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FINAL QUALITY ASSURANCE PROJECT PLAN HANGAR 1000 UNDERGROUND STORAGE TANK WITH TRANSMITTAL NAS JACKSONVILLE FL
2/1/1991
ABB ENVIRONMENTAL

FINAL

QUALITY ASSURANCE PROJECT PLAN
HANGAR 1000
UNDERGROUND STORAGE TANKS
NAS JACKSONVILLE

NAVY CLEAN PROGRAM
DISTRICT I
CONTRACT NO. N62467-89-D-0317

FEBRUARY 1991

ABB Environmental Services, Inc.

ASEA BROWN BOVERI

ASEA BROWN BOVERI

7505-03

February 9, 1991

Commanding Officer
Southern Division, Naval Facilities Engineering Command
ATTN: Mr. John Bartku
2155 Eagle Drive
Charleston, SC 29411-0068

SUBJECT: **Final Site-Specific Quality Assurance Project Plan (QAPP)**
Hangar 1000 Underground Storage Tanks, NAS Jacksonville
CLEAN Contract N62467-89-D-0317, CTO No. 003

Dear Mr. Bartku:

Enclosed are three copies of the Final Site Specific Quality Assurance Project Plan (QAPP) for the Risk Based Clean Closure of the Hangar 1000 Underground Storage Tank Site at the Naval Air Station in Jacksonville, Florida.

ABB Environmental Services, Inc. (ABB-ES) has developed the enclosed QAPP on the behalf of the U.S. Navy Southern Division (SDIV) under the Comprehensive Long Term Environmental Action Navy (CLEAN) contract (contract number N62467-89-D-0317, contract task order (CTO) number 003).

This QAPP was developed in accordance with the most recent Florida Department of Environmental Regulation (FDER) rules governing QAPPs: Chapter 17-160 Florida Administrative Code (F.A.C.), "Quality Assurance" effective January 1, 1991. The enclosed QAPP conforms to the FDER Form 17-160.900 which references the ABB-ES corporate Comprehensive Quality Assurance Plan (CompQAP). The corporate CompQAP was developed in accordance with the revised regulations (17-160) and was submitted to FDER on January 4, 1991. It is currently under review; we expect approval of the CompQAP by mid-February.

Copies of this document have been delivered to the NAS Jacksonville Environmental Coordinator for delivery to FDER. If you have any questions, please call me at (904) 656-1293.

Sincerely,

ABB ENVIRONMENTAL SERVICES, INC.

Kathleen O'Neil

Kathleen O'Neil
Task Order Manager

cc: J. Hudson, Code 18C
J. Schroeder, Environmental Coordinator NAS/JAX
NAVAIRLANT, Commanding Officer
CINCLANTFLT, Commander-in-Chief (Code 182)
R.A. Allen
File: CTO-003 (Final QAPP)

ABB Environmental Services Inc.

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QUALITY ASSURANCE PROJECT PLAN
FLORIDA DEPARTMENT OF ENVIRONEMNTAL REGULATION
FORM 17-160.900

FOR

RISK BASED CLEAN CLOSURE OF HANGAR 1000
UNDERGROUND STORAGE TANKS

OGC Consent Order
No. 88-0738

Prepared by:

ABB ENVIRONMENTAL SERVICES, INC.
2571 EXECUTIVE CENTER CIRCLE, EAST
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Prepared for:

U.S. NAVY
U.S. NAVAL AIR STATION
PUBLIC WORKS DEPARTMENT, ENVIRONMENTAL DIVISION
JACKSONVILLE, FLORIDA 32212-5000
(904) 772-2717

Capt. Delaney, U.S. Navy	Date
Raymond A. Allen III (signature)	2-9-91
Raymond A. Allen, III, CPSS, Primary Consultant Manager	Date
Michael A. Keirn (signature)	2-6-91
Michael A. Keirn, PhD., Primary Consultant QA Officer	Date
Tom Stephens (signature)	2-6-91
Tom Stephens, Savannah Laboratory Director	Date
Elizabeth Schneider (signature)	2-6-91
Elizabeth Schneider, Savannah Laboratory QA Officer	Date

DER Oversight:

DER Project Manager	Date
DER QA Manager	Date

TABLE OF CONTENTS

Quality Assurance Elements
Quality Assurance Project Plan
Form 17-160.900

FIGURES

TABLES

3.0 PROJECT DESCRIPTION

3.1 Site Identification and History

Site Name: Hangar 1000 Underground Storage Tanks

Site Address: Naval Air Station
Street

Jacksonville, Duval, FL 32212-5000
City, County, and Zip Code

3.1.1 **Site History.** The site consists of two underground storage tanks (Tanks A and B) located in the of vincity of Hanger 1000. The tanks were used from the early 1970's through November 1987 to collected waste solvents and other substances through drain lines from a washrack and manhole, and from several shops inside Hangar 1000. No sludge, sediment, or liquid was allowed to accumulate in the washrack, manhole, or any of the piping. Substances removed from the tanks were pumped out on an "as needed" basis and were managed as hazardous waste, with clean-outs always less than 90 days. The drain lines are no longer in use and are plugged or capped.

Garver and Garver, P.A. conducted a Contamination Assessment of the site from January through July 1990. The assessment consisted of two rounds of soil sampling which included vertical soil boring samples from the tank area and sediment from an adjacent stormwater ditch. Laboratory analytical data indicated the presence of volatile organics, semivolatile organics, and metals in selected samples.

3.1.2 **Summary of Historical Data** - see Table 3-1

3.2 Project Scope and Purpose

3.2.1 **Purpose of this Project.** To collect sufficient data to develop a regulatory approved risk-based clean closure of the two underground storage tanks at Hanger 1000, NAS Jacksonville.

