility, and volume of contaminants in the plume. However, due to the known rebounding effects associated with Alternatives 7 (Air Sparge) and 8 (Pump & Treat), these alternatives are considered less favorable in terms of reducing the toxicity, mobility, and volume of contaminants in the plume than Alternatives 2 through 6.

Short-Term Effectiveness

Alternative 7 (Air Sparge) is predicted to reach RAOs in 3 years. However, construction activities during implementation of this alternative are intensive, due to the large number of sparge wells, trenching to install air lines, construction of building(s), and start up activities.

Evaluation Criteria for CERCLA Remedial Alternatives

Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Cost includes estimated capital, periodic, and annual operations and maintenance (O&M) costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

State/Support Agency Acceptance considers whether the State agrees with the Army's analyses and recommendations, as described in the RI/FS and Proposed Plan.

Community Acceptance considers whether the local community agrees with Army's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Alternative 8 (Pump & Treat) is predicted to reach RAOs in 7 years. Construction activities during implementation of Alternative 8 are anticipated to be moderate and include installation of an extraction well, construction of a treatment building, installation of discharge piping to the Kansas River, and start up.

Alternatives 3 (EAB) and 6 (BNP) are predicted to reach RAOs in 8 years. However, the effectiveness of BNP is less certain due to the infancy of this technology. Construction activities during implementation of these alternatives are anticipated to be minimal, because both technologies inject treatment fluids into the ground using direct-push equipment, resulting in very little impact to the surface.

Alternatives 4 (Fe^0 PRB) and 5 (ISRM) are predicted to reach RAOs in 9 years. Alternative 4 has the advantage over Alternative 5 due to the proven effectiveness of this technology versus the fairly new technology of Alternative 5. In addition, Fe^{+2} (Alternative 5) is not as reactive (i.e., efficient) as Fe^0 (Alternative 4). Construction activities during implementation of these alternatives are fairly intensive, especially for Alternative 4. To implement Alternative 4, a trench, 67 feet in depth, is required to place the Fe^0 in the ground. This alternative would have the highest risk to workers during implementation.

Alternative 2 (MNA) relies on natural processes to remediate the plume, and is predicted to require 10 years to reach RAOs. This alternative will have low impact to the surface, low risk to workers during implementation of the alternative, and has been demonstrated to be actively reducing contaminant concentrations at this Site.

Implementability

Alternative 2 (MNA) would be the simplest alternative to implement because there are no construction activities associated with this alternative. Administrative implementability of the institutional controls associated with this alternative would be the same as the other alternatives.

Alternatives 3 (EAB) and 6 (BNP) would be fairly simple to implement because both technologies inject treatment fluids into the ground using direct-push equipment, however, the availability of BNP in the quantities required for this project may be a concern. Preferential pathways for the injected materials to move during injection may be an implementability issue with these alternatives. Administrative implementability of the institutional controls associated with these alternatives would be the same as other alternatives.

Alternatives 5 (ISRM) and 8 (Pump & Treat) would be more intensive to implement and will likely require more time and more equipment than Alternatives 3 (EAB) and 6 (BNP). Administrative implementability of the institutional controls associated with these alternatives would be the same as other alternatives.

Alternatives 4 (Fe^0 PRB) and 7 (Air Sparge) would be the most difficult to implement due to the complexity of installing the Fe^0 PRB to a depth of 67 feet, and the difficulties associated with assembling all of the air sparge/SVE piping, equipment, and structures for housing the equipment. The potential of unforeseeable

Table 2 - Summary of Costs for Evaluations

Alternative		Total Capital Costs[1]	Total O&M Costs[2]	Total Periodic Costs[3]	Total Project Cost[4]	Total Present Value Cost at 3.2%[5]
1	No Action	$ -	$ -	$490,000	$490,000	$370,000
2	MNA	$48,000	$2,200,000	$108,000	$2,300,000	$2,000,000
3	EAB	$450,000	$1,900,000	$80,000	$2,500,000	$2,200,000
4	Fe^0 PRB	$2,200,000	$2,100,000	$108,000	$4,400,000	$4,100,000
5	ISRM	$2,000,000	$2,100,000	$108,000	$4,100,000	$3,800,000
6	BNP	$650,000	$1,900,000	$84,000	$2,700,000	$2,400,000
7	Air Sparge	$2,400,000	$1,500,000	$60,000	$4,000,000	$3,900,000
8	Pump & Treat	$840,000	$3,300,000	$84,000	$4,200,000	$3,800,000

