

SITE: Fire Training Area, HAA-01, HAAF, GEORGIA

Kansas City District, Corps of Engineers Notification of Remedial Inv/Feasibility Study -	12 April 1991
FSGA Decision Document for Interim Remedial Action -	4 Nov 1996
GA EPD Listing Site on Hazardous Site Response Inventory -	12 Jan 1999
FSGA Submittal of Compliance Status Report (dated March 2000) -	30 Mar 2000
GA EPD CSR Review Comments -	5 Jan 2001
FSGA letter to GA EPD for meeting to discuss GA EPD Review Comments -	5 Mar 2001
FSGA letter responding to GA EPD CSR Review Comments based on 19 Mar 2001 meeting -	16 Apr 2001
GA EPD CSR Response to FSGA CSR comments from 19 Mar 2001 meeting -	8 May 2001
FSGA Submittal of Addendum for CSR (April 2005) & Revised Final CSR (May 2002) -	6 June 2005
GA EPD CSR Response to Comments -	21 Dec 2006
<hr/> <b>Change of Contractor</b> <hr/>	
FSGA Submittal of CSR (October 2011) -	20 Oct 2011
GA EPD CSR Review Comments requesting full Revisions to CSR -	6 Jan 2012
FSGA Submittal of Revision #1, CSR (Apr 2012) -	26 Apr 2012



DEPARTMENT OF THE ARMY  
US ARMY INSTALLATION MANAGEMENT COMMAND  
HEADQUARTERS, US ARMY GARRISON, FORT STEWART/HUNTER ARMY AIRFIELD  
DIRECTORATE OF PUBLIC WORKS  
1587 FRANK COCHRAN DRIVE  
FORT STEWART, GEORGIA 31314-5048

REPLY TO  
ATTENTION OF

Office of the Directorate

April 26, 2012

CERTIFIED MAIL

70102780000144282156

Georgia Environmental Protection Division  
Attention: Ms. Amy Potter  
2 Martin Luther King Jr. Drive, Southeast  
Floyd Towers East, Suite 1452  
Atlanta, Georgia 30334

Dear Ms. Potter:

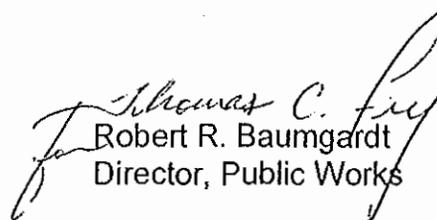
Fort Stewart is pleased to submit to the Georgia Environmental Protection Division two (2) hard copies and one (1) electronic copy of the Compliance Status Report – Revision #1, HAA-01 (Former Fire Training Area and DAACG Chlorinated Solvents Area), HSI# 10395, Hunter Army Airfield, Georgia, dated April 2012.

In accordance with the Federal Code of Regulations, Section 270.11(d), the following certification is provided by the Installation:

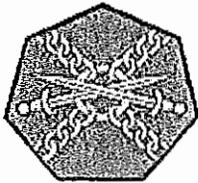
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage 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.

If you have any questions or comments regarding the enclosed report, please contact Ms. Algeana Stevenson at (912) 315-5144 or Ms. Tressa Rutland, Directorate of Public Works, Environmental Division, Prevention and Compliance Branch at (912) 767-2010.

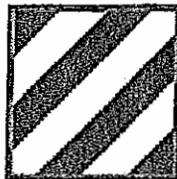
Sincerely,

  
Robert R. Baumgardt  
Director, Public Works

Enclosures



IMA



3d Inf Div (Mech)

**Compliance Status Report  
Revision 1**

**HAA-01 (Former Fire Training Area  
and DAACG Chlorinated Solvents  
Area)**

Hunter Army Airfield, Georgia  
HSI Site Number 10395

Revision 1 - April 2012

Original Report – June 2011



Revision 1 – April 2012  
Original Report – June 2011

## **Executive Summary**

This Compliance Status Report (CSR) documents current and historical investigations performed at the former Fire Training Area (FTA) and the Departure/Arrival Airfield Control Group (DAACG) Chlorinated Solvents Area, at the Hunter Army Airfield (HAAF) in Savannah, Georgia. This report details the nature and extent of impacts associated with historic site operations as defined by CSR investigation and Interim Measure (IM) activities conducted between 1987 and 2010. The report interprets the current and historical data as they relate to horizontal and vertical delineation of impacts, potential migration of constituents in each medium, identification of constituents of potential concern (COPCs), and evaluation of potential impacts to human health and the environment. This CSR investigation was conducted in accordance with the requirements of the Georgia Hazardous Site Response Act (HSRA).

Due to their proximity and history, the FTA and DAACG Chlorinated Solvent Area are collectively identified as HAA-01 (Hazardous Site Inventory [HSI] No. 10395) for the purpose of this investigation. HAA-01 is located in the northwestern portion of the HAAF. The site is located west of the flightline and approximately 800 feet (ft) northwest of the control tower.

The former FTA consisted of a gravel covered concrete fire training pad, a steel structure utilized as a mock aircraft, a 17,000 gallon aboveground storage tank (AST) used to store fuel for training purposes, a 1,100 gallon AST used to contain water contaminated fuel and solvents, and associated underground piping. Typical activities included spraying water contaminated fuels on the mock aircraft, igniting the coated structure, and subsequently extinguishing the aircraft for training purposes. Fire training activities were discontinued at the site in 1991 and all components of the former FTA were removed in 1998 as part of soil remediation activities. Topography at the site gently slopes toward the Springfield Canal that is located 3,600 feet to the west. The Springfield Canal flows southwest before emptying into the Little Ogeechee River, five and a half miles downstream of HAAF.

Several investigations and remedial actions have been conducted at HAA-01 since 1987. Various phases of CSR investigations were performed at the site between 1999 and 2010. Investigations at the site have included the installation of soil borings and monitor wells; the collection and analysis of soil, sediment, groundwater, and surface water samples; human and ecological exposure assessments; and data evaluation.

In March 1987, the United States Army Environmental Hygiene Agency (USAEHA) conducted a preliminary assessment of soils in the vicinity of the former fire training

## Compliance Status Report Revision 1

HAA-01 (Former Fire Training  
Area and DAACG Chlorinated  
Solvent Area)



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pad in order to confirm the absence or presence of impacts. Metals, polynuclear aromatic hydrocarbons (PAHs), and phthalates were detected in soil samples. In February 1990, a total of 6 monitor wells were installed in the shallow and deep portions of the uppermost aquifer at the Site. In addition, 6 soil borings and 3 sediment samples were collected to further define soil and groundwater contamination. In March 1992, three additional monitor wells and 7 soil borings were installed and samples were collected. Four sediment samples were also collected. Laboratory results of these investigations identified volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) in surface soils and drainage ditch sediment samples. Low concentrations of VOCs, SVOCs and metals were also identified in the groundwater samples.

In 1995, a source removal design investigation was conducted in which 4 additional monitor wells and 17 additional soil borings were installed to further define the extent of impacts to soil and groundwater. Groundwater samples were collected from each of the newly installed monitor wells and soil samples were collected from 11 of the 17 soil borings during this investigation. Laboratory analysis of both the soil and groundwater samples confirmed the presence of VOCs and SVOCs exceeding the Risk Reduction Standard (RRS) in the immediate vicinity of the curbed concrete pad. In addition, free phase product was identified in monitor well HMW-07 during this phase of the investigation. The results of this investigation were reported in a Pre-Final CSR, which was subsequently withdrawn in order to incorporate the results of additional investigation activities.

Between November 1997 and March 1998, soil remediation activities were performed at the former FTA. Soils identified during the previous investigations at concentrations exceeding HSRA notification standards were targeted for removal. Remedial activities included the removal of the former FTA components including the simulated aircraft structure, ASTs, underground transmission lines, fire training pad, 9,430 tons of soil, 233 tons of concrete debris, and 81,906 gallons of wastewater. At the completion of the soil remediation activities, laboratory analytical data from confirmatory soil samples showed that concentrations of constituents remained above the HSRA notification standards at multiple locations in the excavation.

Free product removal activities were initiated in February 1999 in the vicinity of monitor well HMW-7 and were performed using a belt skimmer system. While a limited volume of free product was recovered by the skimmer system, no product was detected in surrounding monitor wells during subsequent 1999 or 2000 gauging activities.



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Between July 1999 and January 2000, supplemental CSR investigation activities were conducted, including the installation of 8 monitor wells, 31 soil borings and the collection of soil and groundwater samples for laboratory analysis. Human and ecological exposure assessments were also completed during this phase of investigation. The results of these investigations concluded that the extent of VOCs and SVOCs in soil and the extent of VOCs in groundwater were not completely delineated. Polychlorinated Biphenyls (PCBs) and pesticides were also identified in soil samples, and SVOCs and metals were identified in groundwater samples during this phase of investigation. Chlorinated solvents (cis 1,2-dichloroethene [DCE] and trans 1,2-DCE) were identified in groundwater north of the former FTA. Based on these results, the area north of the former FTA was designated as the DAACG Chlorinated Solvents Area.

In October and November 2001, investigation activities continued with the installation of 2 additional monitor wells, 9 soil borings and the collection of groundwater, surface water and soil samples for laboratory analysis to complete delineation. Six surface water samples were collected from the two drainage ditches adjacent to the former FTA.

In 2002, a Compliance Status Report (Law Engineering and Environmental Services, Inc. [Law] 2002) was prepared and submitted to the Georgia Environmental Protection Division (GAEPD) documenting investigation activities completed through 2001. The report identified several soil and groundwater samples that exceeded applicable RRS that were not fully delineated.

To address the deficiencies identified in the 2002 CSR, additional phases of investigation and remedial actions were completed between 2002 and 2004. In 2002 a vertical profile investigation was completed in the DAACG Area which included the installation of 17 vertical profile borings and the collection of approximately 8 groundwater grab samples from each boring for laboratory analysis. In 2003, 8 additional monitor wells were installed in the DAACG Area and sampled. A comprehensive groundwater sampling event was completed in both the former FTA and DAACG areas in 2004.

An Interim Removal Action (IRA) was conducted in 2003 to address free product and contaminated soil in the vicinity of HMW-7. The belt skimmer system was deactivated and removed during the IRA activities. Monitor well HMW-7 and the immediate surrounding area were excavated and removed for off-site disposal. A replacement monitor well was installed within the limits of the excavation. The results of the 2002



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through 2004 investigation and monitoring activities and the 2003 IRA were documented in a CSR Addendum (Science Applications International Corporation [SAIC] 2005).

Following the submittal of the CSR Addendum, a semi-annual groundwater monitoring program was initiated. Starting with the July 2004 event and continuing through January 2008, monitor wells at both the former FTA and DAACG Area were sampled for laboratory analysis. Analytical methods used for sample analysis varied by year and by sample location over the four years of semi-annual groundwater monitoring.

Based on comments received from the GAEPD on the CSR Addendum, additional soil and groundwater investigation activities were conducted in 2009 and 2010. A comprehensive groundwater monitoring event was completed in February 2009 with samples collected from 10 monitor wells associated with the former FTA and 10 monitor wells from the DAACG area. All samples were submitted for laboratory analysis of VOCs, SVOCs, metals, pesticides, and herbicides. Based on the results of the February 2009 groundwater monitoring event, additional investigation of soil and groundwater was recommended in order to complete delineation of detected compounds to background and/or non-detect concentrations. A total of five soil borings, nine shallow surficial aquifer monitor wells and three deep surficial aquifer monitor wells were proposed to be installed along with the collection of soil and/or groundwater samples.

In November 2009 a focused soil sampling was performed within the former FTA, with 5 soil borings installed to complete horizontal delineation of previously detected compounds. In addition to samples collected from the soil borings, soil samples were also collected from shallow and deep intervals during the installation of 9 of 12 new monitor wells. These soil samples were collected to further characterize and/or delineate previously detected compounds present in soils within the DAACG Area. Based on the cumulative results of the historic and recent soil investigation activities, impacts in soils and have been adequately delineated both horizontally and vertically.

Additional groundwater investigation activities were initiated in December 2009, with the installation of 12 new monitor wells. Nine shallow surficial aquifer monitor wells (HA01-MW-09, through HA01-MW-17) and three deep surficial aquifer monitor wells (HA01-MW-12D, HA-01-MW-14D, and HA01-MW-18D) were installed to complete delineation of the previously identified groundwater impacts within the former FTA and DAACG Areas. Monitor well HA01-MW-18D was installed downgradient of monitor well COE-MW-3, at the request of the GA EPD in order to enhance the vertical



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delineation in this area. This well was installed into the top of the Hawthorne Formation, at approximately 65 feet bls.

Following the installation and development of the new wells a comprehensive groundwater monitoring event was performed. Groundwater samples were collected from the 12 new monitor wells as well as 20 existing monitor wells within the former FTA and DAACG Area. The 20 existing wells were the same wells sampled during the February 2009 monitoring event. All groundwater samples collected from DAACG Area monitor wells were analyzed for metals, pesticides and VOCs. Groundwater samples collected from the former FTA were analyzed for VOCs. Select wells (8 total) from both the DAACG Area and the former FTA were also analyzed for SVOCs based on historic detections. The results of the additional investigation showed that impacts in groundwater were adequately delineated both horizontally and vertically. Results of this event were reported in the Compliance Status Report dated September 2011.

The Georgia EPD completed a review and issued comments on the CSR in January 2012. In response to these comments, monitor wells HA01-MW-12 and HA01-MW-14 were resampled in January 2012 and analyzed for VOCs. Laboratory analysis confirmed the absence of designated VOCs in the wells. In addition, deep monitor well HA01-MW-07D was installed in the vicinity of monitor well COE-MW-07 in order to enhance vertical delineation. The well was installed and sampled in February 2012. Laboratory analysis showed no detections above the laboratory reporting limit.

#### **Human Health Risk Assessment**

A human health risk assessment (HHRA) was completed to evaluate the potential risks to human health at HAA-01 by comparing the maximum detected soil and groundwater constituent concentrations to the Types 1 through 4 RRS. The potential exposure to constituents detected in surface water and sediment were also evaluated by comparing the maximum detected concentrations to the Type 1 RRS and the Georgia In-Stream Water Quality Standards (IWQS) (surface water only). Type 1 and Type 2 standards were exceeded by 16 and 10 constituents in soil, respectively. In addition, 14 and 6 constituents were observed to exceed their respective Type 3 and Type 4 RRSs. Thirty-three constituents were detected in groundwater at concentrations that exceeded the Type 1 and Type 3 groundwater RRS. Eighteen constituents exceeded the Type 2 RRS and 17 constituents exceeded the Type 4 RRS for the shallow groundwater. Eight constituents detected in sediments exceeded the Type 1 and Type 3 RRS. Five constituents detected in sediments exceeded the Type 2 RRS for soil. None of the detected constituents in sediment exceeded the Type 4 RRS. Three constituents detected in surface water exceeded the Georgia in-stream water quality



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standards (IWQS). All of the detected surface water constituents were compared with Type 4 RRS calculated based on exposure of a recreational receptor. None of the maximum detected concentrations exceeded the Type 4 RRS.

### **Ecological Risk Assessment**

An ecological risk assessment (ERA) was also completed for HAA-01. The ERA presented the results of a screening level ERA (SLERA) and Step 3a of a baseline ERA (BERA) for ecological receptors at the site based on hazard quotients (HQs). Risks were characterized for ecological receptors at the site by considering direct contact with constituent of potential ecological concern (COPECs) in surface soil (0-2 ft below land surface [ft bls]) and through ingestion of prey tissue through a food web model to upper-trophic level wildlife. Overall, potential ecological risks are low to negligible for exposure to site surface soil. Potential risks modeled to upper-trophic level invertivorous birds and mammals are also low. Based on this assessment, ecological risks at the site were determined to be minimal and no further evaluation was determined to be necessary.

### **Conclusions**

This CSR for HAA-01 has presented physical, analytical, and risk assessment data to support the conclusion that the potential impacts to the environment by past activities at the site have been sufficiently characterized in surface soil, subsurface soil, sediment, surface water and groundwater. Based on the data provided herein, the following conclusions are submitted for consideration by the GAEPD:

- The CSR investigation has been completed, and the potential impacts to the environment by past activities at HAA-01 have been sufficiently characterized and delineated where necessary in surface soils, subsurface soils, sediment, surface water and groundwater.
- A Corrective Action Plan (CAP) will be developed to address CVOC, benzene and aldrin impacts in groundwater in the DAACG Area and benzene and naphthalene impacts in groundwater in the former FTA. Additionally, soil impacts historically detected in the former FTA will also be carried forward in the CAP for further evaluation.

Upon approval of this document, preparation of the CAP will be initiated. The CAP will be prepared to identify the selected corrective action to be implemented in order to address residual compounds in groundwater and soil exceeding the Type 1 RRS.