3.2.2 **Intended End Use of the Data**

- ___ Permit Compliance
- ___ Feasibility Study
- _✓_ Consent Order Compliance
- ___ Remedial Action
- ___ Contamination Assessment
- ___ Water Quality Data Base (specify which data base: ______________)
- ___ Facility Operating Report
- ___ Other: ________________________________

Table 3-1
Summary of Historical Data

Parameter	Concentration Range	
1. Cadmium	1.6 - 25.3	mg/kg
2. Chromium	1.2 - 9.13	mg/kg
3. Lead	1.59 - 9.55	mg/kg
4. Barium	1.74 - 55.8	mg/kg
5. 1,1-Dichloroethane	21 - 1,850	µg/kg
6. Toluene	80 - 11,350	µg/kg
7. Xylene	78 - 14,750	µg/kg
8. Bis(2-ethylhexyl) phthalate	785 - 955	µg/kg
9. Naphthalene	1040	µg/kg
10. 1,1,1-Trichloroethane	151 - 52,000	µg/kg
11. Trichloroethylene	36 - 6,300	µg/kg
12. 1,1-Dichloroethylene	7.26 - 1,883	µg/kg
13. Ethylbenzene	8.8 - 2,000	µg/kg
14. Tetrachloroethylene	1,400 - 31,450	µg/kg
15. Trichlorotrifluoroethane	235 - 783	µg/kg

3.2.3 Project Schedule and Scope of Work

December 20, 1990
Beginning Date

December 1993 (Closure Complete)
Projected Ending Date

Major Project Tasks

Specific Project Activity	Scheduled Date
Phase I	
1. QAPP due to FDER	January 24, 1991
2. Piezometer installation (completion)	February 4, 1991
3. Groundwater monitoring Plan to FDER	March 20, 1991
4. FDER Approval of QAPP and Groundwater Monitoring Plan	April 24, 1991

3.3 Project Organization

3.3.1 Field Operations. The field operations for this project will be conducted by: ABB Environmental Services, Inc. (ABB-ES) using Comprehensive QA Plan No.: (pending approval).

The organization and personnel duties of the field consultant are described in Section 4.0, page 4-1 to 4-6, revised January 4, 1991.

3.3.2 Laboratory Analytical Work. The laboratory analytical work will be performed by Savannah Laboratory and Environmental Services, Inc. using Comprehensive QA Plan No.: 890142G.

The laboratory organization and personnel duties are described in Section 4.0, page 4-1 to 4-8, revised April 30, 1990.

3.3.3 Project Organization. Refer to Figure 3-1 for the specific organization of this project.

3.3.4 Modifications or Additions. The following personnel and their duty descriptions are not included in the referenced CompQAPs.

A. Field Personnel

1. Kathleen O'Neil, Task Order Manager - oversees technical and project management activities.
2. Eric Blomberg, Field Operations Leader - responsible for day-to-day management and coordination of field activities.
3. Harry Hooper, Engineering Technician - responsible for performance of field activities.

B. Laboratory Personnel

1. Not applicable (N/A)
2. N/A
3. N/A

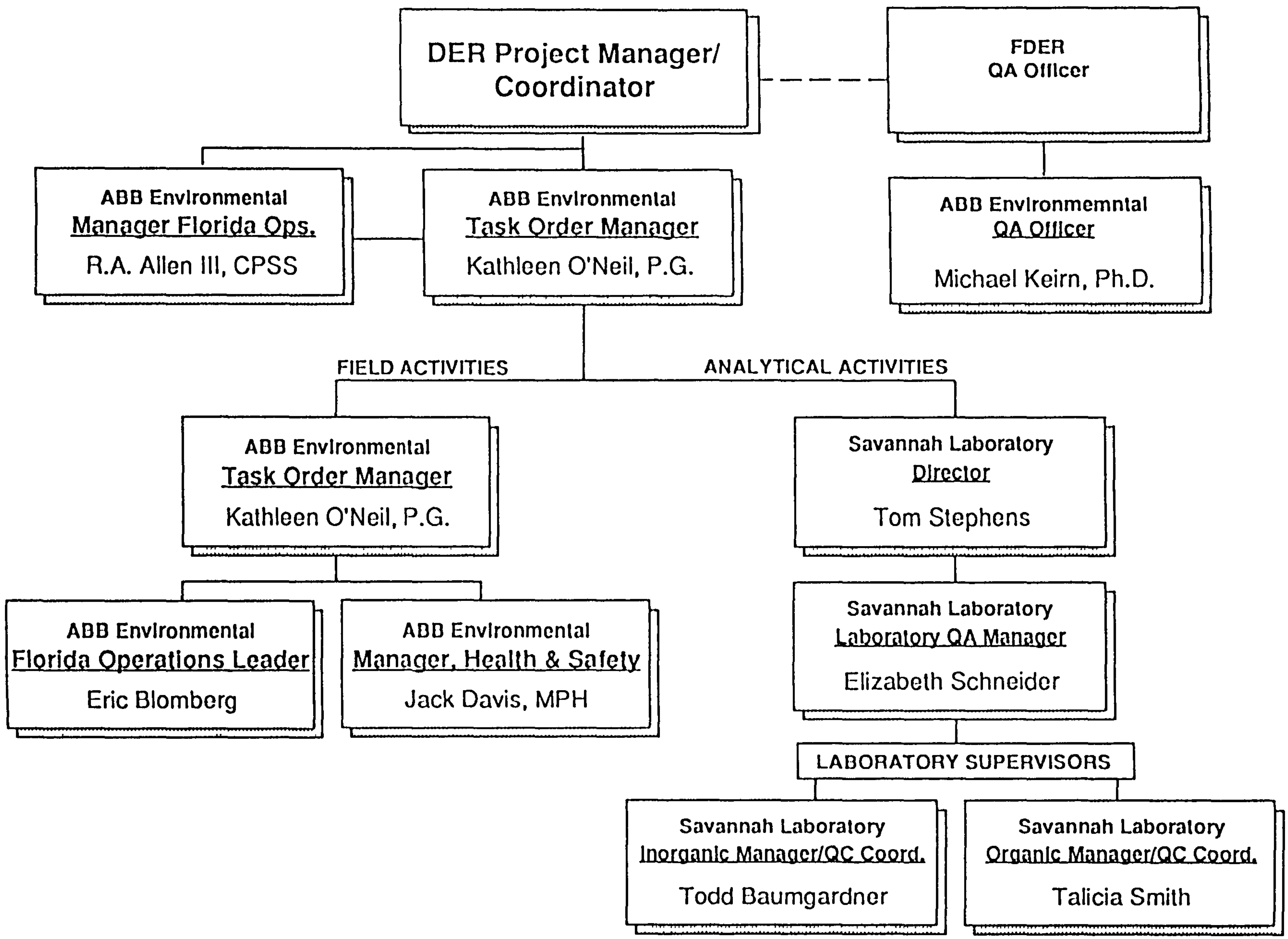


FIGURE 3-1
PROJECT ORGANIZATION

3.4 Project Objectives

3.4.1 **Data Quality Objectives.** The standards criteria outlined in DER Rule 17-761, FAC are the detection limit criteria for this project. The detection limits reported for this project shall at least meet, or be lower than the standards.