Notes:
1 Includes costs for design, bench and pilot testing (if necessary), equipment/chemical costs, construction and implementation, and institutional controls.
2 Includes costs for groundwater monitoring, reporting (if necessary), electricity (if necessary), maintenance, and parts.
3 Includes costs for five-year reviews and closure reporting.
4 Total Capital Costs + Total O&M Costs + Total Periodic Costs
5 Present value cost for a 30-year period using a 3.2 percent discount rate.

problems during implementation is highest with these alternatives. Administrative implementability of the institutional controls associated with these alternatives would be the same as other alternatives.

Cost Evaluation

A cost summary is provided in Table 2:

State/Support Agency Acceptance

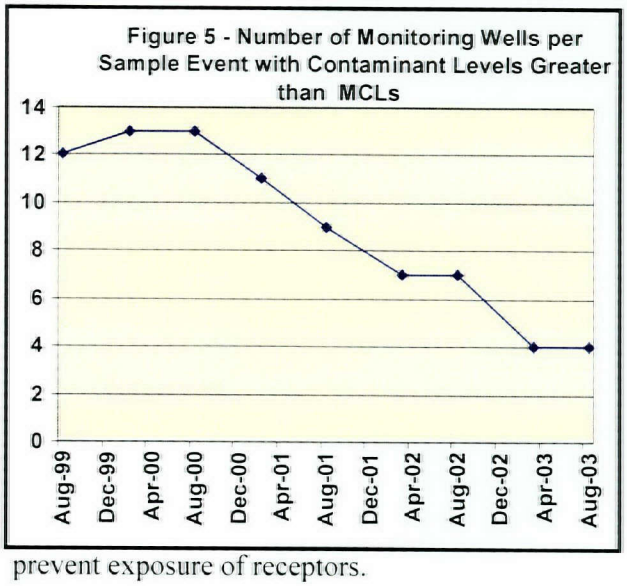
The EPA and KDHE support the Preferred Alternative presented for this Site.

Community Acceptance

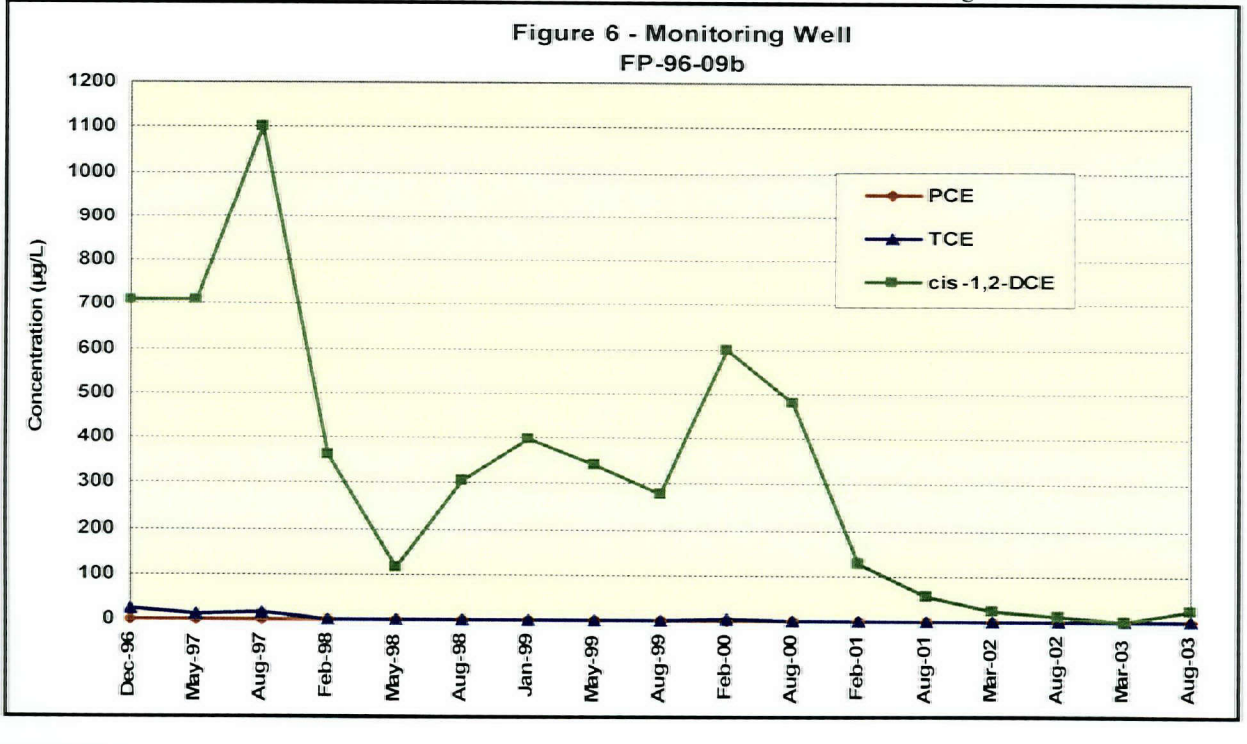
Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Record of Decision (ROD) for the Site.

