REVISED FINAL

PHASE II RCRA FACILITY INVESTIGATION REPORT FOR THE FORMER 724th TANKER PURGING STATION (SWMU 26) FORT STEWART, GEORGIA

REGULATORY AUTHORITY
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The undersigned certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction.

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List of Abbreviations and Acronyms

amsl	above mean sea level
ASTM	American Society for Testing and materials
AUF	Area Use Factor
BAF	bioaccumulation factor
BCF	bioconcentration factor
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CAP	Corrective Action Plan

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMCOC	contaminant migration constituent of concern
CMCOPC	contaminant migration constituent of potential concern
COC	chemical/contaminant of concern
COPC	chemical/contaminant of potential concern
CSM	conceptual site model
DAF	dilution attenuation factor
DPW	Directorate of Public Works
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
ERA	Ecological Risk Assessment
ESV	ecological screening value
FSMR	Fort Stewart Military Reservation
GEPD	Georgia Environmental Protection Division
GSSL	generic soil screening level
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
IDW	investigation-derived wastes
LOAEL	lowest observed adverse effect level
MCL	maximum contaminant level
NAPL	nonaqueous phase liquid
NOAEL	no observed adverse effect level
PAH	polyaromatic hydrocarbon
PCE	1,1,2,2-tetrachloroethene
PID	photoionization detection
PRE	Preliminary Risk Evaluation
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SAIC	Science Applications International Corporation
SQB	sediment quality benchmark
SRC	site-related contaminant/chemical
SSL	Soil Screening Level
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
TPH-DRO	TPH-diesel range organic
TPH-GRO	TPH-gasoline range organic
TPS	Tanker Purging Station
TRV	toxicity reference value
USACE	U.S. Army Corps of Engineers
UTL	upper tolerance level
VOC	volatile organic compound

EXECUTIVE SUMMARY

This report summarizes the results of the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for the Former 724th Tanker Purging Station (TPS), Solid Waste Management Unit (SWMU) 26, at Fort Stewart, Georgia. This report has been prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE), Savannah District, under Contract DACA21-95-D-0022, Delivery Order No. 0007. The RFI sampling was conducted in accordance with USACE guidance EM200-1-3 and the approved Phase II RFI Work Plan.

The Former 724th TPS was located in the western cantonment area, which is in the southern portion of the Fort Stewart Military Reservation (FSMR). The tanker purging station was an area where tanker trailers that carried diesel, JP-4 jet fuel, and mogas were routinely cleaned. During August 1996, the tanker purging station was dismantled, the underground facilities were removed, and approximately 525 cubic yards of contaminated soil were excavated and replaced with clean backfill.

Potential contamination due to fuel leakage at the site was investigated during a Phase I RFI for 24 SWMUs at Fort Stewart in 1993. Analytical results from soil sampling conducted at the Former 724th TPS indicated fuel product and solvent contamination in soil. Based on these findings, the Georgia Environmental Protection Division (GEPD) instructed the Fort Stewart Directorate of Public Works (DPW) to conduct a Phase II RFI.

The objectives of the Phase II RFI for the Former 724th TPS, as defined in the Work Plan approved by GEPD on June 10, 1997, are as follows:

- determine the horizontal and vertical extent of contamination;
- determine whether contaminants present a threat to human health or the environment;
- determine the need for future action and/or no further action; and
- gather necessary data to support a Corrective Action Plan (CAP), if warranted.

SUMMARY OF INVESTIGATION ACTIVITIES

The information provided in this report is based upon data collected previously during the Phase I RFI and data collected as part of the Phase II field sampling and analysis. The scope of the Phase II field work included the following activities:

- Collecting direct-push soil samples using a push probe at a total of 21 locations. Direct-push soil samples were analyzed for volatile organic compounds (VOCs).

- Collecting direct-push groundwater samples using a push probe at a total of 17 locations, including 5 vertical profile probes. Direct-push groundwater samples were analyzed for VOCs.

- Installing five permanent groundwater monitoring wells both upgradient and downgradient of the site. Soil samples were collected from each well borehole and analyzed for VOCs, polynuclear aromatic hydrocarbons (PAHs), and RCRA metals.

- Collecting groundwater samples from the new wells for a total of five samples. Groundwater samples were analyzed for VOCs, PAHs, and RCRA metals.

- Completing aquifer (slug) tests in each of the newly installed wells.

- Collecting surface water and sediment samples at a total of five locations within the swale adjacent to the site and within Mill Creek.

PHYSICAL CHARACTERISTICS OF THE SITE

The former TPS occupied an area approximately 30 feet by 50 feet, located between a fuel truck parking area to the east and a shallow swale to the west. The topography at the site varies between 60 and 70 feet mean sea level (msl). The drainage swale accepts runoff from the site and the adjacent fuel truck parking area, but is not connected to Mill Creek or its tributaries. Mill Creek is the nearest surface water stream to the Former 724th TPS and is located approximately 1200 feet west of the site.

The surficial soils at the site are generally a light gray sand or silty sand up to 15 feet thick. Interbedded clayey sand and sandy clay layers generally underlie these surficial sandy layers to a depth of 15 to 25 feet. A light gray to greenish gray sand and silty sand was encountered beneath these clayey layers and varied from 5 to 15 feet thick. A dark greenish gray silty and clayey sand with shells (typical of the Hawthorn formation) was present in the lower portion of the soil profile to the maximum depth explored (51 feet). Results of geotechnical analyses indicated that the soils tested are generally non-plastic silty to clayey sands, with between 4 and 48 percent by weight fine-grained particles. One soil sample from well MW-1 located northeast of the site consisted of a clayey sand having high plasticity and a low laboratory permeability of 2×10^{-6} cm/sec. Results of aquifer (slug) tests indicated hydraulic conductivities ranging from 2.0×10^{-5} to 4.0×10^{-4} cm/sec for the five wells.

The uppermost hydrogeologic unit is the surficial aquifer, which ranges from 55 to 150 feet in thickness at the FMSR. Water levels measured during well development and sampling varied from the shallowest (3 feet) at MW-1, to the deepest (10 feet) at MW-5 located near Mill Creek. Groundwater flow within the water table is to the west-northwest, ultimately discharging to Mill Creek approximately 1,200 feet from the site. The horizontal gradient is approximately 0.01 foot/foot at the site, and approximately 0.0083 between the site and Mill Creek. The calculated groundwater flow velocity averages approximately 3.6 feet/year towards Mill Creek.

Monitoring well MW-4 is screened within the surficial aquifer at a depth of 35 to 45 feet below ground surface. Water levels in MW-4 were compared to those in an adjacent well, MW-2, which is screened at the water table. Water levels in the deeper well MW-4 were 2.87 feet lower than in MW-2, indicating a downward hydraulic gradient of 0.082 foot/foot. The downward gradient may indicate that the clayey sand layers act as a semi-confining unit, restricting downward migration of groundwater.

CONTAMINANT NATURE AND EXTENT

Results of chemical analyses indicate that soils, groundwater, surface water, and sediment at the site contain organic and metal contaminants at concentrations greater than their reference background concentrations. The predominant contaminants in both soil and groundwater are fuel-related chemicals such as benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds, with secondary contaminants such as acetone, 1,1-dichloroethane, and naphthalene.

Contamination present in surface and subsurface soils is dominated by BTEX and secondary PAH contaminants. Maximum BTEX concentrations reported in soil include benzene (9420 μg/kg), toluene (27,400 μg/kg), ethylbenzene (27,100 μg/kg), and total xylenes (124,000 μg/kg). BTEX contamination in soil extends to the water table (approximately 6 feet deep) and is greatest immediately north and east of the area where contaminated soils were removed in August 1996. The remaining soil contamination covers an area approximately 60 × 75 feet.

BTEX contamination in groundwater extends to a depth of approximately 20 feet below the water table, although isolated areas of BTEX were found in groundwater to depths up to 40 feet. Maximum concentrations were found at the water table in a direct-push groundwater probe (GP.1) and include benzene (8,090 μg/L), toluene (4,200 μg/L), ethylbenzene (2,870 μg/L), and xylenes (12,100 μg/L). These concentrations exceed the respective maximum contaminant levels (MCLs) for each chemical. The BTEX contamination covers a plume area approximately 100 feet wide by 160 feet long, extending from the Former 724th TPS facilities to the north and west. Mill Creek is more than 1,000 feet from the leading edge of the BTEX plume and is, therefore, not being impacted by the contamination. Biodegradation of the BTEX is likely occurring, as evidenced by the presence of methane, a breakdown product of BTEX degradation.

Limited metal contamination is present at the site and in the swale immediately west of the site. In surface and subsurface soils at the site, maximum concentrations of cadmium (0.44 mg/kg), chromium (12.9 mg/kg), and mercury (0.06 mg/kg) were reported. In groundwater at the site, maximum concentrations of arsenic (3.5 μg/L), barium (99.2 μg/L), mercury (0.3 μg/L), and silver (4.1μg/L), were reported, although concentrations in the upgradient well MW-1 were generally higher than those in the downgradient wells and, therefore, may not be site related. In sediments within the swale, concentrations of barium (29.2 mg/kg), mercury (0.07 mg/kg), and silver (2.6 mg/kg) were reported at levels above reference background criteria for both sediment and soil media; chromium (4.4 mg/kg) and lead (6.6 mg/kg) were both higher than reference background criteria for sediment, but below the criteria for surface soil and, therefore, may not be site-related. In surface water, concentrations of cadmium (1.7 μg/L), lead (10.8 μg/L), mercury (0.18 μg/L), and silver (1.3 μg/L) were reported at levels above reference background criteria for both surface water and groundwater; arsenic (1.8 μg/L) was higher than reference background for surface water, but below the criteria for groundwater and, therefore, may not be site related.

Constituents in Mill Creek are not related to the Former 724th TPS, since neither contaminated groundwater nor runoff from the site discharge directly to the creek.

CONTAMINANT FATE AND TRANSPORT

Contaminant fate and transport analysis provided an assessment of the potential migration pathways and transport mechanisms affecting the chemicals at the sites. In particular, the leachability of contaminants from soil to groundwater and their natural attenuation in groundwater was evaluated.

Organic compounds have been detected in surface and subsurface soils at concentrations that exceed U.S. Environmental Protection Agency (EPA) Generic Soil Screening Levels and, therefore, could migrate from soils to the water table at concentrations exceeding their respective MCLs. These organics, which include BTEX, acetone, and naphthalene, have already reached the groundwater because of their high mobilities and historically higher soil concentrations. However, groundwater movement off site is very slow (3.6 feet/year) and may take 280 years to reach the receptor location (Mill Creek).

The BTEX compounds are currently observed above their respective MCLs in groundwater. Based on the site conceptual model, these contaminants have likely been leaching from the contaminated soils into the groundwater beneath the site resulting in concentrations above their MCLs, and will likely continue to leach in the future. However, off-site migration of these contaminants will be very limited due to retardation and biodegradation as well as the slow movement of groundwater flow.

Benzene will degrade from its observed maximum of 8,090 µg/L at the source to a concentration less than its MCL of 5 µg/L in less than 22 years, based on a conservative benzene biodegradation half-life of 2 years. Traveling at a groundwater flow rate of 3.6 feet/year for those 22 years, groundwater would not be expected to exceed its MCL at a distance of 80 feet from the source. Similarly, ethylbenzene, toluene, and xylene, with higher biodegradation rates, will remain at concentrations much lower than benzene. Therefore, it may be concluded that none of the constituents from the Former 724th TPS site is expected to be of potential concern at the nearest receptor location (Mill Creek), which is located nearly 1,200 feet from the former facility.

HUMAN HEALTH RISK ASSESSMENT

The human health risk assessment included a Step 1 risk evaluation to determine potential human health risks associated with the contaminants. Contaminants of potential concern (COPCs) have been identified as those constituents present at concentrations higher than their reference background criteria and higher than their respective EPA Region III risk-based screening criteria.

In surface soil, there are no COPCs for human health, because no constituent exceeded its respective risk-based screening criterion for exposure to a residential receptor.

In subsurface soil, there are likewise no COPCs for human health as a result of direct exposure; no constituent presents a significant potential risk to receptors. As discussed for fate and transport, acetone, BTEX, and naphthalene have been identified as contaminants in subsurface soil that may leach into groundwater at concentrations that are unacceptable in terms of using groundwater as a drinking water source.

In groundwater, the initial COPCs are acetone, arsenic, 1,1-dichloroethane, 1,2-dichloroethane, chloroform, chloromethane, and BTEX. These constituents present a potential threat to human health as a result of using groundwater as a source of drinking water. However, the maximum concentration of arsenic (3.5 µg/L) was well below its MCL of 50 µg/L, and was only slightly above its reference background concentration of 3.02 µg/L. Arsenic exceeded background in only a single downgradient well (MW-2) and was reported at an even higher concentration in the site-specific upgradient well (10.1 µg/L at MW-1). Therefore, arsenic in groundwater is not considered site related and is not a COPC.

In addition, use of the surficial groundwater at this site for drinking water is unlikely. Given the shallow depth of the surficial aquifer and the presence of the deeper principal artesian aquifer (a common source of drinking water throughout the region), the use of the surficial aquifer is not considered to be a viable exposure scenario. However, drinking water screening values were used in the absence of more appropriate values.

In surface water and sediment, there are no human health COPCs because no constituent exceeded its respective risk-based criterion for exposure to a residential receptor.

ECOLOGICAL RISK ASSESSMENT

The ecological risk assessment provided a Phase 1 preliminary risk evaluation for potential terrestrial and aquatic receptors at the site. The Preliminary Risk Evaluation for the Former 724th TPS identified ecological COPCs in surface water, sediment, and groundwater based on a comparison of their maximum site concentrations to their EPA Region 4 ecological screening values. Preliminary risk calculations for identified ecological COPCs in Mill Creek surface water were based on a comparison of detected concentrations to toxicity reference values (TRVs) for surrogate species representing ecological receptors.

Chromium was the only chemical detected in surface soil at the Former 724th TPS at concentrations that exceeded both reference background criteria and the TRVs for an ecological receptor (robin). There is uncertainty about whether earthworms from the Former 724th TPS will constitute 20 percent or more of the diet of robins foraging at the site. Thus, robins are unlikely to be at risk from chromium in surface soil.

There is uncertainty about whether ethylbenzene, benzo(b)fluoranthene, and styrene are ecological COPCs in surface soil, because there are no TRVs for these substances. Benzo(b)fluoranthene and styrene were not present in surface soil at the site, but were detected only at MW-5 (adjacent to Mill Creek) at concentrations near their detection limit, and are therefore not site related. Ethylbenzene was detected in surface soil at MW-2 and is related to former releases at the site. However, ethylbenzene in surface soil is unlikely to pose a risk to ecological receptors given the low concentration (0.02 mg/kg) relative to the proposed TRV for ethylbenzene of 8.4 mg/kg, which is one-tenth the TRV total xylenes. There are, therefore, no ecological COPCs in surface soil.

Barium and silver were identified as ecological COPCs in sediment in the drainage swale, but exposure of sediment-dwelling biota to sediment in the swale was judged to be unlikely. The swale is an ephemeral surface water body, as shown by the lack of water at SWS-3 at the time of sampling, and is unlikely to support a community of aquatic sediment-dwelling organisms. Exposure of other types of receptors (e.g., terrestrial animals) to swale sediment by direct contact and ingestion is likely to be minimal. There are, therefore, no ecological COPCs in sediment in the swale.

Cadmium, lead, and silver were detected in surface water in the drainage swale at the Former 724th TPS at concentrations that exceed reference background criteria and also exceed EPA Region 4 ecological screening values for aquatic biota. However, there are no aquatic biota or other ecological receptors of concern in the man-made swale. Maximum surface water concentrations of cadmium and lead do not exceed a published TRV for terrestrial receptors (raccoons) and are, therefore, not of concern. There is uncertainty about whether silver is of concern because there is no published TRV for silver. There are, therefore, no ecological COPCs in surface water in the swale.

According to EPA Region 4 guidance, groundwater is to be treated as surface water in the ecological preliminary risk evaluation. Treating groundwater as surface water is realistic at the Former 724th TPS site because groundwater may discharge to the drainage swale next to the site during times of high groundwater stage.

Barium, mercury, silver, benzene, and chloromethane are present in groundwater at the Former 724th TPS at concentrations that exceed reference background criteria and also exceed EPA Region 4 ecological screening values for surface water. However, there are no aquatic biota or other ecological receptors of concern in the man-made swale. Maximum groundwater concentrations of barium, mercury, and benzene do not exceed a published TRV for terrestrial receptors (raccoons) potentially ingesting groundwater as surface water; therefore, these metals are not of concern for terrestrial receptors. There is uncertainty about whether silver or chloromethane are ecological COPCs in groundwater because there are no published TRVs for them, so that they are potentially of concern for raccoons, by default. However, silver and chloromethane are higher in the upgradient well and are not considered site related. There are, therefore, no ecological COPCs in groundwater at the site.

In Mill Creek, mercury was identified as an ecological COPC in surface water based on comparison to EPA Region 4 ecological screening values. Mercury is also an ecological COPC in surface water for protection of terrestrial predators (mink, green heron) in Mill Creek based on comparison to their TRVs. In Mill Creek sediment, no ecological COPCs were identified, although there is uncertainty about barium, since there are no published values for barium, making it a COPC by default. Ecological risks in Mill Creek are not related to the Former 724th TPS for the following reasons:

- As concluded in the fate and transport evaluation, off-site migration of contaminants would be very limited because of retardation and biodegradation, as well as the slow movement of groundwater. Mill Creek is the nearest surface water stream to the Former 724th TPS and is located approximately 1,200 feet west of the site. Therefore, migration of contaminants to Mill Creek via groundwater discharge is unlikely, and there is no complete pathway from groundwater to ecological receptors in Mill Creek.

- The drainage swale accepts runoff from the site and the adjacent fuel truck parking area, but is not connected to Mill Creek or its tributaries. Therefore, migration of contaminants to Mill Creek via surface water runoff is also not likely, and there is no complete pathway from the Former 724th TPS to ecological receptors in Mill Creek.

SUPPLEMENTAL GROUNDWATER CHARACTERIZATION

Based upon the results of the original Phase II RFI at the Former 724th TPS, a supplemental characterization was conducted in September 1998 to verify concentrations of metals in groundwater and to provide further evidence that natural attenuation of VOCs is occurring. The scope of work included sampling of the four onsite monitoring wells (MW-1 through MW-4) and analyzing the samples for VOCs, PAHs, RCRA metals, and water quality parameters. Results of this supplemental investigation are presented in Appendix H, and summarized below.

VOCs. Seven individual VOCs were detected in groundwater samples. BTEX compounds were detected only in a single well, MW-2, which is screened at the water table and located in the center of the former facility (i.e., the identified source). During sampling, approximately 1.9 feet of free petroleum product were encountered in MW-2; no free product had been encountered in any of the direct-push groundwater samples or any of the wells during the Phase II RFI in August 1997. Once free product was discovered, a ferret system was installed in MW-2 for recovery of the free product; operation of the ferret system is ongoing.

Benzene (1,350 μg/L), ethylbenzene (477 μg/L), toluene (1,540 μg/L), and total xylenes (2,350 μg/L) were reported in MW-2. The concentrations of benzene and toluene exceeded their respective MCLs of 5 μg/L and 1,000 μg/L. No BTEX constituent was found in any of the other wells, confirming the Phase II RFI conclusions that contaminants have not migrated vertically or laterally from the source at the former facility.

The other VOCs that were detected included chloroform (18.7 μg/L at MW-2); 1,1-dichloroethane (1.4 μg/L at MW-3); and 2-hexanone (6.7 μg/L at MW-3). Chloroform and 2-hexanone are common laboratory contaminants and were not detected in these wells during the Phase II RFI, and are therefore not likely a result of contaminant releases from the former facility. 1,1-Dichloroethane was detected in MW-3 during the Phase II RFI at a concentration of 2.2 μg/L, and is considered a secondary contaminant within the primary BTEX plume.

PAHs. Naphthalene was the only PAH compound detected in groundwater. Naphthalene was reported at 242 μg/L at MW-2, which exceeds its EPA Region III risk-based criterion of 150 μg/L. Naphthalene was also detected in MW-2 during the Phase II RFI. The increase in the concentration of naphthalene is likely due to the presence of the free product found during the supplemental sampling.

RCRA Metals. Four metals were detected in the groundwater samples, including arsenic, barium, chromium, and mercury. These metals were detected above the reference background criteria and in the same wells as detected during the Phase II RFI sampling in August 1997. None of the metals exceeded their respective MCL. Silver, which was detected above background in the original Phase II RFI sampling, was not detected above background in the supplemental sampling.

- Arsenic (maximum 16.4 μg/L) was found at its highest concentration in the upgradient well MW-1, and is therefore not considered site related.

- Barium (maximum 87.9 μg/L) and mercury (maximum 0.59 μg/L) were found at concentrations above background in well MW-4, screened at a depth of 35 to 45 feet. In other wells, barium and mercury were found at or below background. Because these metals do not migrate readily and are only present at depth, they are not likely related to any contaminant plume emanating from the facility.

- Chromium (maximum 6.1 μg/L) was found in MW-2 at a concentration only slightly above background and marginally higher than that found during the Phase II RFI (2.4 μg/L). Chromium was not detected in any of the other wells in the vicinity of the Former 724th TPS, and was detected at a concentration well below its MCL (100 μg/L) and its EPA Region II risk-based criterion (180 μg/L). Therefore, no further action is warranted for chromium in groundwater at the facility.

Other Analytes. Alkalinity varied between 102 and 321 mg/L (lowest at the upgradient well MW-1 and highest in the deeper well MW-4). Sulfate varied between 0.18 and 11.4 mg/L (lowest at well MW-2 and highest at MW-4). These results are consistent with the results of the Phase II RFI and suggest that biodegradation is occurring, resulting in higher alkalinity and sulfate content in the downgradient wells.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been made based on the results of the Phase II RFI and the supplemental groundwater investigation:

1. Because there are no ecological COPCs at the Former 724th TPS, an Ecological Risk Assessment is not warranted.

2. Concentrations of metals found during the Phase II RFI are similar to those found during the supplemental sampling. None of the metal concentrations exceed MCLs or EPA Region III risk-based levels. No further corrective action for metals in groundwater is warranted.

3. Free petroleum product was encountered at well MW-2 in the center of the former facility during the supplemental investigation. Free product recovery, which has been undertaken at the site, should be continued.

4. BTEX compounds exceed MCLs in the shallow water table aquifer near the source. There is no evidence that contamination has migrated further beyond the source, despite the presence of free product being discovered. Natural attenuation of organics through biodegradation is occurring, as suggested by the presence of higher methane, alkalinity, and sulfate in downgradient wells.

5. Due to the presence of free product and BTEX compounds at concentrations in groundwater exceeding MCLs, a CAP will be required to evaluate measures to mitigate the effects of these contaminants. The CAP should evaluate the effectiveness of natural attenuation in remediating VOCs in soil and groundwater by using fate and transport modeling of leaching and biodegradation. The CAP should also address mitigation of naphthalene, which was detected during the supplemental investigation at a concentration exceeding its EPA Region III risk-based level and is likely associated with the free petroleum product.

IDENTIFICATION OF REMEDIAL LEVELS

Remedial levels are presented in Table ES-1 for soil and groundwater. Soil remedial levels are based on leaching from soil to groundwater at levels exceeding MCLs or EPA Region III risk-based values. Groundwater remedial levels are based on MCLs, which take into consideration both human health and technological limitations. In the absence of an MCL, the EPA Region III risk-based values for groundwater were used for deriving remedial levels.

Table ES-1. Remedial Levels for Soil and Groundwater
Former 724th Tanker Purging Station, Fort Stewart

Analyte	Soil Remedial Level (µg/kg)	Groundwater Remedial Level (µg/L)
Arsenic	-	-[a]
1,1-Dichloroethane	-	-[b]
1,2-Dichloroethane	-	-[b]
Acetone	370	370
Benzene	20	5
Chloroform	-	0.1
Chloromethane	-	-[b]
Ethylbenzene	3,100	700
Naphthalene	600	150[c]
Toluene	4,200	1,000
Xylenes, total	31,700	10,000

- Indicates no remedial action needed for that analyte.

-[a] No remedial action is needed for arsenic in groundwater since the maximum concentration for arsenic is below its maximum contaminant level (MCL).

-[b] No remedial action is needed for 1,1-dichloroethane, 1,2-dichloroethane, or chloromethane since the maximum concentration for these analytes during the supplemental groundwater sampling did not exceed their respective MCLs or U.S. Environmental Protection Agency (EPA) Region III risk-based levels.

-[c] No MCL exists for naphthalene; the remedial level for naphthalene is based on its EPA Region III risk-based level.

These soil and groundwater remedial levels are protective of direct exposure to residents by hazardous constituents in groundwater or that may leach from the soil to groundwater. However, it is recognized that groundwater is not used at this site as a source of drinking water. It will take approximately 280 years for groundwater to reach the nearest receptor at Mill Creek, which is 1,200 feet from the former facility. Constituents will naturally attenuate in groundwater through retardation and biodegradation before reaching Mill Creek.

1.0 INTRODUCTION

This report summarizes the results of the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for the Former 724th Tanker Purging Station (TPS), Solid Waste Management Unit (SWMU) 26, at Fort Stewart, Georgia. This report has been prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE), Savannah District, under Contract DACA21-95-D-0022, Delivery Order No. 0007. The RFI was conducted in accordance with USACE guidance EM 200-1-3.

The Former 724th TPS was located in the western cantonment area, which is in the southern portion of the Fort Stewart Military Reservation (FSMR). The TPS was an area where tanker trailers that carried diesel, JP-4 jet fuel, and mogas were routinely cleaned. During August 1996 the tanker purging station was dismantled, the underground facilities were removed, and approximately 525 cubic yards of contaminated soil were excavated and replaced with clean backfill.

Potential contamination due to fuel leakage at the site was investigated during a Phase I RFI for 24 SWMUs at Fort Stewart (Rust 1993). Analytical results from soil sampling conducted at the Former 724th TPS in 1993 indicated fuel product and solvent contamination in soil. Based on these findings, Georgia Environmental Protection Division (GEPD) instructed the Fort Stewart Directorate of Public Works (DPW) to conduct a Phase II RFI.

1.1 OBJECTIVES AND SCOPE OF THE INVESTIGATION

The specific objectives of the Phase II RFI for the Former 724th TPS at Fort Stewart, Georgia, as defined in the Phase II RFI Work Plan (SAIC 1997) (approved by GEPD on June 10, 1997), are to:

- determine the horizontal and vertical extent of contamination;
- determine whether contaminants present a threat to human health or the environment;
- determine the need for future action and/or no further action; and
- gather necessary data to support a Corrective Action Plan (CAP), if warranted.

The information provided in this report is based upon data collected previously during the Phase I RFI and data collected as part of the Phase II field sampling and analysis. The Phase II sampling program incorporated an observational approach to sampling, as defined in the Phase II RFI Work Plan. This observational approach utilized field screening techniques to determine the horizontal and vertical extent of contamination at SWMU 26 and to identify suitable locations for installation of permanent monitoring wells. The scope of the field work included the following activities:

- Collection of direct-push soil samples using a push probe at a total of 21 locations.

- Collection of direct-push groundwater samples using a push probe at a total of 17 locations, including 5 vertical profile probes.

- Installation of five permanent groundwater monitoring wells both upgradient and downgradient of the site.

- Completion of aquifer (slug) tests in each of the newly installed wells.

- Collection of surface water and sediment samples at a total of five locations within the swale adjacent to the site and within Mill Creek.

- Surveying the position of all sample locations.

1.2 REPORT ORGANIZATION

This Phase II RFI Report consists of ten sections. Section 1.0 describes the purpose of this investigation and summarizes the scope of work performed. Section 2.0 discusses the specific site history and conceptual site model for the Former 724th TPS. Section 3.0 summarizes the investigation activities and methodologies used in completing the Phase II RFI field work. Section 4.0 presents the regional setting of the FSMR, including the demographics, topography, regional geology and hydrogeology, surface drainage, soils, and ecology. Section 5.0 describes the results of the investigation and presents an interpretation of the nature and extent of contamination. Section 6.0 identifies site-specific considerations affecting contaminant fate and transport. Section 7.0 presents the human health risk assessment, and Section 8.0 presents the ecological risk assessment, or preliminary risk evaluation (PRE). Section 9.0 summarizes the report conclusions and recommendations for subsequent corrective action. The references are presented in Section 10.0.

This revised final report also contains eight appendices. Appendices A through E contain the same information as presented in the final report (March 1998), including boring logs, monitoring well construction diagrams, aquifer (slug) test results, Quality Control Summary Report, and geotechnical laboratory test results. Appendix F, which contains the background data, has been substantially modified to include additional information collected in conjunction with ongoing RFIs at other SWMUs on the FSMR. Appendix G has been modified to include an explanation of acronyms and validation flags. Appendix H is a new appendix that presents the results of the September 1998 supplemental groundwater sampling.

2.0 SITE HISTORY AND CONTAMINANTS

2.1 INSTALLATION DESCRIPTION

Fort Stewart (then known as Camp Stewart) was established in June 1940 as an anti-aircraft artillery training center. Between January and September 1945, the installation operated as a prisoner-of-war camp. The installation was deactivated in September 1945. In August 1950, Fort Stewart was reactivated to train anti-aircraft artillery units for the Korean Conflict. The training mission was expanded to include armor training in 1953. Fort Stewart was designated a permanent Army installation in 1956, and became a flight training center in 1966. Aviation training at the Fort Stewart facilities was phased out in 1973. In January 1974, the 1st Battalion, 75th Infantry was activated at Fort Stewart. Fort Stewart then became a training and maneuver area, providing tank, field artillery, helicopter gunnery, and small arms training for regular Army and National Guard units. The 24th Infantry Division, which was reflagged as the 3rd Infantry Division in May 1966, was permanently stationed at Fort Stewart in 1975. These activities comprise the installation's primary mission today.

The FSMR is located in portions of Liberty, Bryan, Long, Tattnall, and Evans Counties, Georgia, approximately 40 miles west-southwest of Savannah, Georgia (Figures 2.1 and 2.2). The cantonment, or garrison area, of the FSMR is located within the Liberty County portion of the FSMR on the southern boundary of the reservation. Hinesville, Georgia is the nearest city to the garrison area and is located immediately outside of the reservation boundary.

2.2 SITE LOCATION AND HISTORY

The former TPS was an area where tanker trailers that carried JP-4 jet fuel, diesel, and mogas were routinely cleaned. The Former 724th TPS (SWMU 26) was located in the western cantonment area in the 1800 block of McFarland Avenue, at the western end of the fuel truck parking area. The former TPS occupied an area approximately 30 feet by 50 feet (Rust 1996) located between the chain-link fence at the parking area (western end) and a shallow swale approximately 25 feet to the west (Figure 2.3). The former site facilities included an underground waste oil tank and oil/water separator, an aboveground storage tank that received water after oil/water phase separation, and an underground pump with surface access and pumping controls for pumping water into the aboveground storage tank.

The Former 724th TPS was constructed in 1982 and taken out of service in March 1996. During August 1996 the purging station was dismantled, the underground facilities were removed, and approximately 525 cubic yards of contaminated soil were excavated and replaced with clean backfill. Soil was excavated to the water table at the former facility (approximate depth of 3 to 10 feet) and to a depth of 6 inches in the adjacent swale (Figure 2.4). All equipment, above ground and below ground, was removed from the site during removal activities.

Potentially contaminated materials used or generated at the Former 724th TPS included waste liquids from the purging of fuel tankers. These waste liquids contained assorted petroleum hydrocarbons, such as diesel, JP-4, and mogas (Geraghty and Miller 1992). In addition, various additives, which included Citrikleen™ (Pentebose Corp.), purging fluid MIL-F-38299B AM.2

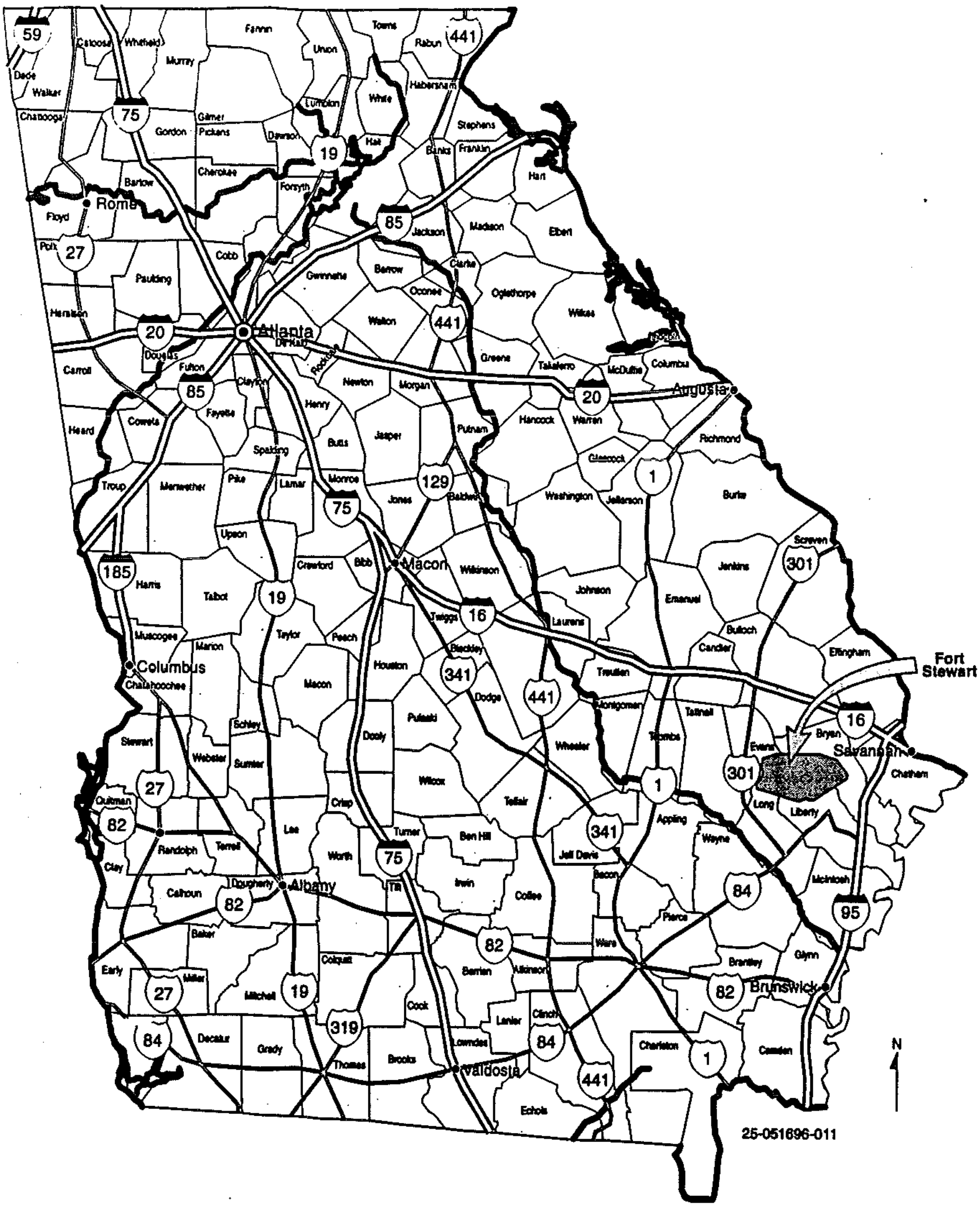

Figure 2.1. Regional Location Map for Fort Stewart Military Reservation, Georgia

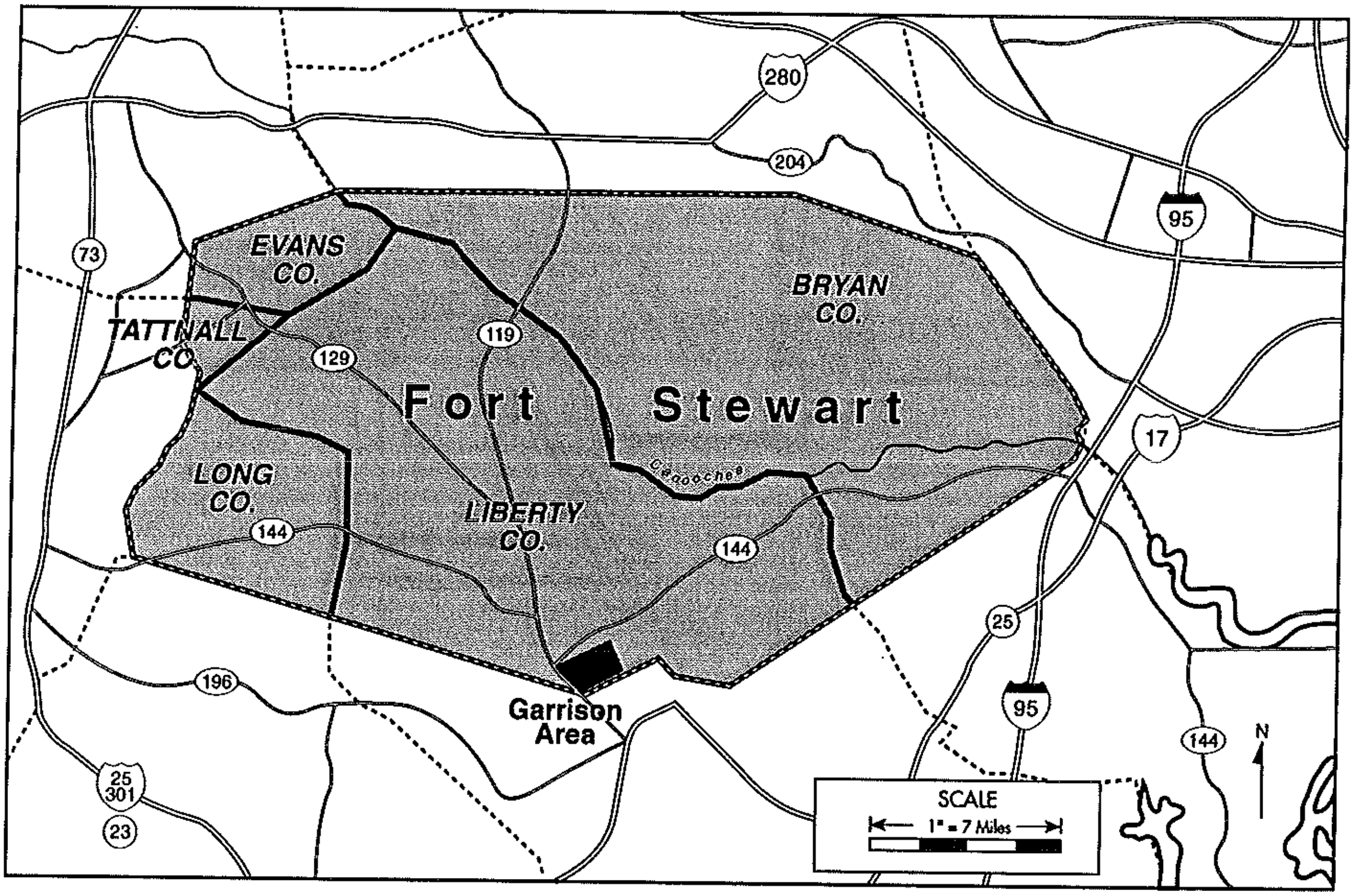

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Figure 2.2. Location Map for Fort Stewart Military Reservation, Georgia

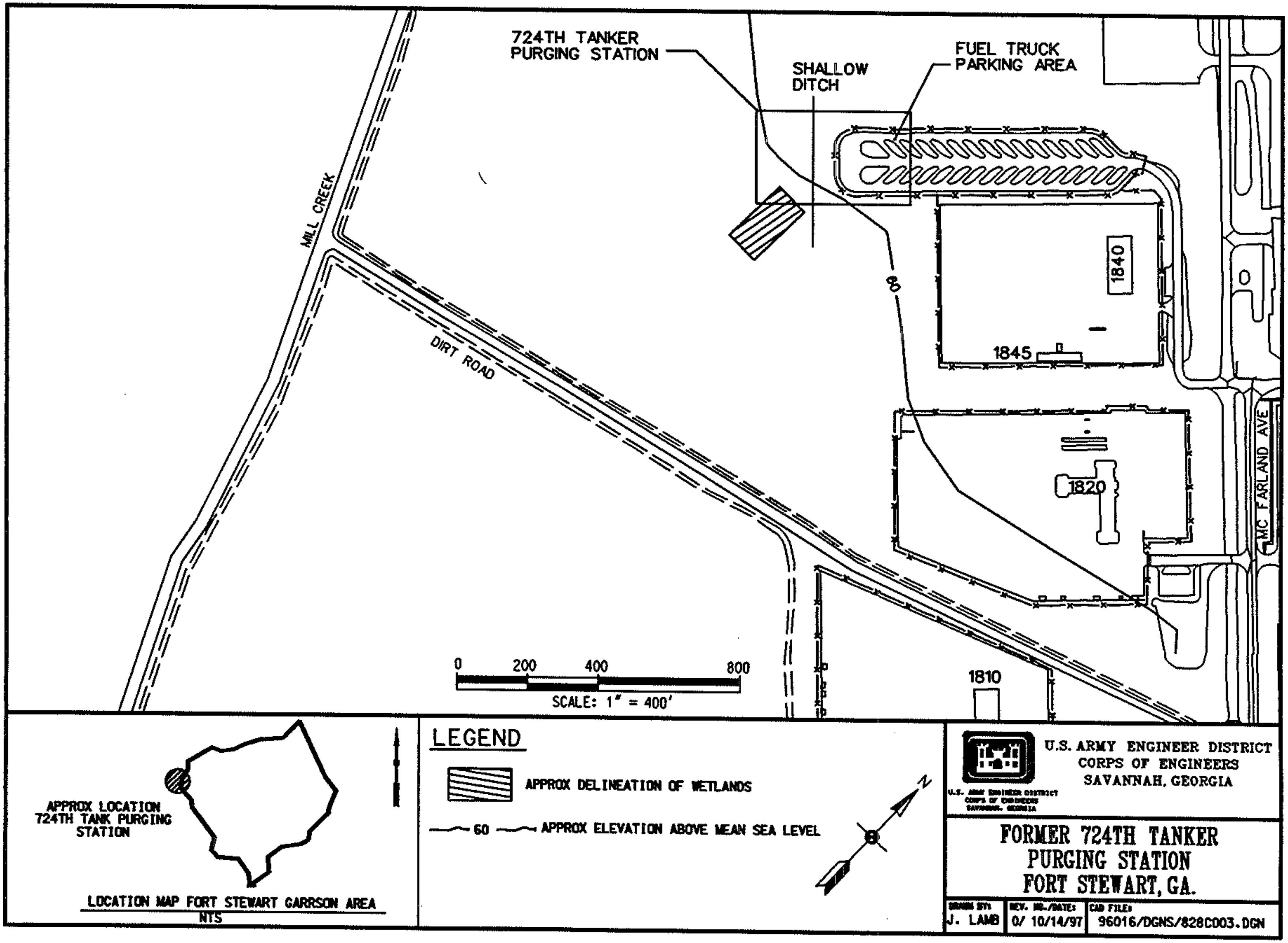

Figure 2.3. Location of the Former 724th Tanker Purging Station (SWMU 26)

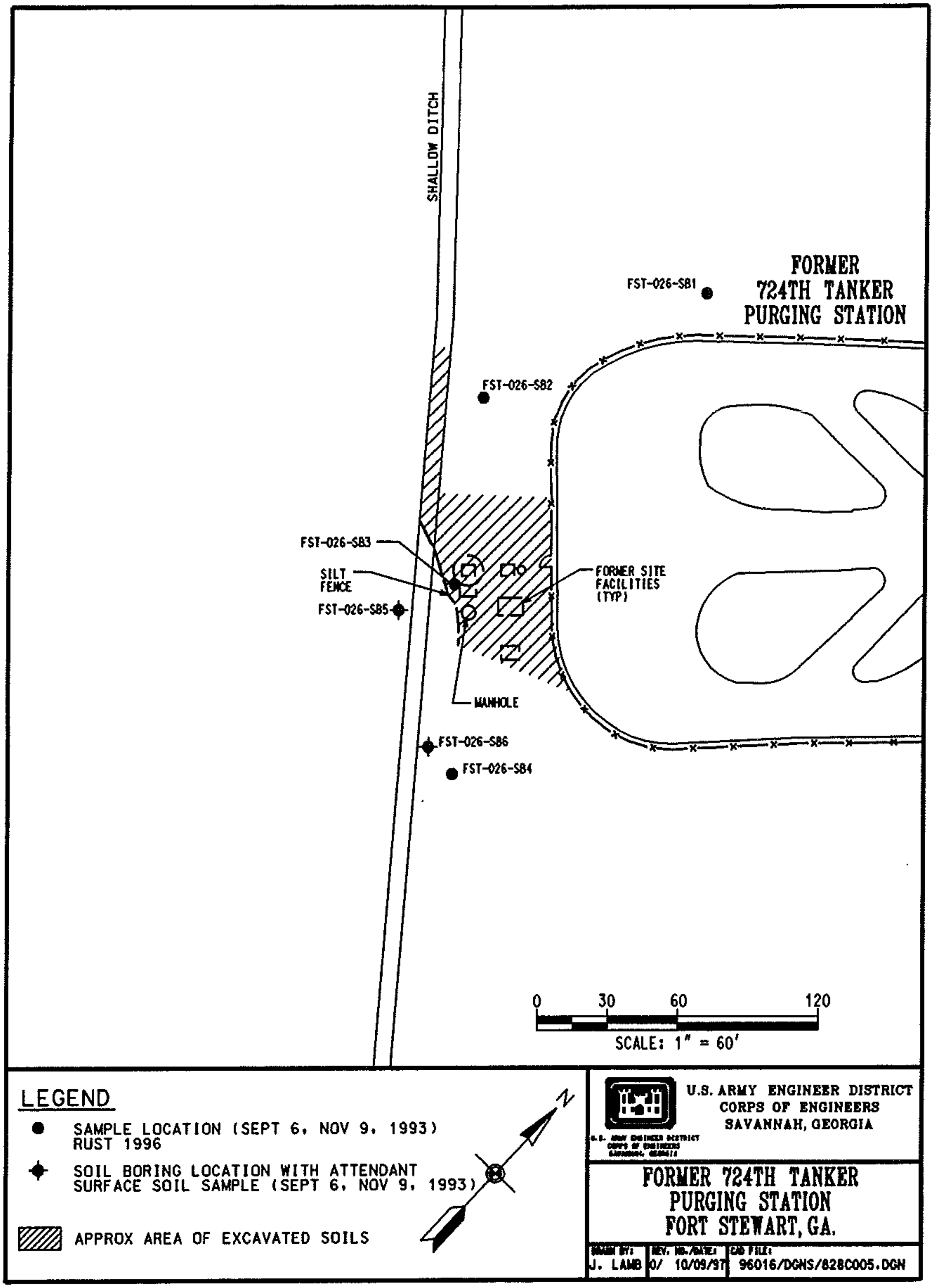

Figure 2.4. Location of Phase I Soil Samples

(Exxon Chemicals America), and a petroleum distillate-based purging solution (Continental Chemicals Corp.) were added to the purging water to aid in the cleaning of the fuel tankers.

2.3 PREVIOUS INVESTIGATIONS

A RCRA Facility Assessment (RFA) was submitted to the GEPD in June 1990 that listed 24 SWMUs, including the then active 724th TPS, as requiring further investigation (Geraghty and Miller 1992). A Phase I RFI, completed in April 1996, was performed in response to that submittal. The objective of the Phase I RFI was to determine if releases to the environment had occurred from any of the 24 identified SWMUs.

During the Phase I RFI, eight soil samples were collected at the Former 724th TPS site. Soil samples were collected on September 6 and November 9, 1993 (Rust 1996). Soil samples were collected from six boring locations (Figure 2.4). In addition, two surface soil samples were collected at SB5 and SB6. Soil samples were analyzed for volatile organic compounds (VOCs), toxicity characteristic leaching procedure (TCLP), total petroleum hydrocarbons (TPH), and pH (Rust 1996). Analytical results for the soil samples were compared to then current GEPD guidelines (1993) or to site-specific background concentrations with the following results:

- **VOCs.** Benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations were reported in soil samples SB3, SB5A, and SB5B at levels up to 2.040 mg/kg. The compound 1,1,2,2-tetrachloroethene (PCE) was detected in soil samples SB3 and SB3 (duplicate) with concentrations of 0.313 mg/kg and 0.092 mg/kg, respectively. Methylene chloride was detected in the surface soil sample SB5A, and acetone was detected in soil samples SB5A and SB5B. Although detected above background, methylene chloride and acetone are common laboratory artifacts.

- **TCLP.** TCLP metals were not reported above the detection limit in soil samples.

- **TPH.** TPH-gasoline range organic (GRO) concentration in one soil sample SB5B exceeded 100 mg/kg. TPH-diesel range organic (DRO) was reported in soil samples SB3, SB5A, and SB5B at concentrations up to 25,600 mg/kg.

- **pH.** Values of pH in soil ranged from 4.87 to 6.33, indicating slightly acidic, yet natural, conditions.

During a site reconnaissance performed on November 8, 1993, on-site workers stated an approximate hydrocarbon thickness of 2.5 feet was present in a temporary monitoring well located on site. Black-stained soils and vegetation were present near the swale located on the west side of the site. A yellow to orange floating layer (apparent oil/water emulsion layer) was observed within both the swale and the pump controls manhole. A petroleum hydrocarbon odor was noted and appeared to be originating on site (Rust 1996).

A tank tightness test was completed on the underground waste oil tank at the Former 724th TPS. This tank, identified as tank 004A at facility number 1840, failed the tightness test, according to the Tracer Research Corporation report (1994).

2.4 PRELIMINARY CONCEPTUAL SITE MODEL

Based on the results of the Phase I RFI at the Former 724th TPS, a release occurred at this site. Contaminated soils were detected in the immediate vicinity of the former facility to the west and southwest. The results of leak tests demonstrated that the underground tank at the site may have leaked. During excavation of the underground tank, discoloration of groundwater was observed, indicating groundwater contamination at the facility. Petroleum hydrocarbon odors and observations of a floating oil/water emulsion in the swale and former manhole have been reported.

Chemicals of potential concern (COPCs) at this site include diesel, gasoline, and cleaning chemicals (BTEX and TPH). Release of these chemicals may have occurred either through subsurface leakage or surface overflow from the underground tank, piping, or manhole.

The most likely pathways for contaminant migration at this site are (1) via overland flow to the swale and wetland located west of the facility, and (2) via groundwater flow toward Mill Creek, also located west of the facility. Past releases have probably followed these migration pathways and may form a plume of contaminated groundwater emanating from the Former 724th TPS. In addition, contaminated soils at the site may continue to cause leaching to the swale or groundwater.

Potential human receptors include recreational users of the wetlands or Mill Creek who may come into contact with contaminated surface water or sediment, on-site workers or soldiers on maneuvers who may come into contact with contaminated soils or waters, and hypothetical future residents who may ingest groundwater. Because the surficial aquifer is not used as a source of potable water, any ingestion of groundwater by future residents would be accidental. Potential ecological receptors include terrestrial soil-dwelling animals and their predators that may ingest contaminated soil or waters at the site or within the swale west of the site, and aquatic biota in Mill Creek that may ingest contaminated groundwater, surface water, or sediments.

3.0 SUMMARY OF INVESTIGATION ACTIVITIES

3.1 SAMPLING METHODOLOGIES

This section describes the RFI field investigations conducted at the Former 724th TPS from July 8 through August 11, 1997. The sampling methodologies and types of testing for physical and chemical characterization of the site are also described. Locations of the Phase II sampling stations are shown on Figures 3.1 through 3.3. The sampling strategy included groundwater screening and surface water and sediment sampling along Mill Creek, soil screening and groundwater screening in the vicinity of the Former 724th TPS, installation and sampling of monitoring wells, and sampling of surface water and sediment in the swale next to the Former 724th TPS site.

3.1.1 Soil Sampling

Soil sampling was conducted using two methods: (1) soil sampling using direct-push methods and (2) soil sampling using hollow-stem augers during installation of monitoring wells.

3.1.1.1 Direct-Push Soil Sampling

A total of 21 direct-push soil probes were completed in and around the Former 724th TPS facility. The locations of the direct-push soil probes are shown on Figure 3.2. The locations were selected using a field decision approach to sampling, with results of VOC analysis of initial ("primary") samples used to determine locations of subsequent ("secondary") samples. Primary samples from stations S-1 through S-13 were collected on July 8 and 9, 1997, and secondary samples from S-14 through S-21 were collected on July 14. The direct-push soil probes were made for the following reasons:

- to determine extent of VOC contamination in soil and
- to minimize generation of investigation-derived waste (IDW).

The direct-push soil samples were taken around the area where contaminated soil was removed in August 1996 from the facility. The samples were taken using a 2-foot split-barrel sampler by pushing the sampler from the ground surface down to the water table in continuous 2-foot intervals. Total depth of sampling varied between 4 and 12 feet. Soil samples were field tested for VOCs in the headspace gas using a photoionization detector (PID). The sample from each boring having the highest detected organic vapor concentration in the headspace gas was then sent off site for quantitative laboratory analysis for VOCs with rapid (24-hour) turnaround. If no VOCs were detected in the headspace gas, then the sample from the 2-foot interval directly above the water table was sent for analysis because gasoline-based chemicals of concern (COCs) from diesel, JP-4, and mogas tend to float on the water table interface. These samples served to confirm the presence or absence of contamination using quantitative data. Results of the laboratory VOC analyses are presented in Section 5.0. Boring logs for the direct-push soil probes showing headspace readings and depths sampled are included in Appendix A.

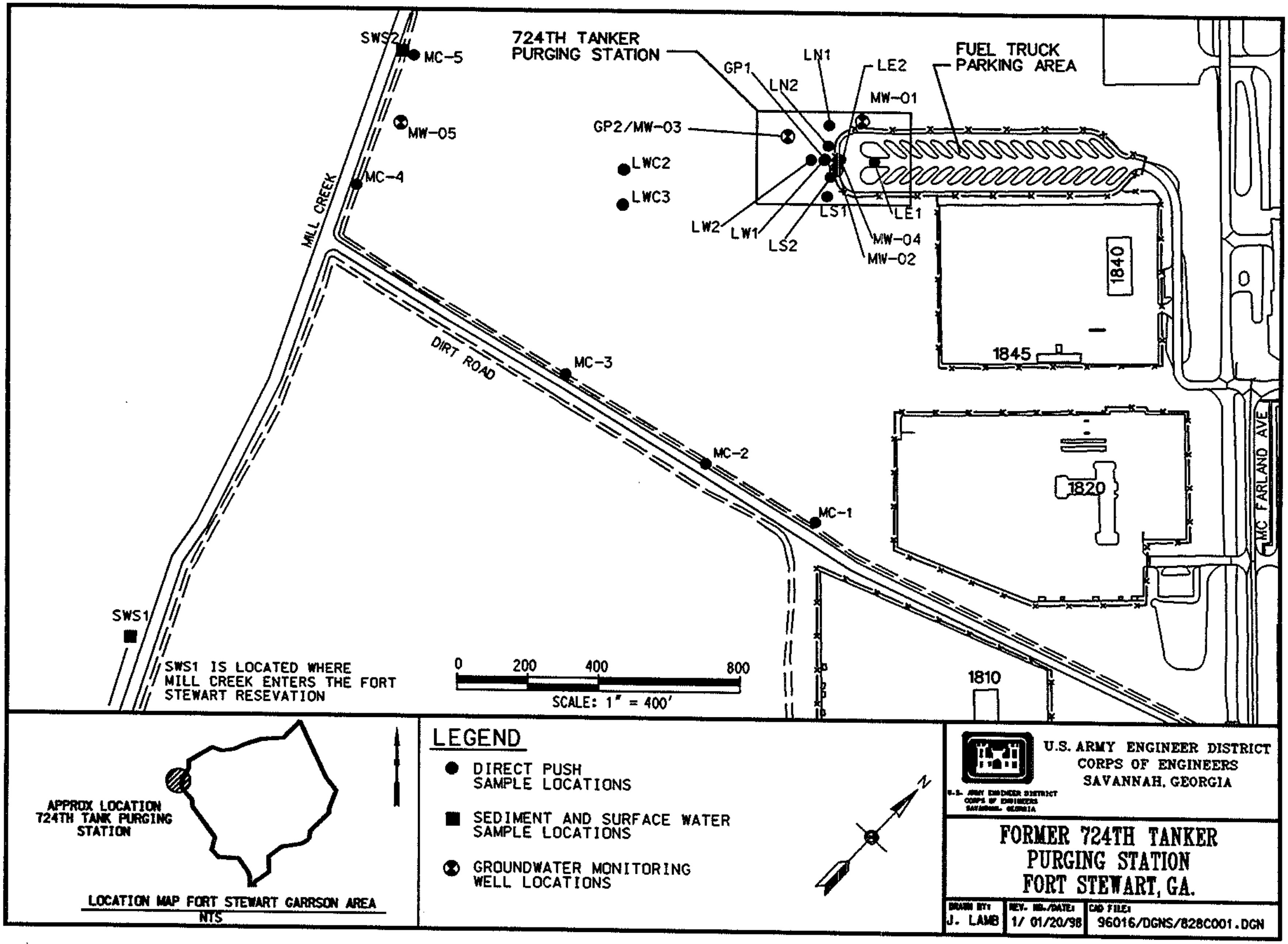

Figure 3.1. Locations of Phase II Sampling Stations Near Mill Creek

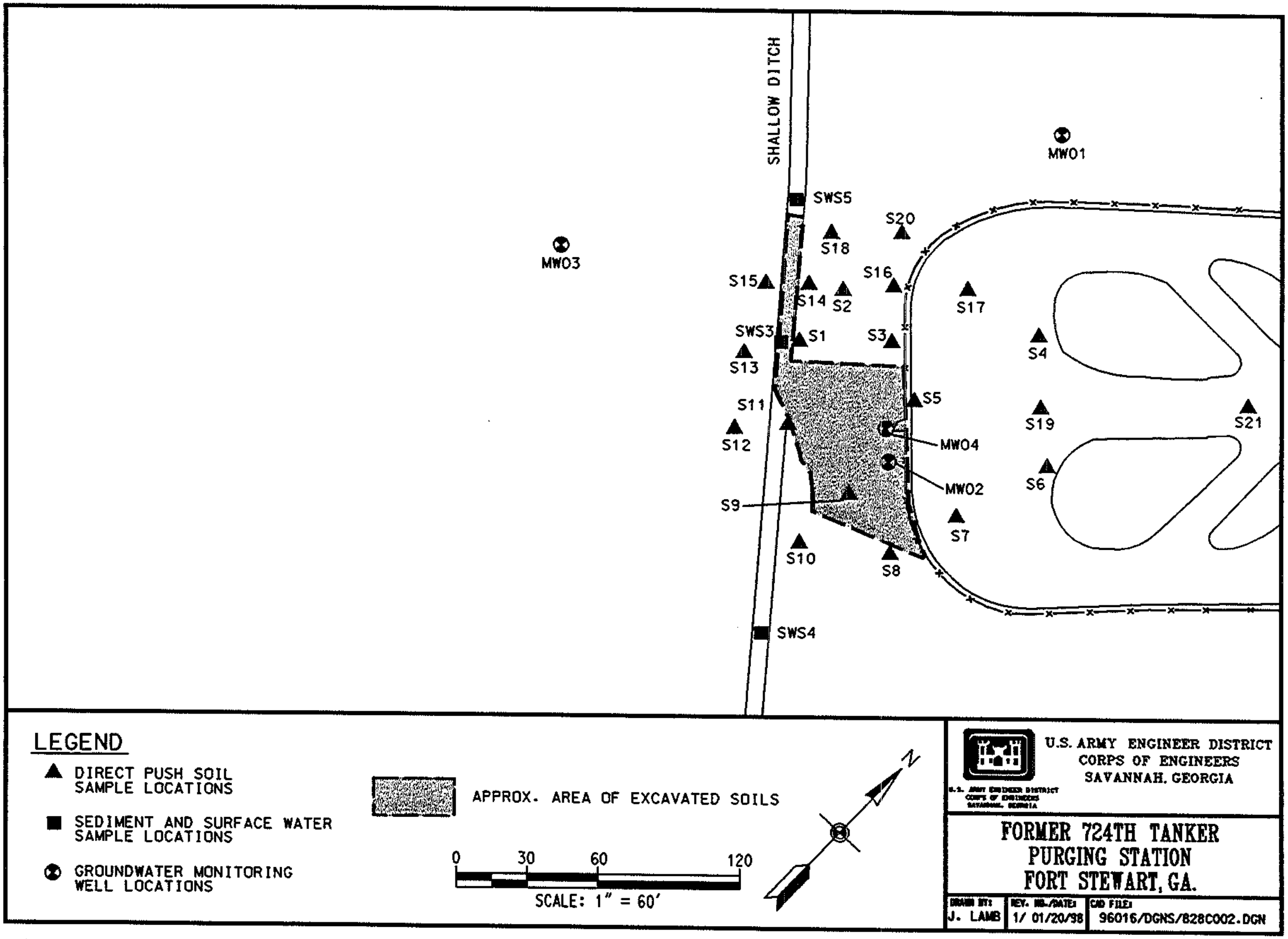

Figure 3.2. Locations of Direct-Push Soil Probes

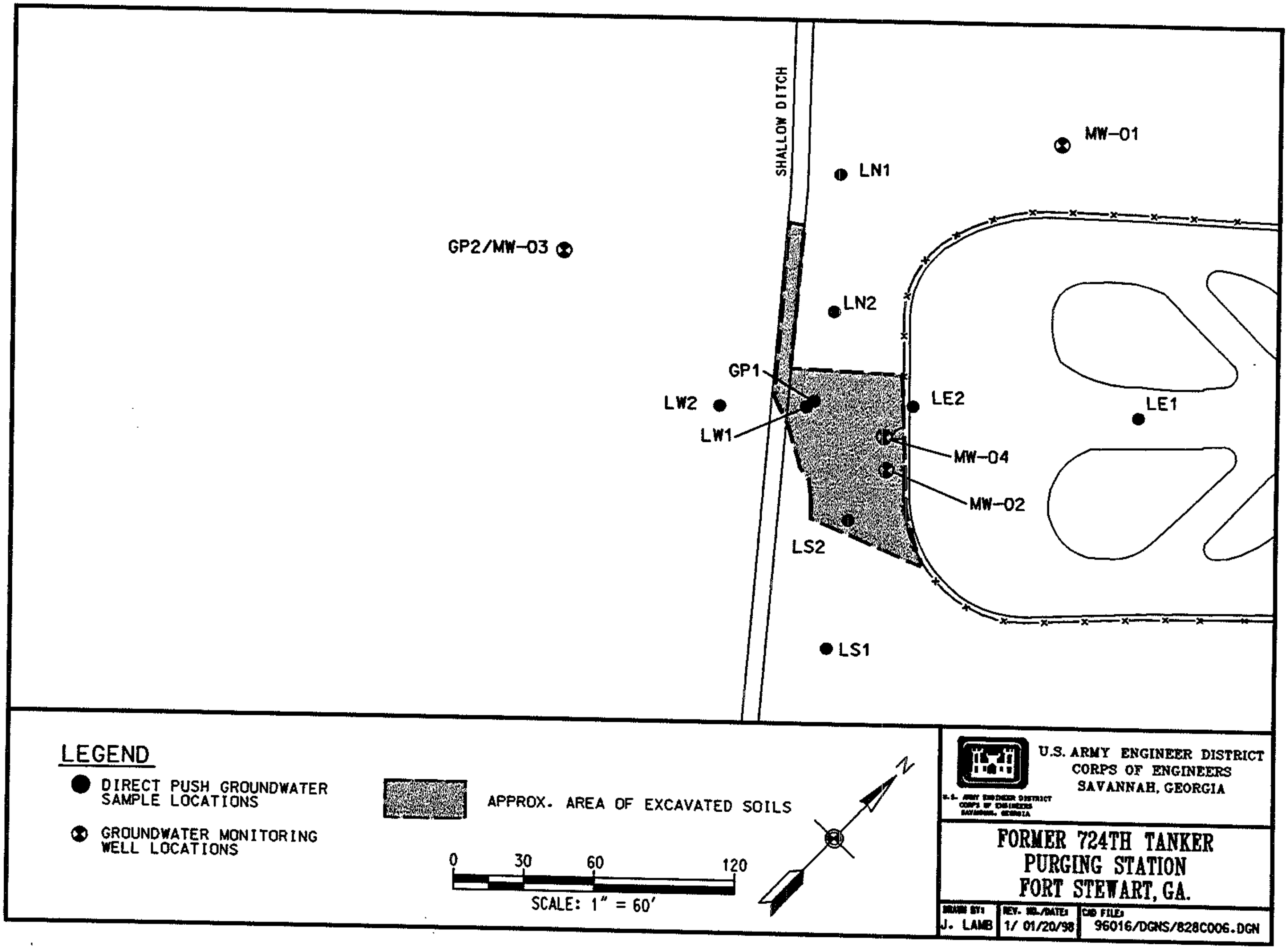

Figure 3.3. Locations of Direct-Push Groundwater Probes

In addition, five direct-push soil samples were sent off site for grain size analysis to aid in selection of monitoring well screen and filter pack materials for subsequent planned monitoring wells. These soil samples were collected from push probes holes S-2, S-4, S-8, S-9, and S-13 using a split-barrel sampler at varying depths.

Samples designated for possible VOC laboratory analysis were collected first from each split-spoon section using a stainless steel spoon and placed into laboratory sample containers. The portion of the remaining sample was then placed into the containers designated for headspace analysis and grain size analysis. The remaining sample was used for field lithologic description.

3.1.1.2 Soil Sampling at Monitoring Wells

Soil samples were also taken during the drilling of boreholes for the installation of monitoring wells using the hollow-stem auger drilling method. The locations of the monitoring wells are shown on Figures 3.1 and 3.3. Auger-drilled soil boreholes were advanced using 4.25-inch inside diameter (ID) hollow-stem augers drilling with either a CME-55 or Ingersoll-Rand A-300 drilling rig. An exception to this procedure is that no soil samples were taken in conjunction with the installation of MW-3, because MW-3 was installed in the same borehole as groundwater screening probe GP-2. The total depth of each of the five boreholes ranged from 14.5 to 51 feet. The borehole samples were collected for the following reasons:

- to collect relatively undisturbed samples for geotechnical testing,
- to obtain lithographic descriptions of the soil profile at each monitoring well,
- to obtain background soil samples and surface soil samples for characterization, and
- to confirm results of the direct soil sampling.

During the drilling of each soil borehole, soil samples were collected with a split-barrel sampler continuously over 5-foot intervals from the ground surface to the water table. The 5-foot core was split into two 2.5-foot sections. A portion of each 2.5-foot section was field tested for VOC headspace gas using a PID. As with the direct-push soil samples, the borehole sample having the highest detected organic vapor concentration in the headspace gas was then sent off site for quantitative laboratory analysis for VOCs, polyaromatic hydrocarbons (PAHs), and RCRA metals. In addition, one soil sample was collected from each borehole and sent off site for laboratory analysis for total organic carbon. If no VOCs were detected in the headspace gas, then the sample from the 2-foot interval directly above the water table was sent for analysis because gasoline-based COCs from diesel, JP-4, and mogas tend to float on the water table interface. In addition, the surface sample taken from a depth of 0 to 1 foot below the ground surface was sent off site for analysis for use in human health and ecological risk assessment. Therefore, a total of two soil samples was collected from each well borehole for chemical analysis. Results of the chemical analyses are presented in Section 5.0. Boring logs for the drilling of monitoring wells are included in Appendix A.

Decontamination of drilling and down-hole sampling equipment was accomplished in accordance with the procedures specified in the Phase II RFI Work Plan (SAIC 1997). These procedures for sampling equipment included washing with water and phosphate-free detergent, rinsing alternately with water and isopropyl alcohol, and placing the equipment on clean plastic or wrapping in plastic or aluminum foil to prevent cross-contamination.

One soil sample from the screened interval in each borehole was analyzed for geotechnical parameters to support contaminant transport evaluation. Bulk soil samples were taken from MW-2, MW-4, and MW-5 directly from the 5-foot split-barrel core and placed into jars. The jar samples were tested for moisture content, plasticity, and grain size distribution. A relatively undisturbed sample was collected from MW-1 for geotechnical analysis using a thin-walled (Shelby) tube sampler. The Shelby tube sampler was inserted into the hollow-stem auger string and hydraulically pushed approximately 2.0 feet. The ends of the Shelby tube sampler were sealed with wax to preserve moisture content in accordance with American Society for Testing and Materials (ASTM) K1587-83, and the tubes were shipped to an off-site laboratory for analysis. The Shelby tube sample was tested for moisture content, Atterberg limits, grain size distribution, soil porosity, and permeability.

3.1.2 Groundwater Sampling

3.1.2.1 Direct-Push Groundwater Sampling

A total of 17 direct-push groundwater probes was made in a broad area around the Former 724th TPS facility. Twelve of the probes obtained a single grab sample of groundwater from the water table. Five of the probes (GP-1, GP-2, LN-2, LE-2, and LS-2) obtained multiple grab samples of groundwater at varying depth intervals to measure the vertical distribution of contamination. The locations of the direct-push groundwater probes are shown on Figures 3.1 and 3.3. The direct-push groundwater probes were taken for the following reasons:

- to delineate the extent of VOC contamination in groundwater,
- to determine the most appropriate location of monitoring wells, and
- to estimate the approximate direction of groundwater flow to determine the most appropriate location of downgradient monitoring wells.

Locations of the direct-push groundwater probes (Figures 3.1 and 3.3) were selected using a field decision approach to sampling, with the results of VOC analysis of initial ("primary") samples used to determine locations of subsequent ("secondary") samples. Primary samples were collected on July 10 and 11, 1997, and secondary samples were collected on July 24 through 27, 1997. Primary samples were taken from the water table, at a depth of approximately 5 to 15 feet. The primary samples were taken at Mill Creek (MC-1 through MC-5) and along two transect lines running through the former facility, one north-south (LN-1 and LS-1) and the other east-west (LE-1 and LW-1). Because no contamination was found at the Mill Creek stations, a second line of probes (LWC-1 through LWC-3) was made perpendicular to the groundwater flow direction at a point half-way between the site and Mill Creek. Because contamination was found at LW-1, a second probe was made at a point further downgradient (LW-2).

Vertical extent of contamination was investigated by making a primary vertical profile direct-push probe at the facility (GP-1). Because contamination was found to a depth of up to 37 feet in GP-1, secondary vertical profile screening probes were made at a location downgradient (GP-2) of the facility, as well as to the north (LN-2), east (LE-2), and south (LS-2), so as to bound the contamination. Total depths of the secondary screening probes ranged from 45 to 50 feet below ground surface.

The direct-push groundwater samples at the primary screening locations were taken using direct-push sampling techniques (Dietrich Power Punch devices mounted on a Mobil B-47 drilling rig). The sampling device, having a 7/8-inch ID screen/casing, was pushed down to the target depth, and a grab groundwater sample was retrieved using a peristaltic pump. At the vertical profile location (GP-1), separate sample holes were pushed for each sample depth. Refusal was encountered in GP-1 at a depth of 37 feet. The samples were then sent off site for laboratory analysis for VOCs with rapid (24-hour) turnaround. Results of the VOC analyses are presented in Section 5.0.

At the probe screening locations (LWC-1 through LWC-3), samples were taken using hand-held augers because truck-mounted access to the sampling locations was not possible. Water samples were obtained using a stainless steel mini-bailer inserted into the hand-auger hole. A groundwater sample could not be retrieved from LWC-1 because the hole was dry at the maximum depth able to be augered with the hand-held equipment (total of 9 feet deep).

At the remaining secondary probe locations (GP-2, LN-2, LE-2, LS-2, and LW-2), push-probe samples were taken using a Dietrich Power Punch inserted through hollow-stem augers and mounted on a CME-55 drilling rig. Because hollow-stem auger drilling methods were being used, soil boring logs could be prepared for these secondary probe holes based on drill cuttings; boring logs are included in Appendix A. Groundwater samples could not be retrieved from the deeper samples in GP-2, LE-2, and LN-2; therefore, soil probe samples were obtained from the bottom of these probe holes instead.

To assist in estimating the direction of groundwater flow, water levels were measured in temporary piezometers that were set in the primary groundwater push probe. Relative water levels were estimated using 1,100 feet of 0.25-inch flexible tubing filled with blue-dyed water to establish levels between wells. The flow direction obtained by this process was used to locate probe GP-2, set approximately 100 feet downgradient from the site. While GP-2 was being drilled, it was decided (in concert with GEPD) to complete GP-2 as a monitoring well (MW-3) to take advantage of otherwise restrictive access amidst the dense vegetation. The bottom of the borehole at GP-2 was backfilled with grout to a depth of 15 feet prior to constructing MW-3 as a water table monitoring well.

3.1.2.2 Monitoring Well Installation and Development

Monitoring wells were installed at the five locations (MW-1 through MW-5) shown on Figures 3.1 and 3.3 from July 23 through 26, 1997. The wells were constructed of 2.0-inch-diameter Schedule 40 polyvinyl chloride (PVC) with flush-threaded couplings. Well screens were constructed of factory-slotted pipe in 10-foot-long sections. Slot size, determined from the sieve analysis results from the direct-push soil probes and field sieve analyses, was 0.008 inches (No. 8 slot). Filter pack materials consisted of DSI Extra Fine Sand. Well construction diagrams are presented in Appendix B. Well construction details are summarized in Table 3.1.

Table 3.1. Monitoring Well Construction Summary for Former 724th Tanker Purging Station, Fort Stewart

Well No.	Date Installed	Size/ Type	Coordinates	Total Depth (feet)	Screen Interval Elevation (feet)	Top of Filter Pack Elevation (feet)	Top of Casing Elevation (feet)
MW-1	07-23-97	2-inch PVC	N683378.0 E820832.3	14.5	59.83 - 50.33	60.83	67.08
MW-2	07-24-97	2-inch PVC	N683224.6 E820869.8	15.0	63.92 - 53.72	64.92	70.86
MW-3[a]	07-24-97	2-inch PVC	N683200.8 E820705.9	51.0	61.01 - 51.51	62.01	67.51
MW-4	07-26-97	2-inch PVC	N683234.6 E820859.6	45.4	33.98 - 24.48	36.18	71.23
MW-5	07-25-97	2-inch PVC	N682482.9 E819879.6	15.0	56.54 - 46.54	57.54	63.10

PVC – polyvinyl chloride.
[a]MW-3 installed in borehole GP-2, total depth 51 feet.
Note: All elevations are NGVD 1929.

Four of the wells (MW-1, MW-2, MW-3, and MW-5) were installed at the water table, to depths of 14.5 to 15 feet. These wells were installed such that the screened interval bisects the water table, so that any free-phase liquid floating on the water table surface could be detected in the well. Because contamination was found at a depth of 37 feet in groundwater push probe GP-1, monitoring well MW-4 was installed to a depth of 45 feet to confirm the vertical extent of contamination. This deep monitoring well was screened at the top of the Hawthorn Clay, characterized by greenish clay with shells.

The wells were developed on July 29 and 30, 1997. Well development was accomplished using a downhole positive displacement pump. A surge block was used to agitate and mobilize particulates around the well screen by rapidly surging the bailer up and down. Well development continued until the well water was clear to the eye, sediment within the well was less than 0.1 foot, a minimum of five times the standing water volume in the well had been removed, and five times the volume of any water added during completion had been removed. In addition, water quality parameters [pH, conductivity, temperature, dissolved oxygen, oxidation-reduction potential (Eh), and turbidity] were measured during well development to verify that they had reached equilibrium, and development continued until turbidity measured less than 10 nephelometric turbidity units (NTUs). Although turbidity in MW-1 remained as high as 75.6 NTUs following well development, final turbidity measured during micropurging dropped to 9.8 NTUs. MW-3 was slower to recharge and took longer (36.5 hours) to remove the minimum volume since 25 gallons had been added during well completion. Well development is summarized in Table 3.2.

Table 3.2. Well Development Summary for Former 724th Tanker Purging Station, Fort Stewart

Well No.	Date	Total Development Time (hours)	Total Volume Removed (gallons)	Final Turbidity Reading (NTU)
MW 1	7/29 - 7/30/97	11.8	205	75.6[a]
MW 2	7/29/97	6.3	100	8.1
MW 3	7/29 - 7/31/97	36.5	160	1.5
MW 4	7/30/97	3.3	200	4.81
MW 5	7/29/97	1.2	110	9.10

[a]Note: during micropurging, final turbidity reduced to 9.8 nephelometric turbidity units (NTUs).

3.1.2.3 Aquifer (Slug) Testing

Aquifer (slug) tests were performed in each of the wells following well development on August 10 and 11, 1997. The slug tests were performed to obtain an estimate of the hydraulic conductivity of the water table aquifer. The slug tests were performed using rising head permeability tests with transducer measurements of the water level rise in the well at intervals varying from 0.3 to 0.6 seconds initially and up to 60 seconds in the latter stages of each test. Results of the aquifer slug tests, showing water level rise (decreasing drawdown) vs. time and the corresponding hydraulic conductivity, are presented in Appendix C.

3.1.2.4 Monitoring Well Sampling

Groundwater sampling was not conducted until at least 14 days after well development, on August 12 through 14, 1997. Prior to installing the sampling pump, the static water level was recorded. Monitoring wells were sampled using low-flow micropurging techniques to minimize the volume of purge water, minimize disturbance of the aquifer, and thereby minimize turbidity in the sample. Field parameters [pH, conductivity, temperature, dissolved oxygen, oxidation-reduction potential (Eh), and turbidity] were monitored during micropurging. The purge rate was adjusted, as necessary, to avoid purging any well to dryness and to equal the recharge of the aquifer. Purging was considered complete when the field parameters stabilized within plus or minus 10 percent after a minimum of three readings at 5-minute intervals. Purging times varied, requiring from 8 to 12 hours to purge in order to attain a turbidity less than 10 NTUs. Results of field parameters measurements made at the end of purging in each well are listed in Table 3.3.

Table 3.3. Field Parameter Measurements During Groundwater Sampling for Former 724th Tanker Purging Station, Fort Stewart

Parameter	Units	Field Reading at Monitoring Well				
		MW-1	MW-2	MW-3	MW-4	MW-5
pH	su	5.95	6.15	6.69	6.87	6.94
Conductivity	mS/cm	185	577	454	533	441
Temperature	°C	25.76	23.93	37.21	21.23	21.8
Turbidity	NTU	9.8	9.4	8.9	9.8	5.5
DO	mg/L	7.68	15.08	0.33	1.19	1.09
ORP	mV	2.7	-118.5	-84.2	-89.9	-30.5
Ferric Iron	mg/L	9.1	8.4	5	2.8	1.6

DO - dissolved oxygen
NTU - nephelometric turbidity unit
ORP - oxidation-reduction potential
Note: Sampling event occurred August 12-14, 1997.

Sampling of each monitoring well began immediately after completion of purging, using the same micropurging pump. Groundwater samples were transferred directly into laboratory sample containers, with the portion designated for volatile organic analysis taken first. One filtered groundwater sample was collected from each well by attaching a 0.45-micron filter to the end of the low-flow pump sampling line. A field test kit was used to measure ferric iron. Groundwater samples were then sent off site for laboratory analysis for VOCs, PAHs, RCRA metals, and natural attenuation parameters (nitrate/nitrite, sulfate/sulfide, ethane/ethene, and methane).

3.1.3 Surface Water and Sediment Sampling

Surface water and sediment samples were collected on August 11, 1997, at five stations, as shown on Figures 3.1 and 3.2. Station SWS-1 is an upgradient (background) sample located in Mill Creek approximately 2 miles upstream of the site, where Mill Creek enters the FSMR. Station SWS-2 is also located in Mill Creek approximately 1,200 feet west of the site. Stations SWS-3 through SWS-5 are located in the swale adjacent to the site. Both surface water and sediment samples were taken at each station, except at SWS-3, because there was no surface water present in the swale at the time of sampling. Surface water samples were collected first and then field measurements were taken for pH, specific conductance, temperature, dissolved oxygen, and turbidity. Sediment samples were collected using stainless steel scoops. Samples were then sent off site for laboratory analysis for VOCs, PAHs, and RCRA metals.

3.1.4 Investigation-Derived Waste Management

IDWs were managed in accordance with the procedures specified in the Phase II RFI Work Plan (SAIC 1997). All IDWs were determined to be nonhazardous materials. Solid wastes were disposed of by transporting the material to the Fort Stewart Sanitary Landfill for use as daily cover. Liquid wastes were disposed of at the Fort Stewart industrial waste water treatment system.

3.2 DATA QUALITY ASSESSMENT

Multiple activities were performed to achieve the desired data quality in this project. Data quality objectives (DQOs) were established to guide the implementation of the field sampling and laboratory analysis. A quality assurance (QA) program was established to standardize procedures and to document activities. Upon receipt by the project team, data were subjected to a verification and validation review that identified and qualified problems related to the analysis. These review steps contribute to a final Quality Control Summary Report, Appendix D, which defines that data used in the investigation met the criteria and are employed appropriately.

The QA Program established requirements for both field and laboratory quality control (QC) procedures. In general, field QC duplicates and QA split samples were required for each environmental sample matrix collected at sites being investigated at a frequency of 10 percent; VOC trip blanks were to accompany each cooler containing water samples for VOC determinations, and analytical laboratory QC duplicates, matrix spikes, laboratory control samples, and method blanks were required for every 20 samples of less of each matrix and analyte. The primary goal of the QA program was to ensure that the quality of results for all environmental measurements was appropriate for their intended use. To this end, a Quality Assurance Project Plan (QAPP) and standardized field procedures were compiled to guide the investigation. Through the process of readiness review, training, equipment calibration, QC implementation, and detailed documentation, the project has successfully accomplished the goals set by the QA Program.

Project data quality determines its usability. The evaluation is based on the interpretation of laboratory QC measures, field QC measures, and the project DQOs. Data Quality Control Reports and other field-generated documents such as sampling logs, boring logs, daily health and safety summaries, daily safety inspections, equipment calibration and maintenance logs, and sample management logs were peer reviewed on site. Analytical data generated for this project have been subjected to a process of data verification, validation, and review. The project implemented the use of data validation checklists to facilitate laboratory data validation. These checklists were completed by the project-designated validation staff and were reviewed by the project laboratory coordinator.

A total of 98 environmental soil, groundwater, and field QC samples were collected with approximately 3,600 discrete analyses (i.e., analytes) being obtained, reviewed, and integrated into the assessment (these totals do not include field measurements and field descriptions). The project produced acceptable results for over 99 percent of the sample analyses performed and successfully collected all required investigation samples.

The overall quality of Former 724th TPS information meets or exceeds the established project objectives. Through proper implementation of the project data verification, validation, and assessment process, project information has been determined to be acceptable for use. Data, as presented, have been qualified as usable, but estimated when necessary. Data produced for this study demonstrate that they can withstand scientific scrutiny; are appropriate for their intended purpose; are technically defensible; and are of known and acceptable sensitivity, precision, and accuracy. A more detailed data quality assessment may be found in Appendix D.

Common Laboratory Contaminants. Common laboratory contaminants were detected in one or more soil samples and include acetone, 2-butanone, 2-hexanone, methylene chloride, and toluene. Results for these common laboratory contaminants are questionable when the results are less than five times the quantitation limit for these constituents or when the result is less than the average concentration detected in the background samples. In such cases, the constituent is not considered a site-related contaminant (SRC), but a likely laboratory artifact. Reference values are listed in Table 3.4.

Table 3.4. Common Laboratory Contaminants (Soil)
Former 724th Tanker Purging Station, Fort Stewart

Parameter	Quantitation Limit	5 × Quantitation Limits	Average Concentration in Background
Acetone	10	50	60.21
2-Butanone	10	50	5.63
2-Hexanone	10	50	5.63
Methylene Chloride	5	25	6.19
Toluene	5	25	10.64

Note: All units in μg/kg.

Filtered vs. Unfiltered Analyses. RCRA metals analyses were conducted on both filtered and unfiltered groundwater samples from six Burn Pits wells and two wells at the Former 724th TPS. Results for detected analytes are listed in Table 3.5.

As discussed in Appendix C, the results indicate no significant relative percent difference for any of the analytes. Filtered results were somewhat less than the corresponding unfiltered result in most cases, but the differences were not significant relative to the analytical precision. With few exceptions, the results were less than five times the quantitation limit for the analyte. At these low concentrations, the absolute differences between analytical results are not considered

Table 3.5. Filtered vs. Unfiltered (μg/L) Groundwater Sample Comparison Former 724th Tanker Purging Station and Burn Pits, Fort Stewart

Area	Station	Sample ID	Parameter	Reporting Limit	Unfiltered Result	Filtered Result
724th TPS	MW-4	264411	Barium	200	99.20 J	96.90 J
724th TPS	MW-5	264511	Barium	200	70.20 J	69.40 J
Burn Pit A	MW-3	4A4311	Barium	200	26.20 J	
Burn Pit A	MW-5	4A4511	Barium	200	66.70 J	62.80 J
Burn Pit B	MW-1	4B4111	Barium	200	21.00 J	
Burn Pit C	MW-7	4C4711	Barium	200	26.60 J	
Burn Pit A	MW-3	4A4311	Cadmium	0.5	0.36 J	
Burn Pit E	MW-6	4E4611	Cadmium	0.5	1.20	
Burn Pit B	MW-1	4B4111	Chromium	10	2.40 J	0.88 J
Burn Pit B	MW-3	4B4311	Chromium	10	3.70 J	0.88 J
Burn Pit E	MW-6	4E4611	Chromium	10	1.70 J	
Burn Pit A	MW-3	4A4311	Lead	1	1.80 J	
Burn Pit A	MW-5	4A4511	Lead	1	0.82 J	
Burn Pit B	MW-1	4B4111	Lead	1	2.00	0.84 J
Burn Pit B	MW-3	4B4311	Lead	1	2.20	1.00 J
724th TPS	MW-4	264411	Mercury	0.05	0.30	
724th TPS	MW-5	264511	Mercury	0.05	0.58	0.052=
Burn Pit A	MW-3	4A4311	Mercury	0.05	0.22	
Burn Pit B	MW-3	4B4311	Mercury	0.05		0.04 J
Burn Pit C	MW-7	4C4711	Mercury	0.05	0.28	
724th TPS	MW-4	264411	Selenium	5	0.51 J	0.79 J
724th TPS	MW-5	264511	Selenium	5	0.78 J	
Burn Pit A	MW-5	4A4511	Selenium	5	0.70 J	1.00 J
724th TPS	MW-4	264411	Silver	0.2	4.10	
Burn Pit A	MW-3	4A4311	Silver	0.2	.028	
Burn Pit B	MW-1	4B4111	Silver	0.2	0.39 J	0.19 J
Burn Pit B	MW-3	4B4311	Silver	0.2	0.14 J	0.11 J
Burn Pit C	MW-7	4C4711	Silver	0.2	0.08 J	

Note: A blank indicates that analyte was not detected.
J indicates estimated value.

significant if the difference is less than three times the quantitation limit. Therefore, filtered and unfiltered results were comparable, indicating good correlation in results. These results demonstrate that efforts to reduce effects of turbidity in groundwater samples were successful and that any residual turbidity (maximum 86.5 NTU in MW-3 at Burn Pit A) did not adversely affect the groundwater sampling results.

An exception is mercury, where results for four of the eight unfiltered samples exceeded five times the quantitation limit, but results for the corresponding filtered samples did not exceed the quantitation limit. Another exception is silver in one sample from MW-4 at the Former 724th TPS, where the reported unfiltered result also exceeded five times the quantitation limit, but was undetected in the filtered sample. This suggests that mercury and silver may be adhered to soil particles and would be less likely to be transported in the dissolved phase in the groundwater.

4.0 PHYSICAL CHARACTERISTICS OF THE SITE

4.1 DEMOGRAPHICS

The cantonment, or garrison, area of the FSMR is located within Liberty County, Georgia (Figure 2.2). Liberty County occupies 328,768 acres and had a total population of 52,745 in 1990. Forty-one percent of the county population lives in Hinesville, the largest city in Liberty County. The total population of Fort Stewart in 1990 was 13,774, 55 percent of which were employed by the Armed Forces. Forty-one percent of the Fort Stewart population live in group quarters while the remaining population live in households (U.S. Department of Commerce 1990).

4.2 TOPOGRAPHY

The FSMR occupies a low-lying, flat region on the coastal plain of Georgia. Surface elevations range from approximately 20 to 100 feet above mean sea level (amsl) within the FSMR and generally decrease from northwest to southeast across the reservation. The topography is dominated by terraces dissected by surface water drainages. The terraces are remnants of sea level fluctuations. The four terraces present within the FSMR are the Wicomico, Penholoway, Talbot, and Pamlico (Metcalf and Eddy 1996). The Former 724th TPS is situated in the southern portion of the FSMR and is located on the Penholoway Terrace. The elevation of the site is between 60 and 70 feet amsl.

4.3 SURFACE DRAINAGE

The principal surface water body accepting drainage from the FSMR is the Canoochee River, which joins the Ogeechee River (part of the northwestern boundary of the reservation). Canoochee Creek is a tributary of the Canoochee River that drains much of the western portion of the FSMR. Mill Creek, which is a second-order tributary of Canoochee Creek in the watershed of Taylors Creek, is the nearest surface water stream to the Former 724th TPS and is located approximately 1,200 feet to the west (Figure 2.3). A shallow drainage swale is located approximately 25 feet west of the Former 724th TPS that accepts runoff from the site and the adjacent Fuel Truck Parking Area. This swale is not connected to Mill Creek or its tributaries. Standing water occurs at the south end of this swale during much of the year, but the northern section is usually dry. A wetland area of unknown size is located adjacent to the site, between the swale and Mill Creek.

4.4 REGIONAL GEOLOGY

The FSMR is located within the coastal plain physiographic province. This province is typified by nine southeastward dipping strata that increase in thickness from zero feet at the fall line (located approximately 350 miles inland from the Atlantic coast) to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4,254 feet below land surface. This well provides the most complete record for Cretaceous, Tertiary, and

Quaternary sedimentary strata. Figure 4.1 presents a geologic column for the Tertiary and Quaternary section in the Fort Stewart area.

The Cretaceous section is approximately 1,970 feet in thickness and dominated by clastics. The Tertiary section is approximately 2,170 feet in thickness and dominated by limestone with a 175-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated (Metcalf and Eddy 1996).

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately one-quarter mile north of the runway at Wright Army Airfield within the FSMR. The log for this well describes a 410-foot section, the lowermost 110 feet of which consisted predominantly of limestone above which 245 feet of dark green phosphatic clay typical of the Hawthorn Group were encountered. The uppermost 55-foot interval was Quaternary-age interbedded sands and clays. The top 15 feet of these sediments were described as sandy clay (Metcalf and Eddy 1996).

4.5 SOILS

Boring logs showing the types of soils encountered during the Phase II RFI at the Former 724th TPS in soil screening probes, groundwater screening probes, and monitoring well boreholes are given in Appendix A. Geological cross-sections of the site are shown on Figures 4.2 and 4.3, and depict the lithology and stratigraphy of the unconsolidated soil deposits beneath the site, as inferred from the soil boring logs. The cross-sections indicate that the soils are highly variable with abrupt changes in soil types over relatively short distances. The surficial materials are generally a light gray sand or silty sand up to 15 feet thick. Interbedded sandy clay and clayey sand layers generally underlie these surficial sandy layers to a depth of 15 to 25 feet. A light gray to greenish gray sand and silty sand were encountered beneath these clayey layers in GP-2/MW-3 and MW-4 and varied from 5 to 15 feet thick. A dark greenish gray silty and clayey sand with shells was present in the lower 20 feet of GP-2/MW-3 and MW-4 to the maximum depth explored (51 feet at MW-3) and likely represents the uppermost portion of the Hawthorn Group.

Geotechnical analyses were conducted on five bulk samples taken from soil screening probes and three bulk samples plus one Shelby tube sample taken from the monitoring well boreholes. The bulk samples from the soil screening probes were analyzed for grain size distribution in accordance with ASTM D422. The samples from the monitoring well boreholes were analyzed for moisture content (ASTM D2216), grain size (ASTM D422), and Atterberg limits (ASTM D4318). In addition, the Shelby tube sample from MW-1 (Sample 261113) was analyzed for specific gravity (ASTM D854), porosity (EM1110-2-1906), and permeability (ASTM D5084). Results of the geotechnical analyses are summarized in Table 4.1. The geotechnical laboratory data sheets are included in Appendix E. These results indicate that tested soils are silty and clayey sands with the proportion of fine-grained particles varying widely from 4 to 48 percent by weight. Soils from the screened intervals in monitoring wells MW-2, MW-4, and MW-5 are non-plastic silty sands. The soil from the screened interval in MW-1 is a clayey sand of high plasticity and low permeability (2×10^{-6} cm/second).

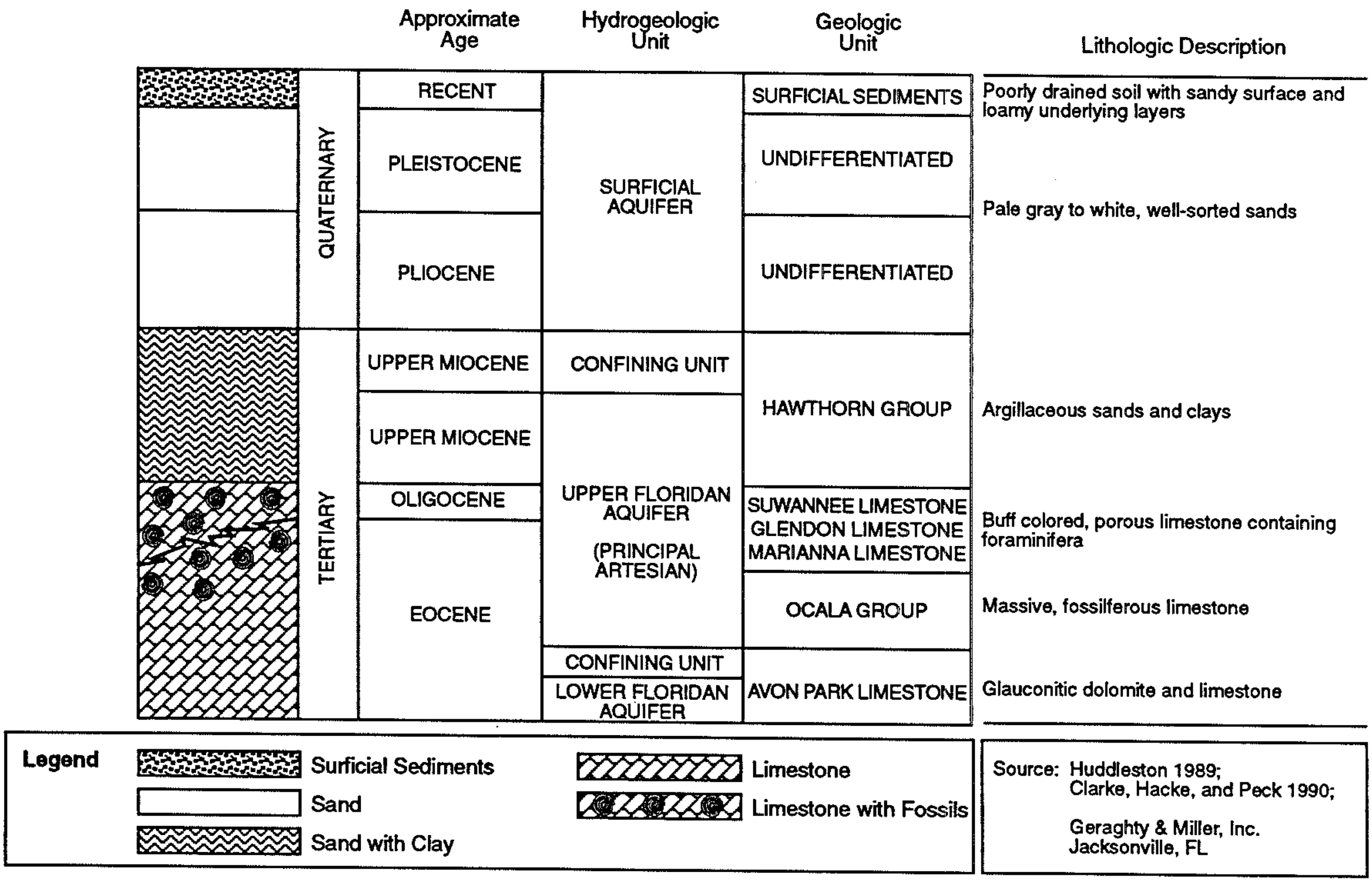

Figure 4.1. Geologic and Hydrostratigraphic Column for the Fort Stewart Area

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Table 4.1. Summary of Geotechnical Analyses, Former 724th Tanker Purging Station, Fort Stewart

				Atterberg Limits			Grain Size Distribution					
Station	Depth (feet)	Sample No.	Moisture Content (percent)	Liquid Limit (percent)	Plastic Limit (percent)	Plasticity Index (percent)	Gravel (percent)	Sand (percent)	Fines (percent)	Specific Gravity	Soil Porosity	Permeability (cm/second)
S-2	2-4	265211	na	na	na	na	0	60	40	na	na	na
S-4	4-6	265411	na	na	na	na	0	85	15	na	na	na
S-8	6-12	265811	na	na	na	na	0	81	19	na	na	na
S-9	6-10	265911	na	na	na	na	0	78	22	na	na	na
S-13	2-4	265D11	na	na	na	na	0	72	28	na	na	na
MW-1	9.5-11.5	261113*	32.8	51	16	35	0	52	48	2.614	0.5218	1.99E-06
MW-2	5-7	261213	21.8	NP	NP	NP	0	79	21	na	na	na
MW-4	34-36	261413	21.9	NP	NP	NP	14	63	23	na	na	na
MW-5	10-12	261513	24.1	NP	NP	NP	0	96	4	na	na	na

na = not analyzed
NP = non-plastic
* = indicates Shelby tube sample

98-177P(XLS)/111397

Aquifer (slug) tests were also conducted in each of the five monitoring wells installed at the site. Results of these tests are summarized in Table 4.2. Estimated hydraulic conductivities range from 2×10^{-5} cm/second at MW-2 to 4×10^{-4} cm/second at MW-5.

Table 4.2. Results of Aquifer (Slug) Tests, Former 724th Tanker Purging Station, Fort Stewart

Station	Test Date	Hydraulic Conductivity (feet/minute)	Hydraulic Conductivity (cm/second)
MW-1	8-11-97	1.4×10^{-4}	7.0×10^{-5}
MW-2	8-10-97	4.0×10^{-5}	2.0×10^{-5}
MW-3	7-24-97	1.0×10^{-4}	5.0×10^{-5}
MW-4	8-10-97	3.0×10^{-4}	1.5×10^{-4}
MW-5	8-10-97	8.0×10^{-4}	4.0×10^{-4}

4.6 HYDROGEOLOGY

The hydrogeology in the vicinity of the FSMR is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifer that are separated by a confining unit (Figure 4.1).

The Principal Artesian aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida, and is regionally known as the Floridan Aquifer. This aquifer is subdivided into upper and lower hydrogeologic units. The upper hydrogeologic unit is composed primarily of Miocene-age argillaceous sands and clays and Oligocene-to-Eocene-age limestones (including the Ocala Group and the Suwannee Limestone, where present) at the top. The upper hydrogeologic unit ranges in thickness from 200 to 260 feet and is most productive where it is thickest and where secondary permeability is most developed. The lower hydrologic unit is comprised of the Eocene-age Avon Park Limestone at the base. The transmissivity of the aquifer in the Savannah area ranges from about 28,000 to 33,000 square feet/day (Krause and Randolph 1989). Groundwater from this aquifer is primarily used for drinking water (Arora 1984). Thirteen groundwater production wells are used for potable water supply on the FSMR, and one additional production well is available for use in fire protection.

The confining layer for the Principal Artesian aquifer is the phosphatic clays of the upper Hawthorn Group. These sediments are regionally extensive and range from 60 to 80 feet in thickness at the FSMR. There are minor occurrences of aquifer material within the Hawthorn Group, however, they have limited utilization (Miller 1990).

The uppermost hydrologic unit is the surficial aquifer, which consists of widely varying amounts of sand, silt, and clay ranging from 55 to 150 feet in thickness. This aquifer is primarily utilized for domestic lawn and agricultural irrigation with wells typically yielding 2 to 180 gallons per minute. The top of the water table ranges from 2 to 10 feet below ground level (Geraghty and Miller 1992).

Water levels were measured on August 10 and 11, 1997, in the five monitoring wells (MW-1 through MW-5) installed at the Former 724th TPS. Depth to water varied from 3 feet (MW-1) to 10 feet (MW-5) below land surface. Figure 4.4 presents a map of the water table contours. Groundwater flow within the water table is to the west-northwest, ultimately discharging to Mill

5.0 CONTAMINANT NATURE AND EXTENT

This section summarizes the results of the chemical laboratory analyses of the soil, groundwater, surface water, and sediment samples collected at the Former 724th TPS site. Complete analytical results for the Phase II chemical data are included in Appendix G of this report. Analytical results for the Phase I chemical data were presented in Appendix U of the Phase I RFI Report (Rust 1996) and are summarized in Section 2.3.1 of this report.

5.1 BACKGROUND DATA ANALYSIS AND SCREENING

The reference background criteria for the Former 724th TPS have been developed based on data from background samples collected from SWMUs across the FSMR. In general, reference background samples were collected in each medium at locations upgradient or upstream of each site so as to be representative of naturally occurring conditions at SWMUs under Phase II investigation. In addition, soil samples collected during the Phase I investigation [i.e., Burn Pits (SMWUs 4A, 4B, 4D, 4E, and 4F), Active Explosive Ordnance Disposal (EOD) Area (SWMU 12A), etc.] were included as reference background samples if they were upgradient of the site and if the data were of sufficient quality to be representative of natural background conditions at the FSMR. A summary of the sample stations, SWMUs, and the source of the data (Phase I or II RFI) is presented in Table 5.1 for each medium.

EPA Region IV methodology (EPA 1996b) was used as guidance for the development of the background data set for screening metals data. In cases where enough samples (e.g., more than 20) are collected to define background, a background upper tolerance level can be calculated. In cases where fewer samples (e.g., less than 20) are collected to define background, background can be calculated as 2 times the mean background concentration (EPA 1996b). Given that fewer than 20 background samples were collected for the FSMR, the latter method was used for calculating reference background concentrations for metals.

Appendix F presents the summary of background data and presents the two-times-mean background concentrations for metals. Given the limited number of reference background samples, the mean concentration of metals for soils in the eastern United States is also presented, for comparative purposes only. The locations of all reference background samples are also shown in Appendix F, on Figures F-1 and F-2.

The detected concentrations of organics in background samples were not used to calculate reference background criteria because all organic compounds are considered to be potentially man-made. Organic compounds were not screened against background. All detected organic compounds are considered SRCs. The following sections discuss the background data analysis for each medium.

5.1.1 Surface Soil

Surface soil samples were taken from the ground surface to a depth of 1 or 2 feet below ground surface (bgs) depending on the amount of recovery from the sampling device. Thirteen surface soil samples were used in the development of the surface soil background data set (Table 5.1). The reference background concentration for metals in surface soils was calculated as 2 times the average concentration of these 13 locations. Phase I data from SWMU 12A and SWMU 35 were determined

Table 5.1. Background Media Summary, Former 724th Tanker Purging Station, Fort Stewart

SWMU Number	SWMU Name on Hazardous Waste Permit HW-045	Station				
		Surface Soil	Subsurface Soil	Groundwater	Surface Water	Sediment
1	South Central Landfill	SC-M17[a]	SC-M17	MW10[a]	NA	NA
2	Camp Oliver Landfill	**MW5**[c]	**MW5**[c]	**MW5**[c]	NA	NA
3	TAC-X Landfill	**MW5**[c]	**MW5**[c]	**MW5**[c]	NA	NA
4A	Burn Pit A		**MW1**[b] (Phase I)	**MW1**[d]	NA	NA
4B	Burn Pit B		**MW3**[b] (Phase I)	**MW3**[d]	NA	NA
4C	Burn Pit C	**MW7**[d]	**MW7**[d]	**MW7**[d]	NA	NA
4D	Burn Pit D		**MW2**[b] (Phase I)	**MW2**[d]	NA	NA
4E	Burn Pit E		**MW3**[b] (Phase I)	**MW3**[d]	NA	NA
4F	Burn Pit F		**MW1**[b] (Phase I)	**MW1**[d]	NA	NA
12A	Active EOD containing Open Detonation Unit and Open Burn Pit	**MW1**[f]	**MW1**[f] (Phase I)	**MW1**[b]	NA	NA
14	Old Fire Training Area			MW8[b]	NA	NA
17	DRMO Hazardous Waste Storage Area	**MW1**[b]	**MW1**[b]	**MW1**[b]	NA	NA
18	Industrial Wastewater Treatment Plant	**MW1**[b]	**MW1**[b]	**MW1**[b]	NA	NA
26	Former 724th Tanker Purging Station	**MW1**[b]	**MW1**[b]	**MW1**[b]	SWS-1	SWS-1
29	Evans Army Heliport POL Storage Facility	**MW5**[b]	**MW5**[b]	**MW5**[b]	NA	NA
31	DEH Asphalt Tanks	**MW1**[b]	**MW1**[b]	**MW1**[b]	NA	NA
32	Supply Diesel Tank	**MW1**[b]	**MW1**	**MW1**[b]	NA	NA
34	DEH Equipment Wash Rack	**MW1**[b]	**MW1**[b]	**MW1**[b]	NA	NA
35	Wright Army Airfield Bulk Fuel System	HA-05[g] (Phase I)	HA-05[g] (Phase I)	MW9[g] (Phase I)	NA	NA

DEH = Directorate of Engineering and Housing.
DRMO = Defense Reutilization and Marketing Office.
EOD = Explosive Ordnance Disposal.
NA = Not applicable; surface water and sediment background are site specific.
POL = Petroleum Oil and Lubricant.
Bold indicates background groundwater sample collected from the same borehole as sample for soil (i.e., monitoring well was constructed in the borehole).
[a]Science Applications International Corporation (SAIC), September 1998. *Phase II RCRA Facility Investigation Report for the South Central Landfill (SWMU 1), Fort Stewart, Georgia* (Final Report), U.S. Army Corps of Engineers, Savannah District, Contract No. DACA21-95-D-0022, Delivery Order 0012.
[b]Rust Environment and Infrastructure, May 1996. *Phase I RCRA Facility Investigation Report for 24 Solid Waste Management Units at Fort Stewart, Georgia, Volume I of III* (Corrected Final Report), U.S. Army Corps of Engineers, Savannah District, Contract No. DACA21-93-D-0029, Delivery Order 0005.
[c]Science Applications International Corporation (SAIC), September 1998. *Phase III RCRA Facility Investigation Report for 16 Solid Waste Management Units at Fort Stewart, Georgia, Volume 1* (Draft Report), U.S. Army Corps of Engineers, Savannah District, Contract No. DACA21-95-D-0022, Delivery Order 0009.
[d]Science Applications International Corporation (SAIC), March 1998. *Phase II RCRA Facility Investigation Report for the Burn Pits (SWMUs 4A – 4F) at Fort Stewart, Georgia* (Final Report), U.S. Army Corps of Engineers, Savannah District, Contract No. DACA21-95-D-0022, Delivery Order 0008.
[f]Radian International, LLC, January 1997. *Site Characterization Report, Open Burn/Open Detonation Units, Fort Stewart, Georgia* (Draft Report), U.S. Army Corps of Engineers, Mobile District.
[g]Metcalf & Eddy, Inc., December 1996. *Final Phase I RFI Report for Bulk Fuel Storage System at Wright Army Airfield, Fort Stewart, Georgia,* U.S. Army Corps of Engineers, Contract No. DACA21-93-D-0049, Delivery Order 0018.

to be of sufficient quality to include in the background data set. If a chemical was not detected at a site, then one-half the detection limit was used as the concentration in calculating the mean background concentration. The sample results included in the data set are presented in Table F-2, Appendix F. Metals are considered SRCs if their concentrations exceed the calculated reference background concentration. Organics were not screened against background; all organic compounds are considered SRCs if they were detected.

5.1.2 Subsurface Soil

Subsurface soil samples were taken from the interval between a depth of 2 feet bgs and the water table. Eighteen subsurface soil samples were used in the development of the subsurface soil background data set (Table 5.1). Phase I data from SWMUs 4A, 4B, 4D, 4E, 4F, SWMU 12A, and 35 were determined to be of sufficient quality to include in the subsurface soil background set. The reference background concentration for metals in subsurface soil was calculated as 2 times the mean of the chemical detected at the 19 locations. If a chemical was not detected in a sample, then one-half the detection limit was used in calculating the mean background concentration. The sample results included in the background data set are presented in Table F-3, Appendix F. Metals are considered SRCs if their concentrations exceed the calculated reference background concentration. Organics were not screened against background; all organic compounds are considered SRCs if they were detected.

5.1.3 Groundwater

Only groundwater samples collected using low-flow techniques (Phase II RFI) were used in the development of the groundwater background data set. Groundwater samples from 19 SWMUs were used (Table 5.1). The reference background concentration groundwater was calculated as two times the average of these 19 samples. If a chemical was not detected at a site, then one-half the detection limit was used in calculating the mean background concentration. The sample results included in background data set are presented in Table F-4, Appendix F. Metals in groundwater are considered SRCs if their concentrations exceed the calculated reference background concentration. Organics were not screened against background; all organic compounds are considered SRCs if they were detected.

5.1.4 Surface Water/Sediment

Surface water and sediment background samples were collected during the Phase II RFI for the Former 724th TPS and are site specific. The reference background surface water concentration was calculated as two times the average of the data taken at the site-specific background location (SWS-1). If a chemical was not detected at a site, then one-half the detection limit was used as the average background concentration. The sample results comprising the site-specific background data for surface water and sediment are presented in Tables F-5 and F-6, respectively, Appendix F. Metals are considered SRCs if their concentrations exceed site-specific reference background concentration. Organics are considered SRCs if they were detected.

5.1.5 Site-related Contaminants

Inorganics for surface soil, subsurface soil, and groundwater were screened against the reference background criteria. Inorganics for surface water and sediment were screened against site-specific background values. As discussed in the preceding sections, all organics that are detected are considered potential SRCs because organic constituents are considered potentially man-made. Organic analytes that were detected at least once, and those inorganic analytes where at least one sample result exceeded background, are considered SRCs. Only the SRCs are carried through for evaluation under fate and transport (Chapter 6.0), human health PRE (Chapter 7.0), and ecological PRE (Chapter 8.0).

5.2 SURFACE SOIL CONTAMINATION

The nature and extent of surface soil contamination was evaluated using the results from surface soil samples taken from four monitoring well boreholes (MW-1, MW-2, MW-4, and MW-5) at the site. The samples from the monitoring wells were analyzed for VOCs, semivolatile organic compounds (SVOCs), and RCRA metals. Table 5.2 summarizes the analytical results for surface soil samples, and Figure 5.1 shows the distribution of analytes above background. This assessment presents Phase II contaminant data only.

Table 5.2. Summary of Analytical Results for Surface Soil Samples, Former 724th Tanker Purging Station, Fort Stewart

		Analytical Results			
Well ID	**Reference Background Criteria**	**MW-1**[a]	**MW-2**	**MW-4**	**MW-5**
Sample ID		**261111**	**261211**	**261411**	**261511**
Depth (feet)		**0 to 1**	**0 to 1**	**0 to 1**	**0 to 1**
Volatile Organic Compounds (μg/kg)					
Acetone	0.00		**26.6**		
Benzene	0.00		**1.4**		
Toluene	0.00		**22.9**		
Ethylbenzene	0.00		**19.6**		
Xylenes, total	0.00		**141**		
Styrene	0.00				**1.9**
Semivolatile Organic Compounds (μg/kg)					
Benzo(*a*)pyrene	0.00				**6.1**
Benzo(*b*)fluoranthene	0.00				**7.8**
RCRA Metals (mg/kg)					
Arsenic	2.10				
Barium	14.70	0.94	14.1	5.8	9.8
Cadmium	0.18				
Chromium	6.21		**6.3**	3.9	1.7
Lead	8.81	1.3	5.1	3.2	4.8
Mercury	0.03			**0.06**	**0.05**
Selenium	0.41	**0.63**			
Silver	0.15			0.07	

[a]Site-specific background location.
Blank indicates analyte not detected.
Bold indicates concentrations greater than reference background criteria.

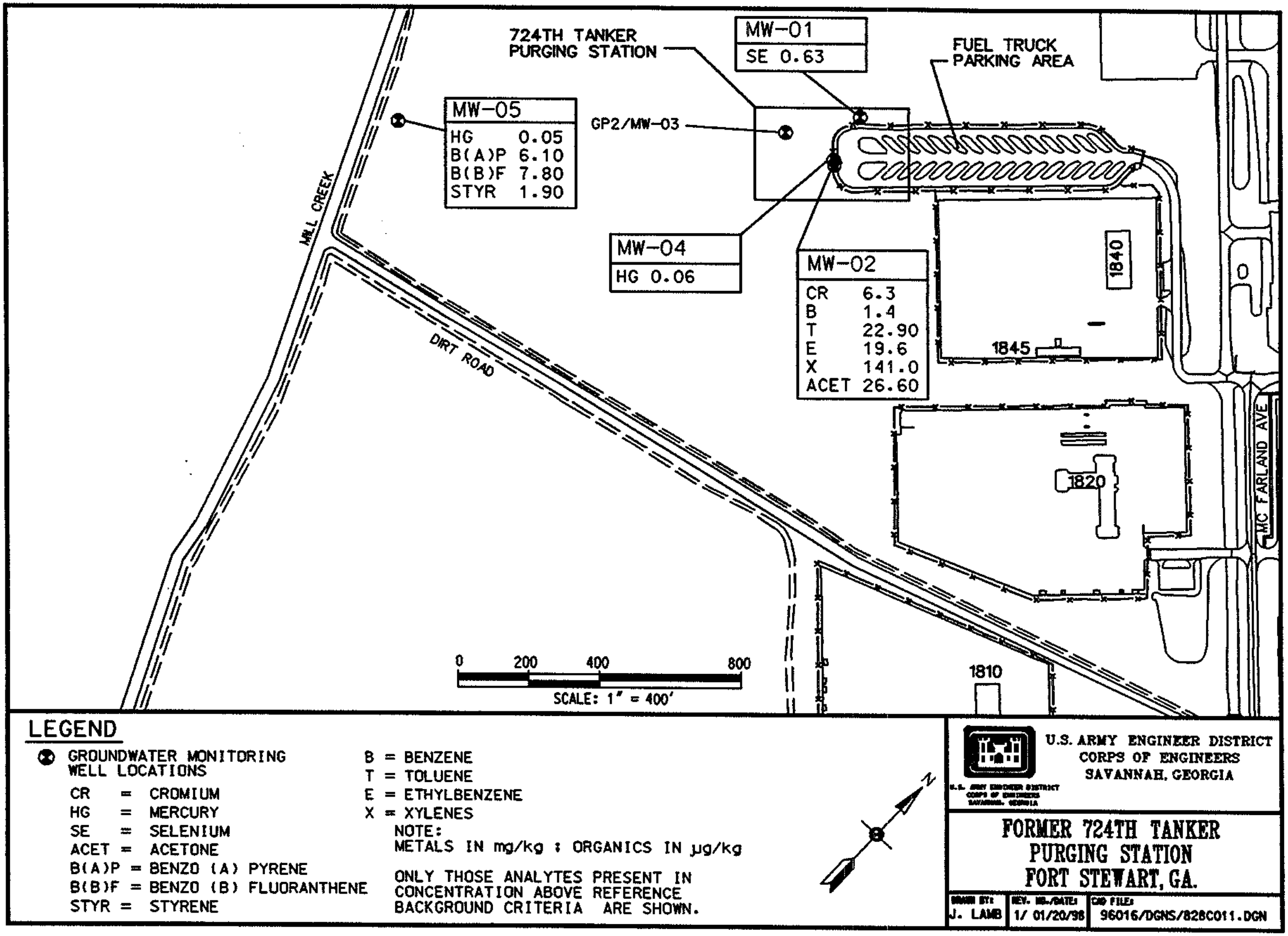

Figure 5.1. Results of Chemical Analyses in Surface Soil

Samples from two soil push probes (S-11 and S-17) were taken from a depth of 0 to 2 feet and analyzed for VOCs only; those results are discussed together with the results of all other direct-push soil sampling.