___ The data quality objectives for this project are the routine QA targets listed in the laboratory CompQAP.

✓ The minimum detection limits to be achieved for this study differ from the routine detection limits specified in the laboratory CompQAP and are included as a part of Table 3-3.

___ The precision and accuracy requirements differ from the routine targets specified in the laboratory CompQAP and are included as a part of Table 3-3.

3.4.2 Proposed Samples for Project

A. See Table 3-2 of this section for a summary of the sampling and analysis activities.

B. See Figure 3-2 for a map of the project site.

3.4.3 **QA Targets for Precision, Accuracy and Minimum Detection Limits**

Field Analytical Measurements

Field measurements to be performed by ABB-ES personnel. Field measurements will be for site screening only.

Parameter	Method No.
1. N/A	N/A
2.	

Refer to CompQAP No. (pending), Section 8.2, page 8-1 to 8-2, revised January 4, 1991.

The following deviations from the stated CompQAP objectives for field measurements are noted as follows.

Method Number	Precision	Accuracy
1. N/A	N/A	N/A

Laboratory Analyses

Laboratory Analyses to be performed by Savannah Laboratories and Environmental Services, Inc. are listed on Table 3-3 by specific citation.

Table 3-2

Proposed Samples for the Project (Summary)

Laboratory Name: *Savannah Laboratories and Environmental Services, Inc.* *CompQAP No.* *890142G*

Frequency	Sample Matrix	Sample Source	Analytical Method Number	No. of Samples	FB	TB	EB	FD	Other
1	Groundwater	Monitoring Well	Appendix IX	4	1	1	1	1	--
1	Soil	Soil Borings	*	*	1	1	1	1	--

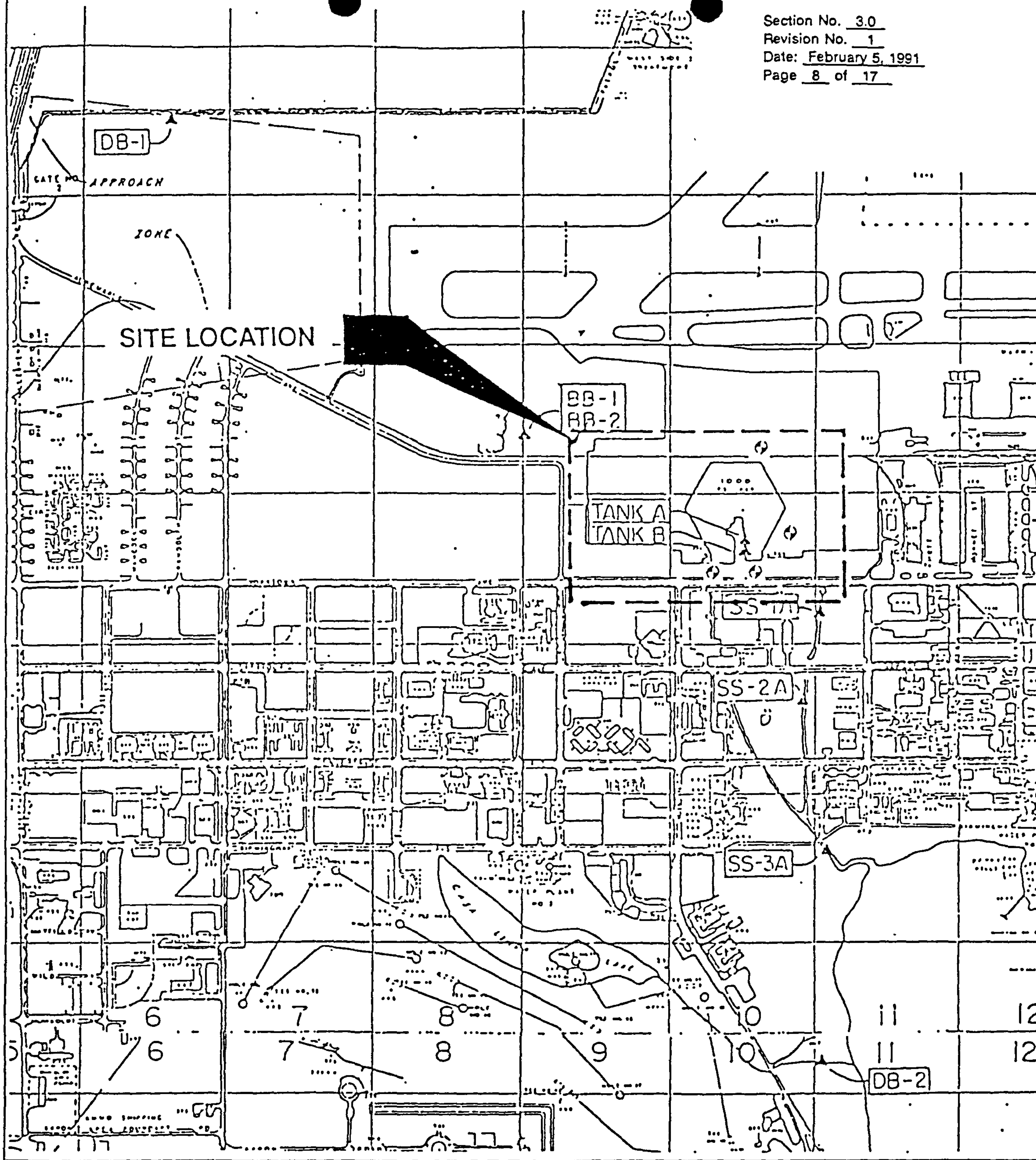
* Soil samples are optional, analytical methods and number of soil samples will be dependent upon groundwater analytical results.