SUMMARY OF THE PREFERRED ALTERNATIVE

The Preferred Alternative for remediation of the groundwater contamination at this Site is Alternative 2: Monitored Natural Attenuation (MNA) with Institutional Controls. This alternative relies on natural degradation processes already occurring at the Site to further reduce contaminant concentrations to levels below the MCLs. With this alternative, the Site will undergo groundwater sampling on a semiannual basis to monitor progress and institutional controls will be put in place to prevent exposure of receptors.



The source of contamination in soil was reduced to concentrations below the levels determined by KDHE to prevent further leaching of contaminants to groundwater through a source removal pilot study (using soil vapor extraction and bioventing technologies) completed in May of 1995. Natural attenuation combined with the source removal in the mid-1990s has been responsible for the continuing decrease of contaminant levels in groundwater. For the final round of groundwater sampling for the RI in August of 1999, twelve monitoring wells had contaminants at levels greater than MCLs. The



number of monitoring wells with contaminants at levels greater than MCLs has decreased steadily since then (see Figure 5) with only four wells that had contaminants at levels greater than MCLs in August of 2003. Contaminant levels within the monitoring wells are also decreasing. As shown on Figure 6, the contaminants in Monitoring Well FP-96-09b have decreased significantly since the start of monitoring in 1996. This well is located approximately 300 yards down the groundwater flow path from the fire training area and displays contaminant concentration trends representative of monitoring wells within the plume.

The Preferred Alternative was selected over the other alternatives because it is expected to continue to provide risk reduction through degradation of contaminants in the groundwater and provides measures to prevent future exposure to currently contaminated groundwater. Based on the information available at this time, the Army, EPA, and KDHE believe the Preferred Alternative would be protective of human health and the environment, would comply with ARARs, would be cost effective, and would utilize permanent solutions to the maximum extent practicable. The Preferred Alternative can change in response to public comment or new information.

COMMUNITY PARTICIPATION

The Army, EPA, and KDHE provide information regarding the cleanup of this Site to the public through public meetings; presentations and discussions at Restoration Advisory Board (RAB) meetings; the Administrative Record for the Site, and announcements published in the *Junction City Daily Union* and *Manhattan Mercury* newspapers. The Army, KDHE, and EPA will rely on public input to ensure that the concerns of the community are considered in selecting an effective alternative for this Site.

An Availability Session will be held during the public comment period to present the conclusions of the RI and FS Reports, to further elaborate on the selection of the preferred alternative, and to receive public comments. The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record, are provided on the front page of this Proposed Plan.

For further information on the Former Fire Training Area, Marshal Army Airfield, Fort Riley, Kansas, please contact:

Oral Saulters
Project Manager
(785) 239-2140

Mr. Craig Phillips
IRP Program Manager
(785) 239-8574.