VOCs. BTEX compounds were reported in the surface soil sample from monitoring well MW-2. Because this location coincides with the location of subsurface soil contamination as well, BTEX contamination is further discussed in combination with subsurface soil in Section 5.3. Acetone was detected in MW-2 at 26.6 µg/kg. Styrene was detected in MW-5 at 1.9 µg/kg.

SVOCs. Benzo(*a*)pyrene (6.1 µg/kg) and benzo(*b*)fluoranthene (7.8 µg/kg) were detected in the surface soil sample from MW-5, which is located adjacent to Mill Creek, 1,200 feet from the Former 724th TPS facility. These constituents were reported at concentrations near their respective detection limits. Therefore, SVOCs in surface soils are not considered to be related to contaminant releases at the Former 724th TPS.

RCRA Metals. Chromium, mercury, and selenium were detected in surface soils at concentrations exceeding their respective reference background values. Chromium was detected above background at MW-2 (6.3 mg/kg), and mercury was detected above background at MW-4 (0.06 mg/kg) and MW-5 (0.05 mg/kg). Selenium was detected above background at MW-1 (0.63 mg/kg), the site background location. As described above for SVOCs, MW-5 is located adjacent to Mill Creek, 1200 feet from the Former 724th TPS facility, and the barium and mercury results at that station were reported at concentrations near their respective detection limits. Therefore, metals in surface soils at MW-5 are not considered related to contaminant releases at the Former 724th TPS.

5.3 SUBSURFACE SOIL CONTAMINATION

The nature and extent of subsurface soil contamination was evaluated using the results from both direct-push soil samples and discrete soil samples taken from monitoring well boreholes and Phase I soil borings.

5.3.1 Direct-Push Soil Sampling Results

The direct-push soil samples were collected from a total of 24 push-probe stations, including 21 soil push-probe and 3 groundwater push-probe stations. The samples were analyzed for VOCs only. Table 5.3 summarizes the BTEX and acetone analytical results for direct-push soil samples, and Figure 5.2 shows the distribution of VOCs in subsurface soils. Phase I data are shown for locations outside of the area of excavated soils removed in August 1996, for reference. In addition, results of BTEX analyses on subsurface soil samples taken from the Phase II monitoring well boreholes are shown for reference to portray a comprehensive picture of BTEX contamination in soil at the site.

VOCs. BTEX compounds were detected in 20 of the 24 push-probe stations. The highest concentrations were reported in samples from stations S-1, S-3, S-5, and S-16. Maximum concentrations of toluene (27,400 µg/kg) and xylene (124,000 µg/kg) were reported in station S-5, and the maximum concentrations of benzene (9420 µg/kg) and ethylbenzene (27,100 µg/kg) were reported in station S-3.

Table 5.3. Summary of BTEX and Acetone Analyses for Soil Samples, Former 724th Tanker Purging Station, Fort Stewart

			Benzene	Toluene	Ethylbenzene	Xylenes, Total	Acetone
Reference Background Criteria			0.00	0.00	0.00	0.00	0.00
Station	Depth (feet)	Sample ID					
S-1	4 to 6	265111	**510**	**76.1**	**2,790**	**11,400**	
S-2	2 to 4	265211	**19.2**	**16.2**	**50.7**	**185**	
S-3	4 to 6	265311	**9,420**	**8,990**	**27,100**	**123,000**	
S-4	4 to 6	265411		**3.4**			
S-5	4 to 6	265511	**5,350**	**27,400**	**24,200**	**124,000**	
S-6	2 to 4	265611					
S-7	4 to 6	265711		**4**			**34.9**
S-8	6 to 12	265811		**11.2**			
S9	6 to 10	265911		**7.6**			**55.0**
S-10	2 to 4	265A11		**32.5**			**1,060**
S-11	0 to 2	265B11					
S-12	2 to 4	265C11		**2.8**	**2.7**	**13.8**	**63**
S-13	2 to 4	265D11		**22.4**			**17.9**
S-14	2 to 4	265E11		**7.4**			
S-15	2 to 4	265F11		**8.1**			
S-16	4 to 6	265G11	**92.5**	**36.6**	**314**	**1,320**	
S-17	0 to 2	265H11		**3.7**			
S-18	2 to 4	265J11					**77.3**
S-19	5 to 6	265K11					
S-20	4 to 6	265M11		**1.6**			**25.7**
S-21	4 to 6	265N11		**4.7**			
GP-2	45 to 50	265U14		**1.5**			**11.8**
LE-2	45 to 50	266815	**6.6**	**1.5**	**4.7**	**10.7**	**13.4**
LN-2	45 to 50	266215	**13.7**	**16.7**	**21.2**	**101**	**23.6**
MW-1	0 to 2	261111					
MW-1	2 to 3.3	261112		**2.6**			**10.8**
MW-2	0 to 2	261211	**1.4**	**22.9**	**19.6**	**141**	**26.6**
MW-2	2 to 5	261212		**396**	**750**	**4,420**	
MW-4	0 to 2	261411					
MW-4	12 to 14.5	261412	**48.5**	**40.6**	**17.2**	**84.2**	**27.9**
MW-4	44.5 to 45.5	261414		**27.9**	**2.5**	**8.6**	**26.8**
MW-5	0 to 2	261511					
MW-5	5 to 7.5	261512		**3.3**			

All values reported in µg/kg.
Blank indicates analyte not detected.
Bold indicates concentrations greater than reference background criteria.

The soil screening results, together with the results of the subsurface soil sampling from monitoring well boreholes, delineate a distinct area of residual BTEX soil contamination, as shown on Figure 5.2. The soil contamination covers an area approximately 60 by 75 feet, extending from the area of the excavated soils removed in August 1996 to the north and east. An area of lesser contamination, predominantly toluene at average concentrations less than 32.5 µg/kg in background samples, is present to the south and west of the area of excavated soil, and is characterized by stations S-8, S-10,

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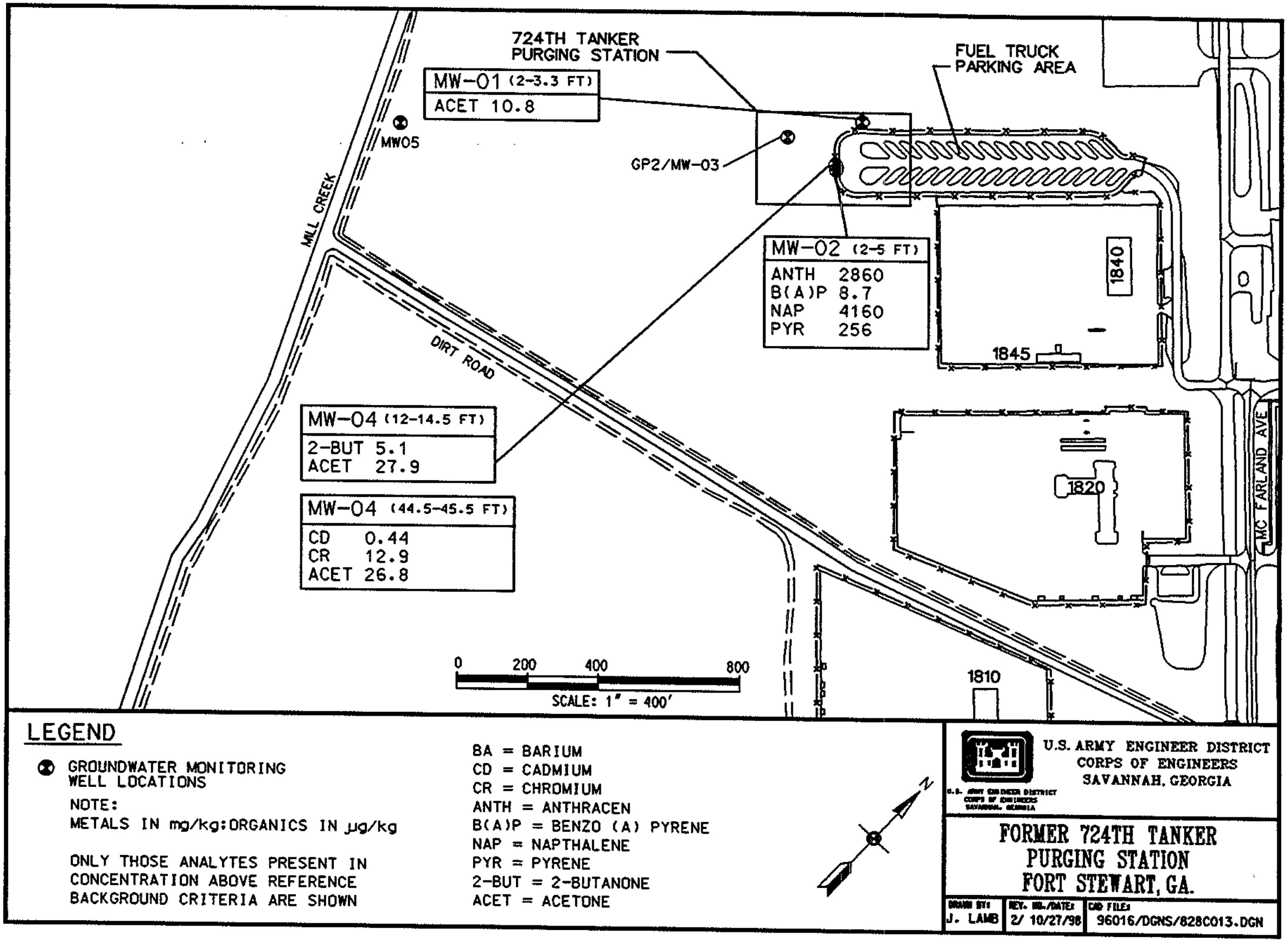


Figure 5.3. Results of Chemical Analyses (Non-BTEX) in Subsurface Soil

VOCs. BTEX compounds were detected in subsurface soils at MW-2 and MW-4 at concentrations above background (Figure 5.2). The maximum concentration of benzene (48.5 μg/kg) was reported in MW-4, and the maximum concentrations of toluene (396 μg/kg), ethylbenzene (750 μg/kg), and xylenes (4420 μg/kg) were reported at MW-2. The locations of MW-2 and MW-4 coincide with the same area of residual BTEX soil contamination as defined by the screening soil sampling results, thereby confirming the extent of subsurface soil contamination.

Acetone and 2-butanone, although detected in subsurface soil samples at MW-1 and MW-4, were not detected at concentrations above the reference background criteria.

PAHs. Various PAHs were detected in a subsurface soil sample from monitoring well MW-2, which is located within the area of BTEX soil contamination. Anthracene, benzo(*a*)pyrene, naphthalene, and pyrene were detected at concentrations ranging from 8.7 μg/kg to 4,160 μg/kg at MW-2.

RCRA Metals. Cadmium and chromium were detected in subsurface soils at MW-4 at levels exceeding their respective reference background criteria. Chromium was detected at 12.9 mg/kg and cadmium was detected at 0.44 mg/kg. Both chromium and cadmium were detected above background in a single soil sample taken at a depth of 44.5 to 45.5 feet at MW-4, and not in any other shallower soil samples and are, therefore, not considered related to contaminant releases from the Former 724th TPS.

5.4 GROUNDWATER CONTAMINATION

A total of 30 direct-push groundwater samples and 5 groundwater monitoring well samples were collected. Direct-push groundwater samples were used to establish groundwater flow direction and extent of contamination for use in locating permanent monitoring wells. Monitoring well samples are used to confirm the types and concentrations of contaminants present in groundwater and to assess risk to human health and the environment.

5.4.1 Direct-Push Groundwater Sampling Results

The direct-push groundwater samples were collected from a total of 17 push-probe stations. The samples were analyzed for VOCs only. The direct-push groundwater focused on the extent of BTEX contamination, the primary indicators of groundwater contamination at the site. Similar to the discussion on direct-push soil sampling results, the results of BTEX analyses on groundwater samples taken from both the direct-push probes and the Phase II monitoring wells are shown in Table 5.5 and Figures 5.4 through 5.7 for reference to portray a comprehensive picture of BTEX contamination in groundwater at the site. This assessment presents Phase II contaminant data only, because no groundwater samples were collected during Phase I.

VOCs. Table 5.5 summarizes the BTEX analytical results for groundwater samples. BTEX compounds were identified at concentrations exceeding reference background criteria and MCLs at four of the 12 push-probe locations (GP-1, LE-2, LW-1, and LW-2). Maximum concentrations were reported at location GP-1 and included benzene (8,090 μg/L), toluene (3,050 μg/L), ethylbenzene (2,870 μg/L), and total xylenes (12,100 μg/L).

Table 5.5. Summary of BTEX Analyses for Groundwater Samples,
Former 724th Tanker Purging Station, Fort Stewart

			Benzene	Toluene	Ethylbenzene	Xylenes, Total
Reference Background Criteria			0.00	0.00	0.00	0.00
MCL			5	1,000	700	10,000
Station	**Depth (feet)**	**Sample ID**				
Direct-Push Samples (µg/L)						
GP-1	5 to 10	266T11	***8,090***	***3,050***	***2,870***	***12,100***
GP-1	19 to 20	266T12	***206***	418	263	1,310
GP-1	29 to 30	266T13	2.1		5.9	28.8
GP-1	32 to 37	266T14	***413***	642	550	1,940
GP-2	10 to 14	266U11				
GP-2	20 to 24	266U12				
GP-2	30 to 34	266U13				
LN-1	5 to 10	266111				
LN-2	10 to 14	266211	1			
LN-2	20 to 24	266212				
LN-2	30 to 34	266213	3.1			
LN-2	45 to 50	266215	***13.7***	16.7	21.2	101
LE-1	6 to 11	266711				
LE-2	30 to 34	266813	2.4		1.4	1.4
LE-2	40 to 42	266814	***54.1***		21.1	77.1
LE-2	45 to 50	266815	***6.6***	1.5	4.7	10.7
LS-1	10 to 15	266411				
LS-2	10 to 14	266511				
LS-2	20 to 22.5	266512				
LS-2	30 to 34	266513				
LS-2	50 to 51	266515				
LW-1	5 to 10	266W11	***6,070***	***4,200***	***2,160***	9,000
LW-2	7 to 10	266A11	***1,660***		588	2,460
LWC-2	7.5 to 9	266E11				
LWC-3	7.5 to 9	266F11				
MC-1	1 to 11	266K11				
MC-2	5 to 15	266M11				
MC-3	5 to 15	266N11				
MC-4	5 to 10	266P11				
MC-5	5 to 10	266R11				
Monitoring Well Samples (µg/L)						
MW-1	4 to 14	264111				
MW-2	4 to 14	264211	***329***	72.6	62.3	296
MW-3	4 to 14	264311				
MW-4	35 to 45	264411				
MW-5	4 to 14	264511				

All values reported in µg/L.
Blank indicates analyte not detected.
Bold type indicates concentration above reference background criteria.
Bold outlined box with ***bold italics*** type indicates concentration above maximum contaminant level.

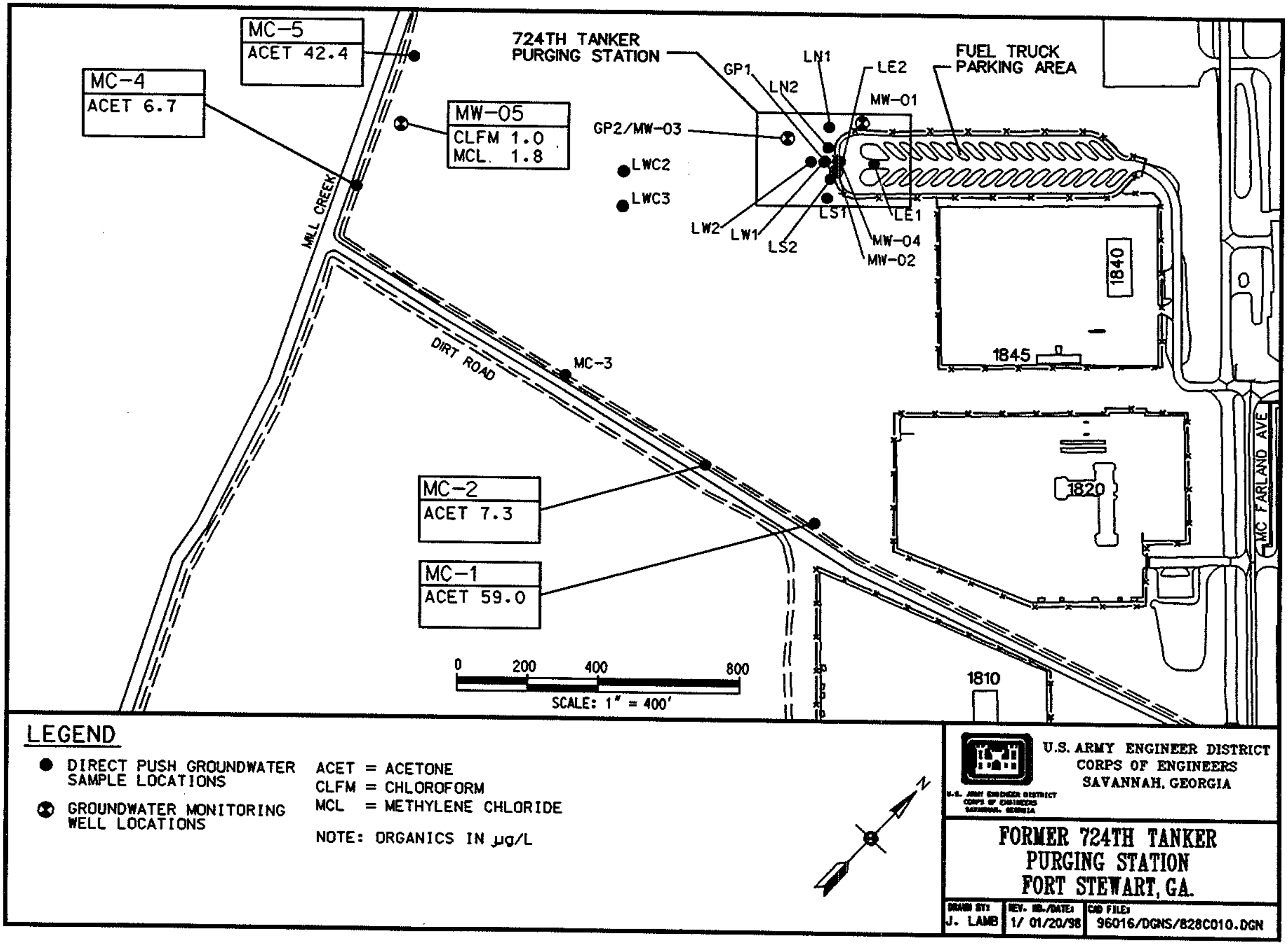


Figure 5.4. Results of Organic Analyses in Groundwater Near Mill Creek

Table 5.6. Summary of Analytical Results for Monitoring Well Groundwater Samples, Former 724th Tanker Purging Station, Fort Stewart

Well ID Sample ID	Reference Background Criteria	MCL	MW-1[a] 264111	MW-2 264211	MW-3 264311	MW-4 264411	MW-5 264511
Volatile Organic Compounds (μg/L)							
1,1 Dichloroethane	0.00				**2.2**		
1,2 Dichloroethane	0.00	5		***7.6***			
Benzene	0.00	5		***329***			
Chloroform	0.00	100			**1.8**		**1**
Chloromethane	0.00		**7.1**				
Ethylbenzene	0.00	700		**62.3**			
Methane	0.00		**53.7**	**4,690**	**19.1**	**214**	**248**
Methylene chloride	0.00	5	**2.1**		**2.2**	**1.9**	**1.8**
Toluene	0.00	1,000		**72.6**			
Xylenes, total	0.00	10,000		**296**			
Semivolatile Organic Compounds (μg/L)							
Naphthalene	0.00			**10.5**			
RCRA Metals (μg/L)							
Arsenic	3.02	50	**10.1**	**3.5**	2.5		
Barium	71.72	2,000	50.7	33.9	37.4	**99.2**	70.20
Chromium	3.56	100		2.4			
Lead	4.69	15	3.3	0.59	0.22		
Mercury	0.14	2	**0.2**	**0.2**		**0.30**	**0.58**
Selenium	1.90	50	0.62		0.56	0.51	0.78
Silver	1.12		**4.9**	0.51	**3.3**	**4.1**	
Other Analytes (mg/L)							
Alkalinity	90.2		45.1	76.3	206	290	244
Nitrate	0.5	10			0.07	0.09	
Sulfate	26.7		3.07	0.55	16.7	4.15	3.01
Sulfide	0.1						0.05

[a]Site-specific background location.
Bold type indicates concentration greater than reference background criteria.
Bold outlined box with ***bold italicized*** type indicates concentration greater than maximum contaminant level.

VOCs. Ten individual VOCs were reported above the detection limit in groundwater samples. Although detected, methylene chloride and chloroform were reported at concentrations 2.2 μg/L and below. Chloromethane was detected in a single well, MW-1, which is upgradient of the former facility at a concentration of 7.1 μg/L.

BTEX compounds were detected in MW-2, which is located nearest the former purging station, and represent the highest contamination within the groundwater as measured in monitoring wells at the site. Benzene (329 μg/L), toluene (72.6 μg/L), ethylbenzene (62.3 μg/L), and xylene (296 μg/L) were detected; of these, only benzene exceeds its respective MCL of 5 μg/L. No BTEX compounds were detected in the remaining wells, thereby confirming both the horizontal and vertical extent of contamination defined by the direct-push groundwater sampling.

VOC 1,2-dichloroethane was detected in MW-2 at a relatively low concentration (7.6 μg/L). VOC 1,1-dichloroethane was detected in MW-3 at the downgradient edge of the BTEX plume, at a concentration (2.2 μg/L) near its detection limit. These constituents are considered secondary contaminants within the primary BTEX plume. Methane is present in the upgradient well MW-1 at a concentration of 53.7 μg/L and at downgradient locations at concentrations ranging from 19.1 to 248 μg/L. These concentrations of methane are likely indicative of natural biological activity. Because methane is also a product of breakdown of BTEX, the higher concentration of methane of 4,690 μg/L at MW-2 located nearest the former facility suggests that biodegradation of organic compounds within the shallow plume at that location is occurring.

SVOCs. Naphthalene was the only PAH compound detected in groundwater. Naphthalene was reported at 10.5 μg/L in MW-2.

RCRA Metals. Analytical results for RCRA metals were compared to the reference groundwater background concentrations presented in Section 5.1. Only constituents that exceed their respective reference background criteria are considered COPCs. Four metals (arsenic, barium, mercury, and silver) were reported above background levels, as shown on Figure 5.8.

Arsenic (maximum 3.5 mg/L) was found in MW-2 at a concentration near its reference background criterion. Arsenic was found at even higher concentrations (10.1 mg/L) in well MW-1, which is upgradient of the site. Therefore, arsenic is not considered an SRC at the Former 724th TPS site.

Similarly, silver (maximum 4.1 mg/L in MW-4) exceeded its reference background criterion, but was found at even higher concentrations (4.9 mg/L) in background well MW-1. Therefore, silver is not considered an SRC.

Barium and mercury exceed the reference background concentration in MW-4 and MW-4 and MW-5, respectively, and are therefore considered COPCs; however, because MW-4 is located in a deeper hydrogeologic zone and MW-5 is located near Mill Creek, nearly 1,200 feet from the Former 724th TPS, these metals are not likely related to any contaminant plume emanating from the facility. A likely source of contamination in MW-5 is from recharge from Mill Creek during times of high creek stage when groundwater flow may be reversed. Lead was not reported above the reference background criteria and is not considered an SRC.

Other Analytes. Other geochemical parameters, including alkalinity, nitrate, sulfate, and sulfide, were analyzed to assist in geochemical evaluation of contaminant fate and transport. Alkalinity varied from a low of 45.1 mg/L at the upgradient well MW-1 to higher concentrations (up to 290 mg/L at MW-4) downgradient of the site and in the deeper portion of the superficial aquifer. Methane and alkalinity are both elevated at MW-5 next to Mill Creek at the well, suggesting that biodegradation of naturally occurring organic matter is also occurring. Nitrates and sulfates were also slightly higher in the downgradient wells.

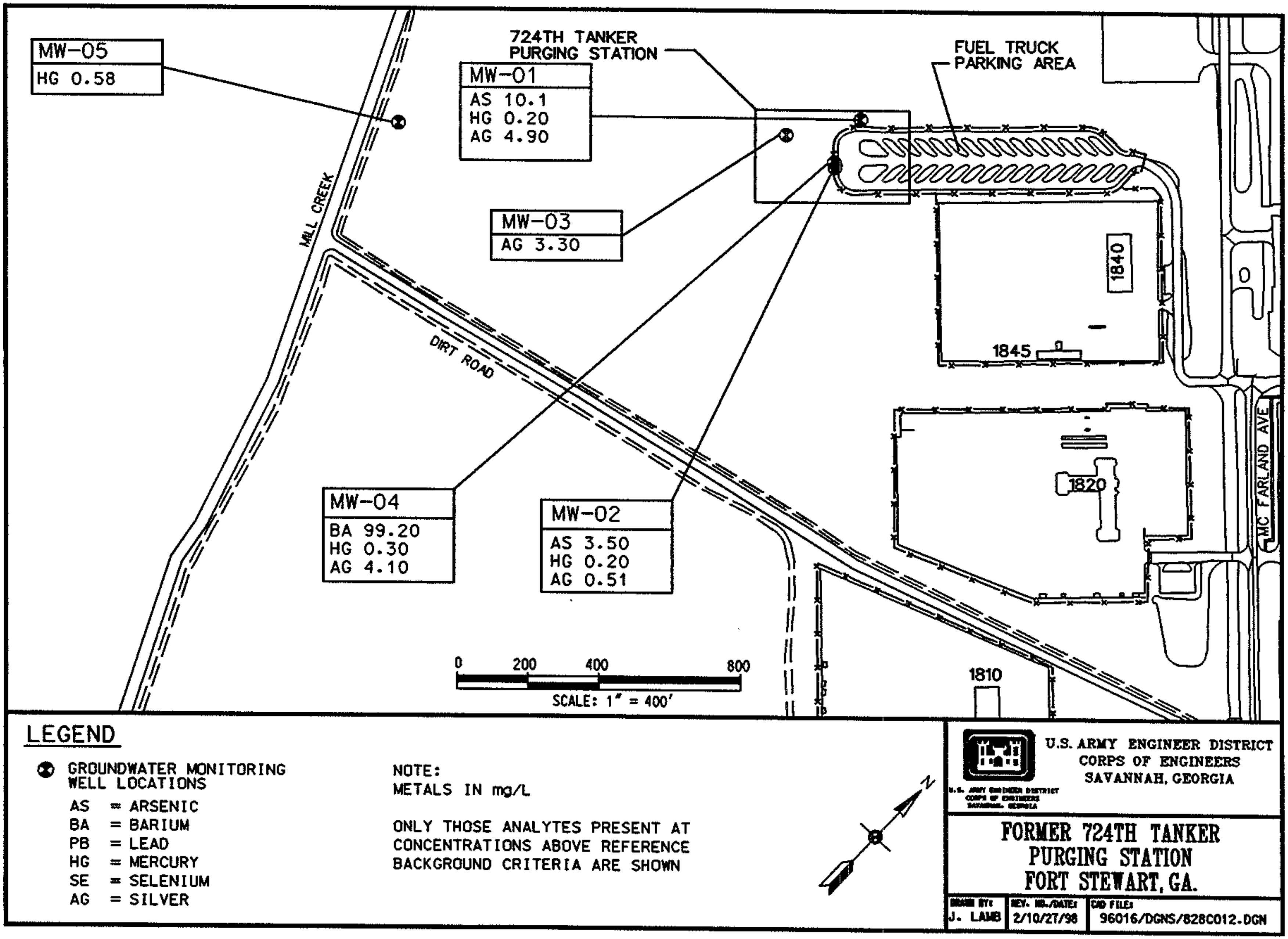


Figure 5.8. Results of Metals Analyses in Groundwater

5.5 SURFACE WATER SAMPLING RESULTS

Four surface water samples, including one background sample, were collected and analyzed for VOCs, PAHs, and RCRA metals (no surface water was present in the swale at station SWS-3 at the time of sampling). Table 5.7 summarizes the analytical results for surface water samples and Figure 5.9 shows their distribution.

No VOCs or PAHs were detected in any of the surface water samples. Results for RCRA metals were compared to the site-specific background criteria results at station SWS-1, located in Mill Creek where the stream enters the FSMR. At stations SWS-4 and SWS-5, located in the swale just west of the Former 724th TPS site, five RCRA metals exceed site-specific background criteria (arsenic, cadmium, lead, mercury, and silver). Of these, cadmium (1.7 µg/L) and lead (10.8 µg/L) are notable in that the concentrations exceed both the site-specific surface water background criteria by factors of more than two and their respective reference groundwater background concentrations as well.

At station SWS-2, located in Mill Creek downstream of the Former 724th TPS, mercury exceeded the site-specific reference background criteria. Mill Creek is located more than 1,200 feet from the Former 724th TPS site and does not receive direct runoff from the site. Although Mill Creek may ultimately receive groundwater discharge from the facility, mercury was not detected in groundwater at elevated concentrations near the facility. Therefore, contaminant migration from the Former 724th TPS to Mill Creek is not indicated by these data. The presence of mercury in Mill Creek is, therefore, presumed not to be related to former activities at the Former 724th TPS.

5.6 SEDIMENT SAMPLING RESULTS

Five sediment samples were collected at the same locations as surface water samples and were analyzed for VOCs, PAHs, and RCRA metals. Table 5.7 summarizes the analytical results for sediment samples and Figure 5.9 shows their distribution.

VOCs. BTEX compounds were detected in the sediment in the swale immediately west of the Former 724th TPS site and are likely indicators of contamination from the facility. Toluene was detected in SWS-3 at 158 µg/kg and xylenes were detected in SWS-4 at 1.2 µg/kg. Methylene chloride was detected in a single sample (SWS-3) at a concentration (2.6 µg/kg) below its method quantitation limit (5 µg/kg) and below its reference background criterion in soils (6.2 µg/kg). Methylene chloride is a common laboratory contaminant and is therefore not likely related to contamination at the Former 724th TPS.

SVOCs. No PAHs were detected in any of the sediment samples.

RCRA metals. Results for RCRA metals were compared to the site-specific reference background criteria. Five metals exceeded background criteria, with maximum values reported as barium (29.2 mg/kg), chromium (4.4 mg/kg), mercury (0.07 mg/kg), and silver (2.6 mg/kg) at station SWS-3, and lead (6.6 mg/kg) at station SWS-4. These sections are located in the swale immediately west of the Former 724th TPS site. Of these, barium and mercury were also detected above background in surface soils at the site, and barium and chromium were detected above background in subsurface soils. Lead was also detected in surface water in the swale and could be associated with past releases of leaded fuel from the Former 724th TPS.

Table 5.7. Summary of Analytical Results for Surface Water and Sediment Samples, Former 724th Tanker Purging Station, Fort Stewart

SURFACE WATER						
Station	**Reference Background Criteria**	**SWS-1[a]**	**SWS-2**	**SWS-3**	**SWS-4**	**SWS-5**
Sample ID		**263111**	**263211**	**263311**	**263411**	**263511**
RCRA Metals (µg/L)						
Arsenic	0.94					**1.8**
Barium	44.8	22.4	26.4		7.3	26.3
Cadmium	0.2					**1.7**
Lead	5.2	2.6			0.46	**10.8**
Mercury	0.18	0.09	**0.4**		0.18	0.08
Silver	0.3	0.15	0.24		**1.3**	0.29

SEDIMENT						
Station	**Reference Background Criteria**	**SWS-1[a]**	**SWS-2**	**SWS-3**	**SWS-4**	**SWS-5**
Sample ID		**262111**	**262211**	**262311**	**262411**	**262511**
Volatile Organic Compounds (µg/kg)						
Methylene chloride	0.00			**2.6**		
Toluene	0.00				**158**	
Xylenes, total	0.00			**1.2**		
RCRA Metals (mg/kg)						
Barium	3.0	1.5	**15.3**	**29.2**	**17**	2.9
Chromium	0.37			**4.4**	**4**	
Lead	1.38	0.69	**2.6**	**5.9**	**6.6**	1.2
Mercury	0.02			**0.07**		
Silver	0.17		**0.8**	**2.6**	**1**	**0.91**

[a]Site-specific background location.
Blank indicates analyte not detected.
Bold indicates concentration above site-specific background criteria.

5.7 SUMMARY AND CONCLUSIONS OF THE NATURE AND EXTENT OF CONTAMINATION

The following summarizes the significant findings of Phase II RFI sampling and analysis:

- Contamination is present in both soil and groundwater at the site, dominated by BTEX compounds, with secondary contaminants such as 1,1-dichloroethane.

- BTEX contamination in soil extends to the water table (approximately 6 feet deep) and is greatest immediately north and east of the area of excavated soils removed in August 1996. The soil contamination covers an area approximately 60 by 75 feet.

- BTEX contamination in groundwater extends to a depth of approximately 20 feet below the water table, although isolated areas of BTEX were found in groundwater to depths up to 40 feet. The BTEX plume is more than 1,000 feet from Mill Creek and is, therefore, not impacting Mill Creek. Contamination in Mill Creek is not related to the Former 724th TPS.

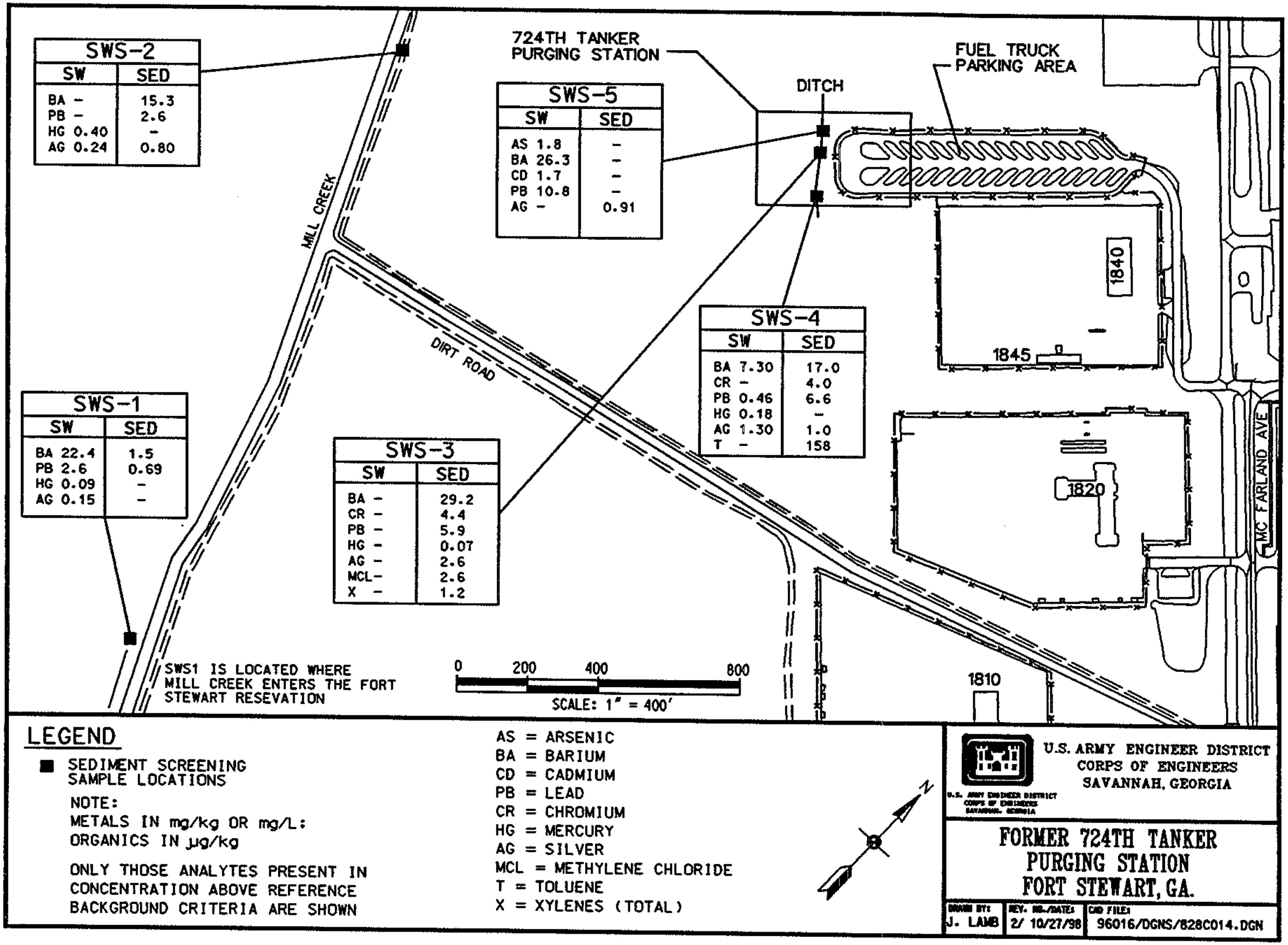


Figure 5.9. Results of Surface Water and Sediment Sampling

- Biodegradation of the VOCs is likely occurring, as evidenced by the presence of methane, a breakdown product of BTEX degradation.

- Some metals (principally mercury and chromium) are present in soil, sediment, and surface water and are present in the swale immediately west of the site.

A summary of the SRCs by medium and their maximum concentrations are presented in Table 5.8. SRCs include all organics that are detected and inorganics detected above reference background criteria. These SRCs are carried through for evaluation under fate and transport, human health PRE, and ecological PRE.

Table 5.8. Summary of Site-related Contaminants from Nature and Extent of Contamination, Former 724th Tanker Purging Station, Fort Stewart

Analyte	Surface Soil	Subsurface Soil	Groundwater Monitoring Wells	Groundwater Direct Push	Surface Water	Sediment
Volatile Organic Compounds (µg/kg)						
	(µg/kg)	(µg/kg)			(µg/L)	(µg/kg)
Acetone	26.6	1,060	ND	1,450	ND	ND
Benzene	1.4	9,420	329	8,090	ND	ND
2-Butanone	ND	5.1	ND	2.8	ND	ND
Chloroform	ND	ND	1.8	ND	ND	ND
Chloromethane	ND	ND	ND	27.7	ND	ND
1,1-Dichlorethane	ND	ND	2.2	125	ND	ND
1,2-Dichlorethane	ND	ND	7.6	ND	ND	ND
Ethylbenzene	19.6	27,100	62.3	2,870	ND	ND
2-Hexanone	ND	ND	ND	3.2	ND	ND
Methane	ND	ND	4,690	NA	ND	ND
Methylene chloride	ND	ND	2.2	ND	ND	2.6
Styrene	1.9	ND	ND	ND	ND	ND
Toluene	22.9	27,400	72.6	4,200	ND	158
Xylenes, total	141	124,000	296	12,100	ND	1.2
Semivolatile Organic Compounds						
	(µg/kg)	(µg/kg)	(µg/L)		(µg/L)	(µg/kg)
Anthracene	ND	2,860	ND	NA	ND	ND
Benzo(*a*)pyrene	6.1	8.7	ND	NA	ND	ND
Benzo(*b*)fluoranthene	7.8	ND	ND	NA	ND	ND
Naphthalene	ND	4,160	10.5	NA	ND	ND
Pyrene	ND	256	ND	NA	ND	ND
RCRA Metals						
	(mg/kg)	(mg/kg)	(µg/L)		(µg/L)	(mg/kg)
Arsenic	ND	ND	3.5	NA	1.8	ND
Barium	BRC	BRC	99.2	NA	BRC	29.2
Cadmium	ND	0.44	ND	NA	1.7	ND
Chromium	6.3	12.9	BRC	NA	ND	4.4
Lead	BRC	BRC	BRC	NA	10.8	6.6
Mercury	0.06	BRC	0.58	NA	0.4	0.07
Selenium	ND	BRC	BRC	NA	ND	ND
Silver	BRC	BRC	4.1	NA	1.3	2.6

BRC = Below background reference criteria.
NA = Not analyzed.
ND = Not detected.

6.0 CONTAMINANT FATE AND TRANSPORT

6.1 INTRODUCTION

This chapter describes the potential migration pathways and mechanisms for transport of chemical substances found in surface and subsurface soils, surface water, and groundwater at the Former 724th TPS. Based on the information presented in previous sections, the refined site conceptual model is developed in this chapter. Simple analytical methods were used to define contaminant movement from source areas to receptor locations. The overall objectives of these analyses are to evaluate potential future impact to human health and the environment.

Section 6.2 discusses the persistence, mobility, and other physical and chemical properties of the organics and metals found at the Former 724th TPS. Section 6.3 presents a conceptual model for potential contaminant migration pathways and describes contaminant release mechanisms through primary transport media (groundwater). Section 6.4 discusses the fate and transport of the contaminants at the Former 724th TPS with respect to their leachability and natural attenuation in the groundwater. Section 6.5 summarizes the conclusions drawn from the results of the analyses and discusses the uncertainties associated with the analyses. Section 6.6 identifies the target remediation levels for soils due to leaching from soil to groundwater.

6.2 PHYSICAL AND CHEMICAL PROPERTIES

The fate and transport of organic compounds and metals are functions of both site characteristics and the physical/chemical properties of the contaminants. Such properties include solubility in water, tendency to transform or degrade (usually described by a half-life or an environmental half-life in a given media), and chemical affinity for solids or organic matter (usually described by a partitioning coefficient K_d, K_{oc}, or K_{ow}). These properties and how they affect inorganic and organic contaminant behavior are described below.

6.2.1 Metals

Inorganic SRCs at the Former 724th TPS site for soils include barium, chromium, and lead. These metals are subject to movement with soil moisture, and may be transported through the vadose zone to groundwater. Metals do not degrade, although some metals can transform to other oxidation states in soil, reducing their mobility and toxicity. Metals also react with soils or other solid surfaces by ion exchange, adsorption, precipitation, or complexation. Such reactions are affected by pH, oxidation-reduction conditions, and the type and amount of organic matter, clay, and hydrous oxides present. In general, these reactions are reversible and cause an element's mobility to be retarded. The retardation factor (R_d) describes numerically the extent to which the velocity of the contaminant relative to water is slowed. The R_d is largely derived from the partitioning coefficient (K_d), expressed by the following relation:

$$R_d = 1 + K_d \cdot \rho_b / \theta$$

where: ρ_b = the soil bulk density (g/cm^3),
θ = soil moisture content.

K_d for the metals at this site may vary by large ranges. It has been found that K_d can even vary by orders of magnitude between samples from the same site. The range of K_d values [obtained from EPA (1996)] and the corresponding range of calculated R_d for the Former 724th TPS SRCs are presented in Table 6.1.

Table 6.1. List of Distribution Coefficients (K_d) Used to Describe the Retardation Factors (R_d) for the Inorganic Site-related Contaminants at the Former 724th Tanker Purging Station, Fort Stewart

Site-related Analytes	K_d Range[a] (mL/kg)	R_d Range[b]
Arsenic	25 to 31	60 to 75
Barium	11 to 52	27 to 126
Cadmium	15 to 4300	37 to 10,320
Chromium	14 to 31	35 to 75
Lead	19 to 1405	25 to 3370
Mercury	0.04 to 200	1.1 to 480
Selenium	2.2 to 18	6.3 to 44
Silver	0.1 to 110	1.2 to 265

[a]The K_d-ranges represent the pH-dependent values for metals developed for soil screening level application (EPA 1996).
[b]The R_d-ranges represent calculated values using the K_d-range and site-specific parameters.

6.2.2 Organic Compounds

The organic compounds detected in soils at the Former 724th TPS site include VOCs and SVOCs. These contaminants may be degraded in the environment by various processes, including hydrolysis, oxidation/reduction, photolysis, or biodegradation. Half-lives of organic compounds in various media can vary from minutes to years, depending on the chemical and on environmental conditions. Degradation may either enhance or reduce the toxicity of a chemical. The biodegradation rates for the organic compounds are presented in Table 6.2. These values are based on the biodegradation half-lives taken from the *Handbook of Environmental Degradation Rates* (Howard et al. 1991). Although a range of values is presented in this book, only the lowest biodegradation rates corresponding to the highest half-lives are presented here to ensure conservatism in discussing contaminant loss through degradation/decay.

The mobility of an organic compound is affected by its volatility and its partitioning behavior between solids and water, water solubility, and concentration. The Henry's Law constant value (K_H) for a compound is a measure of the ratio of the compound's vapor pressure to its aqueous solubility. The K_H value can be used to make general predictions about the compound's tendency to volatilize from water. Substances with K_H values less than 10^{-7} atm/m^3/mol will generally volatilize slowly while compounds with K_H greater than 10^{-3} atm/m^3/mol will volatilize rapidly. Vapor pressure is a measure of the pressure at which a compound and its vapor are in equilibrium. The value can be used to determine the extent to which a compound would travel in air, as well as the rate of volatilization from soils and solution. In general, compounds with vapor pressures lower than 10^{-7} mm Hg will not be present in the atmosphere or soil air in significant amounts, while compounds with vapor pressures higher than 10^{-2} mm Hg will exist primarily in the air. Unless the soil is saturated, VOCs will exist primarily in the atmosphere and soil air. PAHs and other SVOCs will exist in both the air and the soil. The air diffusion coefficient is a

Table 6.2. Physical and Chemical Properties of Organic Site-related Contaminants at Former 724th Tanker Purging Station, Fort Stewart

Constituents	Mol. Wt	Solubility S_w (mg/L)	S_w @ Temp. °C	K_{OW} (ml/ml)	Vapor Pressure (tor @ °C)	Henry's Constant (K_h) atm.m^3/mol	K_h @ Temp. °C	Air Diff. Coeff. cm^2/s	K_{OC} 'mL/g	Calculated K_d (mL/g)	Biodegradation Rate Constant λ 1/day	Log (K_{OW})
Volatile Organic Compounds												
1,1 Dichloroethane	99.0	5.06E+03		6.17E+01	234 @ 25	5.45E-03	25	0.074	53.4[c]	2.67E-01	1.13E-03	1.79
1,2 Dichloroethane	99.0	8.52E+03		2.81E+01		1.10E-03	25	0.104	38[c]	1.90E-01	9.63E-04	2.09
2-Butanone	72.1	2.75E+05		1.82E+00	100 @ 25	6.61E-07	25[a]	0.092[b]	1.15	5.73E-03	2.48E-02	0.26
Acetone	58.1	1.00E+06		5.75E-01	270 @ 30	5.14E-07	25[a]	0.11[b]	0.575	2.88E-03	2.48E-02	-0.24
Benzene	78.1	1.78E+03	20	1.35E+02	95 @ 25	5.55E-03	25	0.0932[b]	62[c]	3.10E-01	9.63E-04	2.13
Chloroform	119.4	9.30E+03	25	9.33E+01	160 @ 20	3.39E-03	25	0.091[b]	53[c]	2.65E-01	3.85E-04	1.97
Chloromethane	50.5	6.36E+03	20	8.13E+00	3800 @ 20	8.82E-03	25	0.11[b]	5.12	2.56E-02	6.19E-03	0.91
Ethylbenzene	106.2	1.52E+02	20	1.41E+03	10 @ 25.9	6.44E-03	25	0.075[e]	204[c]	1.02E+00	3.04E-03	3.15
Methylene chloride	84.9	1.67E+04	25	1.78E+01	429 @ 25	3.19E-03	25	0.1037[b]	10[c]	5.00E-02	6.19E-03	1.25
Styrene	104.1	3.00E+02	20	1.45E+03	5 @ 20	2.28E-03		0.0071[b]	912[c]	4.56E+00	3.30E-03	3.16
Toluene	92.1	5.15E+02	20	4.90E+02	28 @ 25	5.92E-03	25	0.087[f]	140[c]	7.00E-01	3.30E-03	2.69
Xylene	106.2	2.00E+02		5.89E+02	5 @ 20	5.25E-03	25	0.073[b]	196[c]	9.80E-01	1.93E-03	2.77
Semivolatile Organic Compounds												
Anthracene	178.2	1.29E+00	25	2.82E+04	1.95E-4[d]	8.60E-05	25	0.042	23493[c]	1.17E+02	3.77E-04	4.45
Benzo (a) pyrene	252.3	3.80E-03	25	9.55E+05	5E-9 @ 21	4.90E-07	25	0.043	968774[c]	4.84E+03	3.27E-04	5.98
Benzo (b) fluoranthene	252.3	1.00E-03	[a]	3.72E+06	5E-7[d]	2.94E-07	25[a]	0.044[a]	2340000	1.17E+04	2.84E-04	6.57
Napthalene	128.2	3.00E+01	25	2.34E+03	0.082 @ 25	4.83E-04	25	0.059	1191[c]	5.96E+00	2.69E-03	3.37
Pyrene	202.3	1.60E-01	26	1.51E+05	2.5 @ 200	5.10E-06	25	0.051	67992[c]	3.40E+02	9.12E-05	5.18

Solubilities, Henry's Constant and Log (K_{ow}) have been taken from RREL Treatability Data Base (EPA 1994) except otherwise indicated.

Biodegrdation half-lives are based on biodegradation half-lives taken from Hand Book of Environmental Degradation Rates (Howard et. al. 1991) except otherwise indicated.

Air diffusion coefficients are obtained from EPA 1987, except otherwise indicated.

[a] STF Data Base (EPA 1991) [b] indicates Shen et. al 1993 as the source

[c] = measured Koc values (EPA 1996) [d] = Source from EPA 1995 [e] = EPA (1996)

$K_d = K_{oc} * f_{oc}$, where foc is fraction of organic carbon content with a site average value of 0.005 obtained from site measurements measure of the rate of spontaneous mixing, presented in units of cm^2/second, of one substance with another when in contact or separated by a permeable membrane. The rate of diffusion is proportional to the concentration gradient of a substance, increases with temperature, and is inversely related to density and pressure. In soil systems, the principal type of diffusion is from a region of high concentration to a region of low concentration. Diffusion occurs most readily in gases, to a lesser extent in liquids, and least in solids.

Water solubility and the tendency to adsorb to particles or organic matter can correlate with retardation in groundwater transport. The adsorption coefficient/partition coefficient (K_d) of an organic compound is related to the organic carbon/water partition coefficient (K_{oc}) by

$$K_d = f_{oc} \times K_{oc}$$

where:

f_{oc} = fraction of soil organic carbon content.

Chemical-specific K_{oc} values may be obtained from literature or may be calculated using empirical formulas relating the octanol-water partitioning coefficient (K_{ow}) to the K_{oc}. The K_{ow} (mL/mL) is the ratio of a contaminant's concentrations in a system containing water and octanol. The most commonly used formula to relate K_{ow} to K_{oc} is given by (Mills et al. 1985):

$$K_{oc} = 0.63 \times K_{ow}$$

Chemicals with relatively high water solubilities and low adsorption coefficients (e.g., acetone, methylene chloride, etc.) are expected to remain primarily as dissolved phases and be transported at the same rate as the groundwater flow. Chemicals with lower water solubilities and higher adsorption coefficients (e.g., PAHs) are expected to remain primarily adsorbed to the surface of the soils; their transportation with the groundwater would be very limited and at a much slower rate. Table 6.2 presents the solubility, Henry's Law constant (K_H), vapor pressure, air diffusion coefficients, and biodegradation rate constants for the organic compounds detected in soils and groundwater at the Former 724th TPS. Log K_{ow}, K_{ow}, K_{oc}, and K_d for these compounds are also presented in this table.

6.3 CONCEPTUAL MODEL

The conceptual site model (CSM) is a statement of expected site conditions that serves as a paradigm against which observations can be compared and within which predictions can be made. The predictive function of the CSM, of primary importance to contaminant fate and transport analysis, relies on known information and informed assumptions about the site. The better the information and the greater the accuracy of the assumptions, the more accurately the CSM describes the site resulting in more reliable predictions.

The CSM presented in this section summarizes the hydrogeologic components (presented in Section 2.0) and the distribution of contaminants in the subsurface soils and groundwater (presented in Section 5.0). Contaminant migration pathways and release mechanisms are also based on the information presented in Section 5.0. The CSM for contaminant fate and transport at the Former 724th TPS is diagrammatically illustrated in Figure 6.1. The summary of the model elements follows.

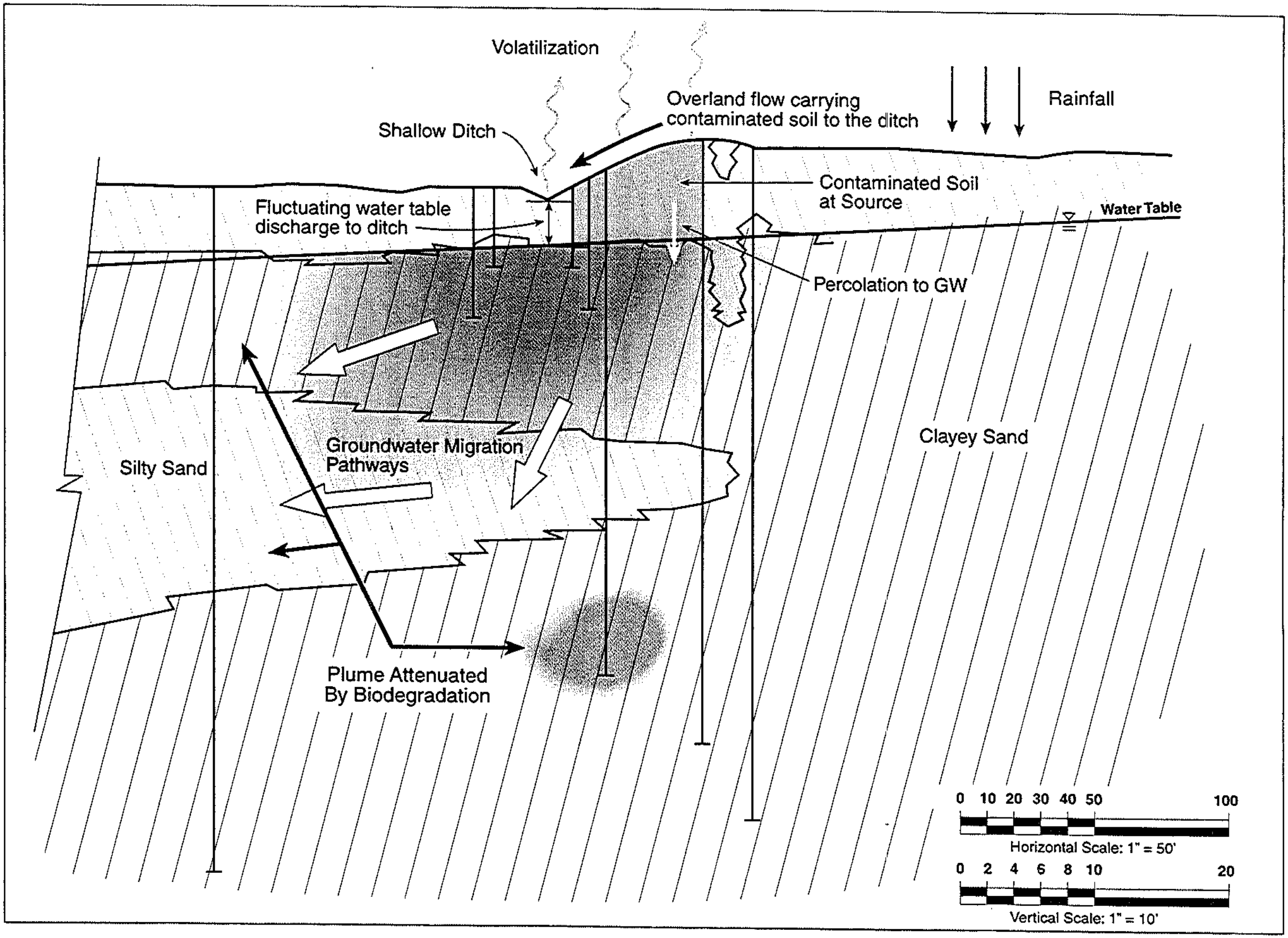


Figure 6.1. Conceptual Site Model for Contaminant Fate and Transport at Former 724th Tanker Purging Station, Fort Stewart

6.3.1 Water Balance Components

The potential for contaminant transport begins with precipitation. The actual amount of rainwater available for flow is highly variable and dependent upon soil type and climatic conditions. A water balance calculation can be used as a tool to quantitatively account for all the components of the hydrologic cycle at the Former 724th TPS. The components of a simple steady-state water balance model include: precipitation (P), evapotranspiration (ET), surface runoff (Sr), and groundwater recharge or percolation (Gr), and is defined as follows:

$$P = ET + Sr + Gr$$

or

$$\text{Rain water available for flow} \quad = \quad Sr + Gr = P - ET$$

The annual average water balance estimates for the Fort Stewart area indicate an evapotranspiration of 65.5 percent (31.4 inches) of total precipitation (48 inches) as compared to 34.5 percent (16.6 inches) for rain water available for flow. Of this 34.5 percent (16.6 inches), groundwater recharge (percolation) accounts for 30.7 (14.7 inches) percent and surface runoff accounts for the remaining 3.8 percent (1.8 inches). The water balance estimations were based on HELP model (EPA 1994) calculations using precipitation and temperature data for the years 1974 through 1978 at Savannah, Georgia.

6.3.2 Contaminant Release Mechanisms and Migration Pathways

Past pathways were:

- Purge liquids disposed of to the oil/water separator at the Former 724th TPS overflowed or were spilled during operations. These liquids infiltrated the soil and contaminated soil and groundwater below the Former 724th TPS.

- Overflow or spilled purge liquids disposed at the Former 724th TPS flowed overland to the nearby ditch contaminating the surface water and sediments.

- The groundwater plume spread to its current extent.

- After removal of the Former 724th TPS facilities and most of the contaminated site soils, BTEX compounds in groundwater and probably in soil have been biologically degrading, producing elevated methane in groundwater at the Former 724th TPS and elevated methane and alkalinity in groundwater downgradient of the Former 724th TPS.

Current pathways are:

- Rainwater percolating through contaminated soil below the Former 724th TPS leaches contaminants and transports contaminants to the water table.

- Contaminants migrate in groundwater along the flow path by advection towards Mill Creek.

- Organic compounds in groundwater and probably in soil are being biologically degraded.

- Organic compounds in soil and probably in groundwater are being volatized.

Release Mechanisms. Purge liquids were spilled during operations or overflowed the oil/water separator in the past, contaminating both groundwater and soils. The seasonal fluctuation of the local water table has spread contaminants from 4 to 10 feet bgs. These contaminated soils and groundwater may be continuously cross-contaminating each other as the elevation of the water table changes. Another important release mechanism at the Former 724th TPS site is infiltration of rain water with leaching to groundwater. Precipitation that does not leave the site as surface runoff infiltrates into the subsurface. Some of this infiltrating water leaves the subsurface environment via evapotranspiration after little or no subsurface flow. The remainder of the water percolates into the subsurface flow system. The rate of percolation is controlled by soil cover, ground slope, saturated conductivity of the soil, and meteorological conditions. As discussed previously, the rate of percolation at this site is quite high (14.7 inches/year).

Water infiltrating through contaminated surface and subsurface soils are leaching contaminants into the groundwater. The factors that affect leaching rate include a contaminant's solubility and partitioning coefficient (K_d) and the amount of percolation. Whether it is the contaminant's partition coefficient or solubility that controls leaching depends on whether leaching is solubility controlled or sorption controlled. Insoluble compounds will precipitate out of solution in the subsurface or remain in their insoluble form with little leaching. Those contaminants with a small K_d will be leached more effectively than those with a larger K_d.

Another factor that affects the persistence of a contaminant is the contaminant's rate of decay. Most of the organic compounds decay or breakdown at characteristic rates that are described by the substance's half-life. For a given percolation rate, those contaminants with long half-lives have a greater potential for contaminating groundwater than do those contaminants with shorter half-lives. Organic contaminants with shorter half-lives and higher K_{oc}s will be completely degraded before reaching the water table.

Release by gaseous emission and airborne particulates is an important mechanism although it is not significant at the Former 724th TPS. VOCs in surface soil are emitted to air via vaporization. The rate of emission is controlled by the vapor pressure of the organic compounds and decreases rapidly over a short period of time as the volatiles are depleted by release to the atmosphere. VOCs in the subsurface soils are emitted to the atmosphere via vertical diffusion through soil pores. Depending on how extensively diffusion has occurred, gaseous emissions from subsurface soils may be significant. In the Former 724th TPS, concentrations of contaminants in the surface soil are relatively insignificant so gaseous emissions to the atmosphere would be minor. However, volatilization of subsurface contaminants could be an important mechanism for redistributing volatile compounds in the subsurface.

Particulate matter from contaminated surface soil can become airborne as a result of wind erosion. This process is controlled by vegetative cover, wind speed, moisture and other fluids, and soil grain size in the surface soils. Wind erosion is not likely to be significant at the Former 724th TPS because of the vegetative cover.

Migration Pathways. The most likely pathways of contaminant migration at this site are (1) via overland flow to the ditch located west of the facility, and (2) via groundwater flow toward Mill Creek located west of the facility. In the saturated zone, the contaminants are carried either in solution or adsorbed to fine particulates (colloids) laterally to the hypothetical receptor locations. The horizontal hydraulic conductivity, which controls the flow rate, is a function of soil grain size and the pressure gradient. Saturated hydraulic conductivities for Former 724th TPS site range from 2.0×10^{-5} to 4.1×10^{-4} cm/second with an overall average of 1.4×10^{-4} cm/second (Section 4.0). The average horizontal hydraulic gradient at the site is 0.0083 with groundwater flow predominantly to the west. Assuming an effective porosity of 0.33 [based on specific yield of fine sands (Mills et. al. 1985)], the groundwater velocity is calculated to be approximately 3.6 feet/year towards the creek. Therefore, it is expected to take 280 years for the site groundwater to reach Mill Creek, located approximately 1,000 feet from the Former 724th TPS. Contaminants that are sorbed onto surface soils can be released by desorption in surface runoff or captured with particulate matter by sheet erosion during a storm event. However, there is not much runoff from the Former 724th TPS and surrounding area because of dense grass cover. A multi-day storm may cause sheet flow. Sheet flow becomes shallow concentrated flow. When the shallow concentrated flow becomes channelized, it may quickly drain contaminants to the ditch.

6.4 FATE AND TRANSPORT ANALYSIS

6.4.1 Soil Leachability Analysis

Contaminant fate and transport analysis at this site involves a series of screening steps to define the contaminant migration constituents of potential concern (CMCOPCs). The CMCOPCs are defined as the constituents that may pose the greatest problem if they migrate from the site source. Once CMCOPCs were developed through the screening process, they were further evaluated using a simple analytical approach for lateral migration in the saturated zone, to the receptor locations to contaminant migration constituents of concern (CMCOCs). The screening steps are discussed in the following sections.

The first step of the screening process represents the development of the SRCs. The SRCs were selected by comparing the maximum detected concentrations of all the analytes measured in surface and subsurface soils with their respective background criteria. The background criteria represent the average site background concentration multiplied by a factor of two. If the maximum concentration of an analyte in the soil exceeds its reference background criterion, then that analyte is selected as an SRC.

The second step of the screening process involves comparing the maximum concentrations of all the SRCs, developed in the previous step, with EPA generic soil screening levels (GSSLs). The GSSLs are set for Superfund Sites for the migration to the groundwater pathway (EPA 1996). For conservatism, a default dilution attenuation factor (DAF) of 1 as applicable based on source area and depth to water table was applied to the GSSLs for the organics. A DAF of 1 is appropriate for organic chemicals because organic constituents are not easily adsorbed to the sandy inorganic soils present above the water table at the Former 724th TPS Site and because the depth to the water table is less than 8 feet. However, for the metals, because of their higher retardation factor, a DAF of 20 was used. The GSSL is defined as the concentration of a contaminant in soil that represents a level of contamination below which there is no concern under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), provided conditions associated with soil screening levels (SSLs) are met. Generally, if contaminant concentrations in soil fall below the GSSL, and there are no significant ecological receptors of concern, then no further study or action is warranted for that area. However, it should be noted here that the purpose of this screen is not to identify the contaminants that may pose risk at a downgradient location but to target those contaminants that may pose the greatest problem if they migrate from the site. The results of this screening are presented in Table 6.3.

Table 6.3. Contaminant Migration Constituents of Potential Concern Based on Soil Screening for Former 724th Tanker Purging Station, Fort Stewart

SRCs	Maximum Concentration	GSSL	Is Maximum Concentration >GSSL?
		Metals (mg/kg)	
Cadmium	0.44	8	No
Chromium	12.90	38	No
Mercury	0.06	0.4	No
		Volatile Organic Compounds (µg/kg)	
2-Butanone	5.10	38.4	No
Acetone	1,060	800	Yes
Benzene	9,420	2	Yes
Ethylbenzene	27,100	700	Yes
Styrene	1.90	200	No
Toluene	27,400	600	Yes
Xylenes	124,000	10,000	Yes
		Semivolatile Organic Compounds (µg/kg)	
Anthracene	2,860	590000	No
Benzo(a)pyrene	8.70	400	No
Benzo(a)fluoranthene	7.80	200	No
Naphthalene	4,160	4,000	Yes
Pyrene	256	210,000	No

GSSL = generic soil screening level

6.4.2 Natural Attenuation of the CMCOPCs

The CMCOPCs at the Former 724th TPS include acetone, BTEX, and naphthalene. These contaminants may be degraded in the environment by various processes, including hydrolysis, oxidation/reduction, photolysis, or biodegradation. As already discussed in Section 6.2, environmental half-lives of organic compounds in various media can vary from minutes to years, depending on the chemical and on environmental conditions. Organic chemicals with differing chemical structures will biodegrade at different rates. Primary biodegradation consists of any biologically induced structural change in an organic chemical, while complete biodegradation is the biologically mediated degradation of an organic compound into carbon dioxide, water, oxygen, and other metabolic inorganic products. The biodegradation rate of an organic compound is proportional to the concentration:

$$-dC/dt = kC^n$$

where:

C = concentration,
k = biodegradation rate constant = 1/t Ln (a/[a-x]),
t = time,
a = initial concentration,
x = change in concentration with time,
n = reaction order, n=1 for first order kinetics.

The half-life ($t_{1/2} = Ln2/k$) is the time necessary for half of the chemical concentration to react. The biodegradation rate of an organic chemical is generally dependent on the presence and population size of soil micro-organisms, capable of degrading the chemical. Based on the above equation and the maximum concentrations of these constituents, a simple first-order correlation can be obtained between the constituent's half-lives and the time required to degrade the contaminant to the concentration equal to its MCL. These correlations indicate that benzene, with its current maximum concentration of 8,090 ppb at the Former 724th TPS groundwater will degrade to its MCL value in less than 10.7 times its half-life, whereas xylene, with its maximum concentration of 12,100 ppb will degrade to its MCL in less than 0.3 times its half-life. Using a conservative half-life of 2 years as reported in the literature, the concentration of benzene will degrade to its MCL value in less than 22 years. This time frame is an order of magnitude less than the 280 years that is expected for the site groundwater to reach the receptor location (Mill Creek). It should be further noted here that this analysis does not account for attenuation due to adsorption and dispersion making the analysis highly conservative.

6.5 SUMMARY AND CONCLUSIONS

Based on site characterization and monitoring data, organics and a few metals are detected in groundwater beneath the Former 724th TPS site. However, the metals are not considered SRCs, mainly due to their low concentrations in the soils. Organics in the site soils that exceed EPA GSSLs include BTEX, acetone, and naphthalene. These organics, except naphthalene, due to their high mobilities and historically higher soil concentrations, have already reached the groundwater. However, groundwater movement off site is very slow (3.6 feet/year) and may take 280 years to reach the receptor location (i.e, Mill Creek).

The BTEX compounds are currently observed above their respective MCLs in groundwater. Based on the site conceptual model, although these contaminants have likely been leaching (and will likely continue to leach in the future) from the contaminated soils into the groundwater beneath the site with concentrations above their MCLs, off-site migration of these contaminants will be very limited due to retardation and biodegradation as well as the slow movement of groundwater flow.

Benzene will degrade from the observed maximum of 8,090 µg/L at the source to a concentration less than its MCL of 5 µg/L in 22 years, based on a conservative benzene biodegradation half-life of 2 years. Traveling at a groundwater flow rate of 3.6 feet/year for those 22 years, groundwater would not be expected to exceed its MCL at a distance of 80 feet from the source. Similarly, ethylbenzene, toluene, xylene, and acetone with higher biodegradation rates will remain at concentrations much lower than benzene. Therefore, it may be concluded that none of the constituents from the Former 724th TPS site are expected to be of potential concern at the nearest receptor location [i.e., Mill Creek (1,200 feet from the source)].

6.6 IDENTIFICATION OF SOIL REMEDIAL LEVELS

Remedial levels for contaminant migration COPCs in soil were identified based on transport modeling. For soils that are above the water table, an unsaturated zone contaminant transport model (SESOIL) was used to predict the concentration of contaminants in the percolating rainwater before reaching the water table. The SESOIL results were then converted into likely average groundwater concentrations by using dilution factors (DFs). DFs were developed by using the hydraulic analysis method (EPA 1996), which involves calculating the rate of flow through the aquifer system and the rate of rainwater percolating into the aquifer. The rate of percolation (14.7 inches/year) and the groundwater flow velocity (3.6 feet/year) were estimated from the CSM. The zone of mixing within the aquifer was assumed to be 20 feet deep. The site was modeled as a single unsaturated soil layer 7 feet thick. Soil contamination was assumed to cover a total area of 4,500 square feet, with 60 feet parallel to groundwater flow. Using these parameters, the DF was calculated to be 1.33. Geotechnical parameters used by the model are bulk dry density = 1.25 grams/cm^3, disconnectedness index = 10, porosity = 52 percent, and organic carbon content = 0.24 percent. The SESOIL results, showing the predicted maximum groundwater concentrations beneath the site, are presented in Table 6.4.

Soil remedial levels were calculated based on the ratio of the MCL to the predicted maximum groundwater concentration for a given analyte. Because there is no MCL for naphthalene, a risk-based concentration equal to the EPA Region II Risk-Based Criteria was used. The soil remedial level is then calculated by multiplying this ratio by the maximum observed concentration of that analyte in soil at the Former 724th TPS facility. The resulting soil remedial levels, based on leaching from soil to groundwater, are presented in Table 6.4.

Table 6.4. Soil Remedial Levels Based on Leaching to Groundwater Former 724th Tanker Purging Station, Fort Stewart

CMCOPC	Maximum Soil Concentration (μg/kg)	Target Groundwater Concentration (MCL) (μg/L)	Predicted Maximum Groundwater Concentration (μg/L)	Soil Remedial Level (μg/kg)
Acetone	1,060	370	1,060	370
Benzene	9,420	5	2,320	20
Ethylbenzene	27,100	700	6,210	3,100
Naphthalene	4,160	150[a]	1,040	600
Toluene	27,400	1,000	6,600	4,200
Xylenes	124,000	10,000	39,200	3,200

CMCOPC = contaminant migration constituent of potential concern

[a] - Target groundwater concentration for naphthalene is EPA Region III risk-based level, since no maximum contaminant level exists for naphthalene.

These soil remedial levels are protective of direct exposure to residents by hazardous constituents leaching from the soil to groundwater. However, it is recognized that groundwater is not used at this site as a source of drinking water. It will take approximately 280 years for groundwater to reach the nearest receptor at Mill Creek, which is 1,200 feet from the former facility. Constituents will naturally attenuate in groundwater through retardation and biodegradation before reaching Mill Creek.

7.0 HUMAN HEALTH RISK ASSESSMENT

This human health risk assessment (HHRA) uses a Step 1 risk evaluation, based on guidance from the GEPD. This will be done to determine if there are potential risks to human health associated with contamination detected at the Former 724th TPS. This process involves the following steps:

- for inorganics, compare detected concentrations to naturally occurring background levels to determine if detected inorganics are naturally occurring or are associated with past activities at the site;
- identify potential migration and exposure pathways associated with the site and identify potential exposure scenarios in order to identify appropriate action levels;
- identify available risk-based action levels for each contaminant detected above background levels or develop levels if they do not exist; and
- compare sample concentrations to action levels to determine if site conditions warrant further evaluation.

Chemicals that exceed action levels will be identified as contaminants of potential concern and will be evaluated in a baseline risk assessment.

7.1 DATA EVALUATION

The objective of this evaluation is to develop a set of chemical data suitable for use in the HHRA. The data for the Former 724th TPS were evaluated to establish (1) which data are of sufficient quality for use in the quantitative risk assessment and (2) which detected chemicals are believed to be site related.

The data used in the risk assessment were verified and validated using the methodology described in the QAPP. Data qualified during the validation as rejected data ("R") were not used in the risk assessment.

Detection limits achieved during sample analysis were reviewed to ensure that the required detection limits were met. Typically, detection limit requirements are established to ensure that characterization has occurred to levels that are low enough to determine if chemicals are present at hazardous levels. These levels are chemical-specific and related to each chemical's toxicity. Required detection limits are presented in the QAPP. In some cases recommended detection limits cannot be achieved by a laboratory, e.g., if matrix or chemical interference requires that a sample be diluted.

An organic chemical was removed from further consideration if it was a common laboratory contaminant and the reported sample concentration was less than ten times the concentration in an associated quality control sample (i.e., trip blank, field blank, equipment rinsate, or laboratory blank). Common laboratory contaminants include acetone, 2-butanone, methylene chloride, toluene, or phthalate esters. Other organic chemicals were not included if results were less than five times the highest concentration detected in an associated quality control sample.

The analytical results for the various environmental media were compared to the appropriate background concentrations to identify SRCs. This was previously done in Section 5.0 (Contaminant Nature and Extent). The reader is referred to this section for the discussion on the selection of SRCs.

7.2 EXPOSURE EVALUATION

The objective of this exposure evaluation is to identify potential human populations that may be exposed to site-related chemicals at the Former 724th TPS under current and future land use conditions. A complete exposure pathway consists of five elements: (1) a potential receptor population, (2) a source of contamination, (3) a transport or retention medium, (4) a point of contact for a receptor, and (5) a route of exposure (ingestion dermal absorption, or inhalation) at the point of contact through which the chemical may be taken into the body. When all of these elements of an exposure pathway are present, an exposure of a receptor population can take place. The assessment considers both on-site and off-site receptors and their relationship to the potential migration pathways and exposure pathways and points of exposure for site-related chemicals.

7.2.1 Receptor Assessment

This section identifies those populations that may be exposed to site-related chemicals. The receptor populations are identified under both current and future conditions. Potential changes in land use are evaluated to determine whether this may result in the presence of more sensitive receptor populations in the future.

Generally, receptor populations are divided into two groups: on-site and off-site receptors. On-site receptors are those individuals who may be present within the site boundaries and come into direct contact with contaminants present. The exposure of an off-site receptor requires a migration pathway that transports a contaminant off-site to a point of exposure of the potential receptor.

The Former 724th TPS is located within an industrialized area of the FSMR; however, the site is not currently in use and has open access, i.e., no institutional controls are in place. Base personal may come on site on a regular basis for lawn maintenance such as grass cutting, etc. Given the open access to the site, a trespasser (e.g., Base worker crossing the site) may visit the site. The adult trespasser is likely to be an occasional event, given that the industrial areas near the site are fenced and an adult trespasser would have little purpose in coming onto the site. The site is located within an industrial/military operational area. No children are allowed in this area; therefore, a juvenile trespasser is not a viable receptor population at this site. Construction work may take place at the site, but given the knowledge of the contamination present, personnel involved in excavation, construction, or similar activity will be required to wear the appropriate protective gear. Therefore, this type of receptor is unlikely to be exposed to contaminants. Under current land-use conditions, the on-site receptors would be represented by a groundskeeper.

The land use in the area surrounding the site consists primarily of industrial operations with undeveloped areas west of the site. Off-site receptors at greatest potential risk to exposure would be individuals working in those areas adjacent to the site.

Given the location of the site within an industrialized area, it will probably remain an industrial area (Master Plan). The land use at the site may remain unchanged. Given this scenario, the future receptor populations would remain the same as those identified as current receptor populations. However, the site may be developed for military/industrial use. Should this occur, construction workers or similar contract labor would be working on the site, in addition to Base personnel working on site. If the site is returned to industrial usage, the area is likely to be secured by a fence, similar to the current areas in use. Therefore, the presence of an on-site juvenile trespasser is unlikely. For the purposes of this risk analysis, it is assumed that the site will be developed for industrial use. The potential risks associated with no changes in current land use would not be different from current risks.

Future off-site receptor populations would be the same as the current receptor populations, namely, nearby base workers. Because Mill Creek is located in an undeveloped area, potential future receptors could also include children playing in Mill Creek, who may be at potential risk from exposure to air-borne contaminants or direct exposure to contaminants in surface water. Because this risk evaluation is designed to determine if no further action is a potential option, the risk-based action levels used in the evaluation are based on a land use that assumes no controls are in place, e.g., a residential land use.

Potential receptor populations for the Former 724th TPS are:

- Current on site - Groundskeeper.
- Current off site - Base worker.
- Future on site - Base worker and construction worker.
- Future off site - Base worker and juvenile playing in Mill Creek.

7.2.2 Migration Pathway Analysis

This section describes the potential pathways related to chemical transport that may result in potential exposure points for humans. In general, the major routes of migration from this site are volatilization into air, wind erosion resulting in fugitive dust, surface water runoff, and leaching of contaminants into groundwater. The site is currently covered by vegetation. Therefore, the migration of contaminants into the atmosphere via fugitive dust is not a viable migration pathway, under current conditions. However, activities in the future may result in the surface cover being removed from the site, resulting in wind erosion.

Soils. Contaminants in soils may migrate via runoff, leaching into groundwater, or volatilizing into air. Runoff may transport contaminants adsorbed to soil particles via erosion. This would result in an increase of the surficial area of contamination and may transport contaminants to sediments in the swale west of the site. Runoff may also result in the transport of particulate-bound water soluble compounds to surface waters in the swale. Groundwater is less than 10 feet bgs at this site and leaching of contaminants into subsurface soils and then into groundwater is likely to be a significant migration pathway. Volatilization into the air may occur, but this pathway would be limited to volatile organics.

Groundwater. Migration of soil contaminants to groundwater could occur from infiltration and percolation of rainwater through the soil. The extent of contaminant migration depends primarily on the amount of rainfall, evaporation, solubility of the chemical in water, absorption coefficient, and distance to the groundwater. In general, VOCs travel more easily through soils than SVOCs, such as high-boiling point fuel hydrocarbons. Solubility of metals is dependent on the metal species and is difficult to generalize. Groundwater at the site discharges into Mill Creek located approximately 1,000 feet west of the site. However, given the low groundwater flow rate, organic contaminants are likely to have attenuated through biodegradation before reaching Mill Creek (Section 5.0). Inorganics, which are less mobile than organics, are likely to be significantly diluted in the groundwater. Therefore, exposure via discharge of groundwater in Mill Creek is expected to be insignificant.

Surface waters. Two surface waters exist near the site, the drainage swale and Mill Creek. The surface water in the swale does not discharge into any other surface water features. The swale collects surface water runoff, which likely percolates into groundwater over time. During times of high groundwater stage, groundwater may discharge into the swale.

The surface water in Mill Creek feeds into the Canoochee River that drains much of the western portion of the FSMR. Mill Creek is unlikely to be a significant migration pathway for contaminants, because of the low potential for contaminants migrating to Mill Creek in significant quantities.

Sediment. Sediments at this site include those within the swale and Mill Creek. However, as previously discussed above, contaminant migration to Mill Creek is not considered to be significant; therefore, exposure via sediment is not considered to be a viable pathway. The sediments within the swale are not constantly covered by water. Therefore, the migration pathways for sediments in the swale would be the same as those given for surface soils.

7.2.3 Identification of Exposure Pathways

Potential human exposure may occur by primary pathways (e.g., dermal contact, inhalation, or inadvertent ingestion of soil), or through secondary pathways involving the transfer of site-related chemicals into food sources (i.e., crops, livestock, and game). The potential exposure pathways will be addressed for each of the potential receptor populations previously identified (Section 7.2.1).

Current and future on-site worker. The current on-site worker may be exposed to contaminants in surface soils and sediments. Potential exposure pathways for surface soils and sediments include incidental ingestion of soils and inhalation of volatile organics. An on-site worker is not likely to come in direct contact with surface waters in the swale given that his activity is primarily limited to mowing the grass, etc. Therefore, exposure to contaminants in surface waters is unlikely.

The future on-site worker is likely to be exposed via all the previously discussed pathways in addition to exposure to volatile organics in groundwater via inhalation. It is unlikely that the surficial groundwater would be used as a source of drinking water, but it may be used for watering purposes, e.g., a lawn sprinkler system, irrigation system for ornamental plants, etc. The on-site worker may be exposed to chemicals in groundwater as a result of volatile organics being released from the groundwater being used to water the lawns, etc.

There are few jobs which would require a site-worker to come in contact with surface waters at the site. Although accidental exposure may occur, these events are likely to be limited to one-time events and the potential exposure would be insignificant.

Current and future off-site worker. Current off-site worker may be exposed to volatile organics released into the air from the soil. This receptor population would be exposed via fugitive dust if the soils are uncovered and the current vegetation is removed. The future off-site receptor may also be exposed to volatiles in groundwater as a result of using groundwater for lawn sprinkler system, etc.

Future scenario with a juvenile playing in Mill Creek. Children playing in Mill Creek may be exposed via inhalation of fugitive dust and direct exposure to contaminants in surface water. However, exposure via inhalation of fugitive dust is likely to be significantly lower than for on-site receptors. Contaminants in groundwater are not expected to migrate to Mill Creek in significant concentrations. Therefore, the child playing in Mill Creek is not considered to be a viable scenario given that the only significant exposure pathway, inhalation of fugitive dust, will be addressed using other receptors, which have a higher exposure rate and potential risk.

Future construction worker. The construction worker is exposed to surface and subsurface soils as a result of excavation. Incidental ingestion, inhalation of contaminants, and dermal absorption are complete exposure pathways for this receptor.

The risk-based screening values are based on a residential receptor population. The potential exposure pathways addressed in deriving the screening values for soils include soil ingestion, inhalation of fugitive dust and volatiles, and ingestion of contaminants leaching into groundwater from soils. Exposure pathways for groundwater include ingestion and inhalation of volatiles during showering. The residential exposure scenario does address all of the potential exposure pathways, although none of the potential receptor populations would be exposed via all of the pathways addressed under a residential exposure scenario. The derivation of the risk-based screening values is discussed further in the following section.

7.3 SELECTION OF SCREENING VALUES

Screening values represent concentrations that are easily available and, due to their conservative nature, can be used with a high degree of confidence to indicate sites for which no further action is required. Screening levels inherently incorporate assumptions about land use. In identifying COPCs, it is generally accepted that screening levels will reflect any potential future land uses, and thus usually reflect a conservative residential use scenario (EPA 1991, 1996b; ASTM 1995).

If risk-based values are not available, it generally reflects (1) that the chemical is not considered to be toxic except perhaps at extremely high concentrations (e.g., aluminum, sodium, etc.); (2) no dose-response data indicate a toxic effect; or (3) EPA is currently reviewing toxicity information and no reference dose or cancer slope factor currently is available.

Soil screening values were used for sediment because the sediments present at the Former 724th TPS are not constantly covered by water, and exposure pathways for this environmental media are the same as surface soils.

Risk-based screening values for surface water could not be found in the available literature. Therefore, screening values for groundwater will be used for surface waters. This is a conservative approach given that groundwater screening values are designed to be protective of a drinking water source, and incidental ingestion of surface water would be significantly less.

7.3.1 Screening Values for Soils and Sediment

The EPA Region III risk-based screening values for ingestion of soils were used for screening values for soils and sediments (EPA 1996c). The risk-based values were adjusted to reflect a potential incremental lifetime cancer risk of 1×10^{-6} or a hazard index of 0.1. The risk-based values are given for residential and industrial land use. Residential land use is unlikely to occur at this site. However, as a conservative measure, residential land use values were used to screen surface soil and sediment samples. Exposure of subsurface soils would be limited to a person working within an excavation, i.e., an industrial exposure scenario. Therefore, the industrial land use values were used to screen the subsurface soil values.

Step 1 screening levels generally reflect residential land uses; use of these levels in the first step of the risk process ensures that no chemical will be screened from consideration prematurely. The EPA does provide guidance and default parameter values for developing screening levels that reflect industrial land-use assumptions. These levels are developed using equations and default values from EPA (1991). Residential land use is unlikely to occur at the Former 724th TPS given it is located within an industrial area.

The default residential exposure assumptions for soil are as follows:

- Soil ingestion for noncarcinogens, where the receptor is a child (age 1 to 6) who ingests 200 mg soil/day for 6 years; for carcinogens the soil ingestion rate is age-adjusted over a time period of birth until age 30, assuming an adult ingests 114 mg/day (EPA 1996a).

- Inhalation of volatiles or fugitive dust, where a resident is exposed to airborne contaminants for 30 years (EPA 1996a).

- Leaching of contaminants to groundwater, with subsequent ingestion of groundwater (EPA 1996a).

The potential exposure pathways for soils present at the Former 724th TPS include soil ingestion of surface soils, ingestion of subsurface soils (construction worker), inhalation of volatiles, and inhalation of fugitive dust for future land-use scenarios. For those chemicals detected, the screening values for soil ingestion are lower (i.e., more conservative) than the risk-based inhalation values; therefore, the soil ingestion values were selected.

Chromium may exist in two valence states, trivalent (Cr+3) and hexavalent (Cr+6) chromium. The hexavalent chromium is significantly more toxic than Cr+3, and Cr+6 is more mobile in the environment. However, Cr+6 is not naturally occurring and is unstable in the environment, oxidizing to the trivalent state. The risk-based screening values for residential soils include both trivalent and hexavalent chromium. It is unlikely that the chromium present is hexavalent chromium, given there is no likely source for Cr+6. In addition, the value given represents the total chromium present which includes the naturally occurring trivalent chromium. As a conservative assumption the hexavalent chromium value will be used for the screening value.

7.3.2 Screening Values for Groundwater

The groundwater screening values reflect the use of groundwater as a source of drinking water (EPA 1996b, 1996d). These values include the Region III screening values for tap water, based on a cancer risk of 10^{-6} and a hazard index (HI) of 0.1. As previously discussed, groundwater at this site is unlikely to be used as a drinking water source, but may be used as a source of water for irrigation or watering in the future. The drinking water screening values are considered to be health protective values given the conservative assumptions used.

The default residential exposure assumptions for groundwater are as follows:

- Groundwater ingestion. For noncarcinogens the receptor is an adult who ingests 2 L groundwater/day; for carcinogens the water ingestion rate is age-adjusted over a time period of birth until age 30, assuming a child age 1 to 6 ingests 1 L/day (EPA 1996a, 1996c).

- Inhalation of volatiles during showering.

Region III risk-based screening values for arsenic include values for carcinogenic and non-carcinogenic effects. The carcinogenic value for arsenic will be used because exposure via drinking water is a chronic exposure. However, it should be noted that the drinking water scenario is not applicable at this site and is being used in absence of a more appropriate screening value.

7.3.3 Screening Values for Surface Water

Risk-based screening values were used for screening values for surface water. These screening values include EPA Region IV Water Quality Standards for Human Health - Water and Organism Ingestion, EPA Region III risk-based criteria for tap water, and EPA Action Levels for drinking water. The different criteria as designed to be protective of human health depending on the types of exposure. The EPA Region IV Water Quality Standards for Human Health - Water and Organism Ingestion represent the maximum concentrations of contaminants in water that will not present an unreasonable risk to human health if the waters are treated and used as a drinking water source or if aquatic life is harvested from the waters and consumed. The risk-based criteria for tap water and EPA Action Levels are values applied to water coming from the tap within a home where the water is used for drinking, bathing, cooking, etc.

Exposure to contaminants in the swale are generally limited to dermal contact resulting from someone stepping in the water or accidentally falling into the water. The swale does not support aquatic populations that could be harvested for food, because the swale is ephemeral. The water quality standards are not appropriate for surface water in the swale would not be used as a source of water for a water treatment plant, and it does not support aquatic populations that can serve as a source of food. Given that the potential exposure pathway for surface water in the swale is dermal exposure, the screening values for tap water (EPA Region III risk-based criteria for tap water and EPA Action Levels for drinking water) are more appropriate screening values, given that these values address possible dermal exposure in addition to other exposure pathways, (e.g., ingestion of water).

The chemicals detected above background in Mill Creek will be screened using the EPA Region IV Water Quality Standards for Human Health - Water and Organism Ingestion. Fish may be harvested from the creek, so these criteria are more appropriate than criteria for tap water.

7.4 RISK EVALUATION

The risk evaluation compares the maximum value detected in each media with its respective screening value. Exceeding the screening value does not infer that a potential risk to human health exists at the site. It does mean that a risk may exist and that those chemicals exceeding their respective screening values should be evaluated more carefully. Contaminants identified as COPCs will be evaluated further in a baseline risk assessment.

The selection of COPCs for each environmental media (surface soil, subsurface soil, groundwater, sediment, and surface water) is addressed below. The selection process involves two steps. The initial step is the comparison of the maximum concentrations to the appropriate screening values. Given the conservative nature of the screening values, a weight-of-evidence analysis of those chemicals which exceed their respective screening values will be done to determine if those chemicals selected should be analyzed further in a baseline risk assessment.

The potential risks associated with exposure to chemicals are not quantified. However, toxicity values and associated data (reference doses, target organs, cancer slope factors, etc.) are presented in Appendix I for informational purposes.

7.4.1 Surface Soils

All of the contaminants detected in surface soils were below their respective screening concentrations (Table 7.1). There are no COPCs for surface soils at this site.

7.4.2 Subsurface Soils

All of the contaminants detected in subsurface soils were below their respective screening concentrations (Table 7.2). There are no COPCs for subsurface soils at this site.

7.4.3 Groundwater

Acetone, arsenic, four chlorinated solvents (1,1-dichloroethane, 1,2-dichloroethane, chloroform, and chloromethane), and BTEX exceeded their respective screening criteria for groundwater (Table 7.3). The COPCs for groundwater are acetone, arsenic, benzene, chloroform, chloromethane, 1,1-dichloroethane, 1,2-dichloroethane, ethylbenzene, toluene, and xylenes.

7.4.4 Sediment

None of the contaminants in sediments is likely to present a potential human health threat to receptors coming into direct contact with these contaminants (Table 7.4). There are no COPCs for sediment.

Table 7.1. Contaminant Screening of Surface Soil Results to Action Levels at Former 724th Tanker Purging Station, Fort Stewart

Analyte	Units	Frequency of Detects	Minimum Detect	Maximum Detect	EPA III Residential (A)	HH COPC?	Justification
Chromium	mg/kg	3/3	1.7	6.3	390	No	Max Detect < All Screening Criteria
Mercury	mg/kg	2/3	0.05	0.06	2.3	No	Max Detect < All Screening Criteria
Benzo(a)pyrene	mg/kg	1/3	0.0061	0.0061	0.088	No	Max Detect < All Screening Criteria
Benzo(b)fluoranthene	mg/kg	1/3	0.0078	0.0078	0.88	No	Max Detect < All Screening Criteria
Acetone	mg/kg	1/5	0.0266	0.0266	780	No	Max Detect < All Screening Criteria
Benzene	mg/kg	1/5	0.0014	0.0014	22	No	Max Detect < All Screening Criteria
Ethylbenzene	mg/kg	1/5	0.0196	0.0196	780	No	Max Detect < All Screening Criteria
Styrene	mg/kg	1/5	0.0019	0.0019	1,600	No	Max Detect < All Screening Criteria
Toluene	mg/kg	2/5	0.0037	0.0229	1,600	No	Max Detect < All Screening Criteria
Xylenes (total)	mg/kg	1/5	0.141	0.141	16,000	No	Max Detect < All Screening Criteria

EPA – U.S. Environmental Protection Agency
HHCOPC – human health contaminant of potential concern

Table 7.2. Contaminant Screening of Subsurface Soil Results to Action Levels at Former 724th Tanker Purging Station, Fort Stewart

Analyte	Units	Frequency of Detects	Minimum Detect	Maximum Detect	EPA III Industrial (A)	HH COPC?	Justification
Barium	mg/kg	4/4	1.1	13.3	14,000	No	Max Detect < All Screening Criteria
Cadmium	mg/kg	1/4	0.44	0.44	100	No	Max Detect < All Screening Criteria
Chromium	mg/kg	3/4	5.4	12.9	1,000	No	Max Detect < All Screening Criteria
Anthracene	mg/kg	1/4	2.86	2.86	61,000	No	Max Detect < All Screening Criteria
Benzo(a)pyrene	mg/kg	1/4	0.0087	0.0087	0.78	No	Max Detect < All Screening Criteria
Naphthalene	mg/kg	1/4	4.16	4.16	8,200	No	Max Detect < All Screening Criteria
Pyrene	mg/kg	1/4	0.256	0.256	6,100	No	Max Detect < All Screening Criteria
2-Butanone	mg/kg	1/29	0.0051	0.0051	100,000	No	Max Detect < All Screening Criteria
Acetone	mg/kg	12/29	0.0118	1.06	20,000	No	Max Detect < All Screening Criteria
Benzene	mg/kg	8/29	0.0066	9.42	200	No	Max Detect < All Screening Criteria
Ethylbenzene	mg/kg	11/29	0.0025	27.1	20,000	No	Max Detect < All Screening Criteria
Toluene	mg/kg	26/29	0.0015	27.4	41,000	No	Max Detect < All Screening Criteria
Xylenes (total)	mg/kg	11/29	0.0086	124	100,000	No	Max Detect < All Screening Criteria

EPA – U.S. Environmental Protection Agency
HHCOPC – human health contaminant of potential concern

Table 7.3. Contaminant Screening of Groundwater Results to Action Levels at Former 724th Tanker Purging Station, Fort Stewart

Analyte	Units	Frequency of Detects	Minimum Detect	Maximum Detect	EPA Region III Risk-Based (A)	Federal MCL (B)	HH COPC?	Justification
Arsenic	µg/L	2/4	2.5	3.5	0.045	50	Yes	Max Detect >= A
Barium	µg/L	4/4	33.9	99.2	260	2,000	No	Max Detect < All Screening Criteria
Mercury	µg/L	3/4	0.2	0.58	1.1	2	No	Max Detect < All Screening Criteria
Silver	µg/L	3/4	0.51	4.1	18		No	Max Detect < All Screening Criteria
Methane	µg/L	4/4	19.1	4,690	–		No	Max Detect < All Screening Criteria
Naphthalene	µg/L	1/4	10.5	10.5	150		No	Max Detect < All Screening Criteria
1,1-Dichloroethane	µg/L	4/32	2.1	125	81		Yes	Max Detect ≥=A
1,2-Dichloroethane	µg/L	1/32	7.6	7.6	0.12	5	Yes	Max Detect >= AB
2-Butanone	µg/L	1/32	2.8	2.8	190		No	Max Detect < All Screening Criteria
2-Hexanone	µg/L	2/32	3.2	18.4	–		No	Max Detect < All Screening Criteria
Acetone	µg/L	13/28	6.7	1,450	370		Yes	Max Detect >= A
Benzene	µg/L	11/32	1	8,090	0.36	5	Yes	Max Detect >= A
Chloroform	µg/L	2/32	1	1.8	0.15		Yes	Max Detect >= A
Chloromethane	µg/L	1/32	27.7	27.7	1.4		Yes	Max Detect >= A
Ethylbenzene	µg/L	9/32	1.4	2,870	130	700	Yes	Max Detect >= A
Methylene chloride	µg/L	3/32	1.8	2.2	4.1	5	No	Max Detect < All Screening Criteria
Toluene	µg/L	5/31	72.6	4,200	75	1,000	Yes	Max Detect >= A
Xylenes, total	µg/L	9/32	1.4	12,100	1200	10,000	Yes	Max Detect >= A

EPA – U.S. Environmental Protection Agency
HHCOPC – human health contaminant of potential concern
MCL – maximum contaminant level

Table 7.4. Contaminant Screening of Sediment Results to Action Levels at Former 724th Tanker Purging Station, Fort Stewart

Analyte	Units	Results > Detection Limit	Minimum Detect	Maximum Detect	EPA Region Residential (A)	HH COPC?	Justification
Barium	mg/kg	4/4	2.9	29.2	550	No	Max Detect < All Screening Criteria
Chromium	mg/kg	2/4	4	4.4	39	No	Max Detect < All Screening Criteria
Lead	mg/kg	4/4	1.2	6.6	40	No	Max Detect < All Screening Criteria
Mercury	mg/kg	1/4	0.07	0.07	2.3	No	Max Detect < All Screening Criteria
Silver	mg/kg	4/4	0.8	2.6	39	No	Max Detect < All Screening Criteria
Methylene chloride	mg/kg	1/4	0.0026	0.0026	85	No	Max Detect < All Screening Criteria
Toluene	mg/kg	1/4	0.158	0.158	1,600	No	Max Detect < All Screening Criteria
Xylenes (total)	mg/kg	1/4	0.0012	0.0012	16,000	No	Max Detect < All Screening Criteria

[a]Methylene chloride is a common laboratory contaminant and is not considered related to contaminant releases from the Former 724th TPS.
EPA – U.S. Environmental Protection Agency
HHCOPC – human health contaminant of potential concern

7.4.5 Surface Waters

The mercury concentration in the surface water sample collected downstream of the site in Mill Creek exceeded its respective screening concentration (Table 7.5). As previously discussed in Section 6.5. (Contaminant Fate and Transport – Summary and Conclusions), Mill Creek does not receive contaminated groundwater discharge or direct runoff from the site. Mercury was not detected in groundwater at elevated concentrations. Therefore, the source of mercury in Mill Creek is not from the Former 724th TPS.

Cadmium and lead in surface water in the swale exceeded their respective screening values (Table 7-5), based on exceedance of the State of Georgia water quality criteria for freshwater streams. The maximum concentrations of cadmium and lead did not, however, exceed EPA drinking water criteria. The possible dose that an industrial worker may receive from intermittent dermal exposure to surface water would be substantially less than the dose that might be received from drinking water. Therefore, drinking water criteria are considered protective of the industrial worker. Neither cadmium nor lead should be considered as a COPC in surface water in the swale.

7.5 CONCLUSIONS OF THE HUMAN HEALTH PRELIMINARY RISK EVALUATION

Based on the results of the screening and the weight-of-evidence analysis, there are no COPCs in surface soils, subsurface soils, sediment, or surface waters. There are COPCs identified for groundwater.

Cadmium and lead were identified as possible COPCs for surface water in the drainage swale as a result of exceeding State of Georgia water criteria. However, maximum concentrations of these metals did not exceed EPA drinking water criteria. The possible dose an industrial worker may receive from intermittent dermal exposure would be substantially less than from drinking water. Cadmium and lead are therefore not considered human health COPC in surface water in the swale.

In Mill Creek, mercury is a COPC in surface water. However, Mill Creek does not receive contaminated groundwater discharge or direct runoff from the site. Therefore, mercury is not a human health COPC in surface water at the 724th Tanker Purging Station.

The initial COPCs for groundwater were identified because they present a potential threat to human health as a result of using groundwater as a source of drinking water. The initial COPCs for groundwater are acetone, arsenic, 1,1-dichloroethane, 1,2-dichloroethane, chloroform, chloromethane, and BTEX.

It should be noted that given the shallow depth of the surficial aquifer and the presence of the deeper Principal Artesian aquifer, a common source of drinking water throughout the region, the use of the surficial aquifer is not considered to be a viable exposure scenario. However, drinking water screening values were used in the absence of more appropriate values.

In conclusion, there are human health COPCs in groundwater based on using the surficial aquifer as a source of drinking water, which is unlikely. Because concentrations of BTEX exceed their respective MCLs, a CAP should be prepared to address measures to mitigate these COPCs. The CAP should present human health cleanup goals using viable future use scenarios. A Baseline Risk Assessment is, therefore, not warranted.

Table 7.5. Contaminant Screening of Surface Water Results to Action Levels at Former 724th Tanker Purging Station, Fort Stewart

Analyte	Units	Frequency of Detects	Minimum Detect	Maximum Detect	Background Criteria	Water Quality Criteria (A)	Drinking Water Criteria (B)	Federal MCL (C)	HH COPC?	Justification
Surface Water Former 724th Tanker Purge Stations-Drainage Ditch										
Arsenic	µg/L	1/2	1.8	1.8	0.94	50[a]	0.045[b]	50	No	Max Detect < A
Cadmium	µg/L	1/2	1.7	1.7	0.2	0.7[a]	18[b]	5	Yes	Max Detect > A
Lead	µg/L	2/2	0.46	10.8	5.2	1.3[a]		15[c]	Yes	Max Detect > A
Silver	µg/L	2/2	0.29	1.3	0.3		180[b]		No	Max Detect < B
Surface Water Former 724th Tanker Purge Stations-Mill Creek										
Mercury	µg/L	1/1	0.4	0.4	0.18	0.012[a]		2	Yes	Max Detect > A

[a] Georgia Department of Natural Resources Quality Control, Chapter 391-36, for freshwater streams
[b] U.S. Environmental Portection Agency (EPA) Region II risk-based criteria for tap water
[c] EPA action level for drinking water
HHCOPC – human health contaminant of potential concern
MCL – maximum contaminant level

7.6 IDENTIFICATION OF REMEDIAL LEVELS

Because there are no human health COPCs for surface soil, subsurface soil, surface water, or sediment, remedial levels were not developed in this section.

Remedial levels for groundwater may include both risk-based concentrations and regulatory levels, such as MCLs. Given that MCLs take into consideration both human health and the limitations of technology to remove contaminants from water, these regulatory levels have been selected for remedial levels for groundwater (Table 7.6). Acetone, 1,1-dichloroethane, and chloromethane did not have MCLs. In the absence of a MCL, the EPA Region III risk-based values for groundwater were used for remedial levels.

The maximum concentration for arsenic is below the Federal MCL, 3.5 µg/L as compared to a MCL of 50 µg/L (Table 7.6). Therefore remedial action to reduce the concentration of this contaminant is not required.

Table 7.6. Remedial Levels for Chemicals of Concern in Groundwater at Former 724th Tanker Purging Station, Fort Stewart

Analyte	Units	Maximum Detect	Federal MCL	EPA Region III Risk-Based
Arsenic	µg/L	3.5	50	-
1,1-Dichloroethane	µg/L	125	NA	81
1,2-Dichloroethane	µg/L	7.6	5	-
Acetone	µg/L	1,450	NA	370
Benzene	µg/L	8,090	5	-
Chloroform	µg/L	1.8	0.1	-
Chloromethane	µg/L	27.7	NA	1.4
Ethylbenzene	µg/L	2,870	700	-
Toluene	µg/L	4,200	1,000	-
Xylenes, total	µg/L	12,100	10,000	-

EPA – U.S. Environmental Protection Agency
MCL – maximum contaminant level
NA – not available

8.0 ECOLOGICAL RISK ASSESSMENT

The State of Georgia requires that all RCRA facilities choosing to set remediation levels based on an assessment of risk to human health and the environment prepare risk assessment documentation and propose remediation levels according to the *Guidance for Selecting Media Remediation Levels at RCRA Solid Waste Management Units* (GEPD 1996). GEPD (1996) guidance is based on the guidance contained in EPA Region 4 Bulletins, *Supplemental Guidance to RAGS, Ecological Risk Assessment* (EPA 1996a) and a 1994 draft of *Ecological Risk Assessment for Superfund, Process for Designing and Conducting Ecological Risk Assessments* (EPA 1997). The EPA has also proposed guidelines for conducting ecological risk assessments (EPA 1996b). The GEPD guidance document takes precedence over EPA Region 4 guidance and RAGS.

Risk is the likelihood of experiencing adverse effects. Ecological risk assessments identify and evaluate the risk to biota exposed to chemical contaminants and physical and biological hazards. The ecological risk assessment for the Former 724th TPS focuses on evaluating the potential of harmful effects on ecological receptors as a result of exposure to chemicals.

The assessment of risk for ecological receptors at the Former 724th TPS is being conducted in a phased approach according to GEPD guidance (1996). As shown in the flowchart of the GEPD ecological risk assessment process (Figure 8.1), the two phases are:

- Preliminary Risk Evaluation (PRE) and
- Ecological Risk Assessment (ERA).

The PRE compares measured concentrations of SRCs to conservative ecological screening values for one or more ecological receptors. SRCs are identified in Section 7 (Tables 7.1 through 7.5). Only those SRCs that are indicated to be potential hazards in the PRE are evaluated as ecological COPCs in an ERA if one is required. The basic approach to ERAs is similar to that of the PRE, but site-specific data are used to quantify exposure and evaluate effects in the ERA (GEPD 1996). Appropriate site-specific data include concentrations of contaminants in animals and plants (tissue residues) and toxicity tests (EPA 1997). Remediation levels for protection of ecological resources will be developed and proposed only for those COPCs that are identified as ecological COCs in the ERA.

Both terrestrial and aquatic habitats present at the Former 724th TPS are evaluated in this PRE. Media of concern to ecological receptors are surface soil, sediment, and surface water. These media can be contacted directly by ecological receptors, or their presence in these media can result in the accumulation of contaminants in plants and animals, which can cause ecological receptors ingesting biota to be exposed. Groundwater at the Former 724th TPS is also evaluated because it can potentially discharge to sediments, seeps and surface water (EPA 1996a).

8.1 PRELIMINARY RISK EVALUATION

The purpose of the PRE is to identify substances detected at the facility that pose a potential hazard to ecological receptors. Ecological COPCs are those substances that are detected at the Former 724th TPS at concentrations exceeding ecological screening values.

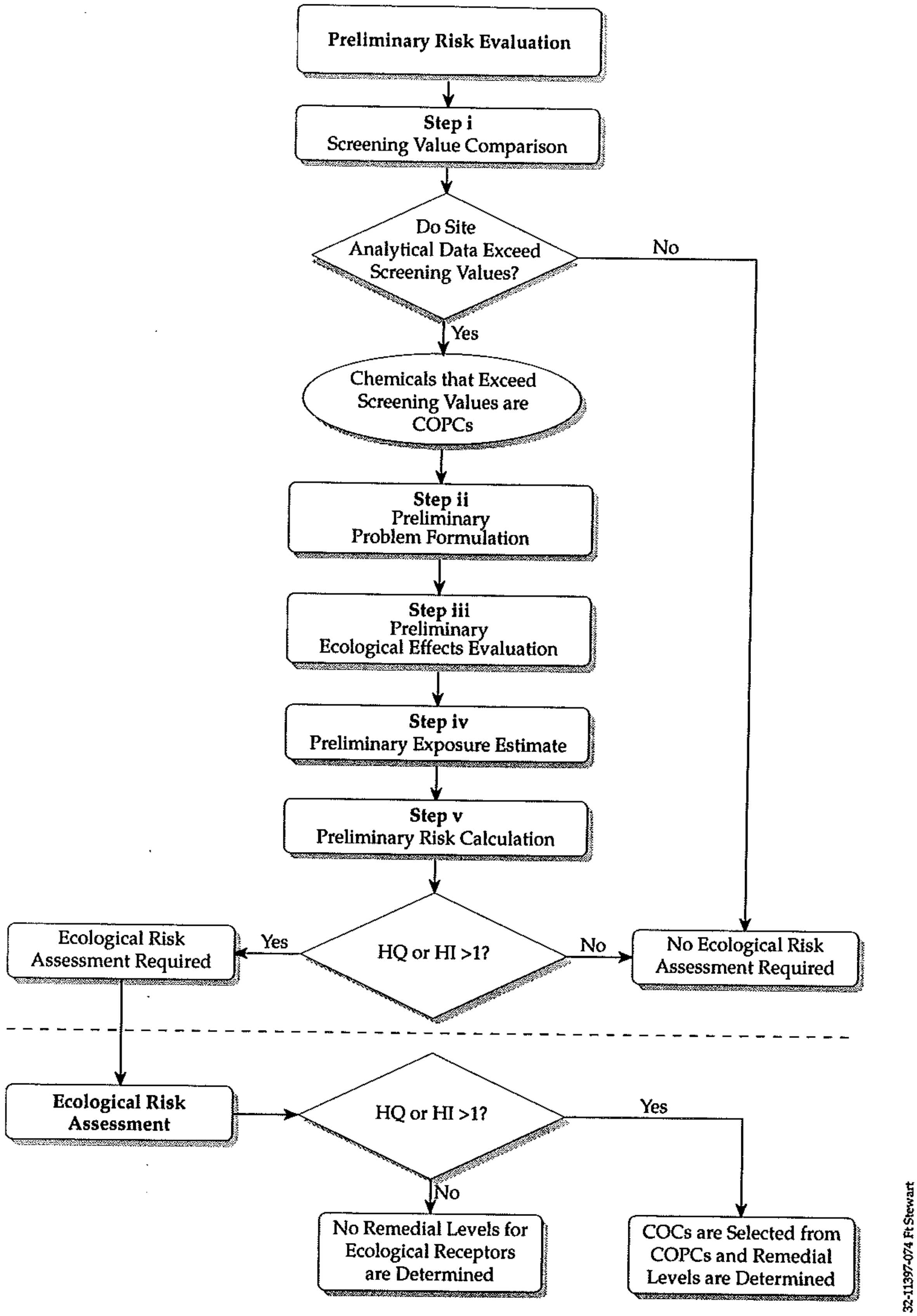


Figure 8.1. General Process for Assessing Risk and Selecting Remedial Levels for Ecological Receptors (GEPD 1996)

According to GEPD (1996), the PRE consists of five steps:

i. Ecological screening value comparison,
ii. Preliminary problem formulation,
iii. Preliminary ecological effects evaluation,
iv. Preliminary exposure estimate, and
v. Preliminary risk calculation.

As shown in the flowchart of the GEPD ecological risk assessment process (Figure 8.1), all SRCs are screened as ecological COPCs by comparing the maximum detected concentration to the ecological screening values (ESVs). The PRE compares the maximum detected concentrations of analytes directly to conservative screening values for those substances. This approach assumes that the most sensitive receptors are those that live in direct contact with the medium and are exposed by multiple pathways to contaminants. If no ecological COPCs are identified based on the screening (Step i), then no further evaluation is required. If ecological COPCs are identified based on the screening, then they are evaluated further (Steps ii through v). Because there are no ESVs for surface soil, all SRCs in surface soil at the Former 724th TPS are evaluated further in PRE Steps ii through v.

8.1.1 Ecological Screening Value Comparison (Step i)

ESVs to identify ecological COPCs at the Former 724th TPS are EPA Region 4 screening values for hazardous waste sites. These are given in Tables 8.1 and 8.2. Screening values for analytes without Region 4 ESVs are proposed based on other methods and data obtained from published sources (e.g., Clayton and Clayton 1981) and toxicological data bases (e.g., Hazardous Substances Data Bank, Integrated Risk Information System). Screening values are conservative to prevent elimination of any contaminant that may pose ecological risk (EPA 1997). If no data are available to support the development of an ESV for an analyte, the analyte is an ecological COPC by default (GEPD 1997a).

Chemicals detected in surface water and sediment from two locations at the Former 724th TPS are screened: Mill Creek and the drainage swale. Mill Creek has two sampling stations (Figure 8.2); one is upgradient of the Former 724th TPS (SWS1) and one is 1,000 feet west of the facility (SWS2). These two stations are screened separately. The drainage swale is represented by samples from three stations, SWS3, SWS4, and SWS5 (Figure 8.2). To screen surface water and sediment in the drainage swale at the Former 724th TPS, the maximum detected concentration from these three stations is compared to the ESV.

For surface water and groundwater, EPA Region 4 ESVs are chronic ambient water quality criteria for the protection of aquatic life, such as aquatic plants, invertebrates, and fish, or similarly derived values (EPA 1996a). There are no EPA Region 4 ESVs for 1,1-dichloroethane, and xylenes, so proposed ESVs for these analytes are identified from published data sources. (Suter and Tsao 1994; Clayton and Clayton 1981).

Groundwater concentrations are screened against surface water ESVs per GEPD guidance because (1) there are no groundwater ESVs and (2) shallow groundwater at the site could discharge to the adjacent swale during times of high groundwater stage, so that ecological receptors in the swale could become exposed to contamination in groundwater. As discussed in Section 6.0, none of the constituents from the Former 724th TPS are expected to be of concern in Mill Creek (located 1200 feet from the source) due to retardation and biodegradation.

Table 8.1. EPA Region IV Ecological Screening Value Comparison for Analytes Detected Above Background in Surface Water at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	Reference Background Criterion	ESV (µg/L)	Mill Creek		Drainage Swale[a]	
			SWS1* (µg/L)	SWS2 (µg/L)	SWS4 (µg/L)	SWS5 (µg/L)
Arsenic	0.94	190[b]	nd	nd	nd	**1.8 J**
Cadmium	0.20	0.66[d]	nd	nd	nd	**1.7**
Lead	5.20	1.32[d]	**2.6**	nd	0.46 J	**10.8 J**
Mercury	0.18	0.0123	0.09	0.4	0.18	0.08
Silver	0.30	0.012[d]	0.15	0.24	1.3	0.29

* Upgradient station.
J = Estimated.
ESV = U.S. Environmental Protection Agency (EPA) Region IV Ecological Screening Values (EPA 1996) and, where indicated, alternative values for analytes without Region IV ESVs.
[a] = Station SWS3 had no water at time of sampling.
[b] = Arsenic III.
[c] = OSWER AWQC or Tier-II value (Suter and Tsao 1996).
[d] = Hardness dependent, assumes 50 mg/L $CaCO_3$.
nd = not detected
Detected concentrations exceeding ESVs are in boldface font.