Table 3-3
Method Identification and QA Objectives

Laboratory Name: Savannah Laboratories and Environmental Services, Inc. CompQAP No. 890142G

Method No.		Matrix	Component	CompQAP Section No.	CompQAP Rev. Date	CompQAP Page No.	Precision*	Accuracy*	MDL*
RCRA Appendix IX		Groundwater for each analysis	Components for each method are listed in the laboratory CompQAP	Section 5.0 Tables 5-1 and 5-2	10/1/90	5 through 166	Precision and accuracy, no difference. MDL's are presented on Table 3-3A.		
6010	8100								
7130	8270								
7131	8240								
7870	8015								
7910	8030								
7911	8080								
7950	8010								
7040	8020								
7041	8250								
7060	8060								
7061	8120								
7080	8040								
7090	8150								
7091	8140								
7200	9010								
7201									

NOTE: * These values need to be completed if the Data Quality Objectives stated in the project description are different from the routine QA objectives cited in the CompQAP or are not included in the CompQAP.



LEGEND

POTENTIAL SOIL BORING / MONITORING WELL LOCATIONS

SITE MAP

ABB ENVIRONMENTAL SERVICES, INC.

DATE:

HANGAR 1,000
UNDERGROUND STORAGE TANKS
NAVAL AIR STATION
JACKSONVILLE, FLORIDA

FIGURE:
3-2

TABLE 3-3A
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL ($\mu g/\ell$)
Barium	6010	10
Copper	6010	25
Silver	6010	10
Zinc	6010	20
Nickel	6010	40
Antimony	6010	50
Arsenic	7060	10
Beryllium	6010	5.0
Cadmium	7131	1.0
Chromium	6010	10
Cobalt	6010	10
Lead	7421	5.0
Mercury	7470	0.20
Selenium	7740	10
Thallium	7841	10
Tin	6010	50
Vanadium	6010	10
Carbon Tetrachloride	8010	1.0
Allyl Chloride	8240	10
1,1-Dichloroethane	8010	1.0
1,2-Dichloroethane	8010	1.0
1,1-Dichloroethylene	8010	1.0
TR-1,2-Dichloroethylene	8010	1.0
Methane Chloride	8010	1.0
Bromodichloromethane	8010	1.0
Bromoform	8010	5.0
Methylene Chloride	8010	5.0

TABLE 3-3A Continued
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL($\mu g/\ell$)
Chlorobenzene	8010	1.0
Dibromochloromethane	8010	1.0
ortho-Dichlorobenzene	8010	1.0
meta-Dichlorobenzene	8010	1.0
para-Dichlorobenzene	8010	1.0
1,1,2-Trichloroethane	8010	1.0
Trichloroethylene	8010	1.0
Chloroethane	8010	1.0
Chloroform	8010	1.0
Vinyl Chloride	8010	1.0
1,2-Dichloropropane	8010	1.0
1,1,1,2-Tetrachloroethane	8010	1.0
1,1,2,2-Tetrachloroethane	8010	1.0
Tetrachloroethylene	8010	1.0
4-Methyl-2-Pentanone; MIBK	8240	50
1,4-Dioxane	8270	10
Methyl Ethyl Ketone (MEK)	8240	100
Methacrylonitrile	8240	100
Isobutyl Alcohol	8240	1000
Acetonitrile	8240	500
Methyl Methacrylate	8240	5.0
Toluene	8020	1.0
Ethylbenzene	8020	1.0
Benzene	8020	1.0
Styrene	8240	5.0
Xylene (Total)	8020	1.0
Acrolein	8240	100

TABLE 3-3A Continued
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL($\mu g/\ell$)
Acrylonitrile	8240	100
2,4-Dimethylphenol	8270	10
2-Chlorophenol	8270	10
2,4-Dichlorophenol	8270	10
Phenol	8270	10
o-Nitrophenol (2-Nitrophenol)	8270	10
p-Nitrophenol (4-Nitrophenol)	8270	50
p-Chloro-m-Cresol	8270	10
Pentachlorophenol	8270	50
2,4,6-Trichlorophenol	8270	10
Butyl Benzyl Phthalate	8270	10
Di-N-Butyl Phthalate	8270	10
Dimethyl Phthalate	8270	10
Diethyl Phthalate	8270	10
Heptachlor	8080	0.01
Heptachlor Epoxide	8080	0.02
PCBs (Polychlorinated Biphenyls)	8080	0.50
Aldrin	8080	0.01
Endosulfan I	8080	0.02
Endosulfan II	8080	0.05
Endosulfan Sulfate	8080	0.10
Endrin	8080	0.02
Endrin Aldehyde	8080	0.10
Toxaphene	8080	1.0
Methoxychlor	8080	0.5
Alpha-BHC	8080	0.01
Delta-BHC	8080	0.01

TABLE 3-3A Continued
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL(μg/ℓ)
Gamma-BHC; Lindane	8080	0.01
4,4'-DDD	8080	0.02
4,4'-DDE	8080	0.02
4,4'-DDT	8080	0.05
Chlordane	8080	0.1
Dieldrin	8080	0.02
2,4-Dinitrotoluene	8090	0.2
2,6-Dinitrotoluene	8090	0.1
Hexachlorobenzene	8270	10
Hexachlorobutadiene	8270	10
Hexachlorocyclopentadiene	8270	10
Hexachloroethane	8270	10
2-Chloronaphthalene	8270	10
Methyl Parathion	8140	0.30
Phorate	8140	1.5
Disulfoton	8140	2.0
2-Sec-Butyl-4,6-Dinitrophenol	8150	0.50
2,4-D	8150	0.50
2,4,5-TP; Silvex	8150	0.10
2,4,5-T	8150	0.30
Pyridine	8270	10
Acetone	8240	100
2-Hexanone	8240	50
1,1,1-Trichloroethane	8240	5.0
Dibromomethane	8240	5.0
Chloroprene	8240	10
Trichlorofluoromethane	8240	5.0