Directorate of Environment and Safety
AFZN-ES-OM (IRP)
Building 407 Pershing Court
Fort Riley, Kansas 66442-6016

ACRONYMS

ARARs	Applicable or Relevant and Appropriate Requirements
Army	United States Department of the Army
BNP	Bimetallic Nanoscale Particles
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cis-1,2-DCE	cis-1,2-dichloroethene
COPCs	Contaminants of Potential Concern
EAB	Enhanced Anaerobic Bioremediation
EPA	United States Environmental Protection Agency, Region VII
Fe^0	Zero-Valent Iron
Fe^{+2}	Ferrous Iron
FFA	Federal Facility Agreement
FFTA	Former Fire Training Area
FS	Feasibility Study
ISRM	In-Situ Redox Manipulation
KDHE	Kansas Department of Health and Environment
MAAF	Marshall Army Airfield
MCL	Maximum Contaminant Level
MNA	Monitored Natural Attenuation
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NPL	National Priorities List
PCE	Tetrachloroethene
Fe^0 PRB	Zero Valent Iron Permeable Reactive Barrier
O&M	Operation and Maintenance
ppb	Part per Billion
PRGs	Preliminary Remedial Goals
ROD	Record of Decision
RAOs	Remedial Action Objectives
RI	Remedial Investigation
RCRA	Resource Conservation and Recovery Act
TCE	Trichloroethene

GLOSSARY OF TERMS

Specialized terms used in this Proposed Plan are defined below:

Administrative Record – The body of documents available to the public associated with characterization and remedy selection at a site.

Applicable or Relevant and Appropriate Requirements (ARARs) – The Federal and State environmental laws that a selected remedy will meet. These requirements may vary among sites and alternatives.

Baseline Risk Assessment – An evaluation of the potential threat to human health and the environment in the absence of any remedial action.

Bioremediation – The use of microorganisms to transform or alter, through metabolic or enzymatic action, hazardous organic contaminants into non-hazardous substances.

Carcinogen – Capable of causing the cells of an organism to react in a manner to produce cancer.

Capital Costs – Expenditures initially incurred to build or install the remedial action.

Contaminant Plume – A column of contamination with measurable horizontal and vertical dimensions that is suspended in and moves with ground water.

Ecological Risk Assessment – Study that assesses risks to aquatic and terrestrial receptors posed by contaminant releases from a site.

Excess Lifetime Cancer Risk - Cancer posed by a contaminated site in excess of the lifetime probability of developing cancer from other causes.

Feasibility Study (FS) – Identifies and evaluates the appropriate technical approaches and treatment technologies to address contamination at a site.

Federal Facility Agreement (FFA) – A written agreement between the EPA and a federal agency that sets forth the roles and responsibilities of the agencies for performing and overseeing the activities. States are often parties to interagency agreements.

Groundwater – Underground water that fill pores in soils or openings in rocks to the point of saturation. Groundwater is often used as a source of drinking water via municipal or domestic wells.

Groundwater Monitoring – Ongoing collection of groundwater information about the environment that helps gauge the effectiveness of a clean-up action.

Hazard Index - The total potential for noncancer health effects, such as organ damage, from chemical exposures.

Human Health Risk Assessment – A study that determines and evaluates risk that site contamination poses to human health.

In Situ – In the natural or original place or location.

Institutional Controls – Actions taken to limit unauthorized access to the site, control the way in which an area of the site is used, and monitor contamination migration.

Maximum Contaminant Level (MCL) – The maximum permissible level of a contaminant in water that is delivered to any user of a public water system under the Safe Drinking Water Act.

Monitored Natural Attenuation (MNA) – refers to the periodic sampling and monitoring of geochemical and contaminant conditions at a site.

National Oil and Hazardous Substance Pollution Contingency Plan (NCP) – Regulations governing cleanups under EPA's Superfund program.

National Priorities List (NPL) – EPAs' list of the most serious uncontrolled or abandoned hazardous waste sites identified for cleanup under the Superfund program.

Natural Attenuation – The processes in soil and groundwater environments that act without human intervention to reduce the mass, toxicity, mobility, volume, or concentrations of contaminants in those media. These in-situ processes include biodegradation, dispersion, dilution, adsorption, volatilization, and chemical or biological stabilization or destruction of contaminants.

Part per Billion (ppb) – A unit of measurement equivalent to one microgram of contaminant per liter of water.

Periodic Costs – Costs that occur only once every few years during the O&M period; may be either capital or O&M costs.

Pilot Study – Small-scale test to evaluate the success of a technology and potentially determine design criteria for a full-scale test.