Table 8.2. EPA Region IV Ecological Screening Value Comparison for Analytes Detected Above Background in Sediment at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	Reference Background Criteria	ESV (mg/kg)	Mill Creek		Drainage Swale		
			SWS1* (mg/kg)	SWS2 (mg/kg)	SWS3 (mg/kg)	SWS4 (mg/kg)	SWS5 (mg/kg)
RCRA Metals (mg/kg)							
Barium	3.00	none	1.5	**15.3**	**29.2**	**17**	**2.9**
Chromium	0.37	52.3	nd	nd	4.4	4	nd
Lead	1.38	30.2	0.69 J	2.6 J	5.9 J	6.6 J	1.2 J
Mercury	0.02	0.13	nd	nd	0.07	nd	nd
Silver	0.17	2	nd	0.8 J	**2.6 J**	1 J	0.91J
Volatile Organic Compounds (mg/kg)							
Methylene chloride	–	0.39[a]	nd	nd	0.0026 J	nd	nd
Toluene	–	0.87[a]	nd	nd	nd	0.158	nd
Xylenes, total	–	112.5[a]	nd	nd	0.0012 J	nd	nd

* Upgradient station.
J = Estimated.
ESV = U.S. Environmental Protection Agency (EPA) Region IV Ecological Screening Values (EPA 1996) and, where indicated, alternative values for analytes without Region IV ESVs.
nd = not detected
Detected concentrations exceeding ESVs are in boldface font.
[a] = Sediment quality benchmark (SQB) = surface water ESV (mg/l) × f_{oc} × K_{ow}.
f_{oc} = Fraction organic carbon, assumed to be 1%.
For calculation of SQBs:

	K_{ow}	Surface water ESV (mg/L)	Source of ESV
Methylene chloride	19.95	1.93	EPA Region IV screening value
Toluene	501.2	0.175	EPA Region IV screening value
Xylenes, total	1585	7.1	EPA Region IV screening value

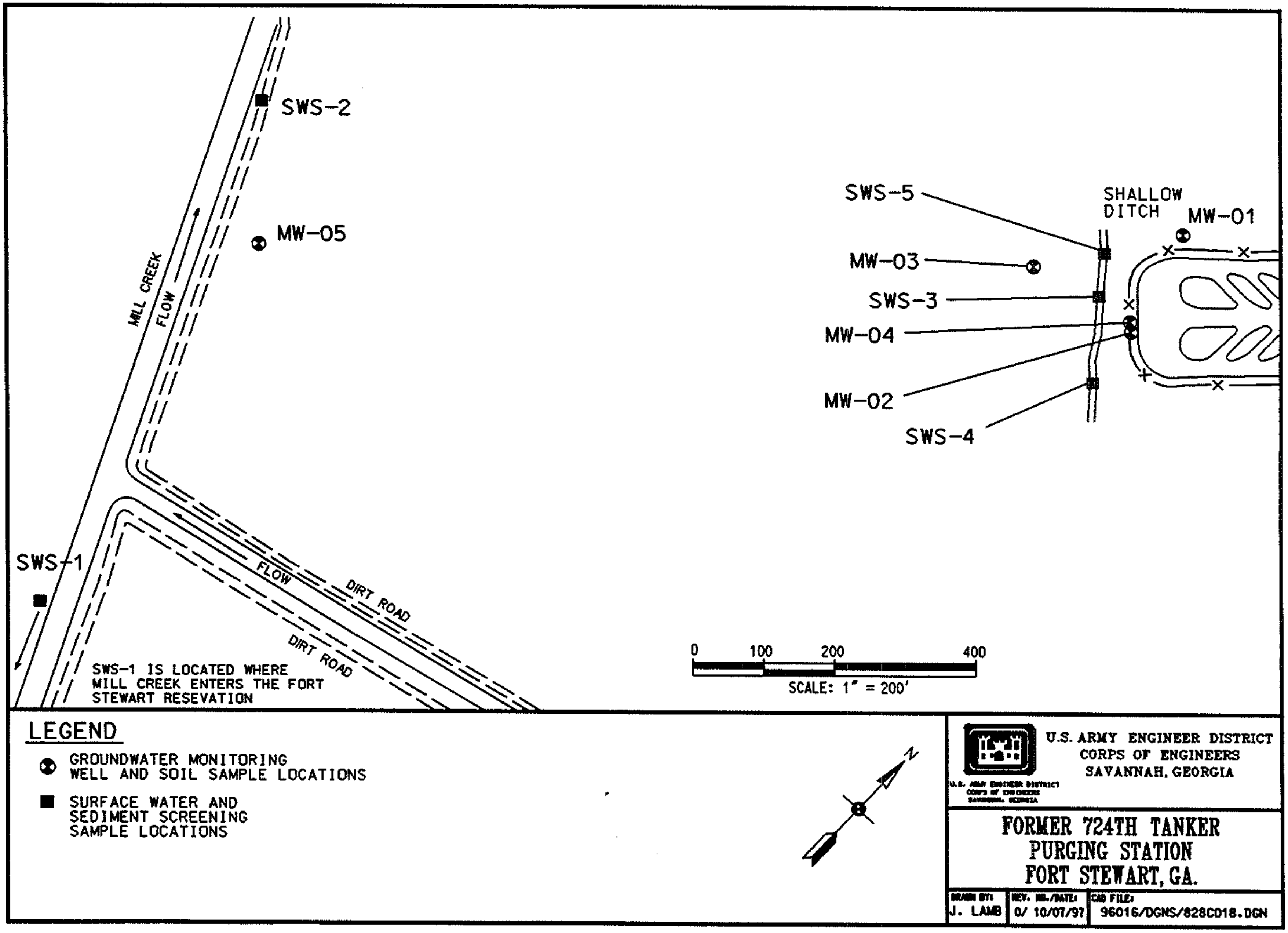


Figure 8.2. Surface Water, Sediment, and Groundwater Sample Locations Evaluated in Preliminary Risk Evaluation for the Former 724th Tanker Purging Station, Fort Stewart

For sediment, screening values are based on observations of direct toxicity to aquatic organisms (EPA 1996a). EPA Region 4 ESVs for sediment were not available for barium, methylene chloride, toluene, and xylenes. For the organic compounds, proposed ESVs are sediment quality benchmarks (SQBs) calculated from the K_{ow} of the compound and the EPA Region 4 ESV for surface water, assuming equilibrium partitioning between the sediment and overlying water and a sediment organic carbon fraction of 1 percent per EPA (1993a). No ESV is proposed for barium.

The results of the screening value comparisons for surface water are presented in Table 8.1. In surface water at the upgradient station in Mill Creek (SWS1), lead and mercury were detected at concentrations that exceed the ESVs for surface water. In surface water at the Mill Creek station adjacent to the Former 724th TPS (SWS2), only mercury was detected at concentrations exceeding the ESV. In surface water from the three swale sampling stations (SWS3-SWS5), the maximum detected concentrations of cadmium (1.7 µg/L), lead (10.8 µg/L), and silver (1.3 µg/L) also exceed the ESVs for those analytes. Thus, four chemicals (cadmium, lead, mercury, and silver) exceed surface water ESVs.

The results of the screening value comparisons for sediment at the Former 724th TPS are presented in Table 8.2. In sediment at the upgradient station in Mill Creek (SWS1), barium and lead were detected. There is no ESV for barium. The maximum detected concentration of lead did not exceed the sediment ESV for lead. In sediment from Mill Creek nearest to the Former 724th TPS (SWS2), barium, lead, and silver were detected. The maximum concentrations of lead and silver do not exceed the ESVs. In sediment samples from the drainage swale at the Former 724th TPS (SWS3-SWS5), barium, chromium, lead, mercury, silver, methylene chloride, toluene, and xylenes were detected. Only the concentration of silver at Station SWS3 in the drainage swale (2.6 mg/kg) exceeds the ESV; the sediment ESV for silver is 2 mg/kg. Thus, two chemicals are identified as ecological COPCs: barium by default of no ESV and silver by slight exceedance of the ESV.

Groundwater samples from the five (monitoring well) locations at the Former 724th TPS (Figure 8.2) are screened separately because of their different depths and locations relative to the facility. The results of the ecological screening for chemicals detected in groundwater at the Former 724th TPS are presented in Table 8.3.

At the upgradient monitoring well (MW-1), barium, mercury, silver, and chloromethane concentrations exceed the surface water ESVs. Because MW-1 is upgradient of the site, these contaminants may be indicative of naturally occurring levels of constituents. Where detected in the remaining four monitoring wells (MW-2 through MW-5), barium, mercury, and silver exceed the ESVs for those analytes. Benzene in MW-2 (329 µg/L) also exceeded its respective ESV of 53 µg/L. Thus, five chemicals (barium, mercury, silver, benzene, and chloromethane) exceed the ESVs and did not pass the screen. Chloromethane was detected only in MW-1 upgradient of the site and is, therefore, not site-related. Barium, mercury, silver, and benzene in groundwater near the Former 724th TPS (MW-2) are ecological COPCs. Barium and mercury are ecological COPCs in groundwater near Mill Creek (MW-5).

The ecological COPCs in surface water, sediment, and groundwater at the Former 724th TPS (excluding upgradient samples) are summarized in Table 8.4. There are one or more ecological COPCs identified in surface water from both the drainage swale at the Former 724th TPS and from Mill Creek downgradient (SWS2) from the facility. The ecological COPCs in surface water at the Former 724th TPS are cadmium, lead, and silver; the only ecological COPC in surface water in Mill Creek is mercury. There are no ecological COPCs identified in sediment from Mill

Table 8.3. EPA Region IV Ecological Screening Value Comparison for Analytes Detected Above Background in Groundwater at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	Reference Background Criteria	ESV	TPS Facility				Mill Creek
			MW-1[a]	MW-2	MW-3	MW-4	MW-5
RCRA Metals (μg/L)							
Arsenic	3.0	190[b]	10.1	3.5 J	2.5J	nd	nd
Barium	71.7	3.9[c]	50.7 J	33.9 J	37.4 J	**99.2 J**	**70.2 J**
Mercury	0.14	0.0123	**0.2**	**0.2**	nd	**0.3**	**0.58**
Silver	1.12	0.012	**4.9**	**0.51**	**3.3**	**4.1**	nd
Volatile Organic Compounds (μg/L)							
Benzene	–	53	nd	**329**	nd	nd	nd
Chloroform	–	289	nd	nd	1.8 J	nd	1 J
Chloromethane	–	5.5	**7.1**	nd	nd	nd	nd
1,1-Dichloroethane	–	47[c]	nd	nd	2.2	nd	nd
1,2-Dichloroethane	–	2000	nd	7.6	nd	nd	nd
Ethylbenzene	–	453	nd	62.3	nd	nd	nd
Methane	–	No ESV	53.7	4690	19.1	214	248
Methylene chloride	–	1920	2.1	nd	2.2	1.9 J	1.8 J
Naphthalene	–	62	nd	10.5	nd	nd	nd
Toluene	–	175	nd	72.6	nd	nd	nd
Xylenes, total	–	7100[d]	nd	296 J	nd	nd	nd

J = Estimated concentration.
ESV = U.S. Environmental Protection Agency (EPA) Region IV Ecological Screening Values (EPA 1996) and where indicated alternative values for analytes without Region IV ESVs.
nd = not detected
– = no value
Detected concentrations exceeding ESVs are in boldface font.
[a] = MW-1 is upgradient monitoring well.
[b] = Arsenic III.
[c] = Office of Solid Waste and Emergency Response ambient water quality criteria or Tier-II value (Suter and Tsao 1996).
[d] = LC_0 salmonid (Clayton and Clayton 1981).

Table 8.4. Summary of Ecological COPCs Identified in EPA Region IV Ecological Screening Value Comparison for Surface Water, Sediment, and Groundwater at the Former 724th Tanker Purging Station, Fort Stewart

	Surface water		Sediment		Groundwater	
	Drainage swale	Mill Creek*	Drainage swale	Mill Creek*	TPS facility*	Mill Creek
Concentration exceeds ESV	Cadmium Lead Silver	Mercury	Silver		Barium Mercury Silver Benzene	Barium Mercury
No ESV			Barium	Barium	Methane	Methane

*Excludes upgradient sample.

Creek based on comparison to ESVs. Silver is the only ecological COPC identified for sediment in the drainage swale at the Former 724th TPS. Barium may be an ecological COPC in sediment at the Former 724th TPS by default because there is no ESV for barium. Barium, mercury, silver, benzene, and chloromethane are identified as ecological COPCs in groundwater at one or more sampling stations at the Former 724th TPS. Thus, a number of ecological COPCs require further examination in PRE Steps ii through v.

A preliminary problem formulation (Step ii), preliminary ecological effects evaluation (Step iii), preliminary exposure estimate (Step iv), and preliminary risk calculation (Step v) are conducted for those detected analytes identified in the PRE screening (Step i) as ecological COPCs and for SRCs in surface soil and surface water in the man-made drainage swale at the Former 724th TPS. These four steps go beyond the ecological screening value comparison to evaluate the potential for risk from ecological COPCs to categories of receptors potentially occurring at the facility.

8.1.2 Preliminary Problem Formulation (Step ii)

The preliminary problem formulation (Step ii) qualitatively identifies categories of potential ecological receptors and the SRCs that may pose a risk to those receptors in the environmental setting of the Former 724th TPS. Preliminary assessment endpoints, ecological receptors, and surrogate species representative of ecological receptors are selected for evaluation in the preliminary risk calculation.

GEPD (1996) specifies that the PRE develop "risk characterization for a model ecological receptor." Developing risk characterization for multiple ecological receptors, e.g., mammals and birds, is allowable for sites where more than one type of potentially hazardous chemical is detected (GEPD 1997a). Characterizing the risk to multiple receptors, where each is more sensitive to one or more chemical contaminant, can make the PRE more protective of ecological resources. The risk characterization for surface soil and surface water in Mill Creek at the Former 724th TPS considers both mammals and birds as ecological receptors. The risk characterization for water in the man-made swale at the Former 724th TPS considers only terrestrial mammals.

Environmental Setting

The Former 724th TPS is located on the northwestern edge of the base motor pool system and is bordered by forest to the north, south, and west. East of this facility are paved surfaces, man-made structures, and additional motor pools. The motor pool facility and truck parking area are surrounded by a standard sized chain-link fence. Surface water features are present in the form of standing pools in swales, wetlands, and Mill Creek, approximately 1,200 feet west of the facility (Figure 8.2).

The terrestrial habitat in the vicinity of the Former 724th TPS consists primarily of palmetto-pine flatwoods forest. Loblolly pine *(Pinus taeda)* and long-leaf pine *(P. palustris)* comprise the forest canopy. The understory is thick with saw-palmetto *(Serenoa repens)* and is managed by controlled burning, as evidenced by the presence of fire breaks at the forest edges and burn marks on the mature trees. A stand of mature hardwoods is located at the western edge of the forest along Mill Creek.

A man-made swale parallels the forest edge on the western side of the Former 724 TPS facility. This swale is located within 5 to 10 feet of the forest edge and is at the base of the fill material that the facility is constructed upon (Figure 8.2). At the time of the investigation, the southernmost end of the swale contained a pool of standing water approximately 35 square feet. Wetland macrophytes bordered the edges of the pool, and various species of frogs *(Rana spp.)* and the southern toad *(Bufo terrestris)* were present in multiple life stages. There was evidence of petroleum contamination in the swale when sediment samples were collected; sampling personnel noted petroleum staining and strong odor in the sediment below 3 inches in depth.

A wetland area is located along the south end of the fence, within the forest (Figure 8.2). This feature was observed from the trail that borders the facility and was not thoroughly investigated. Aquatic macrophytes and hydric soils were observed. This wetland area was considerably larger than the pool previously described, but has not been delineated. Although technically classified as a wetland (i.e., soil borings conducted by licensed USACE personnel) the area adjacent to the Former 724th TPS has not been known to hold standing water.

Additional surface water features include Mill Creek and a ditch that drains into Mill Creek located beyond the forest approximately 900 feet to the south of the Former 724th TPS Facility (Figure 8.2). This ditch was approximately 3 feet wide at its base and 6 to 8 feet deep and contained no flowing water during the investigation. A few small pools of standing water were observed, and crayfish holes were present in the steep banks.

Mill Creek is the only lotic surface water feature associated with the Former 724th TPS facility. The creek bottom is smooth and sandy, and sediments are orange-red in color. The creek is approximately 15 feet wide at its base and has steeply banked sides. Shoreline development is minimal due to the steep banks, and aquatic vegetation is scarce. Primary vegetation are managed grasses which cover the banks and the flat to the tree line on either side of the creek. Approximately 50 feet separate the forest from the creek bank on either side. Minnows were abundant in Mill Creek as were the southern toad *(B. terrestris)* along its edges. There was no evidence that surface water from the Former 724th TPS facility drained into Mill Creek. No swales were present that linked the Former 724th TPS facility to any flowing body of water.

In addition to the aquatic and herpetofauna described above, numerous mammals and birds were noted by SAIC field personnel in the vicinity of the Former 724th TPS either through observation, hearing a call, or seeing scat or tracks. The red-headed woodpecker *(Melanerpes eryhrocephalus)* and the turkey vulture *(Cathartes aura)* were observed in the area on numerous occasions. Scat or tracks of white-tailed deer *(Odocoileus virginianus),* armadillo *(Dasypus novemcinctus),* and raccoon *(Procyon lotor)* were noted by SAIC field personnel.

Surface Soil at Former 724th TPS

The PRE for surface soil (0 to 2 feet) at the Former 724th TPS evaluates the potential for risk to ecological receptors from ecological COPCs detected at soil sampling locations near the actual Former 724th TPS facility: sampling locations MW-1, MW-2, and MW-4 (Figure 8.2). Soil samples from the Mill Creek monitoring well location (MW-5) are discussed below along with surface water, sediment, and groundwater sampled in or near Mill Creek.

The categories of ecological receptors that are potentially directly exposed to substances in surface soil at the Former 724th TPS are soil bacteria and fungi, vegetation, and animals that come in direct contact with or ingest soil, e.g., soil-dwelling invertebrates. Other categories of receptors are potentially exposed indirectly to soil contaminants that are taken up and stored in the cells or tissues of those organisms directly exposed. Herbivorous invertebrates (e.g., insects) and vertebrates (e.g., birds and mammals) are potentially indirectly exposed when they ingest vegetation growing in contaminated soil. Carnivorous animals are potentially exposed when they ingest animals that are directly or indirectly exposed to contaminated soil such as soil-dwelling invertebrates (e.g., earthworms).

Seven chemicals were detected above background in surface soil samples from near the Former 724th TPS: two RCRA metals and five VOCs. Based on the greater amount of published data on the effects of these eight substances on vertebrate wildlife, mammals and birds in particular. The proposed ecological receptors for surface soil at the Former 724th TPS are carnivorous small mammals and birds that prey upon soil-dwelling invertebrates.

The preliminary assessment endpoint for surface soil at the Former 724th TPS is protection of small mammals and bird populations from adverse effects. The surrogate species to represent the ecological receptors are the short-tailed shrew (*Blarina brevicauda*) and the American robin (*Turdus migratorius*). The home range of the shrew is small, and robins are territorial during the spring mating season. Earthworms and other soil-dwelling invertebrates potentially represent a large percentage of both species' diets. The life history and behavior of these two species ensure a conservative estimate of risk.

Surface Water, Sediment, and Groundwater at the Drainage Swale

The PRE for the drainage swale at the Former 724th TPS evaluates the potential for risk to ecological receptors from exposure to surface water sampled from the drainage swale and groundwater which potentially emerges as surface water in the drainage swale. For both surface water and groundwater, the same ecological receptor and surrogate specie are used to evaluate the potential risk over the same exposure pathway.

Groundwater from four sampling locations at the Former 724th TPS (MW-1, MW-2, MW-3 and MW-4) is evaluated as a potential source of surface water in the swale. Groundwater from sampling location MW-4 was collected from a depth of 35 feet and is unlikely to be transported up into the drainage swale because the available data indicate the direction of movement is strongly downward (Section 6.0). Groundwater from the Mill Creek sampling location (MW-5) is not evaluated as a source of surface water in the drainage swale because it is distant and downgradient from the swale. The groundwater sampling location (MW-5) is evaluated as part of Mill Creek.

Sediment in the drainage swale is not evaluated further in the PRE because the swale does not support a community of aquatic sediment-dwelling organisms. The swale is an ephemeral surface water body, as shown by the lack of water at sampling station SWS3 at the time of sampling. Exposure of other types of receptors, e.g., terrestrial animals, to substances in swale sediment by direct contact and ingestion is likely to be minimal.

The ecological receptors that are potentially directly exposed to substances in surface water in the drainage swale at the Former 724th TPS are terrestrial animals that come in direct contact with or ingest surface water in the swale. The drainage swale does not always have water in it and does not support a typical aquatic biota community. Amphibians potentially use the swale for breeding during the Spring when the swale is more likely to hold water, but are not ecological receptors for the PRE. Fort Stewart does not consider the man-made drainage swale to be significant to amphibians as a potential breeding habitat because higher quality breeding habitats are abundant in the areas surrounding the Former 724th TPS. Other terrestrial animals potentially use the swale as a watering hole when there is water in the swale. Because the swale does not support an aquatic community throughout the year, terrestrial predators of aquatic biota, such as piscivorous birds and mammals, are also unlikely to be indirectly exposed intermittently to contaminants in surface water in the swale through ingestion of aquatic prey. Therefore, only terrestrial mammals ingesting water in the drainage swale are ecological receptors for the PRE.

Four metals detected in surface water samples from the drainage swale at the Former 724th TPS are ecological COPCs: cadmium, lead, mercury, and silver. Barium, mercury, silver, benzene, and chloromethane are COPCs in groundwater at the three shallow upgradient monitoring well locations: MW-1, MW-2, and MW-3. Based on the ecological COPCs, the habitat, and potential exposure pathways at the drainage swale, the proposed ecological receptors for surface water and groundwater are terrestrial mammals. Thus, the preliminary assessment endpoint for surface water in the drainage swale at the Former 724th TPS is protection of terrestrial mammal populations from adverse effects.

The surrogate species to represent the generic ecological receptor is the raccoon (*Procyon lotor*). The raccoon is common to the coastal plain in Georgia. Raccoons drink water from shallow surface water bodies, and ingest more water per unit body weight than do larger mammals such as the white-tailed deer (*Odocoileus virginianus*); 0.082 g/g/d (EPA 1993) vs. 0.065 g/g/d (Sample and Suter 1994). Thus, the life history and behavior of the raccoon ensure a conservative estimate of risk.

Soil, Surface Water, Sediment, and Groundwater at Mill Creek

The potential for risk to ecological receptors from exposure to surface soil, surface water, sediment, and groundwater in or near Mill Creek is evaluated further in the PRE for the Former 724th TPS. There is some question as to the source of contamination at Mill Creek sampling stations and the existence of migration pathways from the Former 724th TPS to Mill Creek (Section 6.0). No evidence of any mechanism or pathway by which to transport contaminated surface soil, surface water, sediment, or groundwater from the Former 724th TPS to Mill Creek was observed during the field sampling in support of the PRE. The site hydrological data indicate that groundwater transport from the Former 724th TPS to Mill Creek is unlikely for inorganics (Section 6.0). Furthermore, the drainage swale is a physical barrier to the transport of soil by overland flow from the Former 724th TPS to Mill Creek.

Barium, mercury, and three SVOCs are the SRCs in surface soil at Mill Creek (MW-5). Based on the ecological COPCs, the habitat, and the potential exposure pathways at Mill Creek, the proposed ecological receptors for surface soil are carnivorous small mammals and birds that prey upon soil-dwelling invertebrates. The ecological COPC in surface water in Mill Creek (SWS2) is mercury and those in surface water at the upgradient location (SWS1) are lead and mercury. Barium is the only ecological COPC in Mill Creek sediment. The ecological COPCs in groundwater from the MW-5 sampling location near Mill Creek are barium and mercury. The proposed ecological receptors for surface water and groundwater are aquatic biota, terrestrial mammals ingesting surface water, and terrestrial fish-eating mammals and birds.

The preliminary assessment endpoint for soil at Mill Creek is protection of small mammals and bird populations from adverse effects. The surrogate species to represent the ecological receptors are the short-tailed shrew and the American robin. The preliminary assessment endpoints for surface water from Mill Creek are protection of aquatic biota, protection of terrestrial mammal populations from adverse effects of drinking surface water, and protection of fish-eating mammals and bird populations from adverse effects from ingesting fish and other aquatic biota. The surrogate species to represent the ecological receptors are the raccoon (*Procyon lotor*), the mink (*Mustela vison*), and the green heron (*Butorides striatus*).

These species are potentially found at Fort Stewart (GEPD 1997b) and potentially use Mill Creek as a source of nourishment. Mink and herons ingest fish and other aquatic biota living in streams. Mink are particularly vulnerable to mercury in aquatic systems because of the potential for mercury to occur as methyl mercury, which bioaccumulates greatly in fish tissue. Thus, the life history and behavior of these species ensure a conservative estimate of risk per EPA (1997) guidance.

8.1.3 Preliminary Effects Evaluation (Step iii)

The preliminary ecological effects evaluation (Step iii) identifies TRVs for use in the preliminary risk calculation. TRVs are derived from no observed adverse effect levels (NOAELs) from laboratory toxicity studies on test species. In the PRE for the Former 724th TPS, TRVs are required for shrews and robins ingesting contaminated biota exposed to soils near the facility, raccoons ingesting contaminated water from the drainage swale and Mill Creek, and fish-eating mammals and birds ingesting contaminated biota exposed to surface water in Mill Creek.

For all receptors in the PRE for the Former 724th TPS, which are exposed directly or indirectly by ingestion, TRVs are expressed as threshold concentrations of the contaminant in the abiotic medium (i.e., soil or water). The TRVs for water and soil are calculated from dietary concentrations corresponding to the NOAEL doses (Tables 8.5 and 8.6, respectively). Dietary and drinking water limit concentrations (mg/kg for solids, μg/L for liquids) are calculated from the NOAELs (mg/kg/d) by multiplying by the body weight (kg) and dividing by the ingestion rate (kg/d for solids, L/d for liquids) and converting from mg to μg where necessary. That is,

$$\text{dietary limit} = \text{NOAEL} \times \text{body weight/ingestion rate.}$$

For shrews and robins, which are exposed indirectly by ingestion of biota, the maximum detected soil concentration is compared to the threshold soil concentration (i.e., the TRV), which is calculated as the dietary concentration associated with the NOAEL dose divided by the unitless bioaccumulation factor (BAF) for the contaminant in the tissue of the ingested soil-dwelling biota. That is,

$$\text{TRV (mg/kg)} = \text{dietary limit (mg/kg)/BAF.}$$

For raccoons, which are exposed directly to COPCs in surface water, the maximum detected concentration in surface water is compared to the TRV calculated as the dietary concentration for ingested water. That is,

$$\text{TRV } (\mu\text{g/L}) = \text{drinking water limit } (\mu\text{g/L}).$$

Table 8.5. Derivation of Toxicity Reference Values for Ecological COPCs in Surface Water and Groundwater at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	NOAEL (mg/kg BW/d)				Raccoon drinking water limit (µg/L)[b]	Dietary limit (mg/kg)		Fish BCF*	TRV (µg/L)	
	Red fox	Raccoon[a]	Mink	Great blue heron		Mink[c]	Green heron[d]		Mink	Green heron
RCRA Metals										
Cadmium	0.509	0.514	0.74	1.45	6422	5.42	7.6	50	108	151
Lead[e]	4.22	4.26	6.15	1.13	53,247	44.9	5.9	300	150	19.6
Mercury[f]	0.69	0.70	0.02	0.01	8706	0.11	0.03	63,000	0.0017	0.0005
Silver	–	–	–	–	–	–	–	2	–	–
Volatile Organic Compounds										
Benzene	7.50	7.58	11	–	94,633	80.1	–	32	2503	–
Chloromethane	–	–	–	–	–	–	–	–	–	–

NOAEL = No observed adverse effect level from NOAELs for test species (Sample et al. 1996) unless otherwise noted.
BW = Body weight.
[a]Raccoon NOAEL = Red Fox NOAEL × $(BW_{fox}/BW_{racoon})^{0.25}$, where BW_{fox} = 4.5 kg., and BW_{racoon} = 4.31 kg.
[b]Drinking water limit = Raccoon NOAEL × 1000 (µg/mg) × BW (kg)/water ingestion rate (L/d). See Table 8.7. for BW and water ingestion rate.
[c]Sample et al. (1996).
[d]Dietary limit = NOAEL × BW/food ingestion rate, where green heron NOAEL = great blue heron NOAEL (Sample et al. 1996). See Table 8.7. for BW and water ingestion rate.
[e]NOAEL for lead acetate.
[f]Assumed to be methyl mercury for mink and green heron.
TRV = toxicity reference value = dietary limit × 1000 (µg/mg)/BCF_{fish}.
*Fish BCFs from HAZWRAP (1994).
– = No toxicity information.

Table 8.6. Derivation of Toxicity Reference Values for Ecological COPCs in Soil at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	NOAEL[a] (mg/kg BW/d)		Dietary limit[a,b] (mg/kg BW/d)		Earthworm	TRV (mg/kg)	
	Mammal	Bird	Shrew	Robin	BAF*	Shrew	Robin
RCRA Metals							
Chromium	2737	1	10025	0.83	0.16	62656	5.2
Mercury	1.0	0.45	4.8	0.37	0.34	14.1	1.09
Volatile Organic Compounds							
Acetone	10	–	36.6	–	0.05	732	–
Benzene	26.4	–	52.2	–	0.05	1044	–
Ethylbenzene	–	–	–	–	0.05	8.4[c]	–
Toluene	26	–	51.5	–	0.05	1030	–
Xylenes, total	2.1	–	4.2	–	0.05	84	–
Semivolatile Organic Compounds							
Benzo(a)pyrene	1.0	–	1.98	–	0.05	39.6	–
Benzo(b)flouranthene	–	–	–	–	0.05	3.96[d]	–
Styrene	–	–	–	–	0.05	3.96[d]	–

[a]NOAELs for test species used to derive NOAELs and dietary limits for shrew and robin (Sample et al. (1996).
[b]Dietary limit = NOAEL × BW (kg)/food ingestion rate (kg/d); see Table 8.7 for BW and ingestion rate; NOAELs are for shrew and robin (Sample et al. 1996).
TRV = Toxicity reference value = dietary limit/$BAF_{earthworm}$.
*Earthworm BAFs from HAZWRAP (1994).
– = No data to derive TRV.
[c]TRV for ethylbenzene cannot be derived, proposed TRV = 1/10 TRV for xylenes.
[d]TRV for benzo(b)flouranthene and styrene cannot be derived, proposed TRV = 1/10 TRV for benzo(a)pyrene.

For mink and green herons, which are also exposed indirectly by ingestion of biota, the maximum detected surface water concentration is compared to the threshold water concentration (i.e., the TRV), which is calculated as the dietary concentration associated with the NOAEL dose divided by the bioconcentration factor (BCF) for the contaminant in the tissue of the ingested aquatic biota. That is,

$$\text{TRV } (\mu g/L) = [1000\ (\mu g/mg) \times \text{dietary limit } (mg/kg)]/\text{BCF}(L/kg).$$

This approach allows direct comparison of measured concentrations of COPCs in the abiotic media against the abiotic media concentration assumed to be protective of the ecological receptor. If a NOAEL is not available for a contaminant, the TRV associated with the lowest observed adverse effect level (LOAEL) divided by a conservative uncertainty factor of 10 (LOAEL/10) will be used as the NOAEL (EPA 1996a).

If toxicity data are not available for the surrogate species, data for a test species of the same taxonomic class is sometimes used, i.e., mammal test species data will be used for mammal surrogate species, and bird test species data will be used for bird surrogate species. The NOAEL for the test species is adjusted for the body weight of the surrogate species to derive the NOAEL for the surrogate species. NOAELs for test species based on daily dose (mg/kg body weight/day) are adjusted to surrogate species, according to the following equation:

$$\text{surrogate species NOAEL} = \text{test species NOAEL} \times (bw_{ts}/bw_{ss})^{z},$$

where bw_{ts} and bw_{ss} are the body weights (kg) of the test species and surrogate species, respectively, and $z = 0.25$ for mammals and $z = 0$ for birds (Sample et al. 1996). For example, the published NOAEL for a COPC might be based on data for a 0.35 kg rat. The NOAEL for a 0.022 kg field mouse would be nearly two times larger than the rat NOAEL. NOAELs for shrews, robin, mink, and great blue heron are derived from test species data published in Sample et al. (1996). NOAELs for the raccoon are derived in Table 8.5 from the NOAEL for the red fox reported in Sample et al. (1996).

The TRVs derived for raccoons, mink, and green heron exposed to COPCs in surface water or groundwater are presented in Table 8.5. The TRVs derived for shrews and robins for COPCs detected in soil at Former 724th TPS are presented in Table 8.6. TRVs cannot be derived for ethylbenzene; a TRV is proposed for the shrew that is one tenth the TRV for xylenes, a similar BTEX compound. Similarly, TRVs cannot be derived for benzo(b)flouranthene or styrene; a TRV is proposed for the shrew that is one tenth the TRV for benzo(a)pyrene, a similar PAH compound.

The EPA Region 4 ESVs for surface water used to identify ecological COPCs for surface water and groundwater at the Former 724th TPS are considered to be protective of aquatic life. Therefore, the preliminary risk calculations for aquatic biota exposed to surface water (and groundwater) in Mill Creek at the Former 724th TPS are not required.

8.1.4 Preliminary Exposure Estimate (Step iv)

The preliminary exposure estimate (Step iv) evaluates the potential pathways of exposure appropriate to the preliminary assessment endpoints and ecological receptors at the Former 724th TPS. For receptors likely exposed by ingestion of contaminated surface soil, surface water, sediment, or biota, exposure factors are selected.

The exposures of surrogate species are estimated using conservative assumptions. It is assumed that the receptors spend their entire lives and obtain 100 percent of their diet or drinking water at the facility, i.e., the Area Use Factor (AUF) equals 1. Shrews and robins are assumed to eat only soil-dwelling invertebrates such as worms that bioaccumulate contaminants from soil, in accordance with EPA Region 4 requirements that the screen be based on exposure through two trophic transfers (EPA 1997). Raccoons are assumed to drink water only from the drainage swale at the Former 724th TPS. Contaminants are assumed to bioaccumulate in the soil-dwelling invertebrate prey of ecological receptors at levels equal to published BAFs for earthworms and other invertebrates (e.g., HAZWRAP 1994). The exposure parameters for shrews and robins exposed to COPCs in soil and for raccoons, mink, and green herons exposed to COPCs in surface water or groundwater are presented in Table 8.7.

The concentration of ecological COPCs to which endpoint receptors at the Former 724th TPS are directly or indirectly exposed are estimated by the maximum detected concentration per EPA (1996a) guidance.

8.1.5 Preliminary Risk Calculation (Step v)

The preliminary risk calculation (Step v) calculates hazard quotients (HQs) as the ratio of the measured maximum concentration and the TRV. The HQs of ecological COPCs with consistent modes of toxicity and effects endpoints are added to produce an HI. An HI greater than 1 for a category of COPCs is a useful indicator of potential risk when no individual COPC in that

Table 8.7. Exposure Parameters for Surrogate Species Exposed to Ecological COPCs in Soil, Surface Water, or Groundwater at the Former 724th Tanker Purging Station, Fort Stewart

Parameter	Surrogate Species				
	Shrew	Robin	Raccoon	Mink	Green Heron
Body weight (kg)	0.015*	0.077*	4.31[a]	1*	0.25[b]
Food ingestion rate (kg/d)	0.009*	0.093*	–	0.137*	0.048[b]
Water ingestion rate (L/d)	–	–	0.345[a]	–	–
AUF	1	1	1	1	1
Bioavailability	100 percent	100 percent	100 percent	100 percent	100 percent
Diet	100 percent earthworm	100 percent earthworm	–	100 percent fish	100 percent fish
Source medium	Surface soil	Surface soil	Surface water Groundwater	Surface water in Mill Creek	Surface water in Mill Creek

*Sample et al. (1996); Table B.1.
[a] EPA (1993b); value of 0.08 L/kg/d converted to L/d by multiplying by raccoon body weight.
[b] U.S. Environmental Protection Agency (EPA) Region 4 Supplemental Guidance to RAGS (EPA 1996).
– = Not required for preliminary risk calculation.
AUF = Area Use Factor.

category has an HQ greater than 1. An HI assumes that the effect of the individual COPCs in the category are additive.

Because of uncertainties in quantifying exposure and effects, the exposure and effects assessments for the Former 724th TPS are designed to produce HQs that minimize the probability of falsely concluding that there is no risk when in fact there is. Therefore, ecological COPCs with HQs and HIs less than 1.0 indicate little to no likelihood of risk to the ecological receptors.

Surface Soil at the Former 724th TPS

The preliminary risk calculations for shrews and robins exposed to ecological COPCs detected in soil at the Former 724th TPS are presented in Table 8.8. This table shows the maximum detected concentrations in each soil sample and the TRVs for shrews and robins. The HQs are the simple ratio of the measured concentration and the TRV. Concentrations resulting in HQs exceeding 1.0 are shown in boldface font.

Chromium in surface soil at the Former 724th TPS is present in one surface soil sample (MW-2) at concentrations exceeding the TRV for the robin (Table 8.8). No organic COPCs in surface soil exceed TRVs for the shrew.

An HI can be calculated for the shrew using the five VOCs detected in surface soil at MW-2, assuming that they have similar mechanisms of toxicity on small mammals. The HI for acetone, benzene, ethylbenzene, toluene, and xylenes (total) is 0.00324. Because the HI is less than 1, these VOCs in surface soil at the Former 724th TPS are not ecological COPCs for populations of small mammals ingesting earthworms and other soil-dwelling invertebrates.

Thus, chromium is the only COPC with an HQ exceeding 1 for the ecological receptors exposed to surface soil at the Former 724th TPS.

Table 8.8. Preliminary Risk Evaluation of Ecological COPCs in Surface Soil at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	TRV		Detected Concentration			
	Shrew	Robin	*MW-1	MW-2	MW-4	MW-5
RCRA Metals (mg/kg)						
Chromium	626.56	5.2	nd	6.3	3.9	1.7
Mercury	14.1	1.1	nd	nd	0.06	0.05
Volatile Organic Compounds (mg/kg)						
Acetone	732	–	nd	0.0266 J	nd	nd
Benzene	1,044	–	nd	0.0014 J	nd	nd
Ethylbenzene	8.4[a]	–	nd	0.0229	nd	nd
Toluene	1,030	–	nd	0.0196	nd	nd
Xylenes, total	84	–	nd	0.141 J	nd	nd
Semivolatile Organic Compounds (mg/kg)						
Benzo(a)pyrene	39.6	–	nd	nd	nd	0.0061 J
Benzo(b)flouranthene	3.96[b]	–	nd	nd	nd	0.0078
Styrene	3.96[b]	–	nd	nd	nd	0.0018 J

*MW-1 is upgradient monitoring well location and background surface soil sample.
J = Estimated concentration.
– = No data to derive TRV.
TRV = Toxicity reference value = (NOAEL × BW/food ingestion rate)/$BAF_{earthworm}$ (see Table 8.6).
nd = not detected
Boldface font indicates detected concentration exceeds TRV (HQ >1).
HQ = Maximum concentration/TRV, if detected concentration exceeds TRV, HQ >1.
[a] TRV for ethylbenzene cannot be derived; proposed TRV = 1/10 TRV for xylenes.
[b] TRV for benzo(b)flouranthene and styrene cannot be derived; proposed TRV = 1/10 TRV for benzo(a)pyrene.

Surface Water and Groundwater at the Drainage Swale

The preliminary risk calculations for raccoons exposed to ecological COPCs detected in surface water in the drainage swale and groundwater at the Former 724th TPS are presented in Tables 8.9 and 8.10, respectively. These tables show the maximum detected concentrations in each sample and the drinking water TRVs for raccoons. The HQs are the simple ratio of the measured concentration and the TRV. Concentrations resulting in HQs exceeding 1.0 are shown in boldface font.

Table 8.9. Preliminary Risk Evaluation for Ecological COPCs Detected in Surface Water in Drainage Swale at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	Raccoon Drinking water TRV[a]	Surface Water[a]		
		SWS4	SWS5	Maximum
RCRA Metals (μg/L)				
Cadmium	6,422	nd	1.7	1.7
Lead	53,247	0.46 J	10.8 J	10.8 J
Silver	–	1.3	0.29	1.3

[a] Station SWS3 in drainage swale had no water at time of sampling.
J = estimated
[b] See Table 8.4 for derivation of TRV for drinking water pathway.
[c] Assumed to be mercuric chloride.
nd = not detected
- = no TRV
Detected concentrations exceeding TRVs are in boldface font.

Table 8.10. Preliminary Risk Evaluation for Ecological COPCs in Groundwater at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	Raccoon TRV	TPS Facility				Mill Creek
		MW-1*	MW-2	MW-3	MW-4	MW-5
***RCRA Metals** (µg/L)*						
Barium	35,330	50.7 J	33.9 J	37.4 J	99.2 J	70.2 J
Mercury[a]	8,706	0.2	0.2	nd	0.3	0.58
Silver	–	4.9	0.51	3.3	4.1	nd
***Volatile Organic Compounds** (µg/L)*						
Benzene	94,633	nd	329	nd	nd	nd
Chloromethane	–	7.1	nd	nd	nd	nd

*MW-1 is upgradient monitoring well.
J = Estimated concentrated.
TRV = Toxicity reference values (see Table 8.5).
[a]Assumed to be mercuric chloride
- = no TRV
Detected concentrations exceeding the TRV are in boldface font.

No ecological COPCs are present in surface water sampled from the drainage swale at the Former 724th TPS at concentrations exceeding the TRV for the raccoon. No ecological COPCs are present in groundwater sampled from monitoring wells MW-2, MW-3, and MW-4 near the Former 724th TPS facility at concentrations exceeding the TRV for the raccoon. There is no drinking water TRV for raccoons for silver, so silver is an ecological COPC by default. An HI is not calculated for surface water and groundwater because the ecological COPCs with TRVs have dissimilar mechanisms of toxicity.

Thus, there are no HQs exceeding 1 for the ecological receptors exposed to ecological COPCs in surface water and groundwater at the drainage swale at the Former 724th TPS.

Surface Soil, Surface Water, Sediment, and Groundwater at Mill Creek

The preliminary risk calculations for shrews and robins exposed to ecological COPCs detected in surface soil at the Mill Creek sampling station (MW-5) are presented in Table 8.8 under column "MW-5". This table shows the maximum detected concentrations in each surface soil sample and the TRVs for shrews and robins. The HQ is the ratio of the measured concentration and the TRV. Concentrations resulting in HQs exceeding 1.0 are shown in boldface font.

No constituent was detected in surface soil at Mill Creek (MW-5) at concentrations exceeding the TRVs. An HI is not calculated for metals in surface soil because metals have dissimilar mechanisms of toxicity.

The preliminary risk calculations for raccoons, mink, and green herons exposed to ecological COPCs detected in groundwater (MW-5) and surface water in Mill Creek (SWS2) are presented in Tables 8.10 and 8.11. These tables show the detected concentrations in each sample, the drinking water TRVs for raccoons, and the dietary TRVs for the mink and green heron. The HQ is the ratio of the measured concentration and the TRV. Detected concentrations exceeding a TRV for any ecological receptor and thereby resulting in HQs exceeding 1.0 are shown in boldface font.

Table 8.11. Preliminary Risk Evaluation for Ecological COPCs in Surface Water in Mill Creek at the Former 724th Tanker Purging Station, Fort Stewart

Analyte	TRV[a]			Mill Creek	
	Raccoon (µg/L)[b]	Mink (µg/L)	Green heron (µg/L)	SWS1* (µg/L)	SWS2 (µg/L)
Lead	53,247	150	19.6	2.6	nd
Mercury[c]	8706	0.0017	0.0005	**0.09**	**0.4**

*Upgradient background station.
J = Estimated
TRV = Toxicity reference values.
nd = not detected
[a] See Table 8.4 for derivation of TRVs.
[b] TRV for drinking water pathway only.
[c] Assumed to be methylmercury for mink and green heron, mercuric chloride for raccoon
Detected concentrations exceeding a TRV for any ecological receptor (HQ >1) are in boldface type.

The concentrations of ecological COPCs in groundwater from the Mill Creek sampling station (MW-5) – barium and mercury – are shown in Table 8.10. Neither barium nor mercury exceed the drinking water TRVs for raccoons. An HI is not calculated for the ecological COPCs in groundwater because metals have dissimilar mechanisms of toxicity.

An HI can be calculated for the shrew using the three SVOCs detected in surface soil at MW-5, assuming they have similar mechanisms of toxicity on small mammals. The HI for benzo(a)pyrene, benzo(b)flouranthene, and styrene is 0.0027. Because the HI is much less than 1, these SVOCs in surface soil near Mill Creek are not ecological COPCs for small mammals. Thus, there are no ecological COPCs in surface soil at Mill Creek.

The concentrations of mercury in surface water at both the upgradient background (SWS1) and downgradient (SWS2) sampling stations in Mill Creek exceed the TRVs for mink and green herons. The exceedances are based on these surrogate species being exposed to methylmercury bioaccumulated in the tissue of fish exposed to the measured concentration of mercury from Mill Creek, assuming all mercury is dissolved methylmercury. Lead in surface water at the upgradient station (SWS1) does not exceed the TRV. No COPCs exceed the drinking water TRVs for raccoons. An HI is not calculated for the ecological COPCs in surface water because metals have dissimilar mechanisms of toxicity.

Thus, only mercury in surface water at Mill Creek (SWS2) was detected at a concentration exceeding the TRVs for ecological receptors.

8.1.6. Conclusions of the Ecological Preliminary Risk Evaluation

The ERA provided a Phase 1 PRE for potential terrestrial and aquatic receptors at the site. The PRE for the Former 724th TPS identified ecological COPCs in surface water, sediment, and groundwater based on a comparison of their maximum site concentrations to their EPA Region 4 ecological screening values. Preliminary risk calculations identified ecological COPCs in Mill Creek surface water based on a comparison of detected concentrations to TRVs for surrogate species representing ecological receptors.

Chromium was detected above reference background criteria in surface soil at the Former 724th TPS and was present above the TRV for ecological receptors. The chromium concentration in one surface soil sample (MW-2) exceeded the TRV for the robin, 6.3 mg/kg in soil versus robin TRV of 5.2 mg/kg. There is uncertainty about whether robins foraging at the Former 724th TPS will obtain more than 20 percent of their diet from the site. Thus, robins are unlikely to be at risk from chromium in surface soil at the Former 724th TPS. There is uncertainty about whether ethylbenzene, benzo(b)flouranthene, and styrene are ecological COPCs in surface soil, because no TRVs can be derived for these substances. Benzo(b)flouranthene and styrene were not present at the site, but were detected only at MW-5 (adjacent to Mill Creek) at concentrations near their detection limit, and are, therefore, not site related. Ethylbenzene was detected at MW-2 and is related to former releases at the site. Ethylbenzene in surface soil is unlikely to pose a risk to ecological receptors given the low concentration (0.02 mg/kg) relative to the proposed TRV for ethylbenzene of 8.4 mg/kg, which is one tenth the TRV for total xylenes. There are, therefore, no organic ecological COPCs in surface soil.

Barium and silver were identified as ecological COPCs in swale sediment, but exposure of sediment-dwelling biota to sediment in the drainage swale was judged to be unlikely. The swale is an ephemeral surface water body, as shown by the lack of water at SWS-3 at the time of sampling, and is unlikely to support a community of aquatic sediment-dwelling organisms. Exposures of other types of receptors (e.g., terrestrial animals) to swale sediment by direct contact and ingestion are likely to be minimal. There are, therefore, no ecological COPCs in sediment in the swale.

In surface water in the drainage swale adjacent to the site, cadmium, lead, and silver were detected at concentrations that exceed reference background criteria and EPA Region 4 ecological screening values. However, there are no aquatic biota or other ecological receptors of concern in the man-made swale. No constituents are present in surface water in the swale at concentrations exceeding the TRV for terrestrial receptors (raccoon). There is uncertainty about whether silver is of concern because there is no published TRV for silver. There are, therefore, no ecological COPCs for surface water in the swale.

According to EPA Region 4 guidance (EPA 1996a), groundwater is to be screened in the ecological PRE using EPA Region 4 surface water ESVs. This was done for groundwater from a well near Mill Creek (MW-5) and from wells near the Former 724th TPS (MW-2, MW-3, and MW-4). Barium and mercury are present in Mill Creek groundwater at concentrations that exceed ESVs. Thus, barium and mercury are ecological COPCs for aquatic biota in Mill Creek. Barium, mercury, silver, benzene, and chloromethane are present in groundwater at the former 724th TPS at concentrations that exceed reference background criteria and that exceed EPA Region 4 ESVs for surface water. However, aquatic biota, including amphibians, are not ecological receptors for the man-made swale at the Former 724th TPS. Therefore, there are no ecological COPCs for aquatic biota in the swale.

Groundwater is further evaluated in the PRE as a source of surface water for the potential exposure of terrestrial mammals drinking water from both Mill Creek and the man-made swale at the Former 724th TPS. Groundwater concentrations of barium, mercury, and benzene at either location do not exceed TRVs for raccoons potentially ingesting groundwater as surface water. Therefore, these chemicals are not ecological COPCs for terrestrial mammals. There is uncertainty about whether silver or chloromethane in groundwater from the former 724th TPS are ecological COPCs because there is no TRV for them. Silver and chloromethane have a higher concentration in the upgradient well (MW-1), and thus are not considered site related. There are, therefore, no ecological COPCs in groundwater at the swale.

In Mill Creek, mercury was identified as ecological COPC in surface water based on comparison to EPA Region 4 ecological screening values. Mercury is also an ecological COPC identified in Mill Creek surface water for terrestrial predators (mink, green heron) based on comparison to their TRVs. In Mill Creek sediment, no ecological COPCs were identified, although there is uncertainty about barium because there are no published ecological screening values for barium, making it a COPC by default. Ecological risks in Mill Creek are not related to the Former 724th TPS for the following reasons:

- As concluded in the fate and transport evaluation, off-site migration of contaminants would be very limited because of retardation and biodegradation, as well as the slow movement of groundwater. Mill Creek is the nearest surface water stream to the Former 724th TPS and is located approximately 1,200 feet west of the site. Therefore, migration of contaminants to Mill Creek via groundwater discharge is unlikely, and there is no complete pathway from groundwater to ecological receptors in Mill Creek.

- The drainage swale accepts runoff from the site and the adjacent fuel truck parking area, but is not connected to Mill Creek or its tributaries. Therefore, migration of contaminants to Mill Creek via surface water runoff is also not likely, and there is no complete pathway from the Former 724th TPS to ecological receptors in Mill Creek.

In conclusion, there are no ecological COPCs in either soil, sediment, surface water, or groundwater at the Former 724th TPS site. Therefore, no remedial levels are required to be developed for ecological receptors. No further ERA is warranted for this site.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 SUMMARY OF FINDINGS

The RFI presented in this report was conducted to collect additional analytical data for determining the nature and extent of contamination in environmental media in the vicinity of the Former 724th TPS. The data were derived from a series of screening and primary samples collected from surface and subsurface soils, sediments, surface water, and groundwater in the study area. The samples collected were analyzed for a number of COPCs, including metals, VOCs, and SVOCs.

Results of these analyses indicated that soils at the site contain elevated levels of VOCs, predominantly BTEX, PAHs, and metals, including cadmium, chromium, and mercury. Sediments revealed elevated concentrations of VOCs like methylene chloride, toluene, and xylene, and metals including barium, chromium, lead, mercury, and silver. Surface waters indicated the presence of metals including arsenic, cadmium, lead, and silver, but no organics. Groundwater samples showed evidence of fuel-related contaminants and organic solvents such as naphthalene, BTEX, 1,1-dichloroethane, 1,2-dichloroethane, chloroform, chloromethane, methylene chloride, styrene, 2-butanone, 2-hexanone, and acetone. Metals detected in groundwater included arsenic, barium, mercury, and silver.

The following summarizes the significant findings of Phase II RFI sampling and analysis:

- Contamination is present in both soil and groundwater at the site, dominated by BTEX compounds, with secondary contaminants such as 1,1-dichloroethane.
- BTEX contamination in soil extends to the water table (approximately 6 feet deep) and is greatest immediately north and east of the area of excavated soils removed in August 1996. The soil contamination covers an area approximately 60 by 75 feet.
- BTEX contamination in groundwater extends to a depth of approximately 20 feet below the water table, although isolated areas of BTEX were found in groundwater to depths up to 40 feet. The BTEX contamination covers a plume area approximately 100 feet wide by 160 feet long, extending from the Former 724th TPS facilities to the north and west.
- The leading edge of the BTEX plume is more than 1,000 feet from Mill Creek and is, therefore, not impacting Mill Creek. Contamination in Mill Creek is not related to the Former 724th TPS.
- Biodegradation of the VOCs is likely occurring, as evidenced by the presence of methane, a breakdown product of BTEX degradation.
- Some metals are present in soil and groundwater at the facility in the swale immediately west of the site; no consistent pattern of distribution across media is apparent.

9.2 CONCLUSIONS

Several assessments were conducted to determine the significance of the contaminant concentrations found at the Former 724th TPS with respect to their impact on human health and the environment. The assessments included:

- A contaminant fate and transport analysis (Section 6.0) which provided an assessment of the potential migration pathways and transport mechanisms affecting the chemical compounds found at the site.
- A human health risk assessment (Section 7.0) which employed a Step 1 risk evaluation to determine potential human health risks associated with the COPCs.
- An ecological risk assessment (Section 8.0) which provided a Phase 1 preliminary risk evaluation for terrestrial and aquatic habitats in the study area.

The following summarizes the conclusions regarding contaminant fate and transport:

- Metals are not considered contaminant migration COPCs, mainly due to their low concentrations in the soils.
- Organics in the site soils that exceed EPA GSSLs and are, therefore, of concern for leaching from soils to groundwater, include BTEX, acetone, and naphthalene. These organics, except naphthalene, due to their high mobility, have already reached the groundwater. However, groundwater movement off site is very slow (3.6 feet/year) and may take 280 years to reach the receptor location (i.e., Mill Creek).
- The organic compounds that are currently observed above their respective MCLs in groundwater are BTEX and acetone. Based on the site conceptual model, although these contaminants may have been leaching (and may continue to leach in the future) from the contaminated soils into the groundwater beneath the site with concentrations above their MCLs, off-site migration of these constituents will be limited due to retardation and biodegradation as well as the slow movement of groundwater flow. Benzene will degrade to a concentration less than its MCL in 22 years, having traveled less than 80 feet from the source. Similarly, ethylbenzene, toluene, xylene, and acetone with higher biodegradation rates will remain at concentrations much lower than benzene. Therefore, none of the constituents from the Former 724th TPS site are expected to be of potential concern at the nearest receptor location [i.e., Mill Creek (1,200 feet from the former facility)].

The following summarizes the conclusion of the human health risk assessment:

- Based on the results of the screening and the weight-of-evidence analysis, potential COPCs have been identified for groundwater. There are no COPCs for surface soils, subsurface soils, surface water, or sediment.
- The initial COPCs for groundwater were identified because they present a potential threat to human health as a result of using groundwater as a source of drinking water. The initial COPCs for groundwater are acetone, arsenic, 1,2-dichloroethane, chloroform, chloromethane, and BTEX.

- It should be noted that given the shallow depth of the surficial aquifer and the presence of the deeper Principal Artesian aquifer, a common source of drinking water throughout the region, the use of the surficial aquifer is not considered to be a viable exposure scenario. Drinking water screening values were used in the absence of more appropriate values.

The following summarizes the conclusions of the ecological risk assessment:

- Chromium was the only chemical detected in surface soil at the former 724th TPS at a concentration that exceeded both reference background criteria and a TRV for an ecological receptor (robin). There is uncertainty about whether earthworms from the Former 724th TPS will constitute 20 percent or more of the diet of robins foraging at the site. Thus, robins are unlikely to be at risk from chromium in surface soil.

- There is uncertainty about whether ethylbenzene, benzo(b)flouranthene, and styrene are ecological COPCs in surface soil because no TRVs can be derived for these substances. Benzo(b)flouranthene and styrene were not present in surface soil at the site, but were detected only at MW-5 (adjacent to Mill Creek) at concentrations near their detection limit, and are therefore not site related. Ethylbenzene was detected in surface soil at MW-2 and is related to former releases at the site. However, ethylbenzene in surface soil is unlikely to pose a risk to ecological receptors given the low concentration (0.02 mg/kg) relative to the proposed TRV for ethylbenzene of 8.4 mg/kg, which is one-tenth the TRV for total xylenes. There are, therefore, no ecological COPCs in surface soil.

- Barium and silver were identified as ecological COPCs in sediment in the drainage swale, but exposure of sediment-dwelling biota to sediment in the swale was judged to be unlikely. The swale is an ephemeral surface water body, as shown by the lack of water at SWS-3 at the time of sampling, and is unlikely to support a community of aquatic sediment-dwelling organisms. Exposure of other types of receptors (e.g., terrestrial animals) to swale sediment by direct contact and ingestion is likely to be minimal. There are, therefore, no ecological COPCs in sediment in the swale.

- Cadmium, lead, and silver were detected in surface water in the drainage swale at the Former 724th TPS at concentrations that exceed reference background criteria and also exceed EPA Region 4 ESVs for aquatic biota. However, there are no aquatic biota or other ecological receptors of concern in the man-made swale. Maximum surface water concentrations of cadmium and lead do not exceed a published TRV for terrestrial receptors (raccoons) and are therefore not of concern. There is uncertainty about whether silver is of concern because there is no published TRV for silver. There are, therefore, no ecological COPCs in surface water in the swale.

- Barium, mercury, silver, benzene, and chloromethane are present in groundwater at the Former 724th TPS at concentrations that exceed reference background criteria and also EPA Region 4 ESVs for surface water. However, there are no aquatic biota or other ecological receptors of concern in the man-made swale. Maximum groundwater concentrations of barium, mercury, and benzene do not exceed a published TRV for terrestrial receptors (raccoons) potentially ingesting groundwater as surface water; therefore, these metals are not of concern for raccoons. There is uncertainty about whether silver or chloromethane are ecological COPCs in groundwater because there are no published TRVs for them. However, silver and chloromethane are higher in the upgradient well and are not considered site related. There are, therefore, no ecological COPCs in groundwater at the site.

- In Mill Creek, mercury was identified as an ecological COPC in surface water based on comparison to EPA Region 4 ESVs. Mercury is also an ecological COPC in surface water for protection of terrestrial predators (mink, green heron) in Mill Creek based on comparison to their TRVs. In Mill Creek sediment, no ecological COPCs were identified, although there is uncertainty about barium, since there are no published values for barium. Migration of contaminants to Mill Creek from the 724th TPS is unlikely either via groundwater discharge or via surface water runoff. There is no complete pathway from the Former 724th TPS to ecological receptors in Mill Creek. Therefore, ecological risks in Mill Creek are not related to the Former 724th TPS.

9.3 SUPPLEMENTAL PHASE II GROUNDWATER CHARACTERIZATION

Based upon the results of the original Phase II RFI at the Former 724th TPS, a supplemental characterization was conducted in September 1998 to verify concentrations of metals in groundwater and to provide further evidence that natural attenuation of VOCs is occurring. The scope of work included sampling of the four onsite monitoring wells (MW-1 through MW-4) and analyzing the samples for VOCs, PAHs, RCRA metals, and water quality parameters. Results of this supplemental investigation are presented in Appendix H, and summarized below.

VOCs. Seven individual VOCs were detected in groundwater samples. BTEX compounds were detected only in a single well, MW-2, which is screened at the water table and located in the center of the former facility (i.e., the identified source). During sampling, approximately 1.9 feet of free petroleum product were encountered in MW-2; no free product had been encountered in any of the direct-push groundwater samples or any of the wells during the Phase II RFI in August 1997. Once free product was discovered, a ferret system was installed in MW-2 for recovery of the free product; operation of the ferret system is ongoing.

Benzene (1,350 µg/L), ethylbenzene (477 µg/L), toluene (1,540 µg/L), and total xylenes (2,350 µg/L) were reported in MW-2. The concentrations of benzene and toluene exceeded their respective MCLs of 5 µg/L and 1,000 µg/L. No BTEX constituent was found in any of the other wells, confirming the Phase II RFI conclusions that contaminants have not migrated vertically or laterally from the source at the former facility.

The other VOCs that were detected included chloroform (18.7 µg/L at MW-2), 1,1-dichloroethane (1.4 µg/L at MW-3), and 2-hexanone (6.7 µg/L at MW-3). Chloroform and 2-hexanone are common laboratory contaminants and were not detected in these wells during the Phase II RFI, and are therefore not likely a result of contaminant releases from the former facility. 1,1-Dichloroethane was detected in MW-3 during the Phase II RFI at a concentration of 2.2 µg/L, and is considered a secondary contaminant within the primary BTEX plume.

PAHs. Naphthalene was the only PAH compound detected in groundwater. Naphthalene was reported at 242 µg/L at MW-2, which exceeds its EPA Region III risk-based criterion of 150 µg/L. Naphthalene was also detected in MW-2 during the Phase II RFI. The increase in the concentration of naphthalene is likely due to the presence of the free product found during the supplemental sampling.

RCRA metals. Four metals were detected in the groundwater samples, including arsenic, barium, chromium, and mercury. These metals were detected above the reference background criteria and in the same wells as detected during the Phase II RFI sampling in August 1997. None of the metals exceeded their respective MCLs. Silver, which was detected above background in the original Phase II RFI sampling, was not detected above background in the supplemental sampling.

- Arsenic (maximum 16.4 μg/L) was found at its highest concentration in the upgradient well MW-1, and is therefore not considered site related.

- Barium (maximum 87.9 μg/L) and mercury (maximum 0.59 μg/L) were found at concentrations above background in well MW-4, screened at a depth of 35 to 45 feet. In other wells, barium and mercury were found at or below background. Because these metals do not migrate readily and are only present at depth, they are not likely related to any contaminant plume emanating from the facility

- Chromium (maximum 6.1 μg/L) was found in MW-2 at a concentration only slightly above background and marginally higher than that found during the Phase II RFI (2.4 μg/L). Chromium was not detected in any of the other wells in the vicinity of the Former 724th TPS, and was detected at a concentration well below its MCL (100 μg/L) and its EPA Region II risk-based level (180 μg/L). Therefore, no further action is warranted for chromium in groundwater at the facility.

Other analytes. Alkalinity varied between 102 and 321 mg/L (lowest at the upgradient well MW-1 and highest in the deeper well MW-4). Sulfate varied between 0.18 and 11.4 mg/L (lowest at well MW-2 and highest at MW-4). These results are consistent with the results of the Phase II RFI and suggest that biodegradation is occurring, resulting in higher alkalinity and sulfate content in the downgradient wells.

9.4 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been made based on the results of the Phase II RFI and the supplemental groundwater investigation:

1. Because there are no ecological COPCs at the Former 724th TPS, an ERA is not warranted.

2. Concentrations of metals found during the Phase II RFI are similar to those found during the supplemental sampling. None of the metal concentrations exceed MCLs or EPA Region III risk-based levels. No further corrective action for metals in groundwater is warranted.

3. Free petroleum product was encountered at well MW-2 in the center of the former facility during the supplemental investigation. Free product recovery, which has been undertaken at the site, should be continued.

4. BTEX compounds exceed MCLs in the shallow water table aquifer near the source. There is no evidence that contamination has migrated further beyond the source, despite the presence of free product being discovered. Natural attenuation of organics through biodegradation is

occurring, as suggested by the presence of higher methane, alkalinity, and sulfate in downgradient wells.

5. Due to the presence of free product and BTEX compounds at concentrations in groundwater exceeding MCLs, a CAP will be required to evaluate measures to mitigate the effects of these contaminants. The CAP should evaluate the effectiveness of natural attenuation in remediating VOCs in soil and groundwater by using fate and transport modeling of leaching and biodegradation. The CAP should also address mitigation of naphthalene, which was detected during the supplemental investigation at a concentration exceeding its EPA Region III risk-based level and is likely associated with the free petroleum product.

9.5 IDENTIFICATION OF REMEDIAL LEVELS

Remedial levels are presented in Table 9.1 for soil and groundwater. Soil remedial levels are based on leaching from to groundwater at levels exceeding MCLs or EPA Region III risk-based values. Groundwater remedial levels are based on MCLs, which take into consideration both human health and technological limitations. In the absence of an MCL, the EPA Region III risk-based values for groundwater were used for deriving remedial levels.

Table 9.1. Remedial Levels for Soil and Groundwater Former 724th Tanker Purging Station, Fort Stewart

Analyte	Soil Remedial Level (µg/kg)	Groundwater Remedial Level (µg/L)
Arsenic	-	-[a]
1,1-Dichloroethane	-	-[b]
1,2-Dichloroethane	-	-[b]
Acetone	370	370
Benzene	20	5
Chloroform	-	0.1
Chloromethane	-	-[b]
Ethylbenzene	3,100	700
Naphthalene	600	150[c]
Toluene	4,200	1,000
Xylenes, total	3,200	10,000

- Indicates no remedial action needed for that analyte.

-[a] No remedial action is needed for arsenic in groundwater since the maximum concentration for arsenic is below its maximum contaminant level (MCL).

-[b] No remedial action is needed for 1,1-dichloroethane, 1,2-dichloroethane, or chloromethane since the maximum concentration for these analytes during the supplemental groundwater sampling did not exceed their respective MCLs or U.S. Environmental Protection Agency (EPA) Region III risk-based levels.

-[c] No MCL exists for napthalene; the remedial level for naphthalene is based on its EPA Region III risk-based level.

These soil and groundwater remedial levels are protective of direct exposure to residents by hazardous constituents in groundwater or that may leach from the soil to groundwater. However, it is recognized that groundwater is not used at this site as a source of drinking water. It will take approximately 280 years for groundwater to reach the nearest receptor at Mill Creek, which is 1,200 feet from the former facility. Constituents will naturally attenuate in groundwater through retardation and biodegradation before reaching Mill Creek.

10. REFERENCES

American Society for Testing and Materials. 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites, ASTM Designation E:1739-95, Annual Book of ASTM Standards, West Conshohocken, PA

Arora, R. 1984. Hydrologic Evaluation for Underground Injection Control in the Coastal Plain of Georgia, Department of Natural Resources, Environmental Protection Division, Georgia Geological Survey.

Clayton, G.D., and F.E. Clayton (eds). 1981. Patty's Industrial Hygiene and Toxicology, Vol. 2A: Toxicology, 3rd Revised Edition. John Wiley & Sons, New York.

Eisler (U.S. Fish and Wildlife Service). 1987. Mercury Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. Biological Report 85(1.10), Fish and Wildlife Service, U.S. Department of the Interior, Patuxent, MD.

Eisler. 1988. Lead Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. Biological Report 85(1.14), Fish and wildlife Service, U.S. Department of the Interior, Patuxent, MD.

Environmental Science and Engineering. 1982. Fort Stewart Military Reservation RCRA Studies: Final Engineering Report.

EPA (U.S. Environmental Protection Agency). 1987. Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) - Air Emission Models, Office of Air and Radiation, Research Triangle Park, NC.

EPA. 1991. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part B, Development of Risk-Based Preliminary Remediation Goals, Interim, Publication 9285.7-01B, EPA, Office of Emergency and Remedial Response, Washington, DC.

EPA. 1991. Soil Transport and Fate (STF) Database and Model Management System, Ver. 2.0, R.S. Kerr Environmental Research Laboratory, Ada, OK.

EPA. 1993. Risk Reduction Engineering Laboratory (RREL) Treatability Database, Ver. 4.0, Office of Research and Development, Cincinnati, OH.

EPA. 1993a. Guidelines for Deriving Site-specific Sediment Quality Criteria for the Protection of Benthic Organisms, EPA-822-R-93-017.

EPA. 1993b. Wildlife Exposure Factors Handbook, Vol. 1 EPA/600/R-93/187a.

EPA. 1994. Technical Background Document for Soils Screening Guidance, EPA/540/R-94/106, NTIS PB95-963532.

EPA 1994. The Hydrologic Evaluation of Landfill Performance (HELP) Model, Version 3, EPA/600/R-94/168b, Office of Research and Development, Washington, D.C.

EPA. 1996a. Supplemental Guidance to RAGS, Region IV Bulletins, Ecological Risk Assessment, Nos. 1-5, USEPA Region 4, Office of Health Assessment, October 1996 (Draft).

EPA 1996. Soil Screening Guidance: Technical Background Document, EPA/540/R-95/128, Office of Solid Waste and Emergency Response, May.

EPA. 1996b. Proposed Guidelines for Ecological Risk Assessment, EPA/630/R-95/002B, Washington, DC.

EPA. 1997. Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments, Environmental Response Team, Edison NJ, Interim Final, June 1997.

Georgia Environmental Protection Division (GEPD). 1996. Guidance for Selecting Media Remediation Levels at RCRA Solid Waste Management Units, Georgia Environmental Protection Division, Atlanta, GA, November.

GEPD. 1997. Personal communication from Rod Stafford, GEPD, Department of Natural Resources, Atlanta, GA, October 6.

Geraghty and Miller. 1992. RCRA Facility Investigation Final Work Plan, Fort Stewart, Georgia, June.

Krause and Randolph. 1989.

HAZWRAP. 1994. Loring Air Force Base Ecological Risk Methodology, Martin Marietta Energy Systems, Inc. Draft.

Howard, P.H., R.S. Boethling, W.F. Jarvis, W.M. Meylan, and E.M. Michalenko. 1991. Environmental Degradation Rates, Lewis Publishers, Inc., Chelsea, MI.

Looper, E.E. 1982. Soil Survey of Liberty and Long Counties, Georgia, U.S. Department of Agriculture, Soil Conservation.

Metcalf and Eddy. 1996. Final Work Plan for RCRA Facility Investigation at Bulk Fuel Storage System, Wright Army Airfield, Fort Stewart, Georgia.

Miller, J.A. 1990. Groundwater Atlas of the United States, Segment 6, U.S. Department of the Interior, U.S. Geological Survey, Hydrologic Inventory Atlas 730G.

Mills, W.B., D.B. Porcella, M.J. Ungs, S.A. Gherini, K.V. Summers, G.L. Rupp, and G.L. Bowie. 1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants: Parts 1,2, and 3, EPA/600/6-85/002, EPA Environmental Research Laboratory, Office of Research and Development, Athens, GA.

Perry, R.H., Chilton, C.H., Kirkpatrick, S.D. 1969. Chemical Engineers Handbook, Mc-Graw Hill Book Company, New York, NY.

Rust (Rust Environmental and Infrastructure, Inc.). 1996. Phase I RCRA Facility Investigation Report for 24 Solid Waste Management Units at Fort Stewart, Georgia, Vols. I-III, May.

Sample, B.E., Opresko, D.M., and G.W. Suter II. 1996. Toxicological Benchmarks for Wildlife: 1996 Revision, ES/ER/TM-86/R3.

SAIC (Science Applications International Corporation). 1997. Sampling and Analysis Plan for the Phase II RCRA Facility Investigation at the Former 724th Tanker Purging Station, SWMU 26, Fort Stewart, Georgia, May.

Shen, T.T., Schmidt, C.E., and Card, T.R. 1993. Assessment and Control of VOC Emissions from Waste Treatment and Disposal Facilities, Van Nostrand Reinhold, New York, NY.

Shuman, L.M. 1991. "Chemical forms of micronutrients in soils," in J.J. Montvedt (ed.), Micronutrients in Agriculture, Soil Sci. Soc. Am. Book Series No. 4, Soil Sci. Soc. Amer., Inc., Madison, WI.

Suter, G.W. II, and C.L. Tsao. 1996. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. ES/ER/TM-96/R2. Lockheed Martin Energy Systems, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Tracer Research Corporation. 1994. Fort Stewart, Savannah, Georgia, 1993 Annual Sampling Event of 135 Underground Storage Tanks. January.

U.S. Department of Commerce. 1990. 1990 Census, Bureau of the Census.

USGS (U.S. Department of Interior, Geological Survey). 1981. Chemical Analyses of Soils and Other Surficial Materials of the Conterminous United States. Open-File Report 81-197.

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANKER PURGING STATION
FORT STEWART, GEORGIA

APPENDIX A

BORING LOGS

HTRW DRILLING LOG	DISTRICT Savannah	HOLE NUMBER MW-1 (Purge)
1. COMPANY NAME S.A.I.C.	2. DRILL SUBCONTRACTOR Miller Drilling Co.	SHEET 1 OF SHEETS 3

3. PROJECT Ft. Stewart Purge (Tanker) Facility	4. LOCATION Tanker Purge Facility, MW-1, 724th
5. NAME OF DRILLER Doug Bishop	6. MANUFACTURERS DESIGNATION OF DRILL CME-550 X
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 4 1/4" ID HSA 5' CME Continuous Sampler	8. HOLE LOCATION See Sketch Below
	9. SURFACE ELEVATION
	10. DATE STARTED 07/23/97 / 11. DATE COMPLETED
12. OVERBURDEN THICKNESS N/A	15. DEPTH GROUNDWATER ENCOUNTERED ~4.5 Ft. BGS
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED Surrounding monitoring points @ 4.5 to 5.0 ft BGS
14. TOTAL DEPTH OF HOLE 14.5 Ft BGS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
1		1	N/A			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY**
3 sets	3	3	3 PAH	3 TOC	N/A	N/A
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
Set Well	N/A	Above Grade	N/A			

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE

PROJECT	HOLE NO.
Ft. Stewart Tanker Purge Facility	MW-1 (Purge Facility)

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG						HOLE NUMBER MW-1 (Purge)
PROJECT Ft. Steward Purge (Tanker) Facility			INSPECTOR Matthew B. Vest			SHEET 2 of 3
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		SAND; fine grained, loose, moist to damp, non-plastic, 10YR5/1 gray 0.9	0.0 ppm	0.0 ppm	261111 & 261131	Ran 4.5 Rec 3.3
		same as above, but 10YR6/8 br. yellow 1.4				
		same as above, but 10YR8/3 v. pale brown			2.0	
		2.6	0.0 ppm	0.0 ppm	261112	
		same, but 10YR6/1 gray 3.0				
		same, but 10YR4/1 dark gray 3.3			3.3	
		No Recovery 4.5	N/A	N/A	N/A 4.5	
		CLAYEY SAND; fine grained, loose, wet, low plasticity, 10YR5/1 gray (gradual contact) 6.5	0.0 ppm	0.0 ppm	N/A	Ran 5.0 Rec 4.2 Wet below 4.5 ft BGS
		SAND with clay; fine grained, loose, wet to moist, non-plastic, 10YR5/1 gray			7.0	
		8.7	0.0 ppm	0.0 ppm	N/A	
		No Recovery			9.5	9.5

PROJECT Ft. Stewart Tanker Purge Facility HOLE NO. MW-1 (Purge)

HTRW DRILLING LOG

HOLE NUMBER MW-1 (Purge)

PROJECT Ft. Steward Purge (Tanker) Facility | INSPECTOR Matthew B. Vest | SHEET 3 of 3

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CLAYEY SAND; fine grained, medium density, wet to moist, low plasticity, 5/10GY greenish gray (gradual contact)	0.0 ppm	0.0 ppm	Geotech Shelby Tube 261113 9.5' to 11.5' BGS 12.0	Push Shelby Tube 9.5' - 11.5' BGS. Full Recovery. Geotech Shelby Tube 261113 Ran 5.0' Rec 4.5'
		CLAY; moist, high plasticity, soft, 5/10GY greenish gray (gradual contact)	0.0 ppm	0.0 ppm	N/A	
		CLAYEY SAND; fine grained, wet, low plasticity, loose, 8/1 light greenish gray 14.0				
		No Recovery 14.5			14.5	14.5
						BoH & end drilling @ 14.5' BGS

PROJECT Ft. Stewart Tanker Purge Facility | HOLE NO. MW-1 (Purge)

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT Savannah	HOLE NUMBER MW-2 (Purge)
1. COMPANY NAME S.A.I.C.	2. DRILL SUBCONTRACTOR Miller Drilling Co.	SHEET 1 OF SHEETS 2
3. PROJECT Ft. Stewart Purge (Tanker) Facility	4. LOCATION Tanker Purge Facility, 724th	
5. NAME OF DRILLER Allen Gonsuron	6. MANUFACTURERS DESIGNATION OF DRILL Ingersol Rand A-300	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 7 7/8" OD HSA 3 1/2' CME Continuous Sampler	8. HOLE LOCATION See Sketch Below	
	9. SURFACE ELEVATION	
	10. DATE STARTED 07/24/97	11. DATE COMPLETED
12. OVERBURDEN THICKNESS N/A	15. DEPTH GROUNDWATER ENCOUNTERED ~5.0 ft. BGS	
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED N/A	
14. TOTAL DEPTH OF HOLE 15.0 ft BGS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) N/A	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
N/A	N/A	N/A	N/A			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY**
2	N/A	N/A	N/A	N/A	N/A	N/A
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
Set Well	N/A	Yes	N/A			

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE

PROJECT	HOLE NO.
Ft. Stewart Tanker Purge Facility	MW-2 (Purge Facility)

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

HTRW DRILLING LOG

HOLE NUMBER	MW-2 (Purge)
PROJECT	Ft. Stewart Purge (Tanker) Facility
INSPECTOR	Wayne Parker
SHEET	2 of 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	HEADSPACE (F)	REMARKS (G)
		CLAYEY SAND, subangular, soft to firm, moist, varigated colors, yellow 10YR7/8 red 25YR5/6	0.0 - 2.0 >2000 ppm 1350		261211	
		SAND, poorly graded, subangular, soft, moist, white 8/N	2.0 -5.0 >2000 ppm 1350		261212	
		SAND, with silt, subangular, firm to soft, moist to wet, medium to fine, light gray 7/N, varigated yellow 5Y7/8	5.0 -7.5 0.0 ppm 1400	261213 geotech		Water Table ~5.0 - 6.0 ft BGS
			7.5 - 10.0 0.0 ppm 1400			
		SAND, with silt, subangular, firm to soft, wet, light gray 8/N	10.0 - 12.5 0.0 ppm 1415			
			12.5 - 15.0 0.0 ppm 1415			
						TD = 15.0 ft BGS

HTRW DRILLING LOG

HTRW DRILLING LOG			DISTRICT Savannah				HOLE NUMBER GP-2 (Purge)
1. COMPANY NAME S.A.I.C.			2. DRILL SUBCONTRACTOR Miller Drilling Co.				SHEET 1 OF SHEETS 4
3. PROJECT Ft. Stewart Purge (Tanker) Facility			4. LOCATION Tanker Purge Facility, 724th				
5. NAME OF DRILLER Doug Bishop			6. MANUFACTURERS DESIGNATION OF DRILL CME-550 X				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 4 1/4" ID HSA & Power Punch			8. HOLE LOCATION See Sketch Below				
			9. SURFACE ELEVATION				
			10. DATE STARTED 07/24/97		11. DATE COMPLETED		
12. OVERBURDEN THICKNESS N/A			15. DEPTH GROUNDWATER ENCOUNTERED ~5.0 ft. BGS				
13. DEPTH DRILLED INTO ROCK N/A			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED N/A				
14. TOTAL DEPTH OF HOLE 51.0 ft BGS			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) N/A				
18. GEOTECHNICAL SAMPLES N/A	DISTURBED N/A	UNDISTURBED N/A	19. TOTAL NUMBER OF CORE BOXES N/A				
20. SAMPLES FOR CHEMICAL ANALYSIS 5	VOC 5	METALS N/A	OTHER (SPECIFY) N/A	OTHER (SPECIFY) N/A	OTHER (SPECIFY) N/A	21. TOTAL CORE RECOVERY N/A	
22. DISPOSITION OF HOLE Set above grade Well	BACKFILLED N/A	MONITORING WELL Above Grade	OTHER (SPECIFY) N/A	23. SIGNATURE OF INSPECTOR			

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE

PROJECT Ft. Stewart Tanker Purge Facility	HOLE NO. GP-2/MW-3

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

HOLE NUMBER GP-2 (Purge)

PROJECT Ft. Stewart Purge (Tanker) Facility | INSPECTOR Matthew B. Vest | SHEET 2 of 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		SILTY SAND, fine grained, loose, damp, non-plastic, 2-5Y5/2 grayish brown. (Approximate contact) 5.0	0.0 ppm cuttings	N/A	N/A	Drilling without sampling soil. Logging description from cuttings. Taking water samples with Power Punch @ 10 ft intervals.
		SILTY CLAYEY SAND, fine grained, low to non-plastic, wet, 2-5Y5/2 grayish brown. (Approximate contact) 8.0				
		SILTY SAND, with clay, fine grained, low to non-plastic, wet, loose, 7/N light gray.			10.0	
			0.0 ppm cuttings	41.2 ppm	266U11 13.7	Push Power Punch 10.0 to 13.7 ft BGS and take groundwater sample 266U11.
		(Approximate contact) 15.0	N/A	N/A	N/A	
		SILTY SAND, fine grained, non-plastic, saturated, very soft, 7/N light gray (Consistency of mud, almost a liquid)				20.0

HTRW DRILLING LOG						HOLE NUMBER GP-2
PROJECT Ft. Stewart Purge (Tanker) Facility			INSPECTOR Matthew B. Vest			SHEET 3 of 4
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		Same as above	0.0 ppm	72,000 ppm	266U12 23.7	Push Power Punch 20.0 to 23.7 ft BGS and take groundwater sample 266U12.
			N/A	N/A	N/A	
		(Approximate contact) 30.0			30.0	
		SILTY SAND with Clay, fine grained, non-plastic, saturated, very soft, 7/5GY light greenish gray. (Nearly same as above, slight color change and minor amounts of clay)	0.0 ppm	0.0 ppm	266U13 33.7	Push Power Punch 30.0 to 33.7 ft BGS and take groundwater sample 266U13.
					40.0	40.0

PROJECT Ft. Stewart Purge (Tanker) Facility | INSPECTOR Matthew B. Vest | SHEET 4 of 4

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		Cuttings are same as above, but cuttings return amount is much less. Very little coming to surface. Power Punch was dry and also was very hard to push @ 40.0 to 43.0 ft BGS depth. 46.0	N/A	N/A	No sample Dry depth 43.0	Push Power Punch 40.0 to 43.0 ft BGS and try to take groundwater sample 266U14. No water at this depth however so no sample taken. Possibly mud so thick that it is not allowing trapped water to enter slots on Power Punch screen. Judging from cuttings there is no dry soil interval from 40.0 to 50.0 ft BGS.
		@ ~45 ft BGS cuttings return increased and cuttings still same as above 30.0 ft BGS and below. Hard below ~48 ft BGS.			50.0	
		End of description and end augering @ 50.0 ft BGS.	0.0 ppm	0.0 ppm	266U15 (soil) 51.0	Push Power Punch 50.0 - 51.0 ft BGS. No water for sample. Take soil sample from 45.0 50.0 ft BGS. Difficulty pushing Power Punch. Had to drive with 180 lb automatic hammer. Bottom of Power Punch depth @ 51.0 ft BGS. Water samples: 266U11 → ~~26611~~ 10.0' - 13.7' 266U12 → ~~26612~~ 20.0' - 23.7 266U13 → ~~26613~~ 30.0' - 33.7 No sample 40.0' - 43.0' 265U14 (soil) → ~~soil~~ 45.0' - 50.0'

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT: Savannah	HOLE NUMBER: MW-4 (Purge)
1. COMPANY NAME: S.A.I.C.	2. DRILL SUBCONTRACTOR: Miller Drilling Co.	SHEET 1 OF 6 SHEETS

3. PROJECT: Ft. Stewart Purge (Tanker) Facility	4. LOCATION: Tanker Purge Facility, 724th
5. NAME OF DRILLER: Doug Bishop	6. MANUFACTURERS DESIGNATION OF DRILL: CME-550 X
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4 1/4" ID HSA 5' CME Continuous Sampler	8. HOLE LOCATION: See Sketch Below
	9. SURFACE ELEVATION:
	10. DATE STARTED: 07/26/97 — 11. DATE COMPLETED:
12. OVERBURDEN THICKNESS: N/A	15. DEPTH GROUNDWATER ENCOUNTERED: ~6.6 ft. BGS
13. DEPTH DRILLED INTO ROCK: N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 10.25 ft BGS after 24 hrs
14. TOTAL DEPTH OF HOLE: 45.5 ft BGS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	1	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3 sets	3	3	3 PAH	2 TOC	N/A	N/A

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Set Well	N/A	Above Grade	N/A	

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE

PROJECT	HOLE NO.
Ft. Stewart Tanker Purge Facility	MW-4 (Purge Facility)

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

HTRW DRILLING LOG			HOLE NUMBER MW-4 (Purge)
PROJECT Ft. Stewart Purge (Tanker) Facility	INSPECTOR Matthew B. Vest		SHEET 2 of 6

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		SILTY SAND, fine grained, loose, damp to moist, non-plastic, 2-5YR3/1 very dark gray	0.0 ppm	0.0 ppm	261411 2.0	Ran 4.5 Rec 4.0
		Same as above, but color changed to 7-5YR4/4 brown 3.6	0.0 ppm	148.0 ppm	N/A	
		color changed to 2-5Y5/3 H. olive brown				
		No Recovery 4.5			4.5	4.5
		Same as Above, 2-5Y5/2 grayish brown 6.6	0.0 ppm	172.8 ppm	N/A 7.0	Ran 5.0 Rec 3.2
		SILTY SAND, fine grained, non-plastic, loose, wet, 2-5Y5/2 grayish brown 7.4	0.0 ppm	180.0 ppm	N/A	Wet below ~6.6 ft BGS
		SILTY SANDY CLAY, fine grained, low plasticity, moist, 2-5Y5/1 gray 7.7				
		No Recovery			9.5	9.5

HTRW DRILLING LOG						HOLE NUMBER MW-4 (Purge)
PROJECT Ft. Stewart Purge (Tanker) Facility			INSPECTOR Matthew B. Vest			SHEET 3 of 6
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		SILTY SANDY CLAY, fine grained, low plasticity, moist, soft, 7/10GY light greenish gray.	0.0 ppm	145.0 ppm	N/A 12.0	Ran 5.0 Rec 4.0
		CLAYEY SAND, fine grained, non-plastic, moist, loose, 7-10GY6/6 light greenish gray with 2-5Y6/6 olive yellow. 13.5	0.0 ppm	300.0 ppm	261412 14.5	14.5
		No Recovery 14.5				
		CLAY, stiff, medium plastic, damp to moist, minor fine grained sand, 6/10GY greenish gray. 15.7	0.0 ppm	2.5 ppm	N/A 17.0	Ran 5.0 Rec 5.0
		CLAYEY SAND, fine grained, non-plastic, medium density, moist to damp, 6/10GY greenish gray. 18.9	0.0 ppm	0.0 ppm	N/A 19.5	19.5
		SANDY CLAY, fine grained, loose, non-plastic, saturated, 6/10GY greenish gray. 19.5				

HTRW DRILLING LOG

HOLE NUMBER	MW-4 (Purge)
PROJECT	Ft. Stewart Purge (Tanker) Facility
INSPECTOR	Matthew B. Vest
SHEET	4 of 6

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		CLAY, stiff, low plasticity, damp, 6/10GY greenish gray 22.3	0.0 ppm	0.0 ppm	N/A 22.0	Ran 5.0 Rec 4.5
		Same as above, but wet 22.8	0.0 ppm	0.0 ppm	N/A	
		SAND, coarse grained, non-plastic, wet, loose, 6/10GY greenish gray with some clay. 24.0				
		No Recovery 24.5			24.5	24.5
		SAND, coarse grained, non-plastic, wet, loose, 6/10GY greenish gray with some clay. (gradual contact) 26.9	0.0 ppm	0.0 ppm	N/A 27.0	Ran 5.0 Rec 4.3 Sand heaving up into augers @ 24.5 ft BGS.
		CLAYEY SAND, dense, fine to coarse grained, wet, non-plastic, 6/10GY greenish gray, with shell fragments throughout. 28.8	0.0 ppm	0.0 ppm	N/A	
		No Recovery 29.5			29.5	29.5

HTRW DRILLING LOG						HOLE NUMBER MW-4 (Purge)
PROJECT Ft. Stewart Purge (Tanker) Facility			INSPECTOR Matthew B. Vest			SHEET 5 of 6
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		Same as above with shells ~25% to 50% of soil & varies from very dense to medium dense sands throughout.	0.0 ppm	0.0 ppm	N/A 32.0	Ran 5.0 Rec 5.0
			0.0 ppm	0.0 ppm	N/A 34.5	34.5
			0.0 ppm	0.0 ppm	~~N/A~~ 261413 37.0	Ran 5.0 Rec 5.0 Geotech sample 34.5 - 39.5 ft BGS Sample ID# 261413
		39.3	0.0 ppm	0.0 ppm	N/A 39.5	39.5
		CLAYEY SAND, fine grained, non-plastic, dry, very dense, 4/10GY dark greenish gray.				

HTRW DRILLING LOG						HOLE NUMBER MW-4 (Purge)
PROJECT Ft. Stewart Purge (Tanker) Facility			INSPECTOR Matthew B. Vest			SHEET 6 of 6
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		CLAYEY SAND, fine grained, non-plastic, dry, very dense, 4/10GY dark greenish gray.	0.0 ppm	87.5 ppm	N/A 42.0	Ran 5.0 Rec 5.0
		Clayey sand is very dense, very hard, most likely impermeable.	0.0 ppm	20.4 ppm	N/A 44.5	
		45.5	0.0 ppm	120.0 ppm	261414 45.5	Ran 1.0 Rec 1.0 45.5
		Bottom of Hole @ 45.5 ft BGS Auger and sampler refusal @ 45.5 ft BGS				End augering & sampling @ 45.5 ft BGS Set well in 45.5 ft BGS borehole on agreement with P. Stoll.

HTRW DRILLING LOG

HTRW DRILLING LOG	DISTRICT Savannah	HOLE NUMBER MW-5 (Purge)
1. COMPANY NAME S.A.I.C.	2. DRILL SUBCONTRACTOR Miller Drilling Co.	SHEET 1 OF 2 SHEETS

3. PROJECT Ft. Stewart Purge (Tanker) Facility	4. LOCATION 724th Tanker Purge Facility, Mill Creek
5. NAME OF DRILLER Allen Gonsuron	6. MANUFACTURERS DESIGNATION OF DRILL Ingersol Rand A-300
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 7 7/8" OD HSA 3 1/2' CME Continuous Sampler	8. HOLE LOCATION See Sketch Below
	9. SURFACE ELEVATION
	10. DATE STARTED 07/25/97 / 11. DATE COMPLETED
12. OVERBURDEN THICKNESS N/A	15. DEPTH GROUNDWATER ENCOUNTERED N/A
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED N/A
14. TOTAL DEPTH OF HOLE 15.0 ft BGS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
11.0' - 12.0'		Yes	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
2	N/A	N/A	N/A	N/A	N/A	N/A

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Well	N/A	Yes	N/A	

LOCATION SKETCH/COMMENTS

SCALE: NOT TO SCALE

PROJECT	HOLE NO.
Ft. Stewart Tanker Purge Facility	MW-5 (Purge Facility)

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

HTRW DRILLING LOG						HOLE NUMBER MW-5 (Purge)
PROJECT Ft. Stewart Purge (Tanker) Facility			INSPECTOR Wayne Parker			SHEET 2 of 2
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO. (E)	HEADSPACE (F)	REMARKS (G)
		SAND, well graded, subangular, soft to firm, moist, medium to fine grained, grayish brown 10YR5/2 to light gray 10YR7/2.	0.0 - 2.5 ft 0.0 ppm 0935		261511	
			2.5 - 5.0 ft 0.0 ppm 0935			
		No Recovery				5.0
		SAND, well graded, medium to fine grained, subangular, soft to firm, light gray 10YR7/1	5.0 - 7.5 ft 0.0 ppm 0955		261512	
			7.5 - 10.0 ft 0.0 ppm 0955			
		No Recovery				10.0
		SAND, well graded, medium to coarse grained, subangular to subrounded, dark greenish gray 10GY3/1	10.0 - 12.5 ft 0.0 ppm 1015	Collected Geotech 11.0 - 12.0 ft 261513		
		Numerous shell fragments 13.0 - 14.0 ft	12.5 15.0 ft 0.0 ppm 1015			
		No Recovery				15.0
		TD=15 ft BGS				

HTRW DRILLING LOG	DISTRICT Savannah		HOLE NUMBER LN-2 (Purge)
1. COMPANY NAME S.A.I.C.	2. DRILL SUBCONTRACTOR Miller Drilling Co.		SHEET 1 OF 4 SHEETS

3. PROJECT Ft. Stewart Purge (Tanker) Facility	4. LOCATION Tanker Purge Facility, 724th
5. NAME OF DRILLER Doug Bishop	6. MANUFACTURERS DESIGNATION OF DRILL CME-550 X
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 4 1/4" ID HSA & Power Punch	8. HOLE LOCATION See Sketch Below
	9. SURFACE ELEVATION
	10. DATE STARTED 07/27/97 — 11. DATE COMPLETED 07/27/97
12. OVERBURDEN THICKNESS N/A	15. DEPTH GROUNDWATER ENCOUNTERED N/A
13. DEPTH DRILLED INTO ROCK N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED N/A
14. TOTAL DEPTH OF HOLE 50.0 ft BGS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) N/A

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

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
5	5	N/A	N/A	N/A	N/A	N/A

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned	N/A	N/A	Grouted	

LOCATION SKETCH/COMMENTS SCALE: NOT TO SCALE

PROJECT	HOLE NO.
Ft. Stewart Tanker Purge Facility	LN-2

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

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		SAND, with silt, fine grained, non-plastic, moist, loose, 5/N gray Wet below ~ 5 ft BGS Wet below ~ 5 ft BGS (Approximate contact) 10.0	N/A	N/A	N/A 10.0	Not running a soil sampling device. Logging soil from cuttings only. All contacts approximated.
		SILTY, CLAYEY SAND, fine grained, non-plastic, loose, wet, 5Y6/2 light olive gray.	0.0 ppm	0.0 ppm	266211 14.0	Pushed Power Punch 10.0 to 14.0 ft BGS. Took groundwater sample 266211.
		(Approximate contact) 16.0	N/A	N/A	N/A	
		SILTY, SANDY CLAY, fine grained, non to low plasticity, soft, wet, 5Y6/3 pale olive.			20.0	

HTRW DRILLING LOG						HOLE NUMBER LN-2 (Purge)
PROJECT Ft. Stewart Purge (Tanker) Facility			INSPECTOR Matthew B. Vest			SHEET 3 of 4
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		Same as above.	0.0 ppm	0.0 ppm	266212 and 266222 24.0	Push Power Punch 20.0 to 24.0 ft BGS. Take groundwater sample 266212 and 266222.
			N/A	N/A	N/A 30.0	
			0.0 ppm	0.0 ppm	266213 34.0	Push Power Punch 30.0 to 34.0 ft BGS. Take groundwater sample 266213.
		35.0	N/A	N/A	N/A 40.0	
		SILTY SANDY CLAY, fine grained, non-plastic, saturated, very soft, 6/5GY greenish gray.				

HTRW DRILLING LOG						HOLE NUMBER LN-2 (Purge)
PROJECT Ft. Stewart Purge (Tanker) Facility			INSPECTOR Matthew B. Vest			SHEET 4 of 4
ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	HEADSPACE (E)	HEADSPACE (F)	REMARKS (G)
		Same as above. Cuttings still showing wet grout-like consistency clay-mud with sand, but soil too hard to push Power Punch @ 40.0 ft BGS. 50.0	N/A	N/A	N/A 45.0 226215 Soil grab from auger flights and bit. 50.0	Can't push or drive Power Punch @ 40.0 ft BGS depth. Refusal with Power Punch. Can't even drive it to sufficient depth with 180 lb automatic hammer.
		BOH and refusal @ 50.0 ft BGS				Could not push or drive Power Punch. Power Punch refusal. Take soil grab sample 45.0 - 50.0 ft BGS, ID# 266215

TRW DRILLING LOG

1. DISTRICT	Savannah
HOLE NUMBER	TPS-51
SHEET	1 of 2 SHEETS
COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	MDC
3. PROJECT	Ft. Stewart
4. LOCATION	Tanker Purge
5. NAME OF DRILLER	H. Huntoon
6. MANUFACTURERS DESIGNATION OF DRILL	Mobile B-47 w/ Dietrich Soil Probe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2" outer rod O.D., & 1" inner Rod O.D.
8. HOLE LOCATION	See Sketch Below
9. SURFACE ELEVATION	
10. DATE STARTED	07/08/97
11. DATE COMPLETED	07/08/97
12. OVERBURDEN THICKNESS	—
13. DEPTH GROUNDWATER ENCOUNTERED	~4.5 ft BGS
14. DEPTH DRILLED INTO ROCK	—
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	—
15. TOTAL DEPTH OF HOLE	6 ft BLS
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	—

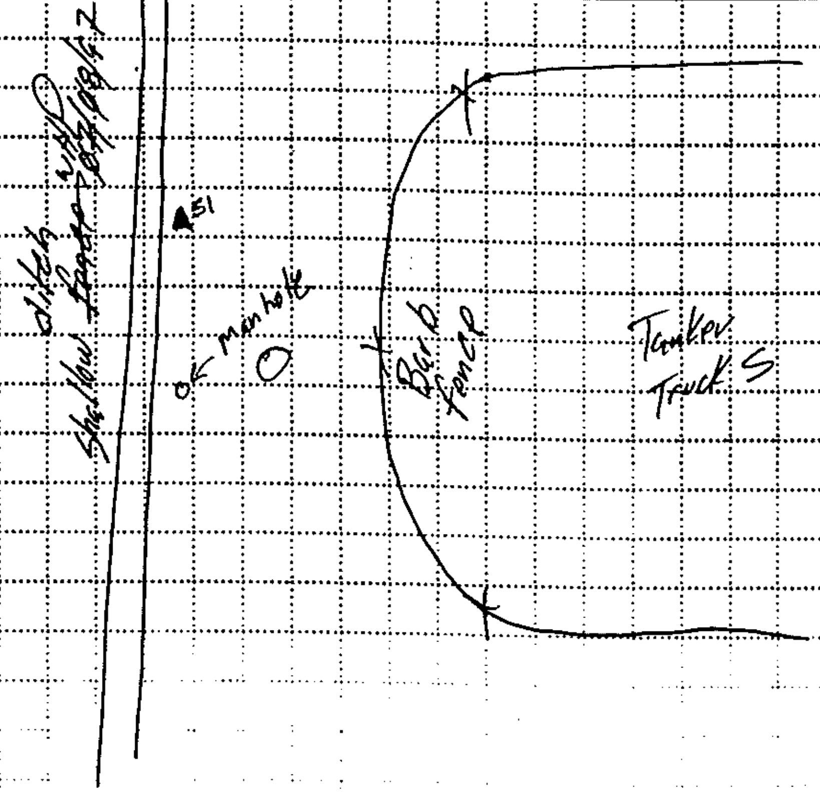
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
—	—	—	

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1	1	—	—	—	—	— %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	—	—	bentonite	Wayne H [signature]

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



PROJECT	HOLE NO.
Ft. Stewart	TPS-51

MARKi 94 (Proponent: CECW-EG)

• NOTE TYPE OF MONITORING ... breathing zone, venting compressed ...

Ft. Stewart ... DRILLING LOG

INSPECTOR W. Parker

HOLE NUMBER TPS-S

SHEET 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
20/24	1	Sand (SW) well-graded Light gray 10YR 7/1 soft moist	0.0-2.0 33.3ppm			
0/24	2, 3	Sand (SW) well-graded gray N5 soft moist; same as above	2.0-4.0 1506ppm			
/24	4, 5, 6	Sand (SW) well-graded light gray N7 soft moist variegated; water table ≥ 4.5 BLS	4.0-6.0 165.3ppm		265111	
		TD = 6 BLS				Both holes duplicate and regular pushed To 6 BLS

PROJECT Ft. Stewart

HOLE NO TPS-S1

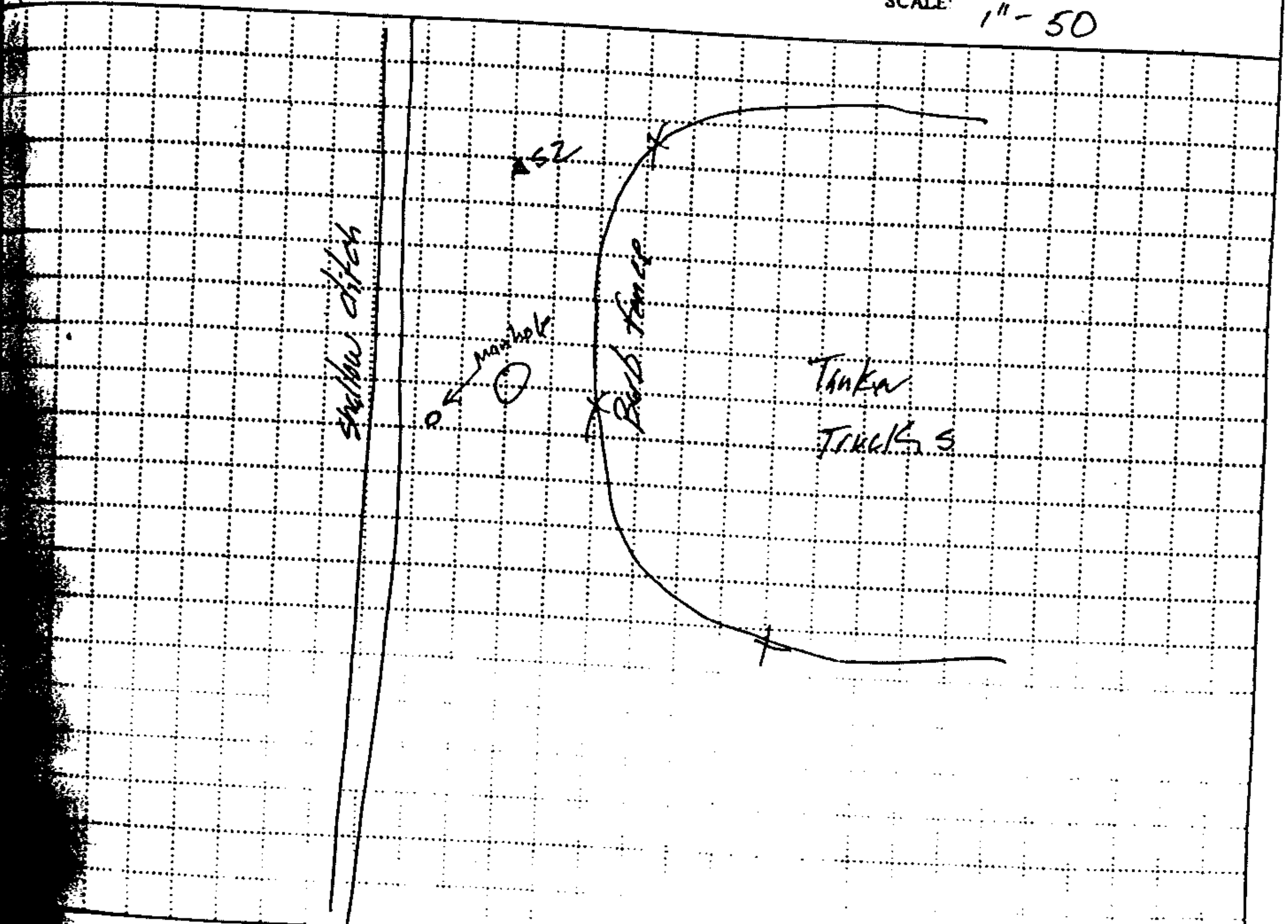
DRILLING LOG

DIVISION	Savanah	HOLE NUMBER TPS-S2
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: MDC	SHEET 1 OF 2 SHEETS
3. PROJECT: Ft. Stewart	4. LOCATION: Tanker Purge	
5. NAME OF DRILLER: H. Hunton	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-47 w/ Dietrich Soil Probe	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD. Outer Rods; 1/4 ID. Inner Rods	8. HOLE LOCATION: See Sketch Below.	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 07/08/97	11. DATE COMPLETED: 07/08/97
12. OVERBURDEN THICKNESS: —	15. DEPTH GROUNDWATER ENCOUNTERED	
13. DEPTH DRILLED INTO ROCK: —	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: —	
14. TOTAL DEPTH OF HOLE: 10 ft BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
1	—	—				
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY**
1	1	—	—	—	—	→
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
abandoned	—	—	bentonite	Wayne [signature]		

LOCATION SKETCH/COMMENTS

SCALE: 1" - 50



Ft. Stewart

HOLE NO. TPS-S2

ENG FORM 1836-R, AUG 94

(Proponent: CECW-EG)

• NOTE TYPE OF MONITORING (i.e., borehole cuttings, m... oring ... and atmosphere ... core, breathing zone, venting compressed air, Ft. Stewart

INSPECTOR D. Parker.

HOLE NUMBER TPS-52

SHEET 1

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
24 / 24	1	Sand well-graded (SW) Light gray N7 moist soft	0-2 0.0ppm			
	2	Varigated dark red 10R 3/6				
24 / 24	3	Same as above Except becoming Dark gray N4 at 3.8 BLS	2-4 625.8ppm		265211	
24 / 24	4–5	Same as above	4-6 314.0ppm			
24 / 24	6–7					
24 / 24	8–9	Same as above				Sieve sample collected from 6.0 - 10.0
	10	TD = 10 BLS				

PROJECT Ft. Stewart

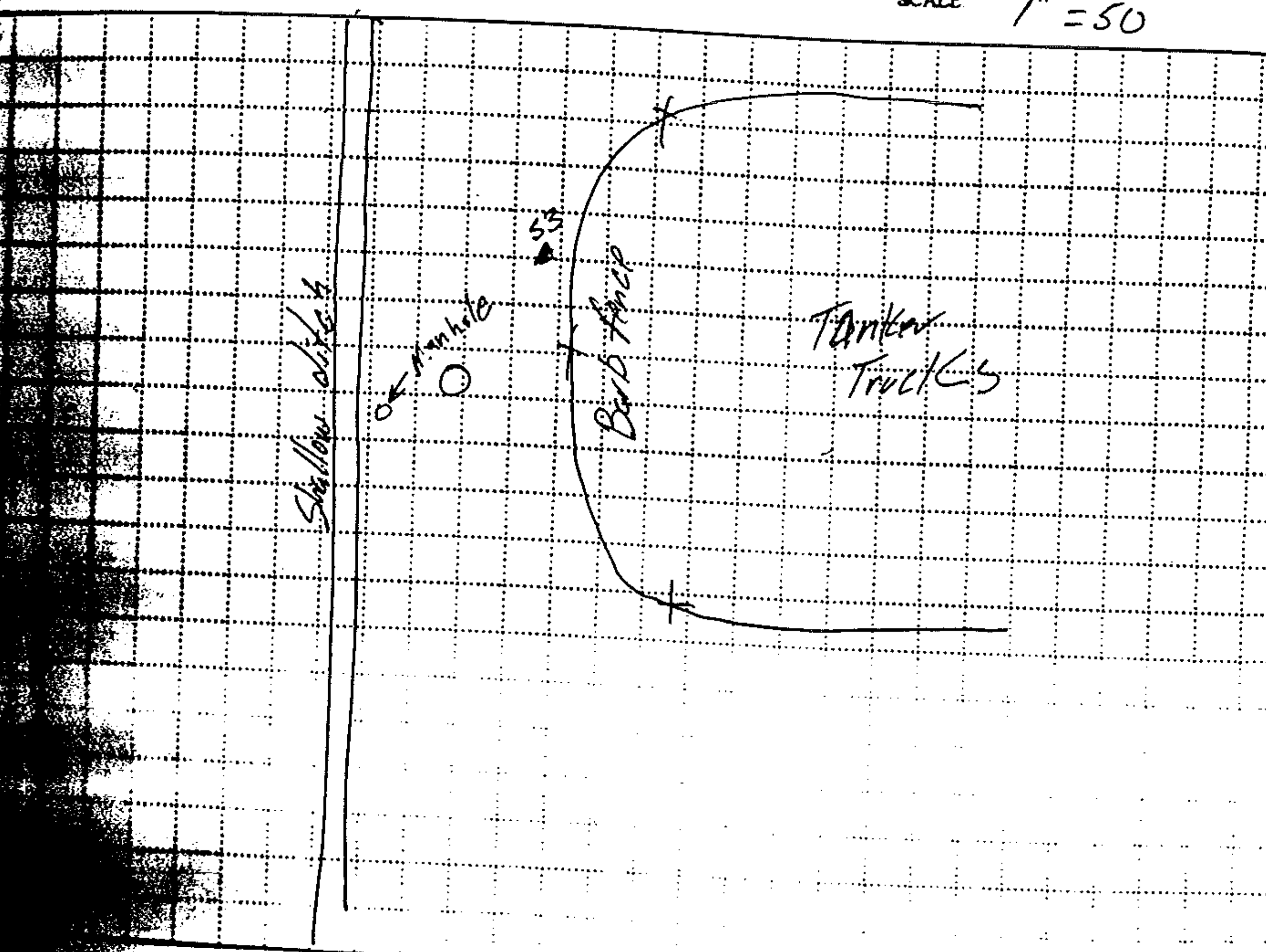
HOLE NO TPS-52

DRILLING LOG

1. Company Name	SAIC
2. Drill Subcontractor	Savanah / Miller (MPC)
Hole Number	TPS-53
Sheet	1 of 2
3. Project	Ft. Stewart
4. Location	Tankr Purge
5. Name of Driller	H. Huntoon.
6. Manufacturer's Designation of Drill	Mobile B-47 w/ Dietrich Soil Probe.
7. Sizes and Types of Drilling and Sampling Equipment	2" OD outer rod; 1" OD inner rod
8. Hole Location	See Sketch Below.
9. Surface Elevation	
10. Date Started	07/08/97
11. Date Completed	07/08/97
12. Overburden Thickness	—
13. Depth Drilled into Rock	—
15. Depth Groundwater Encountered	
16. Depth to Water and Elapsed Time After Drilling Completed	—
17. Other Water Level Measurements (Specify)	—
14. Total Depth of Hole	6 ft BLS
18. Geotechnical Samples	—
Disturbed	—
Undisturbed	—
19. Total Number of Core Boxes	—
20. Samples for Chemical Analysis	1
VOC	1
Metals	—
Other (Specify)	—
Other (Specify)	—
Other (Specify)	
21. Total Core Recovery	N/A
22. Disposition of Hole	Abandoned
Backfilled	—
Monitoring Well	—
Other (Specify)	Bentonite
23. Signature of Inspector	Wayne H. [illegible]

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50



* NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring ... breathing zone, venting compressed air, ...)

Project	Hole No.
Ft. Stewart	TPS-53

(Proponent: CECW-EG)

PROJECT Ft. Stewart | ...ING LOG | INSPECTOR W. Parker | HOLE NUMBER TPS-53 | SHEET 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
4/24	1	Sand well-graded (SW) Light gray N 7 moist soft	0 – 2 2.8ppm			
8.5/24	2 3	Sand well-graded (SW) Light gray N 7 variegated yellowish red 5YR 4/6	2 – 4 77ppm			
2/24	4 5 6	Sand well graded (SW) Light gray N 7 – N4 to dark gray moist soft	4 – 6 978.6		265311	

Ft. Stewart

HOLE NO TPS-53

HTRW DRILLING LOG

COMPANY NAME: SAIC	DIVISION: Savanah		HOLE NUMBER: TPS-54
	2. DRILL SUBCONTRACTOR: MDC		SHEET 1 OF 2 SHEETS
3. PROJECT: Ft. Stewart	4. LOCATION: Tanker Purge		
5. NAME OF DRILLER: H. Hunter	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-47 w/ Dietrich Soil Probe		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD Outer Rod; 1" OD Inner Rod	8. HOLE LOCATION: See Sketch Below		
	9. SURFACE ELEVATION:		
	10. DATE STARTED: 07/09/97	11. DATE COMPLETED: 07/09/97	
12. OVERBURDEN THICKNESS: —	15. DEPTH GROUNDWATER ENCOUNTERED: 5.8' BLS		
13. DEPTH DRILLED INTO ROCK: —	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: —		
14. TOTAL DEPTH OF HOLE: 12' BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —		

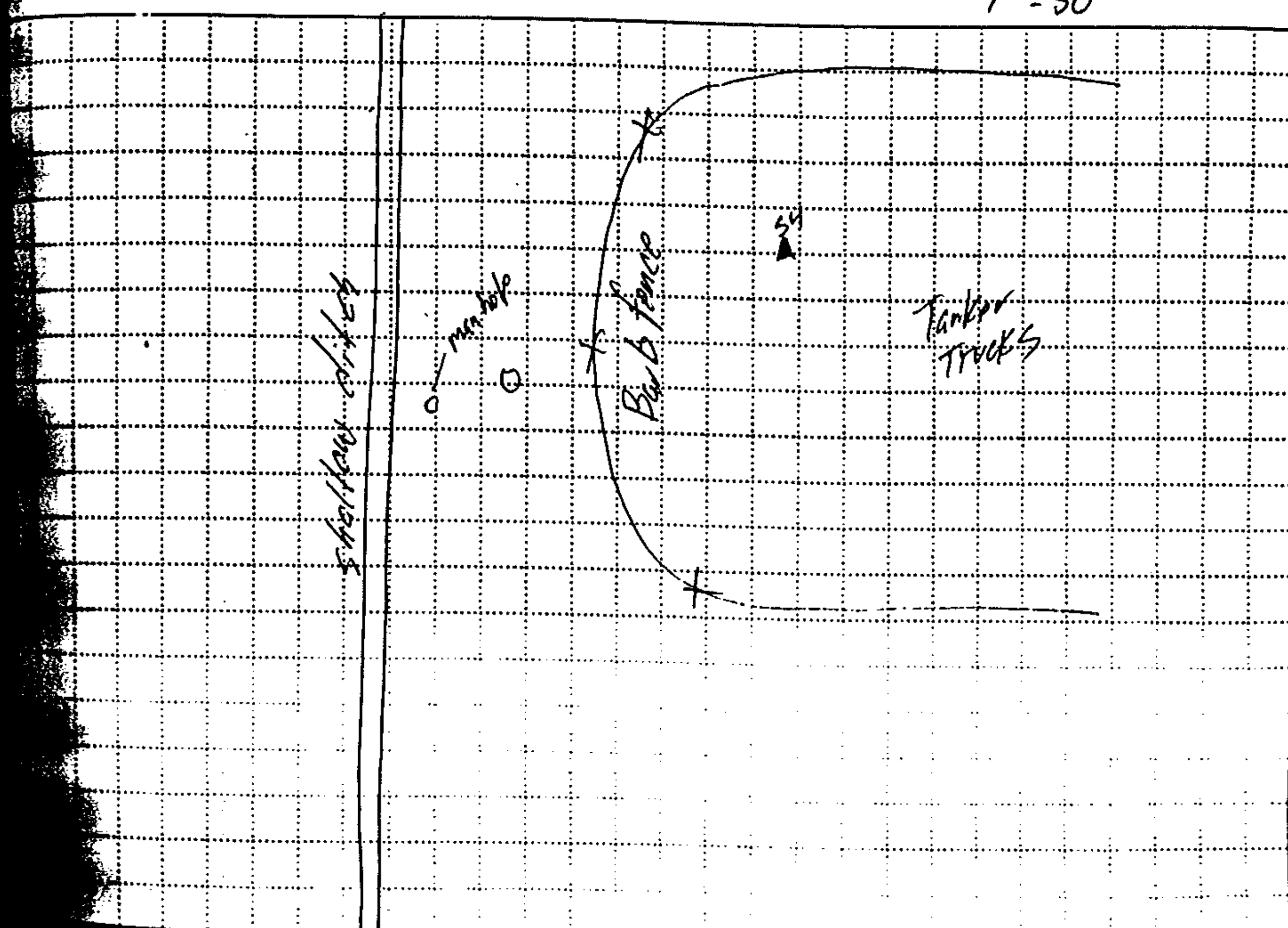
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
Grain Size	—	—	—

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
1	1	—	—	—	—	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	—	—	bentonited	Wayne H. Parker

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



PROJECT: Ft-Stewart

HOLE NO. TPS-54

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, well atmosphere, soil core, breathing zone, venting compressed air, ...)