TABLE 3-3A Continued
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL($\mu g/\ell$)
Trans-1,4-Dichloro-2-Butene	8240	10
Dichlorodifluoromethane	8240	50
1,2,3-Trichloropropane	8240	5.0
Pentachloroethane	8240	10
2-Picoline	8270	10
Propionitrile	8240	100
Carbon Disulfide	8240	5.0
Ethyl Methacrylate	8240	5.0
Cis-1,3-Dichloropropene	8240	5.0
Trans-1,3-Dichloropropene	8240	5.0
Methyl Bromide; Bromo Methane	8240	10
1,2-Dibromo-3-Chloropropane	8240	5.0
1,2-Dibromoethane (EDB)	8240	5.0
Methyl Iodide; iodomethane	8240	5.0
Vinyl Acetate	8240	50
Isodrin	8080	0.02
Isophorone	8270	10
Isosafrole	8270	10
Kepone	8080	0.50
Safrole	8270	10
Aramite	8270	50
O,O-Diethyl O-2-PyrazinylPhosphorothioate	8140	1.0
Dimethoate	8140	10
P-(Dimethylamino) Benzene	8270	10
7,12-DimethylBenz[A]Anthracene	8270	10
3,3'-Dimethylbenzidine	8270	10

TABLE 3-3A Continued
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL($\mu g/\ell$)
A,A-DimethylphenethylAmine	8270	50
O-Nitroaniline	8270	50
M-Nitroaniline	8270	50
P-Nitroaniline	8270	50
Nitrobenzene	8270	10
P-Chloraniline	8270	20
Ethyl Methanesulfonate	8270	20
Famphur	8140	10
Naphthalene	8310	1.0
1,4-Naphthoquinone	8270	10
1-Naphthylamine	8270	10
2-Naphthylamine	8270	10
O,O,O-Triethylphosphorothioate	8270	10
SYM-Trinitrobenzene	8270	50
Methyl methanesulfonate	8270	10
2-methylnaphthalene	8310	1.0
Hexachlorophene	8270	10
hexachloropropene	8270	10
Acetophenone	8270	10
1,2,4,5-Tetrachlorobenzene	8270	10
3-Methylchloroanthrene	8270	10
2,3,4,6-Tetrachlorophenol	8270	10
Tetraethyldithiopyrophosphate	8140	1.5
2,6-Dichlorophenol	8270	10
Bis(2-Chlorethoxy)Methane	8270	10
Bis(2-Chlorethyl)Ether	8270	10
Bis(2-Chloro-1-Methylethyl)Ether	8270	10
Bis(2-Ethylhexyl)Phthalate	8270	10

TABLE 3-3A Continued
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL(μg/ℓ)
P-Phenylenediamine	8270	10
meta-Cresol	8270	10
ortho-Cresol	8270	10
para-Cresol	8270	10
Pentachlorobenzene	8270	10
Pronamide	8270	10
4-Chlorophenyl Phenyl Ether	8270	10
2-Acetylaminofluorene	8270	20
M-Dinitrobenzene	8270	50
4,6-Dinitro-O-Cresol	8270	50
2,4-Dinitrophenol	8270	50
Dibenzofuran	8270	10
4-Aminobiphenyl	8270	20
Aniline	8270	10
Anthracene	8310	0.20
Chlorobenzilate	8080	0.50
Methapyrilene	8270	100
Diphenylamine	8270	10
4-Bromophenyl Phenyl Ether	8270	10
Pentachloronitrobenzene	8270	100
Diallate	8270	10
Benzyl Alcohol	8270	10
2,4,5-Trichlorophenol	8270	10
4-Nitroquinoline-1-oide	8270	100
N-Nitrosodi-N-Butylamine	8270	10
N-Nitrosodiethylamine	8270	20
N-Nitrosodimethylamine	8270	10

TABLE 3-3A Continued
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL($\mu g/\ell$)
N-Nitrosodiphenylamine	8270	10
N-Nitrosodipropylamine	8270	10
N-Nitrosomethylethylamine	8270	10
N-Nitrosomorpholine	8270	10
N-Nitrosopiperidine	8270	20
N-Nitrosopyrrolidine	8270	40
5-Nitro-O-Toluidine	8270	10
Parathion	8140	1.0
Di-N-Octyl Phthalate	8270	10
Acenaphthene	8310	1.0
Acenaphthylene	8310	1.0
O-Toluidine	8270	10
3,3'-Dichlorobenzidine	8270	20
1,2,4-Trichlorobenzene	8270	10
Phenacetin	8270	20
PCDD (Dibenzo-P-Dioxins)	8280	0.01
PCDF (Dibenzofurans)	8280	0.01
2,3,7,8-TCDD (Dioxin)	8280	0.005
Pyrene	8310	0.50
Dibenz[A,H]anthracene	8310	1.0
Fluoranthene	8310	0.50
Fluorene	8310	0.50
Phenanthrene	8310	0.20
Benzo[A]Anthracene	8310	0.20
Benzo[B]Fluoranthene	8310	0.50
Benzo[K]]Fluoranthene	8310	0.50

TABLE 3-3A Continued
Minimum Detection Limits (MDL) Achievable

ANALYTE	METHOD#	PQL(μg/ℓ)
Benzo[GHI]Perylene	8310	0.20
Benzo[A]Pyrene	8310	0.50
Indeno [1,2,3-CD]Pyrene	8310	0.20
Chrysene	8310	0.20
Cyanide	9010	10
Sulfide	9030	100

4.0 FIELD PROCEDURES AND QUALITY CONTROL

CompQAP citations in this section refer to CompQAP No. (pending) unless otherwise specified.

4.1 Sampling Equipment

The following is a list of the equipment that may be used for this project.