# Georgia Department of Natural Resources

2 Martin Luther King Jr. Dr., S.E., Suite 1154, Atlanta, Georgia 30334-9000

Mark Williams, Commissioner

Environmental Protection Division

Judson H. Turner, Director

Land Protection Branch

Mark Smith, Branch Chief

Phone: 404/656-7802 FAX: 404/651-9425

January 6, 2012

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Mr. Robert R. Baumgardt  
Director, Public Works  
Headquarters, Third Infantry Division (Mechanized) and Fort Stewart  
Directorate of Public Works, Building 1137  
Environmental Branch (ATTN: Algeana Stevenson)  
1550 Frank Cochran Drive  
Fort Stewart, Georgia 31314-4927

RE: *Compliance Status Report HAA-01 (Former Fire Training Area and DAACG Chlorinated Solvent Area), Hunter Army Airfield (HAAF), Georgia, dated October 20, 2011 and received October 25, 2011, HSI Site Number 10395, HAAF; EPA ID No. GA4 210 022 733.*

Dear Mr. Baumgardt:

The Land Protection Branch of the Georgia Environmental Protection Division (EPD) has reviewed Hunter Army Airfield's *Compliance Status Report for HAA-01 (Former Fire Training Area and DAACG Chlorinated Solvent Area), Hunter Army Airfield (HAAF), Georgia, dated October 20, 2011 and received October 25, 2011, for compliance with the Rules of Georgia Department of Natural Resources (i.e., Rules), Chapter 391-3-19 Hazardous Sites Response. During that review, the attached comments were generated.*

Within ninety (90) days after receipt of this letter, please submit two (2) copies of all revisions that address the attached comments, and one (1) electronic copy (in PDF format) of the full report. The revised pages should be noted at the bottom with the word "Revised" and the revision date. Please contact Mr. Mo Ghazi or William Powell at 404-656-2833 if you have any questions.

Sincerely,



Amy Potter

Unit Coordinator

Hazardous Waste Management & Remediation Program

c: Tressa Rutland, Fort Stewart (via facsimile)

File: Hunter Army Air Field, Georgia (G)

SARDRIVE\OHAZTRAIL Sites\Hunter Army Air Field\HAAF-1\GAEPD Review CSR HAA-01 FFTA and DAACG Chlorinated Solvent Area\_October 2011.doc

**EPD COMMENTS**  
**FINAL COMPLIANCE STATUS REPORT (CSR)**  
**HAA-01, FORMER FIRE TRAINING AREA AND DAACG CHLORINATED**  
**SOLVENT AREA, HSI SITE #10395**  
**HUNTER ARMY AIRFIELD**

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1. **Section 4.3.1, Description of Each Known Source.** No description of the function, design, dimensions, capacity, and operation of the fire-training pit are provided as required by Rule 391-3-19-.06(3)(b)(1)(v). Please provide this information.
2. **Figure 4-3, Topographic Map.** The provided topographic map uses a satellite aerial that does not distinguish the elevation contours clearly as they blend in with the aerial. Please replace Figure 4-3 with a conventional topographic map that shows only the contour lines (i.e., remove the satellite aerial) and features such as roads, buildings, and water bodies.
3. **Figures 4-2 (and Table 5-2), Well Locations.** Rule 391-3-19-.06(3)(b)(3)(v)(I) requires that a CSR includes a map that depicts all existing well locations including a survey of each well's surface reference point and the elevation of its top of casing. Figure 4-2 (Site Map) shows all existing well locations, but does not include the surface reference points (i.e., Northing and Easting coordinates) or the top of casing elevations. Please modify Figure 4-2 to include this required information. Additionally, several wells (such as HMW-01, 03 and 05) on Table 5-2 have surface reference points (i.e., Northing and Easting coordinates) listed as "not available." Please modify Table 5-2 to include the surface reference points for all existing wells.
4. **Section 5, Soil Sampling Results.** Section 5 provides a chronological discussion of respective soil investigation sampling results to 2009, but does not provide a clear and comprehensive picture of the final delineation or characterization. Because the CSR is a stand-alone document, please provide a new subsection in Section 5 (or 6) that incorporates discussion of the combined current and historical soil sample results. This discussion should include the identification of all contaminants, their maximum detected concentrations, hot spots, removed/remaining contamination, etc., all of which provide a critical part of the soil delineation and characterization.
5. **Sections 5, 7, 10 and 11, Surface Water Sampling Results.** Rule 391-3-19-.07(4)(d) requires that all waters of the State shall be protected from "releases that would cause surface water to experience concentrations of regulated substances in excess of any general criterion specified in the Georgia Rules and Regulations for Water Quality Control at 391-3-6-.03(5) or, if concentration values are not provided in said Rules, concentrations at levels that exhibit acute toxicity to aquatic life as demonstrated pursuant to protocols established by the Director." The narrative discussion of surface water sampling results is not included in Section 5. Please revise. Since surface water sampling results for Tetrachloroethene and Vinyl Chloride (Section 7, Table 7-19) exceed Georgia In-stream Water Quality Standards (IWQS), please identify as such in Sections 7.5 and 10 (Conclusions), and discuss surface water contamination as requiring corrective action in Sections 11 (Recommendations).

6. **Section 5.10.3.1 Groundwater Investigation Results, Page 5-17.** The last column entitled "Type 1 RRS" (Type 1 Risk Reduction Standards found in §391-3-19-.07 of the Georgia Rules) of the table on this page designates "MCL" for concentrations of cis-1,2-Dichloroethylene (DCE) and trans-1,2-DCE. While the listed concentrations of 70 µg/L and 100 µg/L are equal to the MCL, they are also the established Type 1 RRS values for cis-1,2-DCE and trans-1,2-DCE, respectively, and thus do not require the "MCL" designation. Please revise.
7. **Section 5.10.3, Additional Groundwater Delineation (Figures 5-8 through 5-13).** Rule 391-3-19-.06(3)(b)(3) requires that a CSR include "a complete definition of the horizontal and vertical extent of groundwater contamination." The delineation of groundwater contamination in the surficial aquifer is incomplete. Please install the following additional wells to complete delineation of groundwater contamination at the site:
  - One deep well near shallow well COE-MW-07, which contains cis-1,2-DCE at a concentration of 1600 µg/L, to complete vertical downgradient delineation of cis-1,2-DCE and monitor for vertical migration.
  - One shallow well located West and downgradient of well HA01-MW-14, which contains Toluene at a concentration of 240 µg/L, to complete horizontal delineation of Toluene and monitor for downgradient VOC (volatile organic compound) migration.
  - One shallow well located West and downgradient of well HA01-MW-12, which contains Acetone at a concentration of 70 µg/L, to complete horizontal delineation of Acetone and monitor for downgradient VOC migration.
8. **Figures 5-4 and 5-5, Summary of Benzene and Xylene Concentrations in Soil.** In the legends for these figures, the pink areas are identified as "Benzene Isocontour" and "Xylene Isocontour." Figures 5-4 and 5-5 do not show isocontours as the pink areas only represent the horizontal aerial extent of Benzene and Xylene concentrations in soil. Please note that concentrations of constituents should be indicated by isoconcentration lines to demonstrate characterization. Additionally, these figures do not show the date(s) of the sample results. Please revise these figures to include isoconcentration lines and dates of sample results.
9. **Additional Figures, Delineation of Soil Contamination.** If a release involves soil contamination, Rule 391-3-19-.06(3)(b)(2) requires that a CSR include a complete definition of the horizontal and vertical extent of such soil contamination. Rule 391-3-19-.06(3)(b)(2)(iii) additionally requires the location of all sampling points by sample identification number on a map, as well as vertical cross-sections. The CSR does not contain a sufficient demonstration that complete delineation of soil contamination has been achieved as figures demonstrating delineation of all contaminants at the site have not been included in the CSR. Only figures showing Benzene and Xylene soil contamination have been provided. Please note that page 7-4 states that fifty-three (53) constituents exceed the Type 1 RRS, and forty-six (46) constituents exceed the Type 2 RRS. All regulated substances detected in soil which exceed background levels must be shown. Figures demonstrating delineation should show the extent and locations of all previous soil excavations and confirmatory sampling results, including all soil sample results obtained outside the boundaries of the excavated soil, but not within those boundaries (unless taken after the excavation). Please provide appropriate figures demonstrating the complete delineation to background of all soil contaminants in accordance with Rule 391-3-19-.06(3)(b)(2).

10. **Figure 5-2, Surface Water and Sediment Contamination.** This figure does not show the sample results. Please provide the sample results for all substances detected in surface water and sediment on Figure 5-2.
11. **Table 5-5, Groundwater Elevation Summary.** In column "Location ID," please change HA01-MW-18 to HA01-MW-18D to correspond with Figure 4-2.
12. **Table 5-6, Groundwater Investigation Summary - December 2009.** The result for monitoring well HMW-23, which was sampled on 12/17/2009, shows NA (not analyzed). However, this well was sampled on 01/18/2010 and the results are listed in the Table 5-6. Please provide a footnote (or include in the text) explaining why this well was not sampled during the 12/17/2009 sampling event.
13. **Table 5-6, Groundwater Investigation Summary - December 2009.** In the Table 5-6 footnotes, the description for the blue highlight states, "Blue shade indicates the analyte was detected above the Type 1 RRS or MCL where no RRS has been established." According to the most updated version (June 2010) of Georgia Department of Natural Resources: Environmental Protection: Hazardous Site Response Appendix III (Table 1), all analytes with blue highlighting have established Type 1 RRS concentration values (including cis-1,2-DCE, with a concentration value of 70 µg/L). Regulated contaminants not listed in Appendix III (Table 1) have a Type 1 RRS of Detection Limit or Background. Please update all tables accordingly.
14. **Figure 5-14, Additional Figures, Vertical Delineation.** Rule 391-3-19-.06(3)(b)(3)(x) requires that a CSR include "maps and vertical cross-sections of appropriate scale depicting concentrations for all contaminants superimposed upon site stratigraphic features and monitoring wells." Figure 5-14 shows the geologic cross-section for the DAACG plume, and this cross-section does not pass through the areas of highest groundwater contamination. In addition, no vertical cross-sections were provided for the Fire Training Area (FTA). Please revise Figure 5-14, and provide additional geological cross sections that pass through the center of each plume (both Fire Training Area and DAACG plumes) in directions perpendicular and parallel to the direction of groundwater flow as required by Rule 391-3-19-.06(3)(b)(3)(x). Please ensure that the vertical cross-sections clearly depict concentrations for all contaminants of concern, and show any surface water bodies and previous soil excavations.
15. **Section 6, Conceptual Site Model (CSM), Page 6-1.** Rules 391-3-19-.06(3)(b)(1)(iii) requires that a CSR identify the name of each regulated substance released from each source. Section 6 does not identify many of the contaminants that exceed RRSs in soil, groundwater, surface water, and sediment [e.g., cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE, Vinyl Chloride (VC), Benzene, Acetone, Toluene, Carbon Disulfide, etc.]. Please identify all contaminants for each source (FTA, DAACG solvent area) in this section.
16. **Section 8, Incorrect Section Reference.** Section 8 contains numerous section references that are incorrect. Please review this section and correct the following:
  - a. **Section 8.3.1.4: Third Sentence.** This sentence references Section 7.3.1.1. There is no such section in this CSR.

- b. Section 8.3.3: Third Paragraph. Second Sentence. This sentence references Section 7.2.1.7. There is no such section in this CSR.
  - c. Section 8.4.3: Second Paragraph. This section references Section 7.4.5 as Risk Characterization. There is no such section in this CSR.
17. **Section 8, Incorrect Table Reference.** Section 8.4.4.4 incorrectly references Table 7-5 and Table 7-6. The correct references are Table 8-5 and Table 8-6. Please revise accordingly.
18. **Appendix E, Background Concentrations.** The provided background concentration report is taken from the old CSR for HSI # 10395 (Former HAAF Fire Training Area, Feb 2002). The EPD approval letter included in Appendix E (dated May 8, 2001) for background concentrations references a CSR for HSI # 10105 (March 2001). Please clarify.
19. **Appendix G, Laboratory Analytical Reports.** Rule 391-3-19-.06(3)(b)(2)(iv) requires that a CSR include a description of all sampling and analysis procedures and laboratory analytical techniques. For historical soil data prior to 2009, the Appendix only contains the lab analytical results, but the lab techniques, QA/QC procedures and control data are not provided. Please include this information in accordance with Rule 391-3-19-.06(3)(b)(2)(iv).
20. **Appendix L, CSR Checklist.** The supplied CSR checklist in Appendix L contains several errors. For example, on Page 3, for Rule 391-3-19-.06(3)(b)(3)(iv), which establishes the hydrogeologic information requirements for a CSR, the checklist references Appendix J (ProUCL Output). The correct reference is Appendix H (Hydraulic Conductivity Calculations). Also on Page 3, for Rules 391-3-19-.06(3)(b)(3)(v) and 391-3-19-.06(3)(b)(3)(v)(II, III, IV), which establish the well construction information requirements in a CSR, the checklist references Appendix D (Historical Remedial Action Summaries). The correct reference is Appendix C (Field Forms, Well Construction, and Boring Logs). Please thoroughly review Appendix L and make all necessary changes due to incorrect references. Additionally, please update the CSR checklist to reflect all changes made in response to this letter.

### Review of the Human Health Risk Assessment (Section 8)

21. **Exposure Assessment.** Please remove the statement "Thus, if the soil or groundwater concentrations are less than the conservative RRS, then additional exposure scenarios will not be evaluated" from Section 7.2 in the CSR because other exposure scenarios such as surface water and sediment exceed their respective RRS and, therefore, should be evaluated.
22. **Exposure Factors.** Please include the inhalation rates used to calculate risk associated with the inhalation pathways for both soil and groundwater.
23. **Sediment and Surface Water Exposure.** In order to determine compliance with Type 4 RRS in sediment and surface water, please include an evaluation of a recreational receptor.

24. **Toxicity Factors.** The toxicity factors provided on Table 7-3 for 1,3-Dichlorobenzene, 1,1,2,2-Tetrachloroethane, Trichloroethylene (TCE), 2-Nitrophenol, alpha-Chlordane, gamma-Chlordane, Cadmium and Chromium differ from the values the Environmental Protection Division (EPD) recommends. In accordance with HSRA Rules, the use of surrogates is not allowed.

Additionally, total Chromium does not have recommended toxicity factors. It is acceptable to use the more conservative Chromium (VI) toxicity factors in order to evaluate total Chromium at the site. However, this will affect the overall RRS.

For your convenience below are the recommended toxicity values. Please revise accordingly.

Regulated Substance	Toxicity Factors
1,3-Dichlorobenzene	RfDi: NA
1,1,2,2-Tetrachloroethane	SFi: $2.0E^{-01}$ (mg/kg-day) <sup>01</sup> (CalEPA)
Trichloroethylene	RfDo: $5.0E^{-04}$ mg/kg-day (IRIS)
2-Nitrophenol	RfDi: NA
alpha-Chlordane	SFo; NA; SFi: NA; RfDo: NA; RfDi: NA
gamma-Chlordane	SFo; NA; SFi: NA; RfDo: NA; RfDi: NA
Cadmium	RfDi: $5.7E^{-06}$ mg/kg-day (CalEPA)

25. **Type 1 Risk Reduction Standards for Soil.** The Type 1 RRS provided on Table 7-5 for Dibromochloromethane differs from the one calculated by the EPD. The correct value should be 8 mg/kg based on Appendix III times 100. Please revise.

Additionally, the Type 1 RRS for Chromium (VI) is incorrect. The values provided in the HSRA Rules are for total Chromium, and therefore, are not appropriate to use for Chromium (VI). The correct Type 1 RRS should be based on the calculated risk-based value. Please update the CSR (see Figure 5-3, Tables 5-3 and 5-4, and table on Page 5-13) utilizing the following criteria for determining the correct Type 1 RRS (Soil) values [Rule 391-3-19-.07(6)(c)]:

- For metals in soil, please use Table 2 in Appendix III of Rules of Georgia Department of Natural Resources, Chapter 391-3-19.
- For regulated contaminants and *metals not listed in Table 2* (Appendix III), please use the lowest of the following items:

**Item 1.** The highest of:

1. Notification Concentration (NC);
2. Type 1 Groundwater (GW) RRS x 100; or
3. Synthetic Precipitation Leaching Procedure (SPLP) or Toxicity Characteristics Leaching Procedure (TCLP) data.

**Item 2.** For non-carcinogens, the concentration that is unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 7 of Risk Assessment Guidance for Superfund (RAGS), Part B and standard residential exposure assumptions in Table 3 of Appendix III.

**Item 3.** For carcinogens, the concentration for which the upper bound on the estimated excess cancer risk is less than or equal to  $10^{-5}$  via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 of RAGS, Part B and standard residential exposure assumptions in Table 3 of Appendix III.