Preferred Alternative – Final remedial alternative that meets NCP evaluation criteria and is supported by regulatory agencies.

Present Value Cost – A method of evaluation of expenditures that occur over different time periods. By discounting all costs to a common base year, the costs for different remedial action alternatives can be compared on the basis of a single figure for each alternative. When calculating present worth cost for Superfund sites, total operations & maintenance costs are to be included.

Remedial Action – Action(s) taken to correct or remediate contamination.

Remedial Action Objectives (RAOs) – Remediation objectives for protection of human health and the environment.

Record of Decision (ROD) – A formal document that is a consolidated source of information about a Superfund site, the remedy selection process, and the selected remedy.

Receptor – An organism that receives, may receive, or has received environmental exposure to a chemical.

Remedial Investigation (RI) – A study conducted to identify the types, amounts, and locations of contamination at a site.

Resource Conservation and Recovery Act (RCRA) – The Federal act that established a regulatory system to track hazardous wastes from the time they are generated to their final disposal. RCRA also provides for safe hazardous waste management practices and imposes standards for transporting, treating, storing, and disposing of hazardous waste.

Newspaper Ad Insert

Fort Riley Proposes Cleanup Plan for Contaminated Groundwater

Proposed Plan
Fort Riley
Kansas

The United States Department of the Army (Army), the lead agency for Site activities, with support from the United States Environmental Protection Agency Region VII (EPA) and the Kansas Department of Health and Environment (KDHE), will hold a Public Meeting to discuss the Remedial Investigation (RI) and Feasibility Study (FS) Reports and Proposed Plan for the cleanup of contaminated groundwater associated with the Former Fire Training Area at Marshall Army Airfield, Fort Riley, Kansas (Site). The RI and FS Reports discuss the risks posed by the Site and present an evaluation of cleanup options. The Proposed Plan identifies a preferred cleanup alternative for the public to comment on along with the other options considered.

The DA, EPA, and KDHE evaluated the following options for addressing the contaminated groundwater at this Site:

- **Monitored Natural Attenuation with Institutional Controls**
- Enhanced Anaerobic Bioremediation with Institutional Controls and Monitored Natural Attenuation
- Zero-Valent Iron Permeable Reactive Barrier with Institutional Controls and Monitoring
- In-Situ Redox Manipulation with Institutional Controls and Monitoring
- Bimetallic Nanoscale Particles with Institutional Controls and Monitored Natural Attenuation
- Air Sparge/Soil Vapor Extraction with Institutional Controls and Monitoring
- Groundwater Extraction and Ex-Situ Treatment with Institutional Controls and Monitoring

Based on all available information, the preferred alternative proposed for public comment at this time is **Monitored Natural Attenuation with Institutional Controls**, which relies on natural degradation processes already occurring at the Site to further reduce contaminant concentrations to levels below the remedial action objectives. With this alternative, the Site will undergo groundwater monitoring on a semiannual basis and institutional controls will be put in place to prevent exposure of receptors. Groundwater monitoring is intended to provide a level of protection to ensure that risk levels are adequate at the Site during the remediation period. The purpose of institutional controls is to limit exposure to contaminants in the groundwater. Institutional controls at this Site will likely consist of State Environmental Use Controls to restrict drilling or using water wells for domestic or other purposes. If contaminant levels exhibit statistically significant increases over a one-year period before reaching the remedial action objectives or remedial action objectives are not met within an acceptable timeframe, then a contingent alternative will be implemented.

The Preferred Alternative was selected over the other alternatives because it is expected to achieve substantial risk reduction through degradation of contaminants in the groundwater and provides measures to prevent future exposure to currently contaminated groundwater.

Although this is the preferred alternative at the present time, the Army, EPA, and KDHE welcome the public's comments on all of the alternatives listed above. The formal comment period ends on August 11, 2004. The Army, EPA, and KDHE will choose the final remedy after the comment period ends and may select any one of the options after taking public comments into account.

Public Comment Period:
July 13 – August 11, 2004
The Army will accept written comments on the Proposed Plan during the public comment period.

Public Meeting:
July 20, 2004
The Army will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at 407 Pershing Court, Fort Riley, Kansas at 7 p.m. in conjunction with the Restoration Advisory Board.

