

32212-000
20.02.00.0011

PSCS 16, 40, AND 42
RADIOLOGICAL SURVEY REPORTS
FOR
THE NAVAL AIR STATION JACKSONVILLE, FLORIDA

Under Contract No. N62467-93-D-0936

Prepared by

BECHTEL ENVIRONMENTAL, INC.
OAK RIDGE, TENNESSEE

OCTOBER 1995

REVISION 0

Bechtel Job No. 22567

Prepared:

Manuel H. Hygicli
Senior Scientist

10/26/95
Date

Approved:

W. H. Jones
Project Manager

5/13/96
Date

CONTENTS

	Page
FIGURES	iii
TABLES	iii
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1
2.0 SITE HISTORY	1
2.1 PSC 16	1
2.2 PSC 40	4
2.3 PSC 42	4
3.0 RADIATION SURVEY PLAN	4
3.1 PSCS 16, 40, AND 42 PREPARATION	4
3.2 RADIOLOGICAL CHARACTERIZATION PROTOCOLS	4
3.2.1 Methods of Detection	4
3.2.2 Analytical Investigations	10
4.0 BACKGROUND DETERMINATION	10
5.0 DATA ACQUISITION	10
6.0 SUMMARY OF RESULTS	12
REFERENCES	R-1
APPENDIXES	
A PSC 16 SEDIMENT SAMPLES LABORATORY ANALYSIS RESULTS	
B PSC 40 SEDIMENT SAMPLES LABORATORY ANALYSIS RESULTS	
C PSC 42 SEDIMENT SAMPLES LABORATORY ANALYSIS RESULTS	

FIGURES

Figure	Title	Page
1-1	PSC Grid Locations	2
2-1	Location of PSC 16.....	3
2-2	Location of PSC 40.....	5
2-3	Location of PSC 42.....	6
3-1	Sediment Sample Locations for PSC 16.....	7
3-2	Sediment Sample Locations for PSC 40.....	8
3-3	Sediment Sample Locations for PSC 42.....	9

TABLE

Table	Title	Page
5-1	Analytical Results of Soil/Sediment Samples for ^{226}Ra	11

1.0 INTRODUCTION

The U.S. Department of Navy, Southern Division, Naval Facilities Engineering Command intends to conduct radiological remedial actions at Naval Air Station (NAS) Jacksonville, Florida in compliance with federal regulations. Based on the operating history of the site, a total of 45 areas were identified as requiring further investigation to determine whether remediation would be required to meet state and federal guidelines.

Eighteen of the 45 specific areas within NAS Jacksonville (Figure 1-1) have been identified as radiological potential sources of contamination (PSCs). Of these areas, PSCs 16, 40, and 42, areas of approximately 0.75, 1.2, and 3.75 acres, have been identified as lower priority based on potential for contamination, estimated to be minimal based on prior history. A radiological characterization of PSC 15 was performed to determine whether the extent and magnitude of radioactive contamination remaining onsite would require further remedial actions. The radiological characterization entailed determination of the natural background radiation level, identification of contaminants at NAS Jacksonville, and investigation of specific elevated radiation zones on PSCs 16, 40, and 42.

Bechtel Environmental, Inc. (Bechtel), the Environmental Response Action Contractor, performed these radiological characterizations in support of the remedial investigation being performed by ABB-Environmental Services, Inc. (ABB-ES).

2.0 SITE HISTORY

The operating history of NAS Jacksonville has included handling and disposing of materials containing low levels of radioactivity. Onsite activities involving such materials included:

- Aircraft instrument maintenance and repair (radium-226)
- Sandblasting and cleaning (radium-226 and thorium-232)

From June 28 to July 2, 1982, the onsite phase of a preliminary assessment (PA) was conducted as the first phase of the Naval Assessment and Control of Installation Pollutants program. This program has now been incorporated into the Navy and Marine Corps Installation Restoration (MCIR) program. The purpose of the PA was to identify, assess, and control environmental contamination from past hazardous materials storage, transfer, processing, and disposal operations. The PA identified 38 PSCs, of which 10 posed a potential threat to human health and the environment based on their Confirmation Study Ranking System (CSRS) scores. Currently there are 45 PSCs identified within NAS Jacksonville, of which 18 are believed to be radiologically contaminated.