**26. Type 2 Risk Reduction Standards for Soil.** The Type 2 RRS for Chromium (VI) is incorrect. The values provided in the HSRA Rules are for total Chromium, and therefore, are not appropriate to use for Chromium (VI). The overall Type 2 RRS should be based on the more conservative calculated risk-based value or leaching value.

Additionally, when calculating a Type 2 RRS for Lead, please include the IEUBK model. The overall Type 2 RRS for Lead should be the more conservative of the model and the leaching criteria. Please revise accordingly.

**27. Type 4 Risk Reduction Standards for Soil.** The Type 4 RRS for Chromium (VI) is incorrect. The values provided in the HSRA Rules are for total Chromium, and therefore, are not appropriate to use for Chromium (VI). The overall Type 4 RRS should be based on the more conservative calculated risk-based value or leaching value.

Additionally, when calculating a Type 4 RRS for Lead, please include the Georgia Adult Lead model. The overall Type 4 RRS for Lead should be the more conservative of the model and the leaching criteria. Please revise accordingly.

**28. Type 1/3 Risk Reduction Standards for Groundwater.** The Type 1/3 RRS for Chromium (VI) is incorrect, and should be the detection limit. Please revise.

**29. Type 2 Risk Reduction Standards for Groundwater.** The Type 2 RRS for Chromium (VI) is incorrect. The values provided in the HSRA Rules are for total Chromium, and therefore, are not appropriate to use for Chromium (VI). The Type 2 RRS for Chromium (VI) should be based on the risk-based value. Please revise.

**30. Type 4 Risk Reduction Standards for Groundwater.** The Type 4 RRS for Chromium (VI) is incorrect. The values provided in the HSRA Rules are for total Chromium, and therefore, are not appropriate to use for Chromium (VI). The Type 4 RRS for Chromium (VI) should be based on the risk-based value. Please revise.

**31. Typographical Errors.** Some of the values provided in the CSR tables have typographical errors. For example, on Table 7-5 the Type 1 RRS for 1,1,2,2-Tetrachloroethene is 0 mg/kg. However, the correct value is 0.13 mg/kg. Additionally, some of the RRS values provided on Table 7-18 do not match their respective RRS values provided in Table 7-5 and 7-8. Please make sure that the RRS values calculated in Section 7 match the RRS values provided in other sections of the CSR. Additional typographical errors include:

- Section 8.4.4.1: Invertivorous mammal – “sort-tailed.” Please revise to say “short-tailed.”

- Sections 8.4.7 and 10: It appears that the HQ values listed for Benzo(a)pyrene and Dieldrin are reversed. Please verify and revise if necessary.

### **Review of the Ecological Risk Assessment (Section 8)**

**32. ProUCL.** Please revise in accordance with the following:

- A value generated with a dataset of less than ten samples does not provide a value that is representative of a 95% Upper Confidence Limit (UCL) of the mean. Therefore, for datasets with less than ten (10) samples, please use the Maximum Detected Concentration (MDC).
- Please provide, as an appendix, a screen-shot of the input data for the calculation of soil 95% UCLs for Benzo(a)anthracene, Benzo(a)pyrene and Chrysene so that the calculations can be verified.

**33. Dieldrin.** Per EPD guidance (*Georgia EPD Guidance for Selecting Remediation Levels*, 1996), for any substance with a Hazard Quotient (HQ) greater than 1.0, after the refinement step has been performed, a remedial level must be developed. Furthermore, since the Dieldrin-impacted area in question is small (i.e., a hotspot), please include a requirement for corrective action/remediation of this hotspot.

**34. Drainage Ditches.** The drainage ditches have been described as two densely vegetated man-made drainage ditches that offer little aquatic habitat. Since vegetation is in place, please evaluate the ditch soils from a terrestrial perspective. If contamination is found in the soils/sediment of the drainage ditches, please evaluate surface water and sediment of the Springfield Canal for impacts from runoff from the drainage ditches.



DEPARTMENT OF THE ARMY  
US ARMY INSTALLATION MANAGEMENT COMMAND  
HEADQUARTERS, US ARMY GARRISON, FORT STEWART/HUNTER ARMY AIRFIELD  
DIRECTORATE OF PUBLIC WORKS  
1587 FRANK COCHRAN DRIVE  
FORT STEWART, GEORGIA 31314-5048

REPLY TO  
ATTENTION OF

Office of the Directorate

October 20, 2011

CERTIFIED MAIL

70102780000144282057

Georgia Environmental Protection Division  
Attention: Ms. Amy Potter  
2 Martin Luther King Jr. Drive, Southeast  
Floyd Towers East, Suite 1452  
Atlanta, Georgia 30334

Dear Ms. Potter:

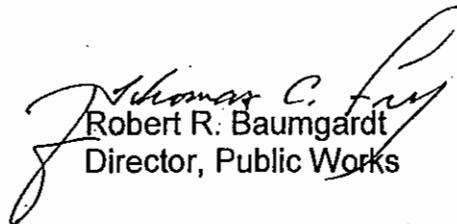
Fort Stewart is pleased to submit to the Georgia Environmental Protection Division two (2) hard copies and one (1) electronic copy of the Compliance Status Report, HAA-01 (Former Fire Training Area and Chlorinated Solvents Area), HSI Site# 10395, Hunter Army Airfield, Georgia, dated October 2011 for your review and approval.

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 gather 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.

If you have any questions or concerns, please contact Ms. Algeana Stevenson at (912) 315-5144 or Ms. Tressa Rutland, Directorate of Public Works, Environmental Division, Prevention and Compliance Branch at (912) 767-2010.

Sincerely,

  
Robert R. Baumgardt  
Director, Public Works

Enclosures



IMA



3d Inf Div (Mech)

## **Compliance Status Report**

### **HAA-01 (Former Fire Training Area and DAACG Chlorinated Solvents Area)**

Hunter Army Airfield, Georgia  
HSI Site Number 10395

October 2011

## Executive Summary

This Compliance Status Report (CSR) documents current and historical investigations performed at the former Fire Training Area (FTA) and the Departure/Arrival Airfield Control Group (DAACG) Chlorinated Solvents Area, at the Hunter Army Airfield (HAAF) in Savannah, Georgia. This report details the nature and extent of impacts associated with historic site operations as defined by CSR investigation and Interim Measure (IM) activities conducted between 1987 and 2010. The report interprets the current and historical data as they relate to horizontal and vertical delineation of impacts, potential migration of constituents in each medium, identification of constituents of potential concern (COPCs), and evaluation of potential impacts to human health and the environment. This CSR investigation was conducted in accordance with the requirements of the Georgia Hazardous Site Response Act (HSRA).

Due to their proximity and history, the FTA and DAACG Chlorinated Solvent Area are collectively identified as HAA-01 (Hazardous Site Inventory [HSI] No. 10395) for the purpose of this investigation. HAA-01 is located in the northwestern portion of the HAAF. The site is located west of the flightline and approximately 800 feet (ft) northwest of the control tower.

The former FTA consisted of a gravel covered concrete fire training pad, a steel structure utilized as a mock aircraft, a 17,000 gallon aboveground storage tank (AST) used to store fuel for training purposes, a 1,100 gallon AST used to contain water contaminated fuel and solvents, and associated underground piping. Typical activities included spraying water contaminated fuels on the mock aircraft, igniting the coated structure, and subsequently extinguishing the aircraft for training purposes. Fire training activities were discontinued at the site in 1991 and all components of the former FTA were removed in 1998 as part of soil remediation activities. Topography at the site gently slopes toward the Springfield Canal that is located 3,600 feet to the west. The Springfield Canal flows southwest before emptying into the Little Ogeechee River, five and a half miles downstream of HAAF.

Several investigations and remedial actions have been conducted at HAA-01 since 1987. Various phases of CSR investigations were performed at the site between 1999 and 2010. Investigations at the site have included the installation of soil borings and monitor wells; the collection and analysis of soil, sediment, groundwater, and surface water samples; human and ecological exposure assessments; and data evaluation.

In March 1987, the United States Army Environmental Hygiene Agency (USAEHA) conducted a preliminary assessment of soils in the vicinity of the former fire training

## ARCADIS

pad in order to confirm the absence or presence of impacts. Metals, polynuclear aromatic hydrocarbons (PAHs), and phthalates were detected in soil samples. In February 1990, a total of 6 monitor wells were installed in the shallow and deep portions of the uppermost aquifer at the Site. In addition, 6 soil borings and 3 sediment samples were collected to further define soil and groundwater contamination. In March 1992, three additional monitor wells and 7 soil borings were installed and samples were collected. Four sediment samples were also collected. Laboratory results of these investigations identified volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) in surface soils and drainage ditch sediment samples. Low concentrations of VOCs, SVOCs and metals were also identified in the groundwater samples.

In 1995, a source removal design investigation was conducted in which 4 additional monitor wells and 17 additional soil borings were installed to further define the extent of impacts to soil and groundwater. Groundwater samples were collected from each of the newly installed monitor wells and soil samples were collected from 11 of the 17 soil borings during this investigation. Laboratory analysis of both the soil and groundwater samples confirmed the presence of VOCs and SVOCs exceeding the Risk Reduction Standard (RRS) in the immediate vicinity of the curbed concrete pad. In addition, free phase product was identified in monitor well HMW-07 during this phase of the investigation. The results of this investigation were reported in a Pre-Final CSR, which was subsequently withdrawn in order to incorporate the results of additional investigation activities.

Between November 1997 and March 1998, soil remediation activities were performed at the former FTA. Soils identified during the previous investigations at concentrations exceeding HSRA notification standards were targeted for removal. Remedial activities included the removal of the former FTA components including the simulated aircraft structure, ASTs, underground transmission lines, fire training pad, 9,430 tons of soil, 233 tons of concrete debris, and 81,906 gallons of wastewater. At the completion of the soil remediation activities, laboratory analytical data from confirmatory soil samples showed that concentrations of constituents remained above the HSRA notification standards at multiple locations in the excavation.

Free product removal activities were initiated in February 1999 in the vicinity of monitor well HMW-7 and were performed using a belt skimmer system. While a limited volume of free product was recovered by the skimmer system, no product was detected in surrounding monitor wells during subsequent 1999 or 2000 gauging activities.

Between July 1999 and January 2000, supplemental CSR investigation activities were conducted, including the installation of 8 monitor wells, 31 soil borings and the collection of soil and groundwater samples for laboratory analysis. Human and ecological exposure assessments were also completed during this phase of investigation. The results of these investigations concluded that the extent of VOCs and SVOCs in soil and the extent of VOCs in groundwater were not completely delineated. Polychlorinated Biphenyls (PCBs) and pesticides were also identified in soil samples, and SVOCs and metals were identified in groundwater samples during this phase of investigation. Chlorinated solvents (cis 1,2-dichloroethene [DCE] and trans 1,2-DCE) were identified in groundwater north of the former FTA. Based on these results, the area north of the former FTA was designated as the DAACG Chlorinated Solvents Area.

In October and November 2001, investigation activities continued with the installation of 2 additional monitor wells, 9 soil borings and the collection of groundwater, surface water and soil samples for laboratory analysis to complete delineation. Six surface water samples were collected from the two drainage ditches adjacent to the former FTA.

In 2002, a Compliance Status Report (Law Engineering and Environmental Services, Inc. [Law] 2002) was prepared and submitted to the Georgia Environmental Protection Division (GAEPD) documenting investigation activities completed through 2001. The report identified several soil and groundwater samples that exceeded applicable RRS that were not fully delineated.

To address the deficiencies identified in the 2002 CSR, additional phases of investigation and remedial actions were completed between 2002 and 2004. In 2002 a vertical profile investigation was completed in the DAACG Area which included the installation of 17 vertical profile borings and the collection of approximately 8 groundwater grab samples from each boring for laboratory analysis. In 2003, 8 additional monitor wells were installed in the DAACG Area and sampled. A comprehensive groundwater sampling event was completed in both the former FTA and DAACG areas in 2004.

An Interim Removal Action (IRA) was conducted in 2003 to address free product and contaminated soil in the vicinity of HMW-7. The belt skimmer system was deactivated and removed during the IRA activities. Monitor well HMW-7 and the immediate surrounding area were excavated and removed for off-site disposal. A replacement monitor well was installed within the limits of the excavation. The results of the 2002

## ARCADIS

through 2004 investigation and monitoring activities and the 2003 IRA were documented in a CSR Addendum (Science Applications International Corporation [SAIC] 2005).

Following the submittal of the CSR Addendum, a semi-annual groundwater monitoring program was initiated. Starting with the July 2004 event and continuing through January 2008, monitor wells at both the former FTA and DAACG Area were sampled for laboratory analysis. Analytical methods used for sample analysis varied by year and by sample location over the four years of semi-annual groundwater monitoring.

Based on comments received from the GAEPD on the CSR Addendum, additional soil and groundwater investigation activities were conducted in 2009 and 2010. A comprehensive groundwater monitoring event was completed in February 2009 with samples collected from 10 monitor wells associated with the former FTA and 10 monitor wells from the DAACG area. All samples were submitted for laboratory analysis of VOCs, SVOCs, metals, pesticides, and herbicides. Based on the results of the February 2009 groundwater monitoring event, additional investigation of soil and groundwater was recommended in order to complete delineation of detected compounds to background and/or non-detect concentrations. A total of five soil borings, nine shallow surficial aquifer monitor wells and three deep surficial aquifer monitor wells were proposed to be installed along with the collection of soil and/or groundwater samples.

In November 2009 a focused soil sampling was performed within the former FTA, with 5 soil borings installed to complete horizontal delineation of previously detected compounds. In addition to samples collected from the soil borings, soil samples were also collected from shallow and deep intervals during the installation of 9 of 12 new monitor wells. These soil samples were collected to further characterize and/or delineate previously detected compounds present in soils within the DAACG Area. Based on the cumulative results of the historic and recent soil investigation activities, impacts in soils and have been adequately delineated both horizontally and vertically.

Additional groundwater investigation activities were initiated in December 2009, with the installation of 12 new monitor wells. Nine shallow surficial aquifer monitor wells (HA01-MW-09, through HA01-MW-17) and three deep surficial aquifer monitor wells (HA01-MW-12D, HA-01-MW-14D, and HA01-MW-18D) were installed to complete delineation of the previously identified groundwater impacts within the former FTA and DAACG Areas. Monitor well HA01-MW-18D was installed downgradient of monitor well COE-MW-3, at the request of the GA EPD in order to enhance the vertical

delineation in this area. This well was installed into the top of the Hawthorne Formation, at approximately 65 feet bls.

Following the installation and development of the new wells a comprehensive groundwater monitoring event was performed. Groundwater samples were collected from the 12 new monitor wells as well as 20 existing monitor wells within the former FTA and DAACG Area. The 20 existing wells were the same wells sampled during the February 2009 monitoring event. All groundwater samples collected from DAACG Area monitor wells were analyzed for metals, pesticides and VOCs. Groundwater samples collected from the former FTA were analyzed for VOCs. Select wells (8 total) from both the DAACG Area and the former FTA were also analyzed for SVOCs based on historic detections. The results of the additional investigation showed that impacts in groundwater were adequately delineated both horizontally and vertically.

#### Human Health Risk Assessment

A human health risk assessment (HHRA) was completed to evaluate the potential risks to human health at HAA-01 by comparing the maximum detected soil and groundwater constituent concentrations to the Types 1 through 4 RRS. The potential exposure to constituents detected in surface water and sediment were also evaluated by comparing the maximum detected concentrations to the Type 1 RRS and the Georgia In-Stream Water Quality Standards (IWQS) (surface water only). Type 1 and Type 2 standards were exceeded by 53 and 46 constituents in soil, respectively. In addition, 50 and 40 constituents were observed to exceed their respective Type 3 and Type 4 RRSs. Thirty-three constituents were detected in groundwater at concentrations that exceeded the Type 1 and Type 3 groundwater RRS. Twenty constituents exceeded the Type 2 RRS and 19 constituents exceeded the Type 4 RRS for the shallow groundwater.

#### Ecological Risk Assessment

An ecological risk assessment (ERA) was also completed for HAA-01. The ERA presented the results of a screening level ERA (SLERA) and Step 3a of a baseline ERA (BERA) for ecological receptors at the site based on hazard quotients (HQs). Risks were characterized for ecological receptors at the site by considering direct contact with constituent of potential ecological concern (COPECs) in surface soil (0-2 ft below land surface [ft bls]) and through ingestion of prey tissue through a food web model to upper-trophic level wildlife. Overall, potential ecological risks are low to negligible for exposure to site surface soil. Potential risks modeled to upper-trophic level invertivorous birds and mammals are also low. Based on this assessment,

ecological risks at the site were determined to be minimal and no further evaluation was determined to be necessary.