Copies of the RI/FS reports and Proposed Plan are available for viewing at the following locations:

Dorothy Bramlage Public Library
230 West Seventh Street
Junction City, Kansas
(785) 238-4311
Hours: Mon – Sat 9:30 a.m. – 6 p.m.
Sun 1 p.m. – 6 p.m.

Manhattan Public Library
Manhattan Kansas 66502
(785) 776-4741
Hours: Mon – Thurs 9 a.m. – 9 p.m.
Fri 9 a.m. – 6 p.m.
Sat 9 a.m. – 6 p.m.
Sun 1 p.m. – 6 p.m.

The Administrative Record can be viewed at:

Directorate of Environment and Safety
AFZN-ES-OM (IRP)
Building 407 Pershing Court
Fort Riley, Kansas 66442-6016
(785) 239-8619
Hours: Mon – Fri 9 a.m. – 4 p.m.

For further information or to submit written comments, please contact:

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(785) 239-2140

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AFZN-ES-OM (IRP)
Building 407 Pershing Court
Fort Riley, Kansas 66442-6016

PUBLIC MEETING—PROPOSED PLAN—FORMER FIRE TRAINING AREA, MARSHALL ARMY AIRFIELD, FORT RILEY, KANSAS

BOARD MEMBERS PRESENT

B. CRAIG PHILLIPS	DR. RICHARD SHIELDS
LARRY DENVER	FLORENCE WHITEBREAD
BRYANT BURNETT	ROBERT WEBER
HARRY HARDY	IRWIN HOOGHEEM
ORAL SAULTERS	WAYNE HENSEN
JOHN SHIMP	STEVE HIGGINS
DAWN TROTTER-MEADOWS	ANDREA AUSTIN

MAJOR JEFFREY BUCZKOWSKI

MEMBERS OF THE PUBLIC PRESENT

CARIN RICHARDSON

[The meeting was called to order at 1907 hours, 20 July 2004.]

Oral Saulters: I'd just like to start with a brief overview of the plan itself. As everyone knows, the public comment period opened July 13th and it will extend through August 11th. Overall these are some of the highlights in the plan itself.

The figure on the right gives you some idea of the groundwater plume that extends from the former fire training area all the way to the Kansas River. And you also get some sense of the extensive monitoring network that we have set up.

A little bit of history on the site. It was operated for just over 20 years as a fire training exercise area. Back in 1982, it was reported that there was one drum of PCE that was released inadvertently. The next day it was cleaned up, but unfortunately some of it did escape to the subsurface and into groundwater. Back in 1994, Fort Riley initiated a pilot study to address the source in the soils and groundwater. It effectively removed a significant amount of the contaminate stuff. And in 2002, we undertook an alternate water supply project. We replaced two wells that were on private property and we plugged and banded five wells.

As a result of the remedial investigation and feasibility study, the groundwater was identified as the only medium of concern and TCE and DCE, which are degradation products with that initial release of PCE, were the only remaining contaminants. One thing to note is based on our monitoring results, we are seeing continued levels decreasing. So that is very much a good thing.

The figure on the right---I apologize, I know it's somewhat difficult to read. The main thing to extract here is that there are two areas---only two areas that are above MCLs--- EPA MCLs. And overall on the bottom we get some sense of the

CERCLA
circular process and where we are at now. The next milestone will be the record of decision.

Now what kind of risk does the site actually present? As part of the baseline risk assessment, we looked at both human health and the ecological receptors and we found that all of these indicators suggested that we were within the EPA acceptable ranges. We looked at both onsite and off post populations, both for cancer and non-cancer. And as far as ecological, we looked at both terrestrial and aquatic organisms.

The conceptual cartoon at the bottom again gives you some idea of the plume and its actually diving as it migrates towards the Kansas River. And again, we only see two areas above MCLs, two isolated areas.

Initially we looked at over 85 different processes and technologies. And through the screening of alternatives and the feasibility study, we were able to narrow that down to eight that were viable. And these range from no action, which is a regulatory requirement through CERCLA, all the way through some more sophisticated technologies, and also some that were much more innovative. But ultimately, number two, Monitored Natural Attenuation, was identified as the preferred clean up remedy. And really, Monitored Natural Attenuation is building on what Mother Nature is effectively doing at the site. It involves a

series of both chemical, physical, and biological processes. And as you can see, there truly is a plethora of activities that are going on at the site. It is a passive approach, but a critical component is that it is coupled with source control. And the '94 pilot study, which truly affected the removing of the source, so this is consistent of the policies of both EPA and KDHE. You see the advantages and disadvantages. And actually we're ahead of the predicted modeling schedule of somewhere around 10 years and that's been accelerated.