Several PSCs have been identified as having been potentially exposed to sources of low-level radioactive materials or radioactive contamination over the past 50 years.. Radium-226 was used as the source of luminescence in aircraft electrical components. Several of the facilities at NAS Jacksonville were used to maintain, repair, store, or calibrate such components. Also, abrasive grits containing elevated levels of radium-226 and thorium-232 were used to clean aircraft components.

2.1 PSC 16

PSC 16 is an approximately 0.75-acre storm sewer area located along Buildings 101, 50, and 795, and discharges at Black Point (Figure 2-1). Over the years, various chemical waste drained into the storm sewer system through cross connections within the sanitary sewer system which no longer exist. It is difficult to estimate the volume of material disposed in this way. This PSC is the outfall or the discharge point.

2.2 PSC 40

PSC 40 is an approximately 1.2-acre area located near the main runway (Figure 2-2). Prior to 1972, this area was the Ex-East IWTP discharge area, a wastewater treatment plant. Primary water treatment included settling for removal of solids and skimming for the removal of oils and solvents. Secondary treatment was provided by trickling filter units. Effluent from the plant was discharged to the St. Johns River. Reportedly, the discharge to the river resulted in a build-up of sediments in the cove east of Runway 27. The Navy removed the east plant from service in 1972, and the waste stream was diverted to the west side plant.

2.3 PSC 42

PSC 42 is a former polishing pond for the waste water treatment plant effluent (Figure 2-3). This polishing pond was classified by EPA as a surface impoundment to treat RCRA F006 and F019 listed hazardous wastes. The polishing pond received 2.3 million gallons per day of treated effluent from the wastewater treatment plant for final clarification before chlorination and discharge to the St. Johns River. PSC 42 covers an area approximately 400 ft wide by 500 ft long.

3.0 RADIATION SURVEY PLAN

PSCs 16, 40, and 42 have been designated as nonsuspect areas with possible residual radioactivity above background levels, attributable to prior operations at NAS Jacksonville. Bechtel developed a radiological survey plan that provides for radiation characterization of sediment samples from PSCs 16, 40, and 42 to identify areas exhibiting radiation levels that may be in excess of accepted cleanup standards. The radiological cleanup standard to be applied at NAS Jacksonville is 5 pCi/g above background for radium-226 in soil⁽¹⁾.

3.1 PSCS 16, 40, AND 42 PREPARATION

No grid or grid-line survey was performed at PSCs 16, 40, and 42; therefore, no civil survey was performed for these PSCs. To characterize these PSCs, only five sediment sample locations were selected on each PSC to obtain surficial (0-6 in. in depth) sediment samples. Figures 3-1 through 3-3 provide the sediment sample locations on each PSC.

3.2 RADIOLOGICAL CHARACTERIZATION PROTOCOLS

The primary purpose for radiologically characterizing PSCs 16, 40, and 42 was to determine their radiological conditions compared to background levels at NAS Jacksonville and to identify the extent and magnitude of radioactive contaminants and sources that were excluded in previous cleanup efforts. The information from these studies may be used as a verification and final survey in future decisions pertaining to free release of PSCs 16, 40, and 42.