### Conclusions

This CSR for HAA-01 has presented physical, analytical, and risk assessment data to support the conclusion that the potential impacts to the environment by past activities at the site have been sufficiently characterized in surface soil, subsurface soil, sediment, surface water and groundwater. Based on the data provided herein, the following conclusions are submitted for consideration by the GAEPD:

- The CSR investigation has been completed, and the potential impacts to the environment by past activities at HAA-01 have been sufficiently characterized and delineated where necessary in surface soils, subsurface soils, sediment, surface water and groundwater.
- A Corrective Action Plan (CAP) will be developed to address CVOC, benzene and aldrin impacts in groundwater in the DAACG Area and benzene and naphthalene impacts in groundwater in the former FTA. Additionally, soil impacts historically detected in the former FTA will also be carried forward in the CAP for further evaluation.

Upon approval of this document, preparation of the CAP will be initiated. The CAP will be prepared to identify the selected corrective action to be implemented in order to address residual compounds in groundwater and soil exceeding the Type 1 RRS.

Scanned 26 JAN 07 Algeana, Randy, Call  
cc: Inessa

# Georgia Department of Natural Resources

2 Martin Luther King Jr. Drive, S.E., Suite 1470, Atlanta, Georgia 30334  
Noel Holcomb, Commissioner  
Environmental Protection Division  
Carol A. Couch, Ph.D., Director  
404-656-2833

RECEIVED

JAN 25 2007

PAGE..... OF.....

20-da  
receipt date

Faxed to us on 21 Dec 06 ✓

December 21, 2006

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

Michael W. Biering, P.E.  
Director, Public Works  
Headquarters, 3D Infantry Division (Mechanized) and Fort Stewart  
Directorate of Public Works, Building 1137  
Environmental Branch (ATTN: Algeana Stevenson)  
1550 Frank Cochran Drive  
Fort Stewart, GA 31314-4927

RE: Revised Final Compliance Status Report (CSR) for the former Fire Training Area (FTA) dated May 24, 2002; HSI # 10395; Hunter Army Airfield; EPA ID No. GA4 210 022 733.  
Addendum to the Compliance Status Report (CSR) for the former Fire Training Area (FTA), dated April 2005; HSI # 10395; Hunter Army Airfield; EPA ID No. GA4 210 022 733.

Dear Mr. Biering:

The Hazardous Waste Management Branch of the Georgia Environmental Protection Division (GA EPD) is in receipt of the above-referenced documents submitted with correspondence (Biering to Hendricks) dated June 6, 2005. Based upon our review, GA EPD has generated the following comment(s):

1. *Acronym* – Chapter 1.0 of the Addendum to the CSR indicates that the northern part of the former FTA has been designated as “DAACG chlorinated solvent area”. Please explain the acronym DAACG.
2. *Section 391-3-19-.06(3)(b)(2) – Soil Delineation* – Soil contamination must be delineated to background concentrations for all VOCs detected above background within the DAACG area north of the former fire training area.
3. *Section 391-3-19-.06(3)(b)(2)(ii) – Analytical Parameters Selected and the Rationale for Selection* – The rationale for analyzing VOCs only must be expanded. Unless you can explain why no other regulated substances potentially exist at the site, additional samples should be collected and analyzed for metals, SVOCs, pesticides, and herbicides. We expect that approximately 20 additional soil samples and 10 groundwater samples collected from the former fire training area and the DAACG chlorinated solvents area would be sufficient to evaluate the potential presence of additional regulated substances.
4. *Section 391-3-19-.06(4)(a) and (b) – Compliance Certification* – The certification of compliance with the applicable risk reduction standards should be signed by the applicable person described in Items 1 through 4 of *Section 391-3-19.03(7)(c)*. The signature space was left blank.
5. *Section 391-3-19-.06(3)(b)(3) – Groundwater Delineation* – Groundwater must be delineated to background concentrations horizontally and vertically for all contaminants. Further sampling is required to complete delineation for the following constituents:

- a. 1,2-DCE, benzene, ethylbenzene, vinyl chloride, and xylenes need to be horizontally delineated northeast of COE-MW-02; and east and south of HMW-14R.
  - b. 1,2-DCE, and vinyl chloride need to be horizontally and vertically delineated northwest of COE-MW-06; and west and southwest of COE-MW-07.
6. *Sections 391-3-19-.06(3)(b)(2) and (3)(x)* – Please show data for all regulated substances in soil and groundwater on the maps. Further delineation may be required based on the revised figures.
  7. *Sections 391-3-19-.06(3)(b)(2) and (3)(x)* – Please include cross-sections for vertical delineation of soil and groundwater contamination.
  8. *Sections 391-3-19-.06(3)(b)(3)(x)* – Please indicate on the groundwater maps whether or not wells with no data boxes were sampled, even if they had no detections. Show the results as <DL (actual detection limit value), rather than BDL.
  9. *Section 391-3-19-.06(3)(b)(3)(viii)* – Maps – Please include isoconcentration lines on maps to show the horizontal extent of groundwater contamination.
  10. *Toxicity Factors* – EPD has noted some discrepancies between the toxicity values on Table 10 of the Addendum and those used by EPD. Please review the following list of toxicity factors for the corrected values.

	Revised CSR Value	EPD Value
Arsenic	SFi = No Value	SFi = 15 (mg/kg-day) <sup>-1</sup> (IRIS)
Barium	RfDi = No Value	RfDi = 1.40E-04 (HEAST)

10. *Type 2 RRS for Soil- Lead* - As required by Section 391-3-19-.07(7)(c)(4) of the Hazardous Sites Response Rules, for lead, soil concentrations at the site must not exceed those concentrations that would cause a resident 6 year old child to have a probability of no greater than 5% of a blood lead level greater than 10 ug/dL as determined by the IEUBK model using site-specific exposure assumptions, including the ingestion of site groundwater as drinking water and the probability of subsurface soils being brought to the land surface. Please evaluate site lead RRS using the IEUBK model and submit all input parameters along with documented references.
11. *Type 2 and 4 RRS for Soil-Leaching Criteria* – Many of the Type 2 and 4 RRS for soil listed on Table 6.1 A and B of the revised final CSR are based on leaching criteria. Calculations for the leaching values were not included in the Addendum or the revised final CSR. Please provide the calculations for the leaching criteria along with documented references.
12. *Type 2 RRS for Groundwater* – The Type 2 RRS for groundwater listed on Table 10 of the Addendum for Arsenic and Barium are incorrect. Below are the correct RRS values and should be corrected in the Addendum.

Mr. Biering  
December 21, 2006  
Page 3

REGULATED SUBSTANCE	REPORT VALUE	EPD VALUE (BASIS)
Arsenic	5.68E-04 mg/kg	1.11E-05 mg/kg (Carcinogenic Value- Adult)
Barium	1.10 mg/kg	2.9E-04 mg/kg (Non-Carcinogenic Value- Child)

13. *Type 4 RRS for Groundwater* – The Type 4 RRS for groundwater listed on Table 11 of the Addendum for Arsenic and Barium are incorrect. Below are the correct RRS values and should be corrected in the Addendum.

REGULATED SUBSTANCE	REPORT VALUE	EPD VALUE (BASIS)
Arsenic	1.91E-03 mg/kg	1.89E-05 mg/kg (Carcinogenic Value)
Barium	7.15 mg/kg	1.43E-03 mg/kg (Non-Carcinogenic Value)

14. Please submit one stand-alone document for the revised CSR, rather than a “Revised Final CSR” and an “Addendum CSR” separately. Include all updated text, figures, tables, appendices, and all historical data.

The revision for the former Fire Training Area CSR report, appropriately addressing the comment(s) above, should be submitted to GA EPD within ninety (90) days from receipt of this correspondence in the form of a totally revised document. Note that two (2) hard copies and two (2) electronic copies in pdf format following the attached guidance for electronic submittal are requested by GA EPD.

Should you have any questions concerning this correspondence, please contact Benoit Causse of my staff at 404-463-7513.

Sincerely,



Amy Potter  
Unit Coordinator  
Hazardous Waste Management Branch

Attachment (1)

c: Darrell Crosby, Manager, GA EPD-Coastal District  
Tressa Rutland, Fort Stewart (via facsimile)

File: Hunter Army Airfield (G)

R:\BCAUSSE\HUNTER ARMY AIRFIELD\HSI 10395\GA EPD-HSI 10395-CSR-Comments

## **Hazardous Sites Response Program Document Submittal Format**

All documents more than 25 pages in length shall be submitted as one paper copy and two compact disc (CD) copies with the documents in Portable Document Format (PDF). A signed certification page must be included in the CD copies. The certification page states that the electronic copy is complete, identical to the paper copy, and virus free.

All documents currently in electronic format should be converted into the PDF format. All documents not available electronically and pages that contain signatures, initials, or other information not in the electronic copy should be scanned into a PDF format including the signed certification page. Scanning should be at 200 dpi with any documents requiring color being scanned in color.

The document should be broken down into multiple PDF files along the following guidelines with the file name referenced in the table of content.

Table of Contents

Signature / Certification pages

Main body of document

Each Attachment (Appendices, Tables, Figures, Reports, etc.)

The CDs shall be enclosed in a jewel case. The CD shall be labeled with the following information written on the CD in indelible ink or affixed to the CD with an adhesive CD label.

Site Name

Site Address

HSI Number

City

County

Document Name

Document Date



DEPARTMENT OF THE ARMY  
HEADQUARTERS, FORT STEWART  
DIRECTORATE OF PUBLIC WORKS  
1550 FRANK COCHRAN DRIVE  
FORT STEWART, GEORGIA 31314-4927

REPLY TO  
ATTENTION OF

Office of the Directorate

EXPRESS MAIL

Georgia Environmental Protection Division  
Attention: Ms. Jane Hendricks  
2 Martin Luther King Jr. Drive, Southeast  
Floyd Towers East, Suite 1462  
Atlanta, Georgia 30334-9000

JUN 06 2005

Dear Ms. Hendricks:

Fort Stewart is pleased to submit two copies of the Addendum Compliance Status Report (CSR) for the Former Fire Training Area at Hunter Army Airfield (HAAF), (HSI Number 10395) dated April 2005 and two copies of the Revised Final (CSR) for the Former Fire Training Area at (HAAF) dated May 2002 for your review and approval.

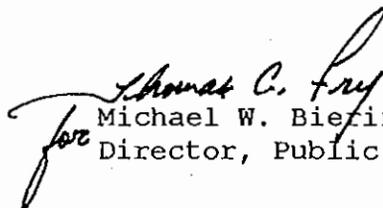
Public notification as required in conjunction with submittal of the CSR to GA EPD is in the process of being performed. In addition, respective parties in Chatham County will also be notified of submittal of the CSR to GA EPD within the next few weeks. Copies of these letters, which will be sent certified mail, will also be available upon request.

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. Algeana Stevenson or Ms. Tressa Rutland, Directorate of Public Works Environmental Division; at (912)767-2010 should questions arise regarding the enclosed report.

Sincerely,

  
for Michael W. Biering, P.E.  
Director, Public Works

Enclosures

**FINAL**

**ADDENDUM COMPLIANCE STATUS REPORT  
FOR  
FORMER FIRE TRAINING AREA (HAA-01)  
HSI SITE NUMBER 10395  
HUNTER ARMY AIRFIELD, GEORGIA**

**Prepared for**

**U. S. Army Corps of Engineers, Savannah District  
Under Contract Number DACA21-02-D-0004  
Delivery Order 0026**

**Prepared by**

**Science Applications International Corporation  
151 Lafayette Drive  
Oak Ridge, TN 37830**

**April 2005**

## EXECUTIVE SUMMARY

This Compliance Status Report (CSR) Addendum documents the additional field investigations that were conducted in 2002 through 2004 to determine the nature and extent of the contamination observed at the DAACG Chlorinated Solvents Area (HAA-16) located north of the Former Fire Training Area (FTA) (HAA-01) at Hunter Army Airfield (HAAF) in Savannah, Georgia. The Former FTA is listed on the Hazardous Site Inventory as HSI No. 10395. The purpose of this CSR Addendum is to satisfy the requirements of the Georgia Hazardous Site Response Act (HSRA) and document the results of the additional activities that have been conducted since the issuance of the Revised Final CSR (LAW 2002).

HAAF is located in the southwestern portion of Savannah and covers approximately 5,400 acres. The mission of the facility is to provide command, control, training, administration, logistical, and civilian-military support to non-divisional units stationed at Fort Stewart and HAAF. Aircraft based at HAAF currently include combat, transport, and training helicopters. The airfield is also used for overseas mobilization of troops and equipment.

The Former FTA site is located on the northwestern portion of HAAF, west of the parking apron and runway, and 800 ft northwest of the old air control tower. The site has not been used for fire training or any other purpose since 1991. The site formerly included a diked, gravel-covered concrete pad, which was used for fire training. During training exercises, fuel was pumped from a nearby 17,000-gal aboveground storage tank through an underground line to the pad where it was sprayed on a simulated aircraft frame and ignited. Reportedly, water-contaminated jet propulsion (JP-4) and diesel fuels were used for these training exercises. The pad and tank areas were the source areas for the contamination detected in soil and groundwater. These source areas underwent extensive remediation in 1998, which included removal of the fuel storage tank, fire training pad, and contaminated soils. Based on past soil and groundwater sampling results, volatile organic compounds, semivolatile organic compounds, and metals are present at the site.

During the field investigation activities in 2000 to support the CSR for the Former FTA, chlorinated solvents [*cis*-1,2-dichloroethene (DCE) and *trans*-1,2-DCE] were detected in a groundwater sample collected from well HMW-14R, which is located to the north of the Former FTA. As a result, this area north of the Former FTA has been designated as the DAACG Chlorinated Solvents Area (HAA-16). Based on the results of a historical archives search, the DAACG Chlorinated Solvents Area may be located within the boundary of a landfill that was identified on historical maps. There was no indication of the operating dates for this landfill or what was disposed of in it.

As part of the CSR Addendum, 136 groundwater samples were collected from 17 vertical profile locations, along with 14 groundwater samples from 12 monitoring wells in the vicinity of the DAACG Chlorinated Solvents Area. The results of these analyses have been used to define the horizontal and vertical extent of the HSRA-regulated substances at the DAACG Chlorinated Solvents Area. In addition, ten groundwater samples were collected from ten monitoring wells in the vicinity of the Former FTA. Furthermore, an interim removal action (IRA) was conducted in the vicinity of HMW-7 to address the free product that has been observed in that well. The horizontal and vertical extent of contamination in surface soil, subsurface soil, and groundwater at the Former FTA was delineated in the Revised Final CSR (LAW 2002).

The current and future use of the HAAF Former FTA and DAACG Chlorinated Solvents Area is non-residential. HSRA-related substances observed in soil and groundwater were evaluated against Types 1 through 4 Risk Reduction Standards (RRS) in the Revised Final CSR (LAW 2002). The

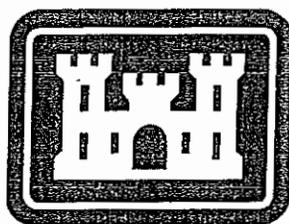
evaluation was updated in this CSR Addendum for the HSRA-related substances observed in groundwater at the DAACG Chlorinated Solvents Area.

The Revised Final CSR (LAW 2002) concluded that benzene, chloromethane, benzo(*a*)pyrene, and lead did not comply with Type 4 RRS for soil. The majority of the sample locations exceeding the Type 4 RRS for soil were located in the vicinity of the Former FTA and the soil has been excavated. However, several isolated locations to the south, southwest, and north of the Former FTA have not been addressed through a corrective action or an IRA. The Revised Final CSR (LAW 2002) concluded that benzene, vinyl chloride, naphthalene, and lead did not comply with Type 4 RRS for groundwater. In addition, the results of the CSR Addendum have concluded that 1,2-DCE and *cis*-1,2-DCE are not in compliance with Type 4 RRS for groundwater. Benzene, naphthalene, and lead are an issue near the Former FTA, while 1,2-DCE; *cis*-1,2-DCE; and vinyl chloride are a concern at the DAACG Chlorinated Solvents Area.

The most likely human receptor groups are maintenance workers that periodically mow or bush-hog the site or utility workers who install or repair underground utilities. Both of these groups may have direct contact with surface and near surface soil. Potentially complete pathways of exposure to soil include incidental ingestion, dermal absorption, and inhalation of fugitive dust and volatile emissions. An Ecological Preliminary Risk Evaluation was conducted as part of the Revised Final CSR (LAW 2002) and recommended that no additional ecological assessment was necessary.

