FINAL

IMA

ADDENDUM #20
TO THE
WORK PLAN

FOR

3d Inf Div (Mech)

PRELIMINARY GROUNDWATER AND CORRECTIVE ACTION PLAN–PART A/PART B INVESTIGATIONS AT FORMER UNDERGROUND STORAGE TANK SITES, HUNTER ARMY AIRFIELD AND FORT STEWART, GEORGIA

Prepared for

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

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Prepared by

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APPROVALS

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Greg Grim, Program Manager — Date 4/13/06

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DO	dissolved oxygen
HAAF	Hunter Army Airfield
PID	photoionization detector
RCRA	Resource Conservation and Recovery Act
Redox	oxidation-reduction potential
SVOC	semivolatile organic compound
VOC	volatile organic compound

1.0 INTRODUCTION

This addendum supplements the following work plans: *Work Plan for Preliminary Groundwater and Corrective Action Plan–Part A/Part B Investigations at Former Underground Storage Tank Sites, Fort Stewart Georgia* (SAIC 1996) and *Sampling and Analysis Plan for Corrective Action Plan–Part A and B Investigations for Former Underground Storage Tanks at Hunter Army Airfield, Georgia* (SAIC 1998). It presents changes to the work plans and the specific sampling requirements for the performance of investigations at the Hunter Army Airfield (HAAF) Purge Facility. Investigations are required at the HAAF Purge Facility due to tank overflows requiring site cleanup (i.e., immediate/emergency response measures) and discharges to water bodies of the state. Remediation of soil and groundwater could be required at the HAAF Purge Facility by Georgia Environmental Protection Department.

The HAAF Purge Facility has not been previously investigated and little is known about the type and extent of any contamination at this site. Table 1 identifies general site-specific information and presents the proposed activities for this site.

2.0 PROJECT ORGANIZATION

The organizational chart for the Fort Stewart and HAAF investigations is presented in Figure 1.

3.0 FIELD ACTIVITIES

Five new monitoring wells, four shallow and one deep, will be installed at the HAAF Purge Facility. A shallow/deep monitoring well pair will be installed on the downgradient side of the source area. Two shallow wells will be installed around the perimeter of the source area, and one shallow well will be installed downgradient of the side outside the source area. During the drilling of the boring for each of the wells, two soil samples will be collected from each of the five borings. The two soil samples from each boring will be submitted to the analytical laboratory for volatile organic compound (VOC), semivolatile organic compound (SVOC), and Resource Conservation and Recovery Act (RCRA) metals analysis. Each well will be developed until the effluent water from the well is clear to the unaided eye and groundwater parameters are stable.

One groundwater sampling round will be conducted, with groundwater samples collected from each of the five newly installed monitoring wells. Each groundwater sample will be analyzed for VOCs, SVOCs, and RCRA metals.

Surface soil samples will be collected with a hand auger from three locations along the surface drainage pathway feature, which passes through the HAAF Purge Facility site. Two soil samples will be collected from each location and analyzed for VOCs, SVOCs, and RCRA metals.

The locations for sampling at the site are presented in Appendix A, Figure A-1. The sample numbering system for the site is provided in Table 2. A summary of analytical samples to be collected at the HAAF Purge Facility is provided in Table 3.

4.0 MONITORING WELL INSTALLATION

Two-inch monitoring wells will be installed using the hollow-stem-auger drilling method. The procedures and methodology for hollow-stem-auger drilling were presented in the work plan (SAIC 1996). During the drilling of the borings for each of the wells, two soil samples will be collected from each of the five borings for a total of ten samples. At each of the soil borings, soil samples will be collected from the surface to the water table. Two samples from each boring will be submitted to the laboratory for chemical analysis for VOCs, SVOCs, and RCRA metals. One sample will be collected from the 0 to 1-ft interval and the second sample will be collected from the interval exhibiting the highest photoionization detector (PID) reading. If there are no elevated PID readings, the interval just above the water table will be submitted for analysis.

The shallow wells are estimated to be 15 ft deep and the deep well is estimated to be 45 ft deep. All monitoring wells will be 2-in. inner diameter polyvinyl chloride wells with 0.010 slotted screen size. Shallow wells will be completed with a 10-ft screen placed across the water table and the deep well will be completed with a 5-ft screen set above the Hawthorn clay layer or the depth interval with the highest PID reading, as determined during soil sampling. Any wells located in the traffic zone will be completed as flush mount wells. Otherwise, each well will be completed with above-grade completions and will be protected by four bollards.

The monitoring wells will be developed in accordance with the procedures and methodology presented in the work plan (SAIC 1996). Groundwater field measurements performed during the investigations will include pH, specific conductance, and temperature. Each well will be developed until the effluent water from the well is clear to the unaided eye and groundwater parameters are stable.