3.2.1 Methods of Detection

The detection of radiation-emitting sources and contaminants is normally achieved through either direct reading surveys with appropriate radiation detection instruments or by analytically determining

Figure 2-3 Location of PSC 42

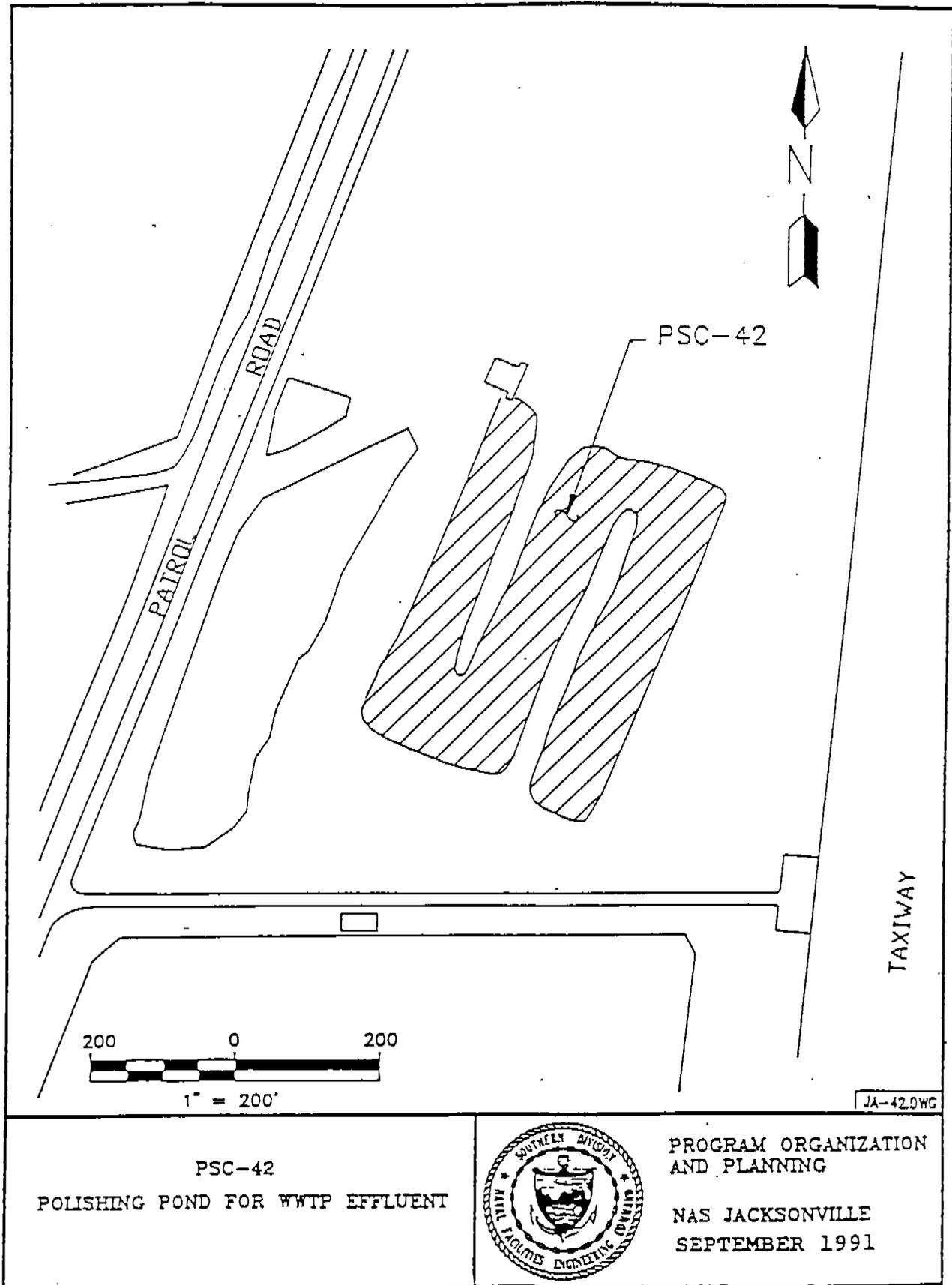