**REVISED FINAL COMPLIANCE STATUS REPORT  
FOR  
FORMER FIRE TRAINING AREA  
HUNTER ARMY AIRFIELD  
SAVANNAH, GEORGIA  
HSI SITE NUMBER 10395  
Volume I of II**

*PREPARED FOR*



**U.S. ARMY CORPS OF ENGINEERS  
SAVANNAH DISTRICT**

PROJECT NO. 12001-9-3411  
CONTRACT NO. DAVA21-97-D-0034-0011

MAY 24, 2002



**LAW**

RESOURCES CREATING SOLUTIONS

## EXECUTIVE SUMMARY

This Revised Final Compliance Status Report (CSR) documents the site assessment and development of Risk Reduction Standards (RRS) for the former Fire Training Area (FTA) at Hunter Army Airfield (HAAF) in Savannah, Georgia [Hazardous Site Inventory (HSI) Number 10395]. The purpose of this CSR is to satisfy the requirements of the Georgia Hazardous Site Response Act (HSRA). (In this report "site" is used to denote the property that was occupied by the former FTA, while "Site" denotes the HSRA site definition.)

HAAF is located in the southwestern portion of Savannah and covers approximately 5,400 acres. The mission of the facility is to provide command, control, training, administration, logistical and civilian-military support to non-divisional units stationed at Fort Stewart and HAAF. Aircraft based at HAAF currently include combat, transport, and training helicopters. The airfield is also used for overseas mobilization of troops and weapons.

The former FTA site is located on the northwestern portion of HAAF, west of the parking apron and runway, and 800 feet northwest of the air control tower. The site has not been used for fire training or any other purpose since 1991. The site formerly included a diked, gravel-covered concrete pad which was used for fire training. During training exercises, fuel was pumped from a nearby 10,000-gallon aboveground storage tank through an underground line to the pad where it was sprayed upon a simulated aircraft frame and ignited. Reportedly, water-contaminated JP-4 and diesel fuels were used for these training exercises. The pad and tank areas were the source areas for the contamination detected in soil and groundwater. These source areas underwent extensive remediation in 1998 which included removal of the fuel storage tank, fire training pad and contaminated soils. Based on past soil and groundwater sampling results, metals, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs) are present at the site.

As a part of the CSR assessment, a total of 133 soil samples were analyzed along with 31 groundwater samples from 22 monitoring wells. The results of these analyses, along with those from previous investigations at the site, have been used to define the horizontal and vertical extent of the HSRA-regulated substances associated with the Site. The studies have shown that the concentrations of detected regulated substances associated with the site are limited to the former FTA. The horizontal and vertical

extent of VOCs, SVOCs, pesticides, PCBs and metals in surface and subsurface soils have been delineated at the Site. The extent of SVOCs, and metals in groundwater has been delineated. The horizontal and vertical extent of VOCs in groundwater is not delineated to the north of the former fire training pad. However, based upon groundwater flow directions and the substances detected, the groundwater contamination north of the former FTA may be originating from a source other than the former FTA site.

The current and future use of the HAAF former FTA property is non-residential. Forty-three HSRA-regulated substances including VOCs, SVOCs, pesticides and metals were detected in soil samples collected from the Site at concentrations above their respective detection limits. A study of the background metals concentrations in soil was performed during the 2001 CSR assessment to determine the upper background concentration for the Site. Georgia EPD approved the calculated upper background concentrations in soils for use at the former FTA. Types 1 through 4 RRS were calculated for these constituents detected based on the criteria provided in Section 391-3-19-.07(6)(c) of the HSRA rules. Twenty-nine of the 43 detected constituents comply with their Type 1 RRS. The maximum detected concentrations of 5 of the 14 remaining constituents complied with their respective Type 2 RRS. Type 3 RRS were calculated for the nine remaining constituents. Seven compounds in surface soil and seven compounds in subsurface soil did not comply with their respective Type 3 RRS for soils. Type 4 RRS were calculated for the eight constituents that exceeded the Type 3 RRS. The maximum detected concentrations of benzene, chloromethane, benzo(a)pyrene, and lead in soil did not comply with default Type 4 RRS for soil.

Fifteen HSRA-regulated substances were detected at concentrations exceeding detection limits in groundwater samples collected from the Site. Concentrations of five constituents exceeded the Types 1 and 3 RRS for groundwater. The maximum detected concentration of four constituents, lead, benzene, vinyl chloride, and naphthalene did not comply with default Type 4 RRS for groundwater.

Based on the above data, soil and groundwater at the HAAF former FTA are not in compliance with Types 1 through 4 RRS.

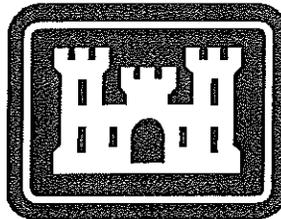
The most likely human receptor groups are maintenance workers that periodically mow or bush-hog the site or utility workers who install or repair underground utilities. Both of these groups may have direct

contact with surface and near surface soil. Potentially complete pathways of exposure to soil include incidental ingestion, dermal absorption, and inhalation of fugitive dust and volatile emissions. Because the ditch banks are heavily vegetated, contact with ditch surface water and sediments is not expected to be a notable source of exposure for humans.

At the request of EPD, an Ecological Preliminary Risk Evaluation (EPRE) was conducted at the former FTA. The EPRE compares measured concentrations of detected substances to conservative ecological screening values to identify substances detected at the former FTA that pose a potential hazard to ecological receptors. Both terrestrial and aquatic habitats are present at the former FTA. Ecological receptors potentially present at the former FTA include earthworms and other soil-dwelling invertebrates, birds, shrews, rabbits, and raccoons. Surface water and surface soil are media of concern to ecological receptors at the Site. Groundwater is not a medium of exposure for ecological receptors; however it can potentially discharge to surface water and was evaluated along with surface water and surface soil during the EPRE. Substances detected in surface water samples were evaluated and were concluded to not pose a risk to wildlife receptors. Substances in groundwater were also evaluated because groundwater could discharge to surface water and were determined to not pose a risk to wildlife receptors. Substances detected in soil were evaluated and were determined to not pose a risk to wildlife receptors. Based on the results of the EPRE, no further ecological assessment is recommended.

**REVISED FINAL COMPLIANCE STATUS REPORT  
FOR  
FORMER FIRE TRAINING AREA  
HUNTER ARMY AIRFIELD  
SAVANNAH, GEORGIA  
HSI SITE NUMBER 10395  
Volume II of II**

*PREPARED FOR*



**U.S. ARMY CORPS OF ENGINEERS  
SAVANNAH DISTRICT**

PROJECT NO. 12001-9-3411  
CONTRACT NO. DAVA21-97-D-0034-0011

MAY 24, 2002

HAAP FTA

Georgia Department of Natural Resources

205 Butler Street, SE, Suite 1462, Atlanta, Georgia 30334

Lonice C. Barrett, Commissioner

Environmental Protection Division

Harold F. Reheis, Director

404/657-8600

May 8, 2001

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Col. Gregory V. Stanley  
Department of the Army  
1550 Cochran Drive  
Fort Stewart, GA 31314

Re: Response to 3/19/01 Meeting Letter  
Hunter Army Airfield  
HSI #10105

Dear Col. Stanley:

The Georgia Environmental Protection Division (EPD) has received your compliance status report (CSR) response letter dated March 5, 2001 and your April 16, 2001 correspondence following up on our March 19, 2001 meeting regarding the above referenced site. EPD was asked to address issues raised during our meeting pertaining to calculated background concentrations, the methodology used to calculate the background concentrations, and future sampling locations:

1. Background Concentrations - The proposed background concentrations presented on page 5 of CSR response are acceptable to EPD. It should be noted that although Table 2 of Appendix III should not be used for determining site-specific background concentrations, it is useful for comparative purposes in that most background concentrations will be below those levels.
2. Statistical Calculations - The statistical methods described can be used for determining background concentrations; however, they do not necessarily apply to all sites due to variations in site-specific data. The method used to determine multiple outliers in a dataset should be stated in the revised CSR and included in an appendix along with the other statistical methods used in the CSR.
3. Proposed Sampling Locations - The sample locations shown in Figure 1 of the CSR response surrounding SB-30 appear sufficient to delineate the site with the following exceptions. Two more sample locations (in addition to SB-45) are needed to delineate the southern boundary near SB-35. One location is needed to the west of SB-45 and south of SB-36. The other location to be added is to the east of SB-45 across Lightning Road. The purpose of proposed sampling locations SB-47 and SB-48 is unclear and needs to be explained before EPD can comment on them.

Hunter Army Airfield Site, HSI #10105  
Response to CSR Comments and March 19, 2001 Meeting Comments  
May 8, 2001  
Page 2

For specific answers to questions concerning risk assessment calculations and ecological evaluations, you may contact Michelle Burgess or Ahmet Bulbakaya at (404) 656-7802. Please contact David Brownlee of the Hazardous Site Response Program at (404) 657-8600 if you have questions regarding this letter.

Sincerely,

Jane Hendricks  
Unit Coordinator  
Hazardous Sites Response Program

c: Melanie Little

File: Site #10105

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DEPARTMENT OF THE ARMY  
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART  
DIRECTORATE OF PUBLIC WORKS  
1550 FRANK COCHRAN DRIVE  
FORT STEWART, GEORGIA 31314-4927

REPLY TO  
ATTENTION OF

16 APR 2001

EXPRESS MAIL

Office of the Directorate

Georgia Environmental Protection Division  
Environmental Protection Division  
Attention: Ms. Jane Hendricks  
205 Butler Street, Southeast  
Suite 1462  
Atlanta, Georgia 30334

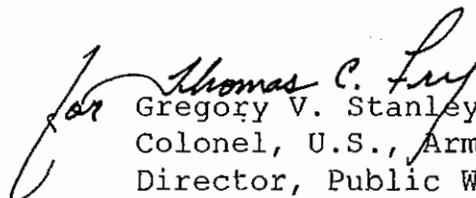
Dear Ms. Hendricks:

Fort Stewart/Hunter Army Airfield is pleased to provide the Georgia Environmental Protection Division (GA EPD) three copies of the meeting minutes from the Comment Resolution meeting held at Floyd Towers (East) in Atlanta, Georgia on March 19, 2001. In attendance at the meeting were representatives of GA EPD, Fort Stewart, the Savannah District Corps of Engineers, and Law Engineering and Environmental Services. Fort Stewart appreciates your time in attending the meeting and ensuring that all issues regarding the Compliance Status Report (CSR) for the former Fire Training Area at Hunter Army Airfield (HSI No. 10395) were discussed.

As requested, a Milestone Schedule has been included indicating the time required to complete the critical tasks in submitting a Revised Final CSR to GA EPD. As noted in the schedule, Fort Stewart/Hunter Army Airfield anticipates submitting the Revised Final CSR to GA EPD within 250 days from receipt of GA EPD's resolution of the action items listed in Comment 23.b. of the enclosed minutes.

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 meeting minutes.

Sincerely,

  
Gregory V. Stanley  
Colonel, U.S., Army  
Director, Public Works

Enclosures

**MILESTONE SCHEDULE**  
**FOR**  
**THE FORMER FIRE TRAINING AREA (HSI No. 10395)**  
**REVISED FINAL COMPLIANCE STATUS REPORT**  
**(APRIL 2001)**

<i>Day*</i>	<i>Critical Task</i>
Day 0	Receipt of GA EPD's comments/approval regarding action items listed in Comment 23.b of the March 19, 2001 meeting minutes.
Day 1 to Day 20	Prepare contract modification to perform additional field work and revisions to CSR.
Day 21-45	Savannah District COE will conduct negotiations with LAW and award contract modification.
Day 46-75	LAW will submit Workplan and SSHP Addenda for review and approval.
Day 76-90	Installation and COE will review Workplan and SSHP.
Day 91-100	Workplan and SSHP will be approved.
Day 101-105	LAW will submit excavation permit request for soil borings and wells.
Day 106-120	Installation contractor will survey site for utilities and grant excavation permit.
Day 121-126	LAW will conduct field work (initial soil borings and well installation).
Day 127-134	Awaiting analytical data to determine if additional soil samples are required.
Day 135-140	LAW samples new wells (wells cannot be sampled for a minimum of 14 days after installation).
Day 141-145	Awaiting analytical data to determine if additional groundwater samples (and hence wells) are required.
Day 146-160	Contingent field time for additional soil and/or groundwater samples.
Day 161-190	LAW personnel validate data.
Day 191-210	Additional data is incorporated into Revised Final CSR (comments not requiring data evaluation/interpretation will have been incorporated into the Revised Final CSR prior to this time).
Day 211-220	Installation and COE review Revised Final CSR.
Day 221-240	LAW incorporates Installation and COE comments into Revised Final CSR.
Day 241-245	Installation prepares transmittal letter for Revised Final CSR and submits to the appropriate personnel for signature(s).
Day 246	Installation submits the Revised Final CSR to GA EPD.
Day 247-250	GA EPD receives Revised Final CSR for review.

\* All timeframes are estimated and could be delayed due to contracting issues, adverse field conditions, or other unforeseen events.

**Meeting Minutes**  
**Response to Georgia EPD Comments**  
**Compliance Status Report for the Hunter Army Airfield Former Fire Training Area**  
**(HSI No. 10395)**  
**19 March 2001**  
**Georgia EPD Offices, Atlanta, Georgia**

1. The meeting convened at 1330 hrs on 19 March 2001. Attendees were Ms. Jane Hendricks (Unit Coordinator), Ms. Sarah Divakarla (Geologist), and Mr. David Brownlee (Environmental Engineer) of the Georgia Environmental Protection Division (GA EPD)-Hazardous Waste Management Branch; Ms. Tressa Rutland and Ms. Melanie Little of Fort Stewart/Hunter Army Airfield Directorate of Public Works; Mr. Wes Smith (Technical Manager) of the United States Army Corps of Engineers, Savannah District (CESAS); and Mr. David Goershel (Deputy Program Manager) and Mr. Steven Hart (Principal) of Law Engineering and Environmental Services, Inc. (LAW). The purpose of the meeting was to discuss the GA EPD's comments and the Installation's March 5, 2001 response to those comments regarding the Compliance Status Report (CSR) for the Former Fire Training Area at Hunter Army Airfield (HSI No. 10395). Furthermore, the Installation solicited input from the GA EPD regarding the proposed investigations in order to solidify the scope of work necessary to submit a revised CSR that will be approved by the GA EPD.
2. After the meeting participants were introduced, Ms. Hendricks of the GA EPD noting the meeting was requested by Fort Stewart/Hunter Army Airfield, requested information regarding the objectives of the meeting. Ms. Little (Fort Stewart/Hunter Army Airfield IRP Program Manager) described to the GA EPD that the objectives of the meeting were to receive GA EPD input to the comment responses, as well as the proposed additional investigations, in order to facilitate the completion of a revised CSR. Ideally, the Fort Stewart/Hunter Army Airfield objectives are to finish the CSR as quickly as possible and move on to the Corrective Active Plan (CAP). Ms. Little requested that the comments received by Mr. Chen on the CSR be reviewed and discussed as well as the resulting project requirements/objectives. In addition, at the end of the meeting, schedule impacts could be addressed.

The individual issues addressed for each comment are provided below.

3. Comment No. 1 -- Ms. Little indicated that the Public Notification was provided in the Savannah Morning News and the Atlanta Journal Constitution. In addition, notification letters were sent to Chatham County and the City of Savannah. Ms. Little indicated copies of the public notification and notification letters would be included in an appendix of the revised CSR. All parties agreed that the next CSR submittal would be called a Revised Final CSR.
4. Comment No. 2 -- The initial discussion was to gain clarification of this comment. Within the CSR, several constituents such as acetone had been identified as laboratory artifact and the CSR had recommended that no additional investigation for these constituents was required. However, in their comment, the GA EPD did not concur that the substances were laboratory artifacts and indicated that all detected organic regulated substances must be investigated to meet the requirements of the HSRA rules. In the Installation's response to the comment, it is indicated that additional delineation will be conducted to define the extent of acetone and bis(2-ethylhexyl)phthalate -in the soils, in lieu of resampling the entire site in an effort to "prove" that these constituents were truly lab contaminants and not associated with the release. The GA EPD concurred with the comment response.

5. Comment No. 3 – For this comment, which addressed arsenic, barium, chromium, and lead in groundwater and the need to address their presence in soils, Ms. Little discussed Fort Stewart/Hunter Army Airfield's previous approach to development of background conditions for other sites at Hunter Army Airfield. Ms. Hendricks response was that the GA EPD required site-specific background conditions be developed for each site investigated and that data from other sites could not be used. Based upon this response, Mr. Steven Hart of LAW discussed the statistical analyses used to develop site-specific background concentrations for the Former Fire Training Area, explaining that statistical methods were selected based on the distribution of the data and the number of non-detects. Specifically, the Former Fire Training Area data were evaluated for normality using the Filliben, Shapiro-Francia, and Shapiro-Wilk tests, and the statistical tests/approaches used in the evaluation process is discussed in greater detail in the Response to Comment table, Comment #4, provided to GA EPD in correspondence (Stanley to Hendricks) dated March 5, 2001. Mr. Brownlee and Ms. Hendricks of the GA EPD indicated that the process used seemed reasonable, but they would have to review the process, as well as the results of the process, and provide a response at a later date as to whether or not the proposed statistical evaluation is acceptable to GA EPD. Also discussed was the use of low-flow or micropurge sampling techniques in collection of groundwater samples for metal analyses, as the turbidity of the sample can provide inaccurate metal concentrations. Fort Stewart and LAW personnel both stated that even with extra field efforts to reduce sample turbidity at the site, some of the groundwater samples still were very turbid and this may have resulted in analytical concentrations that do not accurately depict site conditions.
  