HTRW DRILLING LOG

PROJECT: Ft. Stewart

INSPECTOR: W. Parker

HOLE NUMBER: TPS-54

SHEET: ~~Sh~~ WHP 07/09/97

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	1	0.0 -1.3 Black Top	0-2			
7/7	2	SAND well graded Light gray 10R 7/1 subangular soft moist To dry	0.0ppm			
19/24	3	same as above	2-4 0.0ppm			
	4	small clay layer at 3.5 - 3.7	4-6 0.0ppm		265411	
20/24	5					
	6	water table at 5.8				
	7	~~TD= 6 BLS~~ WHP 07/09/97				
	8	SAND Poorly graded Light gray 10R 7/1 subangular soft				
	9	Wet collected Sieve				
	10	sample 6.0-12.0				
	11	TD = 12 BLS				
	12					

HTRW DRILLING LOG

DISTRICT	SAVANNAH
HOLE NUMBER	S5
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	Miller Drilling
SHEET / SHEETS	1 of 2
3. PROJECT	Ft. Stewart
4. LOCATION	Tanker Purge
5. NAME OF DRILLER	
6. MANUFACTURER'S DESIGNATION OF DRILL	See sketch below
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2" OD Outer Rods; 1" Inner Rods
8. HOLE LOCATION	Mobil B-47 / geoprobe
9. SURFACE ELEVATION	
10. DATE STARTED	07/09/97
11. DATE COMPLETED	07/09/97
12. OVERBURDEN THICKNESS	—
13. DEPTH GROUNDWATER ENCOUNTERED	5.5' BGS
14. DEPTH DRILLED INTO ROCK	—
15. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	—
16. TOTAL DEPTH OF HOLE	6' BLS
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	—

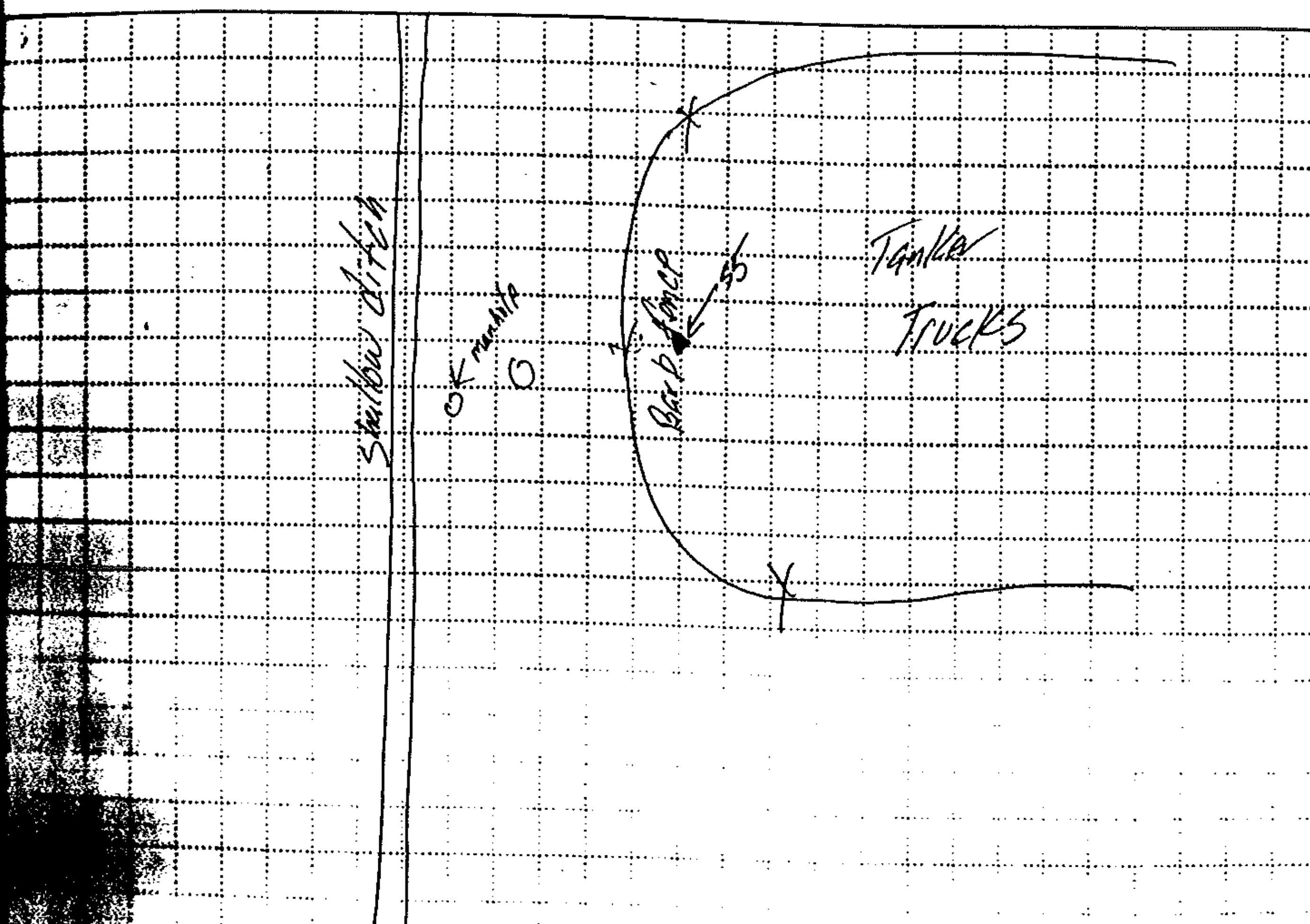
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
—	—	—	

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	1					—

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	—	—	bentonite	[signature]

LOCATION SKETCH/COMMENTS

SCALE:



HOLE NO.
S5

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring well atmosphere, soil core, breathing zone, venting compressed air,

MAR 94 (Proponent: CECW-EG)

7

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
20/24	1 2	Sand well graded (SW) reddish gray ~~WHP 07/09/97 2.5YR 6/1~~ 2.5YR 6/1 soft, moist subangular	0-2 152.3 ppm ~~4-6~~ 2-4 WHP 07/09/97 >2000 ppm			
18/24	3 4	Same as above becoming moister	>2000 ppm 4-6		265511	
WHP 07/09/97 ~~18~~ 8/24	5 6	Sand poorly graded (SW) gray N5 soft, wet subangular Water Table at 5.5 BLS TD = 6 BLS				

SHEET 2 of 2

HOLE NO 55

28

HTRW DRILLING LOG

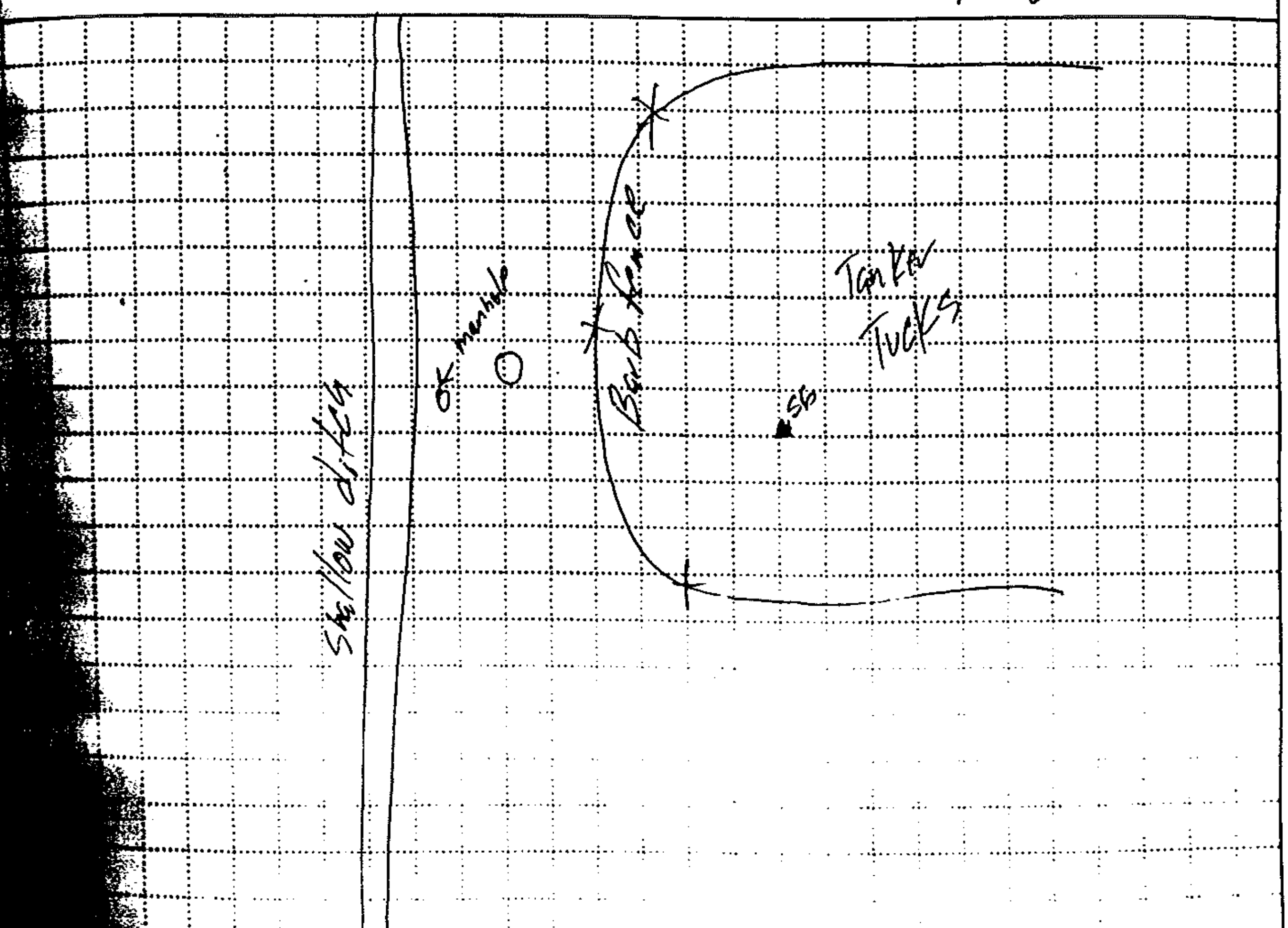
1. COMPANY NAME: SAIC	DISTRICT: Savanah
2. DRILL SUBCONTRACTOR: MDC	HOLE NUMBER: TPS-56
	SHEET 1 OF 2 SHEETS
3. PROJECT: Ft. Stewart	4. LOCATION: Tanker Purge
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-47 w/ Dietrich Soil Probe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD Outer Rod; 1" OD Inner Rod	8. HOLE LOCATION: See Sketch Below.
	9. SURFACE ELEVATION:
	10. DATE STARTED: 07/09/97 — 11. DATE COMPLETED: 07/09/97
12. OVERBURDEN THICKNESS: —	15. DEPTH GROUNDWATER ENCOUNTERED: 5.8' BLS
13. DEPTH DRILLED INTO ROCK: —	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: —
14. TOTAL DEPTH OF HOLE: 6 ft BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —

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

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
1	1	—		—	—	—

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
~~abdo~~ abandoned	—	—	bentonited	Wayne H. R[illegible]

LOCATION SKETCH/COMMENTS — SCALE: 1" = 50'



PROJECT: Ft. Stewart — HOLE NO. TPS-56

FORM 1836 MAR 94 — (Proponent: CECW-EG)

• NOTE TYPE OF MONITORING ... breathing zone, venting compressed ...

HTRW DRILLING LOG

PROJECT: Ft. Stewart
INSPECTOR: W. Parker.
HOLE NUMBER: TPS-56
SHEET: 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		0.0 - 0.8 Blck TOP				
13/13	1	Sand well-graded (SW) Light gray N7 subangular moist soft medium grained	0-2 0.0ppm			
8	2					
24	3	sand Poorly ~~SW~~ graded SP WHP 07/09/97 Light gray N8. subanglar moist to	2-4 79.3ppm		265611	
14	4					
24	5	dry medium grained same as above	4-6 0.0ppm			
	6					
		TD = 6 BLS				
		water table ≥ 5.8				

PROJECT: Ft. Stewart

...ING LOG

COMPANY NAME: SAIC

DISTRICT: Savannah

PROJECT: Ft. Stewart

2 DRILL SUBCONTRACTOR: MDC

HOLE NUMBER: TPS-5...

SHEET 1 OF ... SHEETS

NAME OF DRILLER: H. Huntoon.

4 LOCATION: Tanker Purge

SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD Outer Rod. 1" OD Inner Rod

6 MANUFACTURERS DESIGNATION OF DRILL: Mobile B-47 w/ Dietrich Soil Probe

8 HOLE LOCATION: See Sketch Below.

9 SURFACE ELEVATION:

OVERBURDEN THICKNESS: —

10 DATE STARTED: 07/08/97

11 DATE COMPLETED: 07/08/97

DEPTH DRILLED INTO ROCK: —

15 DEPTH GROUNDWATER ENCOUNTERED: 6.5 BLS

TOTAL DEPTH OF HOLE: 8' BLS

16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: —

GEOTECHNICAL SAMPLES: — | DISTURBED: — | UNDISTURBED: —

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

SAMPLES FOR CHEMICAL ANALYSIS: One (1) | VOC: 1 (one) | METALS: — | OTHER (SPECIFY): — | OTHER (SPECIFY): — | OTHER (SPECIFY): —

19 TOTAL NUMBER OF CORE BOXES:

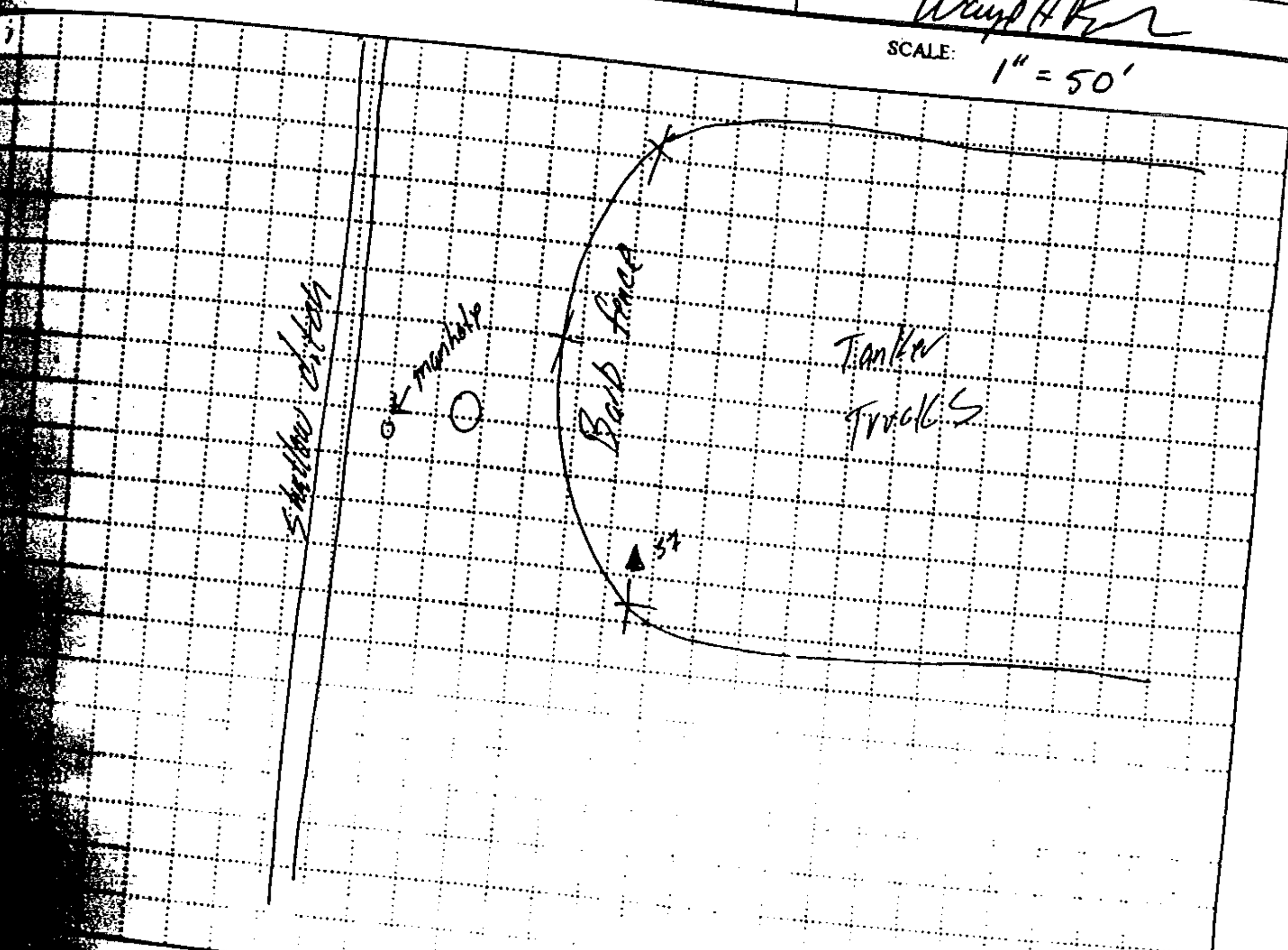
DISPOSITION OF HOLE: abandoned | BACKFILLED: — | MONITORING WELL: — | OTHER (SPECIFY): bentonited

21 TOTAL CORE RECOVERY: %

22 SIGNATURE OF INSPECTOR: [signature]

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



Ft. Stewart.

...94

HOLE NO. TPS-57

(Proponent: CECW-EG)

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring ...core, breathing zone, venting compressed air,

Ft. Stewart | INSPECTOR W Packer | TPS-57 | SHEET 1

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
14/14	1, 2	0.0 – 0.8 Black top SAND well graded (SW) Gray 5YR 6/1 moist subangular soft	0-2 0.0ppm			
7/24	3, 4	SAND Poorly-graded (SP) Light gray N8 Dry subangular soft	2-4 4.1 ppm			
9/24	5, 6	SAND, well-graded (SW) medium grained Medium gray N5 moist subangular soft	4-6 19.0ppm		265711	
	7, 8	Water table at 6.5 BLS	6-8 0.0ppm			
		TD = 8BLS				

Ft. Stewart | HOLE NO TPS-57

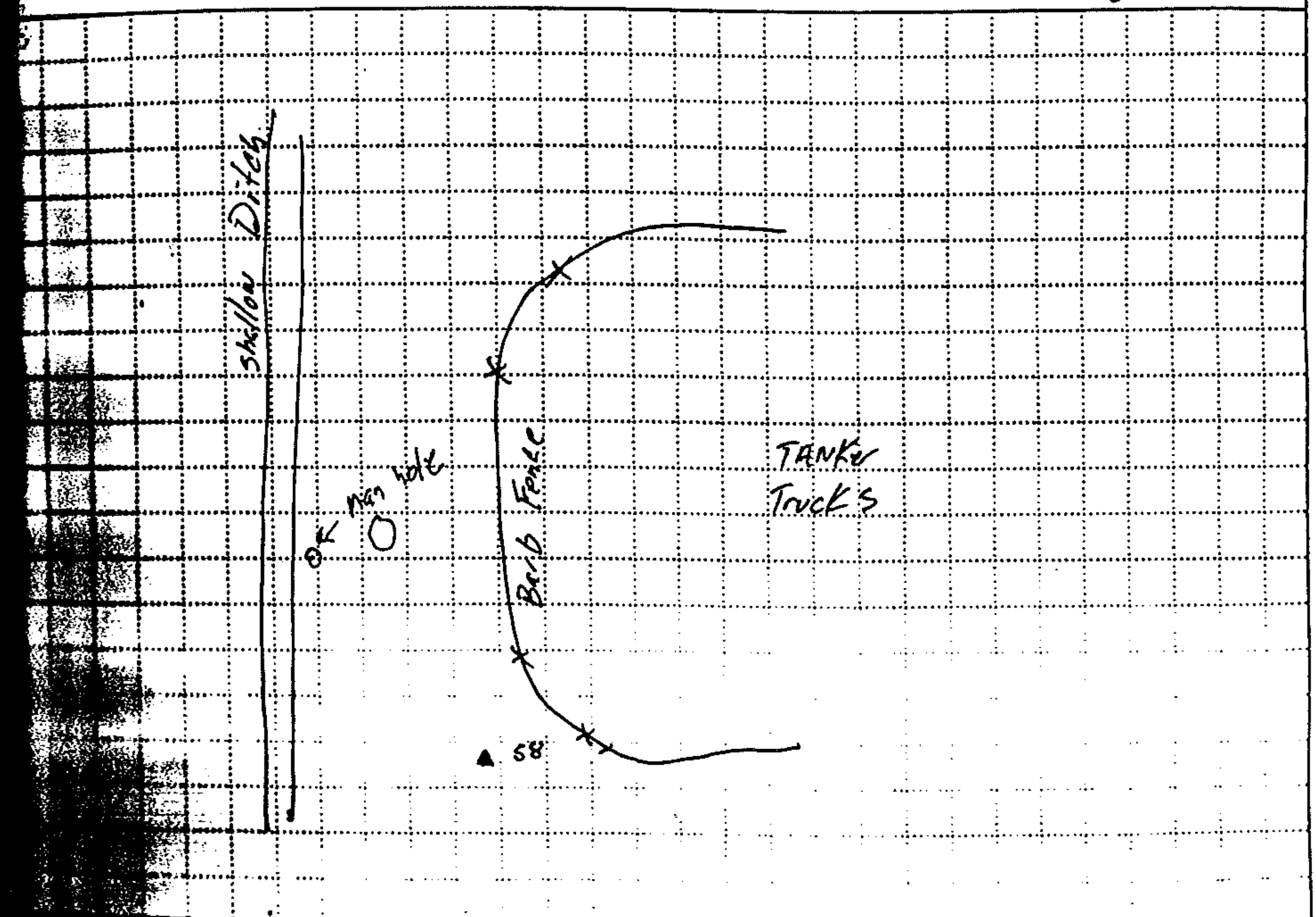
HTRW DRILLING LOG

DISTRICT: Savanah		HOLE NUMBER: TPS-58
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: Miller (MOC)	SHEET 1 OF 2 SHEETS
3. PROJECT: FT. STEWART	4. LOCATION: Tanker Purge	
5. NAME OF DRILLER: Harry "HGZ" Hartoon	6. MANUFACTURER'S DESIGNATION OF DRILL: B-47 (Mobil 6) Dietrich Probe.	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" outer rod OD; 1" inner rod. OD.	8. HOLE LOCATION: TPS-58	
	9. SURFACE ELEVATION: See Sketch Below	
	10. DATE STARTED: 07/08/97	11. DATE COMPLETED: 07/08/97
12. OVERBURDEN THICKNESS: N/A	15. DEPTH GROUNDWATER ENCOUNTERED: ~~N/A~~ 5.8	
13. DEPTH DRILLED INTO ROCK: N/A	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: N/A	
14. TOTAL DEPTH OF HOLE: 12 BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): N/A	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
6.0-12.0 Sieve Analysis	N/A	N/A	N/A			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY %**
1	1	N/A	N/A	N/A	N/A	N/A
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
Abandoned	N/A	N/A	bentonited	[signature]		

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring ... soil atmosphere, soil core, breathing zone, venting compresse...

PROJECT: FT. STEWART

HOLE NO. TPS-58

(Proponent: CECW-EG)

INSPECTOR W. Parker | SHEET 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
22/24	1	Well-graded sand (SW) Light brownish gray 2.5Y 6/2 very soft moist	0.0-2.0 0.0ppm			
9/24	2, 3	Well-graded sand (SW) olive yellow 2.5Y 6/6 very soft moist	2.0-4.0 0.0ppm			
24/24	4, 5	Poorly-Graded sand (SP) Light olive brown 2.5Y 4/3 very soft moist	4.0-6.0 1.8ppm		265811	
		— fines increase at 5.4 sediment saturated at 5.8				
	6	~~TD = 6.0~~ WHP 07/08/97				
4/24	7	water table at 5.8 BLS				
0/24	8, 9	Same as above				
[illegible]/24	10, 11	Sample to wet Keeps falling out of spoon				
	12	TD = 12 BLS				

Ft. Stewart

HOLE NO 7PS-58

14

HTRW DRILLING LOG

1. COMPANY NAME	SAIC
DISTRICT	Savannah
HOLE NUMBER	TPS-95
2. DRILL SUBCONTRACTOR	MDC
SHEET 1 OF 2 SHEETS	
3. PROJECT	FT. STEWART
4. LOCATION	Tanker Purge
5. NAME OF DRILLER	HGZ Houtoon
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile B-47 & Dietrich Soil Probe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe w/ 2" outer rod OD & 1" Inner rod OD
8. HOLE LOCATION	See Sketch Below
9. SURFACE ELEVATION	
10. DATE STARTED	07/08/97
11. DATE COMPLETED	07/08/97
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	5.2 ft BLS
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	10 ft BLS
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

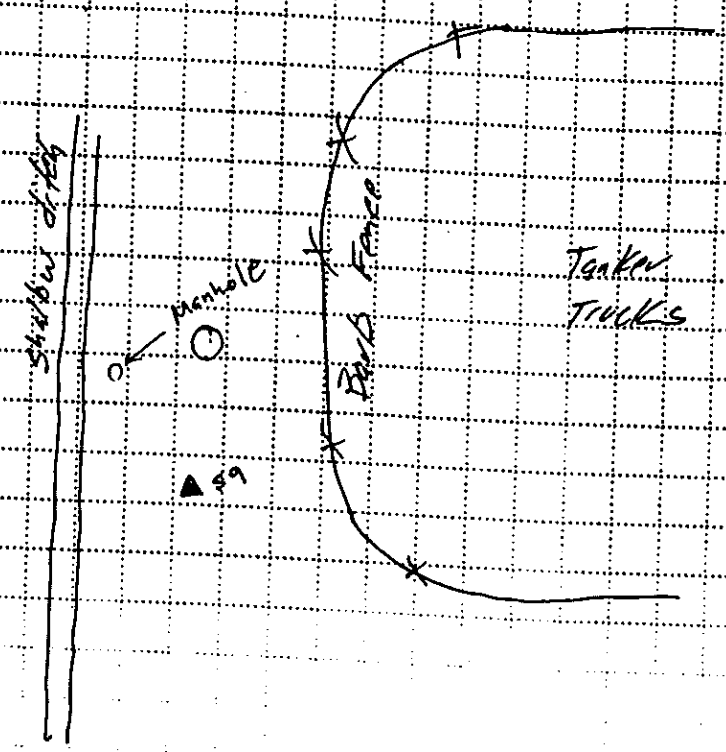
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
GRAIN SIZE	N/A	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1	1	N/A	N/A	N/A	N/A	N/A %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	N/A	N/A	bentonited	Wayne H Par...

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



Ft. Stewart

HOLE NO.
TPS-95

(Proponent: CECW-EG)

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring breathing zone, venting compresse

W Parker

SHEET 2 of 2

(A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
20/24	1, 2	sand well graded SW olive yellow 2.5Y 6/6 moist soft	0.0-2.0 0.0ppm			
7.5/24	3, 4	sand well graded SW light gray 2.5Y 7/2 moist soft	2.0-4.0 3.2ppm			
23/24	5, 6	sand well to Poorly graded SW/SP light to light olive brown 2.5Y 5/6	4.0-6.0 6.3 ppm		265911	
	7, 8, 9, 10	water table at 5.2 BLS same as above Pushed Three spoons to collect Sive Sample 6-10 TD= 10 BLS				

H. Stewart

HOLE NO TP 5-59

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, m... ...ring ... core, breathing zone, venting compressed air.

HTRW DRILLING LOG

DISTRICT	Savanah
HOLE NUMBER	TPS-510
1. COMPANY NAME	SAIC
2. DRILL SUBCONTRACTOR	Miller CMOC
SHEET / SHEETS	1 of 2
3. PROJECT	FT. STEWART
4. LOCATION	TPS-510
5. NAME OF DRILLER	Harry "Haz" Huntoon
6. MANUFACTURERS DESIGNATION OF DRILL	Mobile B-47 A Dietrich Soil Probe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Geoprobe w/ 2" Outer Rod OD. & 1" Inner Rod O.D.
8. HOLE LOCATION	See Sketch Below
9. SURFACE ELEVATION	
10. DATE STARTED	07/08/97
11. DATE COMPLETED	07/08/97
12. OVERBURDEN THICKNESS	N/A
15. DEPTH GROUNDWATER ENCOUNTERED	4 ft BLS
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	6.0 ft BLS
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

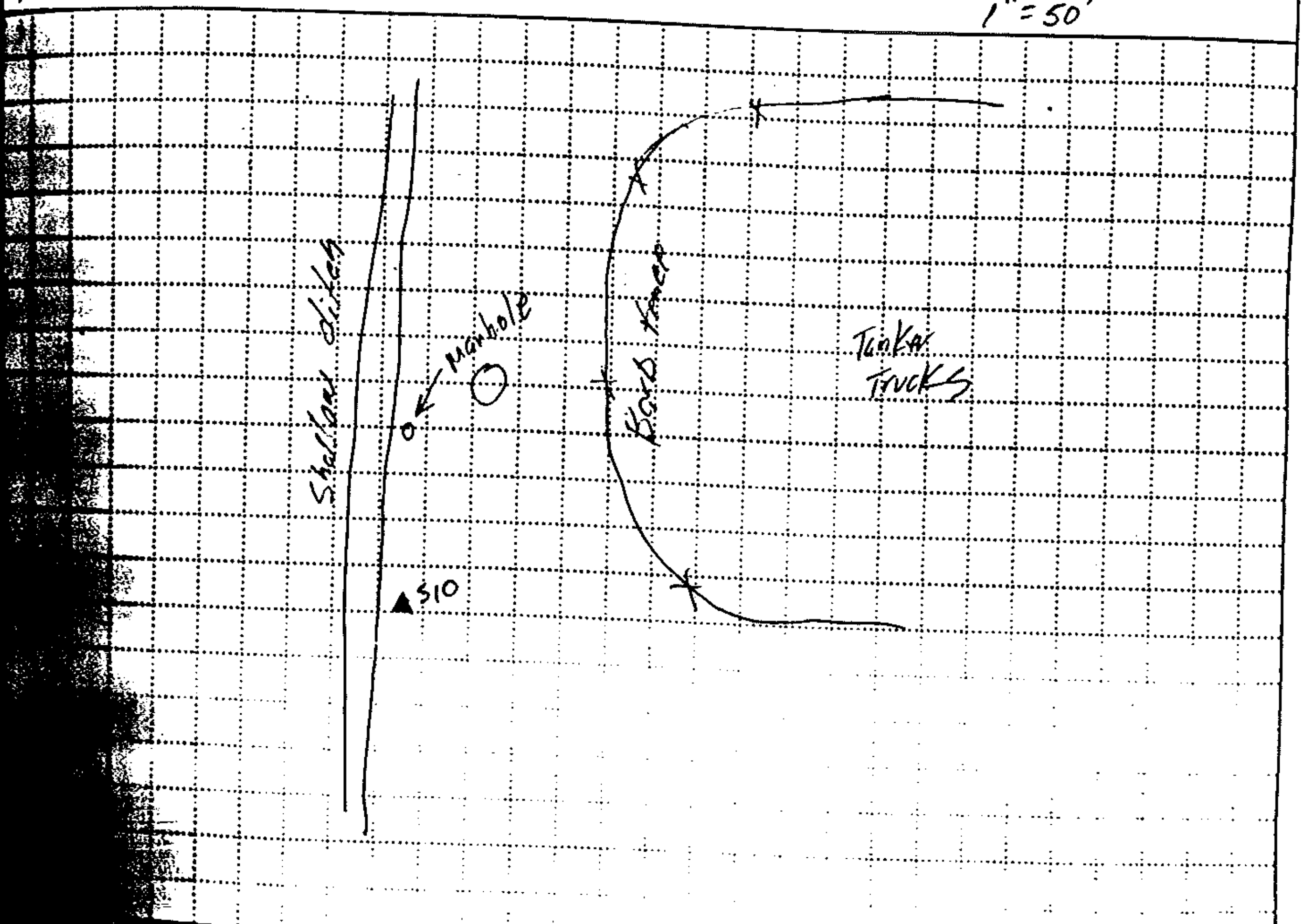
18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
N/A	N/A	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
1	1	N/A	N/A	N/A	N/A	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	N/A	N/A	bentonite	[signature]

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



PROJECT	HOLE NO.
Ft. Stewart	TPS-510

...ARK 94

(Proponent: CECW-EG)

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
18/24	1 2	Sand well graded (SW) dark red to dark yellowish orange 10R 3/6 - 10YR 6/6 moist ~~(SP)~~ very soft	0-2 0.0ppm WHP 07/08/97			
17/24	3 4	Sand poorly graded Gray 5YR 6/1 (SP) moist very soft	2.0-4.0 9.6ppm		265A11	
17/24	5 6	Same as above water table ≈ 4BLS	4.0-6.0 0.0ppm			
		TD = 6.0 BLS				

SHEET 2/2

HOLE NO TPS-510

HOLE NO TPS-510

DRILLING LOG

COMPANY NAME: SAIC	DISTRICT: Savannah
PROJECT: Ft. Stewart	2. DRILL SUBCONTRACTOR: MOC
NAME OF DRILLER: H. Huntoon	4. LOCATION: Tanker Purge
SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD Outer Rod; 1" OD Inner Rod	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile ~~Drill~~ B-47 w/ Dietrich Soil Probe
	8. HOLE LOCATION: See Sketch Below
	9. SURFACE ELEVATION:
	10. DATE STARTED: 07/08/97
	11. DATE COMPLETED: 07/08/97
OVERBURDEN THICKNESS: —	15. DEPTH GROUNDWATER ENCOUNTERED: 5.4' BLS
DEPTH DRILLED INTO ROCK: —	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:
TOTAL DEPTH OF HOLE: 6' BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —

HOLE NUMBER: TPS-S11

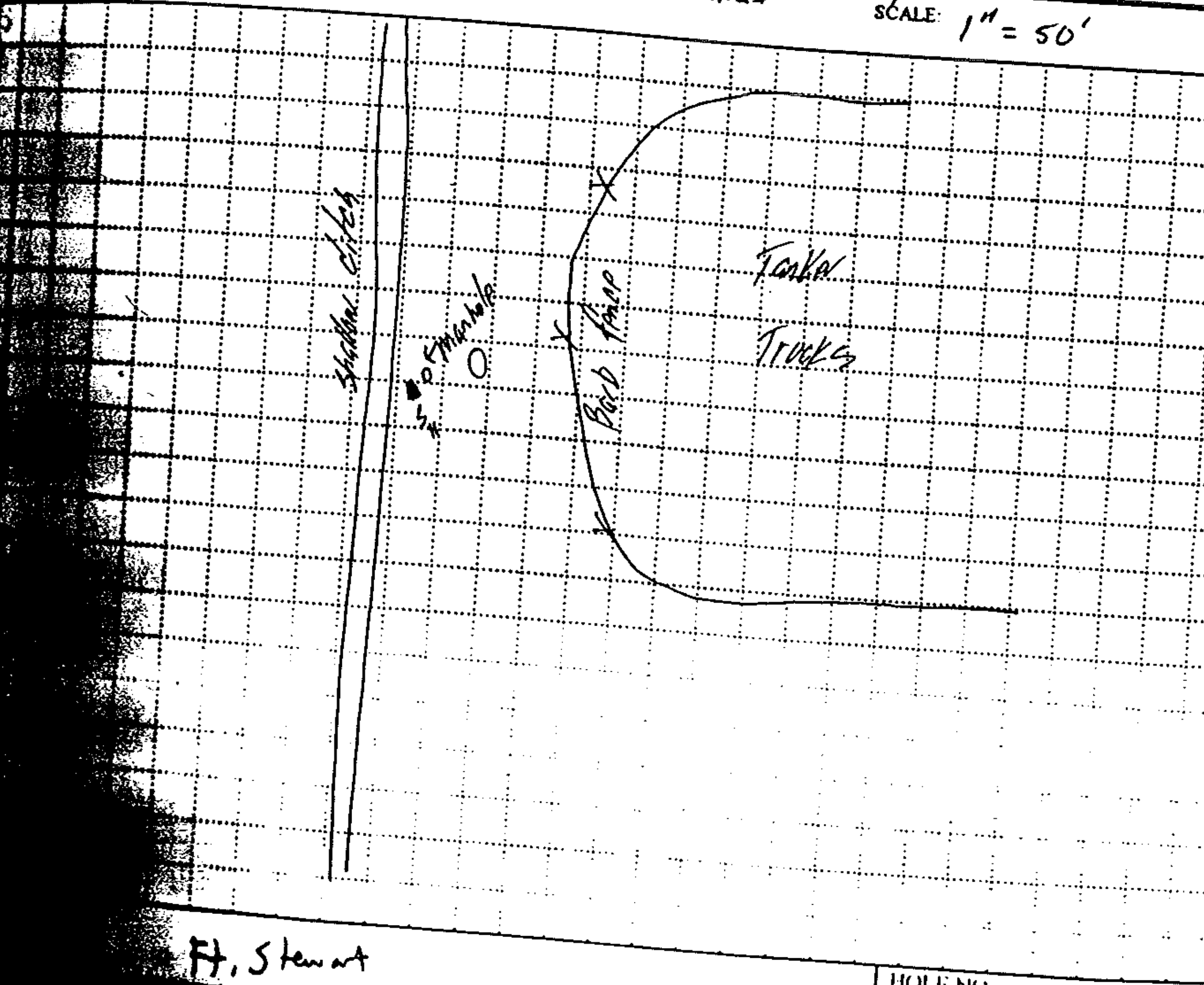
SHEET 1 OF 2 SHEETS

GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES		
—	—	—	—		
SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
1	1	—		—	—

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR	21. TOTAL CORE RECOVERY %
Abandoned	N/A	N/A	Bentonited	Wayne H. Ru...	—

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



Ft. Stewart

HOLE NO: ~~SB~~ TPS-S11

(Proponent: CECW-EG)

• NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring ... zone, venting compressed air, FT. Stewart | INSPECTOR W. Parker. | TPS-S11 | SHEET 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
19/24	1	SAND well-graded (SW) Gray 7.5YR 6/1 TO Black 2.5N subangular soft moist	0-2 770.4ppm		265B11	
	2					
21/24	3	Same as above	2-4 172.0 ppm			
	4					
19/24	5	Sand with silt (SW-SM) Light gray 7N subangular soft moist	4-6 25.0 ppm			
	6	TD = 6 BLS Water table ≈ 5.4 BLS				

FT. Stewart.

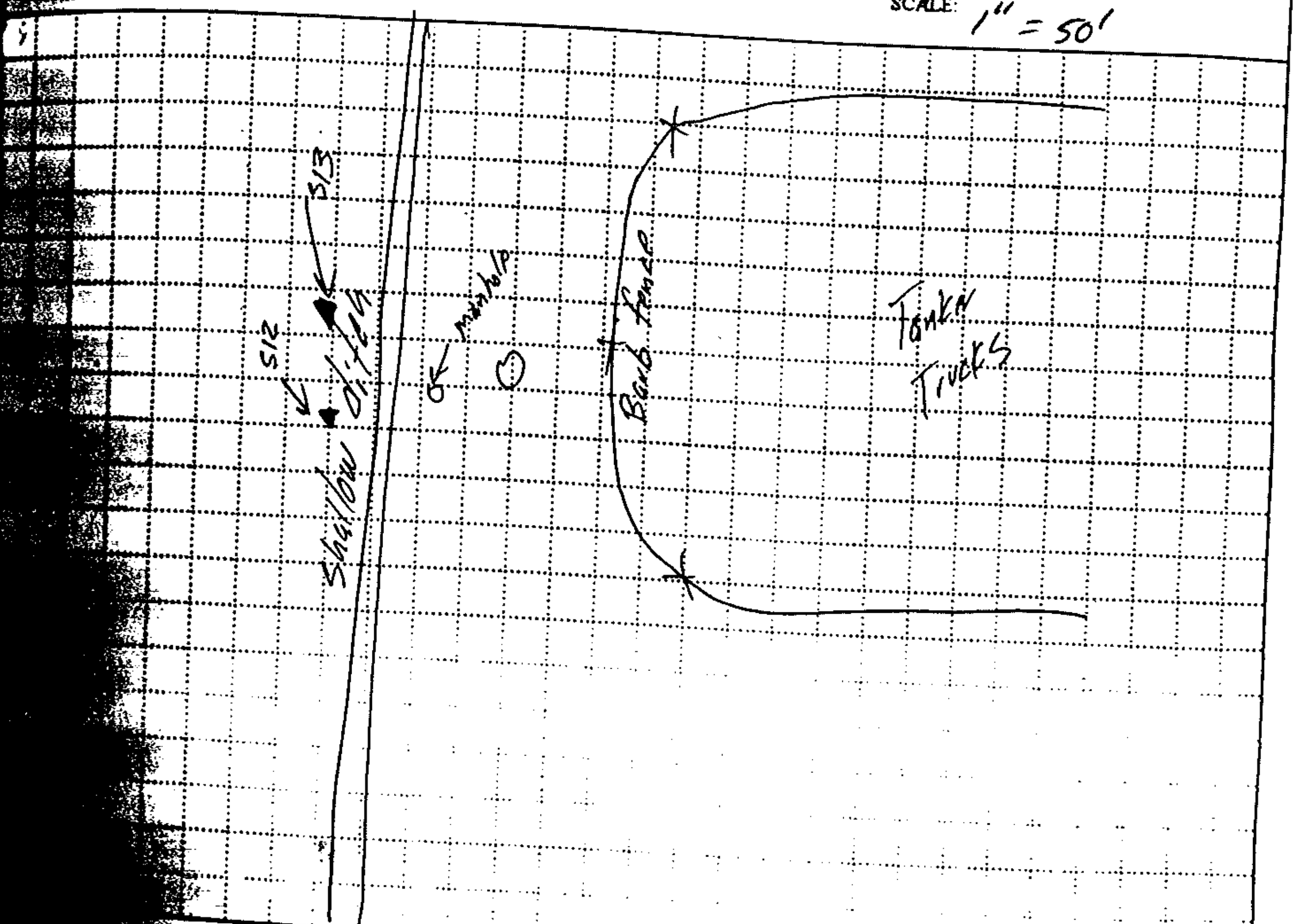
HOLE NO TPS-S11

1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: MDC	SAVANNAH — 512 — SHEET 1 OF 2 SHEETS
3. PROJECT: Ft. Stewart	4. LOCATION: Tanker Purge	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobil B47 / Geoprobe	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD Outter Rod; 1" OD Inner Rods	8. HOLE LOCATION: See sketch below	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 07/09/97	11. DATE COMPLETED: 07/09/97
12. OVERBURDEN THICKNESS: —	15. DEPTH GROUNDWATER ENCOUNTERED: 3.5	
13. DEPTH DRILLED INTO ROCK: —	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 30 min 3.5	
14. TOTAL DEPTH OF HOLE: 4.0 BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —	
18. GEOTECHNICAL SAMPLES: —	DISTURBED: —	UNDISTURBED: —
	19. TOTAL NUMBER OF CORE BOXES: —	
20. SAMPLES FOR CHEMICAL ANALYSIS: 1	VOC: 1	METALS: — ; OTHER (SPECIFY): — ; OTHER (SPECIFY): ; OTHER (SPECIFY): —
		21. TOTAL CORE RECOVERY %: —
22. DISPOSITION OF HOLE: Abandoned	BACKFILLED: — ; MONITORING WELL: —	OTHER (SPECIFY): bentonite
23. SIGNATURE OF INSPECTOR: [signature]		

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring core, breathing zone, venting compressed air, ...)

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



HOLE NO. 512

ENG 94

(Proponent: CECW-EG)

14

INSPECTOR

S12

SHEET 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
	1 2	Sand well-graded (SW) medium grained Light gray 5YR 7/1 Moist soft	0-2 101.0ppm			Hole Augerd with 2¼ inch hand Auger
	3 4	Same as above water table at ≈ 3.5 BLS TD = 4 BLS	2-4 136.8ppm		265C11	Samples Collected at 2' intervals 0-2, 2-4

HOLE NO S12

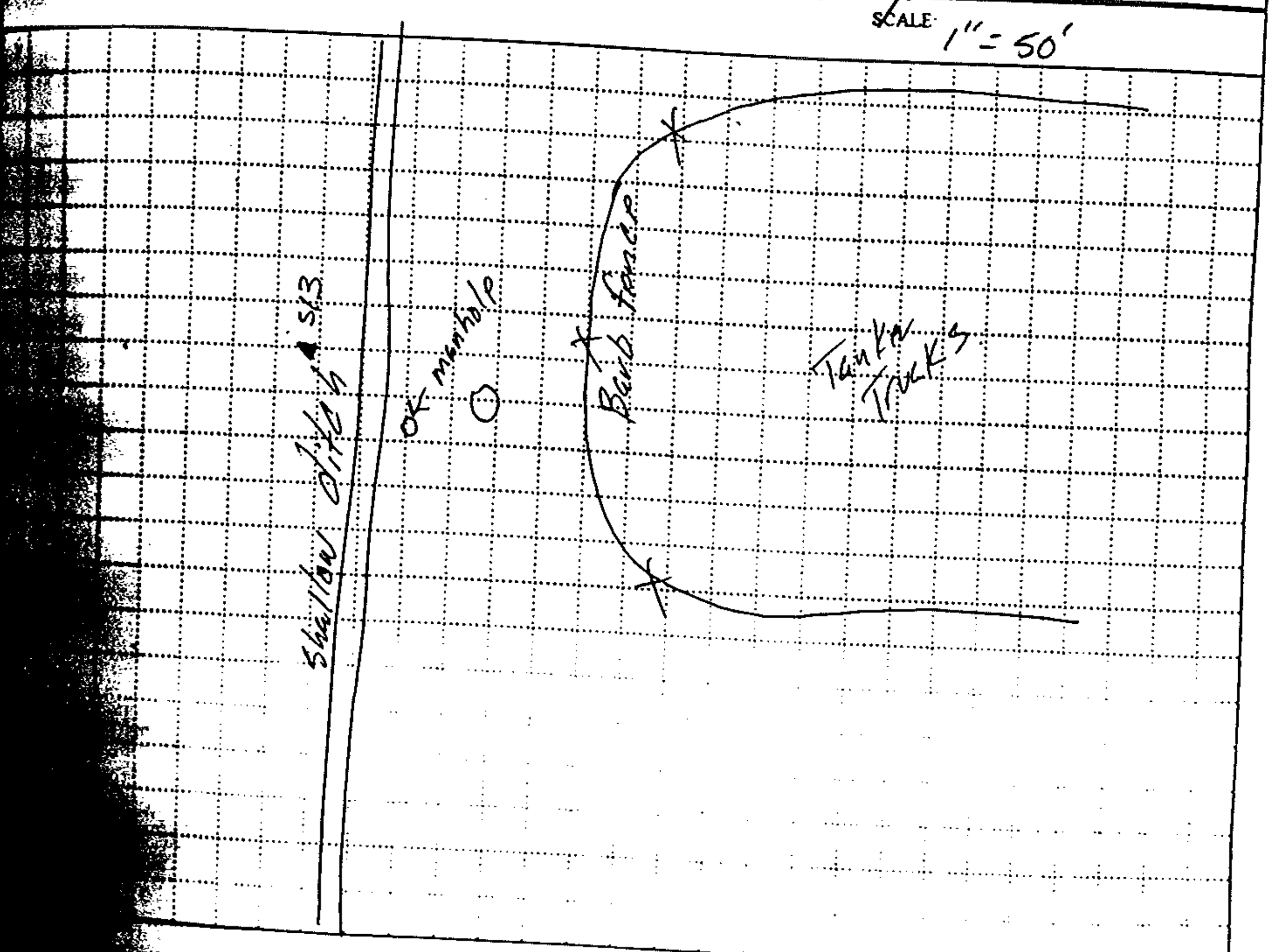
DRILLING LOG

1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: Savannah MDC		HOLE NUMBER: S13
3. PROJECT: Ft Stewart	4. LOCATION: Tanker Purge		SHEET 1 OF 2 SHEETS
5. NAME OF DRILLER: Harry Hutson	6. MANUFACTURER'S DESIGNATION OF DRILL: B-47 / Geoprobe		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION: See Sketch below		
	9. SURFACE ELEVATION: —		
	10. DATE STARTED: 07/09/97	11. DATE COMPLETED: 07/09/97	
12. OVERBURDEN THICKNESS: —	15. DEPTH GROUNDWATER ENCOUNTERED: 3.8		
13. DEPTH DRILLED INTO ROCK: —	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED		
14. TOTAL DEPTH OF HOLE: 5.0 BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)		

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
1	1	—	—			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY %**
1	1	—	—	—	—	—
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
Abandoned	—	—	bentonite	Wayne A Parr		

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



	HOLE NO. S13

(Proponent: CECW-EG)

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* NOTE TYPE OF MONITORING (i.e., borehole cuttings, m... oring ... breathing zone, venting compre... air,

SHEET 2 of 2

	MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
1	Sand well-graded ≈ 10% silt & clay				
2	Light gray 5YR 7/1 moist subangular medium grained soft	0-2 65.8ppm			
3					
4	Sand well-graded with clay (SW-SC)	~~0~~ wth 07/09/97			
5	Light gray N7 wet subangular soft medium grained	2-4 1176.0ppm		265D11	
	TD = 5.0 Water table ≈ 3.8 BLS				Sieve analysis collected from 4.0-5.0

HOLE NO 22

Savannah | S14

1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: Miller Drillin Co.
SHEET 1 of 2 SHEETS	
3. PROJECT: Ft. Stewart	4. LOCATION: Tanker Purge
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL:
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD outter pipe; 1" OD Inner Rod	8. HOLE LOCATION: Same as work Plan
	9. SURFACE ELEVATION:
	10. DATE STARTED: 07/14/97
	11. DATE COMPLETED: 07/14/97
12. OVERBURDEN THICKNESS: NA	13. DEPTH GROUNDWATER ENCOUNTERED: 4.0 ft BGS
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:
14. TOTAL DEPTH OF HOLE: ~~NA~~ WHP 07/14/97 4.0 BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

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

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
1	1	—	—	—	—	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	—	—	—	Wray H. P[illegible]

LOCATION SKETCH/COMMENTS

SCALE:

Same as work plan

PROJECT	HOLE NO.
	S-14

FORM 5056-R, AUG 94

(Proponent: CECW-EG)

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			RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)

PROJECT

HOLE NO 9

TRW DRILLING LOG

DISTRICT	Savannah
HOLE NUMBER	S15
COMPANY NAME	SAIC
DRILL SUBCONTRACTOR	MDC
SHEET 1 of 2 SHEETS	
PROJECT	Ft. Stewart
LOCATION	Tanker Purge
NAME OF DRILLER	Harry "Haz" Hutson
MANUFACTURER'S DESIGNATION OF DRILL	Mobil B-47 / Geoprobe
SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2" OD outter pipe; 1" OD Inner Rod
HOLE LOCATION	see sketch below
SURFACE ELEVATION	
DATE STARTED	7/14/97
DATE COMPLETED	7/14/97
OVERBURDEN THICKNESS	NA
DEPTH GROUNDWATER ENCOUNTERED	4.0 ft BGS
DEPTH DRILLED INTO ROCK	NA
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	—
TOTAL DEPTH OF HOLE	4.0 BLS
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	—

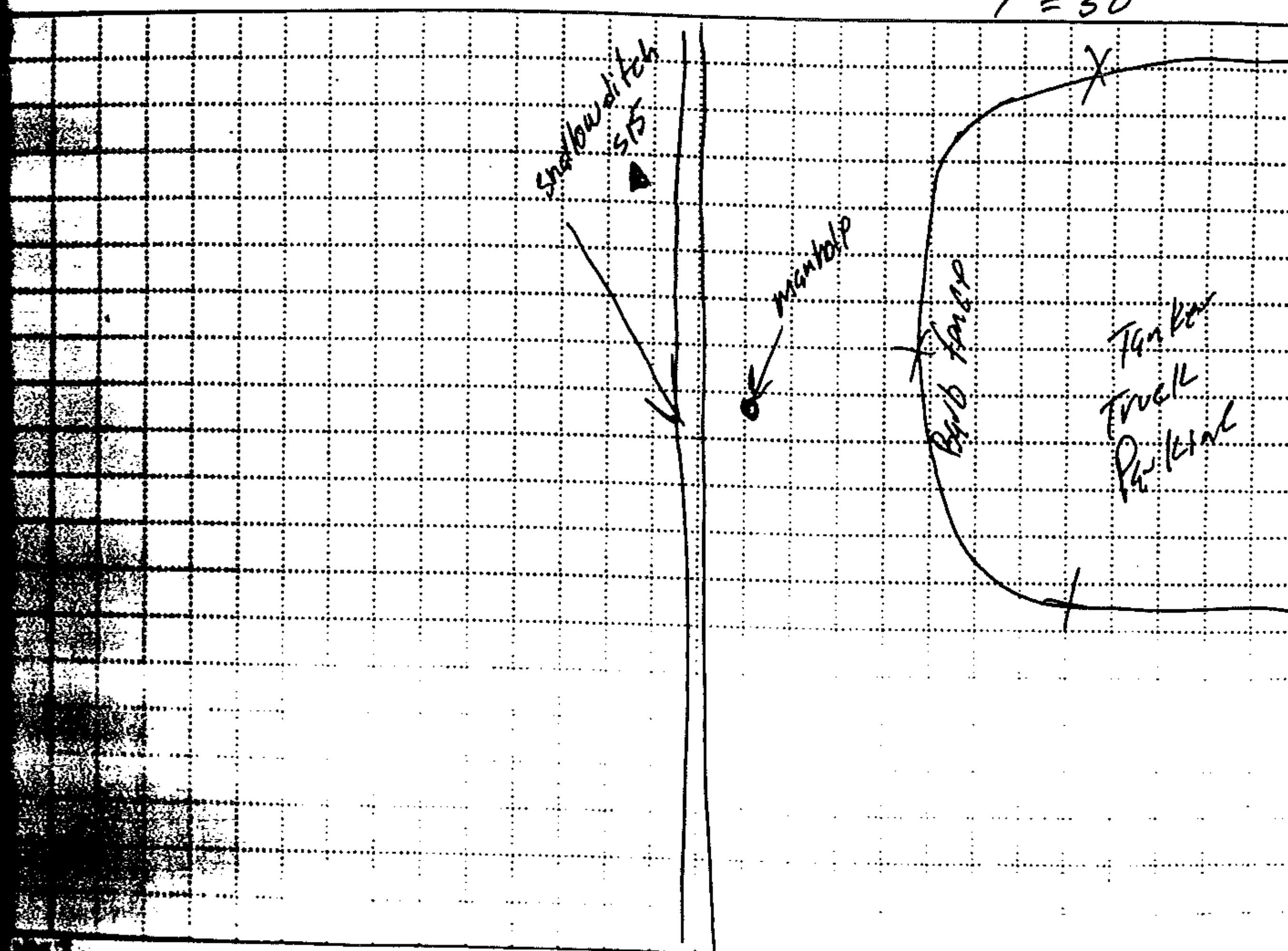
GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	TOTAL NUMBER OF CORE BOXES
—	—		—

SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	TOTAL CORE RECOVERY %
1	1 S01 /	—	—		—	—

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	SIGNATURE OF INSPECTOR
Abandoned	—	—	—	Wayne K. [illegible]

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



PROJECT	Ft. Stewart
HOLE NO.	S15

(Proponent: CECW-EG)

• NOTE TYPE OF MONITORING (i.e., borehole cuttings, mon... ing

HTRW DRILLING LOG

PROJECT: Ft. Stewart Tanker Purge | INSPECTOR: | HOLE NUMBER: S15 | SHEET 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
2	1	Sand well graded (SW) medium gray N5 TO Black N1 soft moist	0-2 0.0ppm 1620			
4	2					
	3	Sand well graded SW with silt, SM-SW soft wet light gray N7	WHP 07/14/97			
4	4		2-4 0.0ppm 1620			
	5	TD = 4.0BLS				Water table at ≈ 4.0BLS

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring well atmosphere, soil core, breathing zone, venting compressed air,

24V4ngn 5/6

1. COMPANY NAME SAIC	2. DRILL SUBCONTRACTOR MDC	SHEET 1 of 2 SHEETS
3. PROJECT Ft. Stewart	4. LOCATION Tanker Purge	
5. NAME OF DRILLER	6. MANUFACTURERS DESIGNATION OF DRILL Mobil B-47	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD cutter pipe; 1" OD Inner Rod	8. HOLE LOCATION Same as work plan	
	9. SURFACE ELEVATION	
	10. DATE STARTED 07/14/97	11. DATE COMPLETED 07/14/97
12. OVERBURDEN THICKNESS NA	15. DEPTH GROUNDWATER ENCOUNTERED 5.5 ft BGS	
13. DEPTH DRILLED INTO ROCK NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
14. TOTAL DEPTH OF HOLE NA	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
—	—	—	—			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
1	1 soil		—	—	—	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
Abandoned	—	—	—	Wayne H. [illegible]		

LOCATION SKETCH/COMMENTS

SCALE:

Same as work plan

Ft. Stewart

HOLE NO. 5/6

SOSR

3056-R, AUG 94

(Proponent: CECW-EG)

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		(C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
20/24	1 2	sand well graded (SW) reddish yellow 7.5YR 8/6 medium to fine	0-2 0.0 ppm 1515			
12/24	3 4	Sand poorly graded (SP) pinkish white 7.5YR 8/2	2-4 0.0 ppm 1515			
22/24	5 6	sand well graded with silt (SW-SM) Light Gray N7	4-6 2000. ppm ~~0.0 ppm~~ WHP 07/14/97 1525		265G11	water table ≈ 5.5 BLS
		TD = 6 BLS				

PROJECT

HOLE NO 22

HTRW DRILLING LOG

1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: Savannah MDC	HOLE NUMBER: S17 SHEET 1 of 2 SHEETS
3. PROJECT: Ft. Stewart	4. LOCATION: Tanker Purge	
5. NAME OF DRILLER: Harry "Haz" Hutoon	6. MANUFACTURERS DESIGNATION OF DRILL: Mobil B-47 / Geoprobe	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 1" OD Outer Rod; 1" OD Inner Rod	8. HOLE LOCATION:	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 07/14/97	11. DATE COMPLETED: 07/14/97
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: 5.7 BLS	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: —	
14. TOTAL DEPTH OF HOLE: 6.0 BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —	

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

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
1	1	—	—	—	—	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	—	—	—	[signature]

LOCATION SKETCH/COMMENTS SCALE:

Same as Work Plan

PROJECT	HOLE NO.
Ft. Stewart	S17

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

• NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring well atmosphere, soil core, breathing zone, venting compressed air, ...)

Tanker Purge INSPECTOR SHEET 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
14/14	1	0.0-0.7' Black top Sand well graded (SW) Light gray N2 subangular soft dry	0-2 72.1 ppm 1415		265A11	
14/24	2 3	Same as above	2-4 0.0 ppm 1415			
19/24	4 5 6	Same as above except for moist to wet	4-6 0.0 ppm 1415			water table at 5.7 BLS
		TD = 6 BLS				

PROJECT

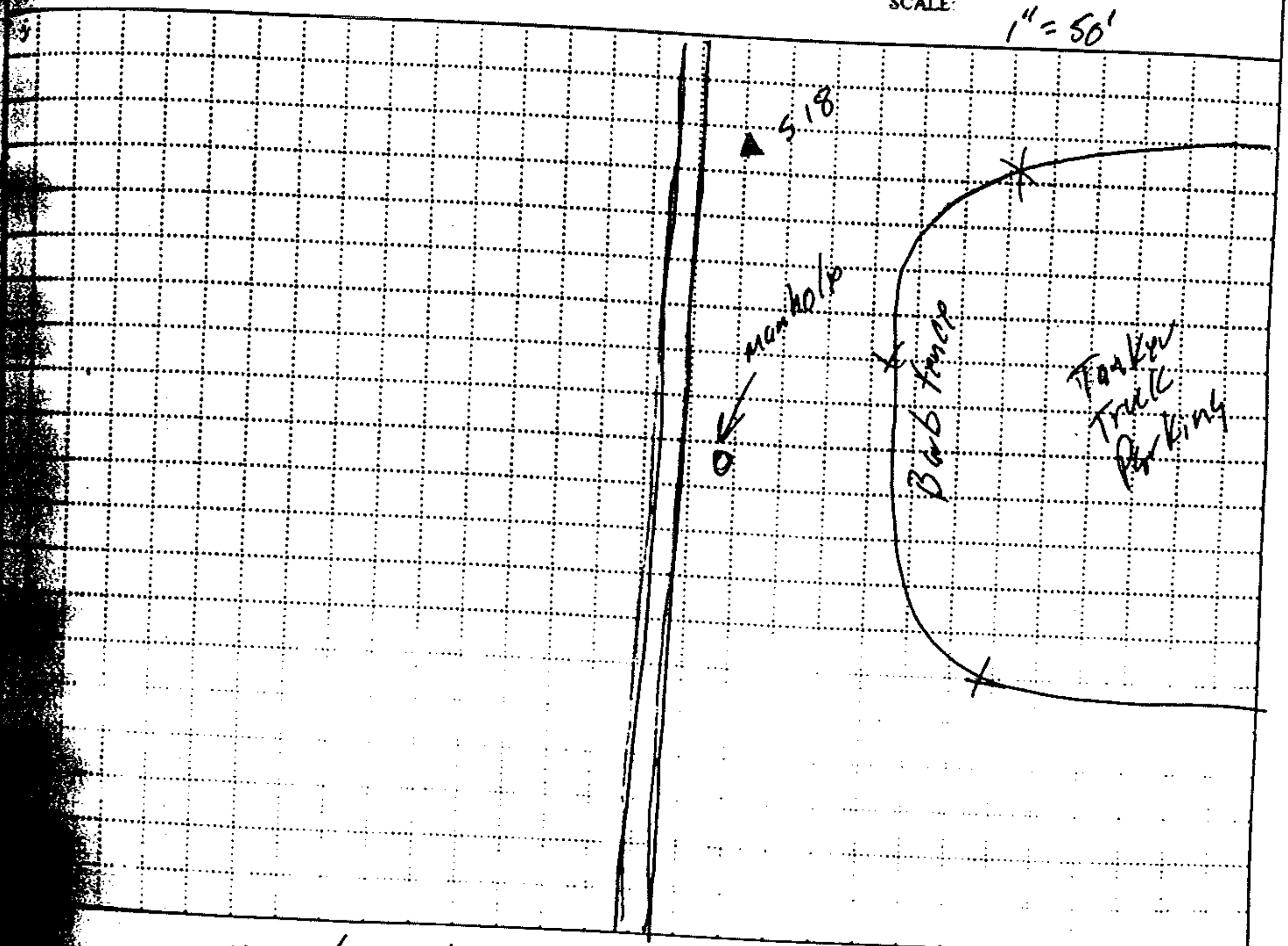
HOLE NO

SAIC	2 DRILL SUBCONTRACTOR: MDC
1 PROJECT: Ft Stewart	SHEET 1 of 2 SHEETS — S18
3 NAME OF DRILLER: Harry "Haz" Hutson	4 LOCATION: Tanker Purge
5 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: "2" OD outter pipe; "1" OD Inner Rod	6 MANUFACTURER'S DESIGNATION OF DRILL: Mobil B-47/ geoprobe
	8 HOLE LOCATION: See sketch below
	9 SURFACE ELEVATION
	10 DATE STARTED: 07/14/97 — 11 DATE COMPLETED: 07/14/97
12 OVERBURDEN THICKNESS: NA	15 DEPTH GROUNDWATER ENCOUNTERED: 4.0 BLS
13 DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
14 TOTAL DEPTH OF HOLE: NA	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18 GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19 TOTAL NUMBER OF CORE BOXES			
—	—	—	—			
20 SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21 TOTAL CORE RECOVERY %**
—	1 soil	—	—	—	—	
22 DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23 SIGNATURE OF INSPECTOR**		
abandoned	—	—	—	[signature]		

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



Ft. Stewart	HOLE NO. S18

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

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, monitoring well atmosphere, soil core, breathing zone, venting con... ssed air,

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Ft Stewart Tanker Purge

INSPECTOR

SHEET 2 of 2

ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
18/24	1 2	Sand poorly graded (SP) subangular soft moist light gray N7	0-2 6.0ppm			
20/24	3 4	WMP 2/14/97 Same as above	2-4 0.0ppm		265511	
24/24	5 6	Sand with silt well graded moist soft to firm moist TD = ~~6.0 BLS~~ 4.0 BLS				water table at ~~6.0~~ 4.0 BLS

PROJECT

HOLE NO

29

S19

1. PROJECT: SAIC Ft. Stewart	2. DRILL SUBCONTRACTOR: Miller Drilling Co.
	SHEET 1 OF 2 SHEETS
3. NAME OF DRILLER: Harry "Haz" Hutson	4. LOCATION: Tanker Purge
5. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD outer pipe; 1" OD Inner pipe	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobil B-47 / geoprobe
	8. HOLE LOCATION
	9. SURFACE ELEVATION
	10. DATE STARTED: 07/14/97 — 11. DATE COMPLETED: 07/14/97
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: 5.5 BLS
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: —
14. TOTAL DEPTH OF HOLE: 6.0 BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
—	—	—	—			
20. SAMPLES FOR CHEMICAL ANALYSIS	**VOC**	**METALS**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**OTHER (SPECIFY)**	**21. TOTAL CORE RECOVERY %**
1	1	—	—	—	—	—
22. DISPOSITION OF HOLE	**BACKFILLED**	**MONITORING WELL**	**OTHER (SPECIFY)**	**23. SIGNATURE OF INSPECTOR**		
abandoned	—	—	—	Wayne H. Pare		

LOCATION SKETCH/COMMENTS

SCALE:

Same as work Plan

FT Stewart	HOLE NO. S19

* NOTE TYPE OF MONITORING (i.e., borehole cuttings, ...onitoring ... soil core, breathing zone, venting con..., ...ssed air,

...MAR. AUG 94

(Proponent: CECW-EG)

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Ft. Stewart Tanker Purge | INSPECTOR

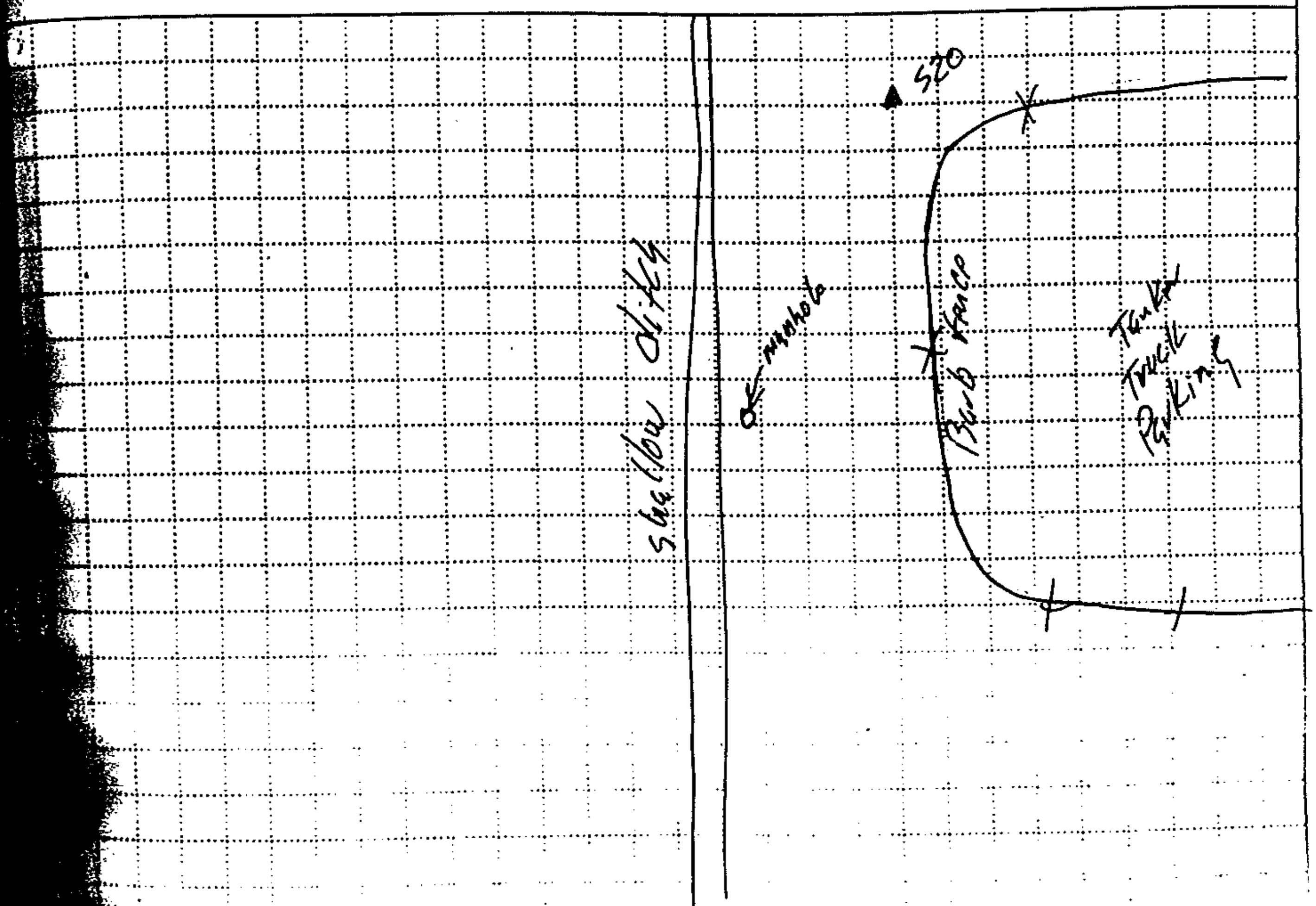
ELEV (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
		0 –1.2 Black Top				
	1	Sand well graded	1.0-3.0 1335			
12/24	2	Pale yellow 2.5Y8/2 dry medium grained subangular soft.	0.0 ppm			
	3		3.0-5.0 1335			
12/24	4	Becoming dark grayish brown	215.0 ppm			
	5	2.5Y 5/2				
12/12	6		Water Table at 5.5 BLS 5.0-6.0 700.0 ppm		265K11	
		TD= 6.0 BLS				

HTRW DRILLING LOG	DISTRICT: Savannah	HOLE NUMBER: S20
1. COMPANY NAME: SAIC	2. DRILL SUBCONTRACTOR: MDC	SHEET 1 OF 2 SHEETS

3. PROJECT: Ft. Stewart	4. LOCATION: Tanker Purge
5. NAME OF DRILLER: Harry "Haz" Hutson	6. MANUFACTURER'S DESIGNATION OF DRILL: mobil B-47 / geoprobe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD outter pipe; 1" OD Inner Rod	8. HOLE LOCATION: see sketch below
	9. SURFACE ELEVATION:
	10. DATE STARTED: 07/14/97 — 11. DATE COMPLETED: 07/14/97
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:
14. TOTAL DEPTH OF HOLE: ~~NA~~ wh 07/14/97 6.0 BLS	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
—	—	—				
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
1	1 soil	—	—	—	—	—
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
abandoned	—	—	—	[signature]		

LOCATION SKETCH/COMMENTS SCALE:



Ft. Stewart. HOLE NO. S20

...TE TYPE OF MONITORING (i.e., borehole cuttings, monitoring well atmosphere, soil core, breathing zone, venting compressed a...

...M56-R, AUG 94 (Proponent: CECW-EG)

(A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
22/24	1 2	Sand well graded (SW) Light gray (N8) To medium gray (N5) subangular soft moist	0-2 0.0 ppm 07/14/97 1600			
8/24	3 4	Sand poorly graded (SP) very pale orange moist soft	2-4 0.0 ppm 07/14/97 1600			
24/24	5 6	Sand with clay well graded soft wet Light gray (N7)	4-6 0.0 ppm 07/14/97 1600		265M11	

INSPECTOR

HOLE NUMBER

SHEET

PROJECT

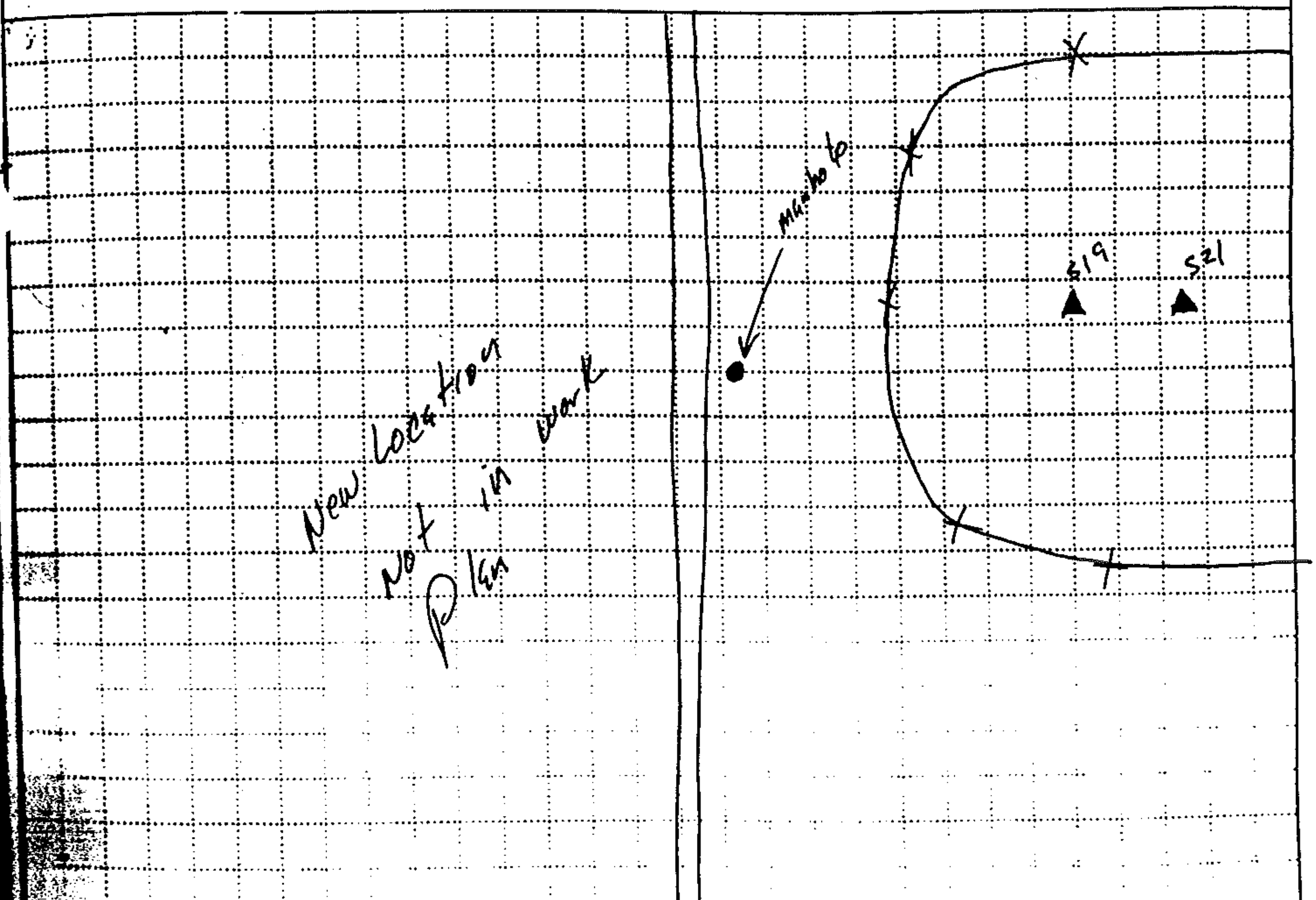
HOLE NO

HTRW DRILLING LOG — Savannah — 521

1. COMPANY NAME: SAIC
2. DRILL SUBCONTRACTOR: MDC
SHEET 1 OF 2 SHEETS
3. PROJECT: Ft. Stewart
4. LOCATION: Tanker Purge
5. NAME OF DRILLER:
6. MANUFACTURER'S DESIGNATION OF DRILL: Mobil B-47 / geoprobe
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" OD outer Rods; 1" OD Inner Rod
8. HOLE LOCATION: See sketch Below
9. SURFACE ELEVATION:
10. DATE STARTED: 07/14/97
11. DATE COMPLETED: 07/14/97
12. OVERBURDEN THICKNESS: NA
15. DEPTH GROUNDWATER ENCOUNTERED: 5.7
13. DEPTH DRILLED INTO ROCK: NA
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED:
14. TOTAL DEPTH OF HOLE: NA
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY):

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
NA	NA	NA	NA			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
1	1	—	—	—	—	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
abandoned	—	—	—	[signature]		

LOCATION SKETCH/COMMENTS — SCALE: 1" = 50'



PROJECT: Ft Stewart
HOLE NO.: 521

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

7

QA CHECK BY: (Signature and Date)

(A)	(B)	(C)	FIELD SCREENING RESULTS (D)	GEOTECH SAMPLE OR CORE BOX NO (E)	ANALYTICAL SAMPLE NO (F)	REMARKS (G)
14/18	1 2	0.0-0.5' Black Top sand with silt well graded reddish yellow 7.5YR 6/8	0-2 0.0ppm 1430			
12/24	3 4	same as above except 2.5/N	2-4 0.0ppm 1430			
10/24	5 6	TD = 6BLS	4-6 0.0ppm 1430		265N11	Ground water table at 5.7 BLS

PROJECT

HOLE NO

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANKER PURGING STATION
FORT STEWART, GEORGIA

APPENDIX B

MONITORING WELL CONSTRUCTION DIAGRAMS

MONITORING WELL INSTALLATION LOG

PROJECT: FORT STEWART - TANK PURGE **DELIVERY ORDER: 0007**

MONITORING WELL ID: MW-1 Tanker Purge

INSTALLATION START: DATE: 7-23-97 TIME: 1645

INSTALLATION FINISH: DATE: 7-23-97 TIME: 1920

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: DSI Extra Fine Sand QUANTITY: 5 bags (250 lbs.)

BENTONITE SEAL: TYPE: DSI Pellets 3/8" QUANTITY: 1/2 bucket (25 lbs.)

GROUT: TYPE: N/A QUANTITY: N/A

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.00P" SLOT CONFIGURATION: #8 slotted

TOTAL OPEN AREA PER FOOT OF SCREEN: ____________

OUTSIDE DIAMETER: 2.3" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN: ____________

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2.3" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

JOINT DESIGN AND COMPOSITION: Threaded PVC

CENTRALIZERS DESIGN AND COMPOSITION: N/A

DESCRIPTION OF PROTECTIVE CASING:

NOMINAL INSIDE DIAMETER: 4 x 4" square COMPOSITION: steel above grade

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

Due to shallow groundwater table @ ~4.5 to 5.0' BGS well had to be screened shallow causing ~1 ft of sand above screen top and ~1 ft of bentonite seal above sand while still letting protective post 2' BGS

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [✓] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [✓] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [✓] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: None

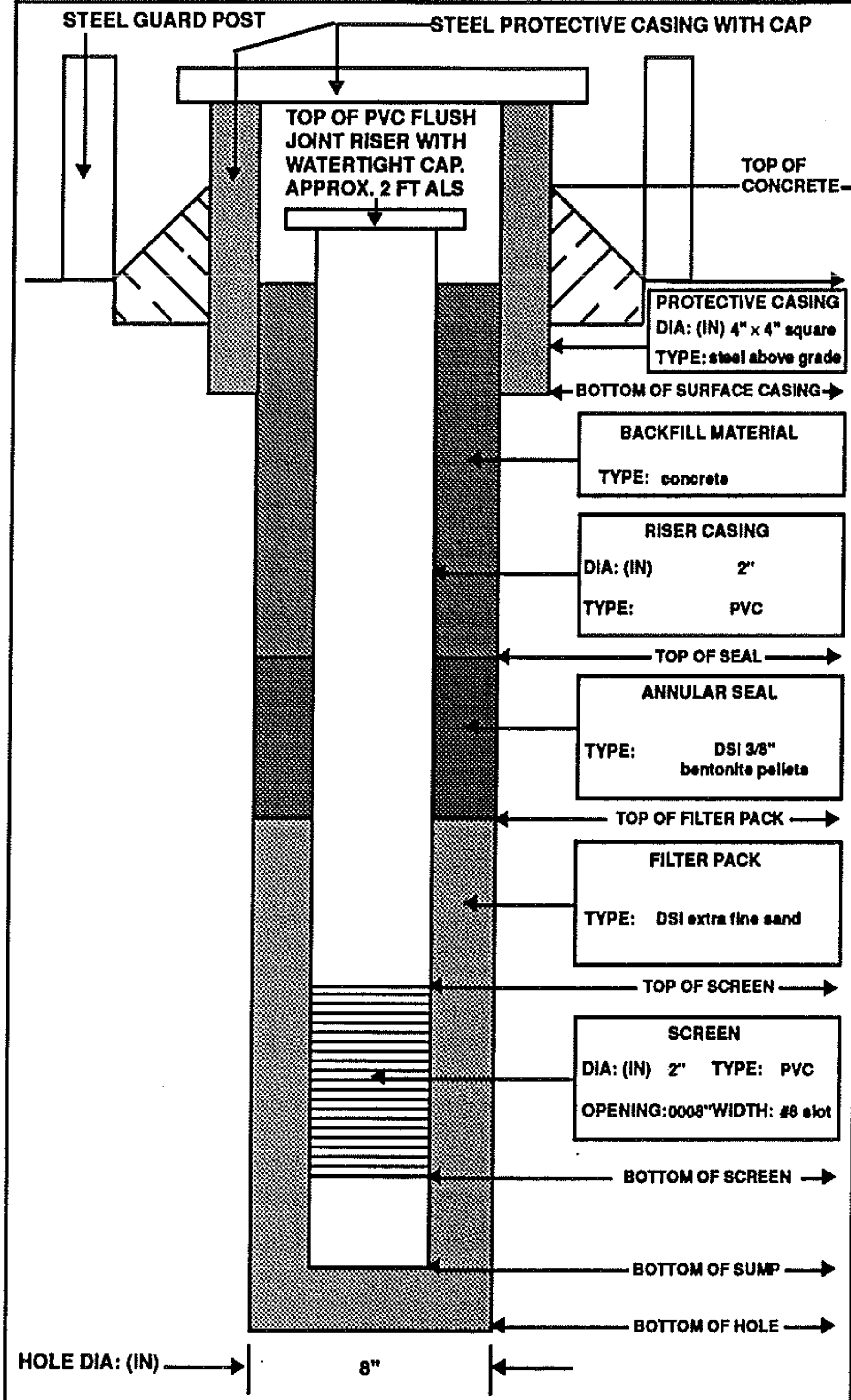
RECORDED BY: ____________ QA CHECK BY: ____________

(Signature & Date) (Signature & Date)

MONITORING WELL

PROJECT: FORT STEWART - TANK PURGE　　DELIVERY ORDER: 0007

WELL NUMBER: MW-1 724TH		BEGIN: 7-23-97 1645	END: 7-23-97 1920
COORDINATES: N: 683378.0448 E: 820832.28401	NAD83	REFERENCE POINT: TOP OF RISER MSL STICKUP 2.5'	ELEVATION: 67.08 NGVD29



	DEPTH	ELEVATION
TOP OF CONCRETE		64.23
	0	63.83
BOTTOM OF SURFACE CASING	2.0	61.83
TOP OF SEAL	2.0	61.83
TOP OF FILTER PACK	3.0	60.83
TOP OF SCREEN	4.0	59.83
BOTTOM OF SCREEN	13.5	50.33
BOTTOM OF SUMP	14.25	49.58
BOTTOM OF HOLE	14.5	49.33

96-053M(TPS)/WellInst.Forms-MW-1/110797

MONITORING WELL INSTALLATION LOG

PROJECT: FORT STEWART - TANK PURGE **DELIVERY ORDER: 0007**

MONITORING WELL ID: MW-2 Tanker Purge

INSTALLATION START: DATE: 7-24-97 TIME: 1330

INSTALLATION FINISH: DATE: 7-24-97 TIME: 1430

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: 1# DSI QUANTITY: 6 bags (50 lbs.)

BENTONITE SEAL: TYPE: 1/4" pellet plug QUANTITY: 3/4 5 gal bucket

GROUT: TYPE: N/A QUANTITY: N/A

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (inches): 0.008" SLOT CONFIGURATION: slotted

TOTAL OPEN AREA PER FOOT OF SCREEN: ______

OUTSIDE DIAMETER: 2.4" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN: DSI #1 sand

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2.4" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

JOINT DESIGN AND COMPOSITION:

CENTRALIZERS DESIGN AND COMPOSITION: None

DESCRIPTION OF PROTECTIVE CASING:

NOMINAL INSIDE DIAMETER: 4 x 4" square COMPOSITION: steel above grade

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

Due to shallow groundwater table @ ~5.0' BGS well had to be screened shallow causing ~1 ft of sand above screen top and ~1.5 ft of bentonite seal above sand while still letting protective post 1.5' BGS

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [✓] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [✓] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [✓] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: ______

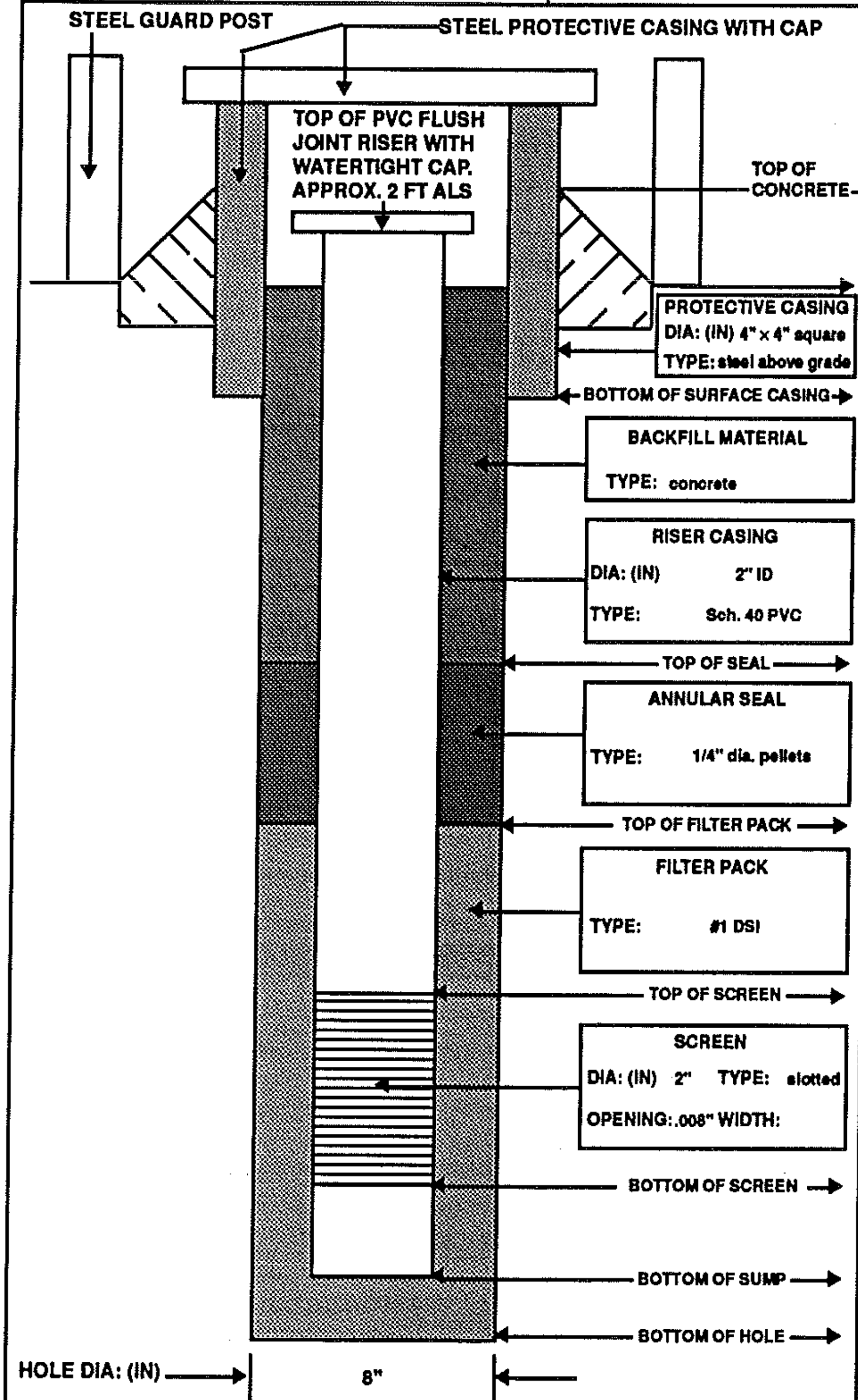
RECORDED BY: ______ QA CHECK BY: ______

(Signature & Date) (Signature & Date)

MONITORING WELL

PROJECT: FORT STEWART - TANK PURGE   DELIVERY ORDER: 0007

WELL NUMBER: MW-2 724TH		BEGIN: 7-24-97 1330	END: 7-24-97 1430
COORDINATES: N: 683224.6024 E: 820869.8411	NAD83	REFERENCE POINT: TOC MSL	ELEVATION: 70.86 NGVD29



	DEPTH	ELEVATION
TOP OF CONCRETE		68.32
Ground surface	0	67.92
BOTTOM OF SURFACE CASING	1.5	66.42
TOP OF SEAL	1.5	66.42
TOP OF FILTER PACK	3.0	64.92
TOP OF SCREEN	4.0	63.92
BOTTOM OF SCREEN	14.2	53.72
BOTTOM OF SUMP	14.5	53.42
BOTTOM OF HOLE	15.0	52.92

MONITORING WELL INSTALLATION LOG

PROJECT: FORT STEWART - TANK PURGE **DELIVERY ORDER: 0007**

MONITORING WELL ID: MW-3 Tanker Purge

INSTALLATION START: DATE: 7-24-97 TIME: 1715

INSTALLATION FINISH: DATE: ______ TIME: ______

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: DSI #1 sand QUANTITY: N/A-used but quantity not known

BENTONITE SEAL: TYPE: DSI 3/8" pellets QUANTITY: N/A-used but quantity not known

GROUT: TYPE: N/A QUANTITY: N/A

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (Inches): 0.008" SLOT CONFIGURATION: #8 slotted

TOTAL OPEN AREA PER FOOT OF SCREEN: ______

OUTSIDE DIAMETER: 2.3" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN: DSI #1 sand

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2.3" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

JOINT DESIGN AND COMPOSITION: Threaded PVC

CENTRALIZERS DESIGN AND COMPOSITION: N/A

DESCRIPTION OF PROTECTIVE CASING:

NOMINAL INSIDE DIAMETER: 4 x 4" square COMPOSITION: steel above grade

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

Due to shallow groundwater well set with bentonite seal ~1.0' thick and ~1.0 ft of filter pack above the top of the screen.

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [✓] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [✓] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [✓] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: ~25 gal

RECORDED BY: ______ QA CHECK BY: ______

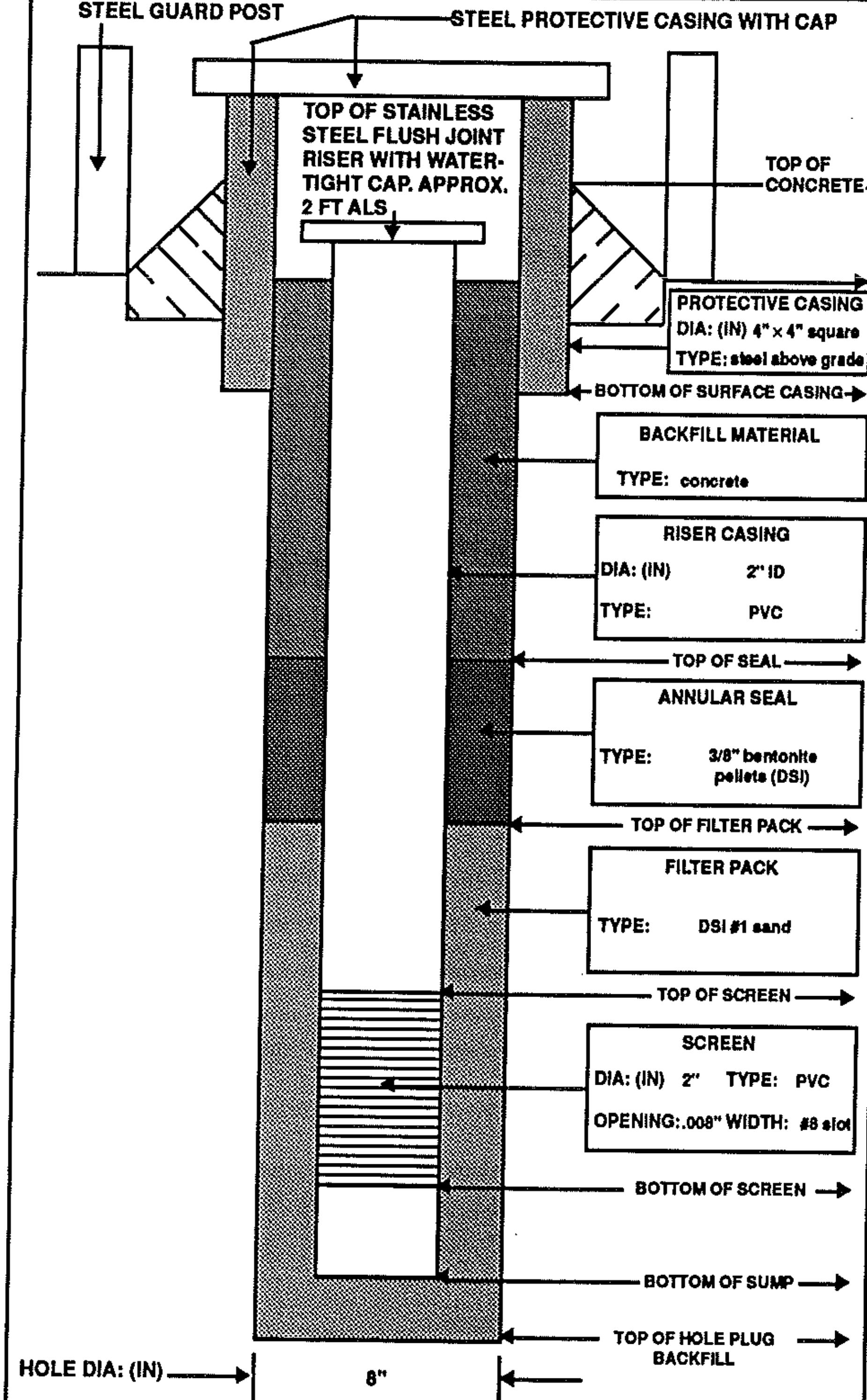
(Signature & Date) (Signature & Date)

96-053M(TPS)/WellInst.Forms-MW-3/110697

MONITORING WELL

PROJECT: FORT STEWART - TANK PURGE | **DELIVERY ORDER: 0007**

WELL NUMBER: MW-3/GP-2 724TH	BEGIN: 7-24-97 1715	END: 7-24-97 1845	
COORDINATES: N: 683200.7651 E: 820705.93401 NAD83	REFERENCE POINT: TOP OF RISER MSL	ELEVATION: 67.51 NGVD29	



	DEPTH	ELEVATION
TOP OF CONCRETE	0	65.01
BOTTOM OF SURFACE CASING	2.0	63.01
TOP OF SEAL	2.0	63.01
TOP OF FILTER PACK	3.0	62.01
TOP OF SCREEN	4.0	61.01
BOTTOM OF SCREEN	13.5	51.51
BOTTOM OF SUMP	14.0	51.01
TOP OF HOLE PLUG BACKFILL	14.5	50.51
BOTTOM OF BOREHOLE		51.0

MONITORING WELL INSTALLATION LOG

PROJECT: FORT STEWART - TANK PURGE **DELIVERY ORDER: 0007**

MONITORING WELL ID: MW-4 Tanker Purge

INSTALLATION START: DATE: 7-26-97 TIME: 1840

INSTALLATION FINISH: DATE: 7-27-97 TIME: 1105

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: DSI # sand QUANTITY: 7 bags (350 lbs)

BENTONITE SEAL: TYPE: DSI 3/8" pellets QUANTITY: 1/2 5 gal bucket

GROUT: TYPE: DSI Portland cement QUANTITY: ______

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (Inches): 0.010" SLOT CONFIGURATION: #10 slotted

TOTAL OPEN AREA PER FOOT OF SCREEN: ______

OUTSIDE DIAMETER: 2.3" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN: DSI #2 sand

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2.3" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

JOINT DESIGN AND COMPOSITION:

CENTRALIZERS DESIGN AND COMPOSITION: N/A

DESCRIPTION OF PROTECTIVE CASING:

NOMINAL INSIDE DIAMETER: 4 x 4" square COMPOSITION: steel, above grade

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

None.

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [✓] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [✓] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [✓] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: 25 gal

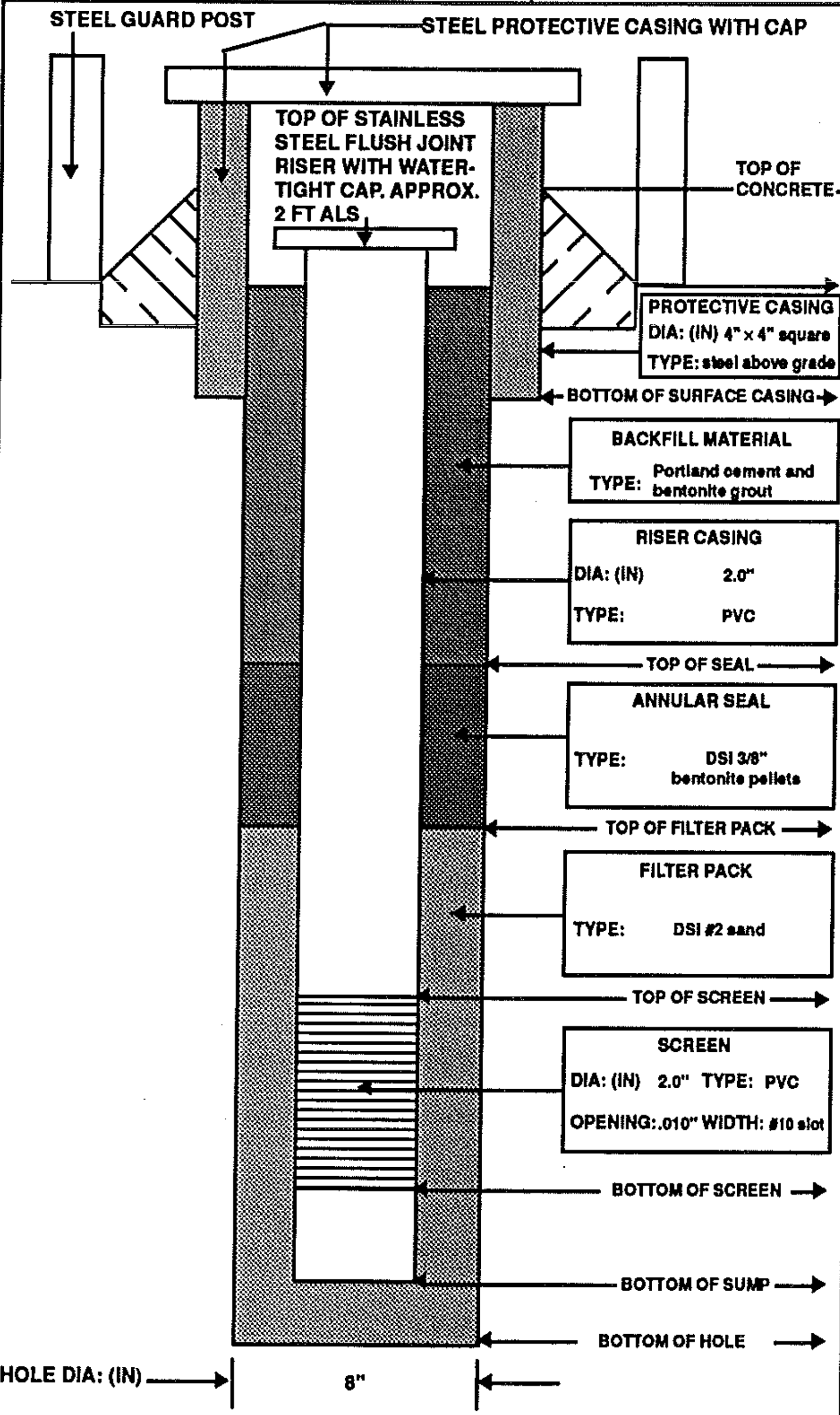
RECORDED BY: ______ **QA CHECK BY:** ______

(Signature & Date) (Signature & Date)

MONITORING WELL

PROJECT: FORT STEWART - TANK PURGE **DELIVERY ORDER: 0007**

WELL NUMBER: MW-4 724TH		BEGIN: 7-26-97 1840	END: 7-27-97 1105
COORDINATES: N: 683234.5977 E: 820859.57801	NAD83	REFERENCE POINT: TOP OF RISER MSL	ELEVATION: 71.23 NGVD29



	DEPTH	ELEVATION
TOP OF CONCRETE		
Ground surface	0	68.68
BOTTOM OF SURFACE CASING	5.0	63.68
TOP OF SEAL	29.5	39.18
TOP OF FILTER PACK	32.5	36.18
TOP OF SCREEN	34.7	33.98
BOTTOM OF SCREEN	44.2	24.48
BOTTOM OF SUMP	44.7	23.98
BOTTOM OF HOLE	45.5	23.18

MONITORING WELL INSTALLATION LOG

PROJECT: FORT STEWART - TANK PURGE **DELIVERY ORDER: 0007**

MONITORING WELL ID: MW-5 Tanker Purge

INSTALLATION START: DATE: 7-25-97 TIME: 0910

INSTALLATION FINISH: DATE: 7-25-97 TIME: 1020

ANNULAR SPACE MATERIALS INVENTORY:

GRANULAR FILTER PACK: TYPE: #2 DSI QUANTITY: 6 1/2 50 lb bags

BENTONITE SEAL: TYPE: 1/4" pellet plug QUANTITY: 1/2 5 gal bucket

GROUT: TYPE: ________ QUANTITY: ________

DESCRIPTION OF WELL SCREEN:

SLOT SIZE (Inches): 0.010" SLOT CONFIGURATION: slotted

TOTAL OPEN AREA PER FOOT OF SCREEN: ________

OUTSIDE DIAMETER: 2.4" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

TYPE OF MATERIAL BETWEEN BOTTOM OF BORING AND SCREEN: #2 DSI sand

DESCRIPTION OF WELL CASING:

OUTSIDE DIAMETER: 2.4" NOMINAL INSIDE DIAMETER: 2.0"

SCHEDULE/THICKNESS: 40 COMPOSITION: PVC

MANUFACTURER: DSI

JOINT DESIGN AND COMPOSITION: Flush threaded

CENTRALIZERS DESIGN AND COMPOSITION: None

DESCRIPTION OF PROTECTIVE CASING:

NOMINAL INSIDE DIAMETER: 4 x 4" square COMPOSITION: steel above grade

SPECIAL PROBLEMS ENCOUNTERED DURING WELL CONSTRUCTION AND THEIR RESOLUTION:

Due to shallow groundwater, well was set with 1 ft of sand above top of screen and 1 ft of bentonite seal above sand to allow protective casing to be set at 2.0 ft BGS.