One of the other disadvantages that was identified as public awareness, people think this is a no action approach and actually there is a very involved monitoring program. We look at both the chemical constituents and the geo-chemical indicators, which truly point to these mechanisms at work.

The figures just give you some sense of these mechanisms in the subsurface. With the example on the left, we see a drum of solvent and the actual---the release and some of the different processes at work. And then on the right, we see the chlorinated solvent and the reductive de-chlorination, it's at work, and the degradation series, that sequence, which is very much consistent with our comparable modeling results.

Overall comparisons were made to the nine EPA criteria. Seven are listed there. The first two are critical,

protection of human health in the environment and meeting all applicable laws and regulations. And as you can see, MNA scored very strongly, along with the others. And the next five are a little bit more technical and these are the primary balancing criteria. And again, MNA was strong in all these categories. And the final two are support agency acceptance, which would be our regulatory partners, EPA, KDHE, and then community acceptance.

And we put in the cost summary to just give you some idea of the relative scale. MNA came out at about two million dollars, which was on the low end compared to some of the other technologies.

And in closing, MNA is our preferred remedy at this juncture and is combined with some of the institutional controls, which would limit exposure to groundwater. And as I said earlier, we are seeing decreasing levels. As recently as August of 2000, we have 13 wells above MCLs. Now we are down to only three as of February of this year.

And I will note some of the milestones for public involvement. As I said, the public comment period will close 11 August and the next big event will be the record of decision. And tentatively we've scheduled the comment period for May of 2005.

If you are interested in looking at an electronic version, the Fort Riley website. Mr. Phillips has graciously uploaded that. So if you want to take an in-depth look at the plan itself, you might utilize that opportunity.

Otherwise, any questions?

Larry Denver: Oral.

Oral Saulters: Yes, sir.

Larry Denver: I've asked this question before 4 or 5 years ago. I still don't understand. It's very hard for me to---I mean, I know the rest of you have more expertise in this area. That has been a tremendous thorn in our side for such a small spill. And no one's ever satisfactorily explained that to me. And in cleaning it, a supposed small spill, and the fact that it was cleaned up really pretty rapidly, supposedly.

Oral Saulters: Yeah. One thing that's kind of difficult to put into perspective is when we are talking about these parts per million, parts per billion. That level is extremely small quantities and I think that, coupled with the degradation, it makes it difficult, I think, to conceptualize truly. I mean, for all of us. I agree with you.

Larry Denver: Well, the plume that went out is a long one---I guess it was two. Two plumes---two things that went out. At least whatever went out in that underwater, underground

area, it just seems like---I just can't figure out how in the world that was founded.

Oral Saulters: Yeah. Actually, in that alluvial material it really is taken off with groundwater and the plume is somewhere around a mile long. That's something that Doctor Shields---I mean, he's our expert.

B. Craig Phillips: Larry, let me tell you this, when your-

Larry Denver: I don't doubt it. Don't misunderstand.

B. Craig Phillips: Let me see if I can give you a better perspective here. The product that was in the barrel was not quite a billion parts per billion, but hundreds of thousands of parts per billion of PCE. The levels we are talking about down here right now are eight parts per billion.

Larry Denver: So if you spread that out.

B. Craig Phillips: And when it was first spilled, you know, that hundreds of thousands of parts per billion went into the ground, got into the groundwater, and then diluted with the millions of gallons of water that's down there down to---what was our highest down there? Maybe 1500 or did we have some really, really high?

It never was that----

Dr. Richard Shields: I don't think we ever got any higher than about 1500.

B. Craig Phillips: Yeah, we had some 1000, 1500 parts per billion and----

Larry Denver: That's a lot compared to what you can get.

B. Craig Phillips: Yeah. So it's a little bit like taking a drop of motor oil and putting it in your bathtub. It just goes everywhere. It is kind of hard to get around and we throw around parts per billion numbers.