6. Comment No. 4 – This comment also addressed the development of site-specific background concentrations in order to evaluate the extent of soil contamination. The comment explicitly identified that the values provided in Appendix III, Table 2 of the HSRA rules could not be used as background. Ms. Little questioned whether another approach could be used as the calculated/proposed site-specific background values were significantly lower than the values provided in Appendix III, Table 2, noting that the Installation wants to ensure what we are doing is not too conservative. The GA EPD noted that a specific statistical method had not been established to determine background. However, Appendix III, Table 2 could NOT be used. GA EPD noted that site-by-site recommendations should be made. The GA EPD reiterated that site-specific background values must be used and indicated that our approach for development of site-specific background values would be reviewed. Mr. Brownlee questioned how outliers were handled, and Mr. Hart provided an explanation using BH10 as an example where all metal concentrations were conservatively excluded from the statistical analysis. All parties agreed that the approach seemed reasonable, but a more extensive review by GA EPD was required. However, Ms. Hendricks of the GA EPD indicated that she may have some concern with the use of data from areas that had been identified to have a release (NOTE-referencing sites with potential metal releases versus POL or BTEX releases). Mr. Hart of LAW indicated that metals had not been identified as a potential source constituent at the fire training area; consequently, removal of metals data from the "data pool" used for the statistical analysis did not seem warranted from the perspective of the Installation and their contractor. In addition, Mr. Hart cited several other sites where the GA EPD has allowed the same approach. Ms. Hendricks and Mr. Brownlee indicated that they would evaluate the data and provide a response to the developed background concentrations at a later date.
  
7. Comment No. 5 – The comment addressed the requirement for additional horizontal extent of contamination data for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Ms. Little indicated that additional soil samples would be collected in

the north and south ends of the site in order to complete delineation of VOC and SVOC soil contamination in these areas. In addition, Ms. Little indicated that the requested contouring of total VOC and total SVOC concentrations would be provided as requested. The GA EPD accepted the response.

8. Comment No. 6 – For this comment, Ms. Little indicated that the vertical flow direction, flow gradient, and flow rate would be provided. Ms. Little pointed out the locations of monitoring well couplets that would be used to provide the vertical groundwater flow data. The GA EPD accepted the response.
9. Comment No. 7 – This comment addressed the need to provide additional groundwater monitoring in order to evaluate the extent of groundwater contamination, which currently did not meet the requirements of Rule 391-3-19-06(3)(b)3. Ms. Little indicated that two additional monitoring wells had been planned for installation in the north end of the site in order to delineate the extent of constituents detected in monitoring well HMW-14R. The GA EPD accepted the response, pending their approval of the proposed sampling locations depicted in Figure 1 of the response to comments packet.
10. Comment No. 8 – This comment addressed the need to install a deep monitoring well downgradient of the Former Fire Training Area in order to address the requirements of Rule 391-3-19-06(3)(b)3. Ms. Little indicated that one monitoring well, HMW-3, was located downgradient of the Former Fire Training Area and was a deep well that could be used to address the comment. Ms. Divakarla indicated that she had reviewed the response and would accept the sampling of HMW-3 as a response to the comment.
11. Comment No. 9 – This comment addressed inhalation rate of air exposure for use in risk reduction standard calculations. Specifically, the comment indicated the inhalation rate should be 15 cubic meters per day ( $m^3/day$ ) not 20 ( $m^3/day$ ). Mr. Goershel indicated that LAW's risk assessors noted that, based upon whether the receptor was for a residential adult or residential child either 15 or 20 might be used in the calculations. The GA EPD indicated that their risk assessment people had not had an opportunity to review the information prior the meeting; however, GA EPD's risk assessment team would review the response and a reply would be provided at a later date. In addition, Ms. Little asked Ms. Hendricks if it would be acceptable for the Installation's contractor to contact Ms. Michelle Burgess (or her designee) directly regarding human health risk assessment issues. Ms. Hendricks concurred that this would be an acceptable arrangement.
12. Comment No. 10 – This comment addressed site-specific soil to air volatilization factors and a lack of references. Mr. Hart of LAW indicated that LAW appreciated the information being pointed out as the reference material allowed an updated list of volatilization factors, which were provided with the comment responses. The GA EPD indicated that their risk assessment staff would review the calculations and provide a reply at a later date.
13. Comment No. 11 – This comment addressed risk assessment relative to soil Type 1 and soil Type 2 criteria for select organic compounds. Mr. Goershel of LAW discussed the general response to the comment and the issue of several values in the table provided by the GA EPD as being shifted out of place. The GA EPD again indicated that their risk assessment staff would review the response and provide a reply at a later date.

14. Comment No. 12 – For this comment, the GA EPD was concerned with the need to conduct an ecological risk assessment due to the presence of select constituents above their respective ecological risk values as compared by the GA EPD. Mr. Goershel discussed the issue regarding ecological risk assessments not being typically required as part of CSRs. However, GA EPD stated that the March 2000 CSR did state that the site contained a potential ecological environment and even went as far as to cite the animals observed to be present (i.e., via tracks and/or burrows). Thus, the information in the March 2000 CSR was believed to be the reason Mr. Chen had made this comment.

Mr. Goershel also indicated that the screening values used were the most conservative available for each constituent, regardless of the trophic level of the species for which the screening level was provided. Mr. Goershel indicated that an appropriate approach would be to conduct a survey for habitats supported at the site, and then conduct a preliminary risk evaluation (PRE) for the appropriate species identified. Ms. Little also stated that for those constituents that “failed” the PRE, a supplemental preliminary risk evaluation (SPRE) would be performed. Ms. Divakarla of the GA EPD indicated that the PRE/SPRE is what the GA EPD typically requires in the CSR if a site has potential receptors. Thus, the use of the PRE/SPRE was approved by GA EPD. In addition, Ms. Little requested that the Installation’s contractor be permitted to discuss any questions that may arise during the PRE/SPRE directly with the ecological risk assessment team at GA EPD. Ms. Hendricks indicated that Ahmet Bulbulkaya could be contacted directly.

15. Comment No. 13 – This comment discussed providing additional information regarding the drainage ditches located north and south of the Former Fire Training Area. Ms. Little discussed concern with collecting surface water samples from these locations due to the significant area that contributes runoff to the drainage canals (i.e., stormwater from the airfield). Samples from this area would not be representative of the site’s contribution to surface water. Ms. Little and Mr. Goershel discussed the disadvantages to this approach (i.e., the surface water is not representative of groundwater discharges from the Fire Training Area alone) and addressed the proposal in the March 5, 2001 Response to Comments to actually model groundwater discharge from the site to surface water. By modeling the surficial groundwater to the point of discharge (i.e., the drainage ditches) a quantitative assessment of the impact of the groundwater contamination at the Fire Training Area to the drainage ditches could be made.

In addition, Mr. Hart questioned whether groundwater concentrations below ambient water quality standards would be sufficient to evaluate whether or not contaminated groundwater was discharging into the drainage canals. Ms. Hendricks indicated that values above or below ambient water quality standards (upgradient of the drainage canals) would have value relative to whether or not groundwater contamination from sources other than the Fire Training Area were discharging to surface water; however, Ms. Hendricks pointed out that the issue of collecting surface water samples was not one solely driven by ecological risk considerations. Other HSRA elements required that surface water quality be considered. Accordingly, Ms. Hendricks suggested that the surface water samples could be collected at the outfall to each drainage canal and later again downgradient of the site to evaluate possible change which would be attributable to surface water contamination from the site. Ms. Little indicated that surface water samples would be collected; a minimum of two per drainage canal.

16. After discussion of the specific GA EPD comments and responses, Ms. Little outlined the proposed sampling locations (Figure 1 of the response to comments packet) with the GA EPD who indicated they will review the plan and provide comments and/or approval of the proposed sampling locations. As part of the discussion, Ms. Little described the potential concerns with adjacent sites and their potential impact on the Former Fire Training Area site and drainage canals. Ms. Hendricks indicated that it would be productive to have the adjacent underground storage tank sites and associated piping depicted on a site figure. Ms. Little agreed and also suggested that the storm water flow information for this area be included in the revised CSR.
17. Upon completing review of the proposed investigation figure, Ms. Hendricks and Ms. Little discussed potential schedule extension. Ms. Little requested a schedule extension due to the magnitude of the work to be executed and the funding and contracting process required to direct LAW to execute the scope of work. Ms. Little asked for an approximate time frame for receipt of GA EPD review and comment to the responses discussed in the meeting, noting the response to these comments would affect negotiations for a modification to the investigation contract. After discussion with Mr. Brownlee, it was indicated that by the end of the first week of April (April 6, 2001), the GA EPD anticipated providing comments. Based upon this date, Ms. Little indicated an anticipated timeframe of mid-December would likely be required before a Revised Final CSR could be submitted. Ms. Hendricks indicated that Fort Stewart/Hunter Army Airfield needed to submit a letter requesting an extension to the submittal date for the Revised Final CSR. Ms. Hendricks indicated that while she understood the challenges that presented Fort Stewart/Hunter Army Airfield in completing this work, she would still like to see a milestone schedule along with the request letter in order to evaluate if the allotted time to execute the work is reasonable. Ms. Little agreed to provide a milestone schedule with the request letter.
18. Ms. Hendricks and Ms. Little discussed the format for the GA EPD review of comment responses. Ms. Hendricks suggested a verbal response would be the fastest; however, Ms. Little indicated that she would like to have an e-mail or a letter that provided the GA EPD input/comments in order to maintain the administrative record for the project. Ms. Hendricks agreed to this format.
19. In addition, Ms. Hendricks also stated that the Corrective Action Plan (CAP) for the site could be submitted prior to approval of the Revised Final CSR; however, also noted that once submitted, another regulated implementation schedule begins. While the Installation likes to be proactive, Ms. Little stated she would be concerned with not having GA EPD approval of the CSR, and specifically the remedial levels, as that could potentially impact the extent of remediation required at the site. Ms. Hendricks indicated that was a valid point. However, suggested that the Installation did have the option of submitting proposed risk reduction standards for separate review and approval.
20. Ms. Little asked Ms. Hendricks what timeframe could be expected for the review and receipt of comments/approval of the Revised Final CSR. Ms. Hendricks indicated that there were currently staff shortages within her unit, so a "standard turn-around time" could not be provided. Additionally, Ms. Hendricks indicated that the risk assessment unit would require the most time for the report review as that unit is currently overloaded and handling human health and ecological risk assessment reviews for multiple units within GA EPD. Ms. Hendricks asked if Fort Stewart/Hunter Army Airfield would prefer to receive comments from her unit on the Revised Final CSR prior to the risk assessment unit performing their

respective reviews (i.e., there potentially could be multiple sets of comments from GA EPD). Ms. Little stated that the Installation would prefer to get all of GA EPD's comments at one time.

21. In conclusion, the GA EPD was invited to visit the site, noting Mr. Chen had commented after his site visit that it was very helpful to him and expected that it would aid in his review of the reports for this, as well as other (specifically the MCA Barracks) site.
22. The meeting adjourned at approximately 2:30 pm EST.
23. Action Items from the March 19, 2001 meeting are as follows:
  - a. Fort Stewart/Hunter Army Airfield: Provide meeting minutes with a milestone letter requesting an extension for submittal of the Revised Final CSR.
  - b. GA EPD, HSRP: Provide approval or comments on the statistical method used to calculate the site-specific background concentrations for the site; provide comments or approval of the proposed site-specific background concentrations; provide comments or approval on the proposed additional sampling locations.



DEPARTMENT OF THE ARMY  
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND LINT STEWART  
DIRECTORATE OF PUBLIC WORKS  
1550 FRANK COCHRAN DRIVE  
FORT STEWART, GEORGIA 31314-4927

05 MAR 2001

REPLY TO  
ATTENTION OF

Office of the Directorate

CERTIFIED MAIL

Georgia Environmental Protection Division  
Hazardous Waste Management Branch  
Attention: Ms. Jane Hendricks  
205 Butler Street, Southeast, Suite 1462  
Atlanta, Georgia 30334

7099 3400 0010 5449 3541

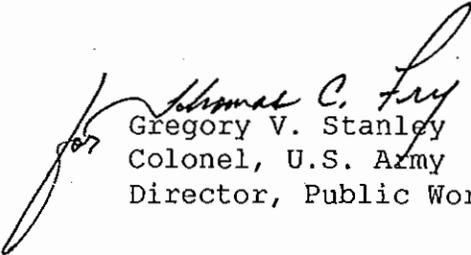
Dear Ms. Hendricks:

Fort Stewart is pleased to receive the Georgia Environmental Protection Division's (GA EPD's) correspondence dated January 5, 2001 in regard to the Compliance Status Report (CSR) for the former Fire Training Area located at Hunter Army Airfield (HSI No. 10395). My staff has reviewed each of the comments and has summarized the Installation's responses in the enclosed table. In addition, information required to substantiate responses are provided as attachments to the Response To Comment table.

In reviewing GA EPD's comments, the Installation concurs that limited, additional fieldwork and analyses are required to complete site horizontal extent of contamination at the site. Figure 1 (enclosed) depicts the proposed locations of additional borings. However, to ensure that the proposed locations are agreeable to GA EPD and to discuss any response to comments that are of issue to GA EPD, I would like to propose a meeting between my staff, GA EPD HSRA representatives, and our contractor (LAW). Specifically, a meeting on March 19, 2001 is agreeable to my staff and LAW personnel, if your staff is available. If this date is conducive to your schedule, please notify either Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works Environmental Branch, at (405) 364-8461 or (912) 767-7919, respectively. The meeting can be held in your offices in Atlanta or at Hunter Army Airfield in conjunction with a site visit. Please let me know as soon as possible what you prefer.

I look forward to resolving these comments/concerns regarding the CSR and proceeding to a corrective action plan for the site. Please contact Ms. Melanie Little or Ms. Tressa Rutland of this Directorate should questions arise regarding the enclosed documents.

Sincerely,

  
Gregory V. Stanley  
Colonel, U.S. Army  
Director, Public Works

Enclosures



DEPARTMENT OF THE ARMY  
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART  
DIRECTORATE OF PUBLIC WORKS  
1550 FRANK COCHRAN DRIVE  
FORT STEWART, GEORGIA 31314-4927

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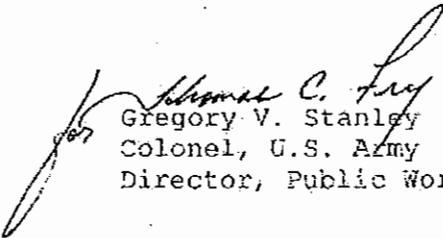
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Sincerely,

  
Gregory V. Stanley  
Colonel, U.S. Army  
Director, Public Works

Enclosures

# Georgia Department of Natural Resources

205 Butler St. S.E., Floyd Towers, East, Suite 1462, Atlanta, Georgia 30334

Lonice C. Barrett, Commissioner

Environmental Protection Division

Harold F. Reheis, Director

Hazardous Waste Management Branch

404/657-8600

January 5, 2001

Rec'd  
JAN 25 2001  
NW

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Mr. Tom Fry  
Chief, Environ. Division  
U. S. Army 24<sup>th</sup> Infantry Division, Bldg. 1139  
Attn: AF2P-DEV  
Fort Stewart, GA 31314

Re: Hunter Army Airfield, Fire Training Area  
HSI No. 10395  
Compliance Status Report  
Notice of Deficiency

Dear Mr. Fry:

The Georgia Environmental Protection Division (EPD) has completed its review of the Compliance Status Report (CSR) submitted on March 31, 2000 for the Hunter Army Airfield (HAAF), Fire Training Area site located at northwest portion of the airfield in Savannah, Georgia. EPD has determined that the CSR is deficient and must be revised. The reasons for this determination are discussed below. The rule citations are from the Georgia Rules for Hazardous Site Response.

### Public Participation

EPD did not receive documentation showing that a notice was published that announced the CSR is available for inspection by the general public for a 30-day public comment period. This notice must be published in both a major paper of general circulation and the legal organ of the local governments in whose jurisdiction the site is located. As required by Rule 391-3-19-.06(5)(d), an exact copy of the public notice, as it appeared in the paper, must be provided to EPD within 15 days after publishing the notice. Also, as required by Rule 391-3-19-.06(5)(e), the responsible party must provide to the county and city governments in which the site is located a written notice providing the same information as required in the published notice. Please ensure that these requirements are met for the revised CSR.