Was all well screen and casing material used for construction free of foreign matter (e.g., adhesive tape, labels, soil, grease, etc.)? YES [✓] NO [ ]

Was all well screen and casing material used for construction free of unsecured couplings, ruptures, and other physical breakage and/or defects? YES [✓] NO [ ]

Is deformation or bending of the installed well screen and casing minimized to the point of allowing the insertion and retrieval of a 1.0-inch bailer throughout the entire length of the completed well? YES [✓] NO [ ]

QUANTITY OF APPROVED WATER USED FOR FILTER PACK ENPLACEMENT: ________

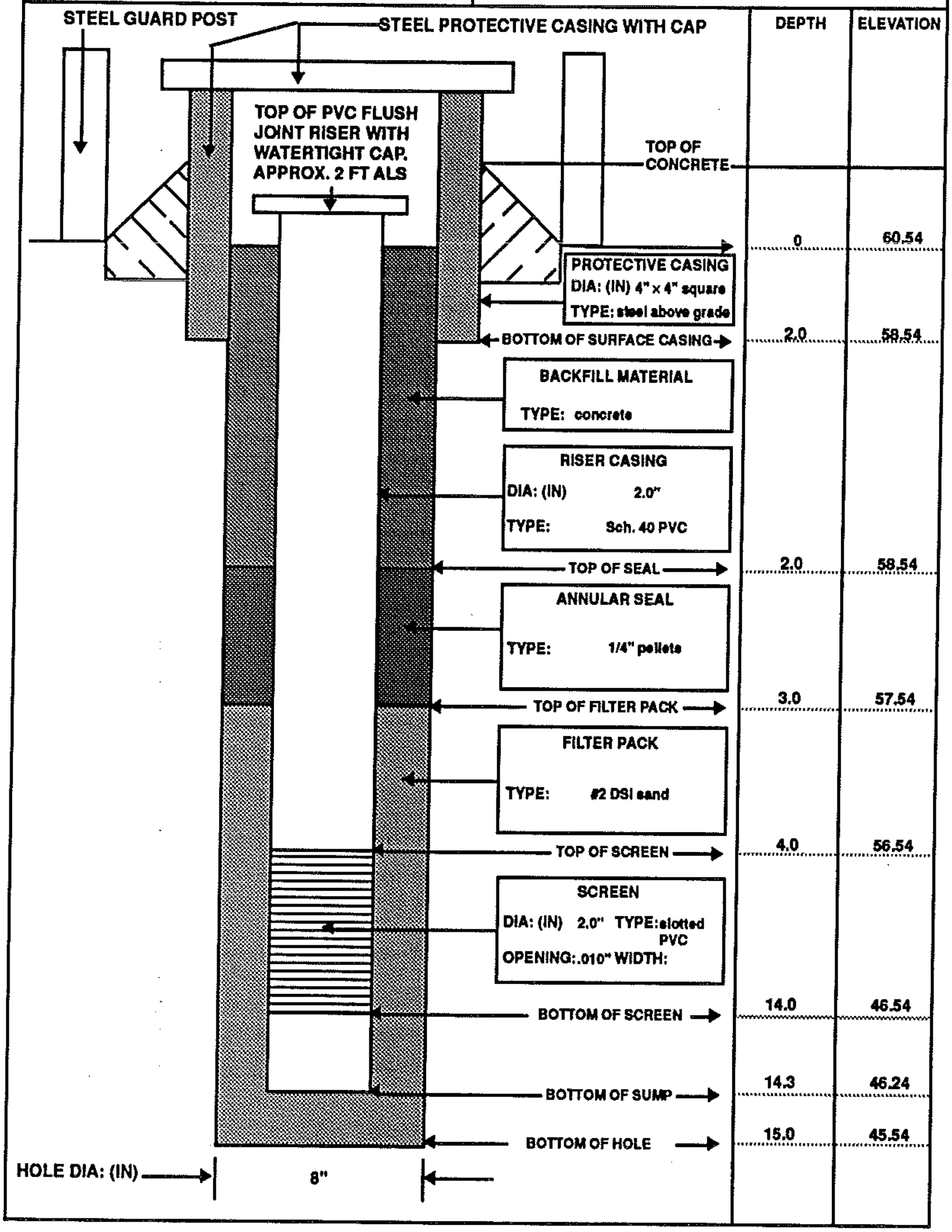
RECORDED BY: ________ QA CHECK BY: ________

(Signature & Date) (Signature & Date)

MONITORING WELL

PROJECT: FORT STEWART - TANK PURGE **DELIVERY ORDER:** 0007

WELL NUMBER: MW-5	**BEGIN:** 7-25-97 0910	**END:** 7-25-97 1020
COORDINATES: N: 682482.9226 E: 819879.63681 NAD83	**REFERENCE POINT:** TOP OF RISER MSL	**ELEVATION:** 63.10 NGVD29



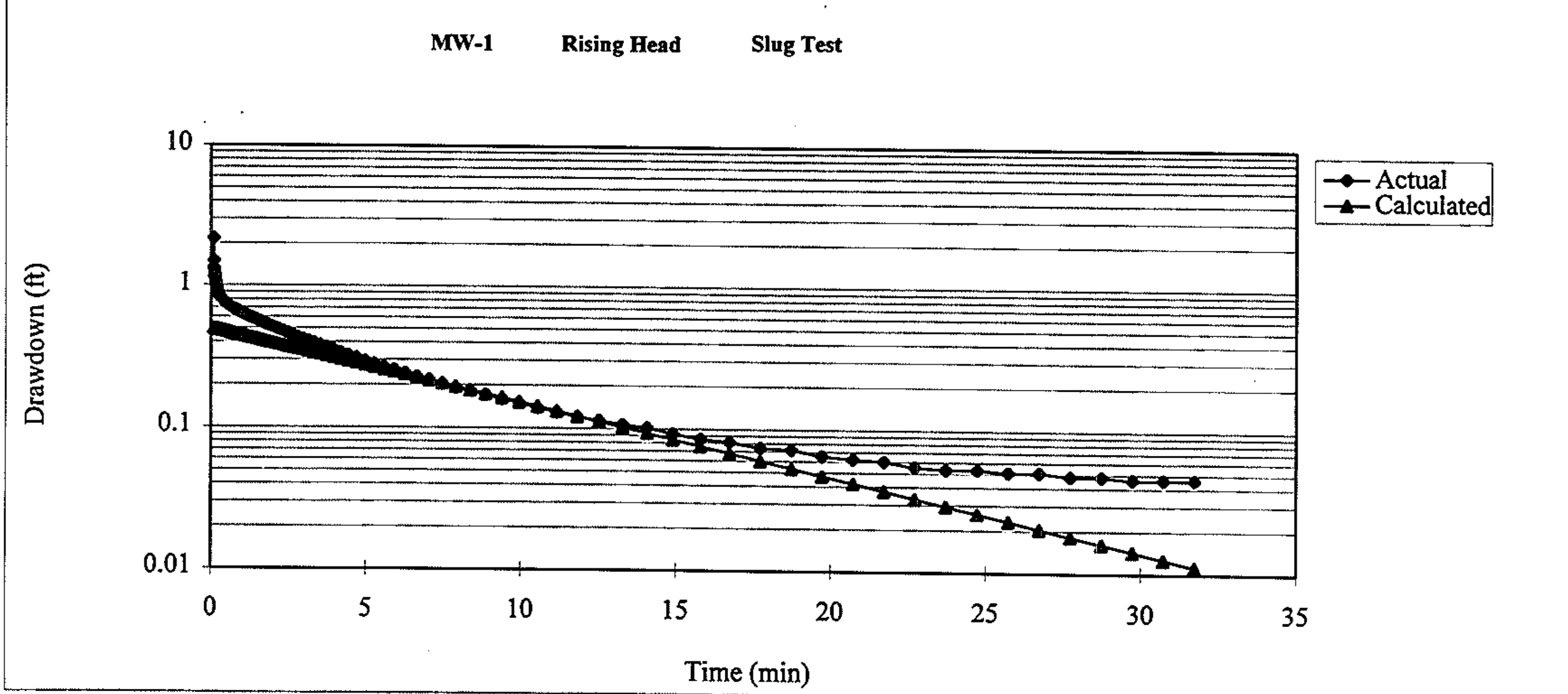
PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANKER PURGING STATION
FORT STEWART, GEORGIA

APPENDIX C

AQUIFER (SLUG) TEST RESULTS

Slug Test Hydraulic Conductivity (K) Calculation

Well ID	MW-1		Test Date	8/11/97	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice (1976)	
Borehole Parameters			Calculation Parameters		
Pretest water level	5.00	ft BRP	Radius of casing (rc^2)	0.01	ft
Casing diameter	2.00	in	Radius of borehole (rw)	0.33	ft
Borehole diameter	8.00	in	Effective radius/well radius ratio ln(Re/rw)	3.20	ft
Saturated thickness (H)	10.00	ft	Effective length of screen (Le)	9.50	ft
Screen length	9.50	ft	Distance from static water level at t=0 (Yo)	0.50	ft
Saturated penetration (Lw)	10.00	ft	**Hydraulic conductivity (K)**	**1.40E-04**	**ft/min**



RESMW-1.XLS

MW-1 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.085	2.148	0.010	0.495
0.09	1.331	0.011	0.495
0.095	1.149	0.011	0.494
0.1	1.49	0.012	0.494
0.1058	1.294	0.013	0.494
0.112	1.271	0.013	0.493
0.1185	1.199	0.014	0.493
0.1255	1.186	0.015	0.493
0.1328	1.156	0.016	0.492
0.1407	1.121	0.017	0.492
0.149	1.063	0.018	0.491
0.1578	1.031	0.019	0.491
0.1672	1.003	0.020	0.490
0.177	0.973	0.021	0.490
0.1875	0.943	0.022	0.489
0.1985	0.925	0.024	0.488
0.2102	0.904	0.025	0.488
0.2227	0.883	0.027	0.487
0.2358	0.865	0.028	0.486
0.2498	0.847	0.030	0.485
0.2647	0.837	0.032	0.484
0.2803	0.83	0.034	0.484
0.297	0.814	0.036	0.483
0.3147	0.803	0.038	0.482
0.3333	0.796	0.040	0.480
0.3532	0.787	0.042	0.479
0.3742	0.777	0.045	0.478
0.3963	0.773	0.047	0.477
0.4198	0.761	0.050	0.475

MW-1 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.4447	0.752	0.053	0.474
0.4697	0.745	0.056	0.473
0.4963	0.738	0.059	0.471
0.5247	0.729	0.063	0.470
0.5547	0.72	0.066	0.468
0.5863	0.713	0.070	0.466
0.6213	0.704	0.074	0.464
0.658	0.694	0.079	0.462
0.6963	0.685	0.083	0.460
0.738	0.678	0.088	0.458
0.7813	0.671	0.094	0.455
0.828	0.662	0.099	0.453
0.8763	0.653	0.105	0.450
0.928	0.644	0.111	0.447
0.983	0.637	0.118	0.444
1.0413	0.627	0.125	0.441
1.103	0.618	0.132	0.438
1.168	0.609	0.140	0.435
1.238	0.597	0.148	0.431
1.3113	0.588	0.157	0.427
1.3897	0.579	0.166	0.423
1.473	0.567	0.176	0.419
1.5613	0.556	0.187	0.415
1.6547	0.544	0.198	0.410
1.753	0.533	0.210	0.405
1.858	0.521	0.222	0.400
1.968	0.51	0.236	0.395
2.0847	0.498	0.250	0.390
2.2097	0.484	0.265	0.384

MW-1 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
2.3413	0.473	0.280	0.378
2.4813	0.459	0.297	0.372
2.6297	0.445	0.315	0.365
2.7863	0.431	0.334	0.358
2.953	0.418	0.353	0.351
3.1297	0.406	0.375	0.344
3.3163	0.392	0.397	0.336
3.5147	0.378	0.421	0.328
3.7247	0.364	0.446	0.320
3.9463	0.351	0.472	0.312
4.1813	0.334	0.501	0.303
4.4297	0.321	0.530	0.294
4.693	0.309	0.562	0.285
4.973	0.293	0.595	0.276
5.2697	0.279	0.631	0.266
5.583	0.265	0.668	0.256
5.9147	0.254	0.708	0.246
6.2663	0.24	0.750	0.236
6.6397	0.228	0.795	0.226
7.0347	0.217	0.842	0.215
7.453	0.203	0.892	0.205
7.8963	0.191	0.945	0.194
8.3663	0.182	1.001	0.184
8.8647	0.171	1.061	0.173
9.3913	0.159	1.124	0.162
9.9497	0.15	1.191	0.152
10.5413	0.138	1.262	0.142
11.168	0.129	1.337	0.131
11.8313	0.12	1.416	0.121

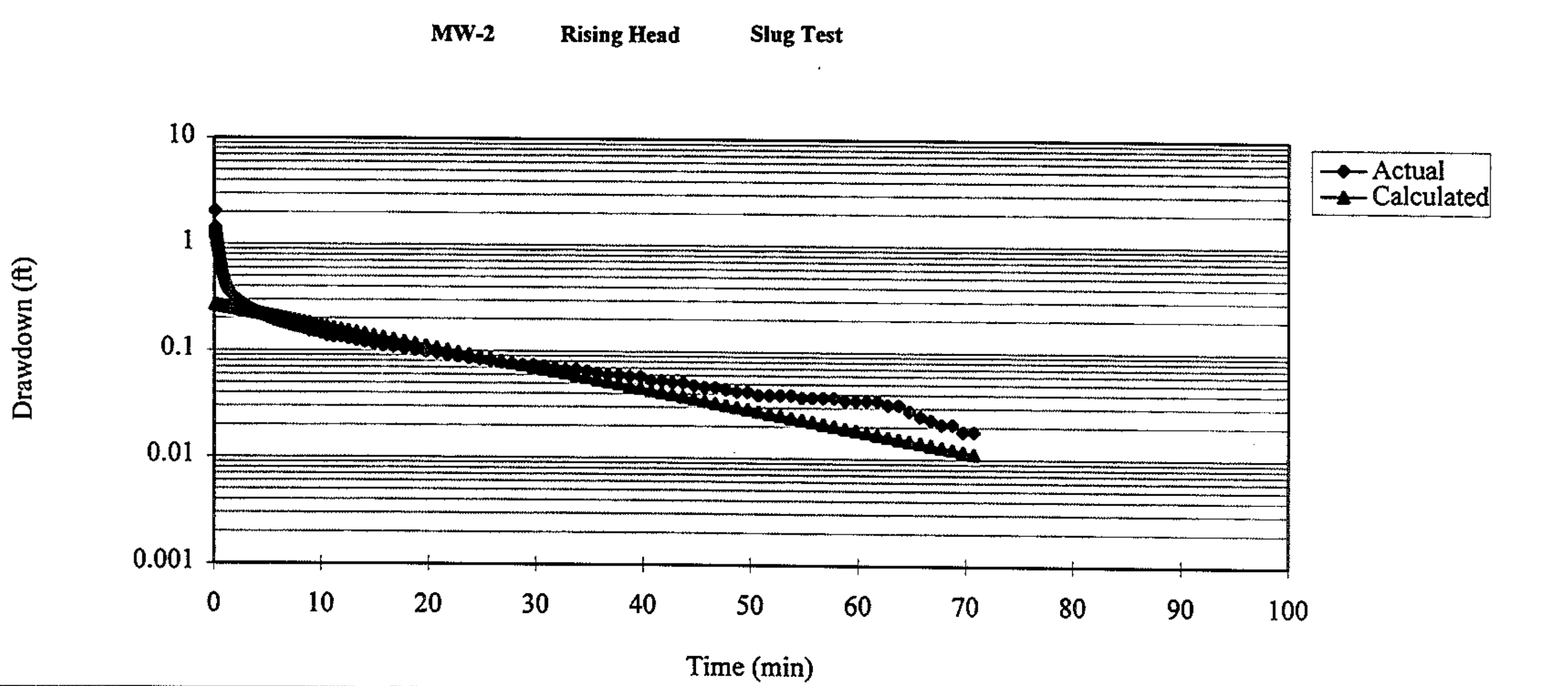
RESMW-1.XLS

MW-1 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
12.5347	0.113	1.500	0.112
13.2797	0.106	1.590	0.102
14.0697	0.101	1.684	0.093
14.9063	0.092	1.784	0.084
15.7913	0.085	1.890	0.076
16.7297	0.081	2.003	0.067
17.723	0.074	2.121	0.060
18.723	0.072	2.241	0.053
19.723	0.065	2.361	0.047
20.723	0.062	2.481	0.042
21.723	0.06	2.600	0.037
22.723	0.055	2.720	0.033
23.723	0.053	2.840	0.029
24.723	0.053	2.959	0.026
25.723	0.051	3.079	0.023
26.723	0.051	3.199	0.020
27.723	0.048	3.318	0.018
28.723	0.048	3.438	0.016
29.723	0.046	3.558	0.014
30.723	0.046	3.678	0.013
31.723	0.046	3.797	0.011

Slug Test Hydraulic Conductivity (K) Calculation

Well ID	MW-2		Test Date	8/10/97	
Test Type	**Rising Head**		Evaluation Method	Bouwer & Rice (1976)	
Borehole Parameters			Calculation Parameters		
Pretest water level	5.00	ft BRP	Radius of casing (rc^2)	0.01	ft
Casing diameter	2.00	in	Radius of borehole (rw)	0.33	ft
Borehole diameter	8.00	in	Effective radius/well radius ratio ln(Re/rw)	2.56	ft
Saturated thickness (H)	10.00	ft	Effective length of screen (Le)	10.00	ft
Screen length	10.20	ft	Distance from static water level at t=0 (Yo)	0.27	ft
Saturated penetration (Lw)	10.00	ft	**Hydraulic conductivity (K)**	**4.00E-05**	**ft/min**



RESMW-2.XLS

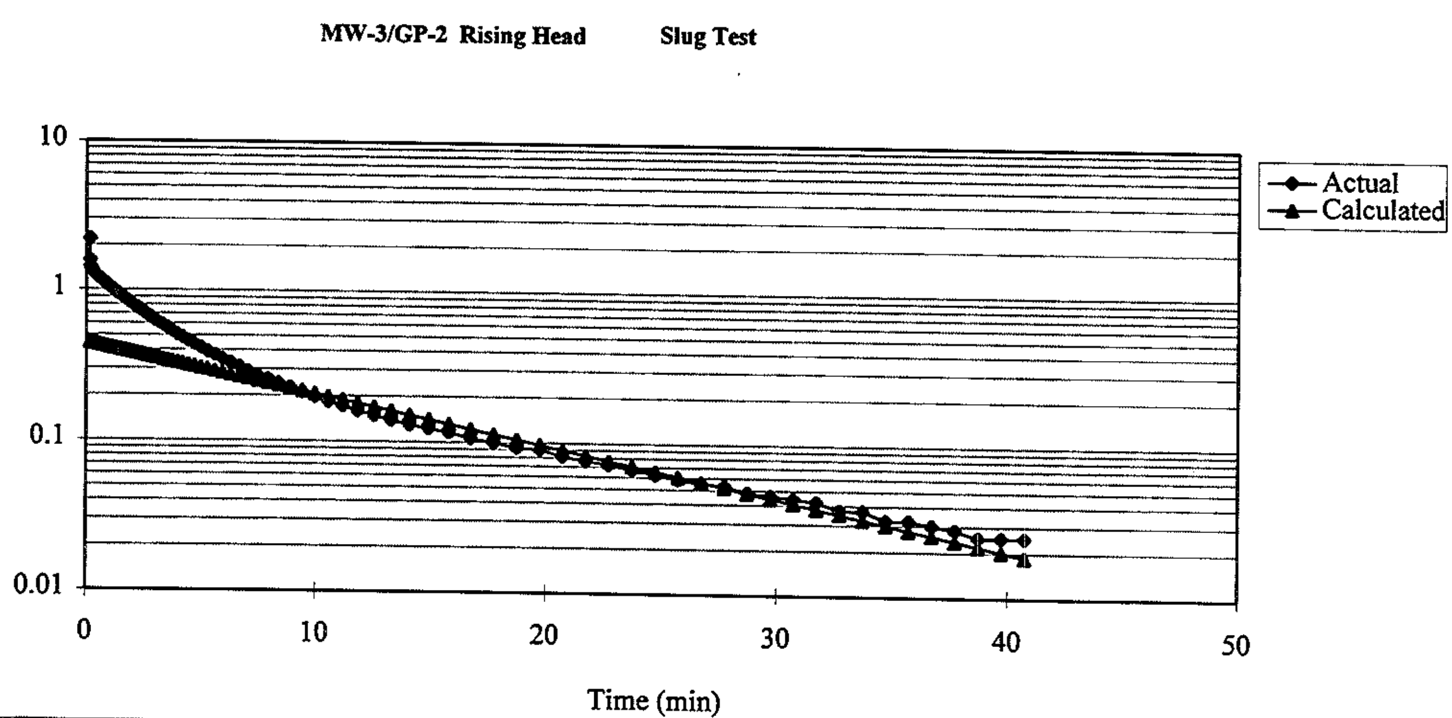
MW-2 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.085	2.044	0.004	0.269
0.09	1.165	0.004	0.269
0.095	1.333	0.004	0.269
0.1	1.423	0.005	0.269
0.1058	1.269	0.005	0.269
0.112	1.294	0.005	0.269
0.1185	1.294	0.005	0.269
0.1255	1.285	0.006	0.268
0.1328	1.266	0.006	0.268
0.1407	1.248	0.006	0.268
0.149	1.22	0.007	0.268
0.1578	1.204	0.007	0.268
0.1672	1.183	0.008	0.268
0.177	1.167	0.008	0.268
0.1875	1.151	0.008	0.268
0.1985	1.13	0.009	0.268
0.2102	1.112	0.009	0.267
0.2227	1.091	0.010	0.267
0.2358	1.068	0.011	0.267
0.2498	1.045	0.011	0.267
0.2647	1.02	0.012	0.267
0.2803	0.999	0.013	0.267

Slug Test Hydraulic Conductivity (K) Calculation

Well ID	MW-3/GP-2		Test Date	7/24/97	
Test Type	**Rising Head**		Evaluation Method	Bouwer & Rice (1976)	

Borehole Parameters			Calculation Parameters		
Pretest water level	5.00	ft BRP	Radius of casing (rc^2)	0.01	ft
Casing diameter	2.00	in	Radius of borehole (rw)	0.33	ft
Borehole diameter	8.00	in	Effective radius/well radius ratio ln(Re/rw)	3.50	ft
Saturated thickness (H)	9.50	ft	Effective length of screen (Le)	9.50	ft
Screen length	9.50	ft	Distance from static water level at t=0 (Yo)	0.45	ft
Saturated penetration (Lw)	8.50	ft	**Hydraulic conductivity (K)**	**1.00E-04**	**ft/min**



RESMW-3.XLS

MW-3/GP-2 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.149	2.173	0.012	0.445
0.1578	1.569	0.012	0.444
0.1672	1.43	0.013	0.444
0.177	1.412	0.014	0.444
0.1875	1.398	0.015	0.443
0.1985	1.382	0.016	0.443
0.2102	1.379	0.016	0.443
0.2227	1.354	0.017	0.442
0.2358	1.347	0.018	0.442
0.2498	1.338	0.020	0.441
0.2647	1.324	0.021	0.441
0.2803	1.312	0.022	0.440
0.297	1.303	0.023	0.440
0.3147	1.294	0.025	0.439
0.3333	1.285	0.026	0.438
0.3532	1.28	0.028	0.438
0.3742	1.269	0.029	0.437
0.3963	1.248	0.031	0.436
0.4198	1.236	0.033	0.435
0.4447	1.229	0.035	0.435
0.4697	1.218	0.037	0.434
0.4963	1.211	0.039	0.433
0.5247	1.199	0.041	0.432
0.5547	1.19	0.043	0.431
0.5863	1.181	0.046	0.430
0.6213	1.165	0.049	0.429
0.658	1.153	0.051	0.427
0.6963	1.137	0.054	0.426
0.738	1.126	0.058	0.425

RESMW-3.XLS

MW-3/GP-2 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.7813	1.11	0.061	0.423
0.828	1.096	0.065	0.422
0.8763	1.082	0.069	0.420
0.928	1.063	0.073	0.419
0.983	1.047	0.077	0.417
1.0413	1.031	0.081	0.415
1.103	1.01	0.086	0.413
1.168	0.994	0.091	0.411
1.238	0.973	0.097	0.408
1.3113	0.953	0.103	0.406
1.3897	0.937	0.109	0.404
1.473	0.918	0.115	0.401
1.5613	0.895	0.122	0.398
1.6547	0.872	0.129	0.395
1.753	0.853	0.137	0.392
1.858	0.828	0.145	0.389
1.968	0.805	0.154	0.386
2.0847	0.78	0.163	0.382
2.2097	0.757	0.173	0.379
2.3413	0.734	0.183	0.375
2.4813	0.708	0.194	0.371
2.6297	0.68	0.206	0.366
2.7863	0.655	0.218	0.362
2.953	0.63	0.231	0.357
3.1297	0.604	0.245	0.352
3.3163	0.581	0.259	0.347
3.5147	0.556	0.275	0.342
3.7247	0.531	0.291	0.336
3.9463	0.505	0.308	0.331

RESMW-3.XLS

MW-3/GP-2 Rising Head Slug Test Hydraulic Conductivity Worksheet

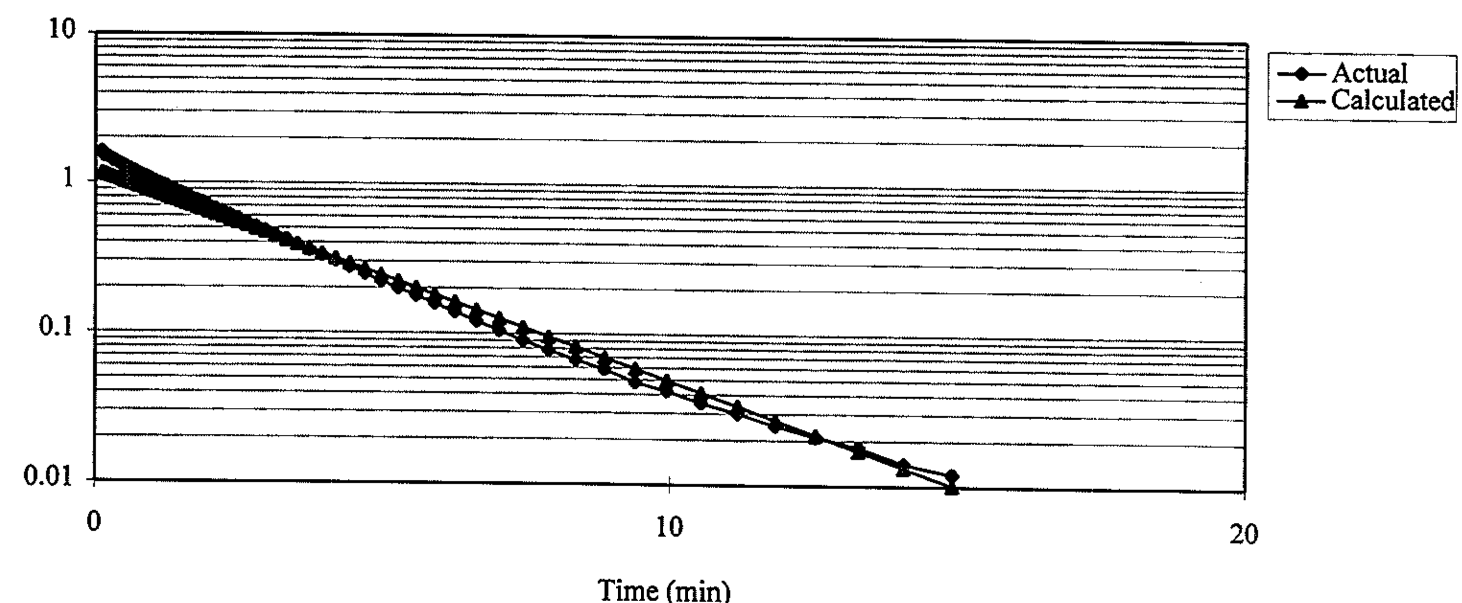
Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
4.1813	0.482	0.327	0.325
4.4297	0.457	0.346	0.318
4.693	0.436	0.367	0.312
4.973	0.413	0.389	0.305
5.2697	0.39	0.412	0.298
5.583	0.369	0.436	0.291
5.9147	0.348	0.462	0.283
6.2663	0.328	0.490	0.276
6.6397	0.309	0.519	0.268
7.0347	0.288	0.550	0.260
7.453	0.27	0.583	0.251
7.8963	0.256	0.617	0.243
8.3663	0.24	0.654	0.234
8.8647	0.226	0.693	0.225
9.3913	0.21	0.734	0.216
9.9497	0.196	0.778	0.207
10.5413	0.182	0.824	0.197
11.168	0.171	0.873	0.188
11.8313	0.159	0.925	0.178
12.5347	0.148	0.980	0.169
13.2797	0.138	1.038	0.159
14.0697	0.129	1.100	0.150
14.9063	0.122	1.165	0.140
15.7913	0.115	1.234	0.131
16.7297	0.106	1.308	0.122
17.723	0.099	1.385	0.113
18.723	0.092	1.464	0.104
19.723	0.09	1.542	0.096
20.723	0.081	1.620	0.089

MW-3/GP-2 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
21.723	0.076	1.698	0.082
22.723	0.072	1.776	0.076
23.723	0.067	1.854	0.070
24.723	0.062	1.933	0.065
25.723	0.058	2.011	0.060
26.723	0.055	2.089	0.056
27.723	0.053	2.167	0.052
28.723	0.048	2.245	0.048
29.723	0.046	2.323	0.044
30.723	0.044	2.402	0.041
31.723	0.042	2.480	0.038
32.723	0.037	2.558	0.035
33.723	0.037	2.636	0.032
34.723	0.032	2.714	0.030
35.723	0.032	2.793	0.028
36.723	0.03	2.871	0.025
37.723	0.028	2.949	0.024
38.723	0.025	3.027	0.022
39.723	0.025	3.105	0.020
40.723	0.025	3.183	0.019

Slug Test Hydraulic Conductivity (K) Calculation

Well ID	MW-4		Test Date	8/10/97	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice (1976)	
Borehole Parameters			**Calculation Parameters**		
Pretest water level	10.25	ft BRP	Radius of casing (rc^2)	0.01	ft
Casing diameter	2.00	in	Radius of borehole (rw)	0.33	ft
Borehole diameter	8.00	in	Effective radius/well radius ratio ln(Re/rw)	2.56	ft
Saturated thickness (H)	35.25	ft	Effective length of screen (Le)	9.50	ft
Screen length	9.50	ft	Distance from static water level at t=0 (Yo)	1.20	ft
Saturated penetration (Lw)	35.25	ft	**Hydraulic conductivity (K)**	**3.00E-04**	**ft/min**



RESMW-4.XLS

MW-4 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.1058	1.603	0.034	1.160
0.112	1.58	0.036	1.158
0.1185	1.569	0.038	1.155
0.1255	1.548	0.040	1.153
0.1328	1.502	0.043	1.150
0.1407	1.532	0.045	1.147
0.149	1.527	0.048	1.144
0.1578	1.515	0.051	1.141
0.1672	1.509	0.054	1.137
0.177	1.499	0.057	1.134
0.1875	1.492	0.060	1.130
0.1985	1.481	0.064	1.126
0.2102	1.469	0.067	1.122
0.2227	1.462	0.071	1.117
0.2358	1.453	0.076	1.113
0.2498	1.442	0.080	1.108
0.2647	1.426	0.085	1.102
0.2803	1.421	0.090	1.097
0.297	1.386	0.095	1.091
0.3147	1.396	0.101	1.085
0.3333	1.384	0.107	1.078
0.3532	1.37	0.113	1.072
0.3742	1.356	0.120	1.064
0.3963	1.342	0.127	1.057
0.4198	1.326	0.135	1.049
0.4447	1.306	0.143	1.041
0.4697	1.299	0.151	1.032
0.4963	1.28	0.159	1.023
0.5247	1.264	0.168	1.014

RESMW-4.XLS

MW-4 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.5547	1.246	0.178	1.004
0.5863	1.232	0.188	0.994
0.6213	1.213	0.199	0.983
0.658	1.195	0.211	0.972
0.6963	1.174	0.223	0.960
0.738	1.151	0.237	0.947
0.7813	1.13	0.251	0.934
0.828	1.107	0.265	0.920
0.8763	1.086	0.281	0.906
0.928	1.063	0.298	0.891
0.983	1.04	0.315	0.876
1.0413	1.015	0.334	0.859
1.103	0.99	0.354	0.843
1.168	0.966	0.374	0.825
1.238	0.939	0.397	0.807
1.3113	0.911	0.420	0.788
1.3897	0.883	0.446	0.769
1.473	0.856	0.472	0.748
1.5613	0.823	0.501	0.727
1.6547	0.793	0.531	0.706
1.753	0.766	0.562	0.684
1.858	0.734	0.596	0.661
1.968	0.701	0.631	0.638
2.0847	0.669	0.668	0.615
2.2097	0.639	0.708	0.591
2.3413	0.607	0.751	0.566
2.4813	0.574	0.796	0.542
2.6297	0.542	0.843	0.516
2.7863	0.51	0.893	0.491

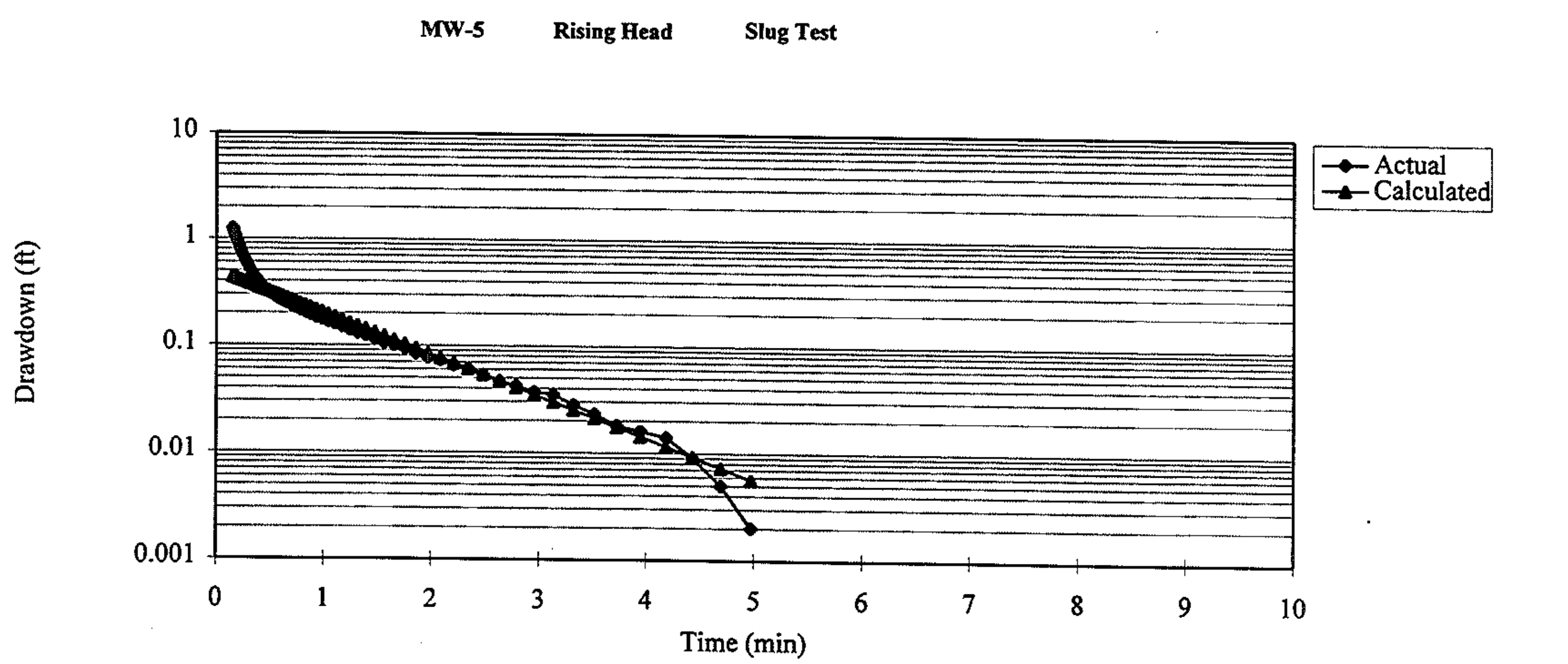
MW-4 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
2.953	0.477	0.947	0.466
3.1297	0.447	1.003	0.440
3.3163	0.418	1.063	0.414
3.5147	0.385	1.127	0.389
3.7247	0.355	1.194	0.364
3.9463	0.328	1.265	0.339
4.1813	0.3	1.341	0.314
4.4297	0.274	1.420	0.290
4.693	0.247	1.505	0.267
4.973	0.221	1.594	0.244
5.2697	0.198	1.690	0.222
5.583	0.178	1.790	0.200
5.9147	0.157	1.896	0.180
6.2663	0.138	2.009	0.161
6.6397	0.12	2.129	0.143
7.0347	0.104	2.256	0.126
7.453	0.09	2.390	0.110
7.8963	0.078	2.532	0.095
8.3663	0.067	2.682	0.082
8.8647	0.058	2.842	0.070
9.3913	0.048	3.011	0.059
9.9497	0.042	3.190	0.049
10.5413	0.035	3.380	0.041
11.168	0.03	3.581	0.033
11.8313	0.025	3.793	0.027
12.5347	0.021	4.019	0.022
13.2797	0.018	4.258	0.017
14.0697	0.014	4.511	0.013
14.9063	0.012	4.779	0.010

RESMW-4.XLS

Slug Test Hydraulic Conductivity (K) Calculation

Well ID	MW-5		Test Date	8/10/97	
Test Type	**Rising Head**		Evaluation Method	Bouwer & Rice (1976)	
Borehole Parameters			Calculation Parameters		
Pretest water level	5.00	ft BRP	Radius of casing (rc^2)	0.01	ft
Casing diameter	2.00	in	Radius of borehole (rw)	0.33	ft
Borehole diameter	8.00	in	Effective radius/well radius ratio ln(Re/rw)	2.30	ft
Saturated thickness (H)	9.00	ft	Effective length of screen (Le)	9.00	ft
Screen length	10.00	ft	Distance from static water level at t=0 (Yo)	0.50	ft
Saturated penetration (Lw)	9.00	ft	**Hydraulic conductivity (K)**	**8.00E-04**	**ft/min**



RESMW-5.XLS

MW-5 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.149	1.239	0.134	0.437
0.1578	1.176	0.142	0.434
0.1672	1.1	0.151	0.430
0.177	1.045	0.160	0.426
0.1875	0.971	0.169	0.422
0.1985	0.909	0.179	0.418
0.2102	0.856	0.190	0.414
0.2227	0.78	0.201	0.409
0.2358	0.727	0.213	0.404
0.2498	0.676	0.225	0.399
0.2647	0.627	0.239	0.394
0.2803	0.586	0.253	0.388
0.297	0.544	0.268	0.383
0.3147	0.503	0.284	0.376
0.3333	0.471	0.300	0.370
0.3532	0.438	0.318	0.364
0.3742	0.413	0.337	0.357
0.3963	0.388	0.357	0.350
0.4198	0.364	0.378	0.342
0.4447	0.341	0.401	0.335
0.4697	0.325	0.423	0.327
0.4963	0.309	0.447	0.320
0.5247	0.295	0.473	0.312
0.5547	0.281	0.500	0.303
0.5863	0.268	0.529	0.295
0.6213	0.256	0.560	0.286
0.658	0.247	0.593	0.276
0.6963	0.235	0.628	0.267
0.738	0.224	0.665	0.257

RESMW-5.XLS

MW-5 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
0.7813	0.212	0.704	0.247
0.828	0.201	0.746	0.237
0.8763	0.191	0.790	0.227
0.928	0.182	0.837	0.217
0.983	0.173	0.886	0.206
1.0413	0.164	0.939	0.196
1.103	0.157	0.994	0.185
1.168	0.148	1.053	0.174
1.238	0.138	1.116	0.164
1.3113	0.129	1.182	0.153
1.3897	0.122	1.253	0.143
1.473	0.113	1.328	0.133
1.5613	0.104	1.408	0.122
1.6547	0.099	1.492	0.112
1.753	0.092	1.580	0.103
1.858	0.083	1.675	0.094
1.968	0.076	1.774	0.085
2.0847	0.072	1.879	0.076
2.2097	0.065	1.992	0.068
2.3413	0.06	2.111	0.061
2.4813	0.053	2.237	0.053
2.6297	0.046	2.371	0.047
2.7863	0.042	2.512	0.041
2.953	0.037	2.662	0.035
3.1297	0.035	2.822	0.030
3.3163	0.028	2.990	0.025
3.5147	0.023	3.169	0.021
3.7247	0.018	3.358	0.017
3.9463	0.016	3.558	0.014

MW-5 Rising Head Slug Test Hydraulic Conductivity Worksheet

Elapsed Time (min)	y=ft	(2*Le*K*t)/(rc^2*ln(Re/rw))	Ycalc (ft)
4.1813	0.014	3.770	0.012
4.4297	0.009	3.994	0.009
4.693	0.005	4.231	0.007
4.973	0.002	4.483	0.006

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANKER PURGING STATION
FORT STEWART, GEORGIA

APPENDIX D

QUALITY CONTROL SUMMARY REPORT

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724TH TANKER PURGING STATION
SWMU 26, FORT STEWART, GEORGIA
QUALITY CONTROL SUMMARY REPORT
November 1997

1 Introduction

The purpose of this project was to perform a Phase II Resource Conservation and Recovery Act (RCRA) Facility investigation for the former 724th Tanker Purging Station, Solid Waste Management Unit (SWMU) 26 at Fort Stewart, Georgia to determine the nature and extent of contamination and to gather data to support a Corrective Action Plan (CAP).

The Former 724th Tanker Purging Station was an area where tanker trailers used to transport JP-4 jet fuel and mogas were routinely cleaned. During August 1996 the purging station was dismantled and the underground facilities were removed, with approximately 500 yd^3 of soil being excavated and replaced with clean backfill. Potential contamination due to leakage at the site was investigated during a Phase I RFI for 24 SWMUs at Fort Stewart (Rust 1993). Analytical results from soil sampling conducted at SWMU 26 indicated fuel product and solvent contamination. Based on these findings, Georgia Environmental Protection Division (GEPD) instructed the Fort Stewart Directorate of Public Works (DPW) to conduct the Phase II RFI. This Quality Control Summary Report (QCSR) consolidates quality control information for the Phase II studies.

1.1 Project Description

Phase II field sampling activities for the site began and were completed in July and August of 1997. Investigation activities consisted of screening soil samples using a push probe at 21 locations; screening groundwater samples from 17 push probe locations, including five vertical profile probes; installation and sampling of five permanent monitoring wells; and collection and analysis of surface water and sediment at five ditch and creek location adjacent to the site.

Sample results were screened against background levels, Georgia Department of Natural Resources action levels, and risk-based action levels for those compounds identified by the Georgia Environmental Protection Division (GEPD).

1.2 Project Objectives

The scope of the project involved performance of site investigation activities relative to the State of Georgia GEPD instructions and preparation of this Phase II RCRA Facility Investigation Report based on the results. The overall purpose of the study was to determine contamination extent and corrective action measures. Specific objectives for the Phase II RFI were defined in the Phase II RFI Sampling and Analysis Plan (SAIC 1997). In summary, the objectives of the project were as follows:

1. Determine the horizontal and vertical extent of contamination.

2. Determine whether contaminants present constitute a threat to human health or the environment.

3. Determine the need for future action or no further action.

4. Gather necessary data to support a Corrective Action Plan (CAP), if warranted.

The general quality assurance (QA) objectives of the project are as follows:

1. Ensure that the method used for borehole drilling will allow for collection of soil samples representative of surface and subsurface soil contamination conditions, and for description of the hydrogeologic environment.

2. Ensure that the method used for collection of groundwater samples will allow for collection of samples representative of water table contamination conditions.

3. Ensure that sampling methods used for soil and groundwater collection minimize alteration of contaminant concentrations, and that drilling and sampling equipment decontamination methods prevent cross-contamination between sampling locations.

4. Ensure that field measurement and analytical laboratory results are accurate, representative of site conditions, and fulfill data quality objectives (DQOs) defined for the project.

The first three QA objectives were accomplished through implementation of the procedures and requirements described in the Work Plan and the Field Sampling Plan. The fourth QA objective was accomplished through data management practices, associated internal laboratory QC analyses, related procedures and requirements defined in the Quality Assurance Project Plan (QAPjP), and through collection and analysis of field quality control (QC) samples.

1.3 Project Implementation

Phase II SAIC field work was initiated and completed in July and August 1997. A project specific Site Health and Safety Plan was compiled for the work completed by SAIC and sub-tier contractors. Ms. Patty Stoll was designated as Field Team Leader for the project. She was responsible for the collection of samples in accordance with the work plan, completion of the Daily Quality Control Reports (DQCRs), coordination of site access, shipment of samples to the laboratories, and documentation and correction of problems as they occurred. Quality Control Officer for the project was Ms. Sharon Stoller. She was responsible for data quality control for the SAIC sampling effort. This included but was not limited to, validation of both field and laboratory data in accordance with the QAPjP and the Sampling and Analysis Plan. As laboratory and analytical data coordinator, Mr. Nile Luedtke was responsible for maintaining analytical files for the project, approval of payment invoices from the laboratories, and documentation and correction of problems as they occurred. As the SAIC project manager, Duncan Moss was responsible for overall project success, budgetary control, COE interfaces, and completion of Monthly Progress Reports (MPRs).

One analytical laboratory was utilized by SAIC for testing samples collected by SAIC personnel. General Engineering Laboratory of Charleston, SC completed all water and soil analysis for: volatile organic compounds (VOCs); benzene, toluene, ethylbenzene, and xylenes (BTEX); semivolatile organic compounds (SVOCs) or polyaromatic hydrocarbons (PAHs); gasoline range organics (GRO); diesel range organics (DRO; RCRA metals; and miscellaneous parameters. The laboratory employed EPA analytical methods and is validated through the COE Missouri River Division (MRD) laboratory review process. The QA laboratory for the entire project was the COE South Atlantic Savannah Division (SAS) Laboratory in Marietta, Georgia.

1.4 Purpose of this Report

Environmental data must always be interpreted relative to its known limitations and its intended use. As can be expected in environmental media of this type, there are areas and data points where the user needs to be cautioned relative to the quality of the project information presented. The data validation process and this data quality assessment are intended to provide current and future data users assistance throughout the interpretation of this data.

The purpose of this Quality Control Summary Report (QCSR) is: to describe Quality Control (QC) procedures followed to ensure data generated by SAIC during these investigations at Fort Stewart would meet project requirements; to describe the quality of the data collected; and to describe problems encountered during the course of the study and their solutions. A QA report will be completed by the USACE SAS Laboratory covering data generated from SAIC collected samples remanded to their custody.

This appendix provides an assessment of the analytical information gathered during the course of the 724th Tanker Purging Station investigation and documents that the quality of the data employed for the report met the objectives. Evaluation of field and laboratory quality control (QC) measures will constitute the majority of this assessment, however, references will also be directed toward those quality assurance (QA) procedures which establish data credibility. The primary intent of this assessment is to illustrate that data generated for theses UST investigations can withstand scientific scrutiny, are appropriate for their intended purpose, are technically defensible, and are of known and acceptable sensitivity, precision, and accuracy.

Multiple activities were performed to achieve the desired data quality in this project. As discussed in the text, decisions were made during the initial scoping to define the quality and quantity of data required. Data Quality Objectives (DQOs) were established to guide the implementation of the field sampling and laboratory analysis. A QA program was established to standardize procedures and to document activities. This program provided a means to detect and correct any deficiencies in the process. Upon receipt by the project team, data was subjected to a verification and validation review which identified and qualified problems related to the analysis. These review steps contribute to this final Data Quality Assessment (DQA) which defines that data used in the investigation met the criteria and are employed appropriately.

2 Quality Assurance Program

A QAPjP was developed for this project and may be found as part of the official Work Plan. The purpose of this document was to enumerate the quantity and type of samples to be taken to inspect the various sites, and to define the quantity and type of Quality Assurance/Quality Control (QA/QC) samples to be used to evaluate the quality of the data obtained.

The QAPjP established requirements for both field and laboratory QC procedures. In general: field QC duplicates and QA split samples were required for each environmental sample matrix collected at sites being investigated at a frequency of 10%; volatile organic compound (VOC) trip blanks were to accompany each cooler containing water samples for VOC determinations; and analytical laboratory QC duplicates, matrix spikes, laboratory control samples, method blanks were required for every 20 samples or less of each matrix and analyte.

A primary goal of the QA program was to ensure that the quality of results for all environmental measurements were appropriate for their intended use. To this end, a QAPjP and standardized field procedures were compiled to guide the investigation. Through the process of readiness review, training, equipment calibration, QC implementation, and detailed documentation, the project has successfully accomplished the goals set by the QA Program.

2.1 Monthly Progress Reports

An MPR was completed by the SAIC Project Manager for every month during project implementation. The MPRs contain the following information: work completed, problems encountered, corrective actions/solutions, summary of findings and upcoming work. These reports were issued to the Savannah Corp Project Manager and may be obtained through their office.

2.2 Daily Quality Control Reports (DQCRs)

The Field Team Leader, Patty Stoll, produced all Daily Quality Control Reports. These include information such as, but not limited to; sub-tier contractors on-site, equipment on-site, work performed summaries, QC activities, Health and Safety activities, problems encountered, and corrective actions. The DQCRs were submitted to the SAIC and Savannah Corp Project Managers, and are on file with them.

2.3 Laboratory "Definitive" Level Data Reporting

The QAPjP for this project identified requirements for laboratory data reporting and identified GEL as the lab for the project. EPA "definitive" data has been reported including the following basic information:

a. laboratory case narratives
b. sample results
c. laboratory method blank results
d. laboratory control standard results

e. laboratory sample matrix spike recoveries
f. laboratory duplicate results
g. surrogate recoveries (VOCs, SVOCs (PAHs), BTEX, GRO, DRO)
h. sample extraction dates
i. sample analysis dates

This information from the laboratory along with field information provides the basis for subsequent data evaluation relative to sensitivity, precision, accuracy, representativeness and completeness. These have been presented in Section B.4.

.3 Data Validation

The objective when evaluating the quality of the project data is to determine its usability. The evaluation is based on the interpretation of laboratory QC measures, field QC measures, and the project DQOs.

This project implemented the use of data validation checklists to facilitate laboratory data validation. These checklists were completed by the project designated validation staff and were reviewed by the project laboratory coordinator. Data validation checklists for each laboratory sample delivery group (SDG) have been retained with laboratory data deliverables by SAIC.

3.1 Field Data Validation

DQCRs were completed by the Field Team Leader. The DQCRs and other field generated documents such as sampling logs, boring logs, daily health and safety summaries, daily safety inspections, equipment calibration and maintenance logs, and sample management logs were peer reviewed on-site. These logs and all associated field information has been delivered to the Savannah Corp project manager and can be obtained through their office.

3.2 Laboratory data Validation

Analytical data generated for this project have been subjected to a process of data verification, validation, and review. The following describes this systematic process and the evaluation activities performed. Several criteria have been established against which the data are compared and from which a judgment is rendered regarding the acceptance and qualification of the data. Because it is beyond the scope of this report to cite those criteria, the reader is directed to the following documents for specific detail:

- SAIC Technical Support Contractor QA Technical Procedure (TP-DM-300-7) Data Verification and Validation;

- Region I EPA - Laboratory Data Validation, Functional Guidelines for Evaluating Inorganic Analyses;

- Region I EPA- Laboratory Data Validation, Functional Guidelines for Evaluating Organic Analyses; and

- Sampling and Analysis Plan for the Phase II RCRA Facility Investigation at the Former 724th Tanker Purging Station SWMU 26, Fort Stewart, Georgia, May 1997.

Upon receipt of field and analytical data, verification staff performed a systematic examination of the reports, following standardized data package checklists to ensure the content, presentation, and administrative validity of the data. Discrepancies identified during this process were recorded and documented utilizing the QA program Analytical Data Nonconformance Report (ADNCR) and Nonconformance Report (NCR) systems.

In conjunction with the data verification, and if standardized laboratory electronic data diskettes were available, the diskette deliverables were subjected to review utilizing SAIC EDD review software. This software performed both a structural and technical assessment of the laboratory-delivered electronic reports. The structural evaluation ensured that all required data had been reported and contract specified requirements were met (i.e., analytical holding times, contractual turnaround times, etc.).

During the validation phase of the review and evaluation process, data were subjected to a systematic technical review by examining all field and analytical QC results and laboratory documentation, following appropriate guidelines for laboratory data validation. These data validation guidelines define the technical review criteria, methods for evaluation of the criteria, and actions to be taken resulting from the review of these criteria. The primary objective of this phase was to assess and summarize the quality and reliability of the data for the intended use and to document factors that may affect the usability of the data. Data verification/validation included but was not necessarily limited to the following parameters:

Inorganic	Organic
Data completeness	Data completeness
Holding times	Holding times
Calibration - Initial - Continuing	Calibration - Initial - Continuing
Blanks	Blanks
Sample results verification	Surrogate recovery
Matrix spike (MS) recovery	
Field duplicate sample analysis	
Laboratory control sample (LCS) analysis	Internal standards performance

Furnace atomic absorption QC (when implemented)	
Detection limits	Compound quantitation and reported detection limits
Secondary dilutions	Secondary dilutions

As an end result of this phase of the review, the data were qualified based on the technical assessment of the validation criteria. Qualifiers were applied to each field and analytical result to indicate the usability of the data for its intended purpose.

3.3 Definition of Data Qualifiers (Flags)

During the data validation process, all laboratory data were assigned appropriate data validation flags and reason codes. Validation flags are defined as follows:

"U" When the material was analyzed for, but not detected above the level of the associated value.

"J" When the associated value is an estimated quantity. Indicating there is cause to question accuracy or precision of the reported value.

"UJ" When the analyte was analyzed for, but not detected, above the associated value, however, the reported value is an estimate and demonstrates an decreased knowledge of its accuracy or precision.

"R" When the analyte value reported is unusable. The integrity of the analyte's identification, accuracy, precision, or sensitivity have raised significant question as to the reality of the information presented.

SAIC validation flagging codes have been provided in Attachment 1, while copies of validation checklists and qualified data forms are on-file with the analytical laboratory deliverable.

3.4 Data Acceptability

A total of 98 environmental soil, groundwater, and field QC samples were collected with approximately 3,600 discrete analyses (i.e., analytes) being obtained, reviewed, and integrated into the assessment (these totals do not include field measurements and field descriptions). The project produced acceptable results for over 99% of the sample analyses performed and successfully collected all required investigation samples. Rejected data were relegated to PAH determinations in a one soil and two groundwater samples.

Table 1 presents a summary of the number of collected investigation samples. It also tallies the successful collection of appropriate targeted field QC and QA split samples. Table 2 provides a summary of rejected analyses grouped by media and analyte category. Copies of the project Chain-of-Custody forms are provided in appendices to the report.

Through appropriate data verification, validation, and review analytical information has been identified as estimated and rejected. None of the semivolatile organic, GRO, DRO, TOC, or anion data were rejected. A minimal number of VOCs (4-methyl-2-pentanone and acetone) were rejected related to poor initial or continuing instrument relative response factors, while a single cadmium reporting limit value was rejected due to calibration drift during analysis. A number of metals results were estimated due to method blank levels or instrument drift during analysis. A few VOC results were estimated due to internal standard areas being low or continuing calibration percent differences being greater than 25%. However, none of the results were extremely disparate and the data has been appropriately identified and qualified. Rejected results reflect a tendency to exhibit extreme negative bias and were therefore unable to support the requirements of the project.

4 Data Evaluation

4.1 Accuracy

Accuracy provides a gauge or measure of the agreement between an observed result and the true value for an analysis. Analytical accuracy is evaluated by measuring the agreement between an analytical result and its known or true value. This is generally determined through use of Laboratory Control Samples (LCSs), Matrix Spike (MS) analysis, and Performance Evaluation (PE) Samples. Accuracy as measured through the use of LCSs determine the method implementation accuracy independent of sample matrix. They document laboratory analytical process control. Accuracy determined by the MS is a function of both matrix and analytical process. Tables 3 and 4 present average LCS recovery values for the various parameters under investigation during these studies. Method blank surrogate compound recoveries and method blank target compound spiked analyses are two forms of laboratory control sample analyses. Table 5 consolidates the average sample matrix spike (MS) recovery values for parameters.

Volatile Organic Compounds

Volatile organic compounds LCS recovery, surrogate recovery, and MS recovery information provide measures of accuracy. Recoveries determined for laboratory volatile organic method blank spike and method blank surrogate analyses indicate the analytical processes for procedures were in control. Individual sample surrogate recoveries and sample MS recoveries indicate analytical accuracy for these compounds was in control and the data is usable.

Method blank surrogate recoveries (Table 3) were all within 80-125% for the volatile analyses. Summaries in Table 4 show soil and water LCS values range from 94.5% to 105.9%, while all recoveries were within 80-120% for the four target compounds.

Sample MS recoveries (Table 5) indicate analytical accuracy was in control with average soil MS recoveries ranging from 90.5% to 115.3%. Average groundwater sample MS recoveries ranged from 103.3% to 110.5%. The wider range of spike recovery observed in actual environmental samples is indicative of matrix and heterogeneity variations, especially when dealing with soil matrices.

Semivolatile Organic Compounds

Average LCS percent recovery values for semivolatile organic compounds in soils/sediments and waters range from 77.5% to 114.0%. These values are well within the normally accepted advisory limits established by the analytical methods. They are also within project accuracy goals of 35-140% for semivolatile compounds. None of the data required qualification based on the LCS. Method blank surrogate recoveries (Table 3) were all well within acceptable ranges for semivolatile compounds. Re-enforcing the analytical process was in control.

Sample MS information (Table 5) for semivolatile organic compounds parallels LCS data. Average percent recoveries range between 65.8% and 93.5%, with the overall accuracy for these measurements being considered acceptable.

Gasoline Range, Diesel Range, and Total Organic Carbon

The laboratory analytical process for these measurements was demonstrated to be under control by maintaining a general 75-125% LCS percent recovery for soil matrices. Average method blank surrogate recoveries were maintained in the range of 80-120%. Matrix spike information demonstrated acceptable accuracy control for soils. A few low soil MS recovery values did cause some data to be estimated.

RCRA Metals and Miscellaneous Parameters

All metal water LCS values fall within an 80-120% range, while the single soil LCS recoveries ranged from 71% to 112%. Matrix spike information (Table 5) were as good as LCS recoveries, with average water MS values ranging from 98.7% to 106.2% and average soil MS values ranging from 91.2% to 106.2%.

LCS and MS recoveries for nitrate, nitrite, sulfate, and sulfide provided satisfactory results for these parameters.

4.2 Precision

Laboratory Precision

As a measure of analytical precision, Table 6 contains average relative percent differences (RPD) for laboratory duplicate sample pairs for the various analytical groups. Data is presented for parameters where both values meet or exceed five times the project required detection limits for that analyte. Data presented compare MS and matrix spike duplicate (MSD) values. As the RPD approaches zero, complete agreement is achieved between the duplicate sample pairs. Sample homogeneity, analytical method performance, and the quantity of analyte being measured all contribute to this measure of sample analytical precision.

Soil and water precision are considered acceptable when the RPD does not exceed 40. This limit was not exceeded for any analytes. All average RPD values were well within a 20% window of acceptance. In only a few instances did individual duplicate comparisons fall outside this level as demonstrated by the maximum RPD's presented. RPD values are very good for these samples and reflect great effort on the part of the field and laboratory teams to homogenize the samples prior to aliquotting and analysis.

Duplicate comparison for those data within five times the reporting level have also been reviewed and evaluated. Acceptance limits for these data were set at ± two times the reporting level. In all cases, laboratory duplicate comparison at these low levels were in agreement.

Individual data points affected by poor precision measures appear in the data set qualified as estimated, when necessary. The precision for those data is considered acceptable and has been determined to be useable for project objectives.

Field Precision

Field duplicate samples were collected to ascertain the contribution to variability (i.e., precision) due to the combination of environmental media, sampling consistency, and analytical precision. Field duplicate samples were collected from the same spatial and temporal conditions as the primary environmental sample. Soil samples were collected from the same sampling device, after homogenization for all analytes except VOCs.

Table 7 provides a summary of field duplicate comparisons by analyte. The tables present both absolute difference and RPD evaluations for field duplicate measurements. RPD was calculated only when both samples were >5 times the analyte reporting level. When one or both sample values were between the quantitation level and 5 times the analyte reporting level the absolute difference was evaluated. If both samples were not detected for a given analyte, precision was considered acceptable. Only duplicate pairs having measurable values are included in the tabulation.

In order to review information, this data quality assessment has implemented general criteria for comparison of absolute difference measurements and RPDs. RPD criteria are identified below. Absolute difference criteria were set at three times the analyte reporting level.

RPD Evaluation Categories

Matrix	Good	Fair	Poor	Unacceptable
Water	<30%	<60%	<100%	>100%
Soil	<50%	<90%	<150%	>150%

While soil field duplicates exhibit some high RPD values the comparison is considered Fair given the high levels of BTEX contamination in the one sample. Sediment metal, VOC, SVOC comparison is Good, with all analytical values being within 5X the reporting levels. Most groundwater and surface water analyte concentrations were not high enough to provide RPD evaluation, however, absolute difference considerations indicate a Good comparison for the data.

A subset of field duplicate analysis compares groundwater filtered and total values. This comparison is presented in Table 8. Evaluation was made with the same criteria as for the other field duplicates and the results show a Good agreement between each of the sample pairs.

4.3 Sensitivity

Determination of minimum detectable values allows the investigation to assess the relative confidence which can be placed in a value in comparison to the magnitude or level of analyte concentration observed. The closer a measured value comes to the minimum detectable concentration, the less confidence and more variation the measurement will have. Project sensitivity goals were expressed as quantitation level goals in the QAPjP. These levels were achieved or exceeded throughout the analytical process. There were individual exceptions which have generated qualification of the data or elevation of detections levels when the original goal was not achieved. Variations observed were caused by fluctuations in moisture content or the need to dilute high concentration analytes into linear range for analysis.

Evaluation of overall project sensitivity can be gain through review of field blank information. These actual sample analysis may provide a comprehensive look at the combined sampling and analysis sensitivity attained by the project. Field QC blanks obtained during sampling activities included samples of VOC trip blank waters. Summary information for those blank determinations exhibiting detectable levels is presented in Table 9.

There were a minimal number of detected VOCs in project trip blanks. These were all below their associated reporting levels and only just above the laboratory instrument detection levels. These levels are not considered significant and have not caused data qualification. It is therefore determine that VOC analysis have not been affected through the transportation and storage process, and that the procedures and precautions employed were effective in preserving the integrity of the sample analysis.

4.4 Representativeness and Comparability

Representativeness expresses the degree to which data accurately reflect the analyte or parameter of interest for the environmental site and is the qualitative term most concerned with the proper design of the sampling program (EPA 1987). Factors that affect the representativeness of analytical data include proper preservation, holding times, use of standard sampling and analytical methods, and determination of matrix or analyte interferences. No data points were rejected based on extended holding times, while only a few analyses were estimated and qualified. Sample preservation, analytical methodologies, and soil sampling methodologies were documented to be adequate and consistently applied. Both soil and groundwater sampling methods have been proven to be effective, application for this study.

Comparability, like representativeness, is a qualitative term relative to a project data set as an individual. These investigations employed appropriate sampling methodologies, site surveillance, use of standard sampling devices, uniform training, documentation of sampling, standard analytical protocols/procedures, QC checks with standard control limits, and universally accepted data reporting units to ensure comparability to other data sets. Through the proper implementation and documentation of these standard practices, the project has established the confidence that the data will be comparable to other project and programmatic information.

4.5 Completeness

Usable data are defined as those data which pass individual scrutiny during the verification and validation process and are accepted for unrestricted application to the human health risk assessment evaluation or equivalent type applications. It has been determined that estimated data are acceptable for project objectives.

Objectives for this investigation have been achieved. The project produced valid results for over 99% of the sample analyses performed and successfully collected all required investigation samples.

5 Data Quality Assessment Summary

The overall quality of Fort Stewart 724th Tanker Purging Station information meets or exceeds the established project objectives. Through proper implementation of the project data verification, validation, and assessment process, project information has been determined to be acceptable for use

Data, as presented, have been qualified as usable, but estimated when necessary. Data which have been estimated provide indications of either accuracy, precision, or sensitivity being less than desired but adequate for interpretation.

Data produced for this study demonstrates that it can withstand scientific scrutiny, is appropriate for its intended purpose, is technically defensible, and is of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of Quality Assurance and Quality Control measures. The environmental information presented has an established confidence which allows utilization for the project objectives and provides data for future needs.

6 References

SAIC (Science Applications International Corporation) 1995. *Data Validation Guidelines for Analytical Data*, Quality Assurance Technical Procedure TP-DM-300-7, Rev.1.

Sampling and Analysis Plan for the Phase II RCRA Facility Investigation at the Former 724th Tanker Purging Station SWMU 26, Fort Stewart, Georgia, May 1997.

ATTACHMENT 1

SAIC Validation Flagging Codes

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724TH TANKER PURGING STATION
SWMU 26, FORT STEWART, GEORGIA

November 1997

DATA VALIDATION FLAGGING CODES

Blanks

F01 Sample data were qualified as a result of the method blank.
F02 Sample data were qualified as a result of the field blank.
F03 Sample data were qualified as a result of the equipment rinsate.
F04 Sample data were qualified as a result of the trip blank.
F05 Gross contamination exists.
F06 Concentration of the contaminant was detected at a level below the CRQL.
F07 Concentration of the contaminant was detected at a level less than the action limit, but greater than the CRQL.
F08 Concentration of the contaminant was detected at a level that exceeds the action level.
F09 No laboratory blanks were analyzed.
F10 Blank had a negative value >5×'s the IDL.
F11 Blanks were not analyzed at required frequency.
F12 Professional judgement was used to qualify the data.

Surrogate Recovery

G01 Surrogate recovery was above the upper control limit.
G02 Surrogate recovery was below the lower control limit.
G03 Surrogate recovery was <10%.
G04 Surrogate recovery was zero.
G05 Surrogate was not present.
G06 Professional judgement was used to qualify the data.

Matrix Spike/Matrix Spike Duplicate

H01 MS/MSD recovery was above the upper control limit.
H02 MS/MSD recovery was below the lower control limit.
H03 MS/MSD recovery was <10%.
H04 MS/MSD pairs exceed the RPD limit.
H05 No action was taken on MS/MSD results.
H06 Professional judgement was used to qualify the data.

Matrix Spike

I01 MS recovery was above the upper control limit.
I02 MS recovery was below the lower control limit.
I03 MS recovery was <30%.
I04 No action was taken on MS data.
I05 Professional judgement was used to qualify the data.

Laboratory Duplicate

J01 Duplicate RPD was outside the control limit.
J02 Duplicate sample results were >5× the CRDL.
J03 Duplicate sample results were <5× the CRDL.
J04 Professional judgement was used to qualify the data.

Internal Area Summary

K01 Area counts were outside the control limits.
K02 Extremely low area counts or performance was exhibited by a major drop off.
K03 IS retention time varied by more than 30 seconds.
K04 Professional judgement was used to qualify the data.

Laboratory Control Samples (LCSs)

P01 LCS recovery was above upper control limit.
P02 LCS recovery was below lower control limit.
P03 LCS recovery was <50%.
P04 No action was taken on the LCS data.
P05 LCS was not analyzed at required frequency.

Target Compound Identification

M01 Incorrect identifications were made.
M02 Qualitative criteria were not met.
M03 Cross contamination occurred.
M04 Confirmatory analysis was not performed.
M05 No results were provided.
M06 Analysis occurred outside 12 hr GC/MS window.
M07 Professional judgement was used to qualify the data.
M08 The %D between the two pesticide/PCB column checks was >25%.

Initial/Continuing Calibration - Organics

C01 Initial calibration RRF was <0.05.
C02 Initial calibration RSD was >30%.
C03 Initial calibration sequence was not followed as required.
C04 Continuing calibration RRF was <0.05.
C05 Continuing calibration %D was >25%.
C06 Continuing calibration was not performed at the required frequency.
C07 Resolution criteria were not met.
C08 RPD criteria were not met.
C09 RSD criteria were not met.
C10 Retention time of compounds was outside windows.
C11 Compounds were not adequately resolved.
C12 Breakdown of endrin or DDT was >20%.
C13 Combined breakdown of endrin/DDT was >30%.
C14 Professional judgement was used to qualify the data.

Table B-1. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations - QCSR

Sample Type	Media	Environmental Samples	Field Duplicates	Trip Blanks	QA Split Samples	QA Trip Blanks
VOC Screening	Soil	24	2	-	-	-
	Groundwater	28	3	6	-	-
All Definitive Parameters	Soils/ Sediments	14	1	-	2	-
	Groundwaters/ Surface Waters	12	2	5	2	2
Totals		78	8	11	4	2

Table B-2. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Summary of Rejected Analytes
(grouped by media and analysis group)

Media	Analysis Group	Rejected/Total	Percent Rejected
Soil	Metals	0/ 72	0.0
	Volatile Organics	0/ 1,292	0.0
	Semivolatile Organics	0/ 157	0.0
	TOC	0/ 5	0.0
	Subtotal	0/ 1,526	0.0
Sediment	Metals	0/ 48	0.0
	Volatile Organics	0/ 102	0.0
	Semivolatile Organics	6/ 204	2.9
	Subtotal	6/ 354	1.6
Surface Water	Metals	0/ 40	0.0
	Volatile Organics	0/ 85	0.0
	Semivolatile Organics	5/ 150	2.9
	Subtotal	5/ 295	1.6
Groundwater	Alkalinity	0/ 6	0.0
	Anions	0/ 24	0.0
	Metals	1/ 64	0.0
	Volatile Organics	5/ 1,258	0.4
	Semivolatile Organics	0/ 102	0.0
	GRO/DRO	0/ 18	0.0
	Subtotal	6/ 1,472	0.4
Project Total		**17/ 3,647**	**0.5**

Table B-3. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Laboratory Control Sample Evaluation - Method Blank Average Surrogate Percent Recovery (%Rec)

Analysis	Soil Average %Rec	Soil Min. %Rec	Soil Max. %Rec	Soil N	Water Average %Rec	Water Min. %Rec	Water Max. %Rec	Water N
Volatile Organic Compounds								
TOLUENE-d8	98.5	89	118	10	101.3	90	110	14
BROMOFLUOROBENZENE	91.2	82	105	10	93.9	82	108	14
DIBROMOFLUOROMETHANE	105.2	92	125	10	101.8	93	118	14
Semivolatile Organic Compounds								
NITROBENZENE-d5	80.3	72	87	3	82.5	74	91	2
2-FLUOROBIPHENYL	87.0	81	94	3	78.0	69	87	2
TERPHENYL-d14	91.0	85	95	3	83.0	70	96	2
BTEX/GRO Compounds								
N-PROPYLBENZENE	90.2	84	98	6	-	-	-	-
DRO Compounds								
O-TERPHENYL	102	-	-	1	-	-	-	-

Table B-4. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Laboratory Control Sample Evaluation - Method Blank Matrix Spike Average Percent Recovery (%Rec)

Analysis	Soil Average %Rec	Soil Min. %Rec	Soil Max. %Rec	Soil N	Water Average %Rec	Water Min. %Rec	Water Max. %Rec	Water N
Volatile Organic Compounds								
BENZENE	105.8	94	120	10	104.5	95	112	13
CHLOROBENZENE	105.9	97	112	10	104.4	96	115	13
1,1-DICHLOROETHENE	102.8	82	120	10	103.2	82	116	13
TOLUENE	100.5	90	110	10	101.6	92	113	13
TRICHLOROETHENE	103.9	90	117	10	102.0	90	113	13
BTEX Compounds								
BENZENE	94.5	93	96	2	-	-	-	-
TOLUENE	98.0	96	100	2	-	-	-	-
ETHYLBENZENE	103.0	102	104	2	-	-	-	
XYLENE	99.5	98	101	2	-	-	-	-
Methane/Ethane/Ethene								
METHANE	-	-	-	-	92	-	-	1
ETHANE	-	-	-	-	103	-	-	1
ETHENE	-	-	-	-	103	-	-	1
Semivolatile Organic Compounds								
ACENAPHTHENE	84.3	82	86	3	84.0	80	88	2
1,4-DICHLOROBENZENE	78.7	75	85	3	77.5	66	89	2
2,4-DINITROTOLUENE	78.3	77	80	3	81.0	77	85	2
n-NITROSODI-n-PROPYLAMINE	88.7	84	96	3	98.5	85	112	2
PYRENE	103.7	93	124	3	114.0	104	124	2
1,2,4-TRICHLOROBENZENE	88.0	83	98	3	81.0	71	83	2

Table B-4 continued. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Laboratory Control Sample Evaluation - Method Blank Matrix Spike Average Percent Recovery (%Rec)

Analysis	Soil Average %Rec	Soil Min. %Rec	Soil Max. %Rec	Soil N	Water Average %Rec	Water Min. %Rec	Water Max. %Rec	Water N
Gasoline Range Organics								
GRO	102.5	97	108	2	-	-	-	-
Diesel Range Organics								
DRO	121	-	-	1	-	-	-	-
Metals (ICP and AA)								
ARSENIC	78	-	-	1	100.4	97	101	3
BARIUM	112	-	-	1	101.6	99	105	3
CADMIUM	71	-	-	1	101.0	100	103	3
CHROMIUM	83	-	-	1	101.5	95	105	3
LEAD	76	-	-	1	101.1	99	103	3
SELENIUM	73	-	-	1	101.1	98	104	3
SILVER	87	-	-	1	103.3	100	108	3
MERCURY	75	-	-	1	98.1	83	112	3
Anions and TOC								
SULFIDE	-	-	-	-	98.5	98	99	2
NITRATE	-	-	-	-	98.0	94	102	2
NITRITE	-	-	-	-	102.0	99	105	2
SULFATE	-	-	-	-	94.5	94	95	2
TOC	-	-	-	-	99.0	94	104	2

Table B-5. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Sample Matrix Sike Evaluation - Average Percent Recovery (%Rec)

Analysis	Soil Average %Rec	Soil Min. %Rec	Soil Max. %Rec	Soil N	Water Average %Rec	Water Min. %Rec	Water Max. %Rec	Water N
Volatile Organic Compounds								
1,1-DICHLOROETHENE	107.9	82	162	8	110.5	76	133	14
BENZENE	115.3	100	143	8	106.4	68	124	14
TRICHLOROETHANE	113.9	101	144	8	104.8	88	124	14
TOLUENE	94.4	65	114	8	103.6	89	124	14
CHLOROBENZENE	109.0	101	115	8	103.3	88	118	14
Semivolatile organic Compounds								
ACENAPTHENE	88.0	87	89	2	68.3	55	75	4
1,4-DICHLOROBENZENE	79.5	79	80	2	69.8	52	80	4
n-NITROSODI-n-PROPYLAMINE	89.5	88	91	2	80.0	58	94	4
1,2,4-TRICHLOROBENZENE	98.5	98	99	2	68.8	56	77	4
2,4-DINOTROTOLUENE	85.0	84	86	2	65.8	52	73	4
PYRENE	93.5	93	94	2	92.5	71	105	4
BTEX Compounds								
BENZENE	97.0	96	98	2	-	-	-	-
TOLUENE	80.5	80	81	2	-	-	-	-
ETHYLBENZENE	106.0	102	110	2	-	-	-	-
XYLENE	90.5	89	92	2	-	-	-	-

Table B-5 continued. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Sample Matrix Sike Evaluation - Average Percent Recovery (%Rec)

Analysis	Soil Average %Rec	Soil Min. %Rec	Soil Max. %Rec	Soil N	Water Average %Rec	Water Min. %Rec	Water Max. %Rec	Water N
GRO Compounds								
	99.0	91	107	2	-	-	-	-
DRO Compounds								
	94.0	89	99	2	-	-	-	-
Metals (ICP and AA)								
ARSENIC	91.2	89	94	3	99.7	96	104	3
BARIUM	106.2	101	117	3	100.2	99	101	3
CADMIUM	97.4	94	101	3	99.6	99	100	3
CHROMIUM	95.3	91	98	3	98.7	95	102	3
LEAD	99.8	98	101	3	99.6	97	101	3
MERCURY	101.3	94	107	3	106.2	100	112	3
SELENIUM	92.9	90	95	3	99.1	97	102	3
SILVER	101.2	96	107	3	101.7	97	110	3
Anions and TOC								
NITRATE	-	-	-	-	102.2	99	106	4
NITRITE	-	-	-	-	99.1	98	100	4
SULFATE	-	-	-	-	100.7	98	102	4
TOC	-	-	-	-	100.2	99	101	4

Table B-6. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Sample Matrix Sike Duplicate or Duplicate Evaluation - Relative Percent Difference (RPD)

Analysis	Soil Average RPD	Soil Min. RPD	Soil Max. RPD	Soil N	Water Average RPD	Water Min. RPD	Water Max. RPD	Water N
Volatile Organic Compounds								
1,1-DICHLOROETHENE	5.3	2	9	4	8.1	3	15	7
BENZENE	3.8	1	10	4	9.4	2	23	7
TRICHLOROETHANE	2.8	0	9	4	7.4	1	15	7
TOLUENE	4.0	1	9	4	2.3	0	5	7
CHLOROBENZENE	2.5	0	4	4	3.4	0	16	7
Semivolatile organic Compounds								
ACENAPTHENE	2	-	-	1	20.5	10	31	2
1,4-DICHLOROBENZENE	1	-	-	1	19.0	6	32	2
n-NITROSODI-n-PROPYLAMINE	3	-	-	1	19.0	6	32	2
1,2,4-TRICHLOROBENZENE	1	-	-	1	20.0	8	32	2
2,4-DINOTROTOLUENE	2	-	-	1	19.5	8	31	2
PYRENE	1	-	-	1	19.5	8	31	2
BTEX Compounds								
BENZENE	2	-	-	1	-	-	-	-
TOLUENE	1	-	-	1	-	-	-	-
ETHYLBENZENE	8	-	-	1	-	-	-	-
XYLENE	3	-	-	1	-	-	-	-

Table B-6 continued. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Sample Matrix Sike Duplicate or Duplicate Evaluation - Relative Percent Difference (RPD)

Analysis	Soil Average RPD	Soil Min. RPD	Soil Max. RPD	Soil N	Water Average RPD	Water Min. RPD	Water Max. RPD	Water N
GRO Compounds								
	16	-	-	1	-	-	-	-
DRO Compounds								
	11	-	-	1	-	-	-	-
Metals (ICP and AA)								
ARSENIC	1.0	0	2	3	7.5	1	19	3
BARIUM	4.5	0	11	3	6.9	0	19	3
CADMIUM	0.8	0	1	3	7.4	0	20	3
CHROMIUM	1.6	0	3	3	6.4	0	18	3
LEAD	0.9	0	1	3	7.0	1	18	3
MERCURY	4.3	2	5	3	5.5	1	11	3
SELENIUM	1.3	1	2	3	3.9	1	9	3
SILVER	2.4	0	5	3	4.7	0	10	3
Anions and TOC								
NITRATE	-	-	-	-	0.5	0	2	4
NITRITE	-	-	-	-	0.8	0	1	4
SULFATE	-	-	-	-	1.1	0	3	4
TOC	-	-	-	-	1.5	1.5	1.5	2

Table B-7. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Soil/Sediment and Water Field Duplicate Evaluation - Relative Percent Difference (RPD) and Absolute Difference

Analysis	Sediment 262111/262121 RPD(%)	Soil 265B11/265B21 RPD(%)	Soil 265111/265121 RPD(%)	Surface Water 263411/263421 RPD(%)
Volatile Organic Compounds				
All Compounds	*	*	*	*
except BENZENE			132	
ETHYLBENZENE			97	
TOLUENE			4.2	
XYLENES			92	
Semivolatile Organic Compounds				
All Compounds	*			*
Metals (ICP and AA)				
ARSENIC	*			*
BARIUM	*			*
CADMIUM	*			*
CHROMIUM	*			*
LEAD	*			*
MERCURY	*			*
SELENIUM	*			*
SILVER	*			*

* Acceptable = At least one value is <5X the reported detection level and duplicate comparison is within 3X the reported detection level.

UNAC Unacceptable = At least one value is <5X the reported detection level and duplicate comparison is greater than 3X the reported detection level.

Table B-7 continued. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations Soil/Sediment and Water Field Duplicate Evaluation - Relative Percent Difference (RPD) and Absolute Difference

Analysis	Groundwater 266W11/266W21 RPD(%)	Groundwater 266N11/266N21 RPD(%)	Groundwater 266212/266222 RPD(%)	Groundwater 264111/264121 RPD(%)
Volatile Organic Compounds				
All Compounds	*	*	*	*
except BENZENE	7.0			
ETHYLBENZENE	23			
TOLUENE	17			
XYLENES	22			
1,1-DICHLOROETHANE	6.8			
METHANE				49
Semivolatile Organic Compounds				
All Compounds				*
Metals (ICP and AA)				
ARSENIC				*
BARIUM				*
CADMIUM				*
CHROMIUM				*
LEAD				5.9
MERCURY				0
SELENIUM				*
SILVER				25

* Acceptable = At least one value is <5X the reported detection level and duplicate comparison is within 3X the reported detection level.

UNAC Unacceptable = At least one value is <5X the reported detection level and duplicate comparison is greater than 3X the reported detection level.

Table B-8. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Groundwater Total vs Filtered Sample Evaluation - Relative Percent Difference (RPD) and Absolute Difference

Analysis	Groundwater 264411 RPD(%)	Groundwater 264511 RPD(%)
Metals (ICP and AA)		
ARSENIC	*	*
BARIUM	2.3	1.1
CADMIUM	*	*
CHROMIUM	*	*
LEAD	*	*
MERCURY	*	*
SELENIUM	*	*
SILVER	*	*

* Acceptable = At least one value is <5X the reported detection level and duplicate comparison is within 3X the reported detection level.

UNAC Unacceptable = At least one value is <5X the reported detection level and duplicate comparison is greater than 3X the reported detection level.

Table B-9. Ft. Stewart 724th Tanker Purging Station Phase II RCRA Investigations
Trip Blank Summary

Analysis	TBT001 07/10/97 (µg/L)	TBT002 07/11/97 (µg/L)	TBT003 07/17/97 (µg/L)	TBT004 07/24/97 (µg/L)
Volatile Organic Compounds				
METHYLENE CHLORIDE	3 U	2.9 U	2 U	2.5 U
TOLUENE	2.2	2.4	2.4	2.2

Analysis	TBT005 07/25/97 (µg/L)	TBT006 07/26/97 (µg/L)	TBT007 07/27/97 (µg/L)	TBT008 08/11/97 (µg/L)
Volatile Organic Compounds				
METHYLENE CHLORIDE	2.4 U	2.8 U	2.9 U	2.9
TOLUENE	2.2	2.1	3.1	4.7

Analysis	TBT010 08/12/97 (µg/L)	TBT012 08/13/97 (µg/L)	TBT013 08/14/97 (µg/L)
Volatile Organic Compounds			
METHYLENE CHLORIDE	3.0	2.5 U	2.8
TOLUENE	4.7	3	4.3

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANKER PURGING STATION
FORT STEWART, GEORGIA

APPENDIX E

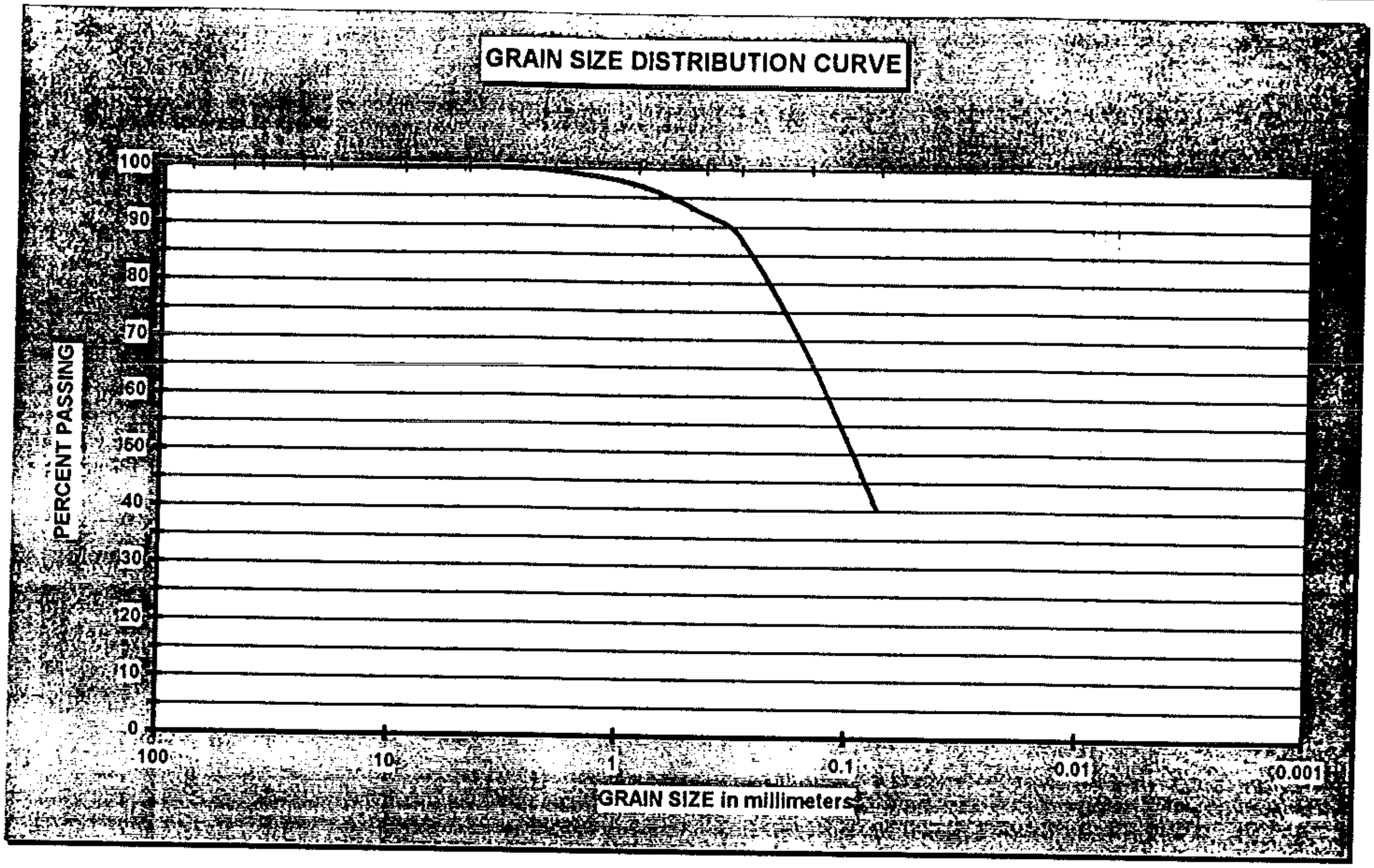
GEOCHEMICAL LABORATORY TEST RESULTS

S&ME

GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart
Job Number: 1439-97-416C

ASTM: D422
Date: 7/14/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and >2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a
Sample No.: 265211
Elevation (ft): n/a

Log No.: 7564
Sample Name: SWMU-26

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	n/a
PLASTIC LIMIT	n/a
PLASTICITY INDEX	n/a
NATURAL MOISTURE (%)	n/a

GRAIN SIZE DATA	
% GRAVEL	0
% SAND	60
%FINES	40
Uniformity Coef.	n/a
Effective Size	n/a

S&ME, Inc., 1413 Topside Road, Louisville, Tennessee 37777, (423) 970-0003, Fax (423) 970-0004

Singleton Laboratories
General Classification Tests

Project: 1439-97-416C
Feature: SWMU-26
Station:
Range :
Boring :

El. : 7.0'
Sample: 265211
Part :

FILE : 54
TESTED BY : reg
Computed By:reg
Checked By : [signature]
Report Date:07-16-97

Specific Gravity =2.650(Assumed)

Moisture Determination
Dry Wt.+Tare(gm)= 345.10 Tare Wt(gm) = 96.20

Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 248.9

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	0.0	100.0	4.7500
NO.10	1.0	99.6	2.0000
NO.20	7.3	97.1	0.8500
NO.40	19.6	92.1	0.4250
NO.50	29.8	88.0	0.3000
NO.100	82.5	66.9	0.1500
NO.200	148.1	40.5	0.0750

D10(mm) =0.0000 D30(mm)= 0.0000 D60(mm)= 0.0000
Gravel(%)= 0 Sand(%)=60 Silt(%)= 40 Clay(%)= 0

S&ME

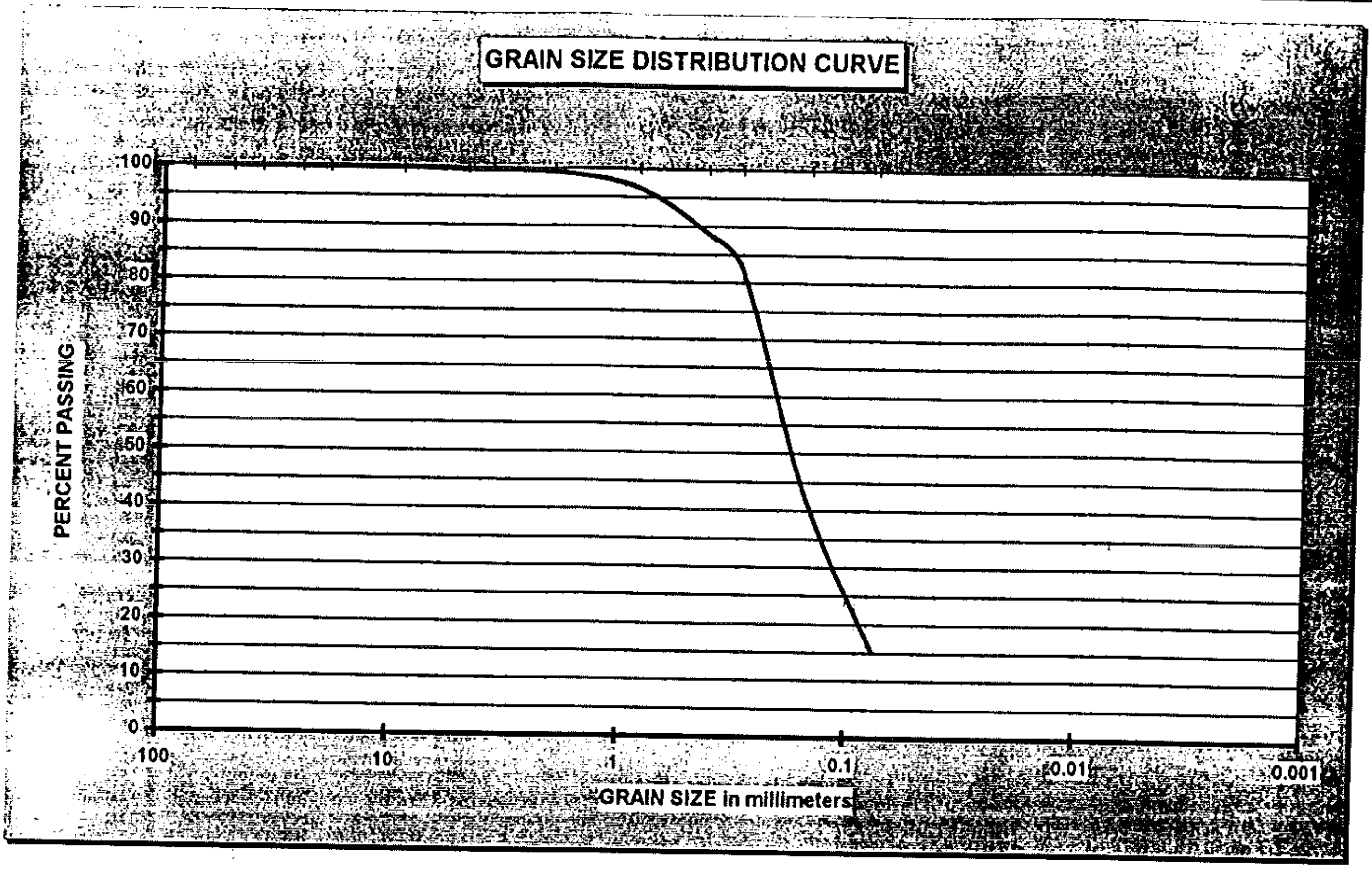
GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart

Job Number: 1439-97-416C

ASTM: D422

Date: 7/14/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a Sample No.: 265411 Elevation (ft): n/a

Log No.: 7565 Sample Name: SWMU-26

ATTERBERG LIMIT (#40 MATERIAL)

LIQUID LIMIT	n/a
PLASTIC LIMIT	n/a
PLASTICITY INDEX	n/a
NATURAL MOISTURE (%)	n/a

GRAIN SIZE DATA

% GRAVEL	0
% SAND	85
%FINES	15
Uniformity Coef.	n/a
Effective Size	n/a

S&ME, Inc., 1413 Topside Road, Louisville, Tennessee 37777, (423) 970-0003, Fax (423) 970-0004

Singleton Laboratories
General Classification Tests

Project: 1439-97-416C
Feature: SWMU-26
Station:
Range :
Boring :

El. : 6.0'
Sample: 265411
Part :

FILE : 55
TESTED BY : reg
Computed By:reg
Checked By :
Report Date:07-16-97

Specific Gravity =2.650(Assumed)

Moisture Determination
Dry Wt.+Tare(gm)= 462.90 Tare Wt(gm) = 98.20
Non-Plastic Soil
Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 364.7

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	0.6	99.8	4.7500
NO.10	2.0	99.5	2.0000
NO.20	12.4	96.6	0.8500
NO.40	41.5	88.6	0.4250
NO.50	63.4	82.6	0.3000
NO.100	213.6	41.4	0.1500
NO.200	309.4	15.2	0.0750

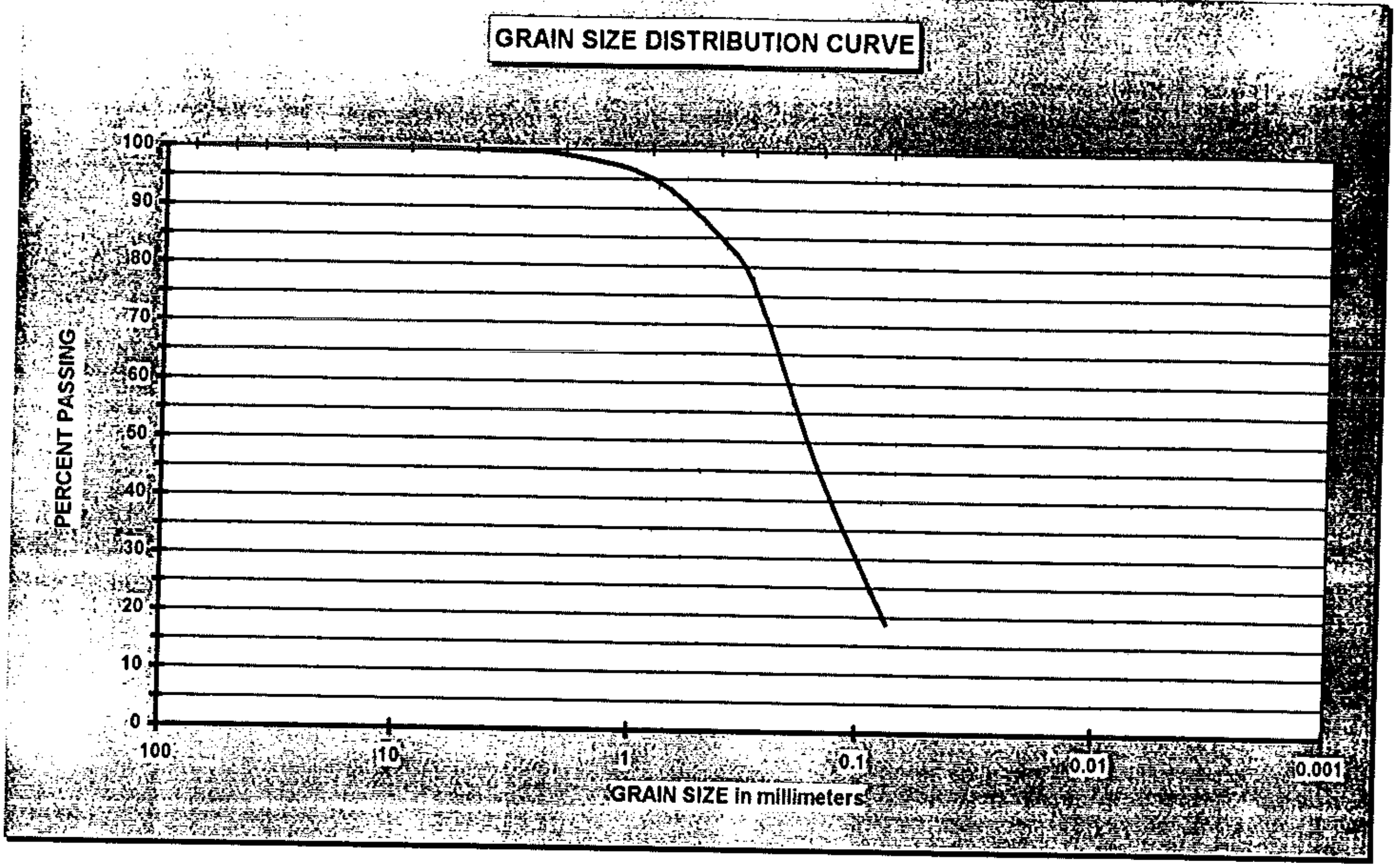
Soil Symbol= SM (Silty sand)
D10(mm) =0.0654 D30(mm)= 0.1109 D60(mm)= 0.2050
Gravel(%)= 0 Sand(%)=85 Silt(%)= 15 Clay(%)= 0

S&ME

GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart
Job Number: 1439-97-416C

ASTM: D422
Date: 7/14/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and > 2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a Sample No.: 265811 Elevation (ft): n/a

Log No.: 7566 Sample Name: SWMU-26

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	n/a
PLASTIC LIMIT	n/a
PLASTICITY INDEX	n/a
NATURAL MOISTURE (%)	n/a

GRAIN SIZE DATA	
% GRAVEL	0
% SAND	81
%FINES	19
Uniformity Coef.	n/a
Effective Size	n/a

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Singleton Laboratories
General Classification Tests

Project: 1439-97-416C
Feature: SWMU-26
Station:
Range :
Boring :

El. : --
Sample: 265811
Part :

FILE : 56
TESTED BY : reg
Computed By:reg
Checked By :
Report Date:07-16-97

Specific Gravity =2.650(Assumed)

Moisture Determination
Dry Wt.+Tare(gm)= 235.30
Tare Wt(gm) = 68.30
Non-Plastic Soil

Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 167

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	0.3	99.8	4.7500
NO.10	1.5	99.1	2.0000
NO.20	8.0	95.2	0.8500
NO.40	24.9	85.1	0.4250
NO.50	38.4	77.0	0.3000
NO.100	91.6	45.1	0.1500
NO.200	135.5	18.9	0.0750

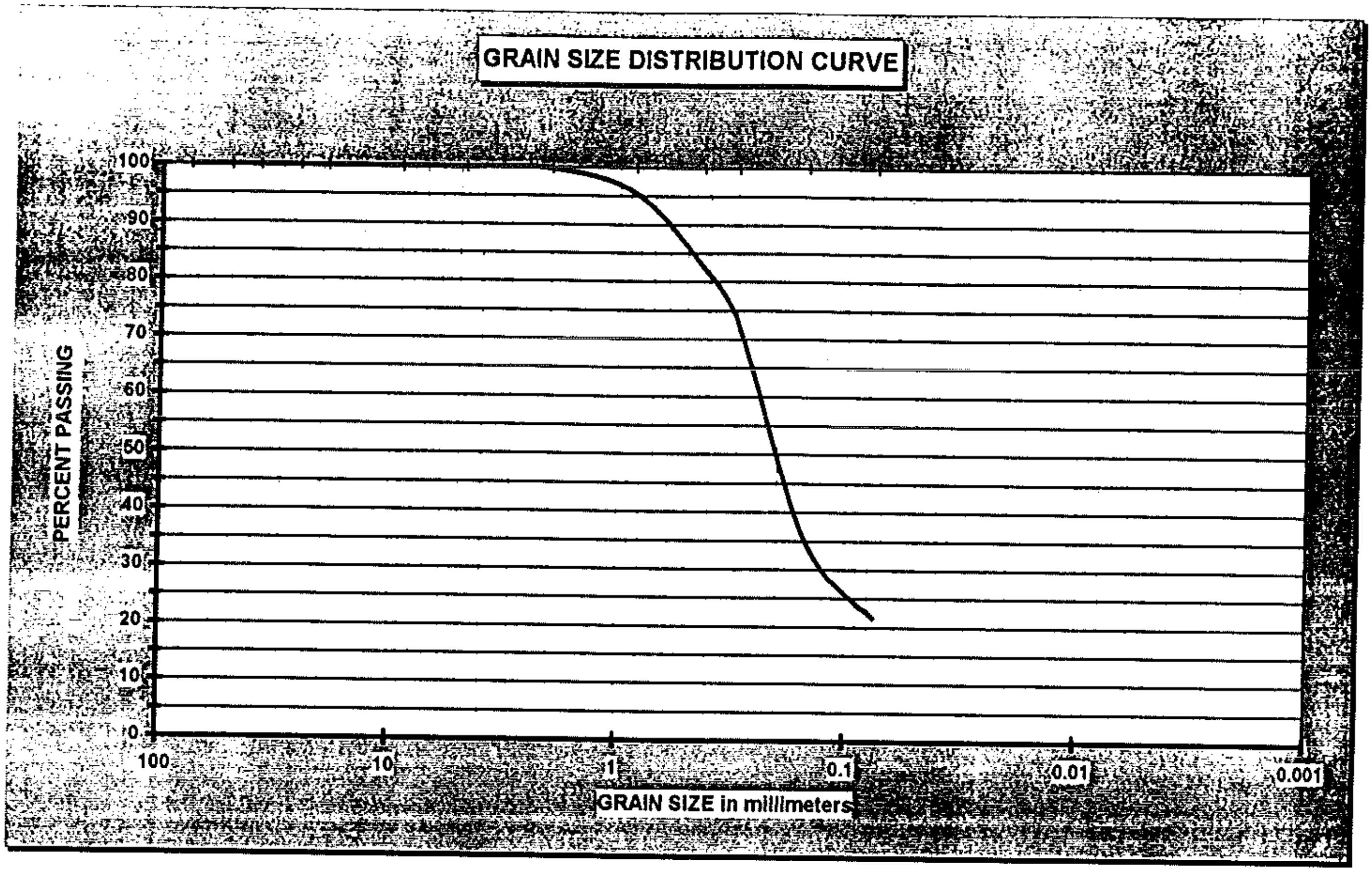
Soil Symbol= SM (Silty sand)
D10(mm) =0.0594 D30(mm)= 0.1006 D60(mm)= 0.2072
Gravel(%)= 0 Sand(%)=81 Silt(%)= 19 Clay(%)= 0

S&ME

GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart
Job Number: 1439-97-416C

ASTM: D422
Date: 7/14/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and >2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a Sample No.: 265911 Elevation (ft): n/a

Log No.: 7567 Sample Name: SWMU-26

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	n/a
PLASTIC LIMIT	n/a
PLASTICITY INDEX	n/a
NATURAL MOISTURE (%)	n/a

GRAIN SIZE DATA	
% GRAVEL	0
% SAND	78
%FINES	22
Uniformity Coef.	n/a
Effective Size	n/a

S&ME, Inc., 1413 Topside Road, Louisville, Tennessee 37777, (423) 970-0003, Fax (423) 970-0004

Singleton Laboratories
General Classification Tests

Project: 1439-97-416C
Feature: SWMU-26
Station:
Range :
Boring :

El. : --
Sample: 265911
Part :

FILE : 57
TESTED BY : reg
Computed By:reg
Checked By : [signature]
Report Date:07-16-97

Specific Gravity =2.650(Assumed)

Moisture Determination
Dry Wt.+Tare(gm)= 352.70 Tare Wt(gm) = 96.40
Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 256.3

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	0.0	100.0	4.7500
NO.10	0.4	99.8	2.0000
NO.20	11.5	95.5	0.8500
NO.40	44.8	82.5	0.4250
NO.50	69.2	73.0	0.3000
NO.100	167.1	34.8	0.1500
NO.200	200.9	21.6	0.0750

D10(mm) =0.0000 D30(mm)= 0.0000 D60(mm)= 0.0000
Gravel(%)= 0 Sand(%)=78 Silt(%)= 22 Clay(%)= 0

S&ME

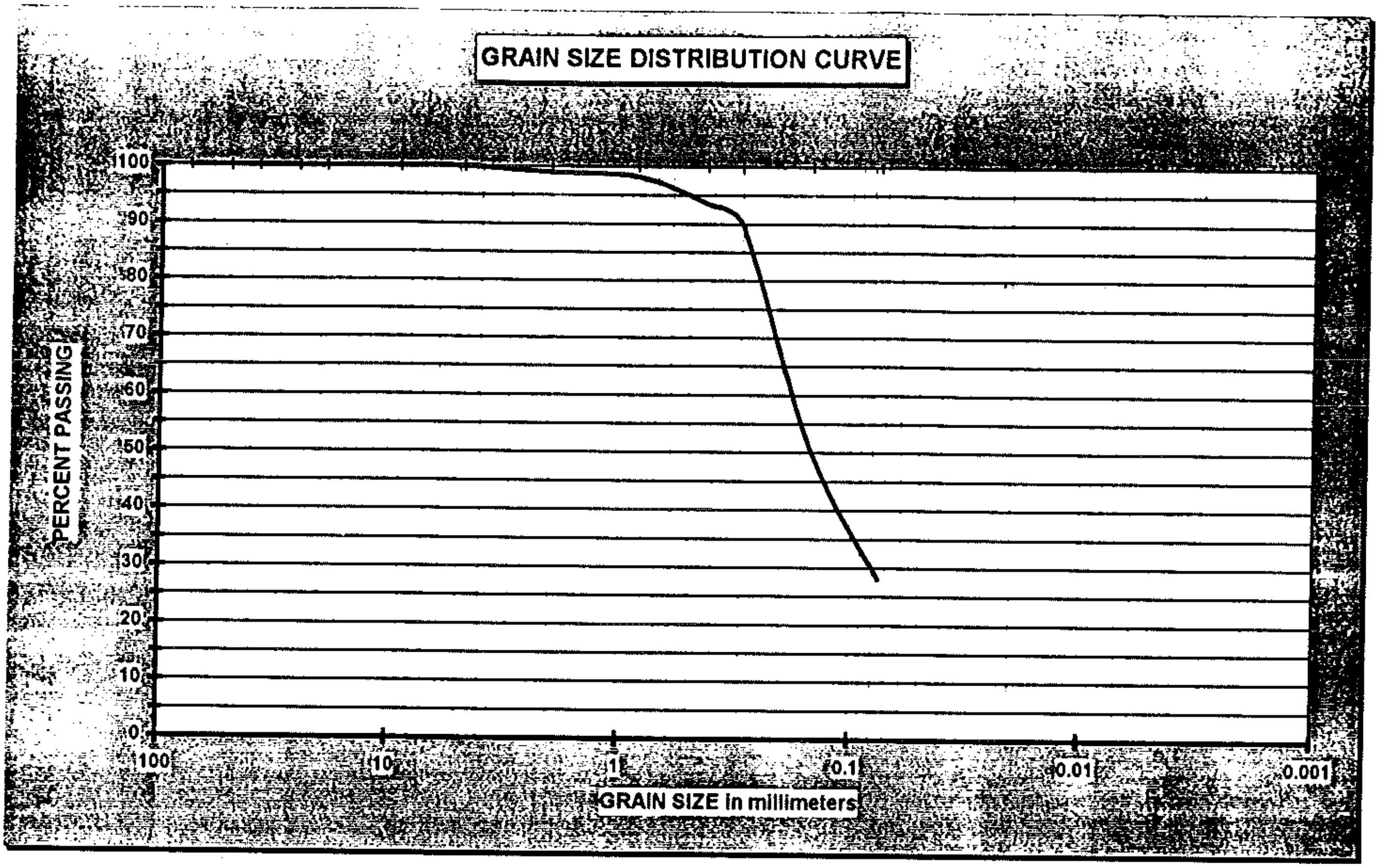
GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart

Job Number: 1439-97-416C

ASTM: D422

Date: 7/14/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and >2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a Sample No.: 265D11 Elevation (ft): n/a

Log No.: 7568 Sample Name: SWMU-26

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	n/a
PLASTIC LIMIT	n/a
PLASTICITY INDEX	n/a
NATURAL MOISTURE (%)	n/a

GRAIN SIZE DATA	
% GRAVEL	0
% SAND	72
%FINES	28
Uniformity Coef.	n/a
Effective Size	n/a

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Singleton Laboratories
General Classification Tests

Project: 1439-97-416C
Feature: SWMU-26
Station:
Range :
Boring :

El. : 4.0'-5.0'
Sample: 265D11
Part :

FILE : 58
TESTED BY : reg
Computed By:reg
Checked By :
Report Date:07-16-97

Specific Gravity =2.650(Assumed)

Moisture Determination
Dry Wt.+Tare(gm)= 442.70 Tare Wt(gm) = 104.20
Non-Plastic Soil
Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 338.5

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	0.0	100.0	4.7500
NO.10	1.6	99.5	2.0000
NO.20	6.2	98.2	0.8500
NO.40	22.1	93.5	0.4250
NO.50	34.9	89.7	0.3000
NO.100	167.9	50.4	0.1500
NO.200	243.4	28.1	0.0750

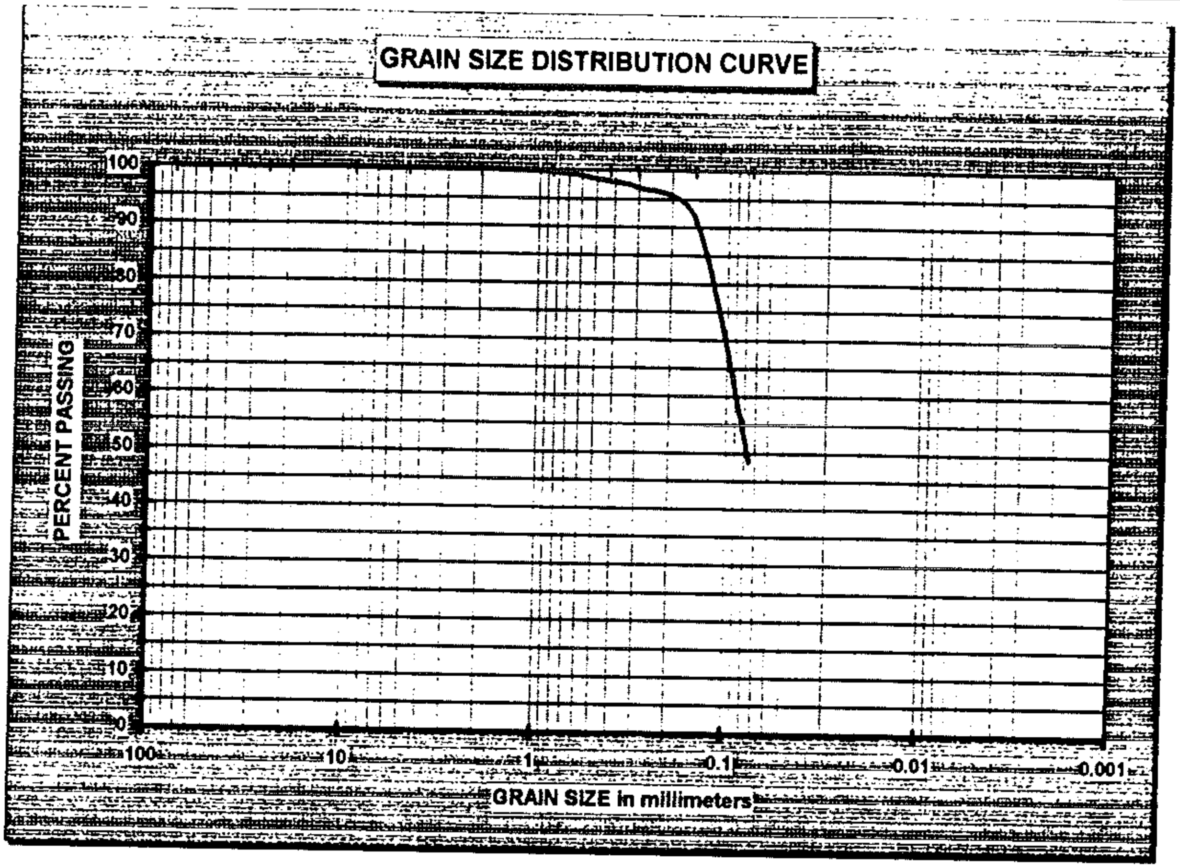
Soil Symbol= SM (Silty sand)
D10(mm) =0.0427 D30(mm)= 0.0796 D60(mm)= 0.1777
Gravel(%)= 0 Sand(%)=72 Silt(%)= 28 Clay(%)= 0

S&ME

GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart
Job Number: 1439-97-416 C

ASTM: D422
Date: 8/21/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and >2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a Sample No.: 261113 Elevation (ft):

Log No.: 7618 Sample Name: SWMU 26

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	51
PLASTIC LIMIT	16
PLASTICITY INDEX	35
NATURAL MOISTURE (%)	32.8

GRAIN SIZE DATA	
% GRAVEL	0
% SAND	52
%FINES	48
Uniformity Coef.	n/a
Effective Size	n/a

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Singleton Laboratories
General Classification Tests

Project: 1439-97-416C
Feature: SWMU-26
Station:
Range :
Boring :

El. :
Sample: 261113
Part : 7618

FILE : 89
TESTED BY : bd
Computed By:bd
Checked By :
Report Date:08-11-97

Specific Gravity = 2.614
Flask No. = 9.00
Soil Wt.(gm) = 50.00
Temp.(deg.c.) = 25.00
Total Wt.(gm) =706.40

Moisture Determination
Dry Wt.+Tare(gm)= 494.60
Tare Wt(gm) = 104.20

Liquid Limit
Blows = 28.00
Wet Wt.(gm) = 16.70
Dry Wt.(gm) = 12.41
Tare Wt.(gm) = 3.81
Liquid Limit(%) = 50.57
Plasticity Index= 34.88

Plastic Limit
Wet Wt.(gm) = 15.08
Dry Wt.(gm) = 13.58
Tare Wt.(gm) = 4.02
Plastic Limit(%)= 15.69

Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 390.4

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	0.0	100.0	4.7500
NO.10	0.1	100.0	2.0000
NO.20	1.3	99.7	0.8500
NO.40	6.9	98.2	0.4250
NO.50	11.5	97.1	0.3000
NO.100	32.6	91.6	0.1500
NO.200	201.4	48.4	0.0750

Soil Symbol= SC/GC (Clayey Gravel/Sand)
D10(mm) =0.0405 D30(mm)= 0.0558 D60(mm)= 0.0903
Gravel(%)= 0 Sand(%)=52 Silt(%)= 48 Clay(%)= 0

S&ME

ATTERBERG LIMITS

Job No: 1439-97-416C

Job Name: SAIC, SWMU-26

Sample No: 261113

ASTM D: 4318

Operator: bd

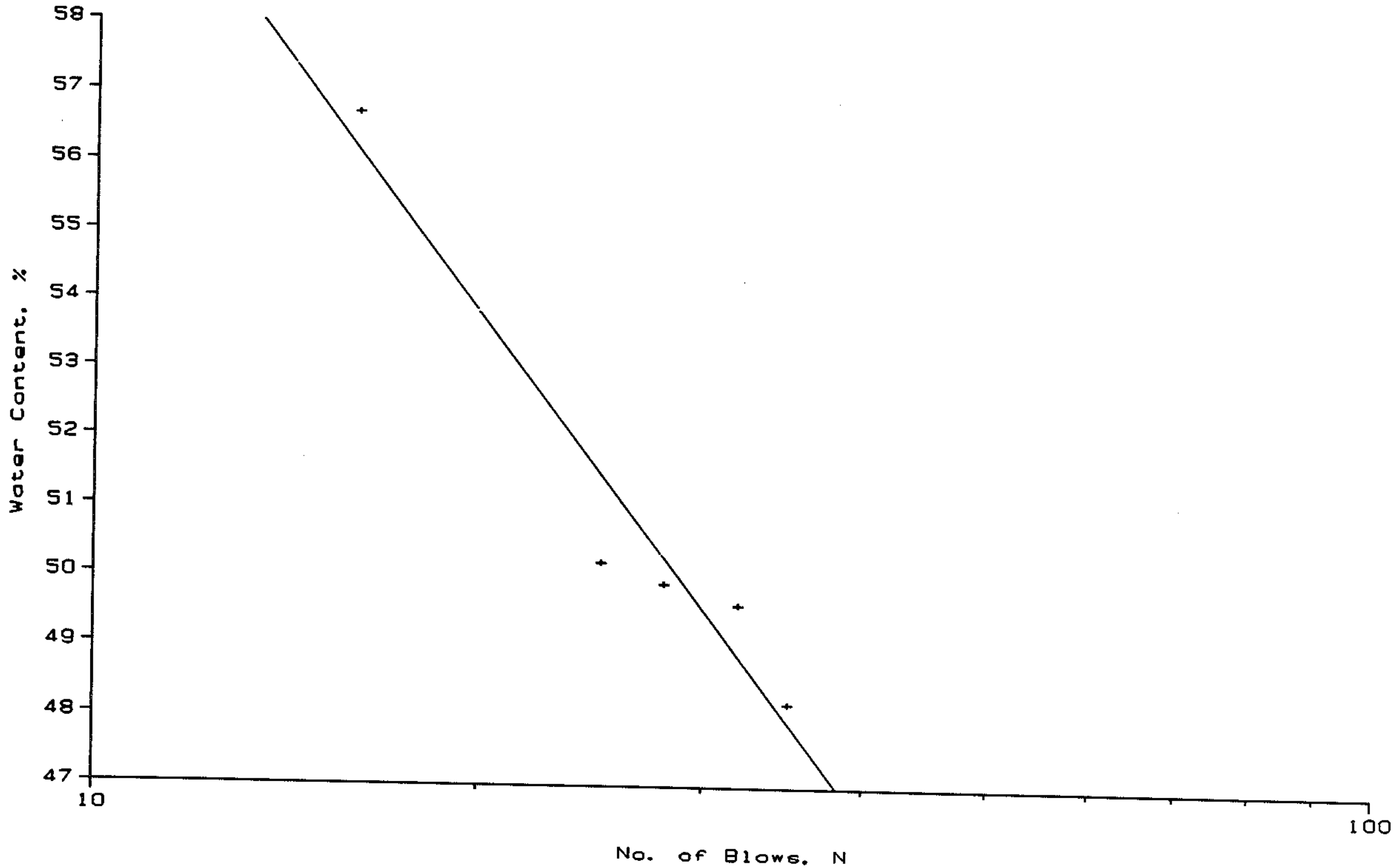
Date: 8/11/97

LIQUID LIMIT DETERMINATION					
Tare No.	50	T	B1	37	38
Soil & Tare Wet Wt.	16.46	17.64	16.70	18.18	19.28
Soil & Tare Dry Wt.	12.36	13.13	12.41	13.39	13.69
Tare Wt.	3.85	4.03	3.81	3.85	3.83
Moisture Content; %	48.2	49.6	49.9	50.2	56.7
No. of Blows; N	35	32	28	25	16

PLASTIC LIMIT DETERMINATION					
Tare No.	31	10	61		
Soil & Tare Wet Wt.	15.08	16.62	15.57		
Soil & Tare Dry Wt.	13.58	14.96	13.91		
Tare Wt.	4.02	4.02	3.73		
Moisture Content; %	15.7	15.2	16.3		

LL=51 **PL=16** **PI=35**

1439-97-416 C
SAIC : SWMU-26
Sample No.: 261113



*** PERMEABILITY ANALYSIS ***

PROJECT: 1439-97-416 C
FEATURE: SAIC - Ft. Stewart
TEST NO: 261113

RUN NO.	CONF. PRESS PSI	AREA IN CM2	PIPETTE OUT CM2	AREA SPEC CM2	HT SPEC CM	TIME INTERVAL SEC	HEAD DIFF INITIAL CM	FINAL CM	PERMEABILITY K CM/SEC
1	3.0	0.7184	0.3656	39.98	7.16	2700.0	96.00	84.79	0.0000019964
2	3.0	0.7184	0.3656	39.98	7.16	3600.0	84.79	71.19	0.0000021081
3	3.0	0.7184	0.3656	39.98	7.16	3000.0	71.19	62.02	0.0000019953
4	3.0	0.7184	0.3656	39.98	7.16	4500.0	96.00	79.01	0.0000018789
								Avg=	1.99466E-06

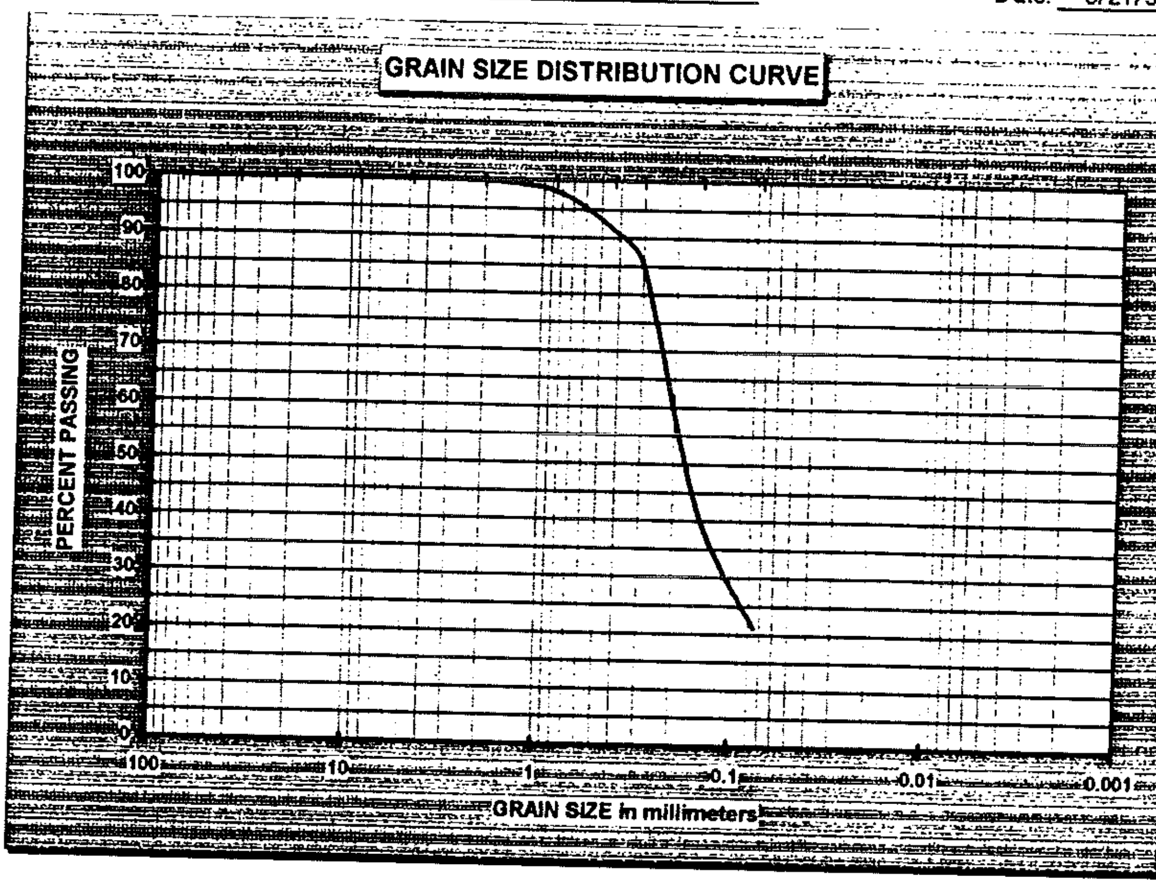
REMARKS:
SAMPLE DATA: Initial Moisture Content= 32.9%
Final Moisture Content= 41.0%
Dry Unit Weight= 78.0 pcf

S&ME

GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart
Job Number: 1439-97-416 C

ASTM: D422
Date: 8/21/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and >2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a Sample No.: 261213 Elevation (ft):

Log No.: 7651 Sample Name: SWMU 26

ATTERBERG LIMIT (-#40 MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
NATURAL MOISTURE (%)	21.8

GRAIN SIZE DATA	
% GRAVEL	0
% SAND	79
%FINES	21
Uniformity Coef.	n/a
Effective Size	n/a

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Singleton Laboratories
General Classification Tests

Project: 1439-97-416 C
F[illegible]ture: SAIC, SWMU 26
Station:
Range :
Boring :

El. :
Sample: 261213
Part : 7651

FILE : 98
TESTED BY : bd
Computed By:bd
Checked By :
Report Date:08-21-97

Specific Gravity =2.650(Assumed)

Moisture Determination
Dry Wt.+Tare(gm)= 423.30 Tare Wt(gm) = 65.90
Non-Plastic Soil
Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 357.4

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	0.0	100.0	4.7500
NO.10	0.3	99.9	2.0000
NO.20	6.3	98.2	0.8500
NO.40	30.9	91.4	0.4250
NO.50	52.2	85.4	0.3000
NO.100	207.2	42.0	0.1500
NO.200	281.5	21.2	0.0750

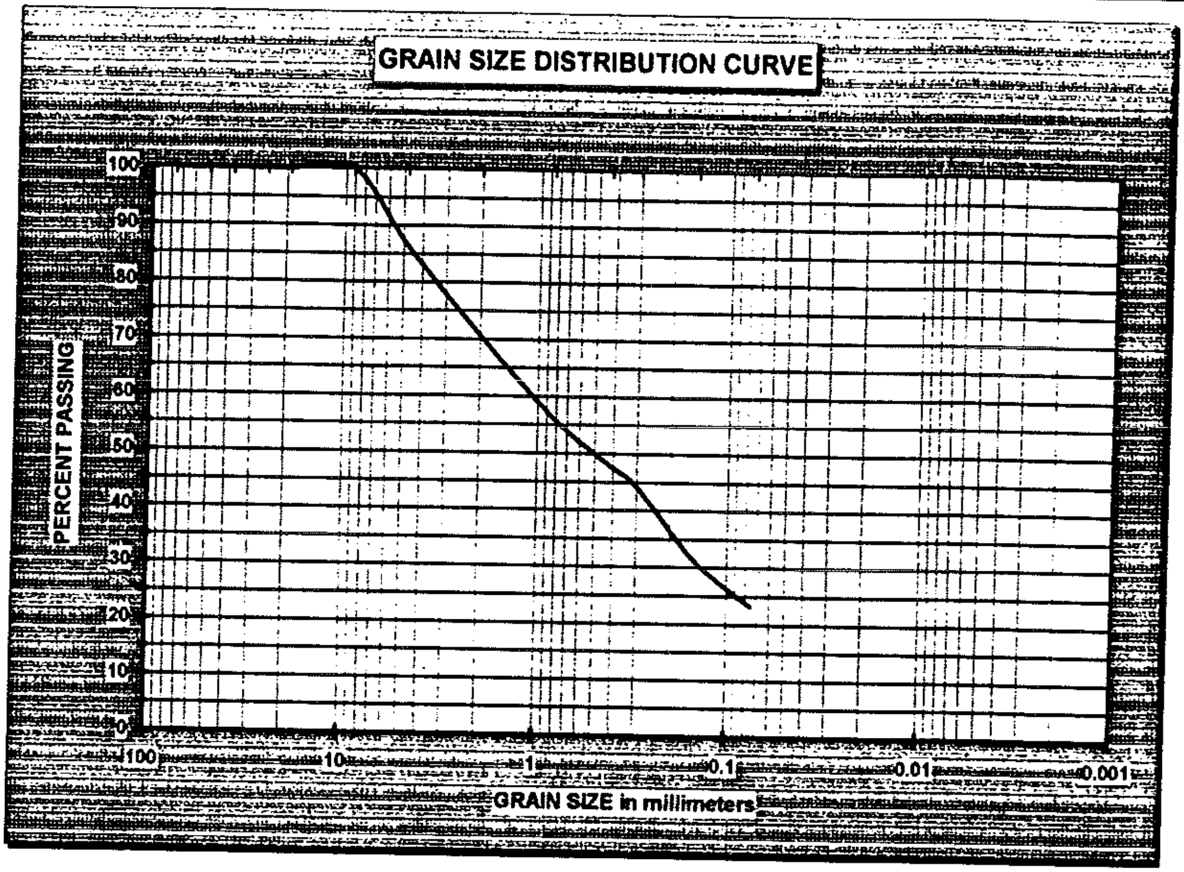
Soil Symbol= SM (Silty sand)
D10(mm) =0.0516 D30(mm)= 0.1005 D60(mm)= 0.1999
Gravel(%)= 0 Sand(%)=79 Silt(%)= 21 Clay(%)= 0

S&ME

GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart
Job Number: 1439-97-416 C

ASTM: D422
Date: 8/21/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and >2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a Sample No.: 261413 Elevation (ft):

Log No.: 7651 Sample Name: SWMU 26

ATTERBERG LIMIT (#40 MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
NATURAL MOISTURE (%)	21.9

GRAIN SIZE DATA	
% GRAVEL	14
% SAND	63
%FINES	23
Uniformity Coef.	n/a
Effective Size	n/a

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Singleton Laboratories
General Classification Tests

Project: 1439-97-416 C
Feature: SAIC, SWMU 26
Station:
Range :
Boring :

El. :
Sample: 261413
Part : 7651

FILE : 99
TESTED BY : bd
Computed By:bd
Checked By :
Report Date:08-21-97

Specific Gravity =2.650(Assumed)

Moisture Determination
Dry Wt.+Tare(gm)= 570.90 Tare Wt(gm) = 103.50
Non-Plastic Soil
Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 467.4

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	63.3	86.5	4.7500
NO.10	137.1	70.7	2.0000
NO.20	202.7	56.6	0.8500
NO.40	241.9	48.2	0.4250
NO.50	260.3	44.3	0.3000
NO.100	320.0	31.5	0.1500
NO.200	358.6	23.3	0.0750

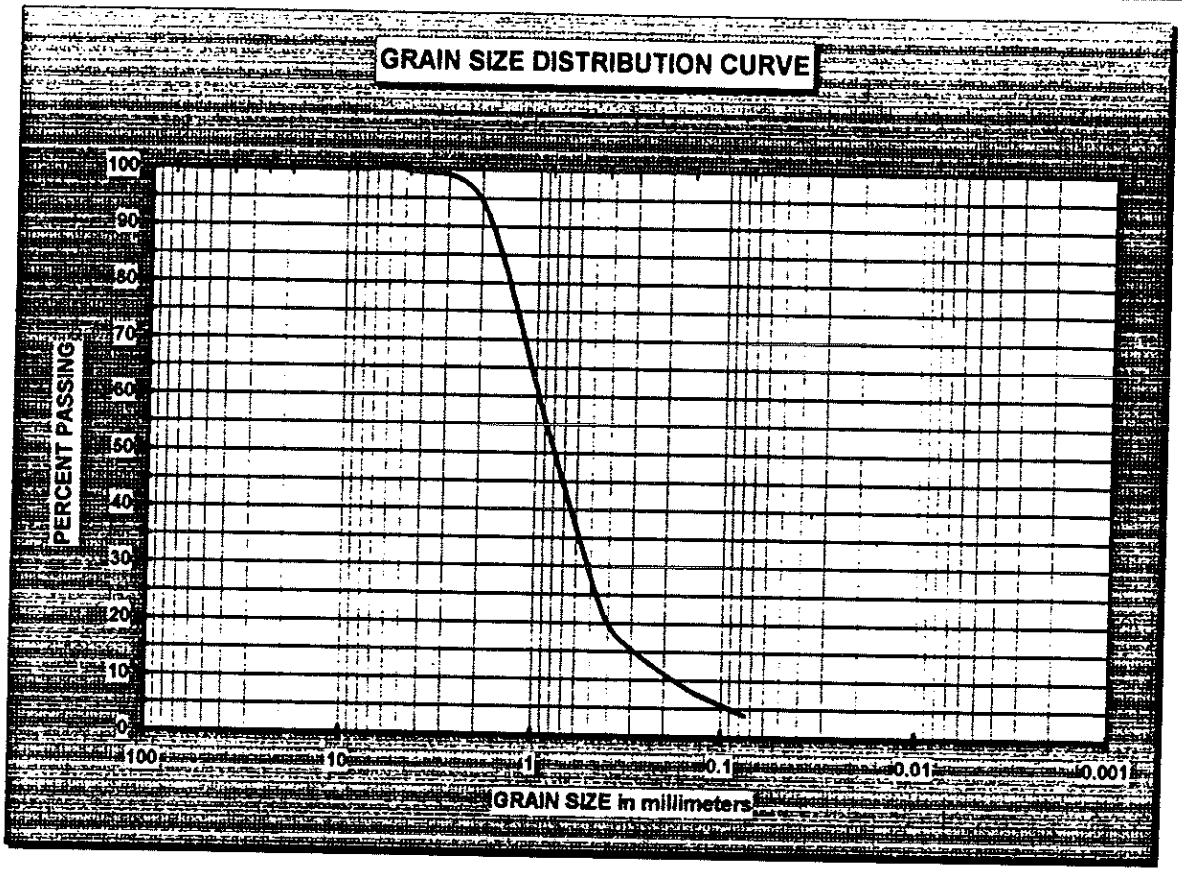
Soil Symbol= SM (Silty sand)
D10(mm) =0.0246 D30(mm)= 0.1319 D60(mm)= 1.0437
Gravel(%)=14 Sand(%)=63 Silt(%)= 23 Clay(%)= 0

S&ME

GRAIN SIZE DATA SHEET

Job Name: SAIC - Ft. Stewart
Job Number: 1439-97-416 C

ASTM: D422
Date: 8/21/97



Gravel	< 75 mm and > 4.75 mm
Coarse Sand	< 4.75 mm and >2.00 mm
Medium Sand	< 2.00 mm and > 0.425 mm

Fine Sand	< 0.425 mm and > 0.075 mm
Silt	< 0.075 and > 0.005 mm
Clay	< 0.005 mm

Boring No.: n/a   Sample No.: 261513   Elevation (ft): ______

Log No.: 7651   Sample Name: SWMU 26

ATTERBERG LIMIT ([illegible] MATERIAL)	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP
NATURAL MOISTURE (%)	24.1

GRAIN SIZE DATA	
% GRAVEL	0
% SAND	96
%FINES	4
Uniformity Coef.	n/a
Effective Size	n/a

S&ME, Inc., 1413 Topside Road, Louisville, Tennessee 37777, (423) 970-0003, Fax (423) 970-0004

Singleton Laboratories
General Classification Tests

Pr-iect: 1439-97-416 C
F ure: SAIC, SWMU 26
Station:
Range :
Boring :

El. :
Sample: 261513
Part : 7651

FILE : 97
TESTED BY : bd
Computed By:bd
Checked By :
Report Date:08-21-97

Specific Gravity =2.650(Assumed)

Moisture Determination
Dry Wt.+Tare(gm)= 721.70 Tare Wt(gm) = 104.10
Non-Plastic Soil
Sieve and Hydrometer Analysis
Total Dry Weight(gm) = 617.6001

Sieve	Wt.Ret.	% Pass.	Size(mm)
3 in.	0.0	100.0	76.2000
2 in.	0.0	100.0	50.8000
1.5 in.	0.0	100.0	38.1000
1 in.	0.0	100.0	25.4000
3/4 in.	0.0	100.0	19.0500
3/8 in.	0.0	100.0	9.5300
NO.4	0.5	99.9	4.7500
NO.10	32.5	94.7	2.0000
NO.20	288.1	53.4	0.8500
NO.40	482.9	21.8	0.4250
NO.50	521.6	15.5	0.3000
NO.100	564.3	8.6	0.1500
N 200	593.4	3.9	0.0750

Soil Symbol= SP (Poor-graded sand)
D10(mm) =0.1721 D30(mm)= 0.5088 D60(mm)= 0.9752
Gravel(%)= 0 Sand(%)=96 Silt(%)= 4 Clay(%)= 0

APPENDIX F

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANK PURGING STATION (SWMU 26)
FORT STEWART, GEORGIA

BACKGROUND DATA SUMMARY

F. BACKGROUND DATA SUMMARY

F.1 BACKGROUND DATA ANALYSIS

The reference background criteria for the Former 724th Tanker Purging Station (TPS) have been developed based on data from background samples collected from solid waste management units (SWMUs) across the Fort Stewart Military Reservation (FSMR). In general, reference background samples were collected in each medium at locations upgradient or upstream of each site so as to be representative of naturally occurring conditions at SWMUs under Phase II investigation. In addition, soil samples collected during the Phase I investigation [i.e., Burn Pits (SMWUs 4A, 4B, 4D, 4E, and 4F), Active Explosive Ordnance Disposal (EOD) Area (SWMU 12A), etc.] were included as reference background samples if they were upgradient of the site and if the data were of sufficient quality to be representative of natural background conditions at the FSMR. A summary of the sample SWMUs, and the source of the data (Phase I or II RFI), is presented in Table F-1 for each medium. Figures F.1 and F.2 present the locations of the background sample locations.