Equipment Description	Construction Materials	Use
Purging Equipment		
1. Submersible pump	stainless steel	purging wells
2. Peristaltic pump	Teflon™ tubing	purging wells
3. Bailer	Teflon™	purging wells
Sampling Equipment		
1. Bailers	Teflon™	collect groundwater samples
2. Split spoons	stainless steel	collect soil samples
3. Hand auger	stainless steel	collect soil samples
4. Trowel/spatula	stainless steel	collect soil samples
Field Measurement Equipment	(Not Applicable)	
1. pH/conductivity/temperature meter		
2. Organic Vapor Analyzer		
3. Portable Gas Chromatograph		
4. Water level indicator		

Refer to CompQAP Section 6.0, page 6-1 to 6-49, revised January 4, 1991 for specific discussions on construction and use. Additional equipment not addressed in the CompQAP will include: N/A

Equipment Description	Construction Materials Use
1. N/A	
2.	
3.	
4.	

4.2 Sampling Protocols (see Table 4-1)

Table 4-1

Sampling Protocols

These citations refer to CompQAP No. (pending)

Topic	Section	No. of Pages	Revision Date
1. Equipment Decontamination	6.3	6-3 - 6-19	1/4/91
2. Field filtration protocols	6.3.1	6-19	1/4/91
3. Groundwater sampling protocols	6.5.1	6-21 - 6-25	1/4/91
4. Surface water sampling protocols	6.5.3	6-25 - 6-27	1/4/91
5. Soil sampling protocols	6.5.5	6-31 - 6-41	1/4/91
6. Sediment sampling protocols	6.5.6	6-42 - 6-49	1/4/91

4.3 Field Equipment Cleaning and Decontamination Procedures

Refer to Table 4-2 for specific references

4.4 Sample Containers

Sample containers will be provided by Savannah Laboratories and Environmental Services, Inc.. Container preparation procedures are found in CompQAP No. 890142G, Section 6.0, page 6-9 to 6-10, revised October 1, 1990.

4.5 Preservation Protocols

Preservatives will be provided by Savannah Laboratories and Environmental Services, Inc.. Documentation for reagents are found in CompQAP No. 890142G, Section 6.0, page 6-12 to 6-20, revised October 1, 1990.

Preservation will be done by ABB-ES personnel following protocols listed in CompQAP No. pending, Section 6.7, page 6-62 to 6-66, revised January 4, 1991.

4.6 Sample Dispatch

Procedures for transporting the samples to the laboratory are listed in CompQAP Section 6.8, page 6-66 to 6-78, revised January 4, 1991.

Table 4-2
Equipment Decontamination and Cleaning Procedures

These citations refer to CompQAP No. Pending

Equipment Category	Cleaning Location	Section No.	Page No.	Revision Date
• Purging Equipment	• in office prior to field work • in field as specified in CompQAP	6.3	6-3 through 6-19	January 4, 1991
• Sampling Equipment	• in office prior to field work • in field as specified in CompQAP	6.3	6-3 through 6-19	January 4, 1991
• Field Measurement Equipment	• in office prior to field work • in field as specified in CompQAP	6.3	6-3 through 6-19	January 4, 1991

4.7 Waste Disposal

Procedures for handling wastes from equipment cleaning and from sampling are listed in CompQAP Section 6.10, page 6-78 to 6-79, revised January 4, 1991.

4.8 Field Sampling Custody

Procedures for sample custody are found in CompQAP Section 7.2, page 7-1 to 7-7, revised January 4, 1991. Further discussions on the field documentation and notebooks are included in CompQAP Section 6.6, page 6-61 to 6-62.

Deviations or modifications to the field custody procedures are listed below:

1. N/A
2.
3.

4.9 Field Measurements

Field measurements are listed in Section 3.4.3 of this QAPP. Deviations or modifications to the procedures listed are as follows:

1. No modifications anticipated at this time.
2.
3.

Other Field measurements that will be made are:

1. None
2.

4.10 Field Calibration Procedures

Calibration protocols for field analytical measurements are listed in CompQAP Section 9.5, page 9-2 to 9-11, revised January 4, 1991.

Deviations to the procedures outlined in the above reference are: N/A

Calibration Procedure	Deviation
1. N/A	
2.	

Project specific field measurement equipment not mentioned in the above reference are as follows: N/A

1. N/A
2.

4.11 Preventative Maintenance

Field equipment preventative maintenance protocols are discussed in CompQAP Section 10.0, page 10-1 to 10-3, revised January 4, 1991.

The following additions or modifications to field equipment maintenance procedures are as follows: N/A

1. N/A
2.

4.12 Field Quality Control Checks and Routines to Assess Precision and Accuracy

The proposed schedule of field QC checks are summarized on Table 3-2 of Section 3.4.

Routines to assess the Precision and Accuracy of field Measurement are found in CompQAP Section 11.0, page 11-1 to 11-2, revised January 4, 1991.

4.13 Data Reduction, Validation Reporting

Field activities relative to this section are found in CompQAP Section 12.0, page 12-1 to 12-2, revised January 4, 1991.

5.0 LABORATORY PROCEDURES AND QUALITY CONTROL

References in this section refer to the Savannah Laboratories and Environmental Services, Inc. Laboratory CompQAP No. 890142G.

5.1 Laboratory Custody Procedures

Laboratory sample custody procedures and documentation are found in CompQAP Section 7.0, page 7-3 to 7-6, revised October 1, 1991.

Deviations or modifications to the laboratory procedures are listed below:

1. None
2.

5.2 Laboratory Analytical Procedures

5.2.1 Laboratory Glassware Cleaning Protocols

Refer to CompQAP Section 9.0, page 9-1 to 9-2, revised October 1, 1990.

Deviations or modifications to the referenced protocols are listed below:

1. None
2.

5.2.2 Method Modifications and/or Deviations

Deviations or modifications to the listed analytical procedures are as follows:

1. None
2.

5.3 Waste Disposal

Waste disposal practices in the laboratory are listed in CompQAP Section 7.0, page 7-5 to 7-5, revised October 1, 1990.

5.4 Calibration Procedures and Frequency

Laboratory calibration protocols are listed in CompQAP Section 8.0 , page 8-1 to 8-7 , revised October 1, 1990 .

Deviations to the procedures outlined in the above reference are: N/A

Calibration Procedure	Deviation
1. N/A	
2.	