5.0 GROUNDWATER SAMPLING

Low-flow techniques will be used to collect groundwater samples from the monitoring wells. Each groundwater sample will be analyzed for VOCs, SVOCs, and RCRA metals. Field measurements performed during the investigations will include pH, specific conductance, temperature, oxidation-reduction potential (Redox), dissolved oxygen (DO), and turbidity. Procedures and equipment for measurement of pH, specific conductance, temperature, Redox, DO, and turbidity were presented in the work plan (SAIC 1996).

6.0 SURFACE SOIL SAMPLING

Surface soil samples will be collected with a hand auger from three locations along the surface drainage pathway feature, which passes through the HAAF Purge Facility site. Two soil samples will be collected from each location and analyzed for VOCs, SVOCs, and RCRA metals. The soil samples will be collected from the 0.5- to 1.0-ft interval and the 2- to 4 ft-interval, and will be located approximately every 250 ft along the drainage pathway to the southeast of the HAAF Purge Facility site. Procedures and equipment for surface soil sampling were presented in the work plan (SAIC 1996).

7.0 WATER LEVEL MEASUREMENT

A complete set of water level measurements will be collected from all wells at the HAAF Purge Facility site. Procedures and equipment for water level measurements were presented in the work plan (SAIC 1996).

8.0 REFERENCES

SAIC (Science Applications International Corporation) 1996. *Work Plan for Preliminary Groundwater and Corrective Action Plan–Part A/Part B Investigations at Former Underground Storage Tank Sites, Fort Stewart, Georgia,* Oak Ridge, Tennessee.

SAIC 1998. *Sampling and Analysis Plan for Corrective Action Plan–Part A and B Investigations for Former Underground Storage Tanks at Hunter Army Airfield, Georgia,* Oak Ridge, Tennessee.

Table 1. Proposed HAAF Purge Facility Investigations

Activity	Location	Laboratory Analyses
Monitoring Well Installation	MW-01 through MW-05 (5)	Soil: VOC, SVOC, RCRA Metals (10)
Monitoring Well Sampling	MW-01 through MW-05 (5)	GW: VOC, SVOC, RCRA Metals (5)
Surface Soil Sampling	SS-01 through SS-03 (3)	Soil: VOC, SVOC, RCRA Metals (6)

GW = Groundwater.
HAAF = Hunter Army Airfield.
RCRA = Resource Conservation and Recovery Act.
SVOC = Semivolatile organic compound.
VOC = Volatile organic compound.