U.S. Environmental Protection Agency (EPA) Region IV methodology (EPA 1996b) was used as guidance for the development of the background data set for screening metals data. In cases where enough samples (e.g., more than 20) are collected to define background, a background upper tolerance level can be calculated. In cases where fewer samples (e.g., less than 20) are collected to define background, background can be calculated as two times the mean background concentration (EPA 1996b). Given that fewer than 20 background samples were collected for the FSMR, the latter method was used for calculating reference background concentrations for metals.

Tables F-2 through F-6 present the analytical results for the individual background samples as well as the two-times-mean background concentrations for surface soil, subsurface soil, groundwater, surface water, and sediment, respectively. If a chemical was not detected at a site then one-half the detection limit was used as the concentration in calculating the mean background concentration. Given the limited number of background samples, the mean concentration for soils in the eastern United States is also presented for comparative purposes only. A statistical analysis of the surface soil, subsurface soil, groundwater, surface water, and sediment data is presented in Tables F-7 through F-11, respectively.

The use of background data from multiple SWMUs across the FSMR is appropriate for soil and groundwater for the following reasons:

1. The soil types for both surface and subsurface soils consist of similar coastal plain deposits (both former barrier island and backwater marsh deposits) with varying amounts of sands, silts, and clays. The variation in soil types occurs vertically at a given site to the same extent that it occurs across the installation. No correlation between the metal concentration and either soil type or geological facies is apparent. The range of variation in the concentration of any given analyte across the background samples is relatively narrow, and generally significantly less than the mean concentration for soils in the eastern United States.

2. The turbidity of groundwater samples was minimized through the use of low-flow micropurging techniques during sample collection. The turbidity values ranged from 1.8 to

136 across all samples. No correlation between the metal concentration and turbidity is apparent. All samples were collected at the water table in the same type of aquifer unit.

Definitions of acronyms and abbreviations used in Appendix F tables

SWMU:	Solid Waste Management Unit
Sample ID:	sample identification number on chain-of-custody
USGS:	United States Geological Survey
Det. Limit:	detection limit reported by the analytical laboratory
CV:	coefficient of variation
Min. Detect:	minimum detected value
Distr.:	distribution of data (normal, lognormal)
Site-specific background criteria:	Surface water and sediment background samples were collected upgradient of this particular SWMU and are specific to this site only. No installation-wide background data set has been established for surface water or sediment.

Table F.1. Background Media Summary, Former 724th Tanker Purging Station, Fort Stewart

SWMU Number	SWMU Name on Hazardous Waste Permit HW-045	Station				
		Surface Soil	Subsurface Soil	Groundwater	Surface Water	Sediment
1	South Central Landfill	SC-M17[a]	SC-M17	MW10[a]	NA	NA
2	Camp Oliver Landfill	MW5[c]	MW5[c]	MW5[c]	NA	NA
3	TAC-X Landfill	MW5[c]	MW5[c]	MW5[c]	NA	NA
4A	Burn Pit A		MW1[b] (Phase I)	MW1[d]	NA	NA
4B	Burn Pit B		MW3[b] (Phase I)	MW3[d]	NA	NA
4C	Burn Pit C	MW7[d]	MW7[d]	MW7[d]	NA	NA
4D	Burn Pit D		MW2[b] (Phase I)	MW2[d]	NA	NA
4E	Burn Pit E		MW3[b] (Phase I)	MW3[d]	NA	NA
4F	Burn Pit F		MW1[b] (Phase I)	MW1[d]	NA	NA
12A	Active EOD containing Open Detonation Unit and Open Burn Pit	MW1[f]	MW1[f] (Phase I)	MW1[b]	NA	NA
14	Old Fire Training Area			MW8[b]	NA	NA
17	DRMO Hazardous Waste Storage Area	MW1[b]	MW1[b]	MW1[b]	NA	NA
18	Industrial Wastewater Treatment Plant	MW1[b]	MW1[b]	MW1[b]	NA	NA
26	Former 724th Tanker Purging Station	MW1[b]	MW1[b]	MW1[b]	SWS-1	SWS-1
29	Evans Army Heliport POL Storage Facility	MW5[b]	MW5[b]	MW5[b]	NA	NA
31	DEH Asphalt Tanks	MW1[b]	MW1[b]	MW1[b]	NA	NA
32	Supply Diesel Tank	MW1[b]	MW1	MW1[b]	NA	NA
34	DEH Equipment Wash Rack	MW1[b]	MW1[b]	MW1[b]	NA	NA
35	Wright Army Airfield Bulk Fuel System	HA-05[g] (Phase I)	HA-05[g] (Phase I)	MW9[g] (Phase I)	NA	NA

DEH = Directorate of Engineering and Housing.
DRMO = Defense Reutilization and Marketing Office.
EOD = Explosive Ordnance Disposal.
NA = Not applicable; surface water and sediment background are site specific.
POL = Petroleum Oil and Lubricant.
Bold indicates background groundwater sample collected from the same borehole as sample for soil (i.e., monitoring well was constructed in the borehole).

[a]Science Applications International Corporation (SAIC), September 1998. *Phase II RCRA Facility Investigation Report for the South Central Landfill (SWMU 1), Fort Stewart, Georgia* (Final Report), U.S. Army Corps of Engineers, Savannah District, Contract No. DACA21-95-D-0022, Delivery Order 0012.

[b]Rust Environment and Infrastructure, May 1996. *Phase I RCRA Facility Investigation Report for 24 Solid Waste Management Units at Fort Stewart, Georgia, Volume I of III* (Corrected Final Report), U.S. Army Corps of Engineers, Savannah District, Contract No. DACA21-93-D-0029, Delivery Order 0005.

[c]Science Applications International Corporation (SAIC), September 1998. *Phase III RCRA Facility Investigation Report for 16 Solid Waste Management Units at Fort Stewart, Georgia, Volume I* (Draft Report), U.S. Army Corps of Engineers, Savannah District, Contract No. DACA21-95-D-0022, Delivery Order 0009.

[d]Science Applications International Corporation (SAIC), March 1998. *Phase II RCRA Facility Investigation Report for the Burn Pits (SWMUs 4A – 4F) at Fort Stewart, Georgia* (Final Report), U.S. Army Corps of Engineers, Savannah District, Contract No. DACA21-95-D-0022, Delivery Order 0008.

[f]Radian International, LLC, January 1997. *Site Characterization Report, Open Burn/Open Detonation Units, Fort Stewart, Georgia* (Draft Report), U.S. Army Corps of Engineers, Mobile District.

[g]Metcalf & Eddy, Inc., December 1996. *Final Phase I RFI Report for Bulk Fuel Storage System at Wright Army Airfield, Fort Stewart, Georgia*, U.S. Army Corps of Engineers, Contract No. DACA21-93-D-0049, Delivery Order 0018.

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Table F-2. Surface Soil Background

Location			USGS	SWMU 2	SWMU 3	SWMU 17	SWMU 18	SWMU 29	SWMU 31	SWMU 32
Station			Eastern	02-MW5	03-MW5	17-MW1	18-MW1	29-MW5	31-MW1	32-MW1
Sample ID			U.S.	021511	031511	171111	181111	291511	311111	321111
Date	Mean	2 × Mean	Reference	01/14/98	01/16/98	01/30/98	02/01/98	01/29/98	01/28/98	01/30/98
Depth (feet)	Background	Background	Value	0 to 2	0 to 2	1 to 2	0 to 1	0 to 1	0 to 1	0 to 1
Volatile Organic Compounds (mg/kg)										
1,1-Dichloroethene	0.00	0.00		<0.0057	<0.0059	0.00037	<0.006	<0.006	<0.0055	0.0003
2-Butanone	0.01	0.01		<0.0114	<0.0118			0.0016	<0.011	
2-Hexanone	0.01	0.01		<0.0114	<0.0118	<0.0103	<0.0119	0.0011	<0.011	<0.011
4-Methyl-2-pentanone	0.01	0.01		<0.0114	<0.0118	<0.0103	<0.0119	0.0011	<0.011	<0.011
Acetone	0.01	0.01		<0.0114	<0.0118			0.0053	<0.0325	
Benzene	0.00	0.01		<0.0057	<0.0059	<0.0052	<0.006	<0.006	<0.0055	<0.0055
Bromomethane	0.01	0.01		<0.0114	<0.0118	<0.0103	<0.0119	0.0018	<0.011	<0.011
Carbon disulfide	0.00	0.01		<0.0057	<0.0059	<0.0052	<0.006	0.0016	<0.0055	<0.0055
Ethylbenzene	0.00	0.01		<0.0057	<0.0059	0.00044	<0.006	<0.006	<0.0055	<0.0055
Toluene	0.01	0.01		<0.0057	0.00043	0.0266	<0.006	0.0114	0.004	0.0067
Trichloroethene	0.00	0.01		<0.0057	<0.0059	0.00035	<0.006	<0.006	<0.0055	<0.0055
Pesticides/Polychlorinated Biphenyls (PCBs) (mg/kg)										
4,4'-DDE	0.00	0.00		0.0011	<0.0015					
4,4'-DDT	0.00	0.00		0.0024	<0.0015					
Methoxychlor	0.00	0.01		0.0029	<0.0077					
Metals (mg/kg)										
Arsenic	1.05	2.10	7.4	2.2	<0.35	<0.33	<0.38	0.45	5.1	0.62
Barium	7.37	14.70	420	21.9	7.1	2.3	0.77	3.7	7	8.4
Cadmium	0.09	0.18	2	<0.05	<0.04	<0.04	<0.05	0.05	0.1	0.33
Chromium	3.10	6.21	52	12.1	2.5	0.98	0.21	1	1.5	3.1
Lead	4.41	8.81	17	6.8	1.6	0.91	0.48	11	2.6	7.4
Mercury	0.02	0.03	0.12	0.04	<0.02	<0.02	<0.01	0.02	<0.02	0.03
Selenium	0.20	0.41	0.45	<0.16	<0.15	<0.14	<0.16		<0.16	
Silver	0.08	0.15	2.8	<0.07	<0.07	<0.06		<0.07	<0.06	<0.07
Radionuclides (pCi/g)										
Radium-226	0.43	0.86								
Radium-228	0.85	1.70								

Table F-2. Surface Soil Background (continued)

Location	Mean Background	2 × Mean Background	USGS Eastern U.S. Reference Value	SWMU 34	SWMU 35	Burn Pit C	Former 724th TPS	SWMU 12A	SWMU 1
Station				34-MW1	HA-05	MW-7	MW1	SB01-MW-1	SC-M17
Sample ID				341111	WAHA-0501	4C1711	261111	SBSL1	011711
Date				01/30/98	03/20/96	07/11/97	07/23/97	9/24/96	11/16/97
Depth (feet)				0 to 1	0 to 2	0 to 1	0 to 2	0 to 2	0 to 1
Volatile Organic Compounds (mg/kg)									
1,1-Dichloroethene	0.00	0.00					<0.0023		<0.0114
2-Butanone	0.01	0.01		<0.0054			<0.0057		<0.0227
2-Hexanone	0.01	0.01					<0.0057		<0.0227
4-Methyl-2-pentanone	0.01	0.01		<0.0109			<0.0057		<0.0227
Acetone	0.01	0.01		<0.0109			<0.0057		<0.0227
Benzene	0.00	0.01		0.0036	<0.0055		<0.0023		<0.0114
Bromomethane	0.01	0.01		0.00042			<0.0023		<0.0227
Carbon disulfide	0.00	0.01		<0.0109			<0.0057		<0.0114
Ethylbenzene	0.00	0.01		<0.0054	<0.0055		<0.0023		<0.0114
Toluene	0.01	0.01		<0.0054	<0.0055		<0.0023		<0.0114
Trichloroethene	0.00	0.01		0.0024			<0.0023		<0.0114
Pesticides/Polychlorinated Biphenyls (PCBs) (mg/kg)									
4,4'-DDE	0.00	0.00							<0.0015
4,4'-DDT	0.00	0.00							<0.0015
Methoxychlor	0.00	0.01							<0.0074
Metals (mg/kg)									
Arsenic	1.05	2.10	7.4	0.43	1.2	<0.32	<0.17		1.8
Barium	7.37	14.70	420	9.8	12	5.2	0.94		9.3
Cadmium	0.09	0.18	2	0.12	<0.5	<0.11	<0.06		<0.05
Chromium	3.10	6.21	52	2.2	3.5	0.67	<0.38		9.4
Lead	4.41	8.81	17	7.5	7.5	3.1	1.3	3	3.3
Mercury	0.02	0.03	0.12	0.04	<0.03	<0.02	<0.01	3.8	0.01
Selenium	0.20	0.41	0.45		<1	<0.21	0.63		<0.41
Silver	0.08	0.15	2.8	<0.07	<1	<0.04	<0.02		0.06
Radionuclides (pCi/g)									
Radium-226	0.43	0.86							0.428
Radium-228	0.85	1.70							0.851

Table F-3. Subsurface Soil Background

Location	Mean Background	2 × Mean Background	USGS Eastern U.S. Reference Values	SWMU 2	SWMU 3	SWMU 17	SWMU 18	SWMU 29	SWMU 31	SWMU 32
Station				02-MW5	03-MW5	17-MW1	18-MW1	29-MW5	31-MW1	32-MW1
Sample ID				021512	031512	171112	181112	291512	311112	321112
Date				01/14/98	01/16/98	01/30/98	02/01/98	01/29/98	01/28/98	01/30/98
Depth (feet)				13 to 15	3 to 5	8 to 9	3 to 3	3 to 4	5 to 6	3 to 4
Volatile Organic Compounds (mg/kg)										
2-Butanone	0.01	0.01		<0.0116	<0.0118			0.0012	<0.0115	
2-Hexanone	0.01	0.01		<0.0116	<0.0118	<0.0128	<0.0119	0.0011	<0.0115	<0.011
4-Methyl-2-pentanone	0.01	0.01		<0.0116	<0.0118	<0.0128	<0.0119	0.0011	<0.0115	<0.011
Acetone	0.02	0.05		<0.015	<0.0118	0.0495		0.005	<0.0598	0.0062
Bromomethane	0.01	0.01		<0.0116	<0.0118	<0.0128	<0.0119	0.002	<0.0115	<0.011
Carbon disulfide	0.00	0.01		<0.0058	<0.0059	<0.0064	<0.006	0.0018	<0.0057	<0.0055
Methylene chloride	0.00	0.01		<0.0058	<0.0059	<0.0064	<0.006	<0.006	<0.0069	<0.0055
Tetrachloroethene	0.00	0.01		<0.0058	<0.0059	<0.0064	<0.006	<0.006	<0.0057	<0.0055
Toluene	0.00	0.01		<0.0058	<0.0059	<0.0064	<0.006	0.00048	0.0012	<0.0055
Xylenes, total	0.00	0.01		<0.0058	<0.0059	<0.0064	<0.006	<0.006	<0.0057	<0.0055
Semivolatile Organic Compounds (mg/kg)										
1,2,4-Trichlorobenzene	0.24	0.48		<0.388	<0.391	<0.427	<0.397	<1.59	<0.383	<0.366
Bis(2-ethylhexyl)phthalate	0.32	0.64		<0.388	<0.391	<0.427	<0.397	<1.59	<0.383	<0.366
Di-*N*-butyl phthalate	0.26	0.52		<0.388	<0.391	<0.427	<0.397	<1.59	<0.383	<0.366
Fluoranthene	7.14	14.30		<0.388	<0.391	<0.427	<0.397	<1.59	<0.383	<0.366
Pyrene	7.31	14.60		<0.388	<0.391	<0.427	<0.397	<1.59	<0.383	<0.366
Pesticides/Polychlorinated Biphenyls (PCBs) (mg/kg)										
alpha-BHC	0.00	0.00		0.00093	<0.00078					

Table F-3. Subsurface Soil Background (continued)

Location			USGS Eastern U.S. Reference Values	SWMU 2	SWMU 3	SWMU 17	SWMU 18	SWMU 29	SWMU 31	SWMU 32
Station				02-MW5	03-MW5	17-MW1	18-MW1	29-MW5	31-MW1	32-MW1
Sample ID				021512	031512	171112	181112	291512	311112	321112
Date	Mean	2 × Mean		01/14/98	01/16/98	01/30/98	02/01/98	01/29/98	01/28/98	01/30/98
Depth (feet)	Background	Background		13 to 15	3 to 5	8 to 9	3 to 3	3 to 4	5 to 6	3 to 4
Metals (mg/kg)										
Arsenic	4.02	8.04	7.4	1.3	2.8	0.78	1.6	0.44	1.5	<0.36
Barium	8.49	17.00	420	1.8	4.5	9.2	6.1	3.7	3.1	3.1
Cadmium	0.12	0.24	2	<0.05	<0.04	<0.05	<0.05	<0.05	<0.04	<0.04
Chromium	5.81	11.60	52	6.4	4.1	16.2	5.4	1.6	0.76	1.5
Lead	5.56	11.10	17	2.2	1.1	10.4	4.5	1.8	1.3	1.1
Mercury	0.02	0.05	0.12	<0.02	<0.02	0.03	<0.02	0.04	<0.02	0.04
Selenium	0.56	1.12	0.45	<0.16	<0.16	<0.18	<0.79		<0.2	
Silver	0.23	0.46	2.8	<0.07	<0.07	<0.08		<0.07	<0.07	<0.07
Radionuclides (pCi/g)										
Radium-226	0.55	1.09								
Radium-228	0.45	0.89								
Other Analytes (mg/kg)										
Total organic carbon	1,100.00	2,200.00								

Table F-3. Subsurface Soil Background (continued)

Location	Mean Background	2 × Mean Background	USGS Eastern U.S. Reference Values	SWMU 34	SWMU 35	Burn Pit C	Former 724th TPS	Burn Pit A	Burn Pit F
Station				34-MW1	HA-05	MW-7	MW1	MW1	MW1
Sample ID				341112	WAHA-0502	4C1712	261112	FST004A-SL	FST004F-SL
Date				01/30/98	03/20/96	07/11/97	07/23/97	06/25/93	06/29/93
Depth (feet)				5 to 8	5 to 7	3 to 5	2 to 3	4 to 6	6 to 8
Volatile Organic Compounds (mg/kg)									
2-Butanone	0.01	0.01				<0.0054	<0.0058		
2-Hexanone	0.01	0.01		<0.0115		<0.0054	<0.0058		
4-Methyl-2-pentanone	0.01	0.01		<0.0115		<0.0054	<0.0058		
Acetone	0.02	0.05		<0.0115		<0.0054	0.0108	<0.057	<0.057
Bromomethane	0.01	0.01		<0.0115		<0.0022	<0.0023		
Carbon disulfide	0.00	0.01		<0.0057		<0.0054	<0.0058	<0.0057	<0.0057
Methylene chloride	0.00	0.01		<0.0057		<0.0022	<0.006	<0.0057	0.006
Tetrachloroethene	0.00	0.01		<0.0057		<0.0022	<0.0023	0.0061	<0.0057
Toluene	0.00	0.01		<0.0057	<0.0056	<0.0022	0.0026	0.0081	<0.0057
Xylenes, total	0.00	0.01		<0.0057	<0.0056	<0.0022	<0.0023	0.0061	<0.0057
Semivolatile Organic Compounds (mg/kg)									
1,2,4-Trichlorobenzene	0.24	0.48		<0.383					
Bis(2-ethylhexyl)phthalate	0.32	0.64		0.712					
Di-*N*-butyl phthalate	0.26	0.52		0.193					
Fluoranthene	7.14	14.30		<0.383	<0.37		<0.376		
Pyrene	7.31	14.60		<0.383	<0.37		<0.376		
Pesticides/Polychlorinated Biphenyls (PCBs) (mg/kg)									
alpha-BHC	0.00	0.00							

Table F-3. Subsurface Soil Background (continued)

Location			USGS Eastern U.S. Reference Values	SWMU 34	SWMU 35	Burn Pit C	Former 724th TPS	Burn Pit A	Burn Pit F
Station				34-MW1	HA-05	MW-7	MW1	MW1	MW1
Sample ID				341112	WAHA-0502	4C1712	261112	FST004A-SL	FST004F-SL
Date				01/30/98	03/20/96	07/11/97	07/23/97	06/25/93	06/29/93
Depth (feet)	Mean Background	2 × Mean Background		5 to 8	5 to 7	3 to 5	2 to 3	4 to 6	6 to 8
Metals (mg/kg)									
Arsenic	4.02	8.04	7.4	<0.37	56	<0.3	0.56	<1.1	<1.1
Barium	8.49	17.00	420	5.2	30	1.1	6.4	5.7	6.2
Cadmium	0.12	0.24	2	<0.05	<0.5	<0.1	<0.06	<0.57	<0.57
Chromium	5.81	11.60	52	2.8	19	1.2	4.3	9	5.1
Lead	5.56	11.10	17	2.1	23	1.6	4.7	9.4	16
Mercury	0.02	0.05	0.12	0.05	<0.03	0.03	<0.01	0.059	<0.011
Selenium	0.56	1.12	0.45		<1	<0.2	0.67	<5.7	<1.1
Silver	0.23	0.46	2.8	<0.07	<1	<0.07	<0.06	<1.1	<1.1
Radionuclides (pCi/g)									
Radium-226	0.55	1.09							
Radium-228	0.45	0.89							
Other Analytes (mg/kg)									
Total organic carbon	1,100.00	2,200.00					1,100		

Table F-3. Subsurface Soil Background (continued)

Location	Mean Background	2 × Mean Background	USGS Eastern U.S. Reference Values	Burn Pit D	Burn Pit B	Burn Pit E	SWMU 12A	SWMU 12A	SWMU 1
Station				MW2	MW3	MW3	SB01-MW-1	SB01-MW-1	SC-M17
Sample ID				FST004D-SL	FST004B-SL	FST004E-SL	SB1SL2	SB1SL3	011712
Date				06/24/93	06/28/93	06/30/93	9/24/96	9/24/96	11/16/97
Depth (feet)				4 to 6	6 to 8	6 to 8	2 to 4	4 to 6	5 to 8
Volatile Organic Compounds (mg/kg)									
2-Butanone	0.01	0.01							<0.0222
2-Hexanone	0.01	0.01							<0.0222
4-Methyl-2-pentanone	0.01	0.01							<0.0222
Acetone	0.02	0.05		0.11	<0.057	<0.058			0.0254
Bromomethane	0.01	0.01							<0.0222
Carbon disulfide	0.00	0.01		<0.0056	<0.0057	<0.0058			<0.0111
Methylene chloride	0.00	0.01		<0.0056	<0.0057	<0.0058			<0.0111
Tetrachloroethene	0.00	0.01		<0.0056	<0.0057	<0.0058			<0.0111
Toluene	0.00	0.01		0.021	<0.0057	<0.0058			<0.0111
Xylenes, total	0.00	0.01		0.022	<0.0057	<0.0058			<0.0111
Semivolatile Organic Compounds (mg/kg)									
1,2,4-Trichlorobenzene	0.24	0.48							0.0022
Bis(2-ethylhexyl)phthalate	0.32	0.64							<0.363
Di-*N*-butyl phthalate	0.26	0.52							<0.363
Fluoranthene	7.14	14.30					83		<0.363
Pyrene	7.31	14.60					85		<0.363
Pesticides/Polychlorinated Biphenyls (PCBs) (mg/kg)									
alpha-BHC	0.00	0.00							<0.00073

Table F-3. Subsurface Soil Background (continued)

Location			USGS	Burn Pit D	Burn Pit B	Burn Pit E	SWMU 12A	SWMU 12A	SWMU 1
Station			Eastern	MW2	MW3	MW3	SB01-MW-1	SB01-MW-1	SC-M17
Sample ID			U.S.	FST004D-SL	FST004B-SL	FST004E-SL	SB1SL2	SB1SL3	011712
Date	Mean	2 × Mean	Reference	06/24/93	06/28/93	06/30/93	9/24/96	9/24/96	11/16/97
Depth (feet)	Background	Background	Values	4 to 6	6 to 8	6 to 8	2 to 4	4 to 6	5 to 8
Metals (mg/kg)									
Arsenic	4.02	8.04	7.4	<1.1	<1.1	<1.2			<0.13
Barium	8.49	17.00	420	5.9	3.7	8.5	20	30	7.1
Cadmium	0.12	0.24	2	<0.56	<0.57	<0.58			<0.04
Chromium	5.81	11.60	52	3.3	4.5	9.5	4	9	2.8
Lead	5.56	11.10	17	3.7	2.7	5.2	4.1	7.5	3.2
Mercury	0.02	0.05	0.12	0.016	<0.011	0.062			0.01
Selenium	0.56	1.12	0.45	<1.1	<1.1	<2.3			<0.29
Silver	0.23	0.46	2.8	<1.1	<1.1	<1.2			<0.02
Radionuclides (pCi/g)									
Radium-226	0.55	1.09							0.547
Radium-228	0.45	0.89							0.445
Other Analytes (mg/kg)									
Total organic carbon	1,100.00	2,200.00							

Table F-4. Groundwater Background

Location	Mean Background	2 × Mean Background	SWMU 2	SWMU 3	SWMU 12A	SWMU 14	SWMU 17	SWMU 18	SWMU 29	SWMU 31	SWMU 32
Station			02-MW5	03-MW5	12A-MW10	14-MW8	17-MW1	18-MW1	29-MW5	31-MW1	32-MW1
Sample ID			024511	034511	124111	144811	174111	184111	294511	314111	324111
Date			35841	35842	35851	35840	35844	35851	35852	35850	35844
Volatile Organic Compounds (µg/L)											
1,1,1-Trichloroethane	1.75	3.50	<5	0.23		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	1.77	3.53	<5	<5		<5	<5	<5	<5	<5	0.53
1,3-*trans*-Dichloropropene	1.75	3.50	<5	<5		<5	<5	0.24	<5	<5	<5
Acetone	3.61	7.21	<10	3.6		<10	<10	5.2	<10	1.7	
Chloromethane	3.71	7.42	<10	<10		<10	<10	<10	<10	<10	<10
Ethylbenzene	1.49	2.97	<5	<5		<5	<5	0.23	0.21	0.34	<5
Methylene chloride	2.04	4.07	<5	<5		<5	<5	<5	<5	<5	<5
Toluene	0.97	1.94	<2	0.26		<2	<2	0.35	<5	0.35	<2
Trichloroethene	1.75	3.50	<5	<5		<5	<5	0.29	<5	<5	<5
Xylenes, total	1.55	3.10	<5	<5		<5	<5	0.42	0.69	0.71	<5
Metals (µg/L)											
Aluminum	1,200.00	2,400			1,200						
Arsenic	1.51	3.02	<3	<3	<3	<3	<3	<3	<3	<3	<3
Barium	35.86	71.72	3.8	18.8	35.5	41.8	27.5	32.1	177	57.4	7.8
Cadmium	0.21	0.43		<0.21	<0.21		<0.21	0.32	<0.21	<0.21	<0.21
Calcium	1,630.00	3,260			1,630						
Chromium	1.78	3.56	<0.42	0.85	2.6	0.53	0.52	1.9	2.2	1.1	<0.42
Copper	2.00	4.00			2						
Iron	2,189.00	4,378			598						
Lead	2.35	4.69	25.5	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	1.6
Magnesium	814.00	1,628			814						
Manganese	17.30	34.60			17.3						
Mercury	0.07	0.14	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	1.90	3.80			1.9						
Potassium	643.00	1,286			643						
Selenium	0.95	1.90	<2.5	<2.5	<2.5	<3.3	<2.5	<2.5	<2.5	<2.5	<2.5
Silver	0.56	1.12	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86
Sodium	3,520.00	7,040			3,520						
Vanadium	2.00	4.00			2						

Table F-4. Groundwater Background (continued)

Location			SWMU 2	SWMU 3	SWMU 12A	SWMU 14	SWMU 17	SWMU 18	SWMU 29	SWMU 31	SWMU 32
Station			02-MW5	03-MW5	12A-MW10	14-MW8	17-MW1	18-MW1	29-MW5	31-MW1	32-MW1
Sample ID	Mean	2 × Mean	024511	034511	124111	144811	174111	184111	294511	314111	324111
Date	Background	Background	35841	35842	35851	35840	35844	35851	35852	35850	35844
Radionuclides (pCi/L)											
Radium-226	0.58	1.16									
Radium-228	1.71	3.42									
Anions (mg/L)											
Alkalinity	45,100.00	90,200									
Sulfate	13,358.75	26,717.50			1,100		4,200	38,900		32,900	10,600
Other Analytes (mg/L)											
Methane	53.70	107.40									
Total organic carbon	3,160.00	6,320			3,160						

Table F-4. Groundwater Background (continued)

Location			SWMU 34	Burn Pit A	Burn Pit F	Burn Pit D	Burn Pit B	Burn Pit E	Burn Pit C	Former 724th TPS	SWMU 1
Station			34-MW1	MW-1	MW-1	MW-2	MW-3	MW-3	MW-7	MW1	SC-M10
Sample ID	Mean	2 × Mean	344111	4A4111	4F4111	4D4211	4B4311	4E4311	4C4711	264111	012T11
Date	Background	Background	35844	08/08/97	07/30/97	07/29/97	08/09/97	07/29/97	08/07/97	08/13/97	12/11/97
Volatile Organic Compounds (µg/L)											
1,1,1-Trichloroethane	1.75	3.50	<5	<2	<2	<2	<2	<2	<2	<2	<5
1,1-Dichloroethane	1.77	3.53	<5	<2	<2	<2	<2	<2	<2	<2	<5
1,3-*trans*-Dichloropropene	1.75	3.50	<5	<2	<2	<2	<2	<2	<2	<2	<5
Acetone	3.61	7.21	<10	<5	<5	<5	<5	<5	<5		
Chloromethane	3.71	7.42	<10	<2	<2	<2	<2	<2	<2	7.1	<10
Ethylbenzene	1.49	2.97	<5	<2	<2	<2	<2	<2	<2	<2	<5
Methylene chloride	2.04	4.07	<5	<2	<2	<2	<5	<2	<5	2.1	<2
Toluene	0.97	1.94	<2	<2	<2	<2	<2	<2	<2	<2	<2
Trichloroethene	1.75	3.50	<5	<2	<2	<2	<2	<2	<2	<2	<2
Xylenes, total	1.55	3.10	<5	<2	<2	<2	<2	<2	<2	<2	<5
Metals (µg/L)											
Aluminum	1,200.00	2,400									
Arsenic	1.51	3.02	<3	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	10.1	<0.6
Barium	35.86	71.72	15	18.5	22.8	58	<14.6	6.9	26.6	50.7	38
Cadmium	0.21	0.43	<0.21	0.34	1.1	0.43	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	1,630.00	3,260									
Chromium	1.78	3.56	1.1	2.4	<0.6	<0.6	3.7	1.5	<0.6	<10	7.3
Copper	2.00	4.00									
Iron	2,189.00	4,378									3,780
Lead	2.35	4.69	<0.96	1.1	0.08	0.2	2.2	<1	<0.06	3.3	3.9
Magnesium	814.00	1,628									
Manganese	17.30	34.60									
Mercury	0.07	0.14	<0.1	<0.06	<0.04	<0.04	<0.05	<0.04	0.28	0.2	<0.03
Nickel	1.90	3.80									
Potassium	643.00	1,286									
Selenium	0.95	1.90	2.5	<0.4	<0.4	<0.82	<0.4	<0.4	<0.4	0.62	
Silver	0.56	1.12	<0.86	0.14	<0.07	0.37	0.14	<0.07	0.08	4.9	<0.07

Table F-4. Groundwater Background (continued)

Location	Mean Background	2 × Mean Background	SWMU 34	Burn Pit A	Burn Pit F	Burn Pit D	Burn Pit B	Burn Pit E	Burn Pit C	Former 724th TPS	SWMU 1
Station			34-MW1	MW-1	MW-1	MW-2	MW-3	MW-3	MW-7	MW1	SC-M10
Sample ID			344111	4A4111	4F4111	4D4211	4B4311	4E4311	4C4711	264111	012T11
Date			35844	08/08/97	07/30/97	07/29/97	08/09/97	07/29/97	08/07/97	08/13/97	12/11/97
Sodium	3,520.00	7,040.00									
Vanadium	2.00	4.00									
Radionuclides (pCi/L)											
Radium-226	0.58	1.16									0.581
Radium-228	1.71	3.42									1.71
Anions (mg/L)											
Alkalinity	45,100.00	90,200								45,100	
Sulfate	13,358.75	26,717.50	14,100							3,070	2,000
Other Analytes (mg/L)											
Methane	53.70	107.40								53.7	
Total organic carbon	3,160.00	6,320									

Table F-5. Surface Water Background

Location	Former 724th TPS		
Station	SWS1		
Sample ID	263111		
Date	08/13/97	Mean Background	2 × Mean Background
Metals (μg/L)			
Arsenic	<0.94	0.47	0.94
Barium	22.4	22.4	44.8
Cadmium	<0.2	0.1	0.2
Chromium	<0.6	0.3	0.6
Lead	2.6	2.6	5.2
Mercury	0.09	0.09	0.18
Selenium	<0.4	0.2	0.4
Silver	0.15	0.15	0.3

Table F-6. Sediment Background

Station	SWS-1	Mean Background	2 × Mean Background
Sample ID	262111		
Date	08/13/97		
RCRA Metals (mg/kg)			
Arsenic	<0.37	0.185	0.37
Barium	1.5	1.5	3.0
Cadmium	<0.12	0.06	0.12
Chromium	<0.37	0.185	0.37
Lead	0.69	0.69	1.38
Mercury	<0.02	0.01	0.02
Selenium	<0.24	0.12	0.24
Silver	<0.17	0.085	0.17

Table F-7. Statistical Analysis of Surface Soil Background Data

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Metals (mg/kg)									
Arsenic	7.4	7/12	58.33	1.05	139	0.43	5.10	L	2.1
Barium	420	12/12	100.00	7.37	79	0.77	21.90	L	14.7
Cadmium	2	4/12	33.33	0.0875	116	0.05	0.33	D	0.175
Chromium	52	12/13	92.31	3.1	116	0.21	12.10	L	6.21
Lead	17	13/13	100.00	4.41	74.4	0.48	11.00	L	8.81
Mercury	0.12	5/12	41.67	0.0171	74.3	0.01	0.04	D	0.0342
Selenium	0.45	1/9	11.11	0.203	105	0.63	0.63	D	0.406
Silver	2.8	1/11	9.09	0.075	189	0.06	0.06	D	0.15
Pesticides/Polychlorinated Biphenyls (PCBs) (mg/kg)									
4,4'-DDD		0/3	0.00	0.00075	0			O	0.0015
4,4'-DDE		1/3	33.33	0.000867	23.3	0.00	0.00	D	0.00173
4,4'-DDT		1/3	33.33	0.0013	73.3	0.00	0.00	D	0.0026
Aldrin		0/3	0.00	0.000375	2.31			O	0.00075
alpha-Chlordane		0/3	0.00	0.000375	2.31			O	0.00075
alpha-BHC		0/3	0.00	0.000375	2.31			O	0.00075
Aroclor-1016		0/3	0.00	0.00187	1.55			O	0.00373
Aroclor-1221		0/3	0.00	0.00187	1.55			O	0.00373
Aroclor-1232		0/3	0.00	0.00187	1.55			O	0.00373
Aroclor-1242		0/3	0.00	0.00187	1.55			O	0.00373
Aroclor-1248		0/3	0.00	0.00187	1.55			O	0.00373
Aroclor-1254		0/3	0.00	0.00187	1.55			O	0.00373
Aroclor-1260		0/3	0.00	0.00187	1.55			O	0.00373
beta-BHC		0/3	0.00	0.000375	2.31			O	0.00075
delta-BHC		0/3	0.00	0.000375	2.31			O	0.00075
Dieldrin		0/3	0.00	0.00075	0			O	0.0015
Endosulfan I		0/3	0.00	0.000375	2.31			O	0.00075
Endosulfan II		0/3	0.00	0.00075	0			O	0.0015
Endosulfan sulfate		0/3	0.00	0.00075	0			O	0.0015
Endrin		0/3	0.00	0.00075	0			O	0.0015

Table F-7. Statistical Analysis of Surface Soil Background Data (continued)

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Endrin ketone		0/3	0.00	0.00075	0			O	0.0015
gamma-Chlordane		0/3	0.00	0.000375	2.31			O	0.00075
gamma-BHC (Lindane)		0/3	0.00	0.000375	2.31			O	0.00075
Heptachlor		0/3	0.00	0.000375	2.31			O	0.00075
Heptachlor epoxide		0/3	0.00	0.000375	2.31			O	0.00075
Methoxychlor		1/3	33.33	0.00348	14.7	0.00	0.00	D	0.00697
Toxaphene		0/3	0.00	0.0188	1.93			O	0.0376
Semivolatile Organic Compounds (mg/kg)									
1,2,4-Trichlorobenzene		0/10	0.00	0.245	69.1			O	0.49
1,2-Dichlorobenzene		0/10	0.00	0.245	69.1			O	0.49
1,3-Dichlorobenzene		0/10	0.00	0.245	69.1			O	0.49
1,4-Dichlorobenzene		0/10	0.00	0.245	69.1			O	0.49
1-Methylnaphthalene		0/1	0.00	0.18				O	0.36
2,2'-Oxybis (1-chloropropane)		0/9	0.00	0.251	70.9			O	0.503
2,4,5-Trichlorophenol		0/10	0.00	0.554	82.7			O	1.11
2,4,6-Trichlorophenol		0/10	0.00	0.245	69.1			O	0.49
2,4-Dichlorophenol		0/10	0.00	0.245	69.1			O	0.49
2,4-Dimethylphenol		0/10	0.00	0.245	69.1			O	0.49
2,4-Dinitrophenol		0/10	0.00	0.593	72.7			O	1.19
2,4-Dinitrotoluene		0/10	0.00	0.245	69.1			O	0.49
2,6-Dinitrotoluene		0/10	0.00	0.245	69.1			O	0.49
2-Chloronaphthalene		0/11	0.00	0.24	67.5			O	0.479
2-Chlorophenol		0/10	0.00	0.245	69.1			O	0.49
2-Methylnaphthalene		0/11	0.00	0.239	67.7			O	0.478
2-Methylphenol		0/10	0.00	0.245	69.1			O	0.49
2-Nitroaniline		0/10	0.00	0.554	82.7			O	1.11
2-Nitrophenol		0/10	0.00	0.245	69.1			O	0.49
3,3'-Dichlorobenzidine		0/10	0.00	0.605	63.4			O	1.21
3-Nitroaniline		0/10	0.00	0.554	82.7			O	1.11
4,6-Dinitro-o-cresol		0/10	0.00	0.593	72.7			O	1.19

Table F-7. Statistical Analysis of Surface Soil Background Data (continued)

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
4-Bromophenyl-phenyl ether		0/10	0.00	0.245	69.1			O	0.49
4-Chloroaniline		0/10	0.00	0.245	69.1			O	0.49
4-Chlorophenyl-phenyl ether		0/10	0.00	0.245	69.1			O	0.49
4-Methylphenol		0/10	0.00	0.245	69.1			O	0.49
4-Nitroaniline		0/10	0.00	0.554	82.7			O	1.11
4-Nitrophenol		0/10	0.00	0.593	72.7			O	1.19
4-Chloro-3-methylphenol		0/10	0.00	0.245	69.1			O	0.49
Acenaphthene		0/12	0.00	0.235	66.1			O	0.469
Acenaphthylene		0/12	0.00	0.235	66.1			O	0.469
Anthracene		0/12	0.00	0.235	66.1			O	0.469
Benzo(*a*)anthracene		0/12	0.00	0.235	66.1			O	0.469
Benzo(*a*)pyrene		0/12	0.00	0.235	66.1			O	0.469
Benzo(*b*)fluoranthene		0/13	0.00	0.23	64.8			O	0.461
Benzo(*g,h,i*)perylene		0/12	0.00	0.235	66.1			O	0.469
Benzo(*k*)fluoranthene		0/12	0.00	0.235	66.1			O	0.469
Benzoic acid		0/1	0.00	0.373				O	0.746
Benzyl alcohol		0/1	0.00	0.187				O	0.373
Bis(2-chloroisopropyl)ether		0/1	0.00	0.187				O	0.373
Bis(2-chloroethoxy)methane		0/10	0.00	0.245	69.1			O	0.49
Bis(2-chloroethyl)ether		0/10	0.00	0.245	69.1			O	0.49
Bis(2-ethylhexyl)phthalate		0/10	0.00	0.245	69.1			O	0.49
Butyl benzyl phthalate		0/10	0.00	0.245	69.1			O	0.49
Carbazole		0/10	0.00	0.245	69.1			O	0.49
Chrysene		0/12	0.00	0.235	66.1			O	0.469
Di-*N*-butyl phthalate		0/10	0.00	0.245	69.1			O	0.49
Di-*N*-octyl phthalate		0/10	0.00	0.245	69.1			O	0.49
Dibenzo(*a,h*)anthracene		0/12	0.00	0.235	66.1			O	0.469
Dibenzofuran		0/10	0.00	0.245	69.1			O	0.49
Diethyl phthalate		0/10	0.00	0.245	69.1			O	0.49
Dimethyl phthalate		0/10	0.00	0.245	69.1			O	0.49
Fluoranthene		0/12	0.00	0.235	66.1			O	0.469

Table F-7. Statistical Analysis of Surface Soil Background Data (continued)

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Fluorene		0/12	0.00	0.235	66.1			O	0.469
Hexachlorobenzene		0/10	0.00	0.245	69.1			O	0.49
Hexachlorobutadiene		0/10	0.00	0.245	69.1			O	0.49
Hexachlorocyclopentadiene		0/10	0.00	0.245	69.1			O	0.49
Hexachloroethane		0/10	0.00	0.245	69.1			O	0.49
Indeno(*1,2,3-cd*)pyrene		0/12	0.00	0.235	66.1			O	0.469
Isophorone		0/10	0.00	0.245	69.1			O	0.49
N-Nitroso-di-*N*-propylamine		0/10	0.00	0.245	69.1			O	0.49
N-Nitrosodiphenylamine		0/10	0.00	0.245	69.1			O	0.49
Naphthalene		0/12	0.00	0.235	66.1			O	0.469
Nitrobenzene		0/10	0.00	0.245	69.1			O	0.49
Pentachlorophenol		0/10	0.00	0.554	82.7			O	1.11
Phenanthrene		0/12	0.00	0.235	66.1			O	0.469
Phenol		0/10	0.00	0.245	69.1			O	0.49
Pyrene		0/12	0.00	0.235	66.1			O	0.469
Volatile Organic Compounds (mg/kg)									
1,1,1-Trichloroethane		0/10	0.00	0.00295	37.7			O	0.00589
1,1,2,2-Tetrachloroethane		0/10	0.00	0.00295	37.7			O	0.00589
1,1,2-Trichloroethane		0/10	0.00	0.00295	37.7			O	0.00589
1,1-Dichloroethane		0/10	0.00	0.00295	37.7			O	0.00589
1,1-Dichloroethene		2/10	20.00	0.00248	63.6	0.00	0.00	D	0.00495
1,2-Dichloroethane		0/10	0.00	0.00295	37.7			O	0.00589
1,2-Dichloroethene		0/8	0.00	0.00283	5.27			O	0.00565
1,2-Dichloropropane		0/10	0.00	0.00295	37.7			O	0.00589
1,2-*cis*-Dichloroethene		0/2	0.00	0.00343	93.9			O	0.00685
1,2-*trans*-Dichloroethene		0/2	0.00	0.00343	93.9			O	0.00685
1,3-*cis*-Dichloropropene		0/10	0.00	0.00295	37.7			O	0.00589
1,3-*trans*-Dichloropropene		0/10	0.00	0.00295	37.7			O	0.00589
2-Butanone		1/6	16.67	0.00548	61.4	0.00	0.00	D	0.011
2-Hexanone		1/10	10.00	0.00545	47.9	0.00	0.00	D	0.0109
4-Methyl-2-pentanone		1/10	10.00	0.00545	47.9	0.00	0.00	D	0.0109

Table F-7. Statistical Analysis of Surface Soil Background Data (continued)

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Acetone		2/7	28.57	0.00728	66	0.00	0.01	D	0.0146
Benzene		1/11	9.09	0.00272	47.8	0.00	0.00	D	0.00544
Bromodichloromethane		0/10	0.00	0.00295	37.7			O	0.00589
Bromoform		0/10	0.00	0.00295	37.7			O	0.00589
Bromomethane		1/10	10.00	0.00535	51.1	0.00	0.00	D	0.0107
Carbon disulfide		1/10	10.00	0.00298	34.8	0.00	0.00	D	0.00595
Carbon tetrachloride		0/10	0.00	0.00295	37.7			O	0.00589
Chlorobenzene		0/10	0.00	0.00295	37.7			O	0.00589
Chloroethane		0/10	0.00	0.00576	42.2			O	0.0115
Chloroform		0/10	0.00	0.00295	37.7			O	0.00589
Chloromethane		0/10	0.00	0.00576	42.2			O	0.0115
Dibromochloromethane		0/10	0.00	0.00295	37.7			O	0.00589
Ethylbenzene		1/11	9.09	0.00273	47.4	0.00	0.00	D	0.00546
Methylene chloride		0/10	0.00	0.0037	45.8			O	0.00739
Styrene		0/10	0.00	0.00295	37.7			O	0.00589
Tetrachloroethene		0/10	0.00	0.00295	37.7			O	0.00589
Toluene		6/11	54.55	0.00609	122	0.00	0.03	L	0.0122
Trichloroethene		1/10	10.00	0.00272	50.8	0.00	0.00	D	0.00544
Vinyl chloride		0/10	0.00	0.00576	42.2			O	0.0115
Xylenes, total		0/11	0.00	0.00293	36			O	0.00585
Radionuclides (pCi/g)									
Radium-226		1/1	100.00	0.428		0.43	0.43	X	0.856
Radium-228		1/1	100.00	0.851		0.85	0.85	X	1.7

[a]Results less than the detection limit were set to one-half the reported detection limit. For radionuclides, the reported result was used to calculate the mean.
Distribution codes:
D = Distribution not determined because fewer than 5 detects or less than 50 percent detects (t-distribution).
L = Distribution most similar to lognormal [land statistic used for upper confidence limit (UCL)].
N = Distribution most similar to normal (t-distribution used for UCL).
O = Analyte not detected in any sample.
X = Distribution significantly different from normal and lognormal (t-distribution used for UCL).
[b]If a chemical was not detected, the reference background criterion was the mean of the detection limit. However, organic constituents were screened against zero because they are considered man-made.
CV = Coefficient of variation.

Table F-8. Statistical Analysis of Subsurface Soil Background Data

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Metals (mg/kg)									
Arsenic	7.40	8/17	47.06	4.02	334	0.44	56.00	D	8.04
Barium	420.00	19/19	100.00	8.49	101	1.10	30.00	L	17
Cadmium	2.00	0/17	0.00	0.115	109			O	0.231
Chromium	52.00	19/19	100.00	5.81	84.5	0.76	19.00	L	11.6
Lead	17.00	19/19	100.00	5.56	103	1.10	23.00	L	11.1
Mercury	0.12	9/17	52.94	0.024	81.4	0.01	0.06	L	0.048
Selenium	0.45	1/14	7.14	0.558	131	0.67	0.67	D	1.12
Silver	2.80	0/16	0.00	0.227	115			O	0.453
Other Analytes									
Total organic carbon		1/1	100.00	1,100		1,100.00	1,100.00	X	2,200
Pesticides/Polychlorinated Biphenyls (PCBs) (mg/kg)									
4,4'-DDD		0/3	0.00	0.00075	6.67			O	0.0015
4,4'-DDE		0/3	0.00	0.00075	6.67			O	0.0015
4,4'-DDT		0/3	0.00	0.00075	6.67			O	0.0015
Aldrin		0/3	0.00	0.000378	3.33			O	0.000757
alpha-Chlordane		0/3	0.00	0.000378	3.33			O	0.000757
alpha-BHC		1/3	33.33	0.000562	56.8	0.00	0.00	D	0.00112
Aroclor-1016		0/3	0.00	0.00188	4.06			O	0.00377
Aroclor-1221		0/3	0.00	0.00188	4.06			O	0.00377
Aroclor-1232		0/3	0.00	0.00188	4.06			O	0.00377
Aroclor-1242		0/3	0.00	0.00188	4.06			O	0.00377
Aroclor-1248		0/3	0.00	0.00188	4.06			O	0.00377
Aroclor-1254		0/3	0.00	0.00188	4.06			O	0.00377
Aroclor-1260		0/3	0.00	0.00188	4.06			O	0.00377
beta-BHC		0/3	0.00	0.000378	3.33			O	0.000757
delta-BHC		0/3	0.00	0.000378	3.33			O	0.000757
Dieldrin		0/3	0.00	0.00075	6.67			O	0.0015
Endosulfan I		0/3	0.00	0.000378	3.33			O	0.000757
Endosulfan II		0/3	0.00	0.00075	6.67			O	0.0015

Table F-8. Statistical Analysis of Subsurface Soil Background Data (continued)

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Endosulfan sulfate		0/3	0.00	0.00075	6.67			O	0.0015
Endrin		0/3	0.00	0.00075	6.67			O	0.0015
Endrin ketone		0/3	0.00	0.00075	6.67			O	0.0015
Gamma chlordane		0/3	0.00	0.000378	3.33			O	0.000757
gamma-BHC (Lindane)		0/3	0.00	0.000378	3.33			O	0.000757
Heptachlor		0/3	0.00	0.000378	3.33			O	0.000757
Heptachlor epoxide		0/3	0.00	0.000378	3.33			O	0.000757
Methoxychlor		0/3	0.00	0.00378	3.33			O	0.00757
Toxaphene		0/3	0.00	0.0189	3.58			O	0.0378
Semivolatile Organic Compounds (mg/kg)									
1,2,4-Trichlorobenzene		1/9	11.11	0.241	90.5	0.00	0.00	D	0.481
1,2-Dichlorobenzene		0/9	0.00	0.26	77.1			O	0.521
1,3-Dichlorobenzene		0/9	0.00	0.26	77.1			O	0.521
1,4-Dichlorobenzene		0/9	0.00	0.26	77.1			O	0.521
1-Methylnaphthalene		0/1	0.00	0.185				O	0.37
2,2'-Oxybis (1-chloropropane)		0/9	0.00	0.26	77.1			O	0.521
2,4,5-Trichlorophenol		0/9	0.00	0.618	84.4			O	1.24
2,4,6-Trichlorophenol		0/9	0.00	0.26	77.1			O	0.521
2,4-Dichlorophenol		0/9	0.00	0.26	77.1			O	0.521
2,4-Dimethylphenol		0/9	0.00	0.26	77.1			O	0.521
2,4-Dinitrophenol		0/9	0.00	0.64	79			O	1.28
2,4-Dinitrotoluene		0/9	0.00	0.26	77.1			O	0.521
2,6-Dinitrotoluene		0/9	0.00	0.26	77.1			O	0.521
2-Chloronaphthalene		0/10	0.00	0.253	75.3			O	0.506
2-Chlorophenol		0/9	0.00	0.26	77.1			O	0.521
2-Methylnaphthalene		0/10	0.00	0.253	75.4			O	0.506
2-Methylphenol		0/9	0.00	0.26	77.1			O	0.521
2-Nitroaniline		0/9	0.00	0.618	84.4			O	1.24
2-Nitrophenol		0/9	0.00	0.26	77.1			O	0.521
3,3'-Dichlorobenzidine		0/9	0.00	0.586	72.5			O	1.17

Table F-8. Statistical Analysis of Subsurface Soil Background Data (continued)

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
3-Nitroaniline		0/9	0.00	0.618	84.4			O	1.24
4,6-Dinitro-o-cresol		0/9	0.00	0.64	79			O	1.28
4-Bromophenyl-phenyl ether		0/9	0.00	0.26	77.1			O	0.521
4-Chloroaniline		0/9	0.00	0.26	77.1			O	0.521
4-Chlorophenyl-phenyl ether		0/9	0.00	0.26	77.1			O	0.521
4-Methylphenol		0/9	0.00	0.26	77.1			O	0.521
4-Nitroaniline		0/9	0.00	0.618	84.4			O	1.24
4-Nitrophenol		0/9	0.00	0.64	79			O	1.28
4-Chloro-3-methylphenol		0/9	0.00	0.26	77.1			O	0.521
Acenaphthene		0/11	0.00	0.247	73.7			O	0.494
Acenaphthylene		0/11	0.00	0.247	73.7			O	0.494
Anthracene		0/11	0.00	0.247	73.7			O	0.494
Benzo(*a*)anthracene		0/11	0.00	0.247	73.7			O	0.494
Benzo(*a*)pyrene		0/11	0.00	0.247	73.7			O	0.494
Benzo(*b*)fluoranthene		0/11	0.00	0.247	73.7			O	0.494
Benzo(*g,h,i*)perylene		0/11	0.00	0.247	73.7			O	0.494
Benzo(*k*)fluoranthene		0/11	0.00	0.247	73.7			O	0.494
Benzoic acid		0/9	0.00	0.26	77.1			O	0.521
Benzyl alcohol		0/9	0.00	0.26	77.1			O	0.521
Bis(2-chloroisopropyl)ether		1/9	11.11	0.318	77.9	0.71	0.71	D	0.637
Bis(2-chloroethoxy)methane		0/9	0.00	0.26	77.1			O	0.521
Bis(2-chloroethyl)ether		0/9	0.00	0.26	77.1			O	0.521
Bis(2-ethylhexyl)phthalate		0/11	0.00	0.247	73.7			O	0.494
Butyl benzyl phthalate		1/9	11.11	0.261	77	0.19	0.19	D	0.521
Carbazole		0/9	0.00	0.26	77.1			O	0.521
Chrysene		0/11	0.00	0.247	73.7			O	0.494
Di-*N*-butyl phthalate		0/9	0.00	0.26	77.1			O	0.521
Di-*N*-octyl phthalate		0/9	0.00	0.26	77.1			O	0.521
Dibenzo(*a,h*)anthracene		0/9	0.00	0.26	77.1			O	0.521
Dibenzofuran		1/12	8.33	7.14	334	83.00	83.00	D	14.3
Diethyl phthalate		0/11	0.00	0.247	73.7			O	0.494

Table F-8. Statistical Analysis of Subsurface Soil Background Data (continued)

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Dimethyl phthalate		0/9	0.00	0.26	77.1			O	0.521
Fluoranthene		0/9	0.00	0.26	77.1			O	0.521
Fluorene		0/9	0.00	0.26	77.1			O	0.521
Hexachlorobenzene		0/9	0.00	0.26	77.1			O	0.521
Hexachlorobutadiene		0/11	0.00	0.247	73.7			O	0.494
Hexachlorocyclopentadiene		0/9	0.00	0.26	77.1			O	0.521
Hexachloroethane		0/9	0.00	0.26	77.1			O	0.521
Indeno(*1,2,3-cd*)pyrene		0/9	0.00	0.26	77.1			O	0.521
Isophorone		0/11	0.00	0.247	73.7			O	0.494
N-Nitroso-di-*N*-propylamine		0/9	0.00	0.26	77.1			O	0.521
N-Nitrosodiphenylamine		0/9	0.00	0.618	84.4			O	1.24
Naphthalene		0/11	0.00	0.247	73.7			O	0.494
Nitrobenzene		0/9	0.00	0.26	77.1			O	0.521
Pentachlorophenol		1/12	8.33	7.31	335	85.00	85.00	D	14.6
Phenanthrene		0/16	0.00	0.00285	33.2			O	0.00569
Phenol		0/10	0.00	0.00285	42.9			O	0.00569
Pyrene		0/11	0.00	0.00285	40.7			O	0.00569
Volatile Organic Compounds (mg/kg)									
1,1-Dichloroethane		0/11	0.00	0.00285	40.7			O	0.00569
1,1-Dichloroethene		0/11	0.00	0.00285	40.7			O	0.00569
1,2-Dichloroethane		0/11	0.00	0.00285	40.7			O	0.00569
1,2-Dichloroethene		0/8	0.00	0.00294	4.62			O	0.00588
1,2-Dichloropropane		0/11	0.00	0.00285	40.7			O	0.00569
1,2-*cis*-Dichloroethene		0/3	0.00	0.0026	98.3			O	0.0052
1,2-*trans*-Dichloroethene		0/3	0.00	0.0026	98.3			O	0.0052
1,3-*cis*-Dichloropropene		0/11	0.00	0.00285	40.7			O	0.00569
1,3-*trans*-Dichloropropene		0/11	0.00	0.00285	40.7			O	0.00569
2-Butanone		1/7	14.29	0.00505	64.3	0.00	0.00	D	0.0101
2-Hexanone		1/11	9.09	0.00535	48.2	0.00	0.00	D	0.0107
4-Methyl-2-pentanone		1/11	9.09	0.00535	48.2	0.00	0.00	D	0.0107
Acetone		6/15	40.00	0.0249	110	0.01	0.11	D	0.0498

Table F-8. Statistical Analysis of Subsurface Soil Background Data (continued)

Analyte	USGS Eastern U.S. Reference	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Benzene		0/17	0.00	0.00284	32.2			O	0.00569
Bromodichloromethane		0/11	0.00	0.00285	40.7			O	0.00569
Bromoform		0/11	0.00	0.00285	40.7			O	0.00569
Bromomethane		1/11	9.09	0.00513	55.8	0.00	0.00	D	0.0103
Carbon disulfide		1/16	6.25	0.00298	25	0.00	0.00	D	0.00596
Carbon tetrachloride		0/11	0.00	0.00285	40.7			O	0.00569
Chlorobenzene		0/11	0.00	0.00285	40.7			O	0.00569
Chloroethane		0/11	0.00	0.00549	48.6			O	0.011
Chloroform		0/11	0.00	0.00285	40.7			O	0.00569
Chloromethane		0/11	0.00	0.00549	48.6			O	0.011
Dibromochloromethane		0/11	0.00	0.00285	40.7			O	0.00569
Ethylbenzene		0/17	0.00	0.00284	32.2			O	0.00569
Methylene chloride		1/16	6.25	0.0032	35.1	0.01	0.01	D	0.00639
Styrene		0/11	0.00	0.00285	40.7			O	0.00569
Tetrachloroethene		1/16	6.25	0.00305	40.9	0.01	0.01	D	0.0061
Toluene		5/17	29.41	0.00406	115	0.00	0.02	D	0.00813
Trichloroethene		0/11	0.00	0.00285	40.7			O	0.00569
Vinyl chloride		0/11	0.00	0.00549	48.6			O	0.011
Xylenes, total		2/17	11.76	0.00416	114	0.01	0.02	D	0.00833
Radionuclides (pCi/g)									
Radium-226		1/1	100.00	0.547		0.55	0.55	X	1.09
Radium-228		1/1	100.00	0.445		0.45	0.45	X	0.89

[a]Results less than the detection limit were set to one-half the reported detection limit. For radionuclides, the reported result was used to calculate the mean.
Distribution codes:
D = Distribution not determined because fewer than 5 detects or less than 50 percent detects (t-distribution).
L = Distribution most similar to lognormal [land statistic used for upper confidence limit (UCL)].
N = Distribution most similar to normal (t-distribution used for UCL).
O = Analyte not detected in any sample.
X = Distribution significantly different from normal and lognormal (t-distribution used for UCL).
[b]If a chemical was not detected, the reference background criterion was the mean of the detection limit. However, organic constituents were screened against zero because they are considered man-made.
CV = Coefficient of variation.

Table F-9. Statistical Analysis of Groundwater Background Data

Analyte	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Anions (mg/L)								
Alkalinity	1/1	100.00	45,100.00		45,100.00	45,100.00	X	90,200.00
Nitrate	0/1	0.00	250.00				O	500.00
Nitrite	0/1	0.00	250.00				O	500.00
Sulfate	8/8	100.00	13,400.00	110.00	1,100.00	38,900.00	L	26,717.50
Sulfide	0/1	0.00	50.00				O	100.00
Metals (mg/L)								
Aluminum	1/1	100.00	1,200.00		1,200.00	1,200.00	X	2,400.00
Antimony	0/1	0.00	1.20				O	2.40
Arsenic	1/18	5.56	1.51	147.14	10.10	10.10	D	3.02
Barium	17/18	94.44	35.90	109.00	3.80	177.00	L	71.72
Beryllium	0/1	0.00	0.08				O	0.15
Cadmium	4/16	25.00	0.21	121.03	0.32	1.10	D	0.43
Calcium	1/1	100.00	1,630.00		1,630.00	1,630.00	X	3,260.00
Chromium	12/18	66.67	1.78	107.61	0.52	7.30	L	3.56
Cobalt	0/1	0.00	0.23				O	0.46
Copper	1/1	100.00	2.00		2.00	2.00	X	4.00
Iron	2/2	100.00	2,190.00	102.79	598.00	3,780.00	N	4,378.00
Lead	8/18	44.44	2.35	250.54	0.08	25.50	D	4.69
Magnesium	1/1	100.00	814.00		814.00	814.00	X	1,628.00
Manganese	1/1	100.00	17.30		17.30	17.30	X	34.60
Mercury	3/18	16.67	0.07	107.16	0.20	0.28	D	0.14
Nickel	1/1	100.00	1.90		1.90	1.90	X	3.80
Potassium	1/1	100.00	643.00		643.00	643.00	X	1,286.00
Selenium	2/17	11.76	0.95	68.62	0.62	2.50	D	1.90
Silver	5/18	27.78	0.56	196.74	0.08	4.90	D	1.12
Sodium	1/1	100.00	3,520.00		3,520.00	3,520.00	X	7,040.00
Thallium	0/1	0.00	1.60				O	3.20

Table F-9. Statistical Analysis of Groundwater Background Data (continued)

Analyte	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Vanadium	1/1	100.00	2.00		2.00	2.00	X	4.00
Zinc	0/1	0.00	8.45				O	16.90
Other Analytes								
Total organic carbon	1/1	100.00	3,160.00		3,160.00	3,160.00	X	6,320.00
Volatile Organic Compounds (mg/L)								
Ethane	0/1	0.00	2.50				O	5.00
Ethene	0/1	0.00	2.50				O	5.00
Methane	1/1	100.00	53.70		53.70	53.70	X	107.40
Explosives (mg/L)								
1,3,5-Trinitrobenzene	0/1	0.00	1.00				O	2.00
1,3-Dinitrobenzene	0/1	0.00	1.50				O	3.00
2,4,6-Trinitrotoluene	0/1	0.00	1.50				O	3.00
2,4-Dinitrotoluene	0/1	0.00	0.05				O	0.10
2,6-Dinitrotoluene	0/1	0.00	0.05				O	0.10
2-Nitrotoluene	0/1	0.00	5.00				O	10.00
3-Nitrotoluene	0/1	0.00	5.00				O	10.00
4-Nitrotoluene	0/1	0.00	5.00				O	10.00
HMX	0/1	0.00	10.00				O	20.00
Nitrobenzene	0/1	0.00	5.00				O	10.00
RDX	0/1	0.00	10.00				O	20.00
Tetryl	0/1	0.00	25.00				O	50.00
Pesticides/Polychlorinated Biphenyls (PCBs) (mg/L)								
4,4'-DDD	0/3	0.00	0.02	0.00			O	0.04
4,4'-DDE	0/3	0.00	0.02	0.00			O	0.04
4,4'-DDT	0/3	0.00	0.02	0.00			O	0.04
Aldrin	0/3	0.00	0.01	0.00			O	0.02
alpha-Chlordane	0/3	0.00	0.01	0.00			O	0.02
alpha-BHC	0/3	0.00	0.01	0.00			O	0.02
Aroclor-1016	0/3	0.00	0.05	0.58			O	0.10
Aroclor-1221	0/3	0.00	0.05	0.58			O	0.10

Table F-9. Statistical Analysis of Groundwater Background Data (continued)

Analyte	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Aroclor-1232	0/3	0.00	0.05	0.58			O	0.10
Aroclor-1242	0/3	0.00	0.05	0.58			O	0.10
Aroclor-1248	0/3	0.00	0.05	0.58			O	0.10
Aroclor-1254	0/3	0.00	0.05	0.58			O	0.10
Aroclor-1260	0/3	0.00	0.05	0.58			O	0.10
beta-BHC	0/3	0.00	0.01	0.00			O	0.02
delta-BHC	0/3	0.00	0.01	0.00			O	0.02
Dieldrin	0/3	0.00	0.02	0.00			O	0.04
Endosulfan I	0/3	0.00	0.01	0.00			O	0.02
Endosulfan II	0/3	0.00	0.02	0.00			O	0.04
Endosulfan sulfate	0/3	0.00	0.02	0.00			O	0.04
Endrin	0/3	0.00	0.02	0.00			O	0.04
Endrin aldehyde	0/2	0.00	0.02	0.00			O	0.04
Endrin ketone	0/3	0.00	0.02	0.00			O	0.04
gamma Chlordane	0/3	0.00	0.01	0.00			O	0.02
gamma-BHC (Lindane)	0/3	0.00	0.01	0.00			O	0.02
Heptachlor	0/3	0.00	0.01	0.00			O	0.02
Heptachlor epoxide	0/3	0.00	0.01	0.00			O	0.02
Methoxychlor	0/3	0.00	0.10	0.00			O	0.20
Toxaphene	0/3	0.00	0.50	0.58			O	0.99
Semivolatile Organic Compounds (mg/L)								
1,2,4-Trichlorobenzene	0/11	0.00	5.05	2.28			O	10.10
1,2-Dichlorobenzene	0/11	0.00	5.05	2.28			O	10.10
1,3-Dichlorobenzene	0/11	0.00	5.05	2.28			O	10.10
1,4-Dichlorobenzene	0/11	0.00	5.05	2.28			O	10.10
2,2'-Oxybis (1-chloropropane)	0/11	0.00	5.05	2.28			O	10.10
2,4,5-Trichlorophenol	0/10	0.00	12.60	2.14			O	25.20
2,4,6-Trichlorophenol	0/10	0.00	5.03	2.16			O	10.06
2,4-Dichlorophenol	0/10	0.00	5.03	2.16			O	10.06
2,4-Dimethylphenol	0/10	0.00	5.03	2.16			O	10.06
2,4-Dinitrophenol	0/10	0.00	12.60	2.14			O	25.20

Table F-9. Statistical Analysis of Groundwater Background Data (continued)

Analyte	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
2,4-Dinitrotoluene	0/11	0.00	5.05	2.28			O	10.10
2,6-Dinitrotoluene	0/11	0.00	5.05	2.28			O	10.10
2-Chloronaphthalene	0/12	0.00	4.23	45.64			O	8.46
2-Chlorophenol	0/10	0.00	5.03	2.16			O	10.06
2-Methylnaphthalene	0/11	0.00	5.05	2.28			O	10.10
2-Methylphenol	0/10	0.00	5.03	2.16			O	10.06
2-Nitroaniline	0/11	0.00	12.60	2.26			O	25.20
2-Nitrophenol	0/10	0.00	5.03	2.16			O	10.06
3,3'-Dichlorobenzidine	0/11	0.00	10.10	2.28			O	20.20
3-Nitroaniline	0/11	0.00	12.60	2.26			O	25.20
4,6-Dinitro-o-cresol	0/10	0.00	12.60	2.14			O	25.20
4-Bromophenyl-phenyl ether	0/11	0.00	5.05	2.28			O	10.10
4-Chloroaniline	0/11	0.00	5.05	2.28			O	10.10
4-Chlorophenyl-phenylether	0/11	0.00	5.05	2.28			O	10.10
4-Methylphenol	0/10	0.00	5.03	2.16			O	10.06
4-Nitroaniline	0/11	0.00	12.60	2.26			O	25.20
4-Nitrophenol	0/10	0.00	12.60	2.14			O	25.20
4-Chloro-3-methylphenol	0/10	0.00	5.03	2.16			O	10.06
Acenaphthene	0/12	0.00	4.23	45.64			O	8.46
Acenaphthylene	0/12	0.00	4.23	45.64			O	8.46
Anthracene	0/12	0.00	4.23	45.64			O	8.46
Benzo(*a*)anthracene	0/12	0.00	4.23	45.64			O	8.46
Benzo(*a*)pyrene	0/12	0.00	4.23	45.64			O	8.46
Benzo(*b*)fluoranthene	0/12	0.00	4.23	45.64			O	8.46
Benzo(*g,h,i*)perylene	0/12	0.00	4.23	45.64			O	8.46
Benzo(*k*)fluoranthene	0/12	0.00	4.23	45.64			O	8.46
Bis(2-chloroethoxy)methane	0/11	0.00	5.05	2.28			O	10.10
Bis(2-chloroethyl)ether	0/11	0.00	5.05	2.28			O	10.10
Bis(2-ethylhexyl)phthalate	0/11	0.00	5.05	2.28			O	10.10
Butyl benzyl phthalate	0/11	0.00	5.05	2.28			O	10.10
Carbazole	0/11	0.00	5.05	2.28			O	10.10

Table F-9. Statistical Analysis of Groundwater Background Data (continued)

Analyte	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Chrysene	0/12	0.00	4.23	45.64			O	8.46
Di-*N*-butyl phthalate	0/11	0.00	5.05	2.28			O	10.10
Di-*N*-octyl phthalate	0/11	0.00	5.05	2.28			O	10.10
Dibenzo(*a,h*)anthracene	0/12	0.00	4.23	45.64			O	8.46
Dibenzofuran	0/11	0.00	5.05	2.28			O	10.10
Diethyl phthalate	0/11	0.00	5.05	2.28			O	10.10
Dimethyl phthalate	0/11	0.00	5.05	2.28			O	10.10
Fluoranthene	0/12	0.00	4.23	45.64			O	8.46
Fluorene	0/12	0.00	4.23	45.64			O	8.46
Hexachlorobenzene	0/11	0.00	5.05	2.28			O	10.10
Hexachlorobutadiene	0/11	0.00	5.05	2.28			O	10.10
Hexachlorocyclopentadiene	0/11	0.00	5.05	2.28			O	10.10
Hexachloroethane	0/11	0.00	5.05	2.28			O	10.10
Indeno(*1,2,3-cd*)pyrene	0/12	0.00	4.23	45.64			O	8.46
Isophorone	0/11	0.00	5.05	2.28			O	10.10
N-Nitroso-di-*N*-propylamine	0/11	0.00	5.05	2.28			O	10.10
N-Nitrosodiphenylamine	0/11	0.00	5.05	2.28			O	10.10
Naphthalene	0/12	0.00	4.23	45.64			O	8.46
Nitrobenzene	0/11	0.00	5.05	2.28			O	10.10
Pentachlorophenol	0/10	0.00	12.60	2.14			O	25.20
Phenanthrene	0/12	0.00	4.23	45.64			O	8.46
Phenol	0/10	0.00	5.03	2.16			O	10.06
Pyrene	0/12	0.00	4.63	30.87			O	9.26
Volatile Organic Compounds (mg/L)								
1,1,1-Trichloroethane	1/17	5.88	1.75	48.08	0.23	0.23	D	3.50
1,1,2,2-Tetrachloroethane	0/17	0.00	1.88	40.43			O	3.76
1,1,2-Trichloroethane	0/17	0.00	1.88	40.43			O	3.76
1,1-Dichloroethane	1/17	5.88	1.77	45.82	0.53	0.53	D	3.54
1,1-Dichloroethene	0/17	0.00	1.88	40.43			O	3.76
1,2-Dichloroethane	0/17	0.00	1.88	40.43			O	3.76
1,2-Dichloroethene	0/9	0.00	2.50	0.00			O	5.00

Table F-9. Statistical Analysis of Groundwater Background Data (continued)

Analyte	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
1,2-Dichloropropane	0/17	0.00	1.88	40.43			O	3.76
1,2-*cis*-Dichloroethene	0/8	0.00	1.19	44.66			O	2.38
1,2-*trans*-Dichloroethene	0/8	0.00	1.19	44.66			O	2.38
1,3-*cis*-Dichloropropene	0/17	0.00	1.88	40.43			O	3.76
1,3-*trans*-Dichloropropene	1/17	5.88	1.75	48.00	0.24	0.24	D	3.50
2-Butanone	0/9	0.00	3.06	36.08			O	6.12
2-Hexanone	0/17	0.00	3.97	31.94			O	7.94
4-Methyl-2-pentanone	0/12	0.00	4.58	21.23			O	9.16
Acetone	3/14	21.43	3.61	37.06	1.70	5.20	D	7.22
Benzene	0/17	0.00	1.53	48.31			O	3.06
Bromodichloromethane	0/17	0.00	1.88	40.43			O	3.76
Bromoform	0/17	0.00	1.88	40.43			O	3.76
Bromomethane	0/17	0.00	3.35	60.52			O	6.70
Carbon disulfide	0/17	0.00	2.50	0.00			O	5.00
Carbon tetrachloride	0/17	0.00	1.88	40.43			O	3.76
Chlorobenzene	0/17	0.00	1.88	40.43			O	3.76
Chloroethane	0/17	0.00	3.35	60.52			O	6.70
Chloroform	0/17	0.00	1.88	40.43			O	3.76
Chloromethane	1/17	5.88	3.71	57.23	7.10	7.10	D	7.42
Dibromochloromethane	0/17	0.00	1.88	40.43			O	3.76
Ethylbenzene	3/17	17.65	1.49	61.47	0.21	0.34	D	2.98
Methylene chloride	1/17	5.88	2.04	34.17	2.10	2.10	D	4.08
Styrene	0/17	0.00	1.88	40.43			O	3.76
Tetrachloroethene	0/17	0.00	1.88	40.43			O	3.76
Toluene	3/17	17.65	0.97	49.16	0.26	0.35	D	1.94
Trichloroethene	1/17	5.88	1.75	47.60	0.29	0.29	D	3.50
Vinyl acetate	0/1	0.00	5.00				O	10.00
Vinyl chloride	0/17	0.00	1.24	78.54			O	2.48
Xylenes, total	3/17	17.65	1.55	53.94	0.42	0.71	D	3.10

Table F-9. Statistical Analysis of Groundwater Background Data (continued)

Analyte	Results >Det. Limit	%Results >Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.[a]	Reference Background Criteria[b]
Radionuclides (pCi/L)								
Radium-226	1/1	100.00	0.58		0.58	0.58	X	1.16
Radium-228	1/1	100.00	1.71		1.71	1.71	X	3.42

[a]Results less than the detection limit were set to one-half the reported detection limit. For radionuclides, the reported result was used to calculate the mean.
Distribution codes:
D = Distribution not determined because fewer than 5 detects or less than 50 percent detects (t-distribution).
L = Distribution most similar to lognormal [land statistic used for upper confidence limit (UCL)].
N = Distribution most similar to normal (t-distribution used for UCL).
O = Analyte not detected in any sample.
X = Distribution significantly different from normal and lognormal (t-distribution used for UCL).
[b]If a chemical was not detected, the reference background criterion was the mean of the detection limit. However, organic constituents were screened against zero because they are considered man-made.
CV = Coefficient of variation.

Table F-10. Summary of Surface Water Background for Former 724th TPS, Fort Stewart

Analyte	Units	Results > Det. Limit	%Results > Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.	Site-specific Background Criteria
Arsenic	µg/L	0/1	0	0.47	.	.	.	O	0.94
Barium	µg/L	1/1	100	22.4	.	22.4	22.4	X	44.8
Cadmium	µg/L	0/1	0	0.1	.	.	.	O	0.2
Chromium	µg/L	0/1	0	0.3	.	.	.	O	0.6
Lead	µg/L	1/1	100	2.6	.	2.6	2.6	X	5.2
Mercury	µg/L	1/1	100	0.09	.	0.09	0.09	X	0.18
Selenium	µg/L	0/1	0	0.2	.	.	.	O	0.4
Silver	µg/L	1/1	100	0.15	.	0.15	0.15	X	0.3
2-Chloronaphthalene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Acenaphthene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Acenaphthylene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Anthracene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Benzo(*a*)anthracene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Benzo(*a*)pyrene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Benzo(*b*)fluoranthene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Benzo(*g,h,i*)perylene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Benzo(*k*)fluoranthene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Chrysene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Dibenzo(*a,h*)anthracene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Fluoranthene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Fluorene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Indeno(*1,2,3-cd*)pyrene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Naphthalene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Phenanthrene	µg/L	0/1	0	0.11	.	.	.	O	0.22
Pyrene	µg/L	0/1	0	0.11	.	.	.	O	0.22
1,1,1-Trichloroethane	µg/L	0/1	0	1	.	.	.	O	2
1,1,2,2-Tetrachloroethane	µg/L	0/1	0	1	.	.	.	O	2
1,1,2-Trichloroethane	µg/L	0/1	0	1	.	.	.	O	2

Table F-10. Summary of Surface Water Background for Former 724th TPS, Fort Stewart (continued)

Analyte	Units	Results > Det. Limit	%Results > Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.	Site-specific Background Criteria
1,1-Dichloroethane	µg/L	0/1	0	1	.	.	.	O	2
1,1-Dichloroethene	µg/L	0/1	0	1	.	.	.	O	2
1,2-Dichloroethane	µg/L	0/1	0	1	.	.	.	O	2
1,2-Dichloropropane	µg/L	0/1	0	1	.	.	.	O	2
1,2-cis-Dichloroethene	µg/L	0/1	0	1	.	.	.	O	2
1,2-trans-Dichloroethene	µg/L	0/1	0	1	.	.	.	O	2
1,3-cis-Dichloropropene	µg/L	0/1	0	1	.	.	.	O	2
1,3-trans-Dichloropropene	µg/L	0/1	0	1	.	.	.	O	2
2-Butanone	µg/L	0/1	0	2.5	.	.	.	O	5
2-Hexanone	µg/L	0/1	0	2.5	.	.	.	O	5
4-Methyl-2-pentanone	µg/L	0/1	0	2.5	.	.	.	O	5
Benzene	µg/L	0/1	0	1	.	.	.	O	2
Bromodichloromethane	µg/L	0/1	0	1	.	.	.	O	2
Bromoform	µg/L	0/1	0	1	.	.	.	O	2
Bromomethane	µg/L	0/1	0	1	.	.	.	O	2
Carbon Disulfide	µg/L	0/1	0	2.5	.	.	.	O	5
Carbon Tetrachloride	µg/L	0/1	0	1	.	.	.	O	2
Chlorobenzene	µg/L	0/1	0	1	.	.	.	O	2
Chloroethane	µg/L	0/1	0	1	.	.	.	O	2
Chloroform	µg/L	0/1	0	1	.	.	.	O	2
Chloromethane	µg/L	0/1	0	1	.	.	.	O	2
Dibromochloromethane	µg/L	0/1	0	1	.	.	.	O	2
Ethylbenzene	µg/L	0/1	0	1	.	.	.	O	2
Methylene Chloride	µg/L	0/1	0	1.05	.	.	.	O	2.1
Styrene	µg/L	0/1	0	1	.	.	.	O	2
Tetrachloroethene	µg/L	0/1	0	1	.	.	.	O	2

Table F-10. Summary of Surface Water Background for Former 724th TPS, Fort Stewart (continued)

Analyte	Units	Results > Det. Limit	%Results > Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.	Site-specific Background Criteria
Toluene	µg/L	0/1	0	1	.	.	.	O	2
Trichloroethene	µg/L	0/1	0	1	.	.	.	O	2
Vinyl Chloride	µg/L	0/1	0	1	.	.	.	O	2
Xylenes, Total	µg/L	0/1	0	1	.	.	.	O	2

CV = Coefficient of variation.

Distribution codes:

D = Distribution not determined because fewer than 5 detects or less than 50 percent detects (t-distribution).

L = Distribution most similar to lognormal [land statistic used for upper confidence limit (UCL)].

N = Distribution most similar to normal (t-distribution used for UCL).

O = Analyte not detected in any sample.

X = Distribution significantly different from normal and lognormal (t-distribution used for UCL).

Table F-11. Summary of Sediment Background for Former 724th TPS, Fort Stewart

Analyte	Units	Results > Det. Limit	%Results > Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.	Site-specific Background Criteria
Arsenic	mg/kg	0/1	0	0.185	.	.	.	O	0.37
Barium	mg/kg	1/1	100	1.5	.	1.5	1.5	X	3
Cadmium	mg/kg	0/1	0	0.06	.	.	.	O	0.12
Chromium	mg/kg	0/1	0	0.185	.	.	.	O	0.37
Lead	mg/kg	1/1	100	0.69	.	0.69	0.69	X	1.38
Mercury	mg/kg	0/1	0	0.01	.	.	.	O	0.02
Selenium	mg/kg	0/1	0	0.12	.	.	.	O	0.24
Silver	mg/kg	0/1	0	0.085	.	.	.	O	0.17
2-Chloronaphthalene	µg/kg	0/1	0	210	.	.	.	O	420
Acenaphthene	µg/kg	0/1	0	210	.	.	.	O	420
Acenaphthylene	µg/kg	0/1	0	210	.	.	.	O	420
Anthracene	µg/kg	0/1	0	210	.	.	.	O	420
Benzo(*a*)anthracene	µg/kg	0/1	0	210	.	.	.	O	420
Benzo(*a*)pyrene	µg/kg	0/1	0	210	.	.	.	O	420
Benzo(*b*)fluoranthene	µg/kg	0/1	0	210	.	.	.	O	420
Benzo(*g,h,i*)perylene	µg/kg	0/1	0	210	.	.	.	O	420
Benzo(*k*)fluoranthene	µg/kg	0/1	0	210	.	.	.	O	420
Chrysene	µg/kg	0/1	0	210	.	.	.	O	420
Dibenzo(*a,h*)anthracene	µg/kg	0/1	0	210	.	.	.	O	420
Fluoranthene	µg/kg	0/1	0	210	.	.	.	O	420
Fluorene	µg/kg	0/1	0	210	.	.	.	O	420
Indeno(*1,2,3-cd*)pyrene	µg/kg	0/1	0	210	.	.	.	O	420
Naphthalene	µg/kg	0/1	0	210	.	.	.	O	420
Phenanthrene	µg/kg	0/1	0	210	.	.	.	O	420
Pyrene	µg/kg	0/1	0	210	.	.	.	O	420
1,1,1-Trichloroethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5

Table F-11. Summary of Sediment Background for Former 724th TPS, Fort Stewart (continued)

Analyte	Units	Results > Det. Limit	%Results > Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.	Site-specific Background Criteria
1,1,2,2-Tetrachloroethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,1,2-Trichloroethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,1-Dichloroethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,1-Dichloroethene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,2-Dichloroethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,2-Dichloropropane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,2-cis-Dichloroethene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,2-trans-Dichloroethene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,3-cis-Dichloropropene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
1,3-trans-Dichloropropene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
2-Butanone	µg/kg	0/1	0	3.15	.	.	.	O	6.3
2-Hexanone	µg/kg	0/1	0	3.15	.	.	.	O	6.3
Acetone	µg/kg	0/1	0	3.15	.	.	.	O	6.3
Benzene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Bromodichloromethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Bromoform	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Bromomethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Carbon Disulfide	µg/kg	0/1	0	3.15	.	.	.	O	6.3
Carbon Tetrachloride	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Chlorobenzene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Chloroethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Chloroform	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Chloromethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Dibromochloromethane	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Ethylbenzene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Methylene Chloride	µg/kg	0/1	0	3.15	.	.	.	O	6.3
Styrene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Tetrachloroethene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Toluene	µg/kg	0/1	0	1.25	.	.	.	O	2.5

Table F-11. Summary of Sediment Background for Former 724th TPS, Fort Stewart (continued)

Analyte	Units	Results > Det. Limit	%Results > Det. Limit	Average Result	CV	Min Detect	Max Detect	Dist.	Site-specific Background Criteria
Trichloroethene	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Vinyl Chloride	µg/kg	0/1	0	1.25	.	.	.	O	2.5
Xylenes, Total	µg/kg	0/1	0	1.25	.	.	.	O	2.5

CV = Coefficient of variation.
Distribution codes:
D = Distribution not determined because fewer than 5 detects or less than 50 percent detects (t-distribution).
L = Distribution most similar to lognormal [land statistic used for upper confidence limit (UCL)].
N = Distribution most similar to normal (t-distribution used for UCL).
O = Analyte not detected in any sample.
X = Distribution significantly different from normal and lognormal (t-distribution used for UCL).

APPENDIX G

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANK PURGING STATION (SWMU 26)
FORT STEWART, GEORGIA

ANALYTICAL LABORATORY DATA

G. ANALYTICAL LABORATORY DATA

DEFINITIONS OF ACRONYMS AND ABBREVIATIONS

REG — Regular analysis

TCLP — Toxicity Characteristic Leachate Procedure (analytes listed in that procedure)

BG — Below ground surface (depth in feet)

QUALIFIERS FOR ORGANIC ANALYTICAL DATA

Laboratory Flags

U — Indicates that the compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution. For a soil/sediment sample, the value must also be corrected for percent moisture.

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed, or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N — Indicates presumptive evidence of a compound. This flag is used only for TICs, where the identification is based on a mass spectral library search.

P — Used for pesticide/Aroclor target analytes when there is greater than 25% difference for detected concentrations between the two gas chromatography (GC) columns.

C — Applies to pesticide results where the identification has been confirmed by GC/MS (gas chromatography/mass spectrometry). If GC/MS confirmation was attempted but was unsuccessful, do not apply this flag; instead use a laboratory-defined flag.

B — Used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for TICs as well as for positively identified target compounds.

E — Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D — Identifies all compounds identified in an analysis at a secondary dilution factor. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.

A — Indicates that a TIC is a suspected aldol-condensation product.

X — Other specific flags may be required to properly define the results. If used, they must be fully described and such description must be attached to the Sample Data Summary Package and the SDG narrative.

Validation Flags

U — Indicates that the compound was analyzed for, but was not detected above the reported sample quantitation limit.

UJ — Indicates that the compound was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.

J — Indicates that the compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample.

N — The analysis indicates the presence of a compound for which there is presumptive evidence to make a "tentative identification."

NJ — Indicates that the analysis indicates the presence of a compound that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

R — Indicates that the sample results for the compound are rejected or unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

= — Indicates that the value has been validated and that the compound has been positively identified and the associated concentration value is accurate.

DATA QUALIFIER FLAGS FOR INORGANIC ANALYTICAL DATA

Laboratory Flags

B — Indicates that the reported value was obtained from a reading that was less than the Contract Required Detection Limit, but greater than or equal to the Instrument Detection Limit (IDL).

U — Indicates that the analyte was analyzed for but not detected.

E — Used when the reported value is estimated because of the presence of interference.

M —Indicates that the duplicate injection precision was not met.

N — Indicates that the spiked sample recovery is not within control limits.

S — Indicates that the reported value was determined by the method of standard additions (MSA).

W —Used when the post-digestion spike for furnace atomic absorption analysis is not within control limits (85 - 115%), while sample absorbance is less than 50% of spike absorbance.

* — Indicates that the duplicate analysis is not within control limits.

\+ — Indicates that the correlation coefficient for the MSA is less than 0.995.

Validation Flags

U — Indicates that the analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ — Indicates that the compound was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.

J — Indicates that the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R — Indicates that the sample results for the analyte are rejected or unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

= — Indicates that the value has been validated and that the analyte has been positively identified and the associated concentration value is accurate.

DATA QUALIFIER FLAGS FOR RADIOCHEMICAL ANALYTICAL DATA

Laboratory Flags

< — The numerical value reported is less than the MDA.

N — The sample results are flagged to denote poor spike recovery.

***** — The sample results are flagged to denote poor duplicate results.

Validation Flags

U — Indicates that the radionuclide was analyzed for, but was not detected above, the reported sample quantitation limit.

J — Indicates that the radionuclide was positively identified; the associated numerical value is the approximate concentration of the radionuclide in the sample.

N — The analysis indicates the presence of a radionuclide for which there is presumptive evidence to make a "tentative identification."

DL — The detection limit requirements were not met. The data quality objectives may not be met.

UI — Indicates that there is uncertain identification for gamma spectroscopy. The radionuclide peaks are detected but fail to meet the positive identification criteria.

R — Indicates that the sample results for the radionuclide are rejected or unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the radionuclide cannot be verified.

= — Indicates that the value has been validated and that the radionuclide has been positively identified and the associated concentration value is accurate.

ANALYTICAL DATA VALIDATION FLAGGING CODES

Holding Times

A01 Extraction holding times were exceeded.
A02 Extraction holding times were grossly exceeded.
A03 Analysis holding times were exceeded.
A04 Analysis holding times were grossly exceeded.
A05 Samples were not preserved properly.
A06 Professional judgment was used to qualify the data.

GC/MS Tuning

B01 Mass calibration was in error, even after applying expanded criteria.
B02 Mass calibration was not performed every 12 hours.
B03 Mass calibration did not meet ion abundance criteria.
B04 Professional judgment was used to qualify the data.

Initial/Continuing Calibration - Organics

C01 Initial calibration RRF was <0.05.
C02 Initial calibration RSD was >30%.
C03 Initial calibration sequence was not followed as required.
C04 Continuing calibration RRF was <0.05.
C05 Continuing calibration %D was >25%.
C06 Continuing calibration was not performed at the required frequency.
C07 Resolution criteria were not met.
C08 RPD criteria were not met.
C09 RSD criteria were not met.
C10 Retention time of compounds was outside windows.
C11 Compounds were not adequately resolved.
C12 Breakdown of endrin or DDT was >20%.
C13 Combined breakdown of endrin/DDT was >30%.
C14 Professional judgment was used to qualify the data.

Initial/Continuing Calibration - Inorganics

D01 ICV or CCV were not performed for every analyte.
D02 ICV recovery was above the upper control limit.
D03 ICV recovery was below the lower control limit.
D04 CCV recovery was above the upper control limit.
D05 CCV recovery was below the lower control limit.

D06 Standard curve was not established with the minimum number of standards.
D07 Instrument was not calibrated daily or each time the instrument was set up.
D08 Correlation coefficient was <0.995.
D09 Mid range cyanide standard was not distilled.
D10 Professional judgment was used to qualify the data.

ICP and Furnace Requirements

E01 Interference check sample recovery was outside the control limit.
E02 Duplicate injections were outside the control limit.
E03 Post digestion spike recovery was outside the control limit.
E04 MSA was required but not performed.
E05 Correlation coefficient was <0.995.
E06 MSA spikes were not at the correct concentration.
E07 Serial dilution criteria were not met.
E08 Professional judgment was used to qualify the data.

Blanks

F01 Sample data were qualified as a result of the method blank.
F02 Sample data were qualified as a result of the field blank.
F03 Sample data were qualified as a result of the equipment rinsate.
F04 Sample data were qualified as a result of the trip blank.
F05 Gross contamination exists.
F06 Concentration of the contaminant was detected at a level below the CRQL.
F07 Concentration of the contaminant was detected at a level less than the action limit, but greater than the CRQL.
F08 Concentration of the contaminant was detected at a level that exceeds the action level.
F09 No laboratory blanks were analyzed.
F10 Blank had a negative value >2 's the IDL.
F11 Blanks were not analyzed at required frequency.
F12 Professional judgment was used to qualify the data.

Surrogate/Radiological Chemical Recovery

G01 Surrogate/radiological chemical recovery was above the upper control limit.
G02 Surrogate/radiological chemical recovery was below the lower control limit.
G03 Surrogate recovery was <10%.
G04 Surrogate/radiological chemical recovery was zero.
G05 Surrogate/radiological chemical recovery was not present.
G06 Professional judgment was used to qualify the data.
G07 Radiological chemical recovery was <20%.
G08 Radiological chemical recovery was >150%.

Matrix Spike/Matrix Spike Duplicate

H01 MS/MSD recovery was above the upper control limit.
H02 MS/MSD recovery was below the lower control limit.
H03 MS/MSD recovery was <10%.
H04 MS/MSD pairs exceed the RPD limit.
H05 No action was taken on MS/MSD results.

H06 Professional judgment was used to qualify the data.
H07 Radiological MS/MSD recovery was <20%.
H08 Radiological MS/MSD recovery was >160%.
H09 Radiological MS/MSD samples were not analyzed at the required frequency.

Matrix Spike

I01 MS recovery was above the upper control limit.
I02 MS recovery was below the lower control limit.
I03 MS recovery was <30%.
I04 No action was taken on MS data.
I05 Professional judgment was used to qualify the data.

Laboratory Duplicate

J01 Duplicate RPD/radiological duplicate error ration (DER) was outside the control limit.
J02 Duplicate sample results were >5 × the CRDL.
J03 Duplicate sample results were <5 × the CRDL.
J04 Professional judgment was used to qualify the data.
J05 Duplicate was not analyzed at the required frequency.

Internal Area Summary

K01 Area counts were outside the control limits.
K02 Extremely low area counts or performance was exhibited by a major drop off.
K03 IS retention time varied by more than 30 seconds.
K04 Professional judgment was used to qualify the data.

Pesticide Cleanup Checks

L01 10% recovery was obtained during either check.
L02 Recoveries during either check were >120%.
L03 GPC Cleanup recoveries were outside the control limits.
L04 Florisil cartridge cleanup recoveries were outside the control limits.
L05 Professional judgment was used to qualify the data.

Target Compound Identification

M01 Incorrect identifications were made.
M02 Qualitative criteria were not met.
M03 Cross contamination occurred.
M04 Confirmatory analysis was not performed.
M05 No results were provided.
M06 Analysis occurred outside 12 hr GC/MS window.
M07 Professional judgment was used to qualify the data.
M08 The %D between the two pesticide/PCB column checks was >25%.

Compound Quantitation and Reported CRQLs

N01 Quantitation limits were affected by large off-scale peaks.
N02 MDLs reported by the laboratory exceeded corresponding CRQLs.
N03 Professional judgment was used to qualify the data.

Tentatively Identified Compounds (TICs)

O01 Compound was suspected laboratory contaminant and was not detected in the blank.
O02 TIC result was not above 10 × the level found in the blank.
O03 Professional judgment was used to qualify analytical data.

Laboratory Control Samples (LCSs)

P01 LCS recovery was above upper control limit.
P02 LCS recovery was below lower control limit.
P03 LCS recovery was <50%.
P04 No action was taken on the LCS data.
P05 LCS was not analyzed at required frequency.
P06 Radiological LCS recovery was <50% for aqueous samples; <40% for solid samples.
P07 Radiological LCS recovery was >150% for aqueous samples; >160% for solid samples.
P08 Professional judgment was used to qualify the data.

Field Duplicate

Q01 No action was taken on the basis of field duplicate RPDs.
Q02 Radiological field duplicate error ratio (DER) was outside the control limit.
Q03 Duplicate sample results were >5 × the CRDL.
Q04 Duplicate sample results were <5 × the CRDL.

Radiological Calibration

R01 Efficiency calibration criteria were not met.
R02 Energy calibration criteria were not met.
R03 Resolution calibration criteria were not met
R04 Background determination criteria were not met.
R05 Quench curve criteria were not met.
R06 Absorption curve criteria were not met.
R07 Plateau curve criteria were not met.
R08 Professional judgment was used to qualify the data.

Radiological Calibration Verification

S01 Efficiency verification criteria were not met.
S02 Energy verification criteria were not met.
S03 Resolution verification criteria were not met
S04 Background verification criteria were not met.
S05 Cross-talk verification criteria were not met.
S06 Professional judgment was used to qualify the data.

Radionuclide Quantitation

T01 Detection limits were not met.
T02 Analytical uncertainties were not met and/or not reported.
T03 Inappropriate aliquot sizes were used.
T04 Professional judgment was used to qualify the data.

System Performance

V01 High background levels or a shift in the energy calibration were observed.
V02 Extraneous peaks were observed.
V03 Loss of resolution was observed.
V04 Peak-tailing or peak splitting that may result in inaccurate quantitation were observed.
V05 Professional judgment was used to qualify the data.