Project specific measurement and/or analytical equipment not mentioned in the above reference are as follows:

1. N/A
2.

Calibration procedures for the above equipment are outlined on Table 5-1 -- not required.

5.5 Preventative Maintenance

Laboratory instrument preventative maintenance protocols are discussed in CompQAP Section 13.0 , page 5-1 to 5-5 , revised January 31, 1989 .

The following modifications to or deviations from the referenced protocols are listed below:

1. N/A
2.

5.6 Quality Control Checks, Routines to Assess Precision and Accuracy, and Calculation of Method Detection Limits

5.6.1 Laboratory Quality Control Measures

The types of laboratory control checks outlined in Table 5-2 will be used when analyzing samples for this project.

5.6.2 Routine Procedures to Assess Precision and Accuracy

Routine procedures to assess the Precision and Accuracy of laboratory parameters are found in CompQAP Section 5.0 , page 5-1 to 5-4, revised October 1, 1991, and Section 14.0 , page 14-1 to 14-2 , revised April 3, 1990 .

Table 5-2

Laboratory Quality Control Checks

Refer to Laboratory CompQAP No. 890142G for frequency and description

QC Check	Section	No. of Pages	Revision Date
1. Reagent Blanks	11.0	7	4/3/90
2. Duplicate Samples	11.0	7	4/3/90
3. Matrix Spikes	11.0	7	4/3/90
4. QC Check Samples	11.0	7	4/3/90
5. QC Check Standards	11.0	7	4/3/90

Deviations (or additions) to the types of laboratory QC checks or frequency are listed below:

1. N/A
2.

Deviations to the referenced procedures to assess precision and accuracy are as follows:

1. N/A
2.

5.6.3 Method Detection Limits

Laboratory activities relative to this section are found in CompQAP Section 10.0 , page 10-1 to 10-11 , revised October 1, 1990 .

Deviations or revisions to the above reference are as follows:

1. N/A
2.

6.0 QUALITY ASSURANCE MANAGEMENT

6.1 Corrective Actions

6.1.1 Field Corrective Action

Protocols to initiate corrective actions by field personnel are listed in CompQAP No. (pending), Section 13.0, page 13-1 to 13-7, revised January 4, 1991.

Revisions to these procedures are listed below:

1. N/A

6.1.2 Laboratory Corrective Action

Protocols to initiate corrective actions by laboratory personnel are listed in CompQAP No. 890142G, Section 15.0, page 15-1 to 15-2, revised April 30, 1990.

Revisions to these procedures are listed below:

1. N/A
2.

ALL INVOLVED PARTIES WILL INITIATE ANY CORRECTIVE ACTION DEEMED NECESSARY BY DER.

6.2 Performance and Systems Audits

6.2.1 Field Activities

A. Routine performance and systems audits are discussed in CompQAP No. pending, Section 14.0, page 14-1 to 14-13, revised January 4, 1991.

B. Specific audits planned for this project are: None

Audit Type	Frequency/Date	Description
1. N/A		
2.		

6.2.2 Laboratory Activities

A. Routine performance and systems audits are discussed in CompQAP No. 890142G, Section 12.0, page 12-1 to 12-, revised April 30, 1990.

B. Specific audits planned for this project are: None

Audit Type	Frequency/Date	Description
1. N/A		

ALL INVOLVED PARTIES WILL CONSENT TO AUDITS BY DER IF DEEMED NECESSARY.

6.3 Quality Assurance Reports

6.3.1 Field Activities

Field QA Reports will be submitted to ABB-ES QA Manager, and the ABB-ES Project Manager at a frequency of once at completion of project.

6.3.2 Laboratory Activities

Laboratory QC Reports will be submitted to the laboratory QA officer and ABB-ES, at a frequency of once at completion of project.

7.0 RESUMES

7.1 Field Activities

Refer to CompQAP No. (pending), Section 16.0, page 16-1 to 16-12, revised January 4, 1991.

Additional (or new) resumes are as follows:

1. Kathleen O'Neil
2. Eric Blomberg
3. Harry Hooper

7.2 Laboratory Activities

Refer to CompQAP No. 890142G, Section 17.0, page 17-1 to 17-45, revised April 30, 1990.

Additional (or new) resumes are as follows:

1. N/A
2.

KATHLEEN M. O'NEIL, P.G., Senior Environmental Scientist

Qualifications Summary

Ms. O'Neil has diverse experience in many aspects of hydrogeologic investigation, contamination assessment, and remedial investigation/feasibility study (RI/FS) design. She has led and participated in hydrogeologic investigative assessments for many complex, multi-component hazardous waste sites.

As a hydrogeologist and environmental engineering scientist with a concentration in water chemistry, Ms. O'Neil has focused on the transport and fate of contaminants in groundwater and surface water systems. In this interest, she has experience with hydrogeologic and chemical data assessment, groundwater flow and solute models, regulatory requirements, project management, and hydrogeologic field investigations.

Education

M.S./Environmental Engineering Sciences, 1987, University of Florida
B.S./Geology, 1983, University of Illinois
B.S./Finance, 1983, University of Illinois

Professional License

Professional Geologist, Tennessee

Relevant Experience

Comprehensive Long Term Environmental Action Navy (CLEAN) Sites - Ms. O'Neil is currently Task Order Manager and Technical Lead for three CLEAN contract task orders (CTOs) in Florida and Georgia. The CTOs include: an RI/FS for multiple National Priorities List (NPL) sites at the Marine Corps Logistic Base (MCLB) in Albany, Georgia; a RCRA Clean Closure for surface impoundments at the same MCLB; and a Risk Assessment-Based Clean Closure of Underground Storage Tanks at the Naval Air Station in Jacksonville Florida.

Martinsburg Air National Guard, Martinsburg, W.Va. - Ms. O'Neil is the Technical Leader and Hydrogeologist for a site investigation of a former fire training area at the Air National Guard Base in Martinsburg, West Virginia. The investigation involves the assessment of the migration of fuels and chlorinated solvents in soils and groundwater within a complex karst aquifer system.