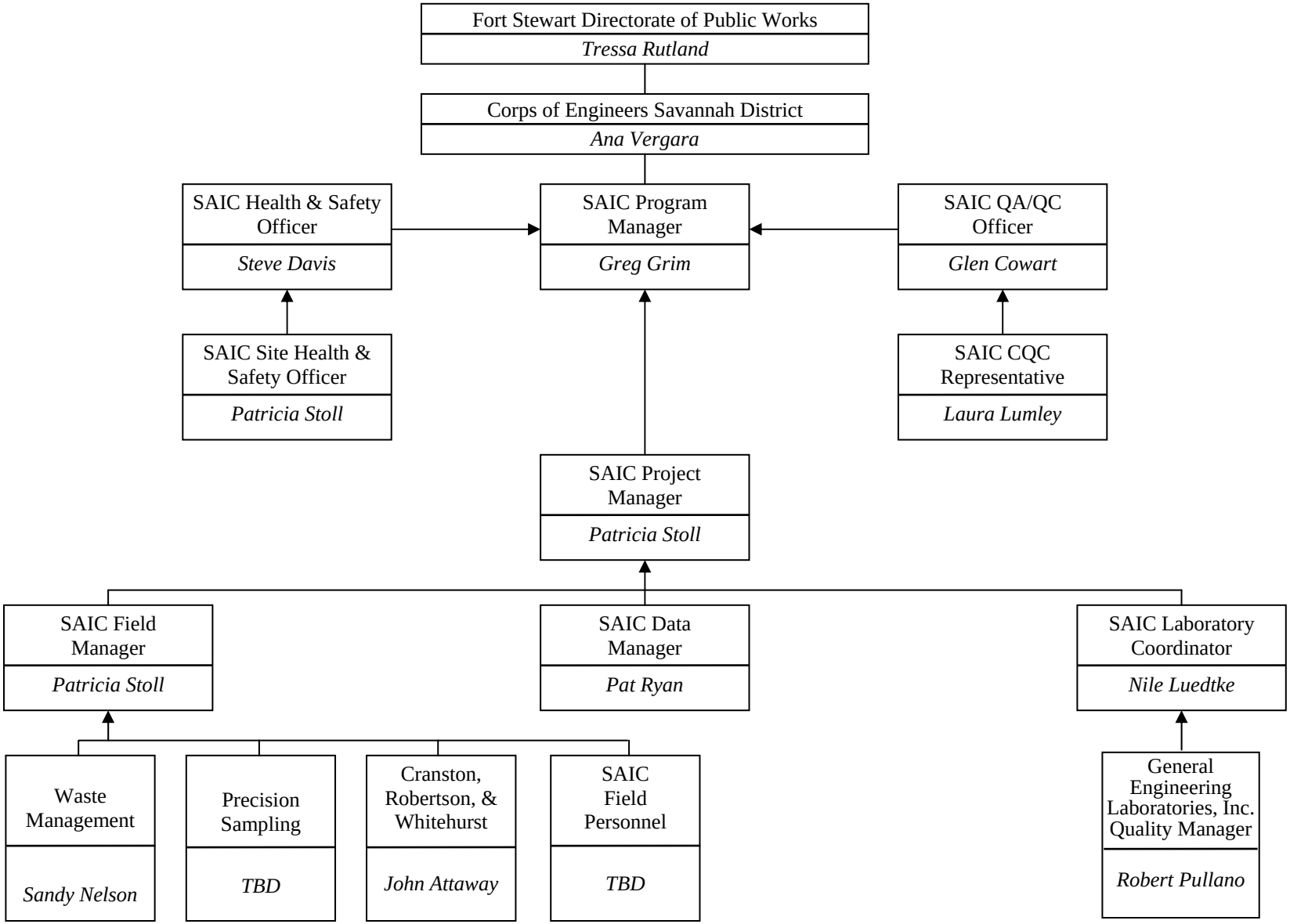

Figure 1. Fort Stewart and HAAF Organizational Chart

Table 2. Sample Numbering System for HAAF

Sample Identification: XX##NT	
XX = Area designator	Area designators used for the project will be the data-cluster identifiers presented in Table 1-1 of the project work plan (SAIC 1996) Examples: Hunter Army Airfield AT = INV – AT (Purge Facility)
## = Sample location	Sample locations will be consecutive starting from the last sample location Example 05 = Monitoring well 05
N = Sample depth	Sample depth will be represented by a number for each laboratory sample Examples 1 = First interval 2 = Second interval
T = Sample type	Examples 1 = Soil sample 2 = Groundwater sample 3 = Soil duplicate 4 = Groundwater duplicate 5 = Rinsate blank (soil equipment) 6 = Rinsate blank (groundwater equipment) 7 = Soil QA split sample 8 = Groundwater QA split sample 9 = Surface water sample 0 = Sediment sample/surface soil sample A = Vertical-profile groundwater sample X = IDW soil

All trip blank samples used during the project will be consecutively identified.
HAAF = Hunter Army Airfield.
IDW = Investigation-derived waste.
QA = Quality assurance.

Table 3. Summary of Analytical Samples to be Collected during HAAF Investigations

Matrix	Analysis	Analytical Procedures	No. Field Samples	QC Dups[a]	Field Rnsts[b]	QC Trip Blanks	Total Samples	Holding Time	Preservation Requirements	Sample Containers
Groundwater	VOC	EPA 8260B	5	1	1	2	9	14 days	Cool 4°C HCl pH <2	Two 40-mL GSV[c]
	SVOC	EPA 8270C	5	1	1	0	7	14 days	Cool 4°C	Two 1-L AG
	RCRA Metals	EPA 6010A, 7000	5	1	1	0	7	180 days	Cool 4°C HNO_3 pH<2	One 1-L HDPE
Soil	VOC	EPA 5035/8260B	16	2	1	0	19	48 hr	Cool 0°C	Three, EnCore
	SVOC	EPA 8270B	16	2	1	0	19	14/40 days	Cool 4°C	One 8-oz. CWM
	RCRA Metals	EPA 6010A, 7000	16	2	1	0	19	6 mo.	Cool 4°C	One 8-oz. CWM
IDW Water	VOC	EPA 8260B	2	0	0	0	2	14 days	Cool 4°C HCl pH <2	Two 40-mL GSV[c]
	Oil and grease	EPA 413.2	2	0	0	0	2	28 days	Cool 4°C H_2SO_4 pH<2	Two 1-L AG
	Total phenols	EPA 420.1/420.2	2	0	0	0	2	28 days	Cool 4°C H_2S0_4 pH<2	Two 1-L AG
	pH	EPA 150.1	2	0	0	0	2	ASAP	Cool 4°C	One 250-mL HDPE

[a]The number of QC duplicate samples represents a 10% distribution between the different types of investigations to be conducted; however, the actual number of duplicates collected for each investigation type might vary slightly from the distribution presented.
[b]The number of QC rinsate blank samples represents a 5% distribution between the different types of investigations to be conducted; however, the actual number of blanks collected for each investigation type might vary slightly from the distribution presented.
[c]Sample containers will be filled so that no headspace is present.
AG = Amber glass.
ASAP = As soon as possible.
CWM = Clear, wide-mouth jar.
EPA = U. S. Environmental Protection Agency.
GSV = Glass septa vial.
HAAF = Hunter Army Airfield.
HDPE = High-density polyethylene.
IDW = Investigation-derived waste.
QC = Quality control.
RCRA = Resource Conservation and Recovery Act.
SVOC = Semivolatile organic compound.
VOC = Volatile organic compound.
(This table is in conformance with EM-200-1-3).