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

.ocation: 724TH TANKER PURGE
Station : TRIP BLANK

TBT001 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	UJ	C05
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	3	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2.2	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

TBT002 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 07/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: 724TH TANKER PURGE
Station : TRIP BLANK

TBT002 — Field Sample Type: Trip Blank — Matrix: Quality Control — Collected: 07/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethylbenzene	2	UG/L	J	U	
REG	Methylene Chloride	2.9	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2.4	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

TBT003 — Field Sample Type: Trip Blank — Matrix: Quality Control — Collected: 07/17/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2.4	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	U	

TBT004 — Field Sample Type: Trip Blank — Matrix: Quality Control — Collected: 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

ocation: 724TH TANKER PURGE
Station : TRIP BLANK

TBT004 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.5	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2.2	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

TBT005 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 07/25/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	UJ	C05
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.4	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2.2	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

T006 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 07/26/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: 724TH TANKER PURGE
Station : TRIP BLANK

TBT006 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 07/26/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.8	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2.1	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

TBT007 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 07/27/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	

.ocation: 724TH TANKER PURGE
Station : TRIP BLANK

TBT007 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 07/27/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.9	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	3.1	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

TBT008 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 08/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.9	UG/L		=	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	4.7	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

TBT010 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 08/12/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: 724TH TANKER PURGE
Station : TRIP BLANK

TBT010 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 08/12/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	3	UG/L		=	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	4.7	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

TBT012 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 08/13/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.5	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	3	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

TBT013 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 08/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code

ocation: 724TH TANKER PURGE
Station : TRIP BLANK

TBT013 Field Sample Type: Trip Blank Matrix: Quality Control Collected: 08/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.8	UG/L		=	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	4.3	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : GP1

266T11   5.0 - 10.0 FT   Field Sample Type: Grab   Matrix: Groundwater   Collected: 07/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	100	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	100	UG/L	U	U	
REG	1,1,2-Trichloroethane	100	UG/L	U	U	
REG	1,1-Dichloroethane	125	UG/L		=	
REG	1,1-Dichloroethene	100	UG/L	U	U	
REG	1,2-Dichloroethane	100	UG/L	U	U	
REG	1,2-Dichloropropane	100	UG/L	U	U	
REG	1,2-cis-Dichloroethene	100	UG/L	U	U	
REG	1,2-trans-Dichloroethene	100	UG/L	U	U	
REG	1,3-cis-Dichloropropene	100	UG/L	U	U	
REG	1,3-trans-Dichloropropene	100	UG/L	U	U	
REG	2-Butanone	250	UG/L	U	U	
REG	2-Hexanone	250	UG/L	U	U	
REG	4-Methyl-2-pentanone	250	UG/L	U	U	
REG	Acetone	250	UG/L	U	U	
REG	Benzene	8090	UG/L	D	=	
REG	Bromodichloromethane	100	UG/L	U	U	
REG	Bromoform	100	UG/L	U	U	
REG	Bromomethane	100	UG/L	U	U	
REG	Carbon Disulfide	250	UG/L	U	U	
REG	Carbon Tetrachloride	100	UG/L	U	U	
REG	Chlorobenzene	100	UG/L	U	U	
REG	Chloroethane	100	UG/L	U	U	
REG	Chloroform	100	UG/L	U	U	
REG	Chloromethane	100	UG/L	U	U	
REG	Dibromochloromethane	100	UG/L	U	U	
REG	Ethylbenzene	2870	UG/L		=	
REG	Methylene Chloride	100	UG/L	U	U	
REG	Styrene	100	UG/L	U	U	
REG	Tetrachloroethene	100	UG/L	U	U	
REG	Toluene	3050	UG/L		=	F08
REG	Trichloroethene	100	UG/L	U	U	
REG	Vinyl Chloride	100	UG/L	U	U	
REG	Xylenes, Total	12100	UG/L		J	C02

266T12   19.0 - 20.0 FT   Field Sample Type: Grab   Matrix: Groundwater   Collected: 07/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	20	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	20	UG/L	U	U	
REG	1,1,2-Trichloroethane	20	UG/L	U	U	
REG	1,1-Dichloroethane	20	UG/L	U	U	
REG	1,1-Dichloroethene	20	UG/L	U	U	
REG	1,2-Dichloroethane	20	UG/L	U	U	
REG	1,2-Dichloropropane	20	UG/L	U	U	
REG	1,2-cis-Dichloroethene	20	UG/L	U	U	
REG	1,2-trans-Dichloroethene	20	UG/L	U	U	
REG	1,3-cis-Dichloropropene	20	UG/L	U	U	
REG	1,3-trans-Dichloropropene	20	UG/L	U	U	
REG	2-Butanone	50	UG/L	U	U	
REG	2-Hexanone	50	UG/L	U	U	
REG	4-Methyl-2-pentanone	50	UG/L	U	U	
REG	Acetone	50	UG/L	U	U	
REG	Benzene	206	UG/L		=	
REG	Bromodichloromethane	20	UG/L	U	U	
REG	Bromoform	20	UG/L	U	U	
REG	Bromomethane	20	UG/L	U	U	
REG	Carbon Disulfide	50	UG/L	U	U	
REG	Carbon Tetrachloride	20	UG/L	U	U	
REG	Chlorobenzene	20	UG/L	U	U	
REG	Chloroethane	20	UG/L	U	U	
REG	Chloroform	20	UG/L	U	U	
REG	Chloromethane	20	UG/L	U	U	
REG	Dibromochloromethane	20	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : GP1

266T12 19.0 - 20.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethylbenzene	263	UG/L		=	
REG	Methylene Chloride	20	UG/L	U	U	
REG	Styrene	20	UG/L	U	U	
REG	Tetrachloroethene	20	UG/L	U	U	
REG	Toluene	418	UG/L		=	F08
REG	Trichloroethene	20	UG/L	U	U	
REG	Vinyl Chloride	20	UG/L	U	U	
REG	Xylenes, Total	1310	UG/L		J	C02

266T13 29.0 - 30.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2.1	UG/L		=	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	5.9	UG/L		=	
REG	Methylene Chloride	2.2	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	4.3	UG/L		U	F04,F07
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	28.8	UG/L		J	C02

266T14 Field Sample Type: Grab Matrix: Groundwater Collected: 07/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	10	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	10	UG/L	U	U	
REG	1,1,2-Trichloroethane	10	UG/L	U	U	
REG	1,1-Dichloroethane	10	UG/L	U	U	
REG	1,1-Dichloroethene	10	UG/L	U	U	
REG	1,2-Dichloroethane	10	UG/L	U	U	
REG	1,2-Dichloropropane	10	UG/L	U	U	
REG	1,2-cis-Dichloroethene	10	UG/L	U	U	
REG	1,2-trans-Dichloroethene	10	UG/L	U	U	
REG	1,3-cis-Dichloropropene	10	UG/L	U	U	
REG	1,3-trans-Dichloropropene	10	UG/L	U	U	
REG	2-Butanone	25	UG/L	U	U	
REG	2-Hexanone	25	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : GP1

266T14 Field Sample Type: Grab Matrix: Groundwater Collected: 07/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	4-Methyl-2-pentanone	25	UG/L	U	U	
REG	Acetone	25	UG/L	U	U	
REG	Benzene	413	UG/L		=	
REG	Bromodichloromethane	10	UG/L	U	U	
REG	Bromoform	10	UG/L	U	U	
REG	Bromomethane	10	UG/L	U	U	
REG	Carbon Disulfide	25	UG/L	U	U	
REG	Carbon Tetrachloride	10	UG/L	U	U	
REG	Chlorobenzene	10	UG/L	U	U	
REG	Chloroethane	10	UG/L	U	U	
REG	Chloroform	10	UG/L	U	U	
REG	Chloromethane	27.7	UG/L		=	
REG	Dibromochloromethane	10	UG/L	U	U	
REG	Ethylbenzene	550	UG/L	D	=	
REG	Methylene Chloride	10	UG/L	U	U	
REG	Styrene	10	UG/L	U	U	
REG	Tetrachloroethene	10	UG/L	U	U	
REG	Toluene	642	UG/L	D	=	F08
REG	Trichloroethene	10	UG/L	U	U	
REG	Vinyl Chloride	10	UG/L	U	U	
REG	Xylenes, Total	1940	UG/L	D	J	C02,C05

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : GP2

265U14 45.0 - 50.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.8	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.8	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.8	UG/KG	U	U	
REG	1,1-Dichloroethane	2.8	UG/KG	U	U	
REG	1,1-Dichloroethene	2.8	UG/KG	U	U	
REG	1,2-Dichloroethane	2.8	UG/KG	U	U	
REG	1,2-Dichloropropane	2.8	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.8	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.8	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.8	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.8	UG/KG	U	U	
REG	2-Butanone	7	UG/KG	U	UJ	C05
REG	2-Hexanone	7	UG/KG	U	U	
REG	4-Methyl-2-pentanone	7	UG/KG	U	U	
REG	Acetone	11.8	UG/KG		J	C05
REG	Benzene	2.8	UG/KG	U	U	
REG	Bromodichloromethane	2.8	UG/KG	U	U	
REG	Bromoform	2.8	UG/KG	U	U	
REG	Bromomethane	2.8	UG/KG	U	U	
REG	Carbon Disulfide	7	UG/KG	U	U	
REG	Carbon Tetrachloride	2.8	UG/KG	U	U	
REG	Chlorobenzene	2.8	UG/KG	U	U	
REG	Chloroethane	2.8	UG/KG	U	U	
REG	Chloroform	2.8	UG/KG	U	U	
REG	Chloromethane	2.8	UG/KG	U	U	
REG	Dibromochloromethane	2.8	UG/KG	U	U	
REG	Ethylbenzene	2.8	UG/KG	U	U	
REG	Methylene Chloride	5.2	UG/KG	B	U	F01,F07
REG	Styrene	2.8	UG/KG	U	U	
REG	Tetrachloroethene	2.8	UG/KG	U	U	
REG	Toluene	1.5	UG/KG	J	J	
REG	Trichloroethene	2.8	UG/KG	U	U	
REG	Vinyl Chloride	2.8	UG/KG	U	U	
REG	Xylenes, Total	2.8	UG/KG	U	UJ	C02

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

266U11 10.0 - 14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2.1	UG/L		=	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.1	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266U12 20.0 - 24.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.8	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : GP2

266U12 20.0 - 24.0 FT **Field Sample Type:** Grab **Matrix:** Groundwater **Collected:** 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266U13 30.0 - 34.0 FT **Field Sample Type:** Grab **Matrix:** Groundwater **Collected:** 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	20	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	20	UG/L	U	U	
REG	1,1,2-Trichloroethane	20	UG/L	U	U	
REG	1,1-Dichloroethane	20	UG/L	U	U	
REG	1,1-Dichloroethene	20	UG/L	U	U	
REG	1,2-Dichloroethane	20	UG/L	U	U	
REG	1,2-Dichloropropane	20	UG/L	U	U	
REG	1,2-cis-Dichloroethene	20	UG/L	U	U	
REG	1,2-trans-Dichloroethene	20	UG/L	U	U	
REG	1,3-cis-Dichloropropene	20	UG/L	U	U	
REG	1,3-trans-Dichloropropene	20	UG/L	U	U	
REG	2-Butanone	50	UG/L	U	UJ	C05
REG	2-Hexanone	50	UG/L	U	U	
REG	4-Methyl-2-pentanone	50	UG/L	U	U	
REG	Acetone	1450	UG/L		J	C05
REG	Benzene	20	UG/L	U	U	
REG	Bromodichloromethane	20	UG/L	U	U	
REG	Bromoform	20	UG/L	U	U	
REG	Bromomethane	20	UG/L	U	U	
REG	Carbon Disulfide	50	UG/L	U	U	
REG	Carbon Tetrachloride	20	UG/L	U	U	
REG	Chlorobenzene	20	UG/L	U	U	
REG	Chloroethane	20	UG/L	U	U	
REG	Chloroform	20	UG/L	U	U	
REG	Chloromethane	20	UG/L	U	U	
REG	Dibromochloromethane	20	UG/L	U	U	
REG	Ethylbenzene	20	UG/L	U	U	
REG	Methylene Chloride	37.5	UG/L	B	U	F01,F07
REG	Styrene	20	UG/L	U	U	
REG	Tetrachloroethene	20	UG/L	U	U	
REG	Toluene	20	UG/L	U	U	
REG	Trichloroethene	20	UG/L	U	U	
REG	Vinyl Chloride	20	UG/L	U	U	
REG	Xylenes, Total	20	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LE1

266711 6.0 - 11.0 FT **Field Sample Type:** Grab **Matrix:** Groundwater **Collected:** 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LE1

266711 6.0 - 11.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	UJ	C05
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	J	U	F04,F06
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LE2

266813 30.0 - 34.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/26/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	25.5	UG/L		=	
REG	Benzene	2.4	UG/L		=	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	1.4	UG/L	J	J	
REG	Methylene Chloride	2.1	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	J	U	F04,F06
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	1.4	UG/L	J	J	C02

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

266814 40.0 - 42.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/26/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	10	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	10	UG/L	U	U	
REG	1,1,2-Trichloroethane	10	UG/L	U	U	
REG	1,1-Dichloroethane	10	UG/L	U	U	
REG	1,1-Dichloroethene	10	UG/L	U	U	
REG	1,2-Dichloroethane	10	UG/L	U	U	
REG	1,2-Dichloropropane	10	UG/L	U	U	
REG	1,2-cis-Dichloroethene	10	UG/L	U	U	
REG	1,2-trans-Dichloroethene	10	UG/L	U	U	
REG	1,3-cis-Dichloropropene	10	UG/L	U	U	
REG	1,3-trans-Dichloropropene	10	UG/L	U	U	
REG	2-Butanone	25	UG/L	U	U	
REG	2-Hexanone	25	UG/L	U	U	
REG	4-Methyl-2-pentanone	25	UG/L	U	U	
REG	Acetone	282	UG/L		=	
REG	Benzene	54.1	UG/L		=	
REG	Bromodichloromethane	10	UG/L	U	U	
REG	Bromoform	10	UG/L	U	U	
REG	Bromomethane	10	UG/L	U	U	
REG	Carbon Disulfide	25	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	10	UG/L	U	U	
REG	Chlorobenzene	10	UG/L	U	U	
REG	Chloroethane	10	UG/L	U	U	
REG	Chloroform	10	UG/L	U	U	
REG	Chloromethane	10	UG/L	U	U	
REG	Dibromochloromethane	10	UG/L	U	U	
REG	Ethylbenzene	21.1	UG/L		=	
REG	Methylene Chloride	13.5	UG/L	B	U	F01,F07
REG	Styrene	10	UG/L	U	U	
REG	Tetrachloroethene	10	UG/L	U	U	
REG	Toluene	26.6	UG/L		U	F04,F07
REG	Trichloroethene	10	UG/L	U	U	
REG	Vinyl Chloride	10	UG/L	U	U	
REG	Xylenes, Total	77.1	UG/L		J	C02

266815 45.0 - 50.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/26/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.6	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.6	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.6	UG/KG	U	U	
REG	1,1-Dichloroethane	2.6	UG/KG	U	U	
REG	1,1-Dichloroethene	2.6	UG/KG	U	U	
REG	1,2-Dichloroethane	2.6	UG/KG	U	U	
REG	1,2-Dichloropropane	2.6	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.6	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.6	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.6	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.6	UG/KG	U	U	
REG	2-Butanone	6.4	UG/KG	U	U	
REG	2-Hexanone	6.4	UG/KG	U	U	
REG	4-Methyl-2-pentanone	6.4	UG/KG	U	U	
REG	Acetone	13.4	UG/KG		=	
REG	Benzene	6.6	UG/KG		=	
REG	Bromodichloromethane	2.6	UG/KG	U	U	
REG	Bromoform	2.6	UG/KG	U	U	
REG	Bromomethane	2.6	UG/KG	U	U	
REG	Carbon Disulfide	6.4	UG/KG	U	U	
REG	Carbon Tetrachloride	2.6	UG/KG	U	U	
REG	Chlorobenzene	2.6	UG/KG	U	U	
REG	Chloroethane	2.6	UG/KG	U	U	
REG	Chloroform	2.6	UG/KG	U	U	
REG	Chloromethane	2.6	UG/KG	U	U	
REG	Dibromochloromethane	2.6	UG/KG	U	U	
REG	Ethylbenzene	4.7	UG/KG		=	
REG	Methylene Chloride	4.6	UG/KG	B	U	F01,F07
REG	Styrene	2.6	UG/KG	U	U	
REG	Tetrachloroethene	2.6	UG/KG	U	U	

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : LE2

266815 45.0 -50.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/26/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Toluene	1.5	UG/KG	J	J	
REG	Trichloroethene	2.6	UG/KG	U	U	
REG	Vinyl Chloride	2.6	UG/KG	U	U	
REG	Xylenes, Total	10.7	UG/KG		J	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LN1

266111 5.0 -10.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	62.4	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	UJ	C05
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	J	U	F04,F01
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LN2

266211 10.0 -14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/27/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LN2

266211 10.0 - 14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/27/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	1	UG/L	J	J	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.5	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266212 20.0 - 24.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/27/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	9.5	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	JB	U	F01,F06
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266213 30.0 - 34.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/27/97

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	29.9	UG/L		=	
REG	Benzene	3.1	UG/L		=	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	JB	U	F01,F06
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266215 45.0 - 50.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/27/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.7	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.7	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.7	UG/KG	U	U	
REG	1,1-Dichloroethane	2.7	UG/KG	U	U	
REG	1,1-Dichloroethene	2.7	UG/KG	U	U	
REG	1,2-Dichloroethane	2.7	UG/KG	U	U	
REG	1,2-Dichloropropane	2.7	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.7	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.7	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.7	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.7	UG/KG	U	U	
REG	2-Butanone	6.8	UG/KG	U	U	
REG	2-Hexanone	6.8	UG/KG	U	U	
REG	4-Methyl-2-pentanone	6.8	UG/KG	U	U	
REG	Acetone	23.6	UG/KG		=	
REG	Benzene	13.7	UG/KG		=	
REG	Bromodichloromethane	2.7	UG/KG	U	U	
REG	Bromoform	2.7	UG/KG	U	U	
REG	Bromomethane	2.7	UG/KG	U	U	
REG	Carbon Disulfide	6.8	UG/KG	U	U	
REG	Carbon Tetrachloride	2.7	UG/KG	U	U	
REG	Chlorobenzene	2.7	UG/KG	U	U	
REG	Chloroethane	2.7	UG/KG	U	U	
REG	Chloroform	2.7	UG/KG	U	U	
REG	Chloromethane	2.7	UG/KG	U	U	
REG	Dibromochloromethane	2.7	UG/KG	U	U	
REG	Ethylbenzene	21.2	UG/KG		=	
REG	Methylene Chloride	5	UG/KG	B	U	F01,F07
REG	Styrene	2.7	UG/KG	U	U	
REG	Tetrachloroethene	2.7	UG/KG	U	U	
REG	Toluene	16.7	UG/KG		=	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LN2

266215 45.0 - 50.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/27/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Trichloroethene	2.7	UG/KG	U	U	
REG	Vinyl Chloride	2.7	UG/KG	U	U	
REG	Xylenes, Total	101	UG/KG		J	C02

266222 Field Sample Type: Field Duplicate Matrix: Groundwater Collected: 07/27/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	24	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LS1

266411 10.0 - 15.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LS1

266411 10.0 - 15.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Acetone	23.8	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	UJ	C05
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.2	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LS2

266511 10.0 - 14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/25/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	2.8	UG/L	J	J	C05
REG	2-Hexanone	3.2	UG/L	J	J	C05
REG	4-Methyl-2-pentanone	5	UG/L	U	UJ	C05
REG	Acetone	58.2	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	B	U	F01,F06
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266512 20.0 - 22.5 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/25/97

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	18.4	UG/L		J	C05
REG	4-Methyl-2-pentanone	5	UG/L	U	UJ	C05
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266513 30.0 -34.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/25/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	UJ	C05
REG	4-Methyl-2-pentanone	5	UG/L	U	UJ	C05
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : LS2

266513 30.0 - 34.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/25/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266515 50.0 - 51.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/25/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	UJ	C05
REG	4-Methyl-2-pentanone	5	UG/L	U	UJ	C05
REG	Acetone	133	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LW1

266W11 5.0 - 10.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	20	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	20	UG/L	U	U	
REG	1,1,2-Trichloroethane	20	UG/L	U	U	
REG	1,1-Dichloroethane	94.7	UG/L		=	
REG	1,1-Dichloroethene	20	UG/L	U	U	
REG	1,2-Dichloroethane	20	UG/L	U	U	
REG	1,2-Dichloropropane	20	UG/L	U	U	
REG	1,2-cis-Dichloroethene	20	UG/L	U	U	
REG	1,2-trans-Dichloroethene	20	UG/L	U	U	
REG	1,3-cis-Dichloropropene	20	UG/L	U	U	
REG	1,3-trans-Dichloropropene	20	UG/L	U	U	
REG	2-Butanone	50	UG/L	U	U	
REG	2-Hexanone	50	UG/L	U	U	
REG	4-Methyl-2-pentanone	50	UG/L	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LW1

266W11 5.0 - 10.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Acetone	50	UG/L	U	U	
REG	Benzene	6070	UG/L	D	=	
REG	Bromodichloromethane	20	UG/L	U	U	
REG	Bromoform	20	UG/L	U	U	
REG	Bromomethane	20	UG/L	U	U	
REG	Carbon Disulfide	50	UG/L	U	U	
REG	Carbon Tetrachloride	20	UG/L	U	U	
REG	Chlorobenzene	20	UG/L	U	U	
REG	Chloroethane	20	UG/L	U	U	
REG	Chloroform	20	UG/L	U	U	
REG	Chloromethane	20	UG/L	U	UJ	C05
REG	Dibromochloromethane	20	UG/L	U	U	
REG	Ethylbenzene	2160	UG/L	D	=	
REG	Methylene Chloride	20	UG/L	U	U	
REG	Styrene	20	UG/L	U	U	
REG	Tetrachloroethene	20	UG/L	U	U	
REG	Toluene	4200	UG/L	D	=	F08
REG	Trichloroethene	20	UG/L	U	U	
REG	Vinyl Chloride	20	UG/L	U	U	
REG	Xylenes, Total	9000	UG/L	D	J	C02

266W21 Field Sample Type: Field Duplicate Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	100	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	100	UG/L	U	U	
REG	1,1,2-Trichloroethane	100	UG/L	U	U	
REG	1,1-Dichloroethane	88.5	UG/L	J	J	
REG	1,1-Dichloroethene	100	UG/L	U	U	
REG	1,2-Dichloroethane	100	UG/L	U	U	
REG	1,2-Dichloropropane	100	UG/L	U	U	
REG	1,2-cis-Dichloroethene	100	UG/L	U	U	
REG	1,2-trans-Dichloroethene	100	UG/L	U	U	
REG	1,3-cis-Dichloropropene	100	UG/L	U	U	
REG	1,3-trans-Dichloropropene	100	UG/L	U	U	
REG	2-Butanone	250	UG/L	U	U	
REG	2-Hexanone	250	UG/L	U	U	
REG	4-Methyl-2-pentanone	250	UG/L	U	U	
REG	Acetone	250	UG/L	U	U	
REG	Benzene	5660	UG/L		=	
REG	Bromodichloromethane	100	UG/L	U	U	
REG	Bromoform	100	UG/L	U	U	
REG	Bromomethane	100	UG/L	U	U	
REG	Carbon Disulfide	250	UG/L	U	U	
REG	Carbon Tetrachloride	100	UG/L	U	U	
REG	Chlorobenzene	100	UG/L	U	U	
REG	Chloroethane	100	UG/L	U	U	
REG	Chloroform	100	UG/L	U	U	
REG	Chloromethane	100	UG/L	U	U	
REG	Dibromochloromethane	100	UG/L	U	U	
REG	Ethylbenzene	1720	UG/L		=	
REG	Methylene Chloride	100	UG/L	U	U	
REG	Styrene	100	UG/L	U	U	
REG	Tetrachloroethene	100	UG/L	U	U	
REG	Toluene	3550	UG/L		=	F08
REG	Trichloroethene	100	UG/L	U	U	
REG	Vinyl Chloride	100	UG/L	U	U	
REG	Xylenes, Total	7230	UG/L		J	C02

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : LW2

266A11 7.0 - 10.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	100	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	100	UG/L	U	U	
REG	1,1,2-Trichloroethane	100	UG/L	U	U	
REG	1,1-Dichloroethane	100	UG/L	U	U	
REG	1,1-Dichloroethene	100	UG/L	U	U	
REG	1,2-Dichloroethane	100	UG/L	U	U	
REG	1,2-Dichloropropane	100	UG/L	U	U	
REG	1,2-cis-Dichloroethene	100	UG/L	U	U	
REG	1,2-trans-Dichloroethene	100	UG/L	U	U	
REG	1,3-cis-Dichloropropene	100	UG/L	U	U	
REG	1,3-trans-Dichloropropene	100	UG/L	U	U	
REG	2-Butanone	250	UG/L	U	UJ	C05
REG	2-Hexanone	250	UG/L	U	U	
REG	4-Methyl-2-pentanone	250	UG/L	U	U	
REG	Acetone	250	UG/L	U	U	
REG	Benzene	1660	UG/L		=	
REG	Bromodichloromethane	100	UG/L	U	U	
REG	Bromoform	100	UG/L	U	U	
REG	Bromomethane	100	UG/L	U	U	
REG	Carbon Disulfide	250	UG/L	U	U	
REG	Carbon Tetrachloride	100	UG/L	U	U	
REG	Chlorobenzene	100	UG/L	U	U	
REG	Chloroethane	100	UG/L	U	U	
REG	Chloroform	100	UG/L	U	U	
REG	Chloromethane	100	UG/L	U	U	
REG	Dibromochloromethane	100	UG/L	U	U	
REG	Ethylbenzene	588	UG/L		=	
REG	Methylene Chloride	180	UG/L	B	U	F01,F07
REG	Styrene	100	UG/L	U	U	
REG	Tetrachloroethene	100	UG/L	U	U	
REG	Toluene	986	UG/L		U	F04,F07
REG	Trichloroethene	100	UG/L	U	U	
REG	Vinyl Chloride	100	UG/L	U	U	
REG	Xylenes, Total	2460	UG/L		J	C02,C05

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LWC2

266E11 7.5 - 9.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/17/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LWC2

266E11 7.5 - 9.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/17/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : LWC3

266F11 7.5 - 9.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/17/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC1

266K11 1.0 -11.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC1

266K11 1.0 - 11.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	59	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	UJ	C05
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	4.3	UG/L		U	F04,F07
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC2

266M11 5.0 - 15.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	7.3	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC2

266M11 5.0 -15.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Chloromethane	2	UG/L	U	UJ	C05
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	8	UG/L		U	F04,F07
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC3

266N11 5.0 -15.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.5	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

266N21 5.0 -10.0 FT Field Sample Type: Field Duplicate Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	

ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC3

266N21 5.0 - 10.0 FT Field Sample Type: Field Duplicate Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	UJ	C05
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	1	UG/L	J	J	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC4

266P11 Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	6.7	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC4

266P11 Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MC5

266R11 5.0 - 10.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 07/10/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	U	
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	42.4	UG/L		=	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	UJ	C05
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW1

261111 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/23/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.17	MG/KG	U	U	
REG	Barium	0.94	MG/KG	B	=	
REG	Cadmium	0.06	MG/KG	U	U	
REG	Chromium	0.38	MG/KG	B	U	F01,F06
REG	Lead	1.3	MG/KG	B	=	
REG	Mercury	0.01	MG/KG	U	U	
REG	Selenium	0.63	MG/KG	B	J	
REG	Silver	0.02	MG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	372	UG/KG	U	U	
REG	Acenaphthene	372	UG/KG	U	U	
REG	Acenaphthylene	372	UG/KG	U	U	
REG	Anthracene	372	UG/KG	U	U	
REG	Benzo(a)anthracene	372	UG/KG	U	U	
REG	Benzo(a)pyrene	372	UG/KG	U	U	
REG	Benzo(b)fluoranthene	372	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	372	UG/KG	U	U	
REG	Benzo(k)fluoranthene	372	UG/KG	U	U	
REG	Chrysene	372	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	372	UG/KG	U	U	
REG	Fluoranthene	372	UG/KG	U	U	
REG	Fluorene	372	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	372	UG/KG	U	U	
REG	Naphthalene	372	UG/KG	U	U	
REG	Phenanthrene	372	UG/KG	U	U	
REG	Pyrene	372	UG/KG	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.3	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-Dichloroethane	2.3	UG/KG	U	U	
REG	1,2-Dichloropropane	2.3	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.3	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.3	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.3	UG/KG	U	U	
REG	2-Butanone	5.7	UG/KG	U	U	
REG	2-Hexanone	5.7	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	5.7	UG/KG	U	UJ	K01
REG	Acetone	5.7	UG/KG	U	U	
REG	Benzene	2.3	UG/KG	U	U	
REG	Bromodichloromethane	2.3	UG/KG	U	U	
REG	Bromoform	2.3	UG/KG	U	U	
REG	Bromomethane	2.3	UG/KG	U	U	
REG	Carbon Disulfide	5.7	UG/KG	U	U	
REG	Carbon Tetrachloride	2.3	UG/KG	U	U	
REG	Chlorobenzene	2.3	UG/KG	U	UJ	K01
REG	Chloroethane	2.3	UG/KG	U	U	
REG	Chloroform	2.3	UG/KG	U	U	
REG	Chloromethane	2.3	UG/KG	U	U	
REG	Dibromochloromethane	2.3	UG/KG	U	U	
REG	Ethylbenzene	2.3	UG/KG	U	UJ	K01
REG	Methylene Chloride	6.5	UG/KG	B	U	F01,F07
REG	Styrene	2.3	UG/KG	U	UJ	K01
REG	Tetrachloroethene	2.3	UG/KG	U	UJ	K01
REG	Toluene	2.3	UG/KG	U	UJ	K01
REG	Trichloroethene	2.3	UG/KG	U	U	
REG	Vinyl Chloride	2.3	UG/KG	U	U	
REG	Xylenes, Total	2.3	UG/KG	U	UJ	C02,K01

261112 2.0 - 3.3 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/23/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.56	MG/KG	B	J	
REG	Barium	6.4	MG/KG		=	
REG	Cadmium	0.06	MG/KG	U	U	
REG	Chromium	4.3	MG/KG		=	
REG	Lead	4.7	MG/KG	B	=	
REG	Mercury	0.01	MG/KG	U	U	
REG	Selenium	0.67	MG/KG	B	J	
REG	Silver	0.06	MG/KG	B	U	F01,F06

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	376	UG/KG	U	U	
REG	Acenaphthene	376	UG/KG	U	U	
REG	Acenaphthylene	376	UG/KG	U	U	
REG	Anthracene	376	UG/KG	U	U	
REG	Benzo(a)anthracene	376	UG/KG	U	U	
REG	Benzo(a)pyrene	376	UG/KG	U	U	
REG	Benzo(b)fluoranthene	376	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	376	UG/KG	U	U	
REG	Benzo(k)fluoranthene	376	UG/KG	U	U	
REG	Chrysene	376	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	376	UG/KG	U	U	
REG	Fluoranthene	376	UG/KG	U	U	
REG	Fluorene	376	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	376	UG/KG	U	U	
REG	Naphthalene	376	UG/KG	U	U	
REG	Phenanthrene	376	UG/KG	U	U	
REG	Pyrene	376	UG/KG	U	U	

Sample Type	Total Organic Carbon (TOC)	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Total Organic Carbon	1100	MG/KG		=	F08

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.3	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethane	2.3	UG/KG	U	UJ	K01
REG	1,1-Dichloroethene	2.3	UG/KG	U	UJ	K01
REG	1,2-Dichloroethane	2.3	UG/KG	U	UJ	K01
REG	1,2-Dichloropropane	2.3	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.3	UG/KG	U	UJ	K01
REG	1,3-cis-Dichloropropene	2.3	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.3	UG/KG	U	U	
REG	2-Butanone	5.8	UG/KG	U	UJ	K01,C05
REG	2-Hexanone	5.8	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	5.8	UG/KG	U	UJ	K01
REG	Acetone	10.8	UG/KG		J	K01,C05
REG	Benzene	2.3	UG/KG	U	U	
REG	Bromodichloromethane	2.3	UG/KG	U	U	
REG	Bromoform	2.3	UG/KG	U	U	
REG	Bromomethane	2.3	UG/KG	U	UJ	K01
REG	Carbon Disulfide	5.8	UG/KG	U	UJ	K01
REG	Carbon Tetrachloride	2.3	UG/KG	U	U	
REG	Chlorobenzene	2.3	UG/KG	U	UJ	K01
REG	Chloroethane	2.3	UG/KG	U	UJ	K01
REG	Chloroform	2.3	UG/KG	U	UJ	K01
REG	Chloromethane	2.3	UG/KG	U	UJ	K01
REG	Dibromochloromethane	2.3	UG/KG	U	U	
REG	Ethylbenzene	2.3	UG/KG	U	UJ	K01
REG	Methylene Chloride	6	UG/KG	B	U	K01, F01, F07
REG	Styrene	2.3	UG/KG	U	UJ	K01
REG	Tetrachloroethene	2.3	UG/KG	U	UJ	K01
REG	Toluene	2.6	UG/KG		J	K01
REG	Trichloroethene	2.3	UG/KG	U	U	
REG	Vinyl Chloride	2.3	UG/KG	U	UJ	K01
REG	Xylenes, Total	2.3	UG/KG	U	UJ	C02,K01

264111 4.0 - 14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/13/97

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity	45.1	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Nitrate	.5	MG/L		U	

ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW1

264111 4.0 - 14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/13/97

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Nitrite	.5	MG/L		U	
REG	Sulfate	3.07	MG/L		=	
REG	Sulfide	.1	MG/L		U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	10.1	UG/L		=	
REG	Barium	50.7	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	3.3	UG/L		J	F10
REG	Mercury	0.20	UG/L		=	
REG	Selenium	0.62	UG/L	B	J	
REG	Silver	4.9	UG/L		=	

Sample Type	Diesel Range Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethane	5	UG/L	U	U	
REG	Ethene	5	UG/L	U	U	
REG	Methane	53.7	UG/L		=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.21	UG/L	U	U	
REG	Acenaphthene	0.21	UG/L	U	U	
REG	Acenaphthylene	0.21	UG/L	U	U	
REG	Anthracene	0.21	UG/L	U	U	
REG	Benzo(a)anthracene	0.21	UG/L	U	U	
REG	Benzo(a)pyrene	0.21	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.21	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.21	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.21	UG/L	U	U	
REG	Chrysene	0.21	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.21	UG/L	U	U	
REG	Fluoranthene	0.21	UG/L	U	U	
REG	Fluorene	0.21	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.21	UG/L	U	U	
REG	Naphthalene	0.21	UG/L	U	U	
REG	Phenanthrene	0.21	UG/L	U	U	
REG	Pyrene	0.21	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW1

264111 4.0 -14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/13/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	7.1	UG/L		=	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.1	UG/L		=	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

264121 4.0 -14.0 FT Field Sample Type: Field Duplicate Matrix: Groundwater Collected: 08/13/97

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity	43.7	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Nitrate	.5	MG/L		U	
REG	Nitrite	.5	MG/L		U	
REG	Sulfate	3.06	MG/L		=	
REG	Sulfide	.1	MG/L		U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	9.6	UG/L		=	
REG	Barium	49.5	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	3.5	UG/L		J	F10
REG	Mercury	0.31	UG/L		=	
REG	Selenium	0.56	UG/L	B	J	
REG	Silver	3.8	UG/L		=	

Sample Type	Diesel Range Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethane	5	UG/L	U	U	
REG	Ethene	5	UG/L	U	U	
REG	Methane	32.6	UG/L		=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.21	UG/L	U	U	
REG	Acenaphthene	0.21	UG/L	U	U	
REG	Acenaphthylene	0.21	UG/L	U	U	
REG	Anthracene	0.21	UG/L	U	U	
REG	Benzo(a)anthracene	0.21	UG/L	U	U	
REG	Benzo(a)pyrene	0.21	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.21	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.21	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.21	UG/L	U	U	
REG	Chrysene	0.21	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.21	UG/L	U	U	
REG	Fluoranthene	0.21	UG/L	U	U	
REG	Fluorene	0.21	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.21	UG/L	U	U	
REG	Naphthalene	0.21	UG/L	U	U	
REG	Phenanthrene	0.21	UG/L	U	U	

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW1

264121 4.0 - 14.0 FT Field Sample Type: Field Duplicate Matrix: Groundwater Collected: 08/13/97

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Pyrene	0.21	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	2.4	UG/L	J	J	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW2

261211 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.93	MG/KG	B	U	F06
REG	Barium	14.1	MG/KG	B	J	
REG	Cadmium	0.11	MG/KG	U	U	
REG	Chromium	6.3	MG/KG		=	
REG	Lead	5.1	MG/KG	E	J	E07
REG	Mercury	0.02	MG/KG	U	U	
REG	Selenium	0.22	MG/KG	U	U	
REG	Silver	0.05	MG/KG	B*	UJ	F06,E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	7.7	UG/KG	U	U	
REG	Acenaphthene	7.7	UG/KG	U	U	
REG	Acenaphthylene	7.7	UG/KG	U	U	
REG	Anthracene	7.7	UG/KG	U	U	
REG	Benzo(a)anthracene	7.7	UG/KG	U	U	
REG	Benzo(a)pyrene	7.7	UG/KG	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW2

261211 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Benzo(b)fluoranthene	7.7	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	7.7	UG/KG	U	U	
REG	Benzo(k)fluoranthene	7.7	UG/KG	U	U	
REG	Chrysene	7.7	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	7.7	UG/KG	U	U	
REG	Fluoranthene	7.7	UG/KG	U	U	
REG	Fluorene	7.7	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	7.7	UG/KG	U	U	
REG	Naphthalene	7.7	UG/KG	U	U	
REG	Phenanthrene	7.7	UG/KG	U	U	
REG	Pyrene	7.7	UG/KG	U	UJ	P01

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.3	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-Dichloroethane	2.3	UG/KG	U	U	
REG	1,2-Dichloropropane	2.3	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.3	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.3	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.3	UG/KG	U	U	
REG	2-Butanone	5.8	UG/KG	U	UJ	C05
REG	2-Hexanone	5.8	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.8	UG/KG	U	U	
REG	Acetone	26.6	UG/KG		J	C05
REG	Benzene	1.4	UG/KG	J	J	
REG	Bromodichloromethane	2.3	UG/KG	U	U	
REG	Bromoform	2.3	UG/KG	U	U	
REG	Bromomethane	2.3	UG/KG	U	U	
REG	Carbon Disulfide	5.8	UG/KG	U	U	
REG	Carbon Tetrachloride	2.3	UG/KG	U	U	
REG	Chlorobenzene	2.3	UG/KG	U	U	
REG	Chloroethane	2.3	UG/KG	U	U	
REG	Chloroform	2.3	UG/KG	U	U	
REG	Chloromethane	2.3	UG/KG	U	U	
REG	Dibromochloromethane	2.3	UG/KG	U	U	
REG	Ethylbenzene	19.6	UG/KG		=	
REG	Methylene Chloride	5.5	UG/KG	B	U	F01,F07
REG	Styrene	2.3	UG/KG	U	U	
REG	Tetrachloroethene	2.3	UG/KG	U	U	
REG	Toluene	22.9	UG/KG		=	
REG	Trichloroethene	2.3	UG/KG	U	U	
REG	Vinyl Chloride	2.3	UG/KG	U	U	
REG	Xylenes, Total	141	UG/KG		J	C02,C05

261212 2.0 - 5.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	1.2	MG/KG	B	U	F06
REG	Barium	12.4	MG/KG	B	J	
REG	Cadmium	0.11	MG/KG	U	U	
REG	Chromium	5.4	MG/KG	B	J	F10
REG	Lead	3.6	MG/KG	E	J	E07
REG	Mercury	0.04	MG/KG		=	
REG	Selenium	1.1	MG/KG	B	J	F10
REG	Silver	0.19	MG/KG	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW2

261212 2.0 - 5.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,2,4-Trichlorobenzene	7.4	UG/KG	U	U	
REG	1,4-Dichlorobenzene	7.4	UG/KG	U	U	
REG	2,4-Dinitrotoluene	7.4	UG/KG	U	U	
REG	2-Chloronaphthalene	7.4	UG/KG	U	U	
REG	Acenaphthene	7.4	UG/KG	U	U	
REG	Acenaphthylene	7.4	UG/KG	U	U	
REG	Anthracene	2860	UG/KG		J	C05
REG	Benzo(a)anthracene	7.4	UG/KG	U	U	
REG	Benzo(a)pyrene	8.7	UG/KG		=	
REG	Benzo(b)fluoranthene	7.4	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	7.4	UG/KG	U	U	
REG	Benzo(k)fluoranthene	7.4	UG/KG	U	U	
REG	Chrysene	7.4	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	7.4	UG/KG	U	U	
REG	Fluoranthene	7.4	UG/KG	U	U	
REG	Fluorene	7.4	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	7.4	UG/KG	U	U	
REG	N-Nitroso-di-n-propylamine	7.4	UG/KG	U	U	
REG	Naphthalene	4160	UG/KG		J	C05
REG	Phenanthrene	7.4	UG/KG	U	U	
REG	Pyrene	256	UG/KG		J	P01,C05

Sample Type	Total Organic Carbon (TOC)	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Total Organic Carbon	3780	MG/KG		=	F08

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	114	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	114	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	114	UG/KG	U	U	
REG	1,1-Dichloroethane	114	UG/KG	U	U	
REG	1,1-Dichloroethene	114	UG/KG	U	U	
REG	1,2-Dichloroethane	114	UG/KG	U	U	
REG	1,2-Dichloropropane	114	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	114	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	114	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	114	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	114	UG/KG	U	U	
REG	2-Butanone	284	UG/KG	U	UJ	C05
REG	2-Hexanone	284	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	284	UG/KG	U	UJ	K01
REG	Acetone	284	UG/KG	U	UJ	C05
REG	Benzene	114	UG/KG	U	U	
REG	Bromodichloromethane	114	UG/KG	U	U	
REG	Bromoform	114	UG/KG	U	U	
REG	Bromomethane	114	UG/KG	U	U	
REG	Carbon Disulfide	284	UG/KG	U	U	
REG	Carbon Tetrachloride	114	UG/KG	U	U	
REG	Chlorobenzene	114	UG/KG	U	UJ	K01
REG	Chloroethane	114	UG/KG	U	U	
REG	Chloroform	114	UG/KG	U	U	
REG	Chloromethane	114	UG/KG	U	U	
REG	Dibromochloromethane	114	UG/KG	U	U	
REG	Ethylbenzene	750	UG/KG		J	K01
REG	Methylene Chloride	142	UG/KG	B	U	F01,F07
REG	Styrene	114	UG/KG	U	UJ	K01
REG	Tetrachloroethene	114	UG/KG	U	UJ	K01
REG	Toluene	396	UG/KG		J	K01
REG	Trichloroethene	114	UG/KG	U	U	
REG	Vinyl Chloride	114	UG/KG	U	U	
REG	Xylenes, Total	4420	UG/KG		J	C02,C05,K01

261241 Field Sample Type: Equipment Rinsate Matrix: Groundwater Collected: 07/24/97

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.6	UG/L	U	U	
REG	Barium	3.3	UG/L	B	U	F01,F06
REG	Cadmium	0.2	UG/L	U	R	F10
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	0.06	UG/L	U	U	
REG	Mercury	0.05	UG/L	*	=	
REG	Selenium	0.4	UG/L	U	U	
REG	Silver	3.3	UG/L	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.21	UG/L	U	U	
REG	Acenaphthene	0.21	UG/L	U	U	
REG	Acenaphthylene	0.21	UG/L	U	U	
REG	Anthracene	0.21	UG/L	U	U	
REG	Benzo(a)anthracene	0.21	UG/L	U	U	
REG	Benzo(a)pyrene	0.21	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.21	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.21	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.21	UG/L	U	U	
REG	Chrysene	0.21	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.21	UG/L	U	U	
REG	Fluoranthene	0.21	UG/L	U	U	
REG	Fluorene	0.21	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.21	UG/L	U	U	
REG	Naphthalene	0.21	UG/L	U	U	
REG	Phenanthrene	0.21	UG/L	U	U	
REG	Pyrene	0.21	UG/L	U	UJ	P01

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	U	
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.3	UG/L	B	U	F01,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Acetate	5	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

264211 4.0 -14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/12/97

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity	76.3	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Nitrate	.5	MG/L		U	
REG	Nitrite	.5	MG/L		U	
REG	Sulfate	.554	MG/L		J	
REG	Sulfide	1	MG/L		U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	3.5	UG/L	B	J	
REG	Barium	33.9	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	2.4	UG/L	B	J	
REG	Lead	0.59	UG/L	B	J	
REG	Mercury	0.2	UG/L		=	
REG	Selenium	0.4	UG/L	U	U	
REG	Silver	0.51	UG/L		=	

Sample Type	Diesel Range Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethane	5	UG/L	U	U	
REG	Ethane	5	UG/L	U	U	
REG	Ethene	5	UG/L	U	U	
REG	Ethene	5	UG/L	U	U	
REG	Methane	4690	UG/L	D	=	
REG	Methane	3050	UG/L	D	=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.22	UG/L	U	U	
REG	Acenaphthene	0.22	UG/L	U	U	
REG	Acenaphthylene	0.22	UG/L	U	U	
REG	Anthracene	0.22	UG/L	U	U	
REG	Benzo(a)anthracene	0.22	UG/L	U	U	
REG	Benzo(a)pyrene	0.22	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.22	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.22	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.22	UG/L	U	U	
REG	Chrysene	0.22	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.22	UG/L	U	U	
REG	Fluoranthene	0.22	UG/L	U	U	
REG	Fluorene	0.22	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.22	UG/L	U	U	
REG	Naphthalene	10.5	UG/L		=	
REG	Phenanthrene	0.22	UG/L	U	U	
REG	Pyrene	0.22	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	7.6	UG/L		=	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	329	UG/L	D	=	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW2

264211 4.0 -14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/12/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	62.3	UG/L		=	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	72.6	UG/L		=	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	296	UG/L	D	J	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW3

264311 4.0 -14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/14/97

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity	206	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Nitrate	0.07	MG/L		=	
REG	Nitrite	.05	MG/L		U	
REG	Sulfate	16.7	MG/L		=	
REG	Sulfide	.1	MG/L		U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	2.5	UG/L	B	J	
REG	Barium	37.4	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	0.6	UG/L	U	U	
REG	Lead	0.22	UG/L	B	J	F10
REG	Mercury	0.08	UG/L	U	U	
REG	Selenium	0.56	UG/L	B	J	
REG	Silver	3.3	UG/L		=	

Sample Type	Diesel Range Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethane	5	UG/L	U	U	
REG	Ethene	5	UG/L	U	U	
REG	Methane	19.1	UG/L		=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.2	UG/L	U	U	
REG	Acenaphthene	0.2	UG/L	U	U	
REG	Acenaphthylene	0.2	UG/L	U	U	
REG	Anthracene	0.2	UG/L	U	U	
REG	Benzo(a)anthracene	0.2	UG/L	U	U	
REG	Benzo(a)pyrene	0.2	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.2	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.2	UG/L	U	U	

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW3

264311 4.0 -14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/14/97

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Benzo(k)fluoranthene	0.2	UG/L	U	U	
REG	Chrysene	0.2	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.2	UG/L	U	U	
REG	Fluoranthene	0.2	UG/L	U	U	
REG	Fluorene	0.2	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.2	UG/L	U	U	
REG	Naphthalene	0.2	UG/L	U	U	
REG	Phenanthrene	0.2	UG/L	U	U	
REG	Pyrene	0.2	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2.2	UG/L		=	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	1.8	UG/L	J	J	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.2	UG/L		=	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

264341 Field Sample Type: Equipment Rinsate Matrix: Groundwater Collected: 08/12/97

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Sulfate	1	MG/L		U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	5	UG/L	U	UJ	F10
REG	Barium	3.3	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	1	UG/L	U	UJ	F10
REG	Mercury	0.03	UG/L	U	U	
REG	Selenium	5	UG/L	U	UJ	F10
REG	Silver	0.1	UG/L	B	U	F06,F01

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.2	UG/L	U	U	
REG	Acenaphthene	0.2	UG/L	U	U	
REG	Acenaphthylene	0.2	UG/L	U	U	
REG	Anthracene	0.2	UG/L	U	U	
REG	Benzo(a)anthracene	0.2	UG/L	U	U	
REG	Benzo(a)pyrene	0.2	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.2	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.2	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.2	UG/L	U	U	
REG	Chrysene	0.2	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.2	UG/L	U	U	
REG	Fluoranthene	0.2	UG/L	U	U	
REG	Fluorene	0.2	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.2	UG/L	U	U	
REG	Naphthalene	0.2	UG/L	U	U	
REG	Phenanthrene	0.2	UG/L	U	U	
REG	Pyrene	0.2	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	4.1	UG/L	J	J	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	UJ	C05
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	JB	U	F01,F06
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW4

261411 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/26/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.32	MG/KG	U	U	
REG	Barium	5.8	MG/KG	B	J	
REG	Cadmium	0.11	MG/KG	U	U	
REG	Chromium	3.9	MG/KG	B	J	
REG	Lead	3.2	MG/KG	E	J	E07
REG	Mercury	0.06	MG/KG		=	
REG	Selenium	0.21	MG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW4

261411 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/26/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Silver	0.07	MG/KG	B*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	7.2	UG/KG	U	U	
REG	Acenaphthene	7.2	UG/KG	U	U	
REG	Acenaphthylene	7.2	UG/KG	U	U	
REG	Anthracene	7.2	UG/KG	U	U	
REG	Benzo(a)anthracene	7.2	UG/KG	U	U	
REG	Benzo(a)pyrene	7.2	UG/KG	U	U	
REG	Benzo(b)fluoranthene	7.2	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	7.2	UG/KG	U	U	
REG	Benzo(k)fluoranthene	7.2	UG/KG	U	U	
REG	Chrysene	7.2	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	7.2	UG/KG	U	U	
REG	Fluoranthene	7.2	UG/KG	U	U	
REG	Fluorene	7.2	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	7.2	UG/KG	U	U	
REG	Naphthalene	7.2	UG/KG	U	U	
REG	Phenanthrene	7.2	UG/KG	U	U	
REG	Pyrene	7.2	UG/KG	U	UJ	P01

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.2	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.2	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	2.2	UG/KG	U	U	
REG	1,1-Dichloroethane	2.2	UG/KG	U	U	
REG	1,1-Dichloroethene	2.2	UG/KG	U	U	
REG	1,2-Dichloroethane	2.2	UG/KG	U	U	
REG	1,2-Dichloropropane	2.2	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.2	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.2	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.2	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.2	UG/KG	U	U	
REG	2-Butanone	5.6	UG/KG	U	UJ	C05
REG	2-Hexanone	5.6	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	5.6	UG/KG	U	UJ	K01
REG	Acetone	5.6	UG/KG	U	U	
REG	Benzene	2.2	UG/KG	U	U	
REG	Bromodichloromethane	2.2	UG/KG	U	U	
REG	Bromoform	2.2	UG/KG	U	U	
REG	Bromomethane	2.2	UG/KG	U	U	
REG	Carbon Disulfide	5.6	UG/KG	U	U	
REG	Carbon Tetrachloride	2.2	UG/KG	U	U	
REG	Chlorobenzene	2.2	UG/KG	U	UJ	K01
REG	Chloroethane	2.2	UG/KG	U	U	
REG	Chloroform	2.2	UG/KG	U	U	
REG	Chloromethane	2.2	UG/KG	U	U	
REG	Dibromochloromethane	2.2	UG/KG	U	U	
REG	Ethylbenzene	2.2	UG/KG	U	UJ	K01
REG	Methylene Chloride	5.4	UG/KG	B	U	F01,F07
REG	Styrene	2.2	UG/KG	U	UJ	K01
REG	Tetrachloroethene	2.2	UG/KG	U	UJ	K01
REG	Toluene	2.2	UG/KG	U	UJ	K01
REG	Trichloroethene	2.2	UG/KG	U	U	
REG	Vinyl Chloride	2.2	UG/KG	U	U	
REG	Xylenes, Total	2.2	UG/KG	U	UJ	C02,K01

?61412 12.0 - 14.5 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/26/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.76	MG/KG	B	U	F06

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW4

261412 12.0 - 14.5 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/26/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Barium	7.9	MG/KG	B	J	
REG	Cadmium	0.11	MG/KG	U	U	
REG	Chromium	8.3	MG/KG		=	
REG	Lead	4.1	MG/KG	E	J	E07
REG	Mercury	0.03	MG/KG		=	
REG	Selenium	0.22	MG/KG	U	U	
REG	Silver	0.41	MG/KG	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	7.8	UG/KG	U	U	
REG	Acenaphthene	7.8	UG/KG	U	U	
REG	Acenaphthylene	7.8	UG/KG	U	U	
REG	Anthracene	7.8	UG/KG	U	U	
REG	Benzo(a)anthracene	7.8	UG/KG	U	U	
REG	Benzo(a)pyrene	7.8	UG/KG	U	U	
REG	Benzo(b)fluoranthene	7.8	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	7.8	UG/KG	U	U	
REG	Benzo(k)fluoranthene	7.8	UG/KG	U	U	
REG	Chrysene	7.8	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	7.8	UG/KG	U	U	
REG	Fluoranthene	7.8	UG/KG	U	U	
REG	Fluorene	7.8	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	7.8	UG/KG	U	U	
REG	Naphthalene	7.8	UG/KG	U	U	
REG	Phenanthrene	7.8	UG/KG	U	U	
REG	Pyrene	7.8	UG/KG	U	UJ	P01

Sample Type	Total Organic Carbon (TOC)	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Total Organic Carbon	421	MG/KG		=	F08

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.3	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-Dichloroethane	2.3	UG/KG	U	U	
REG	1,2-Dichloropropane	2.3	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.3	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.3	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.3	UG/KG	U	U	
REG	2-Butanone	5.1	UG/KG	J	J	C05
REG	2-Hexanone	5.8	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.8	UG/KG	U	U	
REG	Acetone	27.9	UG/KG		J	C05
REG	Benzene	48.5	UG/KG		=	
REG	Bromodichloromethane	2.3	UG/KG	U	U	
REG	Bromoform	2.3	UG/KG	U	U	
REG	Bromomethane	2.3	UG/KG	U	U	
REG	Carbon Disulfide	5.8	UG/KG	U	U	
REG	Carbon Tetrachloride	2.3	UG/KG	U	U	
REG	Chlorobenzene	2.3	UG/KG	U	U	
REG	Chloroethane	2.3	UG/KG	U	U	
REG	Chloroform	2.3	UG/KG	U	U	
REG	Chloromethane	2.3	UG/KG	U	U	
REG	Dibromochloromethane	2.3	UG/KG	U	U	
REG	Ethylbenzene	17.2	UG/KG		=	
REG	Methylene Chloride	4	UG/KG	B	U	F01,F07
REG	Styrene	2.3	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW4

261412 12.0 - 14.5 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/26/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Tetrachloroethene	2.3	UG/KG	U	U	
REG	Toluene	40.6	UG/KG		=	
REG	Trichloroethene	2.3	UG/KG	U	U	
REG	Vinyl Chloride	2.3	UG/KG	U	U	
REG	Xylenes, Total	84.2	UG/KG		J	C02,C05

261414 44.5 - 45.5 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/26/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	1.8	MG/KG	B	U	F06
REG	Barium	13.3	MG/KG	B	J	
REG	Cadmium	0.44	MG/KG		=	
REG	Chromium	12.9	MG/KG		=	
REG	Lead	1.9	MG/KG	E	J	E07
REG	Mercury	0.03	MG/KG	U	U	
REG	Selenium	0.62	MG/KG	B	J	
REG	Silver	0.29	MG/KG	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	8.9	UG/KG	U	U	
REG	Acenaphthene	8.9	UG/KG	U	U	
REG	Acenaphthylene	8.9	UG/KG	U	U	
REG	Anthracene	8.9	UG/KG	U	U	
REG	Benzo(a)anthracene	8.9	UG/KG	U	U	
REG	Benzo(a)pyrene	8.9	UG/KG	U	U	
REG	Benzo(b)fluoranthene	8.9	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	8.9	UG/KG	U	U	
REG	Benzo(k)fluoranthene	8.9	UG/KG	U	U	
REG	Chrysene	8.9	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	8.9	UG/KG	U	U	
REG	Fluoranthene	8.9	UG/KG	U	U	
REG	Fluorene	8.9	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	8.9	UG/KG	U	U	
REG	Naphthalene	8.9	UG/KG	U	U	
REG	Phenanthrene	8.9	UG/KG	U	U	
REG	Pyrene	8.9	UG/KG	U	UJ	P01

Sample Type	Total Organic Carbon (TOC)	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Total Organic Carbon	19200	MG/KG		=	F08

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.7	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.7	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	2.7	UG/KG	U	U	
REG	1,1-Dichloroethane	2.7	UG/KG	U	U	
REG	1,1-Dichloroethene	2.7	UG/KG	U	U	
REG	1,2-Dichloroethane	2.7	UG/KG	U	U	
REG	1,2-Dichloropropane	2.7	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.7	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.7	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.7	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.7	UG/KG	U	U	
REG	2-Butanone	6.7	UG/KG	U	UJ	C05
REG	2-Hexanone	6.7	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	6.7	UG/KG	U	UJ	K01
REG	Acetone	26.8	UG/KG		J	C05
REG	Benzene	2.7	UG/KG	U	U	
REG	Bromodichloromethane	2.7	UG/KG	U	U	
REG	Bromoform	2.7	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW4

261414 44.5 - 45.5 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/26/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Bromomethane	2.7	UG/KG	U	U	
REG	Carbon Disulfide	6.7	UG/KG	U	U	
REG	Carbon Tetrachloride	2.7	UG/KG	U	U	
REG	Chlorobenzene	2.7	UG/KG	U	UJ	K01
REG	Chloroethane	2.7	UG/KG	U	U	
REG	Chloroform	2.7	UG/KG	U	U	
REG	Chloromethane	2.7	UG/KG	U	U	
REG	Dibromochloromethane	2.7	UG/KG	U	U	
REG	Ethylbenzene	2.5	UG/KG	J	J	K01
REG	Methylene Chloride	4.7	UG/KG	B	U	F01,F07
REG	Styrene	2.7	UG/KG	U	UJ	K01
REG	Tetrachloroethene	2.7	UG/KG	U	UJ	K01
REG	Toluene	27.9	UG/KG		J	K01
REG	Trichloroethene	2.7	UG/KG	U	U	
REG	Vinyl Chloride	2.7	UG/KG	U	U	
REG	Xylenes, Total	8.6	UG/KG		J	C02,C05,K01

264411 35.0 - 45.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/13/97

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity	290	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Nitrate	0.09	MG/L		=	
REG	Nitrite	.5	MG/L		U	
REG	Sulfate	4.15	MG/L		=	
REG	Sulfide	.1	MG/L		U	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.6	UG/L	U	U	
REG	Barium	99.2	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	1	UG/L	U	UJ	F10
REG	Mercury	0.3	UG/L		=	
REG	Selenium	0.51	UG/L	B	J	
REG	Silver	4.1	UG/L		=	

Sample Type	Filtered Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.6	UG/L	U	U	
REG	Barium	96.9	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	1	UG/L	U	UJ	F10
REG	Mercury	0.13	UG/L	U	U	
REG	Selenium	0.79	UG/L	B	J	
REG	Silver	0.19	UG/L	B	U	F06

Sample Type	Diesel Range Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethane	5	UG/L	U	U	
REG	Ethene	5	UG/L	U	U	
REG	Methane	214	UG/L	E	=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.2	UG/L	U	U	
REG	Acenaphthene	0.2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW4

264411 35.0 - 45.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/13/97

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Acenaphthylene	0.2	UG/L	U	U	
REG	Anthracene	0.2	UG/L	U	U	
REG	Benzo(a)anthracene	0.2	UG/L	U	U	
REG	Benzo(a)pyrene	0.2	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.2	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.2	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.2	UG/L	U	U	
REG	Chrysene	0.2	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.2	UG/L	U	U	
REG	Fluoranthene	0.2	UG/L	U	U	
REG	Fluorene	0.2	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.2	UG/L	U	U	
REG	Naphthalene	0.2	UG/L	U	U	
REG	Phenanthrene	0.2	UG/L	U	U	
REG	Pyrene	0.2	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	1.9	UG/L	J	J	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	J	U	F04,F06
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW5

261511 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.31	MG/KG	U	U	
REG	Barium	9.8	MG/KG	B	J	
REG	Cadmium	0.1	MG/KG	U	U	
REG	Chromium	1.7	MG/KG	B	J	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW5

261511 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Lead	4.8	MG/KG	E	J	E07
REG	Mercury	0.05	MG/KG		=	
REG	Selenium	0.31	MG/KG	B	U	F06
REG	Silver	0.04	MG/KG	U*	UJ	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	7	UG/KG	U	U	
REG	Acenaphthene	7	UG/KG	U	U	
REG	Acenaphthylene	7	UG/KG	U	U	
REG	Anthracene	7	UG/KG	U	U	
REG	Benzo(a)anthracene	7	UG/KG	U	U	
REG	Benzo(a)pyrene	6.1	UG/KG	J	J	
REG	Benzo(b)fluoranthene	7.8	UG/KG		=	
REG	Benzo(g,h,i)perylene	7	UG/KG	U	U	
REG	Benzo(k)fluoranthene	7	UG/KG	U	U	
REG	Chrysene	7	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	7	UG/KG	U	U	
REG	Fluoranthene	7	UG/KG	U	U	
REG	Fluorene	7	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	7	UG/KG	U	U	
REG	Naphthalene	7	UG/KG	U	U	
REG	Phenanthrene	7	UG/KG	U	U	
REG	Pyrene	7	UG/KG	U	UJ	P01

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.1	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1-Dichloroethane	2.1	UG/KG	U	U	
REG	1,1-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-Dichloroethane	2.1	UG/KG	U	U	
REG	1,2-Dichloropropane	2.1	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.1	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.1	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.1	UG/KG	U	U	
REG	2-Butanone	5.3	UG/KG	U	UJ	C05
REG	2-Hexanone	5.3	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	5.3	UG/KG	U	UJ	K01
REG	Acetone	5.3	UG/KG	U	U	
REG	Benzene	2.1	UG/KG	U	U	
REG	Bromodichloromethane	2.1	UG/KG	U	U	
REG	Bromoform	2.1	UG/KG	U	U	
REG	Bromomethane	2.1	UG/KG	U	U	
REG	Carbon Disulfide	5.3	UG/KG	U	U	
REG	Carbon Tetrachloride	2.1	UG/KG	U	U	
REG	Chlorobenzene	2.1	UG/KG	U	UJ	K01
REG	Chloroethane	2.1	UG/KG	U	U	
REG	Chloroform	2.1	UG/KG	U	U	
REG	Chloromethane	2.1	UG/KG	U	U	
REG	Dibromochloromethane	2.1	UG/KG	U	U	
REG	Ethylbenzene	2.1	UG/KG	U	UJ	K01
REG	Methylene Chloride	5.9	UG/KG	B	U	F01,F07
REG	Styrene	1.9	UG/KG	J	J	G01,K01
REG	Tetrachloroethene	2.1	UG/KG	U	UJ	K01
REG	Toluene	2.1	UG/KG	U	UJ	K01
REG	Trichloroethene	2.1	UG/KG	U	U	
REG	Vinyl Chloride	2.1	UG/KG	U	U	
REG	Xylenes, Total	2.1	UG/KG	U	UJ	C02,K01

261512 5.0 - 7.5 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.29	MG/KG	U	U	
REG	Barium	1.1	MG/KG	B	J	
REG	Cadmium	0.1	MG/KG	U	U	
REG	Chromium	0.29	MG/KG	U	UJ	F10
REG	Lead	0.41	MG/KG	BE	J	E07
REG	Mercury	0.02	MG/KG	U	U	
REG	Selenium	0.5	MG/KG	B	J	F10
REG	Silver	0.17	MG/KG	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	6.9	UG/KG	U	U	
REG	Acenaphthene	6.9	UG/KG	U	U	
REG	Acenaphthylene	6.9	UG/KG	U	U	
REG	Anthracene	6.9	UG/KG	U	U	
REG	Benzo(a)anthracene	6.9	UG/KG	U	U	
REG	Benzo(a)pyrene	6.9	UG/KG	U	U	
REG	Benzo(b)fluoranthene	6.9	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	6.9	UG/KG	U	U	
REG	Benzo(k)fluoranthene	6.9	UG/KG	U	U	
REG	Chrysene	6.9	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	6.9	UG/KG	U	U	
REG	Fluoranthene	6.9	UG/KG	U	U	
REG	Fluorene	6.9	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	6.9	UG/KG	U	U	
REG	Naphthalene	6.9	UG/KG	U	U	
REG	Phenanthrene	6.9	UG/KG	U	U	
REG	Pyrene	6.9	UG/KG	U	UJ	P01

Sample Type	Total Organic Carbon (TOC)	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Total Organic Carbon	250	MG/KG		=	F08

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1,1-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1,1-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1,1-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.1	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.1	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.1	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.1	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.1	UG/KG	U	U	
REG	1,1-Dichloroethane	2.1	UG/KG	U	U	
REG	1,1-Dichloroethane	2.1	UG/KG	U	U	
REG	1,1-Dichloroethane	2.1	UG/KG	U	U	
REG	1,1-Dichloroethane	2.1	UG/KG	U	U	
REG	1,1-Dichloroethene	2.1	UG/KG	U	U	
REG	1,1-Dichloroethene	2.1	UG/KG	U	U	
REG	1,1-Dichloroethene	2.1	UG/KG	U	U	
REG	1,1-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-Dichloroethane	2.1	UG/KG	U	U	
REG	1,2-Dichloroethane	2.1	UG/KG	U	U	
REG	1,2-Dichloroethane	2.1	UG/KG	U	U	
REG	1,2-Dichloroethane	2.1	UG/KG	U	U	
REG	1,2-Dichloropropane	2.1	UG/KG	U	U	
REG	1,2-Dichloropropane	2.1	UG/KG	U	U	
REG	1,2-Dichloropropane	2.1	UG/KG	U	U	
REG	1,2-Dichloropropane	2.1	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.1	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW5

261512 5.0 - 7.5 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,2-trans-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.1	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.1	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.1	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.1	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.1	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.1	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.1	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.1	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.1	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.1	UG/KG	U	U	
REG	2-Butanone	5.2	UG/KG	U	UJ	C05
REG	2-Butanone	5.2	UG/KG	U	U	
REG	2-Butanone	5.2	UG/KG	U	UJ	C05
REG	2-Butanone	5.2	UG/KG	U	UJ	C05
REG	2-Hexanone	5.2	UG/KG	U	U	
REG	2-Hexanone	5.2	UG/KG	U	U	
REG	2-Hexanone	5.2	UG/KG	U	U	
REG	2-Hexanone	5.2	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.2	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.2	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.2	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.2	UG/KG	U	U	
REG	Acetone	5.2	UG/KG	U	UJ	C05
REG	Acetone	5.2	UG/KG	U	U	
REG	Acetone	5.2	UG/KG	U	UJ	C05
REG	Acetone	5.2	UG/KG	U	UJ	C05
REG	Benzene	2.1	UG/KG	U	U	
REG	Benzene	2.1	UG/KG	U	U	
REG	Benzene	2.1	UG/KG	U	U	
REG	Benzene	2.1	UG/KG	U	U	
REG	Bromodichloromethane	2.1	UG/KG	U	U	
REG	Bromodichloromethane	2.1	UG/KG	U	U	
REG	Bromodichloromethane	2.1	UG/KG	U	U	
REG	Bromodichloromethane	2.1	UG/KG	U	U	
REG	Bromoform	2.1	UG/KG	U	U	
REG	Bromoform	2.1	UG/KG	U	U	
REG	Bromoform	2.1	UG/KG	U	U	
REG	Bromoform	2.1	UG/KG	U	U	
REG	Bromomethane	2.1	UG/KG	U	U	
REG	Bromomethane	2.1	UG/KG	U	U	
REG	Bromomethane	2.1	UG/KG	U	U	
REG	Bromomethane	2.1	UG/KG	U	U	
REG	Carbon Disulfide	5.2	UG/KG	U	U	
REG	Carbon Disulfide	5.2	UG/KG	U	U	
REG	Carbon Disulfide	5.2	UG/KG	U	U	
REG	Carbon Disulfide	5.2	UG/KG	U	U	
REG	Carbon Tetrachloride	2.1	UG/KG	U	U	
REG	Carbon Tetrachloride	2.1	UG/KG	U	U	
REG	Carbon Tetrachloride	2.1	UG/KG	U	U	
REG	Carbon Tetrachloride	2.1	UG/KG	U	U	
REG	Chlorobenzene	2.1	UG/KG	U	U	
REG	Chlorobenzene	2.1	UG/KG	U	U	
REG	Chlorobenzene	2.1	UG/KG	U	U	
REG	Chlorobenzene	2.1	UG/KG	U	U	
REG	Chloroethane	2.1	UG/KG	U	U	
REG	Chloroethane	2.1	UG/KG	U	U	
REG	Chloroethane	2.1	UG/KG	U	U	
REG	Chloroethane	2.1	UG/KG	U	U	
REG	Chloroform	2.1	UG/KG	U	U	
REG	Chloroform	2.1	UG/KG	U	U	
REG	Chloroform	2.1	UG/KG	U	U	
REG	Chloroform	2.1	UG/KG	U	U	
REG	Chloromethane	2.1	UG/KG	U	U	
REG	Chloromethane	2.1	UG/KG	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW5

261512 5.0 - 7.5 FT Field Sample Type: Grab Matrix: Subsurface Soil Collected: 07/24/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Chloromethane	2.1	UG/KG	U	U	
REG	Chloromethane	2.1	UG/KG	U	U	
REG	Dibromochloromethane	2.1	UG/KG	U	U	
REG	Dibromochloromethane	2.1	UG/KG	U	U	
REG	Dibromochloromethane	2.1	UG/KG	U	U	
REG	Dibromochloromethane	2.1	UG/KG	U	U	
REG	Ethylbenzene	2.1	UG/KG	U	U	
REG	Ethylbenzene	2.1	UG/KG	U	U	
REG	Ethylbenzene	2.1	UG/KG	U	U	
REG	Ethylbenzene	2.1	UG/KG	U	U	
REG	Methylene Chloride	4.4	UG/KG	B	U	F01,F07
REG	Methylene Chloride	4.4	UG/KG	B	U	F01,F07
REG	Methylene Chloride	4.4	UG/KG	B	U	F01,F07
REG	Methylene Chloride	4.4	UG/KG	B	U	F01,F07
REG	Styrene	2.1	UG/KG	U	U	
REG	Styrene	2.1	UG/KG	U	U	
REG	Styrene	2.1	UG/KG	U	U	
REG	Styrene	2.1	UG/KG	U	U	
REG	Tetrachloroethene	2.1	UG/KG	U	U	
REG	Tetrachloroethene	2.1	UG/KG	U	U	
REG	Tetrachloroethene	2.1	UG/KG	U	U	
REG	Tetrachloroethene	2.1	UG/KG	U	U	
REG	Toluene	3.3	UG/KG		=	
REG	Toluene	3.3	UG/KG		=	
REG	Toluene	3.3	UG/KG		=	
REG	Toluene	3.3	UG/KG		=	
REG	Trichloroethene	2.1	UG/KG	U	U	
REG	Trichloroethene	2.1	UG/KG	U	U	
REG	Trichloroethene	2.1	UG/KG	U	U	
REG	Trichloroethene	2.1	UG/KG	U	U	
REG	Vinyl Chloride	2.1	UG/KG	U	U	
REG	Vinyl Chloride	2.1	UG/KG	U	U	
REG	Vinyl Chloride	2.1	UG/KG	U	U	
REG	Vinyl Chloride	2.1	UG/KG	U	U	
REG	Xylenes, Total	2.1	UG/KG	U	UJ	C02
REG	Xylenes, Total	2.1	UG/KG	U	UJ	C02
REG	Xylenes, Total	2.1	UG/KG	U	UJ	C02
REG	Xylenes, Total	2.1	UG/KG	U	UJ	C02

264511 4.0 - 14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/12/97

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity	244	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Nitrate	.5	MG/L		U	
REG	Nitrite	.5	MG/L		U	
REG	Sulfate	3.01	MG/L		=	
REG	Sulfide	0.05	MG/L		J	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	5	UG/L	U	UJ	F10
REG	Barium	70.2	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	1	UG/L	U	UJ	F10
REG	Mercury	0.58	UG/L		=	
REG	Selenium	0.78	UG/L	B	J	F10
REG	Silver	0.07	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Filtered Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	5	UG/L	U	UJ	F10
REG	Barium	69.4	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	1	UG/L	U	UJ	F10
REG	Mercury	0.05	UG/L		=	
REG	Selenium	5	UG/L	U	UJ	F10
REG	Silver	0.1	UG/L	B	U	F06,F01

Sample Type	Diesel Range Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethane	5	UG/L	U	U	
REG	Ethene	5	UG/L	U	U	
REG	Methane	248	UG/L	D	=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.21	UG/L	U	U	
REG	Acenaphthene	0.21	UG/L	U	U	
REG	Acenaphthylene	0.21	UG/L	U	U	
REG	Anthracene	0.21	UG/L	U	U	
REG	Benzo(a)anthracene	0.21	UG/L	U	U	
REG	Benzo(a)pyrene	0.21	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.21	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.21	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.21	UG/L	U	U	
REG	Chrysene	0.21	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.21	UG/L	U	U	
REG	Fluoranthene	0.21	UG/L	U	U	
REG	Fluorene	0.21	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.21	UG/L	U	U	
REG	Naphthalene	0.21	UG/L	U	U	
REG	Phenanthrene	0.21	UG/L	U	U	
REG	Pyrene	0.21	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	1	UG/L	J	J	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	1.8	UG/L	J	J	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	

ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : MW5

264511 4.0 - 14.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 08/12/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S01

265111 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	24.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	24.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	24.4	UG/KG	U	U	
REG	1,1-Dichloroethane	24.4	UG/KG	U	U	
REG	1,1-Dichloroethene	24.4	UG/KG	U	U	
REG	1,2-Dichloroethane	24.4	UG/KG	U	U	
REG	1,2-Dichloropropane	24.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	24.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	24.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	24.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	24.4	UG/KG	U	U	
REG	2-Butanone	61	UG/KG	U	U	
REG	2-Hexanone	61	UG/KG	U	U	
REG	4-Methyl-2-pentanone	61	UG/KG	U	U	
REG	Acetone	61	UG/KG	U	U	
REG	Benzene	510	UG/KG		=	
REG	Bromodichloromethane	24.4	UG/KG	U	U	
REG	Bromoform	24.4	UG/KG	U	U	
REG	Bromomethane	24.4	UG/KG	U	U	
REG	Carbon Disulfide	61	UG/KG	U	U	
REG	Carbon Tetrachloride	24.4	UG/KG	U	U	
REG	Chlorobenzene	24.4	UG/KG	U	U	
REG	Chloroethane	24.4	UG/KG	U	U	
REG	Chloroform	24.4	UG/KG	U	U	
REG	Chloromethane	24.4	UG/KG	U	UJ	C05
REG	Dibromochloromethane	24.4	UG/KG	U	U	
REG	Ethylbenzene	2790	UG/KG	D	=	
REG	Methylene Chloride	24.4	UG/KG	U	U	
REG	Styrene	24.4	UG/KG	U	U	
REG	Tetrachloroethene	24.4	UG/KG	U	U	
REG	Toluene	76.1	UG/KG		=	
REG	Trichloroethene	24.4	UG/KG	U	U	
REG	Vinyl Chloride	24.4	UG/KG	U	U	
REG	Xylenes, Total	11400	UG/KG	D	J	C02

265121 4.0 - 6.0 FT Field Sample Type: Field Duplicate Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	60.2	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	60.2	UG/KG	U	U	
REG	1,1,2-Trichloroethane	60.2	UG/KG	U	U	
REG	1,1-Dichloroethane	60.2	UG/KG	U	U	
REG	1,1-Dichloroethene	60.2	UG/KG	U	U	
REG	1,2-Dichloroethane	60.2	UG/KG	U	U	
REG	1,2-Dichloropropane	60.2	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	60.2	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	60.2	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	60.2	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	60.2	UG/KG	U	U	
REG	2-Butanone	151	UG/KG	U	U	
REG	2-Hexanone	151	UG/KG	U	U	
REG	4-Methyl-2-pentanone	151	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S01

265121 4.0 - 6.0 FT Field Sample Type: Field Duplicate Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Acetone	151	UG/KG	U	U	
REG	Benzene	105	UG/KG		=	
REG	Bromodichloromethane	60.2	UG/KG	U	U	
REG	Bromoform	60.2	UG/KG	U	U	
REG	Bromomethane	60.2	UG/KG	U	U	
REG	Carbon Disulfide	151	UG/KG	U	U	
REG	Carbon Tetrachloride	60.2	UG/KG	U	U	
REG	Chlorobenzene	60.2	UG/KG	U	U	
REG	Chloroethane	60.2	UG/KG	U	U	
REG	Chloroform	60.2	UG/KG	U	U	
REG	Chloromethane	60.2	UG/KG	U	UJ	C05
REG	Dibromochloromethane	60.2	UG/KG	U	U	
REG	Ethylbenzene	965	UG/KG		=	
REG	Methylene Chloride	60.2	UG/KG	U	U	
REG	Styrene	60.2	UG/KG	U	U	
REG	Tetrachloroethene	60.2	UG/KG	U	U	
REG	Toluene	79.4	UG/KG		=	
REG	Trichloroethene	60.2	UG/KG	U	U	
REG	Vinyl Chloride	60.2	UG/KG	U	U	
REG	Xylenes, Total	4240	UG/KG		J	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S02

265211 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	22	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	22	UG/KG	U	U	
REG	1,1,2-Trichloroethane	22	UG/KG	U	U	
REG	1,1-Dichloroethane	22	UG/KG	U	U	
REG	1,1-Dichloroethene	22	UG/KG	U	U	
REG	1,2-Dichloroethane	22	UG/KG	U	U	
REG	1,2-Dichloropropane	22	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	22	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	22	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	22	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	22	UG/KG	U	U	
REG	2-Butanone	55	UG/KG	U	U	
REG	2-Hexanone	55	UG/KG	U	U	
REG	4-Methyl-2-pentanone	55	UG/KG	U	U	
REG	Acetone	55	UG/KG	U	U	
REG	Benzene	19.2	UG/KG	J	J	
REG	Bromodichloromethane	22	UG/KG	U	U	
REG	Bromoform	22	UG/KG	U	U	
REG	Bromomethane	22	UG/KG	U	U	
REG	Carbon Disulfide	55	UG/KG	U	U	
REG	Carbon Tetrachloride	22	UG/KG	U	U	
REG	Chlorobenzene	22	UG/KG	U	U	
REG	Chloroethane	22	UG/KG	U	U	
REG	Chloroform	22	UG/KG	U	U	
REG	Chloromethane	22	UG/KG	U	UJ	C05
REG	Dibromochloromethane	22	UG/KG	U	U	
REG	Ethylbenzene	50.7	UG/KG		=	
REG	Methylene Chloride	36.6	UG/KG	B	U	F01,F07
REG	Styrene	22	UG/KG	U	U	
REG	Tetrachloroethene	22	UG/KG	U	U	
REG	Toluene	16.2	UG/KG	J	J	
REG	Trichloroethene	22	UG/KG	U	U	
REG	Vinyl Chloride	22	UG/KG	U	U	
REG	Xylenes, Total	185	UG/KG		J	C02

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : S03

265311 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2350	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2350	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2350	UG/KG	U	U	
REG	1,1-Dichloroethane	2350	UG/KG	U	U	
REG	1,1-Dichloroethene	2350	UG/KG	U	U	
REG	1,2-Dichloroethane	2350	UG/KG	U	U	
REG	1,2-Dichloropropane	2350	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2350	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2350	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2350	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2350	UG/KG	U	U	
REG	2-Butanone	5880	UG/KG	U	U	
REG	2-Hexanone	5880	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5880	UG/KG	U	U	
REG	Acetone	5880	UG/KG	U	U	
REG	Benzene	9420	UG/KG		=	
REG	Bromodichloromethane	2350	UG/KG	U	U	
REG	Bromoform	2350	UG/KG	U	U	
REG	Bromomethane	2350	UG/KG	U	U	
REG	Carbon Disulfide	5880	UG/KG	U	U	
REG	Carbon Tetrachloride	2350	UG/KG	U	U	
REG	Chlorobenzene	2350	UG/KG	U	U	
REG	Chloroethane	2350	UG/KG	U	U	
REG	Chloroform	2350	UG/KG	U	U	
REG	Chloromethane	2350	UG/KG	U	UJ	C05
REG	Dibromochloromethane	2350	UG/KG	U	U	
REG	Ethylbenzene	27100	UG/KG		=	
REG	Methylene Chloride	2350	UG/KG	U	U	
REG	Styrene	2350	UG/KG	U	U	
REG	Tetrachloroethene	2350	UG/KG	U	U	
REG	Toluene	8990	UG/KG		=	
REG	Trichloroethene	2350	UG/KG	U	U	
REG	Vinyl Chloride	2350	UG/KG	U	U	
REG	Xylenes, Total	123000	UG/KG		J	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S04

265411 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-Dichloroethane	2.4	UG/KG	U	U	
REG	1,2-Dichloropropane	2.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.4	UG/KG	U	U	
REG	2-Butanone	5.9	UG/KG	U	U	
REG	2-Hexanone	5.9	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.9	UG/KG	U	U	
REG	Acetone	5.9	UG/KG	U	U	
REG	Benzene	2.4	UG/KG	U	U	
REG	Bromodichloromethane	2.4	UG/KG	U	U	
REG	Bromoform	2.4	UG/KG	U	U	
REG	Bromomethane	2.4	UG/KG	U	U	
REG	Carbon Disulfide	5.9	UG/KG	U	U	
REG	Carbon Tetrachloride	2.4	UG/KG	U	U	
REG	Chlorobenzene	2.4	UG/KG	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S04

265411 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Chloroethane	2.4	UG/KG	U	U	
REG	Chloroform	2.4	UG/KG	U	U	
REG	Chloromethane	2.4	UG/KG	U	UJ	C05
REG	Dibromochloromethane	2.4	UG/KG	U	U	
REG	Ethylbenzene	2.4	UG/KG	U	U	
REG	Methylene Chloride	5.8	UG/KG	B	U	F01,F07
REG	Styrene	2.4	UG/KG	U	U	
REG	Tetrachloroethene	2.4	UG/KG	U	U	
REG	Toluene	3.4	UG/KG		=	
REG	Trichloroethene	2.4	UG/KG	U	U	
REG	Vinyl Chloride	2.4	UG/KG	U	U	
REG	Xylenes, Total	7	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S05

265511 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	556	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	556	UG/KG	U	U	
REG	1,1,2-Trichloroethane	556	UG/KG	U	U	
REG	1,1-Dichloroethane	556	UG/KG	U	U	
REG	1,1-Dichloroethene	556	UG/KG	U	U	
REG	1,2-Dichloroethane	556	UG/KG	U	U	
REG	1,2-Dichloropropane	556	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	556	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	556	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	556	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	556	UG/KG	U	U	
REG	2-Butanone	1390	UG/KG	U	U	
REG	2-Hexanone	1390	UG/KG	U	U	
REG	4-Methyl-2-pentanone	1390	UG/KG	U	U	
REG	Acetone	1390	UG/KG	U	U	
REG	Benzene	5350	UG/KG		=	
REG	Bromodichloromethane	556	UG/KG	U	U	
REG	Bromoform	556	UG/KG	U	U	
REG	Bromomethane	556	UG/KG	U	U	
REG	Carbon Disulfide	1390	UG/KG	U	U	
REG	Carbon Tetrachloride	556	UG/KG	U	U	
REG	Chlorobenzene	556	UG/KG	U	U	
REG	Chloroethane	556	UG/KG	U	U	
REG	Chloroform	556	UG/KG	U	U	
REG	Chloromethane	556	UG/KG	U	U	
REG	Dibromochloromethane	556	UG/KG	U	U	
REG	Ethylbenzene	24200	UG/KG		=	
REG	Methylene Chloride	556	UG/KG	U	U	
REG	Styrene	556	UG/KG	U	U	
REG	Tetrachloroethene	556	UG/KG	U	U	
REG	Toluene	27400	UG/KG		=	
REG	Trichloroethene	556	UG/KG	U	U	
REG	Vinyl Chloride	556	UG/KG	U	U	
REG	Xylenes, Total	124000	UG/KG	D	J	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S06

265611 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	4	UG/KG	U	U	

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : S06

265611 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,2-Trichloroethane	4	UG/KG	U	U	
REG	1,1-Dichloroethane	4	UG/KG	U	U	
REG	1,1-Dichloroethene	4	UG/KG	U	U	
REG	1,2-Dichloroethane	4	UG/KG	U	U	
REG	1,2-Dichloropropane	4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	4	UG/KG	U	U	
REG	2-Butanone	10	UG/KG	U	U	
REG	2-Hexanone	10	UG/KG	U	U	
REG	4-Methyl-2-pentanone	10	UG/KG	U	U	
REG	Acetone	10	UG/KG	U	U	
REG	Benzene	4	UG/KG	U	U	
REG	Bromodichloromethane	4	UG/KG	U	U	
REG	Bromoform	4	UG/KG	U	U	
REG	Bromomethane	4	UG/KG	U	U	
REG	Carbon Disulfide	10	UG/KG	U	U	
REG	Carbon Tetrachloride	4	UG/KG	U	U	
REG	Chlorobenzene	4	UG/KG	U	U	
REG	Chloroethane	4	UG/KG	U	U	
REG	Chloroform	4	UG/KG	U	U	
REG	Chloromethane	4	UG/KG	U	UJ	C05
REG	Dibromochloromethane	4	UG/KG	U	U	
REG	Ethylbenzene	4	UG/KG	U	U	
REG	Methylene Chloride	5.6	UG/KG	B	U	F01,F07
REG	Styrene	4	UG/KG	U	U	
REG	Tetrachloroethene	4	UG/KG	U	U	
REG	Toluene	4	UG/KG	U	U	
REG	Trichloroethene	4	UG/KG	U	U	
REG	Vinyl Chloride	4	UG/KG	U	U	
REG	Xylenes, Total	12	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S07

265711 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	4.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	4.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	4.4	UG/KG	U	U	
REG	1,1-Dichloroethane	4.4	UG/KG	U	U	
REG	1,1-Dichloroethene	4.4	UG/KG	U	U	
REG	1,2-Dichloroethane	4.4	UG/KG	U	U	
REG	1,2-Dichloropropane	4.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	4.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	4.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	4.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	4.4	UG/KG	U	U	
REG	2-Butanone	11.1	UG/KG	U	U	
REG	2-Hexanone	11.1	UG/KG	U	U	
REG	4-Methyl-2-pentanone	11.1	UG/KG	U	U	
REG	Acetone	34.9	UG/KG		=	
REG	Benzene	4.4	UG/KG	U	U	
REG	Bromodichloromethane	4.4	UG/KG	U	U	
REG	Bromoform	4.4	UG/KG	U	U	
REG	Bromomethane	4.4	UG/KG	U	U	
REG	Carbon Disulfide	11.1	UG/KG	U	U	
REG	Carbon Tetrachloride	4.4	UG/KG	U	U	
REG	Chlorobenzene	4.4	UG/KG	U	U	
REG	Chloroethane	4.4	UG/KG	U	U	
REG	Chloroform	4.4	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S07

265711 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Chloromethane	4.4	UG/KG	U	UJ	C05
REG	Dibromochloromethane	4.4	UG/KG	U	U	
REG	Ethylbenzene	4.4	UG/KG	U	U	
REG	Methylene Chloride	8.6	UG/KG	B	U	F01,F07
REG	Styrene	4.4	UG/KG	U	U	
REG	Tetrachloroethene	4.4	UG/KG	U	U	
REG	Toluene	4	UG/KG	J	J	
REG	Trichloroethene	4.4	UG/KG	U	U	
REG	Vinyl Chloride	4.4	UG/KG	U	U	
REG	Xylenes, Total	4.4	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S08

265811 6.0 - 12.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-Dichloroethane	2.4	UG/KG	U	U	
REG	1,2-Dichloropropane	2.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.4	UG/KG	U	U	
REG	2-Butanone	6.1	UG/KG	U	U	
REG	2-Hexanone	6.1	UG/KG	U	U	
REG	4-Methyl-2-pentanone	6.1	UG/KG	U	U	
REG	Acetone	6.1	UG/KG	U	U	
REG	Benzene	2.4	UG/KG	U	U	
REG	Bromodichloromethane	2.4	UG/KG	U	U	
REG	Bromoform	2.4	UG/KG	U	U	
REG	Bromomethane	2.4	UG/KG	U	U	
REG	Carbon Disulfide	6.1	UG/KG	U	U	
REG	Carbon Tetrachloride	2.4	UG/KG	U	U	
REG	Chlorobenzene	2.4	UG/KG	U	U	
REG	Chloroethane	2.4	UG/KG	U	U	
REG	Chloroform	2.4	UG/KG	U	U	
REG	Chloromethane	2.4	UG/KG	U	UJ	C05
REG	Dibromochloromethane	2.4	UG/KG	U	U	
REG	Ethylbenzene	2.4	UG/KG	U	U	
REG	Methylene Chloride	4.8	UG/KG	B	U	F01,F07
REG	Styrene	2.4	UG/KG	U	U	
REG	Tetrachloroethene	2.4	UG/KG	U	U	
REG	Toluene	11.2	UG/KG		J	H02
REG	Trichloroethene	2.4	UG/KG	U	U	
REG	Vinyl Chloride	2.4	UG/KG	U	U	
REG	Xylenes, Total	7.3	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S09

265911 6.0 - 10.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	4.7	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	4.7	UG/KG	U	U	
REG	1,1,2-Trichloroethane	4.7	UG/KG	U	U	
REG	1,1-Dichloroethane	4.7	UG/KG	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S09

265911 6.0 - 10.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1-Dichloroethene	4.7	UG/KG	U	U	
REG	1,2-Dichloroethane	4.7	UG/KG	U	U	
REG	1,2-Dichloropropane	4.7	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	4.7	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	4.7	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	4.7	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	4.7	UG/KG	U	U	
REG	2-Butanone	11.8	UG/KG	U	U	
REG	2-Hexanone	11.8	UG/KG	U	U	
REG	4-Methyl-2-pentanone	11.8	UG/KG	U	U	
REG	Acetone	55	UG/KG		=	
REG	Benzene	4.7	UG/KG	U	U	
REG	Bromodichloromethane	4.7	UG/KG	U	U	
REG	Bromoform	4.7	UG/KG	U	U	
REG	Bromomethane	4.7	UG/KG	U	U	
REG	Carbon Disulfide	11.8	UG/KG	U	U	
REG	Carbon Tetrachloride	4.7	UG/KG	U	U	
REG	Chlorobenzene	4.7	UG/KG	U	U	
REG	Chloroethane	4.7	UG/KG	U	U	
REG	Chloroform	4.7	UG/KG	U	U	
REG	Chloromethane	4.7	UG/KG	U	UJ	C05
REG	Dibromochloromethane	4.7	UG/KG	U	U	
REG	Ethylbenzene	4.7	UG/KG	U	U	
REG	Methylene Chloride	10.9	UG/KG	B	U	F01,F07
REG	Styrene	4.7	UG/KG	U	U	
REG	Tetrachloroethene	4.7	UG/KG	U	U	
REG	Toluene	7.6	UG/KG		=	
REG	Trichloroethene	4.7	UG/KG	U	U	
REG	Vinyl Chloride	4.7	UG/KG	U	U	
REG	Xylenes, Total	4.7	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S10

265A11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	4.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	4.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	4.4	UG/KG	U	U	
REG	1,1-Dichloroethane	4.4	UG/KG	U	U	
REG	1,1-Dichloroethene	4.4	UG/KG	U	U	
REG	1,2-Dichloroethane	4.4	UG/KG	U	U	
REG	1,2-Dichloropropane	4.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	4.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	4.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	4.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	4.4	UG/KG	U	U	
REG	2-Butanone	11.1	UG/KG	U	U	
REG	2-Hexanone	11.1	UG/KG	U	U	
REG	4-Methyl-2-pentanone	11.1	UG/KG	U	U	
REG	Acetone	1060	UG/KG	D	=	
REG	Benzene	4.4	UG/KG	U	U	
REG	Bromodichloromethane	4.4	UG/KG	U	U	
REG	Bromoform	4.4	UG/KG	U	U	
REG	Bromomethane	4.4	UG/KG	U	U	
REG	Carbon Disulfide	11.1	UG/KG	U	U	
REG	Carbon Tetrachloride	4.4	UG/KG	U	U	
REG	Chlorobenzene	4.4	UG/KG	U	U	
REG	Chloroethane	4.4	UG/KG	U	U	
REG	Chloroform	4.4	UG/KG	U	U	
REG	Chloromethane	4.4	UG/KG	U	UJ	C05
REG	Dibromochloromethane	4.4	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S10

265A11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/08/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethylbenzene	4.4	UG/KG	U	U	
REG	Methylene Chloride	8.3	UG/KG	B	U	F01,F07
REG	Styrene	4.4	UG/KG	U	U	
REG	Tetrachloroethene	4.4	UG/KG	U	U	
REG	Toluene	32.5	UG/KG		=	
REG	Trichloroethene	4.4	UG/KG	U	U	
REG	Vinyl Chloride	4.4	UG/KG	U	U	
REG	Xylenes, Total	4.4	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S11

265B11 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	4.6	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	4.6	UG/KG	U	U	
REG	1,1,2-Trichloroethane	4.6	UG/KG	U	U	
REG	1,1-Dichloroethane	4.6	UG/KG	U	U	
REG	1,1-Dichloroethene	4.6	UG/KG	U	U	
REG	1,2-Dichloroethane	4.6	UG/KG	U	U	
REG	1,2-Dichloropropane	4.6	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	4.6	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	4.6	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	4.6	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	4.6	UG/KG	U	U	
REG	2-Butanone	11.5	UG/KG	U	U	
REG	2-Hexanone	11.5	UG/KG	U	U	
REG	4-Methyl-2-pentanone	11.5	UG/KG	U	U	
REG	Acetone	11.5	UG/KG	U	U	
REG	Benzene	4.6	UG/KG	U	U	
REG	Bromodichloromethane	4.6	UG/KG	U	U	
REG	Bromoform	4.6	UG/KG	U	U	
REG	Bromomethane	4.6	UG/KG	U	U	
REG	Carbon Disulfide	11.5	UG/KG	U	U	
REG	Carbon Tetrachloride	4.6	UG/KG	U	U	
REG	Chlorobenzene	4.6	UG/KG	U	U	
REG	Chloroethane	4.6	UG/KG	U	U	
REG	Chloroform	4.6	UG/KG	U	U	
REG	Chloromethane	4.6	UG/KG	U	U	
REG	Dibromochloromethane	4.6	UG/KG	U	U	
REG	Ethylbenzene	4.6	UG/KG	U	U	
REG	Methylene Chloride	7.4	UG/KG	B	U	F01,F07
REG	Styrene	4.6	UG/KG	U	U	
REG	Tetrachloroethene	4.6	UG/KG	U	U	
REG	Toluene	4.6	UG/KG	U	U	
REG	Trichloroethene	4.6	UG/KG	U	U	
REG	Vinyl Chloride	4.6	UG/KG	U	U	
REG	Xylenes, Total	4.6	UG/KG	U	UJ	C02

265B21 0.0 - 2.0 FT Field Sample Type: Field Duplicate Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	4.6	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	4.6	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	4.6	UG/KG	U	U	
REG	1,1-Dichloroethane	4.6	UG/KG	U	U	
REG	1,1-Dichloroethene	4.6	UG/KG	U	U	
REG	1,2-Dichloroethane	4.6	UG/KG	U	U	
REG	1,2-Dichloropropane	4.6	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	4.6	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	4.6	UG/KG	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S11

265B21 0.0 - 2.0 FT Field Sample Type: Field Duplicate Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,3-cis-Dichloropropene	4.6	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	4.6	UG/KG	U	U	
REG	2-Butanone	11.6	UG/KG	U	U	
REG	2-Hexanone	11.6	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	11.6	UG/KG	U	UJ	K01
REG	Acetone	11.6	UG/KG	U	U	
REG	Benzene	4.6	UG/KG	U	U	
REG	Bromodichloromethane	4.6	UG/KG	U	U	
REG	Bromoform	4.6	UG/KG	U	U	
REG	Bromomethane	4.6	UG/KG	U	U	
REG	Carbon Disulfide	11.6	UG/KG	U	U	
REG	Carbon Tetrachloride	4.6	UG/KG	U	U	
REG	Chlorobenzene	4.6	UG/KG	U	UJ	K01
REG	Chloroethane	4.6	UG/KG	U	U	
REG	Chloroform	4.6	UG/KG	U	U	
REG	Chloromethane	4.6	UG/KG	U	UJ	C05
REG	Dibromochloromethane	4.6	UG/KG	U	U	
REG	Ethylbenzene	4.6	UG/KG	U	UJ	K01
REG	Methylene Chloride	7.2	UG/KG	B	U	F01,F07
REG	Styrene	4.6	UG/KG	U	UJ	K01
REG	Tetrachloroethene	4.6	UG/KG	U	UJ	K01
REG	Toluene	4.6	UG/KG	U	UJ	K01
REG	Trichloroethene	4.6	UG/KG	U	U	
REG	Vinyl Chloride	4.6	UG/KG	U	U	
REG	Xylenes, Total	4.6	UG/KG	U	UJ	C02,K01

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S12

265C11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	4.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	4.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	4.4	UG/KG	U	U	
REG	1,1-Dichloroethane	4.4	UG/KG	U	U	
REG	1,1-Dichloroethene	4.4	UG/KG	U	U	
REG	1,2-Dichloroethane	4.4	UG/KG	U	U	
REG	1,2-Dichloropropane	4.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	4.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	4.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	4.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	4.4	UG/KG	U	U	
REG	2-Butanone	11.1	UG/KG	U	U	
REG	2-Hexanone	11.1	UG/KG	U	U	
REG	4-Methyl-2-pentanone	11.1	UG/KG	U	U	
REG	Acetone	63	UG/KG		=	
REG	Benzene	4.4	UG/KG	U	U	
REG	Bromodichloromethane	4.4	UG/KG	U	U	
REG	Bromoform	4.4	UG/KG	U	U	
REG	Bromomethane	4.4	UG/KG	U	U	
REG	Carbon Disulfide	11.1	UG/KG	U	U	
REG	Carbon Tetrachloride	4.4	UG/KG	U	U	
REG	Chlorobenzene	4.4	UG/KG	U	U	
REG	Chloroethane	4.4	UG/KG	U	U	
REG	Chloroform	4.4	UG/KG	U	U	
REG	Chloromethane	4.4	UG/KG	U	UJ	C05
REG	Dibromochloromethane	4.4	UG/KG	U	U	
REG	Ethylbenzene	2.7	UG/KG	J	J	
REG	Methylene Chloride	6.6	UG/KG	B	U	F01,F07
REG	Styrene	4.4	UG/KG	U	U	
REG	Tetrachloroethene	4.4	UG/KG	U	U	
REG	Toluene	2.8	UG/KG	J	J	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S12

265C11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Trichloroethene	4.4	UG/KG	U	U	
REG	Vinyl Chloride	4.4	UG/KG	U	U	
REG	Xylenes, Total	13.8	UG/KG		J	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S13

265D11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/09/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	4.6	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	4.6	UG/KG	U	U	
REG	1,1,2-Trichloroethane	4.6	UG/KG	U	U	
REG	1,1-Dichloroethane	4.6	UG/KG	U	U	
REG	1,1-Dichloroethene	4.6	UG/KG	U	U	
REG	1,2-Dichloroethane	4.6	UG/KG	U	U	
REG	1,2-Dichloropropane	4.6	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	4.6	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	4.6	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	4.6	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	4.6	UG/KG	U	U	
REG	2-Butanone	11.6	UG/KG	U	U	
REG	2-Hexanone	11.6	UG/KG	U	U	
REG	4-Methyl-2-pentanone	11.6	UG/KG	U	U	
REG	Acetone	17.9	UG/KG		=	
REG	Benzene	4.6	UG/KG	U	U	
REG	Bromodichloromethane	4.6	UG/KG	U	U	
REG	Bromoform	4.6	UG/KG	U	U	
REG	Bromomethane	4.6	UG/KG	U	U	
REG	Carbon Disulfide	11.6	UG/KG	U	U	
REG	Carbon Tetrachloride	4.6	UG/KG	U	U	
REG	Chlorobenzene	4.6	UG/KG	U	U	
REG	Chloroethane	4.6	UG/KG	U	U	
REG	Chloroform	4.6	UG/KG	U	U	
REG	Chloromethane	4.6	UG/KG	U	UJ	C05
REG	Dibromochloromethane	4.6	UG/KG	U	U	
REG	Ethylbenzene	4.6	UG/KG	U	U	
REG	Methylene Chloride	15	UG/KG	B	U	F01,F07
REG	Styrene	4.6	UG/KG	U	U	
REG	Tetrachloroethene	4.6	UG/KG	U	U	
REG	Toluene	22.4	UG/KG		=	
REG	Trichloroethene	4.6	UG/KG	U	U	
REG	Vinyl Chloride	4.6	UG/KG	U	U	
REG	Xylenes, Total	4.6	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S14

265E11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.3	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-Dichloroethane	2.3	UG/KG	U	U	
REG	1,2-Dichloropropane	2.3	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.3	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.3	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.3	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : S14

265E11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Butanone	5.8	UG/KG	U	U	
REG	2-Hexanone	5.8	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.8	UG/KG	U	U	
REG	Acetone	5.8	UG/KG	U	U	
REG	Benzene	2.3	UG/KG	U	U	
REG	Bromodichloromethane	2.3	UG/KG	U	U	
REG	Bromoform	2.3	UG/KG	U	U	
REG	Bromomethane	2.3	UG/KG	U	U	
REG	Carbon Disulfide	5.8	UG/KG	U	U	
REG	Carbon Tetrachloride	2.3	UG/KG	U	U	
REG	Chlorobenzene	2.3	UG/KG	U	U	
REG	Chloroethane	2.3	UG/KG	U	U	
REG	Chloroform	2.3	UG/KG	U	U	
REG	Chloromethane	2.3	UG/KG	U	U	
REG	Dibromochloromethane	2.3	UG/KG	U	U	
REG	Ethylbenzene	2.3	UG/KG	U	U	
REG	Methylene Chloride	4.1	UG/KG	B	U	F01,F07
REG	Styrene	2.3	UG/KG	U	U	
REG	Tetrachloroethene	2.3	UG/KG	U	U	
REG	Toluene	7.4	UG/KG		=	
REG	Trichloroethene	2.3	UG/KG	U	U	
REG	Vinyl Chloride	2.3	UG/KG	U	U	
REG	Xylenes, Total	2.3	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S15

J5F11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.3	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-Dichloroethane	2.3	UG/KG	U	U	
REG	1,2-Dichloropropane	2.3	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.3	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.3	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.3	UG/KG	U	U	
REG	2-Butanone	5.7	UG/KG	U	U	
REG	2-Hexanone	5.7	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.7	UG/KG	U	U	
REG	Acetone	5.7	UG/KG	U	U	
REG	Benzene	2.3	UG/KG	U	U	
REG	Bromodichloromethane	2.3	UG/KG	U	U	
REG	Bromoform	2.3	UG/KG	U	U	
REG	Bromomethane	2.3	UG/KG	U	U	
REG	Carbon Disulfide	5.7	UG/KG	U	U	
REG	Carbon Tetrachloride	2.3	UG/KG	U	U	
REG	Chlorobenzene	2.3	UG/KG	U	U	
REG	Chloroethane	2.3	UG/KG	U	U	
REG	Chloroform	2.3	UG/KG	U	U	
REG	Chloromethane	2.3	UG/KG	U	U	
REG	Dibromochloromethane	2.3	UG/KG	U	U	
REG	Ethylbenzene	2.3	UG/KG	U	U	
REG	Methylene Chloride	3.8	UG/KG	B	U	F01,F07
REG	Styrene	2.3	UG/KG	U	U	
REG	Tetrachloroethene	2.3	UG/KG	U	U	
REG	Toluene	8.1	UG/KG		=	
REG	Trichloroethene	2.3	UG/KG	U	U	
REG	Vinyl Chloride	2.3	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S15

265F11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Xylenes, Total	2.3	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S16

265G11 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	22.2	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	22.2	UG/KG	U	U	
REG	1,1,2-Trichloroethane	22.2	UG/KG	U	U	
REG	1,1-Dichloroethane	22.2	UG/KG	U	U	
REG	1,1-Dichloroethene	22.2	UG/KG	U	U	
REG	1,2-Dichloroethane	22.2	UG/KG	U	U	
REG	1,2-Dichloropropane	22.2	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	22.2	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	22.2	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	22.2	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	22.2	UG/KG	U	U	
REG	2-Butanone	55.6	UG/KG	U	U	
REG	2-Hexanone	55.6	UG/KG	U	U	
REG	4-Methyl-2-pentanone	55.6	UG/KG	U	U	
REG	Acetone	55.6	UG/KG	U	U	
REG	Benzene	92.5	UG/KG		=	
REG	Bromodichloromethane	22.2	UG/KG	U	U	
REG	Bromoform	22.2	UG/KG	U	U	
REG	Bromomethane	22.2	UG/KG	U	U	
REG	Carbon Disulfide	55.6	UG/KG	U	U	
REG	Carbon Tetrachloride	22.2	UG/KG	U	U	
REG	Chlorobenzene	22.2	UG/KG	U	U	
REG	Chloroethane	22.2	UG/KG	U	U	
REG	Chloroform	22.2	UG/KG	U	U	
REG	Chloromethane	22.2	UG/KG	U	U	
REG	Dibromochloromethane	22.2	UG/KG	U	U	
REG	Ethylbenzene	314	UG/KG		=	
REG	Methylene Chloride	22.2	UG/KG	U	U	
REG	Styrene	22.2	UG/KG	U	U	
REG	Tetrachloroethene	22.2	UG/KG	U	U	
REG	Toluene	36.6	UG/KG		=	
REG	Trichloroethene	22.2	UG/KG	U	U	
REG	Vinyl Chloride	22.2	UG/KG	U	U	
REG	Xylenes, Total	1320	UG/KG		J	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S17

265H11 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.2	UG/KG	U	UJ	K01
REG	1,1,2,2-Tetrachloroethane	2.2	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	2.2	UG/KG	U	UJ	K01
REG	1,1-Dichloroethane	2.2	UG/KG	U	UJ	K01
REG	1,1-Dichloroethene	2.2	UG/KG	U	UJ	K01
REG	1,2-Dichloroethane	2.2	UG/KG	U	UJ	K01
REG	1,2-Dichloropropane	2.2	UG/KG	U	UJ	K01
REG	1,2-cis-Dichloroethene	2.2	UG/KG	U	UJ	K01
REG	1,2-trans-Dichloroethene	2.2	UG/KG	U	UJ	K01
REG	1,3-cis-Dichloropropene	2.2	UG/KG	U	UJ	K01
REG	1,3-trans-Dichloropropene	2.2	UG/KG	U	UJ	K01
REG	2-Butanone	5.4	UG/KG	U	UJ	K01
REG	2-Hexanone	5.4	UG/KG	U	UJ	K01

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : S17

265H11 0.0 - 2.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	4-Methyl-2-pentanone	5.4	UG/KG	U	UJ	K01
REG	Acetone	5.4	UG/KG	U	UJ	K01
REG	Benzene	2.2	UG/KG	U	UJ	K01
REG	Bromodichloromethane	2.2	UG/KG	U	UJ	K01
REG	Bromoform	2.2	UG/KG	U	UJ	K01
REG	Bromomethane	2.2	UG/KG	U	UJ	K01
REG	Carbon Disulfide	5.4	UG/KG	U	UJ	K01
REG	Carbon Tetrachloride	2.2	UG/KG	U	UJ	K01
REG	Chlorobenzene	2.2	UG/KG	U	UJ	K01
REG	Chloroethane	2.2	UG/KG	U	UJ	K01
REG	Chloroform	2.2	UG/KG	U	UJ	K01
REG	Chloromethane	2.2	UG/KG	U	UJ	K01
REG	Dibromochloromethane	2.2	UG/KG	U	UJ	K01
REG	Ethylbenzene	2.2	UG/KG	U	UJ	K01
REG	Methylene Chloride	5.3	UG/KG	B	U	F01,F07,K01
REG	Styrene	2.2	UG/KG	U	UJ	K01
REG	Tetrachloroethene	2.2	UG/KG	U	UJ	K01
REG	Toluene	3.7	UG/KG		J	K01
REG	Trichloroethene	2.2	UG/KG	U	UJ	K01
REG	Vinyl Chloride	2.2	UG/KG	U	UJ	K01
REG	Xylenes, Total	2.2	UG/KG	U	UJ	C02,K01

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S18

265J11 2.0 - 4.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-Dichloroethane	2.4	UG/KG	U	U	
REG	1,2-Dichloropropane	2.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.4	UG/KG	U	U	
REG	2-Butanone	5.9	UG/KG	U	U	
REG	2-Hexanone	5.9	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.9	UG/KG	U	U	
REG	Acetone	77.3	UG/KG		=	
REG	Benzene	2.4	UG/KG	U	U	
REG	Bromodichloromethane	2.4	UG/KG	U	U	
REG	Bromoform	2.4	UG/KG	U	U	
REG	Bromomethane	2.4	UG/KG	U	U	
REG	Carbon Disulfide	5.9	UG/KG	U	UJ	C05
REG	Carbon Tetrachloride	2.4	UG/KG	U	U	
REG	Chlorobenzene	2.4	UG/KG	U	U	
REG	Chloroethane	2.4	UG/KG	U	U	
REG	Chloroform	2.4	UG/KG	U	U	
REG	Chloromethane	2.4	UG/KG	U	U	
REG	Dibromochloromethane	2.4	UG/KG	U	U	
REG	Ethylbenzene	2.4	UG/KG	U	U	
REG	Methylene Chloride	5.1	UG/KG	B	U	F01,F07
REG	Styrene	2.4	UG/KG	U	U	
REG	Tetrachloroethene	2.4	UG/KG	U	U	
REG	Toluene	2.4	UG/KG	U	U	
REG	Trichloroethene	2.4	UG/KG	U	U	
REG	Vinyl Chloride	2.4	UG/KG	U	U	
REG	Xylenes, Total	2.4	UG/KG	U	UJ	C02

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S19

265K11 5.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-Dichloroethane	2.4	UG/KG	U	U	
REG	1,2-Dichloropropane	2.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.4	UG/KG	U	U	
REG	2-Butanone	5.9	UG/KG	U	U	
REG	2-Hexanone	5.9	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.9	UG/KG	U	U	
REG	Acetone	5.9	UG/KG	U	U	
REG	Benzene	2.4	UG/KG	U	U	
REG	Bromodichloromethane	2.4	UG/KG	U	U	
REG	Bromoform	2.4	UG/KG	U	U	
REG	Bromomethane	2.4	UG/KG	U	U	
REG	Carbon Disulfide	5.9	UG/KG	U	U	
REG	Carbon Tetrachloride	2.4	UG/KG	U	U	
REG	Chlorobenzene	2.4	UG/KG	U	U	
REG	Chloroethane	2.4	UG/KG	U	U	
REG	Chloroform	2.4	UG/KG	U	U	
REG	Chloromethane	2.4	UG/KG	U	U	
REG	Dibromochloromethane	2.4	UG/KG	U	U	
REG	Ethylbenzene	2.4	UG/KG	U	U	
REG	Methylene Chloride	3.3	UG/KG	B	U	F01,F07
REG	Styrene	2.4	UG/KG	U	U	
REG	Tetrachloroethene	2.4	UG/KG	U	U	
REG	Toluene	2.4	UG/KG	U	U	
REG	Trichloroethene	2.4	UG/KG	U	U	
REG	Vinyl Chloride	2.4	UG/KG	U	U	
REG	Xylenes, Total	2.4	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S20

265M11 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.4	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethane	2.4	UG/KG	U	U	
REG	1,1-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-Dichloroethane	2.4	UG/KG	U	U	
REG	1,2-Dichloropropane	2.4	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.4	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.4	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.4	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.4	UG/KG	U	U	
REG	2-Butanone	6.1	UG/KG	U	U	
REG	2-Hexanone	6.1	UG/KG	U	U	
REG	4-Methyl-2-pentanone	6.1	UG/KG	U	U	
REG	Acetone	25.7	UG/KG		=	
REG	Benzene	2.4	UG/KG	U	U	
REG	Bromodichloromethane	2.4	UG/KG	U	U	
REG	Bromoform	2.4	UG/KG	U	U	
REG	Bromomethane	2.4	UG/KG	U	U	
REG	Carbon Disulfide	6.1	UG/KG	U	U	
REG	Carbon Tetrachloride	2.4	UG/KG	U	U	
REG	Chlorobenzene	2.4	UG/KG	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S20

265M11 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Chloroethane	2.4	UG/KG	U	U	
REG	Chloroform	2.4	UG/KG	U	U	
REG	Chloromethane	2.4	UG/KG	U	U	
REG	Dibromochloromethane	2.4	UG/KG	U	U	
REG	Ethylbenzene	2.4	UG/KG	U	U	
REG	Methylene Chloride	2.4	UG/KG	U	U	
REG	Styrene	2.4	UG/KG	U	U	
REG	Tetrachloroethene	2.4	UG/KG	U	U	
REG	Toluene	1.6	UG/KG	J	J	
REG	Trichloroethene	2.4	UG/KG	U	U	
REG	Vinyl Chloride	2.4	UG/KG	U	U	
REG	Xylenes, Total	2.4	UG/KG	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : S21

265N11 4.0 - 6.0 FT Field Sample Type: Grab Matrix: Soil Collected: 07/14/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.2	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.2	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	2.2	UG/KG	U	U	
REG	1,1-Dichloroethane	2.2	UG/KG	U	U	
REG	1,1-Dichloroethene	2.2	UG/KG	U	U	
REG	1,2-Dichloroethane	2.2	UG/KG	U	U	
REG	1,2-Dichloropropane	2.2	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.2	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.2	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.2	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.2	UG/KG	U	U	
REG	2-Butanone	5.6	UG/KG	U	U	
REG	2-Hexanone	5.6	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	5.6	UG/KG	U	UJ	K01
REG	Acetone	5.6	UG/KG	U	U	
REG	Benzene	2.2	UG/KG	U	U	
REG	Bromodichloromethane	2.2	UG/KG	U	U	
REG	Bromoform	2.2	UG/KG	U	U	
REG	Bromomethane	2.2	UG/KG	U	U	
REG	Carbon Disulfide	5.6	UG/KG	U	U	
REG	Carbon Tetrachloride	2.2	UG/KG	U	U	
REG	Chlorobenzene	2.2	UG/KG	U	UJ	K01
REG	Chloroethane	2.2	UG/KG	U	U	
REG	Chloroform	2.2	UG/KG	U	U	
REG	Chloromethane	2.2	UG/KG	U	U	
REG	Dibromochloromethane	2.2	UG/KG	U	U	
REG	Ethylbenzene	2.2	UG/KG	U	UJ	K01
REG	Methylene Chloride	3.4	UG/KG	B	U	F01,F07
REG	Styrene	2.2	UG/KG	U	UJ	K01
REG	Tetrachloroethene	2.2	UG/KG	U	UJ	K01
REG	Toluene	4.7	UG/KG		J	K01
REG	Trichloroethene	2.2	UG/KG	U	U	
REG	Vinyl Chloride	2.2	UG/KG	U	U	
REG	Xylenes, Total	2.2	UG/KG	U	UJ	C02,K01

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS1

262111 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.37	MG/KG	U	U	
REG	Barium	1.5	MG/KG	BE	=	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS1

262111 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Cadmium	0.12	MG/KG	U	U	
REG	Chromium	0.37	MG/KG	U	UJ	F10
REG	Lead	0.69	MG/KG	*	J	E02
REG	Mercury	0.02	MG/KG	U	U	
REG	Selenium	0.24	MG/KG	U	UJ	F10
REG	Silver	0.17	MG/KG	*	U	F06

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	420	UG/KG	U	U	
REG	Acenaphthene	420	UG/KG	U	U	
REG	Acenaphthylene	420	UG/KG	U	U	
REG	Anthracene	420	UG/KG	U	U	
REG	Benzo(a)anthracene	420	UG/KG	U	U	
REG	Benzo(a)pyrene	420	UG/KG	U	U	
REG	Benzo(b)fluoranthene	420	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	420	UG/KG	U	U	
REG	Benzo(k)fluoranthene	420	UG/KG	U	U	
REG	Chrysene	420	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	420	UG/KG	U	U	
REG	Fluoranthene	420	UG/KG	U	U	
REG	Fluorene	420	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	420	UG/KG	U	U	
REG	Naphthalene	420	UG/KG	U	U	
REG	Phenanthrene	420	UG/KG	U	U	
REG	Pyrene	420	UG/KG	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.5	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.5	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.5	UG/KG	U	U	
REG	1,1-Dichloroethane	2.5	UG/KG	U	U	
REG	1,1-Dichloroethene	2.5	UG/KG	U	U	
REG	1,2-Dichloroethane	2.5	UG/KG	U	U	
REG	1,2-Dichloropropane	2.5	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.5	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.5	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.5	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.5	UG/KG	U	U	
REG	2-Butanone	6.3	UG/KG	U	U	
REG	2-Hexanone	6.3	UG/KG	U	U	
REG	4-Methyl-2-pentanone	6.3	UG/KG	U	R	C01,C04
REG	Acetone	6.3	UG/KG	U	U	
REG	Benzene	2.5	UG/KG	U	U	
REG	Bromodichloromethane	2.5	UG/KG	U	U	
REG	Bromoform	2.5	UG/KG	U	U	
REG	Bromomethane	2.5	UG/KG	U	U	
REG	Carbon Disulfide	6.3	UG/KG	U	U	
REG	Carbon Tetrachloride	2.5	UG/KG	U	U	
REG	Chlorobenzene	2.5	UG/KG	U	U	
REG	Chloroethane	2.5	UG/KG	U	U	
REG	Chloroform	2.5	UG/KG	U	U	
REG	Chloromethane	2.5	UG/KG	U	U	
REG	Dibromochloromethane	2.5	UG/KG	U	U	
REG	Ethylbenzene	2.5	UG/KG	U	U	
REG	Methylene Chloride	6.3	UG/KG	BJ	U	F01,F06
REG	Styrene	2.5	UG/KG	U	U	
REG	Tetrachloroethene	2.5	UG/KG	U	U	
REG	Toluene	2.5	UG/KG	U	U	
REG	Trichloroethene	2.5	UG/KG	U	U	
REG	Vinyl Chloride	2.5	UG/KG	U	U	
REG	Xylenes, Total	2.5	UG/KG	U	U	

262121 0.0 - 0.0 FT Field Sample Type: Field Duplicate Matrix: Sediment Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.37	MG/KG	U	U	
REG	Barium	1.5	MG/KG	BE	=	
REG	Cadmium	0.12	MG/KG	U	U	
REG	Chromium	0.37	MG/KG	U	UJ	F10
REG	Lead	0.66	MG/KG	*	J	E02
REG	Mercury	0.02	MG/KG	U	U	
REG	Selenium	0.25	MG/KG	U	UJ	F10
REG	Silver	0.3	MG/KG	*	U	F07

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	419	UG/KG	U	U	
REG	Acenaphthene	419	UG/KG	U	U	
REG	Acenaphthylene	419	UG/KG	U	U	
REG	Anthracene	419	UG/KG	U	U	
REG	Benzo(a)anthracene	419	UG/KG	U	U	
REG	Benzo(a)pyrene	419	UG/KG	U	U	
REG	Benzo(b)fluoranthene	419	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	419	UG/KG	U	U	
REG	Benzo(k)fluoranthene	419	UG/KG	U	U	
REG	Chrysene	419	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	419	UG/KG	U	U	
REG	Fluoranthene	419	UG/KG	U	U	
REG	Fluorene	419	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	419	UG/KG	U	U	
REG	Naphthalene	419	UG/KG	U	U	
REG	Phenanthrene	419	UG/KG	U	U	
REG	Pyrene	419	UG/KG	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.5	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.5	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.5	UG/KG	U	U	
REG	1,1-Dichloroethane	2.5	UG/KG	U	U	
REG	1,1-Dichloroethene	2.5	UG/KG	U	U	
REG	1,2-Dichloroethane	2.5	UG/KG	U	U	
REG	1,2-Dichloropropane	2.5	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.5	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.5	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.5	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.5	UG/KG	U	U	
REG	2-Butanone	6.3	UG/KG	U	U	
REG	2-Hexanone	6.3	UG/KG	U	U	
REG	4-Methyl-2-pentanone	6.3	UG/KG	U	R	C01,C04
REG	Acetone	6.3	UG/KG	U	U	
REG	Benzene	2.5	UG/KG	U	U	
REG	Bromodichloromethane	2.5	UG/KG	U	U	
REG	Bromoform	2.5	UG/KG	U	U	
REG	Bromomethane	2.5	UG/KG	U	U	
REG	Carbon Disulfide	6.3	UG/KG	U	U	
REG	Carbon Tetrachloride	2.5	UG/KG	U	U	
REG	Chlorobenzene	2.5	UG/KG	U	U	
REG	Chloroethane	2.5	UG/KG	U	U	
REG	Chloroform	2.5	UG/KG	U	U	
REG	Chloromethane	2.5	UG/KG	U	U	
REG	Dibromochloromethane	2.5	UG/KG	U	U	
REG	Ethylbenzene	2.5	UG/KG	U	U	
REG	Methylene Chloride	6.3	UG/KG	BJ	U	F01,F06
REG	Styrene	2.5	UG/KG	U	U	
REG	Tetrachloroethene	2.5	UG/KG	U	U	
REG	Toluene	2.5	UG/KG	U	U	
REG	Trichloroethene	2.5	UG/KG	U	U	
REG	Vinyl Chloride	2.5	UG/KG	U	U	
REG	Xylenes, Total	2.5	UG/KG	U	U	

263111 Field Sample Type: Grab Matrix: Surface Water Collected: 08/13/97

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.94	UG/L	B	U	F06
REG	Barium	22.4	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	0.6	UG/L	U	U	
REG	Lead	2.6	UG/L		J	F10
REG	Mercury	0.09	UG/L		=	
REG	Selenium	0.4	UG/L	U	U	
REG	Silver	0.15	UG/L	B	J	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.22	UG/L	U	U	
REG	Acenaphthene	0.22	UG/L	U	U	
REG	Acenaphthylene	0.22	UG/L	U	U	
REG	Anthracene	0.22	UG/L	U	U	
REG	Benzo(a)anthracene	0.22	UG/L	U	U	
REG	Benzo(a)pyrene	0.22	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.22	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.22	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.22	UG/L	U	U	
REG	Chrysene	0.22	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.22	UG/L	U	U	
REG	Fluoranthene	0.22	UG/L	U	U	
REG	Fluorene	0.22	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.22	UG/L	U	U	
REG	Naphthalene	0.22	UG/L	U	U	
REG	Phenanthrene	0.22	UG/L	U	U	
REG	Pyrene	0.22	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2.1	UG/L		U	F04,F07
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Table G-1

Phase II RFI
Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS2

262211 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.37	MG/KG	U	U	
REG	Barium	15.3	MG/KG	BE	=	
REG	Cadmium	0.12	MG/KG	U	U	
REG	Chromium	0.37	MG/KG	U	UJ	F10
REG	Lead	2.6	MG/KG	*	J	E02
REG	Mercury	0.02	MG/KG	U	U	
REG	Selenium	0.25	MG/KG	U	UJ	F10
REG	Silver	0.8	MG/KG	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	433	UG/KG	U	U	
REG	Acenaphthene	433	UG/KG	U	U	
REG	Acenaphthylene	433	UG/KG	U	U	
REG	Anthracene	433	UG/KG	U	U	
REG	Benzo(a)anthracene	433	UG/KG	U	U	
REG	Benzo(a)pyrene	433	UG/KG	U	U	
REG	Benzo(b)fluoranthene	433	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	433	UG/KG	U	U	
REG	Benzo(k)fluoranthene	433	UG/KG	U	U	
REG	Chrysene	433	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	433	UG/KG	U	U	
REG	Fluoranthene	433	UG/KG	U	U	
REG	Fluorene	433	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	433	UG/KG	U	U	
REG	Naphthalene	433	UG/KG	U	U	
REG	Phenanthrene	433	UG/KG	U	U	
REG	Pyrene	433	UG/KG	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.6	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.6	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.6	UG/KG	U	U	
REG	1,1-Dichloroethane	2.6	UG/KG	U	U	
REG	1,1-Dichloroethene	2.6	UG/KG	U	U	
REG	1,2-Dichloroethane	2.6	UG/KG	U	U	
REG	1,2-Dichloropropane	2.6	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.6	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.6	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.6	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.6	UG/KG	U	U	
REG	2-Butanone	6.5	UG/KG	U	U	
REG	2-Hexanone	6.5	UG/KG	U	U	
REG	4-Methyl-2-pentanone	6.5	UG/KG	U	R	C01,C04
REG	Acetone	6.5	UG/KG	U	U	
REG	Benzene	2.6	UG/KG	U	U	
REG	Bromodichloromethane	2.6	UG/KG	U	U	
REG	Bromoform	2.6	UG/KG	U	U	
REG	Bromomethane	2.6	UG/KG	U	U	
REG	Carbon Disulfide	6.5	UG/KG	U	U	
REG	Carbon Tetrachloride	2.6	UG/KG	U	U	
REG	Chlorobenzene	2.6	UG/KG	U	U	
REG	Chloroethane	2.6	UG/KG	U	U	
REG	Chloroform	2.6	UG/KG	U	U	
REG	Chloromethane	2.6	UG/KG	U	U	
REG	Dibromochloromethane	2.6	UG/KG	U	U	
REG	Ethylbenzene	2.6	UG/KG	U	U	
REG	Methylene Chloride	6.5	UG/KG	BJ	U	F01,F06
REG	Styrene	2.6	UG/KG	U	U	
REG	Tetrachloroethene	2.6	UG/KG	U	U	
REG	Toluene	2.6	UG/KG	U	U	
REG	Trichloroethene	2.6	UG/KG	U	U	
REG	Vinyl Chloride	2.6	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS2

262211 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Xylenes, Total	2.6	UG/KG	U	U	

262241 Field Sample Type: Equipment Rinsate Matrix: Surface Water Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.6	UG/L	U	U	
REG	Barium	3.5	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	0.6	UG/L	U	U	
REG	Lead	1	UG/L	U	UJ	F10
REG	Mercury	0.04	UG/L	U	=	
REG	Selenium	0.4	UG/L	U	U	
REG	Silver	0.07	UG/L	U	U	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.22	UG/L	U	U	
REG	Acenaphthene	0.22	UG/L	U	U	
REG	Acenaphthylene	0.22	UG/L	U	U	
REG	Anthracene	0.22	UG/L	U	U	
REG	Benzo(a)anthracene	0.22	UG/L	U	U	
REG	Benzo(a)pyrene	0.22	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.22	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.22	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.22	UG/L	U	U	
REG	Chrysene	0.22	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.22	UG/L	U	U	
REG	Fluoranthene	0.22	UG/L	U	U	
REG	Fluorene	0.22	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.22	UG/L	U	U	
REG	Naphthalene	0.22	UG/L	U	U	
REG	Phenanthrene	0.22	UG/L	U	U	
REG	Pyrene	0.22	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS2