UST Removal and Contamination Assessment, Chattanooga,TN - As Project Manager for a closure assessment involving the removal of fourteen USTs, Ms. O'Neil is responsible for all technical, regulatory, and administrative aspects of tank removal, hydrogeologic assessment, and remedial investigation. The assessment involved the design of a three phase hydrogeologic investigation to determine the extent of contamination and the development of remedial recommendations.

Remedial Investigation of an EPA Superfund Site - North Carolina
Ms. O'Neil was a team member in the development of an RI report for the Potter's Septic Tank Pits, REM III, Superfund site in Sandy Acres, North Carolina. Ms. O'Neil analyzed data and developed sections pertaining to site hydrogeology, groundwater contamination, and contaminant fate and accumulation. The interpretation involved the distribution of organics and inorganics in both a recharge area for a shallow drinking water aquifer and in a wetland discharge area for the same aquifer.

Regulatory Compliance Assessment, NAVFAC - Ms. O'Neil was responsible for a regulatory compliance assessment of above and underground storage tank programs, and PCB removal and disposal programs, for Naval Aviation Depot (NADEP) facilities in Florida. The assessment addressed current federal, state and local regulations; potential future changes in regulations; and detailed recommendations to ensure the achievement and maintenance of regulatory compliance.

Groundwater Flow and Solute Transport Modelling - Ms. O'Neil has developed and assisted with groundwater flow and transport simulations for several highly contaminated sites including: a former silver smelting site; an Austrian landfill which threatened water supply wells in the city of Vienna; a chemical manufacturing site with contamination throughout a three aquifer system; and two petroleum contaminated sites in Florida.

Additional Experience

As Production Geologist for the Phosphate Mining Division of Occidental Chemical Company in White Springs Florida, Ms. O'Neil was responsible for the geologic field control of five open-pit mining areas. She was responsible for ensuring the quality of the ore extracted and for the identification of potential problems due to lithologic variations in the matrix.

For the University of Florida, Ms. O'Neil conducted research under a grant from the Florida Department of Environmental Regulation. The research involved the analysis of multimedia samples from Florida surface waters to determine the presence and prevalence of contaminants which should potentially be considered for future regulation. In addition, Ms. O'Neil conducted research involving experimental sorptive capacity determination and the adaptation of fugacity-based ecosystem models to wetland systems.

ERIC A. BLOMBERG, Hydrogeologist

Qualifications Summary

Mr. Blomberg's areas of expertise include geology, hydrogeology, and geologic engineering. His work experience includes site investigations, field investigations, data evaluation, groundwater and soil sampling, aquifer characterization, and implementation of field operations. Additionally, he has laboratory experience in gas chromatography for use in identification of contamination in soil, groundwater, and surface water. Mr. Blomberg's field investigations have covered landfills, industrial sites, underground and aboveground petroleum storage tanks, jet fuel pipelines, gasoline stations, Navy bases, and Air Force bases.

Education

M.S./Undesignated with emphasis in Hydrogeology, 1988, Georgia Institute of Technology
B.S./Geological Engineering, 1985, Colorado School of Mines

Relevant Experience

Field Gas Chromatography, Dover Air Force Base, Remedial Investigation, Delaware--Mr. Blomberg was responsible for analyzing the headspace on soil samples collected during drilling operation, using a Photovac 10S50 Gas Chromatograph, to aid in monitoring well installation and placement.

Site Investigations and Sampling, Underground Storage Tank Sites for Major Oil Companies, Industrial Sites, and Navy Facilities, Florida and Maryland--Responsibilities included supervision of monitoring well installation, soil and groundwater sampling, water level measurements, pump recovery system operation and maintenance, logging lithologies of split-spoon samples, surveying well elevations, and performing slug and pump tests. Using information collected during the investigation, Mr. Blomberg was able to determine the horizontal and vertical extent of petroleum hydrocarbon contamination, calculate aquifer characteristics, and define transport direction of the contamination.

Remedial Action, MPL Landfill; Winthrop, Maine--Mr. Blomberg built and installed methane gas probes around the perimeter of the landfill to determine methane gas concentrations and investigate the potential for methane gas extraction from the landfill. He also was responsible for overseeing the installation of several monitoring wells, collecting cores from the bedrock, and running packer tests within the interval of fractured bedrock.

Site Investigation and Implementation of Field Work, Sumter County, Florida--Mr. Blomberg assisted in the costing and contracting for the drilling subcontractor, writing and implementing the work plan, and writing technical reports upon completion of the field investigation.

Additional Experience

Prior to joining C-E Environmental, Mr. Blomberg's work experience included hydrogeologic assessment of hazardous and non-hazardous waste sites for a large environmental firm in the southeast U.S. and involvement in exploration and production of oil and gas as a Geological Engineer for a major oil company.

HARRY B. HOOPER II, Senior Engineering Technician

Qualifications Summary

As a technician in the Remedial and Engineering Services Department, Mr. Hooper's responsibilities encompass a wide rage of duties including project initiation which involves researching and developing site plans and specifications, attaining cost estimates and bids, and scheduling. Mr. Hooper supervises each project from inception to completion. During the project, he maintains a liaison with his superiors and clients. At completion, Mr. Hooper prepares the project closeout including as-builts, reports, and billings. Mr. Hooper's area of expertise also includes 15 years of QA/QC on commercial and government construction sites. He maintains open communication with appropriate on-site personnel.

Education

AA/Geology, 1968, Miami Dade County Community College, Miami, Florida

Relevant Experience

As Engineering Technician, Mr. Hooper has 9 years of experience in Tallahassee and Miami, Florida. He performs quality control testing on construction materials in the laboratory and on project sites. He supervises geotechnical and geological investigations. He also has done work also in Georgia, Alabama, and West Virginia.

Mr. Hooper was manager of construction materials testing and inspection services for a geotechnical engineering firm in north Florida. His duties included developing testing requirements, marketing project bids, supervising up to four technicians, contractor/client liaison, and preparing reports and billings.

Additional Experience

Mr. Hooper has performed Sampling and Evaluations of Airborne Asbestos dust (NIOSH S82) and is certified. He has performed air sampling and analysis for asbestos dust in private and public facilities in north Florida. Mr. Hooper is trained in and has provided field inspection services in the installation of geogrid membranes on construction sites.

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