### Regulated Substances

1. Rule 391-3-19-.06(3)(a) requires that the CSR document the current status of the site with regard to the risk reduction standards for *all* regulated substances associated with each release at the site. Rule 391-3-19-.06(3)(b) reinforces the requirement that the CSR address all regulated substances associated with each release at the site. Since quality control data did not indicate the occurrence of laboratory contamination as stated in the CSR, all detected organic regulated substances must be investigated to meet the requirements of the Rules.
2. Arsenic, barium, chromium, and lead have been found in groundwater and are very likely to be associated with releases at the site. They should be accessed for their occurrence in soil. The CSR must properly select analytical parameters as required by Rule 391-3-19-.06(3)(b)(2)(ii). The selection

should accommodate the analysis of all the regulated substances associated with each release for each of the environmental media involved.

#### Site Characterization - Soil

1. Appropriately determined background concentrations are critical in the definition of the extent of soil contamination. The concentrations in Appendix III, Table 2 of the Rules cannot be used for background soil concentrations. HAAF must explicitly determine background soil concentrations for metals released at the site using analytical data from samples taken from locations that are representative of soil conditions not affected by a release of a regulated substance as required by Rule 391-3-19-.06(3)(b)2. Their extent of contamination must be determined accordingly.
2. The definition of the horizontal extent of soil contamination for volatile organic compounds (VOCs) and semi-VOCs is inadequate. The horizontal extent of contamination should be depicted using contour lines at the locations of samples with contaminant levels below the detection limits to demonstrate the complete definition described in Rule 391-3-19-.06(3)(b)2. Additional samples must be collected to address the uncertainty of delineations as shown in Figures 4.7 and 4.8. Likewise, in Figure 6.1, areas of noncompliance should be drawn to actual data points meeting appropriate risk reduction criteria.

#### Site Characterization - Groundwater

1. The CSR must also determine the vertical groundwater gradient, flow direction, and flow rate for the aquifer as required by Rule 391-3-19-.06(3)(b)3(iii). The procedure used to determine the hydraulic parameters should be included in the CSR.
2. The horizontal extent of groundwater contamination was not determined to meet the requirements of Rule 391-3-19-.06(3)(b)3. It appears that there are not an appropriate number of data points at sufficient locations to the north of the site with concentrations at background levels to define the plumes horizontally. Additional data must be collected.
3. Figure 4.6 indicates that monitoring well HMW-5 is located side gradient to the sources. This suggests that the well may be not placed at the best location to provide convincing data to define the vertical extent of groundwater contamination. Please install and analyze an additional deep well at a more appropriate location to meet the requirements of Rule 391-3-19-.06(3)(b)3.

#### Risk Reduction Standards

1. In Appendix G (p. G-3), the inhalation rate of air exposure ( $IR_{air}$ ) should be  $15 \text{ m}^3/\text{day}$  not  $20 \text{ m}^3/\text{day}$ .
2. In Appendix G, the site-specific soil-to-air volatilization factors (VF) cannot be validated since there are no references to the soil/air partition coefficient ( $K_{as}$ ), the soil-water partition coefficient ( $K_d$ ), the organic carbon partition coefficient ( $K_{oc}$ ), molecular diffusivity, and Henry's law constant. Differences in the VF will produce different results for RAGS PRG equations 6 and 7. An example of differences in these chemical properties is shown for benzene in the following table.

**Comparison of Soil to Air Volatilization Factors For Benzene**

Parameters	Presented Value	GaEPD Value <sup>1</sup>
$K_{as}$ (g soil/cm <sup>3</sup> air)	1.91	0.1949
$K_d$ (cm <sup>3</sup> /g)	0.12	1.178
$K_{oc}$ (cm <sup>3</sup> /g)	5.9	58.9
Molecular Diffusivity (cm <sup>2</sup> /s)	0.088	0.088
Henry's Law Constant (atm-m <sup>3</sup> /mol)	0.0056	0.0056
Volatilization Factor (m <sup>3</sup> /kg)	789.58	2920

3. The following comments are related to RAGS Equations:
- Appendix G should include RAGS equations 6 and 7.
  - The soil Type 2 criteria for benzene should be the lesser of the calculated values using the RAGS equation 6 for carcinogens and RAGS equation 7 for noncarcinogens.
  - The soil Type 1 criteria for naphthalene should be the notification concentration (100 mg/kg) as opposed to the value derived from RAGS equation 7. Please see the following Table for the correct risk reduction criteria.

**Comparison of Type 1, 2, and 4 RRS Values for Groundwater and Soil**

Regulated Substance in Soil	Type RRS	Hunter Army Airfield Criteria (mg/kg)	GaEPD Criteria (mg/kg)
Benzene	Type 2	1.4	5
	Type 4		
Benzo(k)fluoranthene	Type 2	3.9	14
Chrysene	Type 2	120	125
2,4-dinitrotoluene	Type 1	0.66	100
Ethylbenzene	Type 2	550	1562
Naphthalene	Type 1	93	100
Trichlorofluoromethane	Type 1	150	200

<sup>1</sup> 1996. US EPA, Soil Screening Guidance Technical Background Document, Office of Solid Waste and Emergency Response, EPA/540/R-95/128.  
<http://www.epa.gov/oerrpage/superfund/resources/soil/toc.htm>

Regulated Substance in GW	Type RRS	Hunter Army Airfield Criteria (mg/L)	GaEPD Criteria (mg/L)
Benzene	Type 4	0.014	0.009
Lead	Type 4	0.015	Background

4. Section 5.3 (p. 5-4) identifies ecological receptors. The following Table lists screening values for soil in order to determine the need for an ecological risk assessment. Detected soil concentrations that are above these levels are listed. Since the data documents the need for ecological risk assessment, the revised CSR must include such an assessment.

**Comparison of Ecological Soil Screening Levels and Soil Samples**

Regulated Substances	Screening Value (mg/kg)	Soil Samples Above SVs (mg/kg)
Dieldrin	0.0005	.004, .0073, .0048, .038, .026, .043, .0036, .0035, .0036, .0037, .0042, .004, .0041, .0041, .004, .0041, .004, .0037, .0035
Anthracene	0.1	.34, .37, .36, .34, .4, .36, .48, 1.5, 2.2, 2.8, .37, .36, .35, .36, .99, .37, .36, .35, .36, .99, .37, 7.4, .36, .34, .38, 7.5, .36, .42, .36, .37, .35, .39, .4, .41, .41, .39, .41, .4, .38, .37, 5.7, .35, .39, .4, .43, .36, .36, .36, 2.2, .37, .38
Benzo(a)pyrene	0.1	.34, .37, .36, .34, .4, .75, .48, 6.2, 5.2, 16, .37, .36, .35, .36, 8.9, .37, 9.9, .36, .34, .38, 26, .36, .42, .36, .37, .35, .39, .4, .41, .41, .39, .41, .4, .38, .37, 20, .35, .39, .4, .43, 1.9, .36, .36, 10, .37, .38
Fluoranthene	0.1	.34, .37, .36, .34, .4, .52, .48, 11, 13, 22, .37, .36, .35, .5, 11, .37, .33, .36, .34, .38, 72, .36, .42, .36, .37, .35, .39, .4, .41, .41, .39, .41, .43, .38, .37, 22, .35, .39, .4, .43, 2.4, .36, .36, 24, .37, .38
Naphthalene	0.1	.34, .37, .36, .34, .4, .36, .48, .37, .41, 1.4, .37, .36, .35, .36, .36, .37, .53, .36, .34, .38, 3.5, .36, .43, .36, .37, .35, .39, .4, .41, .41, .39, .41, .4, .38, .37, 1.9, .35, .39, .4, .43, .36, .36, .36, .79, .37, .38
Phenanthrene	0.1	.34, .37, .36, .34, .4, .36, .48, 2.0, 7.3, 7.1, .37, .36, .35, .36, 3.6, .37, .39, .36, .34, .38, 32, .36, .42, .36, .37, .35, .39, .4, .41, .41, .39, .41, .4, .38, .37, 19, .35, .39, .4, .43, .36, .36, .36, 10, .37, .38
Pyrene	0.1	.34, .37, .36, .34, .4, .36, .48, 8.5, 8.7, 18, .37, .36, .35, .36, 10, .37, 25, .36, .34, .38, 49, .36, .42, .36, .37, .35, .39, .4, .41, .41, .39, .41, .41, .38, .37, 26, .35, .39, .4, .43, 2, .36, .36, 17, .37, .38

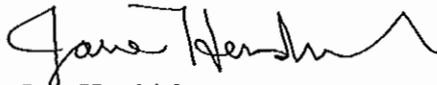
Mr. Tom Fry  
January 5, 2001  
Page 5

5. In Section 5.2.1 (Physical Site Characteristics, p. 5-2), please revisit the discussion of the two drainage ditches located north and south of the site. Include in the discussion the potential of the ditches to provide a habitat for aquatic species. Include any previous investigative work or site history that would provide information regarding the impact that the drainage ditches may have on the environment.

Please revise the CSR to address the comments in this letter and submit a complete response to EPD by March 30, 2001. The response should be in the form of a stand-alone document that has a structure consistent with that of the original CSR.

If you have any questions regarding EPD's review, please contact Xiaobing Chen at (404) 657-8600.

Sincerely,



Jake Hendricks  
Unit Coordinator  
Hazardous Sites Response Program

JH:xbc

File: HSI No. 10395



DEPARTMENT OF THE ARMY  
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART  
DIRECTORATE OF PUBLIC WORKS  
1550 FRANK COCHRAN DRIVE  
FORT STEWART, GEORGIA 31314-4927

REPLY TO  
ATTENTION OF

3 MAR 2000

OFFICE OF THE DIRECTORATE

EXPRESS MAIL

Georgia Environmental Protection Division  
Hazardous Waste Management Branch  
Attention: Ms. Jane Hendricks  
205 Butler Street, Southeast, Suite 1462  
Atlanta, Georgia 30334

Dear Ms. Hendricks:

Fort Stewart is pleased to submit two (2) copies of the Compliance Status Report (CSR), dated March 31, 2000, to the Georgia Environmental Protection Division (GA EPD). This CSR documents the site investigation conducted at the Former Fire Training Area (HSI Number 10395) at Hunter Army Airfield, Georgia. Based on my review of the findings contained in the enclosed report, with respect to the risk reduction standards of the Rules for Hazardous Site Response, Rule 391-3-19.07, I have determined that the Former Fire Training Area is not in compliance with Types I through 4 risk reductions standards. I look forward to receiving your review comments on the enclosed report.

Please note that public notification required in conjunction with submittal of the CSR to GA EPD is in the process of being performed. Specifically, an announcement is scheduled to be published in the legal announcement section of the Atlanta Journal Constitution on April 9, 2000 and in the Savannah Morning News on April 9, 2000. Copies of these public notifications will be maintained at Fort Stewart and will be available to GA EPD upon request. In addition, respective parties in Chatham County will also be notified of submittal of the CSR to GA EPD within the next few weeks. Copies of these letters, which will be sent certified mail, will also be available upon request.

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 enclosed documents and/or the request to combine these two sites in the HSRA database.

Sincerely,

*for* *Thomas C. Fey*  
Gregory V. Stanley  
Colonel, U.S. Army  
Director, Public Works

03/30/00

Enclosures

## EXECUTIVE SUMMARY

This Compliance Status Report (CSR) documents the site assessment and development of Risk Reduction Standards (RRS) for the former Fire Training Area (FTA) at Hunter Army Airfield (HAAF) in Savannah, Georgia [Hazardous Site Inventory (HSI) Number 10395]. The purpose of this CSR is to satisfy the requirements of the Georgia Hazardous Site Response Act (HSRA). (In this report "site" is used to denote the property that was occupied by the former FTA, while "Site" denotes the HSRA site definition.)

HAAF is located in the southwestern portion of Savannah and covers approximately 5,400 acres. The mission of the facility is to provide command, control, training, administration, logistical and civilian-military support to non-divisional units stationed at Fort Stewart and HAAF. Aircraft based at HAAF currently include combat, transport, and training helicopters. The airfield is also used for overseas mobilization of troops and weapons.

The former FTA site is located on the northwestern portion of HAAF, west of the parking apron and runway, and 800 feet northwest of the air control tower. The site has not been used for fire training or any other purpose since 1991. The site formerly included a diked, gravel-covered concrete pad which was used for fire training. During training exercises, fuel was pumped from a nearby 10,000-gallon aboveground storage tank through an underground line to the pad where it was sprayed upon a simulated aircraft frame and ignited. Reportedly, water-contaminated JP-4 and diesel fuels were used for these training exercises. The pad and tank areas were the source areas for the contamination detected in soil and groundwater. These source areas underwent extensive remediation in 1998 which included removal of the fuel storage tank, fire training pad and contaminated soils. Based on past soil and groundwater sampling results, metals, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs) are present at the site.

As a part of the CSR assessment, a total of 121 soil samples were samples from 20 monitoring wells. The results of these analysis investigations at the site, have been used to define the horizontal regulated substances associated with the Site. The studies have show regulated substances associated with the site are limited to the form extent of SVOCs in soils to the north and south of the fire traini however, the SVOCs present appear to be due to fill materials (conc to build up the area rather than activities associated with the form

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extent of VOCs, pesticides, PCBs and metals in soils has been completely delineated. The horizontal and vertical extent of VOCs in groundwater is not completely delineated to the north of the fire training pad. The extent of SVOCs, pesticides, PCBs, and metals in groundwater has been completely delineated.

The current and future use of the HAAF FTA property is non-residential. Thirty-five HSRA-regulated substances including VOCs, SVOCs, and pesticides were detected in soil samples collected from the Site at concentrations above their respective detection limits. Detected metals were either below detection limits or background concentrations. Types 1 through 4 RRS were calculated for these constituents based on the criteria provided in Section 391-3-19-.07(6)(c) of the HSRA rules. Twenty-five of the 35 detected constituents comply with their Type 1 RRS. The maximum detected concentrations of three of the ten remaining constituents complied with their respective Type 2 RRS. Type 3 RRS were calculated for the seven remaining constituents. Four compounds in surface soil and six compounds in subsurface soil did not comply with their respective Type 3 RRS for soils. Type 4 RRS were calculated for the six constituents that exceeded the Type 3 RRS. The maximum detected concentrations of benzene, chloromethane, and benzo(a)pyrene in soil did not comply with default Type 4 RRS for soil.

Twelve HSRA-regulated substances were detected at concentrations exceeding detection limits in groundwater samples collected from the Site. Concentrations of five constituents exceeded the Types 1 and 3 RRS for groundwater. The maximum detected concentration of four constituents, lead, benzene, vinyl chloride, and naphthalene, did not comply with default Type 4 RRS for groundwater.

The soil and groundwater at the HAAF FTA is not in compliance with Types 1 through 4 RRS.

# Georgia Department of Natural Resources

205 Butler Street, S.E., Suite 1462, Atlanta, Georgia 30334

Lonice C. Barrett, Commissioner  
Environmental Protection Division  
Harold F. Reheis, Director  
404/657-8600

January 12, 1999

**CERTIFIED MAIL**

**RETURN RECEIPT REQUESTED**

Environmental Branch (Attn: Tom Fry)  
Director of Public Works  
HQ's 3rd Infantry Division and Fort Stewart  
1557 Frank Cochran Drive  
Fort Stewart, GA 31314-4928

RE: Listing of site on Hazardous Site Inventory  
Hunter Army Airfield - MCA Barracks  
Between Cook Blvd. & Strachen Dr.; Mitchell Blvd. & Douglas St.  
Savannah, Georgia 31409  
HSI Site Number: 10521

Dear Mr. Fry:

Pursuant to the Georgia Rules for Hazardous Site Response, specifically Rule 391-3-19-.05(1) "Listing on the Hazardous Site Inventory," the Georgia Environmental Protection Division (EPD) has evaluated the above referenced site to determine whether a release of a regulated substance exceeding a reportable quantity has occurred. Based upon information provided in your notification dated September 4, 1998, it has been determined that a release exceeding a reportable quantity has occurred at this site. Therefore, this site is now listed on the Hazardous Site Inventory (HSI) and will be included in the next publication of the HSI.

Enclosed is a document entitled "Introduction to the Hazardous Site Inventory" that provides an overview of the listing process. Also enclosed is a printout of the data on your site that has been entered into the HSI database. The printout indicates the numerical values assigned when the site was evaluated using the Reportable Quantities Screening Method (RQSM). If it is your position that any of the values shown on the enclosed printout do not represent actual conditions at the site as of the date of this letter, then you may request that the value be changed. If analytical data not yet submitted to EPD is the basis of your request for a change in a RQSM value, the data must have been collected prior to your receipt of this letter to affect the listing of your site on the HSI. Your request should be made in writing and provide documentation to support your position, including a statement as to what you think the appropriate value for that factor should be.