262241 Field Sample Type: Equipment Rinsate Matrix: Surface Water Collected: 08/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Methylene Chloride	2	UG/L	J	U	F04,F06
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

263211 Field Sample Type: Grab Matrix: Surface Water Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	1.7	UG/L	B	U	F06
REG	Barium	26.4	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	0.6	UG/L	U	U	
REG	Lead	1	UG/L	B	UJ	F10
REG	Mercury	0.4	UG/L		=	
REG	Selenium	0.4	UG/L	U	U	
REG	Silver	0.24	UG/L		=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.22	UG/L	U	U	
REG	Acenaphthene	0.22	UG/L	U	U	
REG	Acenaphthylene	0.22	UG/L	U	U	
REG	Anthracene	0.22	UG/L	U	U	
REG	Benzo(a)anthracene	0.22	UG/L	U	U	
REG	Benzo(a)pyrene	0.22	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.22	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.22	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.22	UG/L	U	U	
REG	Chrysene	0.22	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.22	UG/L	U	U	
REG	Fluoranthene	0.22	UG/L	U	U	
REG	Fluorene	0.22	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.22	UG/L	U	U	
REG	Naphthalene	0.22	UG/L	U	U	
REG	Phenanthrene	0.22	UG/L	U	U	
REG	Pyrene	0.22	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS2

263211 Field Sample Type: Grab Matrix: Surface Water Collected: 08/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	J	U	F04,F06
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS3

262311 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.35	MG/KG	U	U	
REG	Barium	29.2	MG/KG	BE	=	
REG	Cadmium	0.12	MG/KG	U	U	
REG	Chromium	4.4	MG/KG	B	=	
REG	Lead	5.9	MG/KG	*	J	E02
REG	Mercury	0.07	MG/KG		=	
REG	Selenium	0.23	MG/KG	U	UJ	F10
REG	Silver	2.6	MG/KG	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	386	UG/KG	U	U	
REG	Acenaphthene	386	UG/KG	U	U	
REG	Acenaphthylene	386	UG/KG	U	U	
REG	Anthracene	386	UG/KG	U	U	
REG	Benzo(a)anthracene	386	UG/KG	U	U	
REG	Benzo(a)pyrene	386	UG/KG	U	U	
REG	Benzo(b)fluoranthene	386	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	386	UG/KG	U	U	
REG	Benzo(k)fluoranthene	386	UG/KG	U	U	
REG	Chrysene	386	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	386	UG/KG	U	U	
REG	Fluoranthene	386	UG/KG	U	U	
REG	Fluorene	386	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	386	UG/KG	U	U	
REG	Naphthalene	386	UG/KG	U	U	
REG	Phenanthrene	386	UG/KG	U	U	
REG	Pyrene	386	UG/KG	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.3	UG/KG	U	U	
REG	1,1,2-Trichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethane	2.3	UG/KG	U	U	
REG	1,1-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-Dichloroethane	2.3	UG/KG	U	U	
REG	1,2-Dichloropropane	2.3	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.3	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	2.3	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	2.3	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.3	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS3

262311 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Butanone	5.8	UG/KG	U	U	
REG	2-Hexanone	5.8	UG/KG	U	U	
REG	4-Methyl-2-pentanone	5.8	UG/KG	U	R	C01,C04
REG	Acetone	5.8	UG/KG	U	U	
REG	Benzene	2.3	UG/KG	U	U	
REG	Bromodichloromethane	2.3	UG/KG	U	U	
REG	Bromoform	2.3	UG/KG	U	U	
REG	Bromomethane	2.3	UG/KG	U	U	
REG	Carbon Disulfide	5.8	UG/KG	U	U	
REG	Carbon Tetrachloride	2.3	UG/KG	U	U	
REG	Chlorobenzene	2.3	UG/KG	U	U	
REG	Chloroethane	2.3	UG/KG	U	U	
REG	Chloroform	2.3	UG/KG	U	U	
REG	Chloromethane	2.3	UG/KG	U	U	
REG	Dibromochloromethane	2.3	UG/KG	U	U	
REG	Ethylbenzene	2.3	UG/KG	U	U	
REG	Methylene Chloride	2.6	UG/KG	J	J	
REG	Styrene	2.3	UG/KG	U	U	
REG	Tetrachloroethene	2.3	UG/KG	U	U	
REG	Toluene	2.3	UG/KG	U	U	
REG	Trichloroethene	2.3	UG/KG	U	U	
REG	Vinyl Chloride	2.3	UG/KG	U	U	
REG	Xylenes, Total	1.2	UG/KG	J	J	

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS4

32411 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.44	MG/KG	U	U	
REG	Barium	17	MG/KG	BE	=	
REG	Cadmium	0.15	MG/KG	U	U	
REG	Chromium	4	MG/KG	B	=	
REG	Lead	6.6	MG/KG	*	J	E02
REG	Mercury	0.03	MG/KG	U	U	
REG	Selenium	0.3	MG/KG	U	UJ	F10
REG	Silver	1	MG/KG	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
DIL	2-Chloronaphthalene	5030	UG/KG	U	U	
DIL	Acenaphthene	5030	UG/KG	U	U	
DIL	Acenaphthylene	5030	UG/KG	U	U	
DIL	Anthracene	5030	UG/KG	U	U	
DIL	Benzo(a)anthracene	5030	UG/KG	U	U	
DIL	Benzo(a)pyrene	5030	UG/KG	U	U	
DIL	Benzo(b)fluoranthene	5030	UG/KG	U	U	
DIL	Benzo(g,h,i)perylene	5030	UG/KG	U	U	
DIL	Benzo(k)fluoranthene	5030	UG/KG	U	U	
DIL	Chrysene	5030	UG/KG	U	U	
DIL	Dibenzo(a,h)anthracene	5030	UG/KG	U	U	
DIL	Fluoranthene	5030	UG/KG	U	U	
DIL	Fluorene	5030	UG/KG	U	U	
DIL	Indeno(1,2,3-cd)pyrene	5030	UG/KG	U	U	
DIL	Naphthalene	5030	UG/KG	U	U	
DIL	Phenanthrene	5030	UG/KG	U	U	
DIL	Pyrene	5030	UG/KG	U	U	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	503	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS4

262411 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Acenaphthene	503	UG/KG	U	U	
REG	Acenaphthylene	503	UG/KG	U	U	
REG	Anthracene	503	UG/KG	U	R	K02
REG	Benzo(a)anthracene	503	UG/KG	U	U	
REG	Benzo(a)pyrene	503	UG/KG	U	U	
REG	Benzo(b)fluoranthene	503	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	503	UG/KG	U	U	
REG	Benzo(k)fluoranthene	503	UG/KG	U	U	
REG	Chrysene	503	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	503	UG/KG	U	U	
REG	Fluoranthene	503	UG/KG	U	R	K02
REG	Fluorene	503	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	503	UG/KG	U	U	
REG	Naphthalene	503	UG/KG	U	U	
REG	Phenanthrene	503	UG/KG	U	R	K02
REG	Pyrene	503	UG/KG	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	154	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	154	UG/KG	U	U	
REG	1,1,2-Trichloroethane	154	UG/KG	U	U	
REG	1,1-Dichloroethane	154	UG/KG	U	U	
REG	1,1-Dichloroethene	154	UG/KG	U	U	
REG	1,2-Dichloroethane	154	UG/KG	U	U	
REG	1,2-Dichloropropane	154	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	154	UG/KG	U	U	
REG	1,2-trans-Dichloroethene	154	UG/KG	U	U	
REG	1,3-cis-Dichloropropene	154	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	154	UG/KG	U	U	
REG	2-Butanone	385	UG/KG	U	U	
REG	2-Hexanone	385	UG/KG	U	U	
REG	4-Methyl-2-pentanone	385	UG/KG	U	R	C01,C04
REG	Acetone	385	UG/KG	U	U	
REG	Benzene	154	UG/KG	U	U	
REG	Bromodichloromethane	154	UG/KG	U	U	
REG	Bromoform	154	UG/KG	U	U	
REG	Bromomethane	154	UG/KG	U	U	
REG	Carbon Disulfide	385	UG/KG	U	U	
REG	Carbon Tetrachloride	154	UG/KG	U	U	
REG	Chlorobenzene	154	UG/KG	U	U	
REG	Chloroethane	154	UG/KG	U	U	
REG	Chloroform	154	UG/KG	U	U	
REG	Chloromethane	154	UG/KG	U	U	
REG	Dibromochloromethane	154	UG/KG	U	U	
REG	Ethylbenzene	154	UG/KG	U	U	
REG	Methylene Chloride	385	UG/KG	BJ	U	F01,F06
REG	Styrene	154	UG/KG	U	U	
REG	Tetrachloroethene	154	UG/KG	U	U	
REG	Toluene	158	UG/KG		=	
REG	Trichloroethene	154	UG/KG	U	U	
REG	Vinyl Chloride	154	UG/KG	U	U	
REG	Xylenes, Total	154	UG/KG	U	U	

263411 Field Sample Type: Grab Matrix: Surface Water Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.62	UG/L	B	U	F06
REG	Barium	7.3	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	0.6	UG/L	U	U	
REG	Lead	0.46	UG/L	B	J	F10
REG	Mercury	0.18	UG/L		=	
REG	Selenium	0.4	UG/L	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS4

263411 | Field Sample Type: Grab | Matrix: Surface Water | Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Silver	1.3	UG/L		=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.2	UG/L	U	U	
REG	Acenaphthene	0.2	UG/L	U	U	
REG	Acenaphthylene	0.2	UG/L	U	U	
REG	Anthracene	0.2	UG/L	U	U	
REG	Benzo(a)anthracene	0.2	UG/L	U	U	
REG	Benzo(a)pyrene	0.2	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.2	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.2	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.2	UG/L	U	U	
REG	Chrysene	0.2	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.2	UG/L	U	U	
REG	Fluoranthene	0.2	UG/L	U	U	
REG	Fluorene	0.2	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.2	UG/L	U	U	
REG	Naphthalene	0.2	UG/L	U	U	
REG	Phenanthrene	0.2	UG/L	U	U	
REG	Pyrene	0.2	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	J	U	F04,F06
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

263421 | Field Sample Type: Field Duplicate | Matrix: Surface Water | Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	5	UG/L	U	UJ	F10

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS4

263421 Field Sample Type: Field Duplicate Matrix: Surface Water Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Barium	7.6	UG/L	B	J	
REG	Cadmium	0.2	UG/L	U	U	
REG	Chromium	10	UG/L	U	UJ	F10
REG	Lead	.46	UG/L	B	J	F10
REG	Mercury	0.05	UG/L		=	
REG	Selenium	1.1	UG/L	B	J	
REG	Silver	0.14	UG/L	B	J	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.2	UG/L	U	U	
REG	Acenaphthene	0.2	UG/L	U	U	
REG	Acenaphthylene	0.2	UG/L	U	U	
REG	Anthracene	0.2	UG/L	U	U	
REG	Benzo(a)anthracene	0.2	UG/L	U	U	
REG	Benzo(a)pyrene	0.2	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.2	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.2	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.2	UG/L	U	U	
REG	Chrysene	0.2	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.2	UG/L	U	U	
REG	Fluoranthene	0.2	UG/L	U	U	
REG	Fluorene	0.2	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.2	UG/L	U	U	
REG	Naphthalene	0.2	UG/L	U	U	
REG	Phenanthrene	0.2	UG/L	U	U	
REG	Pyrene	0.2	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	J	U	F04, F06
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS5

262511 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Sediment Collected: 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	0.38	MG/KG	U	U	
REG	Barium	2.9	MG/KG	BE	=	
REG	Cadmium	0.13	MG/KG	U	U	
REG	Chromium	0.38	MG/KG	U	UJ	F10
REG	Lead	1.2	MG/KG	*	J	F10,E02
REG	Mercury	0.03	MG/KG	U	U	
REG	Selenium	0.25	MG/KG	U	UJ	F10
REG	Silver	0.91	MG/KG	*	J	E02

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	444	UG/KG	U	U	
REG	Acenaphthene	444	UG/KG	U	U	
REG	Acenaphthylene	444	UG/KG	U	U	
REG	Anthracene	444	UG/KG	U	U	
REG	Benzo(a)anthracene	444	UG/KG	U	U	
REG	Benzo(a)pyrene	444	UG/KG	U	U	
REG	Benzo(b)fluoranthene	444	UG/KG	U	U	
REG	Benzo(g,h,i)perylene	444	UG/KG	U	U	
REG	Benzo(k)fluoranthene	444	UG/KG	U	U	
REG	Chrysene	444	UG/KG	U	U	
REG	Dibenzo(a,h)anthracene	444	UG/KG	U	U	
REG	Fluoranthene	444	UG/KG	U	U	
REG	Fluorene	444	UG/KG	U	U	
REG	Indeno(1,2,3-cd)pyrene	444	UG/KG	U	U	
REG	Naphthalene	444	UG/KG	U	U	
REG	Phenanthrene	444	UG/KG	U	U	
REG	Pyrene	444	UG/KG	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2.7	UG/KG	U	U	
REG	1,1,2,2-Tetrachloroethane	2.7	UG/KG	U	UJ	K01
REG	1,1,2-Trichloroethane	2.7	UG/KG	U	U	
REG	1,1-Dichloroethane	2.7	UG/KG	U	UJ	K01
REG	1,1-Dichloroethene	2.7	UG/KG	U	UJ	K01
REG	1,2-Dichloroethane	2.7	UG/KG	U	UJ	K01
REG	1,2-Dichloropropane	2.7	UG/KG	U	U	
REG	1,2-cis-Dichloroethene	2.7	UG/KG	U	UJ	K01
REG	1,2-trans-Dichloroethene	2.7	UG/KG	U	UJ	K01
REG	1,3-cis-Dichloropropene	2.7	UG/KG	U	U	
REG	1,3-trans-Dichloropropene	2.7	UG/KG	U	U	
REG	2-Butanone	6.8	UG/KG	U	UJ	K01
REG	2-Hexanone	6.8	UG/KG	U	UJ	K01
REG	4-Methyl-2-pentanone	6.8	UG/KG	U	R	C01,C04,K01
REG	Acetone	6.8	UG/KG	U	UJ	K01
REG	Benzene	2.7	UG/KG	U	U	
REG	Bromodichloromethane	2.7	UG/KG	U	U	
REG	Bromoform	2.7	UG/KG	U	U	
REG	Bromomethane	2.7	UG/KG	U	UJ	K01
REG	Carbon Disulfide	6.8	UG/KG	U	UJ	K01
REG	Carbon Tetrachloride	2.7	UG/KG	U	U	
REG	Chlorobenzene	2.7	UG/KG	U	UJ	K01
REG	Chloroethane	2.7	UG/KG	U	UJ	K01
REG	Chloroform	2.7	UG/KG	U	UJ	K01
REG	Chloromethane	2.7	UG/KG	U	UJ	K01
REG	Dibromochloromethane	2.7	UG/KG	U	U	
REG	Ethylbenzene	2.7	UG/KG	U	UJ	K01
REG	Methylene Chloride	6.8	UG/KG	BJ	U	F01,F06,K01
REG	Styrene	2.7	UG/KG	U	UJ	K01
REG	Tetrachloroethene	2.7	UG/KG	U	UJ	K01
REG	Toluene	2.7	UG/KG	U	UJ	K01
REG	Trichloroethene	2.7	UG/KG	U	U	

Table G-1

Phase II RFI

Former 724th Tanker Purging Station, Ft. Stewart, Georgia

Location: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS5

262511 0.0 - 0.0 FT **Field Sample Type:** Grab **Matrix:** Sediment **Collected:** 08/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Vinyl Chloride	2.7	UG/KG	U	UJ	K01
REG	Xylenes, Total	2.7	UG/KG	U	UJ	K01

263511 **Field Sample Type:** Grab **Matrix:** Surface Water **Collected:** 08/11/97

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	1.8	UG/L	B	J	F10
REG	Barium	26.3	UG/L	B	J	
REG	Cadmium	1.7	UG/L		=	
REG	Chromium	0.83	UG/L	B	U	F06
REG	Lead	10.8	UG/L		J	F10
REG	Mercury	0.08	UG/L		=	
REG	Selenium	0.4	UG/L	U	U	
REG	Silver	0.29	UG/L		=	

Sample Type	Semi-Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	0.2	UG/L	U	U	
REG	Acenaphthene	0.2	UG/L	U	U	
REG	Acenaphthylene	0.2	UG/L	U	U	
REG	Anthracene	0.2	UG/L	U	U	
REG	Benzo(a)anthracene	0.2	UG/L	U	U	
REG	Benzo(a)pyrene	0.2	UG/L	U	U	
REG	Benzo(b)fluoranthene	0.2	UG/L	U	U	
REG	Benzo(g,h,i)perylene	0.2	UG/L	U	U	
REG	Benzo(k)fluoranthene	0.2	UG/L	U	U	
REG	Chrysene	0.2	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	0.2	UG/L	U	U	
REG	Fluoranthene	0.2	UG/L	U	U	
REG	Fluorene	0.2	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	0.2	UG/L	U	U	
REG	Naphthalene	0.2	UG/L	U	U	
REG	Phenanthrene	0.2	UG/L	U	U	
REG	Pyrene	0.2	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	2	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	2	UG/L	U	U	
REG	1,1,2-Trichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethane	2	UG/L	U	U	
REG	1,1-Dichloroethene	2	UG/L	U	U	
REG	1,2-Dichloroethane	2	UG/L	U	U	
REG	1,2-Dichloropropane	2	UG/L	U	U	
REG	1,2-cis-Dichloroethene	2	UG/L	U	U	
REG	1,2-trans-Dichloroethene	2	UG/L	U	U	
REG	1,3-cis-Dichloropropene	2	UG/L	U	U	
REG	1,3-trans-Dichloropropene	2	UG/L	U	U	
REG	2-Butanone	5	UG/L	U	UJ	C05
REG	2-Hexanone	5	UG/L	U	U	
REG	4-Methyl-2-pentanone	5	UG/L	U	U	
REG	Acetone	5	UG/L	U	R	C04,C05
REG	Benzene	2	UG/L	U	U	
REG	Bromodichloromethane	2	UG/L	U	U	
REG	Bromoform	2	UG/L	U	U	
REG	Bromomethane	2	UG/L	U	U	
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	2	UG/L	U	U	
REG	Chlorobenzene	2	UG/L	U	U	
REG	Chloroethane	2	UG/L	U	U	
REG	Chloroform	2	UG/L	U	U	
REG	Chloromethane	2	UG/L	U	U	
REG	Dibromochloromethane	2	UG/L	U	U	

.ocation: Former 724th Tanker Purge Stations (SWMU 26)
Station : SWS5

263511 Field Sample Type: Grab Matrix: Surface Water Collected: 08/11/97

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Ethylbenzene	2	UG/L	U	U	
REG	Methylene Chloride	2	UG/L	U	U	
REG	Styrene	2	UG/L	U	U	
REG	Tetrachloroethene	2	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	2	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	2	UG/L	U	UJ	C02

APPENDIX H

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANKER PURGING STATION (SWMU 26)
FORT STEWART, GEORGIA

SUPPLEMENTAL PHASE II GROUNDWATER CHARACTERIZATION

1.0 INTRODUCTION

This letter report summarizes the results of the supplemental characterization of groundwater at the Former 724th Tanker Purging Station (TPS) at Fort Stewart, Georgia. This characterization was conducted in accordance with the recommendations of the *Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report for the Former 724th Tanker Purging Station [Solid Waste Management Unit (SWMU) 26]* (SAIC 1998) and as agreed to by Georgia Environmental Protection Divison in their review comments on that report. This report has been prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE), Savannah District, under Contract DACA21-95-D-0022, Delivery Order No. 0007. The supplemental sampling was conducted in accordance with USACE guidance EM200-1-3 and the procedures described in the original Phase II RFI Work Plan (SAIC 1997).

The purpose of this supplemental characterization is to verify concentrations of metals in groundwater and to provide further evidence that natural attenuation of volatile organic compounds (VOCs) is occurring. The scope of work included sampling of the four existing on-site monitoring wells (MW-1 through MW-4), and analyzing the samples for VOCs, polyaromatic hydrocarbons (PAHs), RCRA metals, and water quality parameters. The four wells were previously installed during the Phase II RFI for monitoring the following aquifer units:

MW-1: Shallow water table, upgradient;
MW-2: Shallow water table, center of site;
MW-3: Shallow water table, downgradient; and
MW-4: Deeper portion of the surficial aquifer (35 to 45 feet below land surface), center of site.

2.0 SUMMARY OF INVESTIGATION ACTIVITIES

2.1 SAMPLING METHODOLOGY

The supplemental groundwater sampling at the Former 724th TPS was conducted from September 19 through 21, 1998. The sampling procedures used were the same as those used during the Phase II RFI sampling in August 1997. Prior to installing the sampling pump, the static water level was recorded. Monitoring wells were sampled using low-flow micropurging techniques to minimize the volume of purge water, minimize disturbance of the aquifer, and thereby minimize turbidity in the sample. Field parameters [pH, conductivity, temperature, dissolved oxygen (DO), oxidation-reduction potential (Eh), and turbidity] were monitored during micropurging. The purge rate was adjusted, as necessary, to avoid purging any well to dryness and to equal the recharge of the aquifer. Purging was considered complete when the field parameters stabilized within plus or minus 10 percent after a minimum of three readings at 5-minute intervals. Purging times varied, requiring from 1.3 to 4.0 hours to purge in order to attain a turbidity less than 10 nephelometric turbidity units (NTUs). The exception to this procedure occurred at MW-4, where purging was stopped after 9.8 hours, having removed 68.4 liters of water, and when turbidity was at 22.3 NTUs. Results of field parameter measurements made at the end of purging in each well are listed in Table H.1.

Table H.1. Field Parameter Measurements During Supplemental Groundwater Sampling Former 724th Tanker Purging Station, Fort Stewart

Parameter	Units	Field Reading at Monitoring Well			
		MW-1	MW-2	MW-3	MW-4
Purging time	hours	2.6	4.0	1.3	9.8
Volume purged	liters	40.3	18.5	20.0	68.4
pH	su	6.24	6.26	6.77	8.64
Conductivity	μmho/cm	140	560	274	648
Temperature	°C	25.49	26.52	23.35	23.65
Turbidity	NTU	9.0	7.0	8.4	22.3
DO	mg/L	na	11.69	na	18.13
Eh	mV	-18.3	-15.4	-99.7	-19.7
Ferric iron	mg/L	6.6	10	6.5	1.8
Elevation TOC	feet msl	67.08	70.86	67.51	71.23
Depth to water[a]	feet	5.75	12.47[b]	7.19	12.18
Elevation water[a]	feet msl	61.33	58.39[b]	60.32	59.05

DO - dissolved oxygen
msl - mean sea level (National Geodetic Vertical Datum of 1929).
na - not measured during sampling
NTU - nephelometric turbidity unit
TOC - top of casing
[a] - depth to water measured on September 17, 1998, during pump installation.
[b] - elevation does not include approximately 1.9 feet of floating free product.

Sampling of each monitoring well began immediately after completion of purging, using the same micropurging pump. Groundwater samples were transferred directly into laboratory sample containers, with the portion designated for volatile organic analysis taken first. Ferric iron was measured in the field at the time of sampling. Groundwater samples were then sent off site for laboratory analysis for VOCs, PAHs, RCRA metals, and water quality parameters (sulfate and alkalinity).

2.2 DATA QUALITY ASSESSMENT

Activities to achieve the desired data quality were as described in the Phase II RFI Report and the Phase II RFI Work Plan. One field quality control (QC) duplicate sample was taken from MW-1; a total of five samples were, therefore, collected and analyzed. The project produced acceptable results for over 98 percent of the data analyzed. Volatile organic compound data for 2-butanone were rejected due to poor calibration response factors and percent differences. Reporting levels were elevated for sample 264212 on both PAH and VOC analyses due to elevated contaminant concentrations in the sample. Methane, ethane, and ethene gaseous organic analyses were lost due to laboratory handling errors; additional samples will be collected in December 1998 for methane, ethane, and ethene analysis. The overall quality of the laboratory data meets the established project objectives, and the data are acceptable for use.

3.0 SUMMARY OF INVESTIGATION RESULTS

3.1 POTENTIOMETRIC MAP

Water table measurements were taken in each of the four wells on September 17, 1998, prior to sampling. Table H.1 lists the measured depth below top of casing and the corresponding water elevation. Because of the presence of nearly 2 feet of floating free product in well MW-2, an accurate current potentiometric map cannot be drawn. Water table elevations in September 1998 were generally similar to those measured in August 1997. Groundwater flow is, therefore, expected to be to the west toward Mill Creek. The vertical hydraulic gradient, as measured between MW-4 and the shallow monitoring wells, is expected to be upward, with a hydraulic head difference between one and three feet.

3.2 RESULTS OF GROUNDWATER ANALYSES

Analytical results for groundwater samples from the four monitoring wells are summarized in Table H.2 for those parameters detected in at least one sample. Figure H.1 shows the distribution of the detected constituents at the Former 724th TPS during the September 1998 sampling; only those inorganics exceeding background concentrations are shown. All organic compounds are considered site-related contaninants, when detected.

Table H.2. Summary of Analytical Results in Groundwater (September 1998)
Former 724th Tanker Purging Station, Fort Stewart

Parameter	Reference Background Criteria	MCL	Monitoring Well ID				
			MW-1	**MW-1 (dup)**	**MW-2**	**MW-3**	**MW-4**
Sample ID			264112	264122	264212	264312	264412
Date			9/21/98	9/21/98	9/20/98	9/21/98	9/19/98
Volatile Organic Compounds (μg/L)							
1,1-Dichloroethane	0.0	5				**1.4**	
2-Hexanone	0.0					**6.7**	
Benzene	0.0	5			***1350***		
Chloroform	0.0	100			**18.7**		
Ethylbenzene	0.0	700			**477**		
Toluene	0.0	1,000			***1540***		
Xylenes, total	0.0	10,000			**2350**		
Polyaromatic Hydrocarbons (μg/L)							
Naphthalene	0.0				**242**		
RCRA Metals (μg/L)							
Arsenic	3.02	50	**16.4**	**13.8**	**4.3**		
Barium	71.72	2,000	51.1	52.1	16.3	42.9	**87.9**
Chromium	3.56	100			**6.1**		
Mercury	0.14	2			**0.15**		**0.59**
Other Analytes (mg/L)							
Alkalinity	90.2		**102**	**103**	**145**	**247**	**321**
Sulfate	26.7		1.39	1.28	0.18	3.83	11.4

Bold outlined box with ***bold italicized*** type indicates concentration above maximum contaminant level (MCL).
Bold type indicates concentration above Fort Stewart Military Reservation reference background criteria.
Blank indicates analyte not detected.

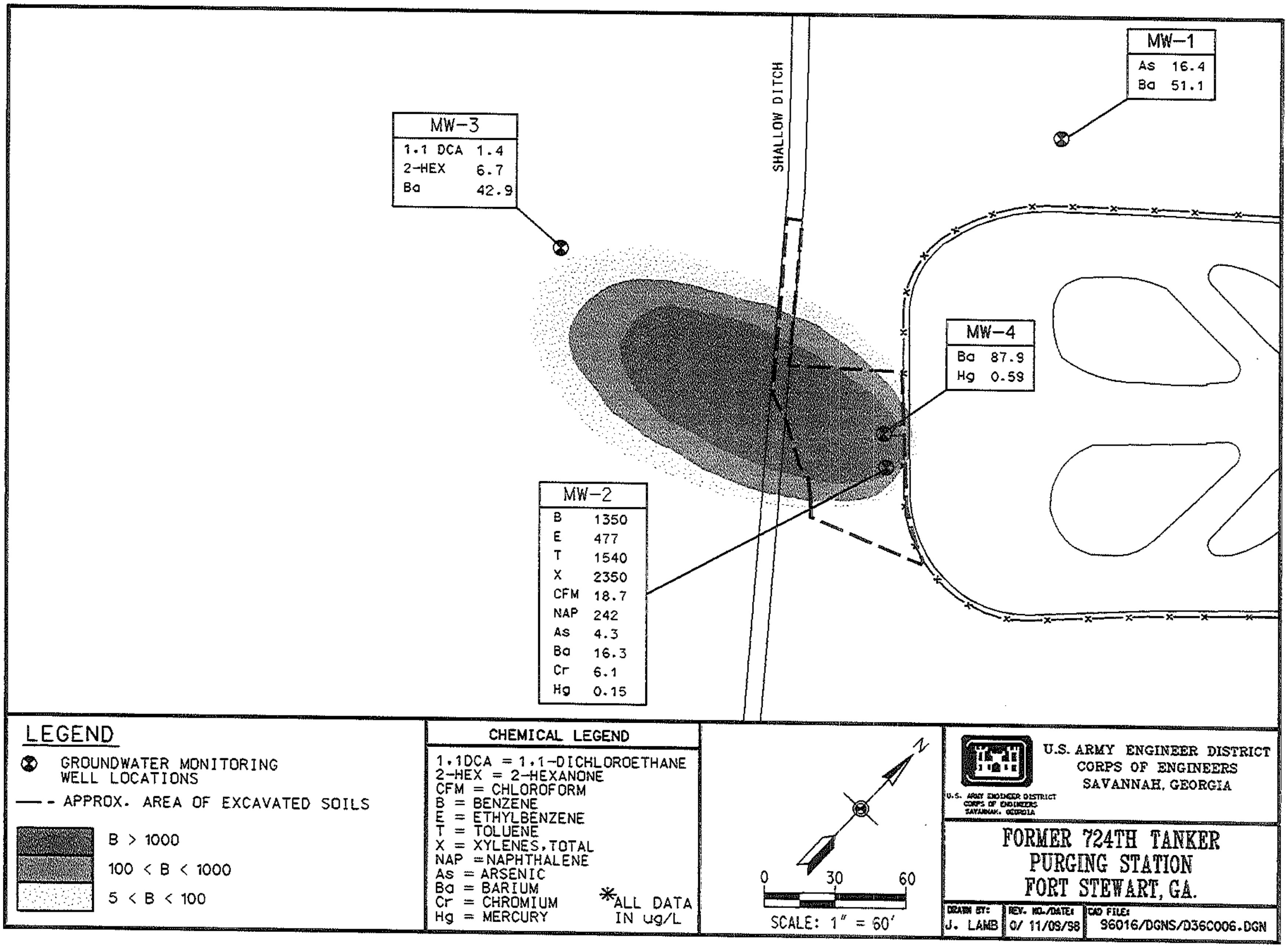


Figure H.1. Results of Groundwater Sampling (September 1998)

VOCs. Seven individual VOCs were detected in groundwater samples. Benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds were detected only in a single well, MW-2, which is screened at the water table and located in the center of the former facility (i.e., the identified source). During sampling, approximately 1.9 feet of free petroleum product were encountered in MW-2; no free product had been encountered in any of the direct-push groundwater samples or any of the wells during the Phase II RFI activities conducted in August 1997. Once free product was discovered, a ferret system was installed in MW-2 for recovery of the free product; operation of the ferret system is ongoing. The product is being stored in an aboveground storage tank and is labelled as off-spec fuel. All collected free product will be burned at the Central Energy Plant.

Benzene (1,350 μg/L), ethylbenzene (477 μg/L), toluene (1,540 μg/L), and total xylenes (2,350 μg/L) were reported in MW-2. The concentrations of benzene and toluene exceeded their maximum contaminant levels (MCLs) of 5 μg/L and 1,000 μg/L, respectively. No BTEX constituents were found in any of the other wells, confirming the Phase II RFI conclusions that contaminants have not migrated vertically or laterally from the source at the former facility.

The other VOCs that were detected included chloroform (18.7 μg/L at MW-2); 1,1-dichloroethane (1.4 μg/L at MW-3); and 2-hexanone (6.7 μg/L at MW-3). Chloroform and 2-hexanone are common laboratory contaminants and were not detected in these wells during the Phase II RFI, and are therefore not likely a result of contaminant releases from the former facility. VOC 1,1-dichloroethane was detected in MW-3 during the Phase II RFI at a concentration of 2.2 μg/L, and is considered a secondary contaminant within the primary BTEX plume, as also concluded in the Phase II RFI report.

PAHs. Naphthalene was the only PAH compound detected in groundwater. Naphthalene was reported at 242 μg/L at MW-2, which exceeds its U.S. Environmental Protection Agency (EPA) Region III risk-based level of 150 μg/L. Naphthalene was also detected in MW-2 during the Phase II RFI at 10.4 μg/L. The increase in the concentration of naphthalene is likely due to the presence of the free product found during the supplemental sampling.

RCRA metals. Four metals were detected in the groundwater samples, including arsenic, barium, chromium, and mercury. These metals were detected above the reference background criteria and in the same wells as detected during the Phase II RFI sampling in August 1997. None of the metals exceeded its respective MCL.

Arsenic (maximum 16.4 μg/L) was found at its highest concentration in the upgradient well MW-1, and is therefore not considered site related. This is consistent with conclusions of the Phase II RFI.

Barium (maximum 87.9 μg/L) and mercury (maximum 0.59 μg/L) were found at concentrations above background in well MW-4, screened at a depth of 35 to 45 feet. In other wells, barium and mercury were found at or below background. Because these metals do not migrate readily and are only present at depth, they are not likely related to any contaminant plume emanating from the facility. This is consistent with conclusions of the Phase II RFI.

Chromium (maximum 6.1 μg/L) was found in MW-2 at a concentration only slightly above its reference background concentration of 3.6 μg/L. This concentration is only marginally higher than that found during the Phase II RFI at MW-2 (2.4 μg/L). Chromium was not detected in any of the other wells in the vicinity of the Former 724th TPS, and was detected at a concentration well below its MCL (100 μg/L) and its EPA Region III risk-based level (180 μg/L). Therefore, no further action is warranted for chromium in groundwater at the facility.

Other analytes. Alkalinity varied between 102 and 321 mg/L (lowest at the upgradient well MW-1 and highest in the deeper well MW-4). Sulfate varied between 0.18 and 11.4 mg/L (lowest at well MW-2 and highest at MW-4). These results are consistent with the results of the Phase II RFI and suggest that biodegradation is occurring, resulting in higher alkalinity and sulfate content in the downgradient wells.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been made based on the results of the supplemental groundwater investigation:

1. Concentrations of metals are similar to those found during the Phase II RFI, and therefore the supplemental sampling has verified their presence. None of the metals exceed MCLs and no further corrective action for metals in groundwater is warranted.

2. Free petroleum product was encountered at well MW-2 in the center of the former facility (i.e., the identified source). Free product recovery, which has been undertaken at the site, should be continued.

3. BTEX compounds continue to exceed MCLs in the shallow water table aquifer near the source, consistent with the results of the August 1997 sampling. There is no evidence that contamination has migrated further beyond the source, despite the presence of free product being discovered. Natural attenuation of organics through biodegradation is occurring, as suggested by the presence of higher alkalinity and sulfate in downgradient wells.

4. Due to the presence of free product and BTEX compounds exceeding MCLs, a Corrective Action Plan (CAP) will be required to evaluate measures to mitigate the effects of these contaminants, as recommended in the Phase II RFI report. The CAP should also address mitigation of naphthalene, which is likely associated with the free petroleum product.

5.0 ATTACHMENTS

Attached are the laboratory analytical results for the groundwater samples analyzed during the September 1998 supplemental sampling.

ATTACHMENTS

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANK PURGING STATION (SWMU 26)
FORT STEWART, GEORGIA

ANALYTICAL RESULTS
FOR
GROUNDWATER SUPPLEMENTAL SAMPLING
(SEPTEMBER 1998)

H. ANALYTICAL LABORATORY DATA

DEFINITIONS OF ACRONYMS AND ABBREVIATIONS

REG — Regular analysis

TCLP — Toxicity Characteristic Leachate Procedure (analytes listed in that procedure)

BG — Below ground surface (depth in feet)

QUALIFIERS FOR ORGANIC ANALYTICAL DATA

Laboratory Flags

U — Indicates that the compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution. For a soil/sediment sample, the value must also be corrected for percent moisture.

J — Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed, or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N — Indicates presumptive evidence of a compound. This flag is used only for TICs, where the identification is based on a mass spectral library search.

P — Used for pesticide/Aroclor target analytes when there is greater than 25% difference for detected concentrations between the two gas chromatography (GC) columns.

C — Applies to pesticide results where the identification has been confirmed by GC/MS (gas chromatography/mass spectrometry). If GC/MS confirmation was attempted but was unsuccessful, do not apply this flag; instead use a laboratory-defined flag.

B — Used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for TICs as well as for positively identified target compounds.

E — Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D — Identifies all compounds identified in an analysis at a secondary dilution factor. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.

A — Indicates that a TIC is a suspected aldol-condensation product.

X — Other specific flags may be required to properly define the results. If used, they must be fully described and such description must be attached to the Sample Data Summary Package and the SDG narrative.

Validation Flags

U — Indicates that the compound was analyzed for, but was not detected above the reported sample quantitation limit.

UJ — Indicates that the compound was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.

J — Indicates that the compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample.

N — The analysis indicates the presence of a compound for which there is presumptive evidence to make a "tentative identification."

NJ — Indicates that the analysis indicates the presence of a compound that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

R — Indicates that the sample results for the compound are rejected or unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

= — Indicates that the value has been validated and that the compound has been positively identified and the associated concentration value is accurate.

DATA QUALIFIER FLAGS FOR INORGANIC ANALYTICAL DATA

Laboratory Flags

B — Indicates that the reported value was obtained from a reading that was less than the Contract Required Detection Limit, but greater than or equal to the Instrument Detection Limit (IDL).

U — Indicates that the analyte was analyzed for but not detected.

E — Used when the reported value is estimated because of the presence of interference.

M —Indicates that the duplicate injection precision was not met.

N — Indicates that the spiked sample recovery is not within control limits.

S — Indicates that the reported value was determined by the method of standard additions (MSA).

W —Used when the post-digestion spike for furnace atomic absorption analysis is not within control limits (85 - 115%), while sample absorbance is less than 50% of spike absorbance.

* — Indicates that the duplicate analysis is not within control limits.

\+ — Indicates that the correlation coefficient for the MSA is less than 0.995.

Validation Flags

U — Indicates that the analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ — Indicates that the compound was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.

J — Indicates that the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R — Indicates that the sample results for the analyte are rejected or unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

= — Indicates that the value has been validated and that the analyte has been positively identified and the associated concentration value is accurate.

DATA QUALIFIER FLAGS FOR RADIOCHEMICAL ANALYTICAL DATA

Laboratory Flags

< — The numerical value reported is less than the MDA.

N — The sample results are flagged to denote poor spike recovery.

* — The sample results are flagged to denote poor duplicate results.

Validation Flags

U — Indicates that the radionuclide was analyzed for, but was not detected above, the reported sample quantitation limit.

J — Indicates that the radionuclide was positively identified; the associated numerical value is the approximate concentration of the radionuclide in the sample.

N — The analysis indicates the presence of a radionuclide for which there is presumptive evidence to make a "tentative identification."

DL — The detection limit requirements were not met. The data quality objectives may not be met.

UI — Indicates that there is uncertain identification for gamma spectroscopy. The radionuclide peaks are detected but fail to meet the positive identification criteria.

R — Indicates that the sample results for the radionuclide are rejected or unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the radionuclide cannot be verified.

= — Indicates that the value has been validated and that the radionuclide has been positively identified and the associated concentration value is accurate.

ANALYTICAL DATA VALIDATION FLAGGING CODES

Holding Times

A01 Extraction holding times were exceeded.
A02 Extraction holding times were grossly exceeded.
A03 Analysis holding times were exceeded.
A04 Analysis holding times were grossly exceeded.
A05 Samples were not preserved properly.
A06 Professional judgment was used to qualify the data.

GC/MS Tuning

B01 Mass calibration was in error, even after applying expanded criteria.
B02 Mass calibration was not performed every 12 hours.
B03 Mass calibration did not meet ion abundance criteria.
B04 Professional judgment was used to qualify the data.

Initial/Continuing Calibration - Organics

C01 Initial calibration RRF was <0.05.
C02 Initial calibration RSD was >30%.
C03 Initial calibration sequence was not followed as required.
C04 Continuing calibration RRF was <0.05.
C05 Continuing calibration %D was >25%.
C06 Continuing calibration was not performed at the required frequency.
C07 Resolution criteria were not met.
C08 RPD criteria were not met.
C09 RSD criteria were not met.
C10 Retention time of compounds was outside windows.
C11 Compounds were not adequately resolved.
C12 Breakdown of endrin or DDT was >20%.
C13 Combined breakdown of endrin/DDT was >30%.
C14 Professional judgment was used to qualify the data.

Initial/Continuing Calibration - Inorganics

D01 ICV or CCV were not performed for every analyte.
D02 ICV recovery was above the upper control limit.
D03 ICV recovery was below the lower control limit.
D04 CCV recovery was above the upper control limit.
D05 CCV recovery was below the lower control limit.

D06 Standard curve was not established with the minimum number of standards.
D07 Instrument was not calibrated daily or each time the instrument was set up.
D08 Correlation coefficient was <0.995.
D09 Mid range cyanide standard was not distilled.
D10 Professional judgment was used to qualify the data.

ICP and Furnace Requirements

E01 Interference check sample recovery was outside the control limit.
E02 Duplicate injections were outside the control limit.
E03 Post digestion spike recovery was outside the control limit.
E04 MSA was required but not performed.
E05 Correlation coefficient was <0.995.
E06 MSA spikes were not at the correct concentration.
E07 Serial dilution criteria were not met.
E08 Professional judgment was used to qualify the data.

Blanks

F01 Sample data were qualified as a result of the method blank.
F02 Sample data were qualified as a result of the field blank.
F03 Sample data were qualified as a result of the equipment rinsate.
F04 Sample data were qualified as a result of the trip blank.
F05 Gross contamination exists.
F06 Concentration of the contaminant was detected at a level below the CRQL.
F07 Concentration of the contaminant was detected at a level less than the action limit, but greater than the CRQL.
F08 Concentration of the contaminant was detected at a level that exceeds the action level.
F09 No laboratory blanks were analyzed.
F10 Blank had a negative value >2 's the IDL.
F11 Blanks were not analyzed at required frequency.
F12 Professional judgment was used to qualify the data.

Surrogate/Radiological Chemical Recovery

G01 Surrogate/radiological chemical recovery was above the upper control limit.
G02 Surrogate/radiological chemical recovery was below the lower control limit.
G03 Surrogate recovery was <10%.
G04 Surrogate/radiological chemical recovery was zero.
G05 Surrogate/radiological chemical recovery was not present.
G06 Professional judgment was used to qualify the data.
G07 Radiological chemical recovery was <20%.
G08 Radiological chemical recovery was >150%.

Matrix Spike/Matrix Spike Duplicate

H01 MS/MSD recovery was above the upper control limit.
H02 MS/MSD recovery was below the lower control limit.
H03 MS/MSD recovery was <10%.
H04 MS/MSD pairs exceed the RPD limit.
H05 No action was taken on MS/MSD results.

H06 Professional judgment was used to qualify the data.
H07 Radiological MS/MSD recovery was <20%.
H08 Radiological MS/MSD recovery was >160%.
H09 Radiological MS/MSD samples were not analyzed at the required frequency.

Matrix Spike

I01 MS recovery was above the upper control limit.
I02 MS recovery was below the lower control limit.
I03 MS recovery was <30%.
I04 No action was taken on MS data.
I05 Professional judgment was used to qualify the data.

Laboratory Duplicate

J01 Duplicate RPD/radiological duplicate error ration (DER) was outside the control limit.
J02 Duplicate sample results were >5 × the CRDL.
J03 Duplicate sample results were <5 × the CRDL.
J04 Professional judgment was used to qualify the data.
J05 Duplicate was not analyzed at the required frequency.

Internal Area Summary

K01 Area counts were outside the control limits.
K02 Extremely low area counts or performance was exhibited by a major drop off.
K03 IS retention time varied by more than 30 seconds.
K04 Professional judgment was used to qualify the data.

Pesticide Cleanup Checks

L01 10% recovery was obtained during either check.
L02 Recoveries during either check were >120%.
L03 GPC Cleanup recoveries were outside the control limits.
L04 Florisil cartridge cleanup recoveries were outside the control limits.
L05 Professional judgment was used to qualify the data.

Target Compound Identification

M01 Incorrect identifications were made.
M02 Qualitative criteria were not met.
M03 Cross contamination occurred.
M04 Confirmatory analysis was not performed.
M05 No results were provided.
M06 Analysis occurred outside 12 hr GC/MS window.
M07 Professional judgment was used to qualify the data.
M08 The %D between the two pesticide/PCB column checks was >25%.

Compound Quantitation and Reported CRQLs

N01 Quantitation limits were affected by large off-scale peaks.
N02 MDLs reported by the laboratory exceeded corresponding CRQLs.
N03 Professional judgment was used to qualify the data.

Tentatively Identified Compounds (TICs)

O01 Compound was suspected laboratory contaminant and was not detected in the blank.
O02 TIC result was not above 10 × the level found in the blank.
O03 Professional judgment was used to qualify analytical data.

Laboratory Control Samples (LCSs)

P01 LCS recovery was above upper control limit.
P02 LCS recovery was below lower control limit.
P03 LCS recovery was <50%.
P04 No action was taken on the LCS data.
P05 LCS was not analyzed at required frequency.
P06 Radiological LCS recovery was <50% for aqueous samples; <40% for solid samples.
P07 Radiological LCS recovery was >150% for aqueous samples; >160% for solid samples.
P08 Professional judgment was used to qualify the data.

Field Duplicate

Q01 No action was taken on the basis of field duplicate RPDs.
Q02 Radiological field duplicate error ratio (DER) was outside the control limit.
Q03 Duplicate sample results were >5 × the CRDL.
Q04 Duplicate sample results were <5 × the CRDL.

Radiological Calibration

R01 Efficiency calibration criteria were not met.
R02 Energy calibration criteria were not met.
R03 Resolution calibration criteria were not met
R04 Background determination criteria were not met.
R05 Quench curve criteria were not met.
R06 Absorption curve criteria were not met.
R07 Plateau curve criteria were not met.
R08 Professional judgment was used to qualify the data.

Radiological Calibration Verification

S01 Efficiency verification criteria were not met.
S02 Energy verification criteria were not met.
S03 Resolution verification criteria were not met
S04 Background verification criteria were not met.
S05 Cross-talk verification criteria were not met.
S06 Professional judgment was used to qualify the data.

Radionuclide Quantitation

T01 Detection limits were not met.
T02 Analytical uncertainties were not met and/or not reported.
T03 Inappropriate aliquot sizes were used.
T04 Professional judgment was used to qualify the data.

System Performance

V01 High background levels or a shift in the energy calibration were observed.
V02 Extraneous peaks were observed.
V03 Loss of resolution was observed.
V04 Peak-tailing or peak splitting that may result in inaccurate quantitation were observed.
V05 Professional judgment was used to qualify the data.

Location: SWMU-26
Station : 26-MW1

264112 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 09/21/98

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity, Total	102	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Sulfate	1.39	MG/L		=	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	16.4	UG/L		=	
REG	Barium	51.1	UG/L	B	J	
REG	Cadmium	1.1	UG/L	U	U	
REG	Chromium	1.7	UG/L	B	U	F06
REG	Lead	1.5	UG/L	U	U	
REG	Mercury	0.1	UG/L	U	U	
REG	Selenium	4.1	UG/L	B	U	F06
REG	Silver	2.1	UG/L	B	U	F06

Sample Type	Polynuclear Aromatic Hydrocarbons	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	10.5	UG/L	U	U	
REG	Acenaphthene	10.5	UG/L	U	U	
REG	Acenaphthylene	10.5	UG/L	U	U	
REG	Anthracene	10.5	UG/L	U	U	
REG	Benzo(a)anthracene	10.5	UG/L	U	U	
REG	Benzo(a)pyrene	10.5	UG/L	U	U	
REG	Benzo(b)fluoranthene	10.5	UG/L	U	U	
REG	Benzo(g,h,i)perylene	10.5	UG/L	U	U	
REG	Benzo(k)fluoranthene	10.5	UG/L	U	U	
REG	Chrysene	10.5	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	10.5	UG/L	U	U	
REG	Fluoranthene	10.5	UG/L	U	U	
REG	Fluorene	10.5	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	10.5	UG/L	U	U	
REG	Naphthalene	10.5	UG/L	U	U	
REG	Phenanthrene	10.5	UG/L	U	U	
REG	Pyrene	10.5	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	5	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	5	UG/L	U	U	
REG	1,1,2-Trichloroethane	5	UG/L	U	U	
REG	1,1-Dichloroethane	5	UG/L	U	U	
REG	1,1-Dichloroethene	5	UG/L	U	U	
REG	1,2-Dichloroethane	5	UG/L	U	U	
REG	1,2-Dichloroethene	5	UG/L	U	U	
REG	1,2-Dichloropropane	5	UG/L	U	U	
REG	1,3-cis-Dichloropropene	5	UG/L	U	U	
REG	1,3-trans-Dichloropropene	5	UG/L	U	U	
REG	2-Butanone	10	UG/L	U	R	C01,C04
REG	2-Hexanone	10	UG/L	U	U	
REG	4-Methyl-2-pentanone	10	UG/L	U	U	
REG	Acetone	10	UG/L	U	U	
REG	Benzene	5	UG/L	U	U	
REG	Bromodichloromethane	5	UG/L	U	U	
REG	Bromoform	5	UG/L	U	U	
REG	Bromomethane	10	UG/L	U	UJ	C05
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	5	UG/L	U	U	
REG	Chlorobenzene	5	UG/L	U	U	
REG	Chloroethane	10	UG/L	U	U	
REG	Chloroform	5	UG/L	U	U	
REG	Chloromethane	10	UG/L	U	U	
REG	Dibromochloromethane	5	UG/L	U	U	
REG	Ethylbenzene	5	UG/L	U	U	
REG	Methylene Chloride	5	UG/L	U	U	
REG	Styrene	5	UG/L	U	U	

Location: SWMU-26
Station : 26-MW1

264112 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 09/21/98

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Tetrachloroethene	5	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	5	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	5	UG/L	U	U	

264122 0.0 - 0.0 FT Field Sample Type: Field Duplicate Matrix: Groundwater Collected: 09/21/98

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity, Total	103	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Sulfate	1.28	MG/L		=	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	13.8	UG/L		=	
REG	Barium	52.1	UG/L	B	J	
REG	Cadmium	1.1	UG/L	U	U	
REG	Chromium	1.3	UG/L	B	U	F06
REG	Lead	1.5	UG/L	U	U	
REG	Mercury	0.1	UG/L	U	U	
REG	Selenium	4.4	UG/L	B	U	F06
REG	Silver	2	UG/L	U	U	

Sample Type	Polynuclear Aromatic Hydrocarbons	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	10.5	UG/L	U	U	
REG	Acenaphthene	10.5	UG/L	U	U	
REG	Acenaphthylene	10.5	UG/L	U	U	
REG	Anthracene	10.5	UG/L	U	U	
REG	Benzo(a)anthracene	10.5	UG/L	U	U	
REG	Benzo(a)pyrene	10.5	UG/L	U	U	
REG	Benzo(b)fluoranthene	10.5	UG/L	U	U	
REG	Benzo(g,h,i)perylene	10.5	UG/L	U	U	
REG	Benzo(k)fluoranthene	10.5	UG/L	U	U	
REG	Chrysene	10.5	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	10.5	UG/L	U	U	
REG	Fluoranthene	10.5	UG/L	U	U	
REG	Fluorene	10.5	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	10.5	UG/L	U	U	
REG	Naphthalene	10.5	UG/L	U	U	
REG	Phenanthrene	10.5	UG/L	U	U	
REG	Pyrene	10.5	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	5	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	5	UG/L	U	U	
REG	1,1,2-Trichloroethane	5	UG/L	U	U	
REG	1,1-Dichloroethane	5	UG/L	U	U	
REG	1,1-Dichloroethene	5	UG/L	U	U	
REG	1,2-Dichloroethane	5	UG/L	U	U	
REG	1,2-Dichloroethene	5	UG/L	U	U	
REG	1,2-Dichloropropane	5	UG/L	U	U	
REG	1,3-cis-Dichloropropene	5	UG/L	U	U	
REG	1,3-trans-Dichloropropene	5	UG/L	U	U	
REG	2-Butanone	10	UG/L	U	R	C01,C04
REG	2-Hexanone	10	UG/L	U	U	
REG	4-Methyl-2-pentanone	10	UG/L	U	U	
REG	Acetone	10	UG/L	U	U	
REG	Benzene	5	UG/L	U	U	
REG	Bromodichloromethane	5	UG/L	U	U	
REG	Bromoform	5	UG/L	U	U	
REG	Bromomethane	10	UG/L	U	UJ	C05

Location: SWMU-26
Station : 26-MW1

264122 0.0 - 0.0 FT Field Sample Type: Field Duplicate Matrix: Groundwater Collected: 09/21/98

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	5	UG/L	U	U	
REG	Chlorobenzene	5	UG/L	U	U	
REG	Chloroethane	10	UG/L	U	U	
REG	Chloroform	5	UG/L	U	U	
REG	Chloromethane	10	UG/L	U	U	
REG	Dibromochloromethane	5	UG/L	U	U	
REG	Ethylbenzene	5	UG/L	U	U	
REG	Methylene Chloride	5	UG/L	U	U	
REG	Styrene	5	UG/L	U	U	
REG	Tetrachloroethene	5	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	5	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	5	UG/L	U	U	

Location: SWMU-26
Station : 26-MW2

264212 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 09/20/98

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity, Total	145	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Sulfate	0.18	MG/L	J	J	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	4.3	UG/L	B	J	
REG	Barium	16.3	UG/L	B	J	
REG	Cadmium	1.1	UG/L	U	U	
REG	Chromium	6.1	UG/L	B	J	
REG	Lead	1.5	UG/L	U	U	
REG	Mercury	0.15	UG/L	B	J	
REG	Selenium	7.7	UG/L		U	F07
REG	Silver	2	UG/L	U	U	

Sample Type	Polynuclear Aromatic Hydrocarbons	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	400	UG/L	U	U	
REG	Acenaphthene	400	UG/L	U	U	
REG	Acenaphthylene	400	UG/L	U	U	
REG	Anthracene	400	UG/L	U	U	
REG	Benzo(a)anthracene	400	UG/L	U	U	
REG	Benzo(a)pyrene	400	UG/L	U	U	
REG	Benzo(b)fluoranthene	400	UG/L	U	U	
REG	Benzo(g,h,i)perylene	400	UG/L	U	U	
REG	Benzo(k)fluoranthene	400	UG/L	U	U	
REG	Chrysene	400	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	400	UG/L	U	U	
REG	Fluoranthene	400	UG/L	U	U	
REG	Fluorene	400	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	400	UG/L	U	U	
REG	Naphthalene	242	UG/L	J	J	
REG	Phenanthrene	400	UG/L	U	U	
REG	Pyrene	400	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	100	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	100	UG/L	U	U	
REG	1,1,2-Trichloroethane	100	UG/L	U	U	
REG	1,1-Dichloroethane	100	UG/L	U	U	

Location: SWMU-26
Station : 26-MW2

264212 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 09/20/98

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1-Dichloroethene	100	UG/L	U	U	
REG	1,2-Dichloroethane	100	UG/L	U	U	
REG	1,2-Dichloroethene	100	UG/L	U	U	
REG	1,2-Dichloropropane	100	UG/L	U	U	
REG	1,3-cis-Dichloropropene	100	UG/L	U	U	
REG	1,3-trans-Dichloropropene	100	UG/L	U	U	
REG	2-Butanone	200	UG/L	U	R	C01,C04
REG	2-Hexanone	200	UG/L	U	U	
REG	4-Methyl-2-pentanone	200	UG/L	U	U	
REG	Acetone	200	UG/L	U	U	
REG	Benzene	1350	UG/L		=	
REG	Bromodichloromethane	100	UG/L	U	U	
REG	Bromoform	100	UG/L	U	U	
REG	Bromomethane	200	UG/L	U	UJ	C05
REG	Carbon Disulfide	100	UG/L	U	U	
REG	Carbon Tetrachloride	100	UG/L	U	U	
REG	Chlorobenzene	100	UG/L	U	U	
REG	Chloroethane	200	UG/L	U	U	
REG	Chloroform	18.7	UG/L	J	J	
REG	Chloromethane	200	UG/L	U	U	
REG	Dibromochloromethane	100	UG/L	U	U	
REG	Ethylbenzene	477	UG/L		=	
REG	Methylene Chloride	100	UG/L	JB	U	F01,F06
REG	Styrene	100	UG/L	U	U	
REG	Tetrachloroethene	100	UG/L	U	U	
REG	Toluene	1540	UG/L		=	
REG	Trichloroethene	100	UG/L	U	U	
REG	Vinyl Chloride	40	UG/L	U	U	
REG	Xylenes, Total	2350	UG/L		=	

Location: SWMU-26
Station : 26-MW3

264312 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 09/21/98

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity, Total	247	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Sulfate	3.83	MG/L		=	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	4	UG/L	U	U	
REG	Barium	42.9	UG/L	B	J	
REG	Cadmium	1.1	UG/L	U	U	
REG	Chromium	1.5	UG/L	B	U	F06
REG	Lead	1.5	UG/L	U	U	
REG	Mercury	0.1	UG/L	U	U	
REG	Selenium	2.8	UG/L	B	U	F06
REG	Silver	2.2	UG/L	B	U	F06

Sample Type	Polynuclear Aromatic Hydrocarbons	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	10	UG/L	U	U	
REG	Acenaphthene	10	UG/L	U	U	
REG	Acenaphthylene	10	UG/L	U	U	
REG	Anthracene	10	UG/L	U	U	
REG	Benzo(a)anthracene	10	UG/L	U	U	
REG	Benzo(a)pyrene	10	UG/L	U	U	
REG	Benzo(b)fluoranthene	10	UG/L	U	U	
REG	Benzo(g,h,i)perylene	10	UG/L	U	U	
REG	Benzo(k)fluoranthene	10	UG/L	U	U	
REG	Chrysene	10	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	10	UG/L	U	U	

Location: SWMU-26
Station : 26-MW3

264312 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 09/21/98

Sample Type	Polynuclear Aromatic Hydrocarbons	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Fluoranthene	10	UG/L	U	U	
REG	Fluorene	10	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	10	UG/L	U	U	
REG	Naphthalene	10	UG/L	U	U	
REG	Phenanthrene	10	UG/L	U	U	
REG	Pyrene	10	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	5	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	5	UG/L	U	U	
REG	1,1,2-Trichloroethane	5	UG/L	U	U	
REG	1,1-Dichloroethane	1.4	UG/L	J	J	
REG	1,1-Dichloroethene	5	UG/L	U	U	
REG	1,2-Dichloroethane	5	UG/L	U	U	
REG	1,2-Dichloroethene	5	UG/L	U	U	
REG	1,2-Dichloropropane	5	UG/L	U	U	
REG	1,3-cis-Dichloropropene	5	UG/L	U	U	
REG	1,3-trans-Dichloropropene	5	UG/L	U	U	
REG	2-Butanone	10	UG/L	U	R	C01,C04
REG	2-Hexanone	6.7	UG/L	J	J	C05
REG	4-Methyl-2-pentanone	10	UG/L	U	U	
REG	Acetone	10	UG/L	U	U	
REG	Benzene	5	UG/L	U	U	
REG	Bromodichloromethane	5	UG/L	U	U	
REG	Bromoform	5	UG/L	U	U	
REG	Bromomethane	10	UG/L	U	UJ	C05
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	5	UG/L	U	U	
REG	Chlorobenzene	5	UG/L	U	U	
REG	Chloroethane	10	UG/L	U	U	
REG	Chloroform	5	UG/L	U	U	
REG	Chloromethane	10	UG/L	U	U	
REG	Dibromochloromethane	5	UG/L	U	U	
REG	Ethylbenzene	5	UG/L	U	U	
REG	Methylene Chloride	5	UG/L	U	U	
REG	Styrene	5	UG/L	U	U	
REG	Tetrachloroethene	5	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	5	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	5	UG/L	U	U	

Location: SWMU-26
Station : 26-MW4

264412 0.0 - 0.0 FT Field Sample Type: Grab Matrix: Groundwater Collected: 09/19/98

Sample Type	Alkalinity	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Alkalinity, Total	321	MG/L		=	

Sample Type	Common Anions	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Sulfate	11.4	MG/L		=	

Sample Type	Metals	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	Arsenic	4	UG/L	U	U	
REG	Barium	87.9	UG/L	B	J	
REG	Cadmium	1.1	UG/L	U	U	
REG	Chromium	2.2	UG/L	B	U	F06
REG	Lead	1.5	UG/L	U	U	
REG	Mercury	0.59	UG/L		=	
REG	Selenium	3.5	UG/L	B	U	F06
REG	Silver	6	UG/L	B	U	F06

Sample Type	Polynuclear Aromatic Hydrocarbons	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	2-Chloronaphthalene	10.4	UG/L	U	U	
REG	Acenaphthene	10.4	UG/L	U	U	
REG	Acenaphthylene	10.4	UG/L	U	U	
REG	Anthracene	10.4	UG/L	U	U	
REG	Benzo(a)anthracene	10.4	UG/L	U	U	
REG	Benzo(a)pyrene	10.4	UG/L	U	U	
REG	Benzo(b)fluoranthene	10.4	UG/L	U	U	
REG	Benzo(g,h,i)perylene	10.4	UG/L	U	U	
REG	Benzo(k)fluoranthene	10.4	UG/L	U	U	
REG	Chrysene	10.4	UG/L	U	U	
REG	Dibenzo(a,h)anthracene	10.4	UG/L	U	U	
REG	Fluoranthene	10.4	UG/L	U	U	
REG	Fluorene	10.4	UG/L	U	U	
REG	Indeno(1,2,3-cd)pyrene	10.4	UG/L	U	U	
REG	Naphthalene	10.4	UG/L	U	U	
REG	Phenanthrene	10.4	UG/L	U	U	
REG	Pyrene	10.4	UG/L	U	U	

Sample Type	Volatile Organics	Result	Units	Qualifiers Lab	Qualifiers Data	Validation Code
REG	1,1,1-Trichloroethane	5	UG/L	U	U	
REG	1,1,2,2-Tetrachloroethane	5	UG/L	U	U	
REG	1,1,2-Trichloroethane	5	UG/L	U	U	
REG	1,1-Dichloroethane	5	UG/L	U	U	
REG	1,1-Dichloroethene	5	UG/L	U	U	
REG	1,2-Dichloroethane	5	UG/L	U	U	
REG	1,2-Dichloroethene	5	UG/L	U	U	
REG	1,2-Dichloropropane	5	UG/L	U	U	
REG	1,3-cis-Dichloropropene	5	UG/L	U	U	
REG	1,3-trans-Dichloropropene	5	UG/L	U	U	
REG	2-Butanone	10	UG/L	U	R	C01,C04
REG	2-Hexanone	10	UG/L	U	U	
REG	4-Methyl-2-pentanone	10	UG/L	U	U	
REG	Acetone	10	UG/L	U	U	
REG	Benzene	5	UG/L	U	U	
REG	Bromodichloromethane	5	UG/L	U	U	
REG	Bromoform	5	UG/L	U	U	
REG	Bromomethane	10	UG/L	U	UJ	C05
REG	Carbon Disulfide	5	UG/L	U	U	
REG	Carbon Tetrachloride	5	UG/L	U	U	
REG	Chlorobenzene	5	UG/L	U	U	
REG	Chloroethane	10	UG/L	U	U	
REG	Chloroform	5	UG/L	U	U	
REG	Chloromethane	10	UG/L	U	U	
REG	Dibromochloromethane	5	UG/L	U	U	
REG	Ethylbenzene	5	UG/L	U	U	
REG	Methylene Chloride	5	UG/L	U	U	
REG	Styrene	5	UG/L	U	U	
REG	Tetrachloroethene	5	UG/L	U	U	
REG	Toluene	2	UG/L	U	U	
REG	Trichloroethene	5	UG/L	U	U	
REG	Vinyl Chloride	2	UG/L	U	U	
REG	Xylenes, Total	5	UG/L	U	U	

APPENDIX I

PHASE II RCRA FACILITY INVESTIGATION
FORMER 724th TANK PURGING STATION (SWMU 26)
FORT STEWART, GEORGIA

TOXICITY DATA FOR HUMAN HEALTH CHEMICALS OF POTENTIAL CONCERN

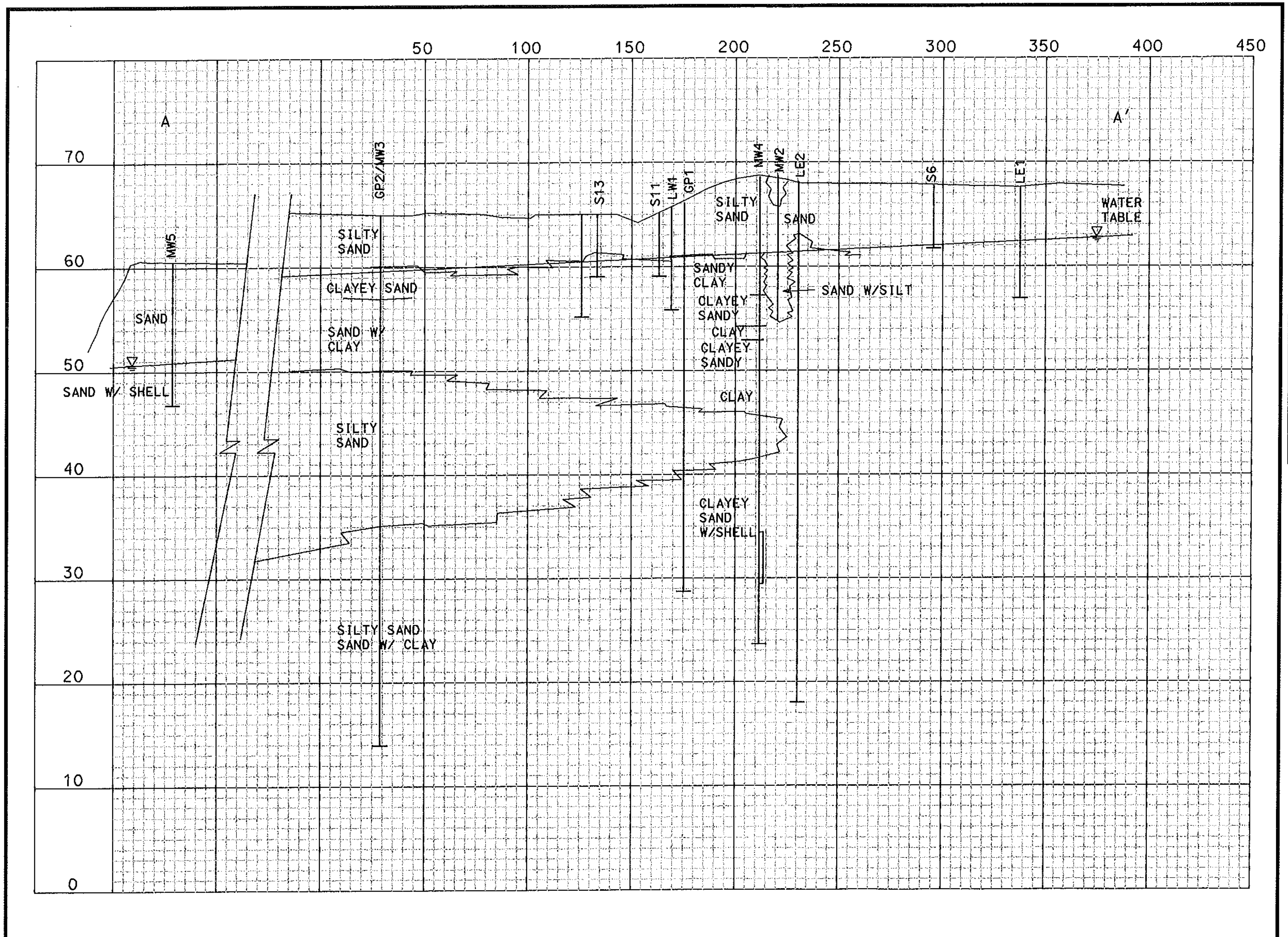
Table I-1. Summary of Toxicity Data for Human Health Chemicals of Potential Concern

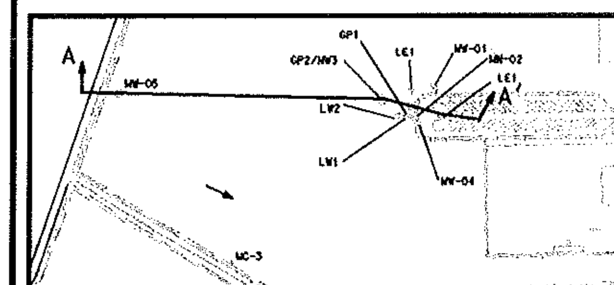
Chemical	CSFo 1/mg/kg/d	Ref	CSFi 1/mg/kg/d	Ref	WOE	RfDo mg/kg/d	Ref	UF-MF	Target Organs	RfDi mg/kg/d	Ref	UF-MF	Target Organs
1,1-Dichloroethane						1.00E-01	H						
1,2-Dichloroethane					B2								
2-Butanone						6.00E-01	I	3,000	Develop.	2.86E-01	I	3,000	Develop.
2-Hexanone													
Acetone						1.00E-01	I	1,000	Liver, kidney				
Anthracene						3.00E-01	I	3,000	No effects				
Arsenic	1.50E+00	I	1.51E+01	I		3.00E-04	I	3	Skin				
Barium						7.00E-02	I	3	Circ.				
Benzene	2.90E-02	I	2.90E-02	I	A								
Beno(a)pyrene	7.30E+00	I			B2								
Benzo(b)fluoranthene	7.30E-01	E			B2								
Cadmium-food			6.30E+00	I		1.00E-03	I	10	Kidney				
Cadmium-water			6.30E+00	I		5.00E-04	I	10	Develop.				
Chloroform	6.10E-03	I	8.10E-02	I	B2	1.00E-02	I	1,000	Liver				
Chloromethane	1.30E-02	H	6.00E-03	H	B2								
Chromium VI			4.10E+01	H		3.00E-03	I	300	Clinical	3.00E-05	I	90	Resp.
Ethylbenzene						1.00E-01	I	1,000	Kidney, liver	2.90E-01	I	300	Develop.
Mercury (inorganic)										8.60E-05	I	30	CNS
Methylene chloride	7.50E-03	I	1.65E-03	I	B2	6.00E-02	I	100	Liver	8.60E-01	H		
Naphthalene						2.00E-02	I	3,000	Clinical	9.00E-04	I		
Pyrene						3.00E-02	I	3,000	Kidney				
Selenium						5.00E-03	I	3	Clinical				
Silver						5.00E-03	I	3	Skin				
Styrene						2.00E-01	I	1,000	Heme, liver	2.86E-01	I	30	CNS
Toluene						2.00E-01	I	1,000	Liver, kidney	1.14E-01	I	300	CNS
Xylenes						2.00E+00	I	100	Clinical				

CSFo - Oral cancer slope factor.
CSFi - Inhalation cancer slope factor
Ref - Source of information: I - IRIS; H - Heat; E – Environmental Protection Agency National Center for Environmental Assessment Regional Support provisional value.
WOE - Cancer weight of evidence classification.
RfDo - Oral reference dose.
RfDi - Inhalation reference dose.
UF-MF - Product of the uncertainty and modifying factors.
Target Organs - Primary organ system affected by non-carcinogenic chemical.
Circ - Circulatory system.

Clinical - Endpoints included clinical effects such as change in body weight, enzyme levels, etc. Effects cannot be associated with any specific organ system.
CNS - Central nervous system.
Develop - Developmental toxicity.
GI - Gastrointentestial system.
Heme - Hematopoietic system.
Immune - Immune system.
Repord. - Reproductive system.
Resp - Respiratory system.
None - No target organ specified.

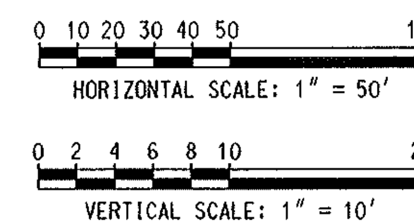
LEGEND





KEY PLAN

NTS



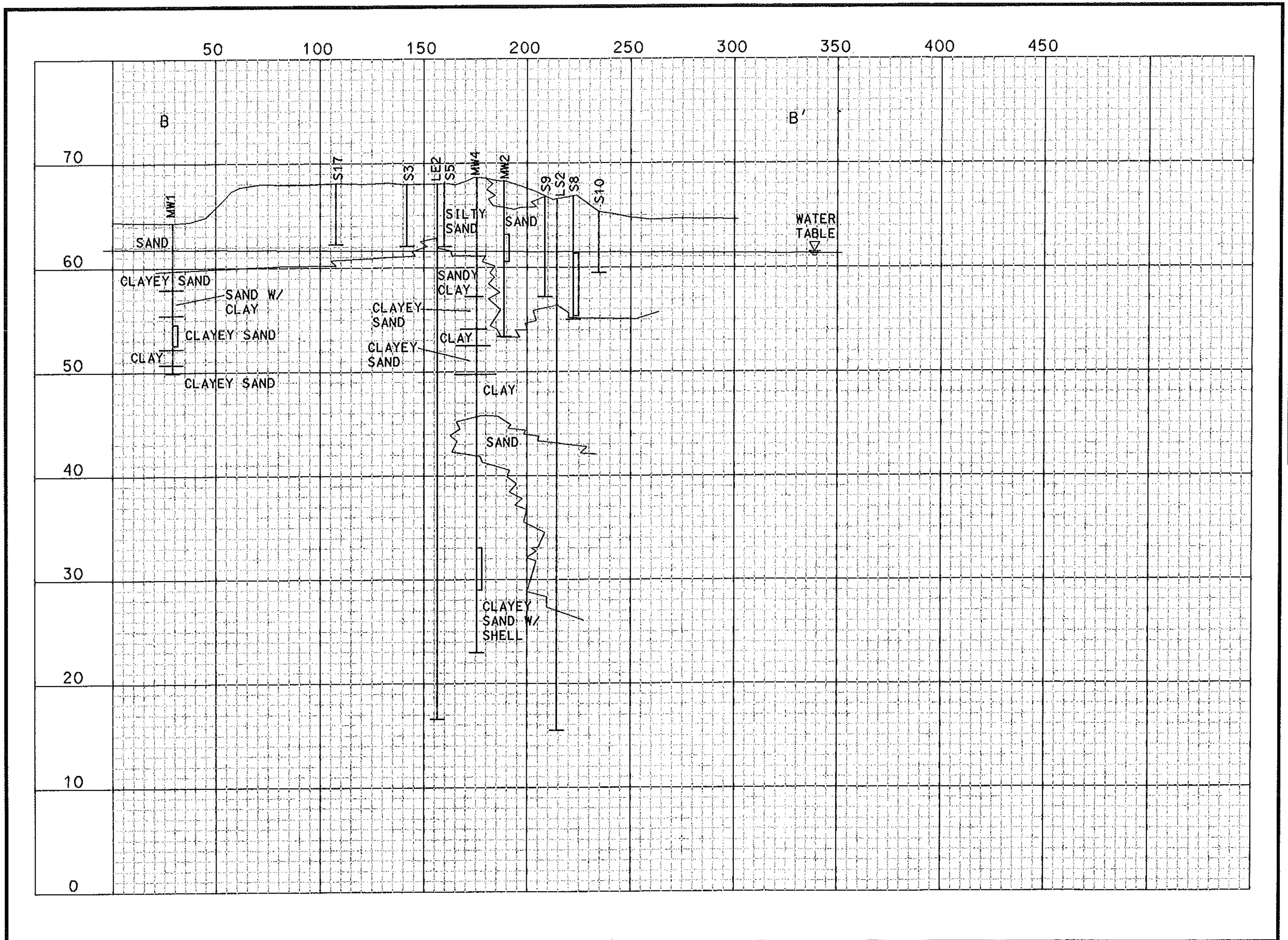
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

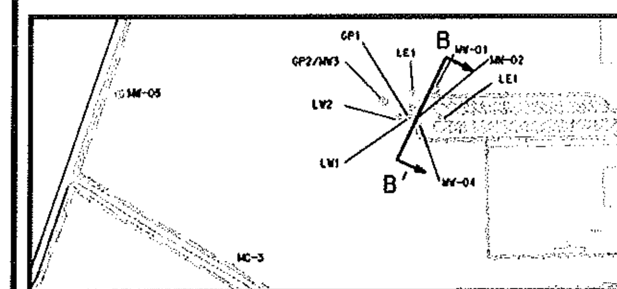
FORMER 724TH TANKER
PURGING STATION
FORT STEWART, GA

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	0/ 10/27/97	96016/DGNS/828C016.DGN

Figure 4.2. Geologic Cross-Section A-A′

LEGEND





KEY PLAN

NTS

0 10 20 30 40 50 100

HORIZONTAL SCALE: 1" = 50'

0 2 4 6 8 10 20

VERTICAL SCALE: 1" = 10'

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FORT STEWART, GA

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J. LAMB	0/ 10/27/97	96016/DGNS/828C0017.DGN

Figure 4.3. Geologic Cross-Section B-B'

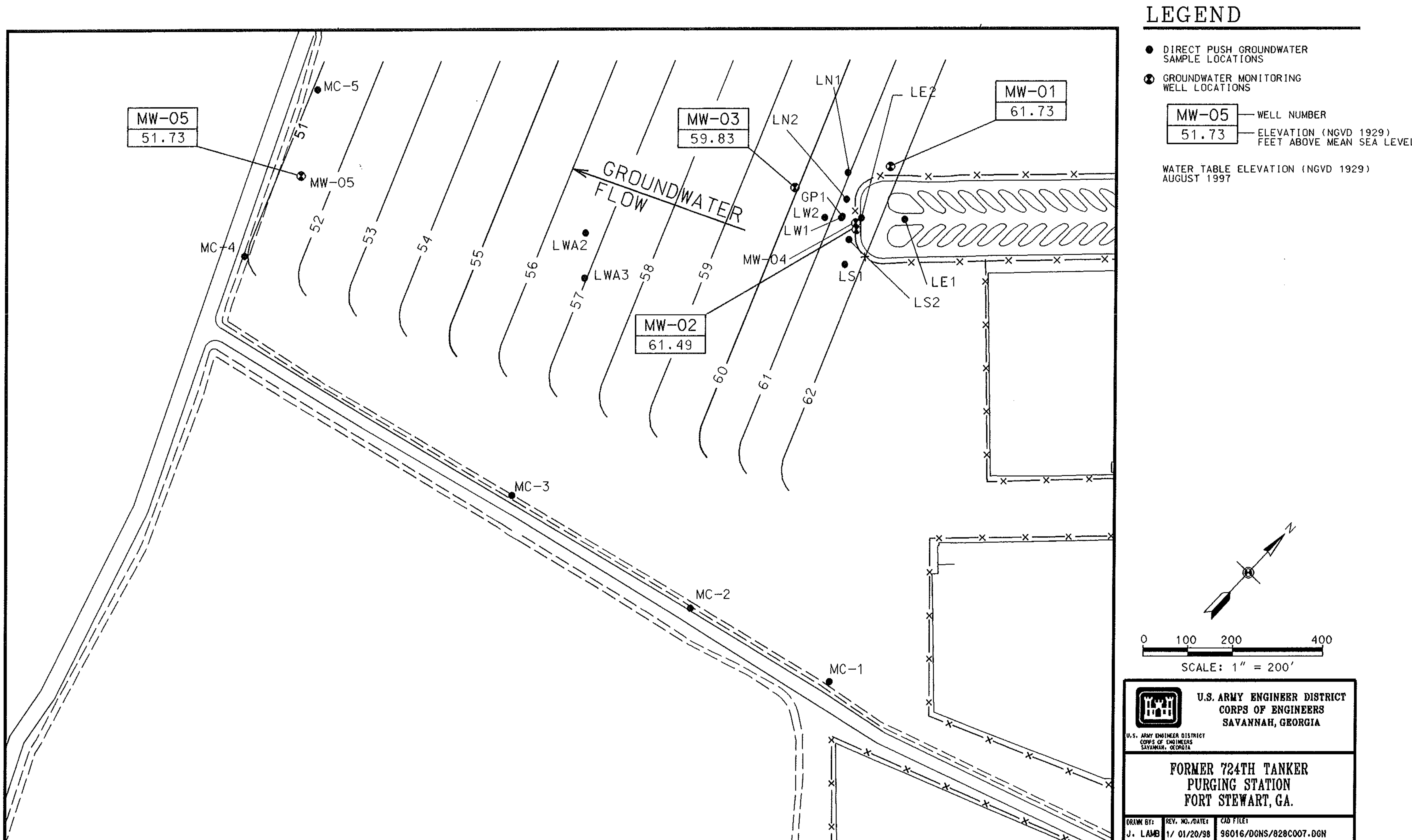


Figure 4.4. Water Table Contour Map (August 1997)

Creek. Hydraulic gradient within the water table is approximately 0.01 foot/foot at the site, and approximately 0.0083 foot/foot between the site and Mill Creek.

Monitoring well MW-4 is screened within the surficial aquifer at a depth of 35 to 45 feet. Water levels in wells MW-2 and MW-4 were compared to estimate vertical hydraulic gradients at the site. Water levels in MW-4 were 2.87 feet lower than in MW-2, indicating a downward hydraulic gradient of 0.082 foot/foot. The downward gradient measured in MW-2 and MW-4 may indicate that the clayey sand layers encountered across the site may act as a semi-confining unit, restricting downward migration of groundwater.

4.7 ECOLOGY

Approximately 7.8 square miles of the 436.8 square miles at FSMR comprise the garrison area. The remainder is used for ranges and training areas (approximately 11 percent) or held as non-use areas.

Eighty-four percent of the land is forested (approximately 367.2 square miles). Sixty-six percent of the forest area is pine with the major species including the slash pine, loblolly pine, and longleaf pine. Thirty-four percent of the forest is composed of river bottom lands and swamps whose major species include the tupelo, other gum trees, water oak, and bald cypress trees. The open range and training areas comprise 11 percent of the base and consist of grasses, shrubs, and scrub tree (oak) growth.

Aquatic habitats on FSMR include a number of natural or man-made ponds and lakes, the Canoochee River, Canoochee Creek and tributaries, and a number of bottom land swamps and pools. The Ogeechee River borders the installation along its northeast boundary. Organic detritus content is high, and dark coloring of the water is not unusual. Dense growths of aquatic vegetation are also typical, especially during the summer months.

Both terrestrial and aquatic fauna are abundant in the unimproved areas of FSMR. Major game species found on the installation include white-tailed deer, feral hog, wild turkey, rabbit, squirrel, and bobwhite in addition to numerous other mammal, bird, reptile, and amphibian species (Environmental Science and Engineering 1982). Dominant fish include bluegill, largemouth bass, crappie, sunfish, channel catfish, minnows, and shiners. Three federally listed threatened or endangered species reside at FSMR: the American bald eagle, Eastern indigo snake, and the red-cockaded woodpecker.

4.8 METEOROLOGY

Fort Stewart has a humid, subtropical climate with long, hot summers. Average temperatures range from 50°F in the winter to 80°F in the summer. Average annual precipitation is 48 inches, with slightly over half falling from June through September. Prolonged drought is rare in the area, but severe local storms (tornadoes and hurricanes) do occur. Under normal conditions, wind speeds rarely exceed 5 knots, but gusty winds of over 25 knots may occur during summer thunderstorms (Geraghty and Miller 1992).

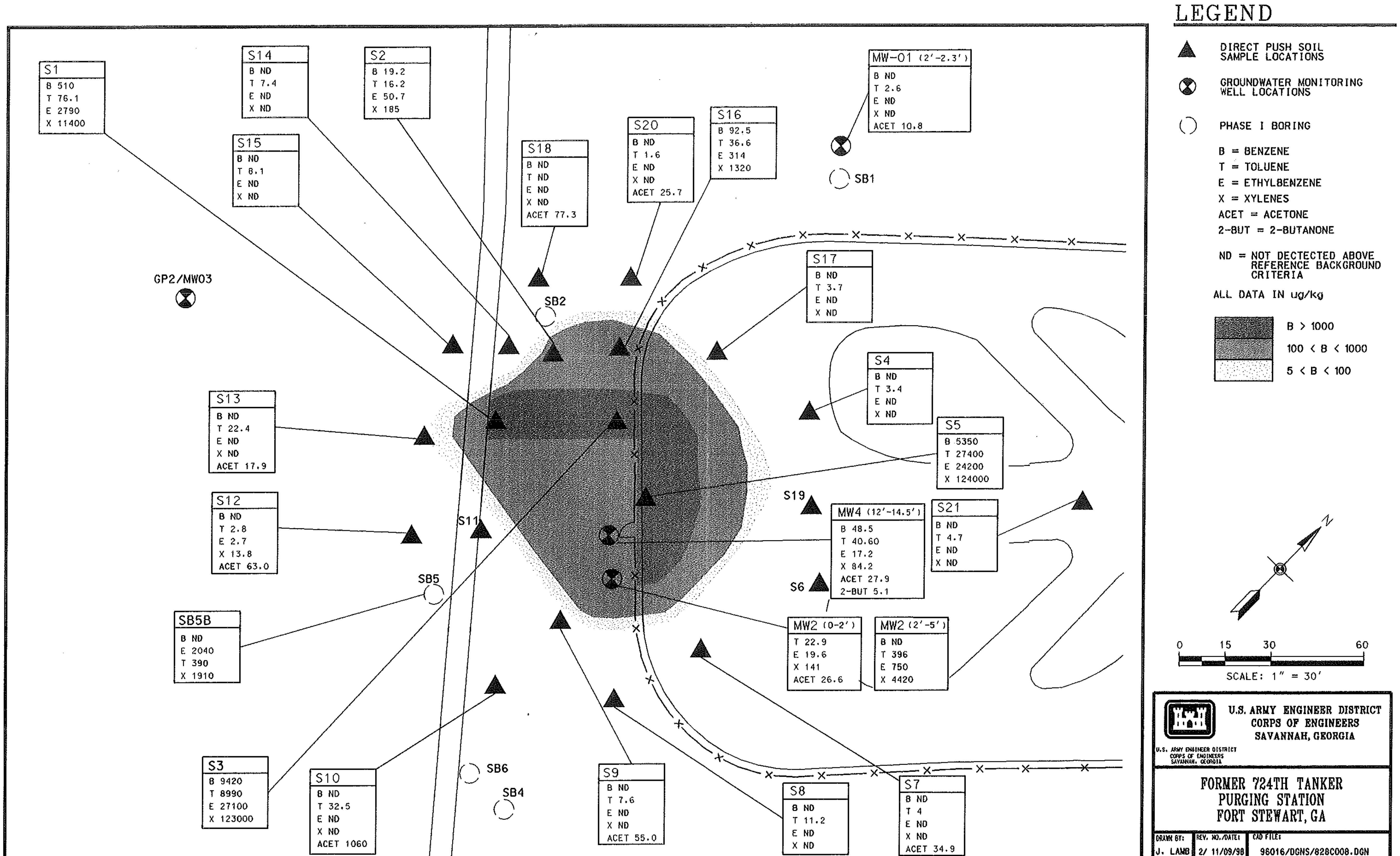


Figure 5.2. Results of VOC Analyses in Subsurface Soil (0 to 15 feet deep)

S-12, and S-13. Results of BTEX analyses on the direct-push soil samples surrounding this area of contamination are less than their average detection in background samples, thereby bounding the zone of contamination. Vertically, the contamination extends from the ground surface to the water table, typically up to 6 feet deep in that area.

Acetone was detected in several of the direct-push soil samples located around the fringe of the BTEX-contaminated area. However, acetone was detected in only three of the direct-push soil samples at concentrations above its average detection in background samples.

5.3.2 Soil Boring Sampling Results

Discrete subsurface soil samples were collected from four of the five monitoring well boreholes. The samples were analyzed for VOCs, PAHs, RCRA metals, and total organic carbon. Table 5.4 summarizes analytical results for the discrete subsurface soil samples and Figures 5.2 (VOCs) and 5.3 (non-BTEX) show their distribution.

Table 5.4. Summary of Analytical Results for Subsurface Soil Samples, Former 724th Tanker Purging Station, Fort Stewart

Station	Reference Background Criteria	MW-1	MW-2	MW-4	MW-4	MW-5
Sample ID		261112	261212	261412	261414	261512
Depth (feet)		2 to 3.3	2 to 5	12 to 14.5	44.5 to 45.5	5 to 7
Volatile Organic Compounds (μg/kg)						
Acetone	0.00	**10.8**		**27**	**26**	
2-Butanone	0.00			**5**		
Benzene	0.00			**48**		
Toluene	0.00	**2.60**	**396**	**40**	**27**	**3.30**
Ethylbenzene	0.00		**750**	**17**	**2**	
Xylenes, Total	0.00		**4,420**	**84**	**8**	
Semivolatile Organic Compounds (μg/kg)						
Anthracene	0.00		**2,860**			
Benzo(*a*)pyrene	0.00		**8.7**			
Naphthalene	0.00		**4,160**			
Pyrene	0.00		**256**			
RCRA Metals (mg/kg)						
Arsenic	8.04	0.56				
Barium	17.00	6.4	12.4	7.9	13.3	1.1
Cadmium	0.24				**0.44**	
Chromium	11.60	4.3	5.4	8.3	**12.9**	
Lead	11.10	4.7	3.6	4.1	1.9	0.41
Mercury	0.05		0.04	0.03		
Selenium	1.12	0.67	1.1		0.62	0.5
Silver	0.46		0.19	0.41	0.29	0.17
Other Analytes (mg/kg)						
Total organic carbon (mg/kg)	2,200	1,100	**3,780**	421	**19,200**	250

Blank indicates analyte not detected.
Bold indicates concentration greater than reference background criteria.

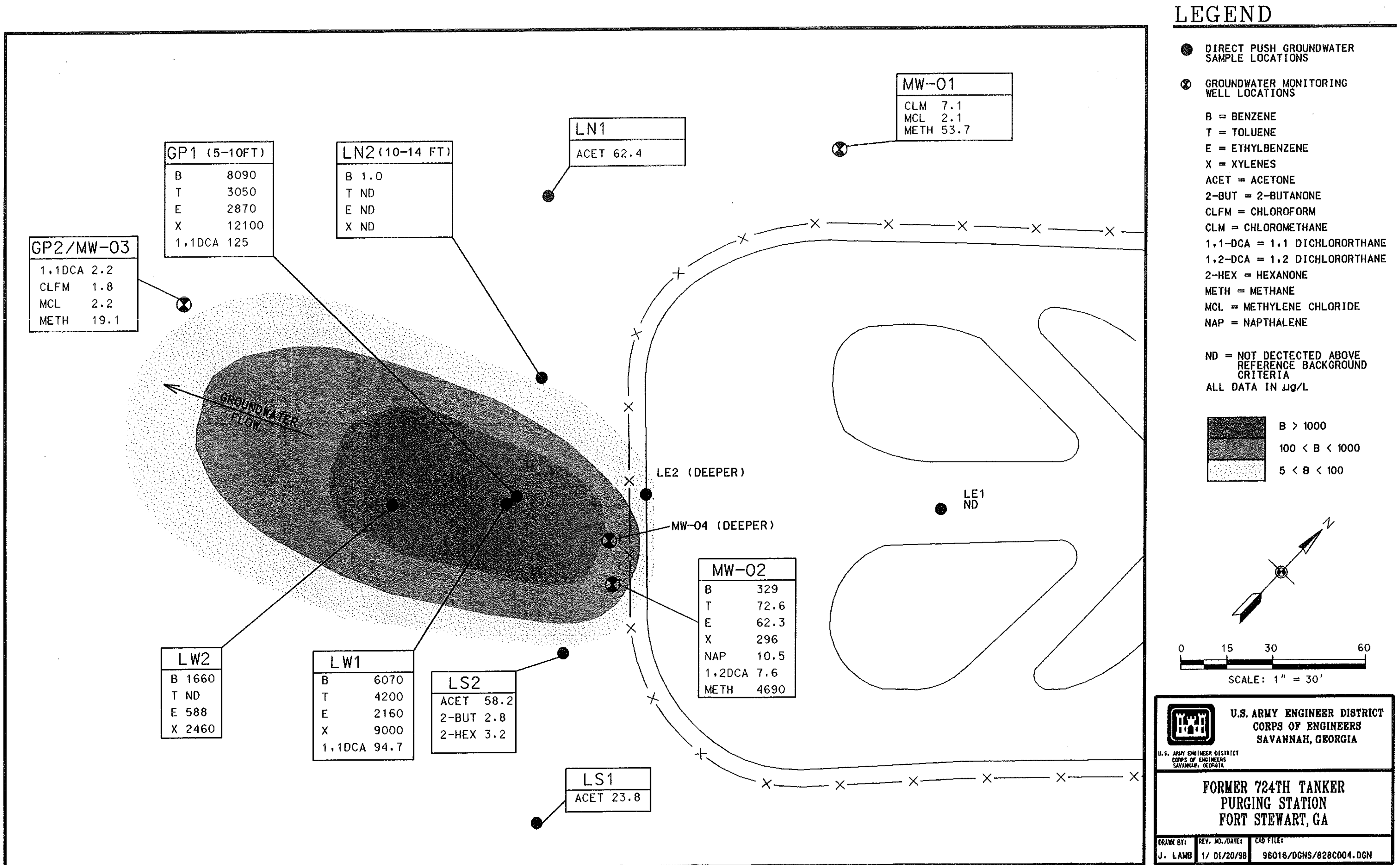


Figure 5.5. Results of Organic Analyses in Water Table Samples at the Site (<20 feet deep)

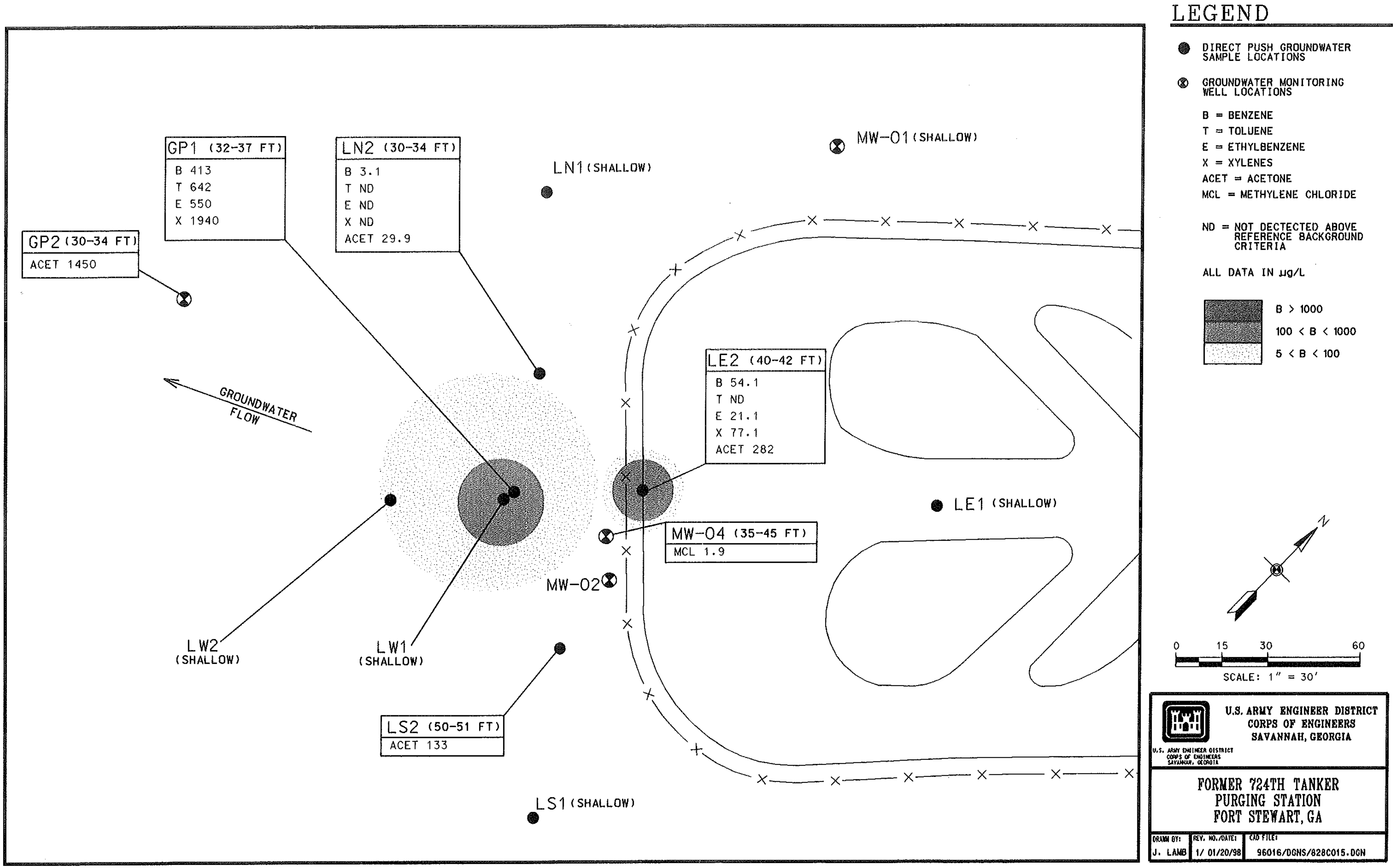
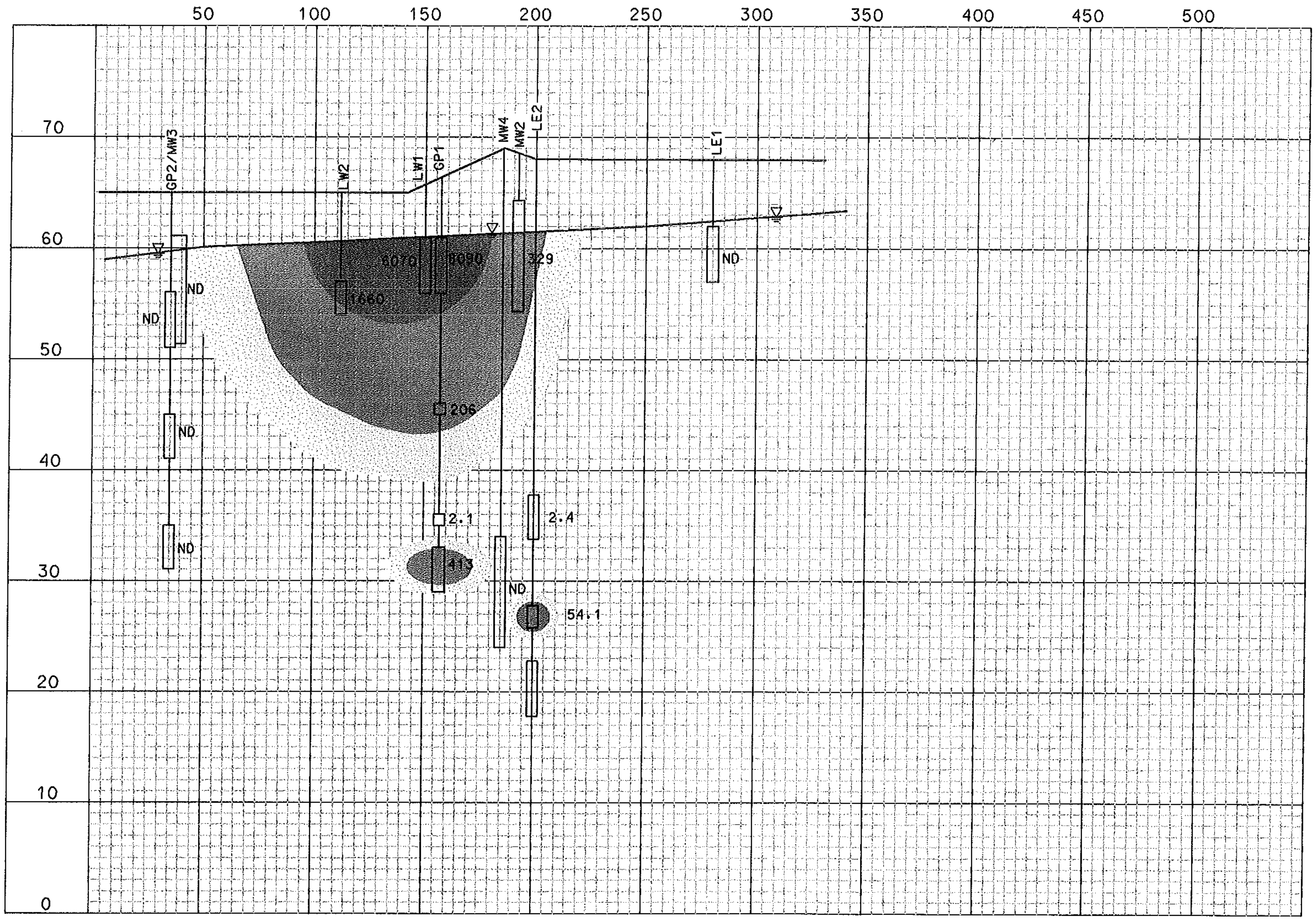


Figure 5.6. Results of Organic Analyses in Groundwater at the Site (20 to 50 feet deep)



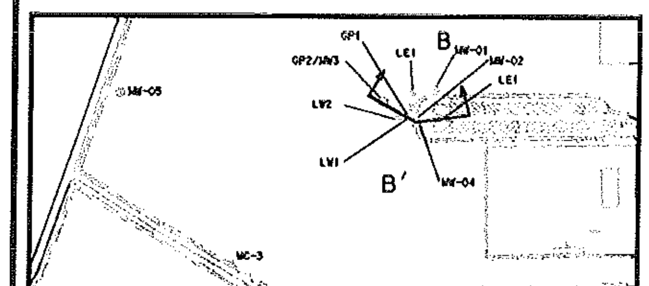
LEGEND

BTEX GROUNDWATER CONTAMINATION

ND = NOT DECTECTED ABOVE REFERENCE BACKGROUND CRITERIA

NOTE:
VALUES SHOWN ARE FOR BENZENE (μg/L)

B > 1000
100 < B < 1000
5 < B < 100



KEY PLAN
NTS

0 10 20 30 40 50 100
HORIZONTAL SCALE: 1" = 50'

0 2 4 6 8 10 20
VERTICAL SCALE: 1" = 10'

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER 724TH TANKER
PURGING STATION
FORT STEWART, GA

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	1/ 01/20/98	96016/DGNS/828C009.DGN

Figure 5.7. Cross-Section of BTEX Contamination in Groundwater

The direct-push groundwater sampling results, together with the results of the groundwater sampling from monitoring wells, clearly delineate the area of residual BTEX groundwater contamination, as shown on Figures 5.4 through 5.6. Groundwater samples taken several hundred feet south and west of the TPS showed mainly acetone detections (maximum 59.0 μg/L) but no BTEX compounds (Figure 5.4). Figure 5.5 shows groundwater contamination at the water table covers a plume area approximately 100 feet wide by 160 feet long, extending from the area of the excavated soils removed in August 1996 to the north and west (Figure 5.5). The plume dimensions are consistent with the westward direction of groundwater flow inferred from the water table contours presented on Figure 4-4. Results of BTEX analyses on the direct-push groundwater samples surrounding this plume are less than the average detection limit for the background samples, thereby bounding the zone of contamination.

Vertically, the extent of contamination was investigated using results from five vertical profile push probes (GP-1, GP-2, LN-2, LE-2, and LS-2), as well as one deep well (MW-4). Results for BTEX analyses in groundwater below 20 feet deep are shown on Figure 5.6. A cross-section showing the vertical extent of BTEX contamination (as indicated by benzene) is presented on Figure 5.7. Contamination extends from the water table to a depth of approximately 20 feet below the water table. However, isolated areas of BTEX in groundwater were found in some direct-push samples (GP-1 at 32 to 37 feet and LE-2 at 40 to 42 feet), which may indicate smaller zones of contamination at depths up to 40 feet. These zones do not appear to comprise a contiguous plume, however, and may reflect relict or residual BTEX contamination in the clayey layers at that depth. However, this contamination was not confirmed in monitoring well MW-4, which is screened at a depth of 35 to 40 feet. Vertical migration of contamination can occur due to the downward hydraulic gradient indicated at monitoring wells MW-2 and MW-4.

Other non-BTEX VOCs were also detected in the direct-push groundwater samples, and are reported in Appendix G and shown on Figures 5.4 and 5.5. Of these, 1,1-dichloroethane is notable because it was detected at a maximum value of 125 μg/L at GP-1, which also exhibited the maximum levels of BTEX contamination in groundwater. VOC 1,1-dichloroethane was also detected in LW-1 and is, therefore, considered a secondary contaminant associated with the primary BTEX plume.

Acetone, 2-butanone, and 2-hexanone were also detected. Acetone was detected at stations GP-2, LN-1, LN-2, LE-2, LS-1, and LS-2, with a maximum value of 1450 μg/L in the vertical profile GP-2 at a depth of 30 to 34 feet, but was not found consistently in other samples at that depth. VOC 2-hexanone was found in two samples from LS-2 at concentrations of 3.2 μg/L. There also were single detections of 2-butanone (2.8 μg/L) at LS-2 and chloromethane (27.7 μg/L) at GP-1.

5.4.2 Groundwater Monitoring Well Sampling Results

Groundwater contamination was evaluated using the results from water samples taken from five permanent monitoring wells installed during the Phase II field work at the site. These samples were analyzed for VOCs, PAHs, RCRA metals, and other natural attenuation parameters. Both filtered and unfiltered water samples were collected; only the total metal analysis on unfiltered water samples is presented in this section. Table 5.6 summarizes the analytical results for groundwater samples from monitoring wells. Figure 5.4 shows their distribution near Mill Creek, and Figures 5.5 and 5.6 show their distribution at the Former 724th TPS site. This assessment presents Phase II contaminant data only, because no groundwater samples were collected during the Phase I investigation.

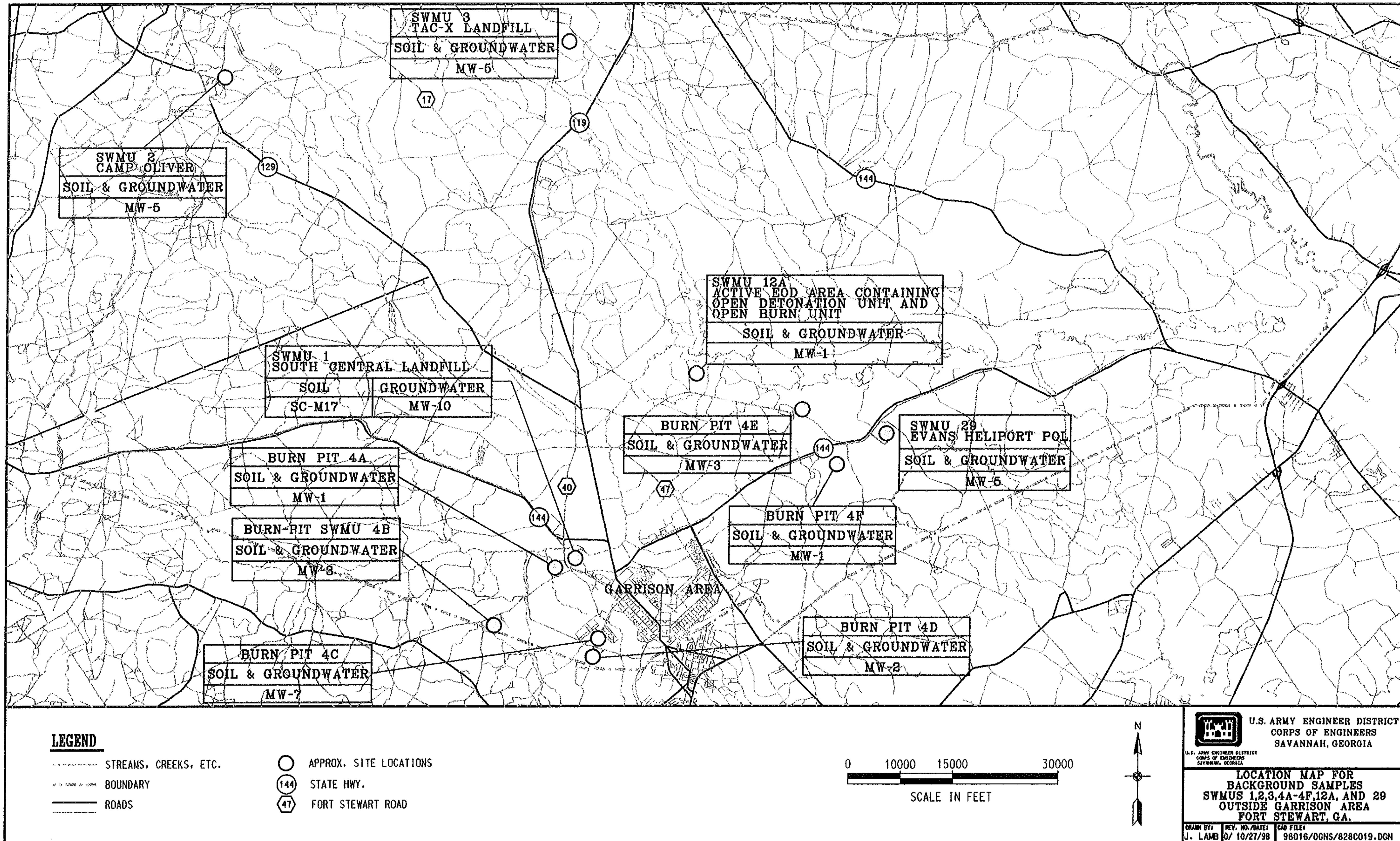


Figure F.1. Location Map for Background Sample Stations - SWMUs 1, 2, 3, 4A-4F, 12A, and 29, Fort Stewart, Georgia

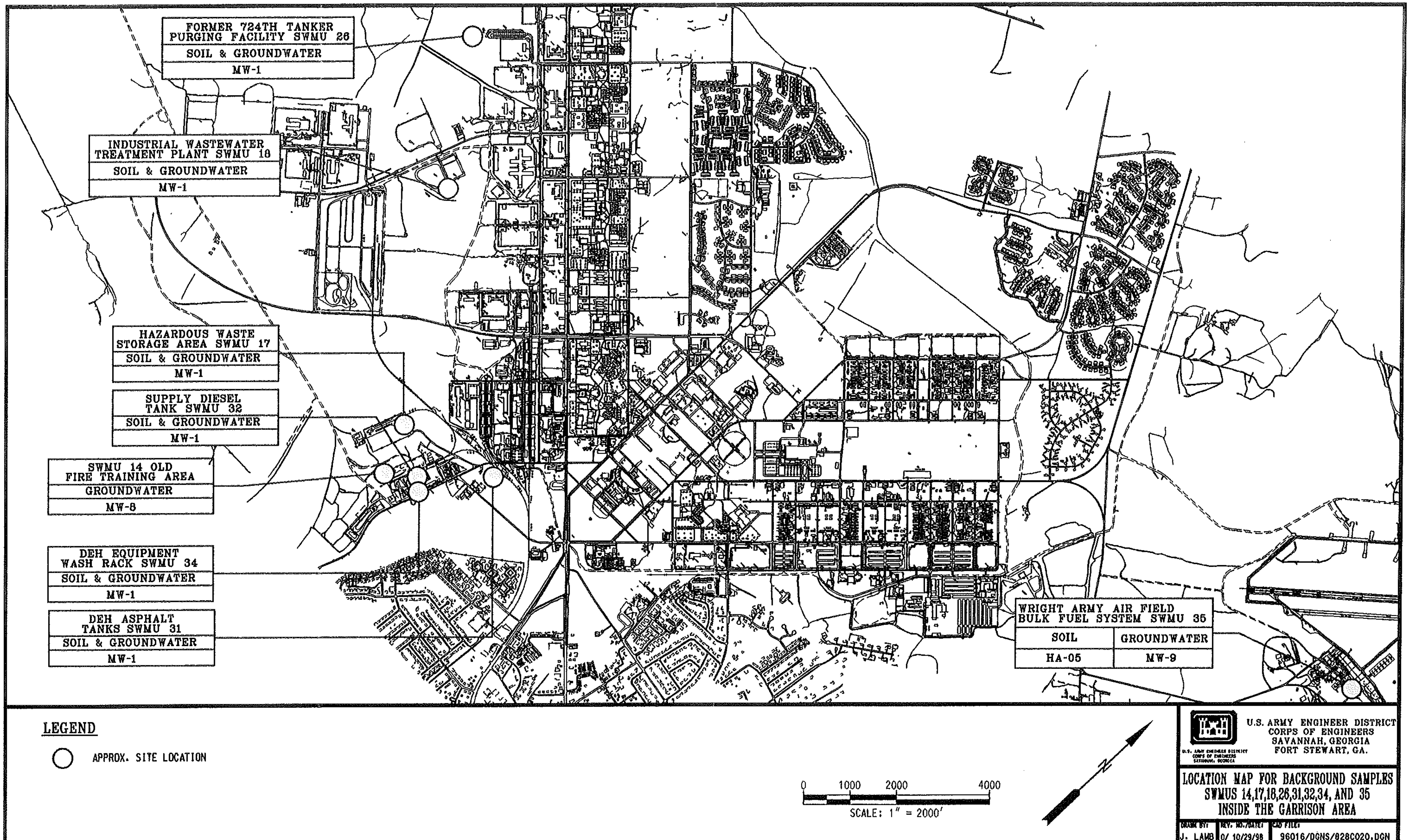


Figure F.2. Location Map for Background Sample Stations - SWMUs 14, 17, 18, 26, 31, 32, 34, and 35, Fort Stewart, Georgia

DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
Directorate of Public Works
1557 Frank Cochran Drive
Fort Stewart, Georgia 31314-4928

Express Mailed
11/24/98

REPLY TO
ATTENTION OF

NOV 24 1998

Directorate of Public Works   CERTIFIED MAIL

Georgia Environmental Protection Division
Attention: Mr. Bruce Khaleghi
205 Butler Street, Southeast
Suite 1162
Atlanta, Georgia 30334

Dear Mr. Khaleghi:

Fort Stewart is pleased to receive the Georgia Environmental Protection Division's (GA EPD) correspondence dated September 24, 1998, in reference to the Final Phase II RCRA Facility Investigation (RFI) Report for the Former 724th Tanker Purging Station [Solid Waste Management Unit (SWMU) 26], dated March 1998; Fort Stewart; EPA ID No. GA9 210 020 872.

In response to the comments received from GA EPD, Fort Stewart has revised the RFI report and enclosed four copies of the Revised Final Phase II RCRA Facility Investigation Report for the Former 724th Tanker Purging Station [Solid Waste Management Unit (SWMU) 26], dated November 1998. Fort Stewart agrees to comply with the comments listed in the referenced correspondence with the exception of Comment #11 (Toxicity Profiles are enclosed under Appendix I rather than in Section 7.0 for informational purposes). A formal response to comments table is provided as an enclosure (i.e., within the front pocket of each Revised Final RFI Report).

In accordance with the Federal Code of Regulations, Section 270.11(d), the following certification is provided by the Installation:

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

Please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works Environmental Branch, at (405) 364-8461 or (912) 767-7919, respectively, should questions arise regarding the response to comments and/or the Revised Final Phase II RFI Report.

Sincerely,

for Dale F. Kiefer
Ovidio E. Perez
Colonel, U.S., Army
Director, Public Works

Enclosures