Larry Denver: I guess the whole thing about it is it includes all of us to think what we are doing. This thing just has staggered me how that did that. I've been down the lead trail, radon, and all that stuff. You know, but this is really beyond mine.

B. Craig Phillips: That's a little easier to get your head around sometimes, parts per billion, because when you're talking about carcinogens where it only takes parts per billion of long-term exposure to increase cancer risks, it's a little harder to get around than getting----

Larry Denver: I just needed a refresher.

B. Craig Phillips: I understand. It's good for us to sometimes be asked to put it into---to really think about it from more of a layman's perspective.

Dr. Richard Shields: Particularly when you look at the transmissivity. The way this stuff will move through those alluvial materials down there in the Kansas River. They are extremely porous and it moves with quite a bit of rapidity through those things.

Larry Denver: I don't think the average person realizes when they poor something out, I don't think I did, what really happens.

B. Craig Phillips: Right. Good question.

Oral, would you talk just for a minute about what--- you mentioned the opportunity for public comment and part of this is informing the public or having the public buy in, as well as having the regulator buy in to the process and the proposed plan. Would you just tell the folks what we did regarding the directly affected population down in the valley down there where the plume actually is in sending them the letters and what those letters said?

Oral Saulters: Yes.

As part of the public involvement process, we do have leases with some of the landowners adjacent to Fort Riley through the Corps of Engineers. So we made a specific effort to reach out to them personally and let them know about this opportunity and to keep them informed. We thought that was

particularly important. And that coupled with our relationship with EPA and KDHE, they encourage us as well to give them every opportunity to be involved.

B. Craig Phillips: When did we send those letters? I don't recall.

Oral Saulters: I believe right around the first of July.

B. Craig Phillips: A good couple weeks ago.

Oral Saulters: Yeah.

B. Craig Phillips: So they've been out there for a while. They pre-dated the public comment and thus far I have received no written comments. In case you didn't see it, the public notice ran in the Manhattan Mercury, the Junction City, and the Clay Center papers.

Dr. Richard Shields: They were sent out with return receipts too to ensure that they were in fact received.

Florence Whitebread: When you said that the soil is porous though, doesn't that help cleanse and pick up some of those particles? I mean pick it up out of the water stream?

Dr. Richard Shields: It will allow it to transport much more quickly out of the system and not be retained. And it also tends to hold---will hold onto some of it, physical absorption under the mineral grains, but yes, it does help flush it. And why you see it diving or going deeper is because the recharge is

moving the dissolved phase deeper into the bottom of the aquifer and then out through the bottom. Once it hits bedrock, it will just move along the bedrock interface to discharge into the Kansas River.

B. Craig Phillips: Do we have any comments from our member of the public?

Carin Richardson: I read the proposed plan in an article on the internet and it was actually really easy to find. And for someone who is simple, the conclusion, did you read it? The conclusion was exactly what it needed to be. It was one paragraph that stated this is why we chose what we did and that was pretty good.

Harry Hardy: I just want to make a comment too. I think looking at it kind of from a legal perspective, but also looking at it as a document that goes out to the public, commend all parties involved, both regulatory agencies and the Army, in putting together a document that the public could easily read and understand what the alternatives and course of action and why chosen. It's really what's intended by the documents that the public gets so they understand these and they are not getting something really, extremely technical that they can't know what it is that we are proposing to do. So for all of you, time well spent.

B. Craig Phillips: Indeed. And on behalf of the installation, I want to thank Rob and Bryant and their predecessors and all their teams for helping us get here. It definitely was a team effort. Not just the folks on my team, but our regulatory partners, and I want to thank them very much for all their help in helping us get here. It seems like it's been a long road, but this is a monumental time for us and we are moving well on all the projects.

Thank you, Oral.

Oral Saulters: Thank you. And we do have hard copies available if anyone wants any.

B. Craig Phillips: With that, unless anyone else has anything, I guess we are officially done with the public comment portion of the meeting.

Thank you.

[The meeting concluded at 1923 hours, 20 July 2004.]

C E R T I F I C A T I O N

The meeting was recorded and transcribed verbatim by Jennifer L. Gibson, court reporter, on Tuesday, July 20, 2004.

Jennifer L Gibson

JENNIFER L. GIBSON 27 July 2004