In accordance with O.C.G.A. §12-8-70(d) and Rule 391-3-19-.05(2) "Release Reporting," you are required to submit the following information unless such information has already been submitted pursuant to Rule 391-3-19-.04(4) "Notification Requirements":

- (1) Name, mailing address, and telephone number of the site's property owner, lessee, tenant, or facility owner or operator (for all such properties at the site);
- (2) Street address of the site or, if a numbered address is not available, a location descriptor;
- (3) An original of the most current topographic map of scale 1:24,000 produced by the United States Geological Survey, with the geographic center of the site identified;

Mr. Tom Fry  
January 12, 1999  
Page 2

- (4) A description of the property boundaries in the vicinity of the site by legal description, survey plat, tax map (EPD requires that you provide a tax map parcel ID number for the parcel at which the reportable quantity release was identified), or other means (the property boundary description must include other owners' properties if other properties have been affected by the release);
- (5) A chemical name, taken from Appendix I, of each regulated substance released at the site which independently meets the notification criteria in Rule 391-3-19-.04(3);
- (6) A general description of the nature of the release and the location of areas affected by the release or by its subsequent migration, both within and beyond the original site's boundaries;
- (7) Suspected or known source, quantity, and date of the release;
- (8) A summary of actions taken to investigate, clean up, or otherwise remediate the site; and
- (9) A statement which identifies the criteria of Rule 391-3-19-.04(3) by which the property owner determined that a release which required notification has occurred.

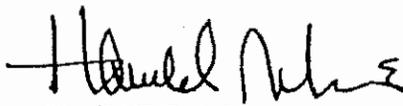
You have the option to use EPD's standardized Release Notification/Reporting Form (copy enclosed) in submitting the above information. Simply check "Reportable Quantity Release Reporting" in Item 1 of the form. If you have already submitted an initial release notification using the standardized form, and the information on the form accurately reflects the present situation at the site, please be aware that the only remaining information being requested by today's letter is described in Item 22 of the form. If you change any information previously submitted in a standardized form, please check "Supplemental Information" in Item 1 of the form.

Please submit the required information within forty-five (45) days of receipt of this letter to the following address:

Georgia Environmental Protection Division  
Hazardous Sites Response Program  
205 Butler Street, S.E., Suite 1462  
Atlanta, Georgia 30334  
ATTENTION: HSI

If you have any questions or comments, please contact Xiaobing Chen at 404/657-8600.

Sincerely,

  
Harold F. Reheis  
Director

HFR:xbc

Enclosures: (1) HSI site data printout  
(2) Introduction to the HSI  
(3) Release Notification/Reporting Form

File: HSI 10521

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## Record of Decision / Decision Document

DSERTS# HAA-01

Date Received 11-4-96

Installation Fort Stewart

Title DD for IRA at the fire training area

Hunter Army Airfield

Type DD-IRA

Date Signed \_\_\_\_\_

**DECISION DOCUMENT FOR INTERIM REMEDIAL ACTION AT  
THE FIRE TRAINING AREA  
HUNTER ARMY AIRFIELD, GEORGIA**

PURPOSE OF INTERIM REMEDIAL ACTION

This decision document describes the selected interim remedial action for the Fire Training Area (HAA-01) at Hunter Army Airfield, Georgia.

The Fire Training Area is located on the northwestern portion of the runway and was used until 1991 to train firefighters in a live fire situation. Training sessions took place approximately eight times per year, and fuel for the training fires was supplied from an aboveground storage tank. Approximately 300 to 500 gallons of waste oil, solvents, and waste fuels (AVGAS and JP-4) were used per session. The fire training area consists of a 5,000 square foot concrete pad, bermed on all sides. The concrete pad contains POL contaminated soil, and soil on the south side of the pad is visibly stained from overflow resulting from training activities. The concrete pad is cracked in several locations which has resulted in soil contamination beneath the pad. Reports completed in 1990, 1992, and 1995, indicate that the training area has been impacted by past activities. The reports concluded that the soil at the site poses a risk to human health through inhalation and/or ingestion. Based on these findings, an interim remedial action is required and necessary as outlined in this decision document.

The interim remedial action involves excavation and removal of contaminated soil from the source area and disposing of this soil to an approved State disposal facility. Specifically, the contaminated soil will be taken to an asphalt plant where the soil will be incinerated and reused in the asphalt process. Also, further groundwater monitoring and investigation will be conducted for a period of five (5) years to determine if further actions are required to address possible groundwater contamination.

This decision document was developed by the Department of Public Works at Fort Stewart, with support from the U.S. Army Corps of Engineers.

SUMMARY OF SITE RISK

A qualitative risk evaluation was done in the Compliance Status Report, completed in April 1996. The qualitative risk evaluation identified and evaluated potential risks to human health and the environment posed by constituents detected during remedial investigation (RI) activities, for both soil and groundwater. The risk of exposure to subsurface soils is dependent upon the disturbance and contact with those soils. Benzene was detected at significant concentrations in on-site

soils. Under the Rules of Georgia Department of Natural Resources Environmental Protection Division, Hazardous Site Response Act (HSRA), Chapter 391-3-19 risk reduction standards (RRS) which are still protective of human health and the environment can be incorporated into a remedial action, allowing for less stringent clean-up standards. Using the RRS approach, benzene soil concentrations on-site must be remediated to 10 mg/kg. However, benzene concentrations at the site are as high as 18 mg/kg. Thus, under HSRA there is a risk to human health and the environment if subsurface soils are disturbed. Under Chapter 391-3-19, Hunter Army Airfield is required to remove the source of contamination to achieve standards which are applicable to site specific environmental media. Therefore, under State of Georgia regulations, the site must be remediated to 10 mg/kg of benzene in the soil. The remedial design has been prepared to meet all State of Georgia requirements.

#### SUMMARY OF REMEDIAL ALTERNATIVES

Based on the Compliance Status Report, the options considered for interim remedial action alternatives for the treatment of the soil and clean-up of the source area are as follows:

DESCRIPTION	COST
1. No action	\$0
2. Source Removal-Excavate and Offsite Disposal	\$695,644

Alternative number 1 does not satisfy the requirements of Chapter 391-3-19. This alternative would not remove the source of contamination and would not allow for the site to be remediated to 10 mg/kg of benzene in the soil. Instead, the potential for further impact on the groundwater at the site is increased if the source is not removed. In addition, the risk to human health and the environment is not considered by this alternative.

Alternative number 2 would entail removal and disposal of the contaminated soil in an approved State disposal facility. This alternative would allow the contaminated soil to be reused once it has been incinerated, and would reduce the risk of future contamination at the site. Alternative #2 would provide the best balance of reducing both the potential of further contamination at the site and/or remediation, and will ultimately minimize costs and liability. Alternative #2 will also significantly reduce the risk of human exposure from soil (ie. ingestion and/or inhalation). The current cost of this alternative is \$695,644.

#### DECLARATION

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to this interim remedial action, and is cost-effective. This remedy satisfies the statutory preference for remedies that employ treatment to reduce

the mobility of toxic material as a principal element.

Due to the fact that the selected course of action is a source removal, and further remedial action may be required to address groundwater contamination, the five-year review will not apply to this interim remedial action. The chosen course of action is consistent with any future remedies needed to address possible groundwater contamination at this site.

John H. Spears  
JOHN H. SPEARS  
Chief, Environmental Branch

Dale F. Keifer  
DALE F. KEIFER  
Chief, Environmental and  
Natural Resources Division

for Dale F. Keifer  
CAREY W. BROWN  
LTC; EN  
Director, Public Works



DEPARTMENT OF THE ARMY  
KANSAS CITY DISTRICT, CORPS OF ENGINEERS  
700 FEDERAL BUILDING  
KANSAS CITY, MISSOURI 64106-2896

REPLY TO  
ATTENTION OF:

CEMRK-ED-TD (200)

12 April 1991

MEMORANDUM FOR Commander, Environmental Affairs Office, HQ 24th  
Infantry Division, Mechanized, ATTN: AF2P-DEF-E  
(Tom Houston), Fort Stewart, Georgia 31314-5000

SUBJECT: Remedial Investigation/Feasibility Study of the Two Fort  
Stewart Fire Training Areas, Located at Wright and Hunter Army  
Airfields

1. Reference CEMRK-ED-TD Memorandum, dated 19 September 1990, (enclosure 1) concerning the proposed closure of the subject fire training areas. The memorandum requested the Fort Stewart Environmental Affairs office to contact the State Regulator, Georgia Department of Natural Resources (GDNR), and obtain regulatory closure requirements pertinent to this project. These requirements would be utilized by CEMRK for the development of a contract Scope of Work (SOW) designed to produce a formal site "Closure Plan." Environmental Science and Engineering (ESE), Inc. is the A-E currently under contract for this investigation.
2. CEMRK has been verbally notified by the Fort Stewart Environmental Affairs office of their concerns regarding the involvement of GDNR with this project. Fort Stewart stated that it is their position that the GDNR should become involved only after a draft closure plan had been prepared. To date no contact has been made with the GDNR by either CEMRK or Fort Stewart.
3. This investigation is required to be performed in compliance with the "Code of Federal Regulation," Title 40 (CFR). The CFR requires the State Regulator to be notified and consulted regarding decisions pertaining to closure action. Additionally, it has been CEMRK's experience that by establishing an open line of communication between the State Regulator, local installation and A-E that potential hurdles regarding the preparation and/or acceptance of closure plans can be avoided. If the State Regulator is not kept current of the project status, extensive comments could be generated upon their initial review of the final plan. These comments could be of such a nature that a contract modification would be required to extend the services of the A-E.
4. Therefore, it is again requested that contact be made with the GDNR and the above mentioned information solicited. Enclosed for your reference is a draft letter (enclosure 2) which represents the typical format utilized by this office when requesting such information.

CEMRK-ED-TD

SUBJECT: Remedial Investigation/Feasibility Study of the Two Fort Stewart Fire Training Areas, Located at Wright and Hunter Army Airfields

5. Additional reference is made to the 10 October 1990 site meeting at which time representatives from both CEMRK and the Fort Stewart Environmental Affairs office discussed the current use of the training facilities. Fort Stewart stated that upon closure of the training sites both Hunter and Wright Army Airfields' fire departments will be without training facilities and that a method would have to be devised to dispose of off-specification JP4 aviation fuel currently being utilized in conjunction with the training activities.

6. CEMRK understands your installation's situation concerning both the excess fuel and training requirements. However, both of the sites must remain inactive in order for the closure plan, which will be developed based upon the sites' current characterization, to remain effective. No further investigative/closure activities should be performed if the sites continue to be utilized for training purposes.

7. Your written response stating concurrence with both GDNR project involvement and the utilization of the training facilities is needed as soon as possible in order for the project to move forward. If you take exception to either of the issues then a formal memorandum stating the basis for such exception is required. The memorandum would be utilized to determine if further investigative action is feasible.

8. Any questions regarding this matter are to be directed towards Mr. Scott Young, of my staff, at 816-426-2608 or FTS 867-2608.

FOR THE COMMANDER:



PAUL D. BARBER  
Chief, Engineering Division

2 Encls

CF: (w/encls)  
CEMRD-MD-IIA  
FCEN-RDE (Rudy Stein)

19 September 1990

MEMORANDUM FOR

Commander, Missouri River Division, ATTN: CENRD-ED-EA  
Commander, Environmental Affairs Office, HQ 24th Infantry Division Mech.,  
ATTN: AFZP-DER-E (Tom Houston), Fort Stewart, Georgia 31314-5000

SUBJECT: Remedial Investigation/Feasibility Study of the Two Fort Stewart  
Fire Training Areas, Located at Wright and Hunter Army Airfields

1. Hunter/ESE, the Architect Engineering (A-E) firm performing the subject contamination study transmitted the project Draft Contamination Evaluation Report, dated May 1990, to the appropriate reviewing agencies for comment. CEMRK compiled all of the agencies' comments (enclosure 1) and requested the A-E to respond in writing as to their proposed disposition of each comment. The A-E complied with the request with a letter dated 13 August 1990 (enclosure 2).

2. The site Investigation Scope of Work (SOW) required the A-E to perform field investigations, collect/analyze potentially hazardous materials and prepare both a Draft and Final Contamination Evaluation Summary Report. Additionally, the SOW contained unpriced optional tasks which would require the A-E to furnish site closure alternatives and/or design documents. These optional tasks are outlined below:

a. Draft Closure Plan - The A-E shall evaluate all reasonable closure alternatives for the site including, but not limited to, the removal of contamination and off-site disposal, on-site treatment or no action. The A-E will analyze each of the alternatives as to viability and cost effectiveness. All viable alternatives for closure must meet the State of Georgia and Federal rules and regulations. Any additional site sampling activities deemed necessary, by the Contracting Officer, to adequately derive, support and/or evaluate the proposed closure alternatives shall be performed under this optional task.

b. Design and Construction Documents - Upon approval of the Draft Closure Plan, the A-E shall prepare a construction bid package for a construction contract. The package shall provide all design, drawings, analysis, and detailed construction cost estimates for closure of the sites.

If deemed necessary the optional tasks would be implemented by CEMRK and represent an extension to the basic contract requirements.

3. A meeting will be conducted at the Fort Stewart Environmental Affairs Office to discuss the comments generated on the draft report, the available contract options and the A-E's project recommendations. Following this

CEMRK-ED-TD

SUBJECT: Remedial Investigation/Feasibility Study of the Two Fort Stewart Fire Training Areas, Located at Wright and Hunter Army Airfields

meeting the A-E will prepare and submit the Final Contamination Evaluation Report. The submittal of this report shall fulfill the A-E's basic contractual requirements.

4. A copy of the Final Contamination Evaluation Report will then be transmitted to the State Regulator, Georgia Department of Natural Resources (GDNR), Environmental Branch, by the Fort Stewart Environmental Affairs Office requesting that the regulatory requirements associated with the fire training sites be established.

5. It is important to note that the Draft Contamination Evaluation Report states that potential health risks exist at the fire training sites. This statement is supported by the detection of metals, VOCs and PAHs. As a result of this detection, both the soil and groundwater may pose potential risks to human and environmental receptors coming into contact with these media. Therefore, the A-E has stated that upon implementation of the closure plan option, a determination must be made as to whether migration of contaminated media to adjacent surface water bodies has occurred. This determination would be made utilizing additional field sampling activities specified by the Contracting Officer.

6. Based upon a review of the analytical data provided in the draft report, CEMRK concurs with the A-E's recommendation to further investigate the sites' potential health risks. As previously stated, this additional investigation would be performed in conjunction with the implementation of the closure plan option. However, since the GDNR has primacy on the fire training sites a final determination cannot be made until receipt and review of the GDNR regulatory requirements. Additionally, these requirements would be utilized to define the optional task Scope of Work. Therefore, no contractual action regarding this investigation/site closure can be performed by CEMRK until after the GDNR review is complete.

7. Funds necessary to implement the optional closure plan have been requested by CEMRK for use in FY91. However, due to the limited funding anticipated for the FY91 Installation Restoration Program, it is imperative that a determination be made as to this project's actual funding requirements ASAP. Therefore, it is requested that the regulatory requirements established by the GDNR be transmitted to CEMRK upon receipt by the Fort Stewart Environmental Affairs Office so that proper action may be taken.

8. Any questions regarding this matter are to be directed to Mr. Scott Young, of my staff, at 816-426-2608 or FTS 867-2608.

FOR THE COMMANDER:

2 Encls  
1. Draft Report CMTS  
2. ESE Letter  
CF: wo/encls

PAUL D. BARBER  
Chief, Engineering Division

Georgia Department of  
Natural Resources - Land  
Protection Branch  
Floyd Tower East, Suite 1154  
205 Butler St., S.E.  
Atlanta, Georgia 30334

DRAFT

Dear Gentlemen:

This letter is in response to an environmental investigation currently being performed on two separate Fort Stewart fire training facilities located at Wright and Hunter Army Airfields. The U.S. Army Corps of Engineers, Kansas City District, utilizing the services of Environmental Science & Engineering (ESE), Inc., have performed a contamination assessment of the training facilities. This assessment was performed under the Defense Environmental Restoration Program and resulted in the determination that both sites require permanent closure in accordance with an RCRA, part B permit.

The Kansas City District office is currently preparing to negotiate the services of ESE, Inc., for the preparation of a formal site "Closure Plan." The plan would incorporate both facilities and must comply with appropriate Federal and Georgia Department of Natural Resources (GDNR) regulatory requirements. Therefore, any regulatory requirements that GDNR could provide regarding a site closure of this type would be greatly appreciated. Additionally, any technical and/or site remediation concerns which you feel are vital to the preparation and implementation of the closure plan would also be appreciated.

Due to the limited funding associated with the Defense Environmental Restoration Program it is imperative that the projects actual funding requirements be established as soon as possible. Your prompt attention to this matter will help us accurately estimate costs and help ensure funding for the project.

If you have any questions regarding this matter, please direct them towards Mr. \_\_\_\_ of my staff at ( ) - .

Sincerely,

Signature Block