APPENDIX A

PROPOSED SAMPLING LOCATIONS FOR HAAF PURGE FACILITY INVESTIGATIONS

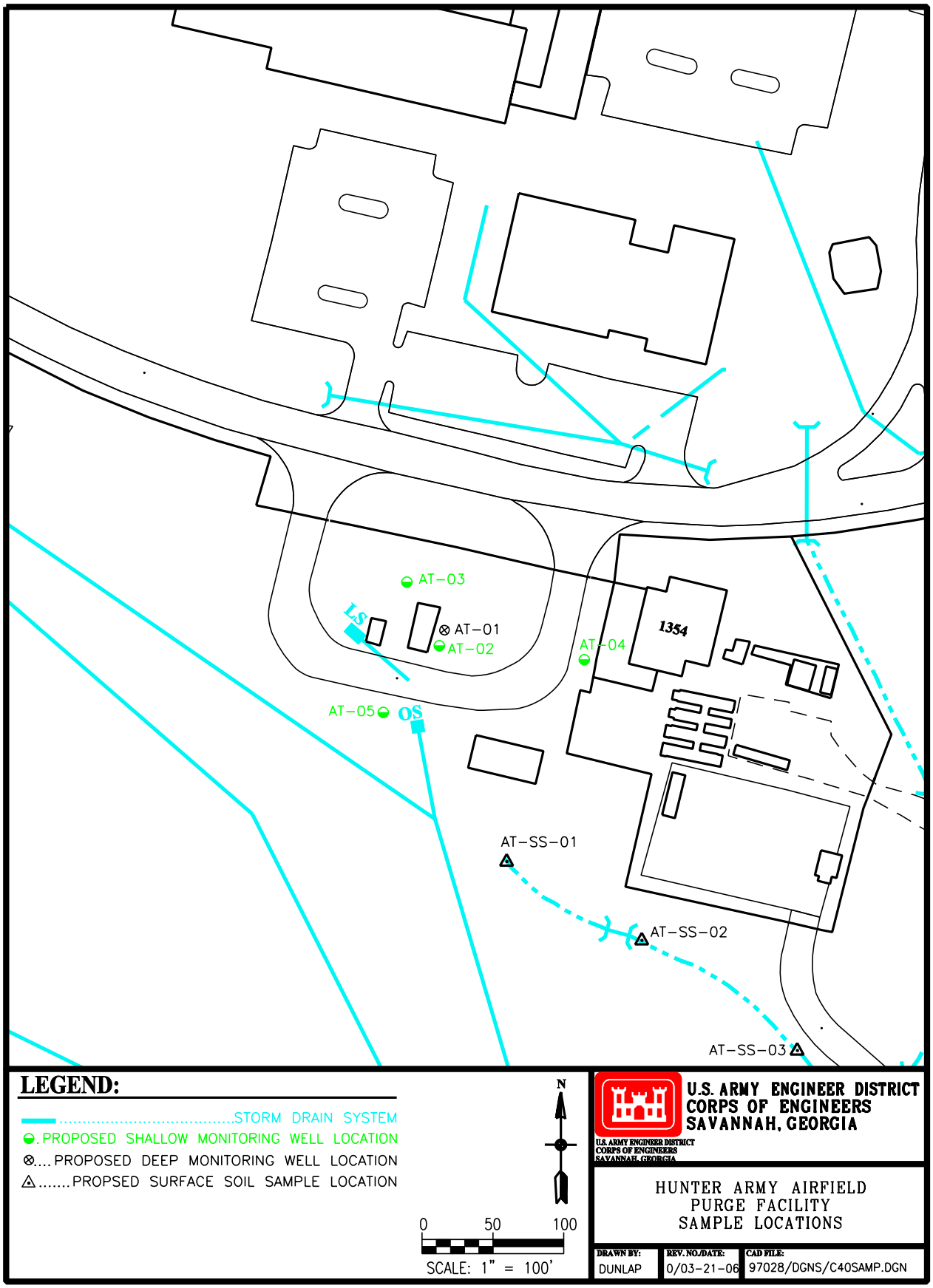

Figure A-1. Location Map of Hunter Army Airfield Purge Facility