Figure 3-1 Sediment Sample Locations for PSC 16

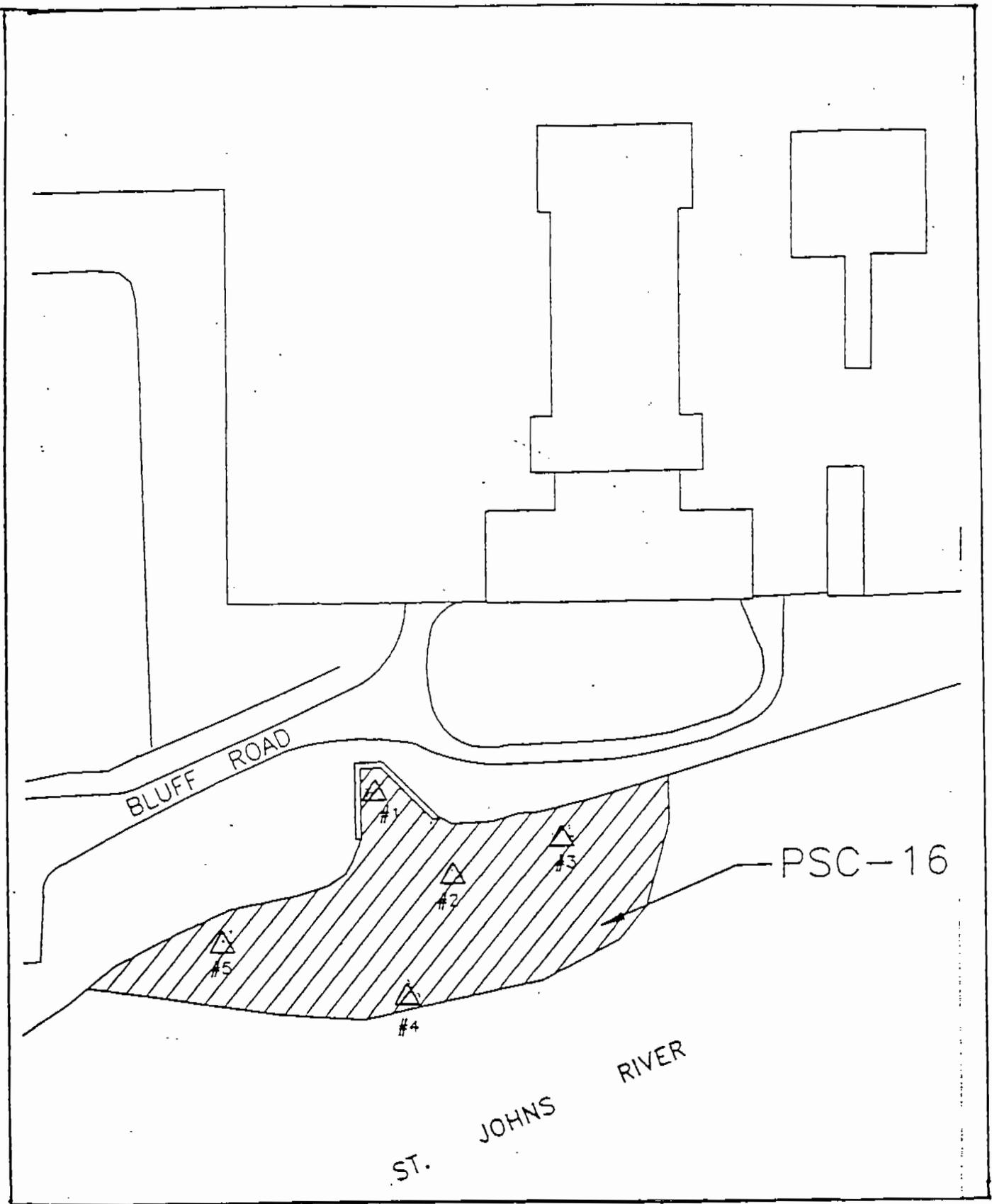


Figure 3-2 Sediment Sample Locations for PSC 40

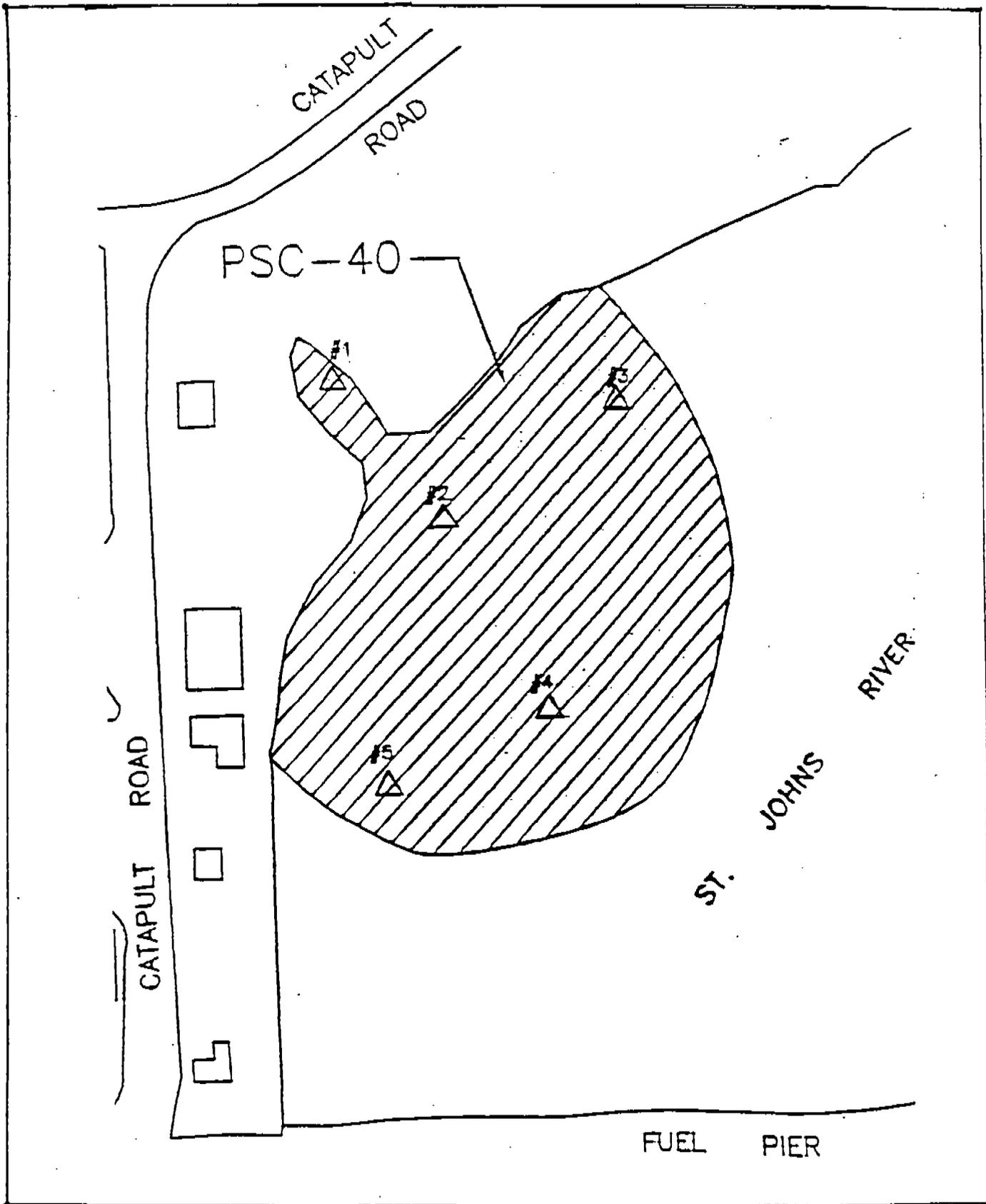
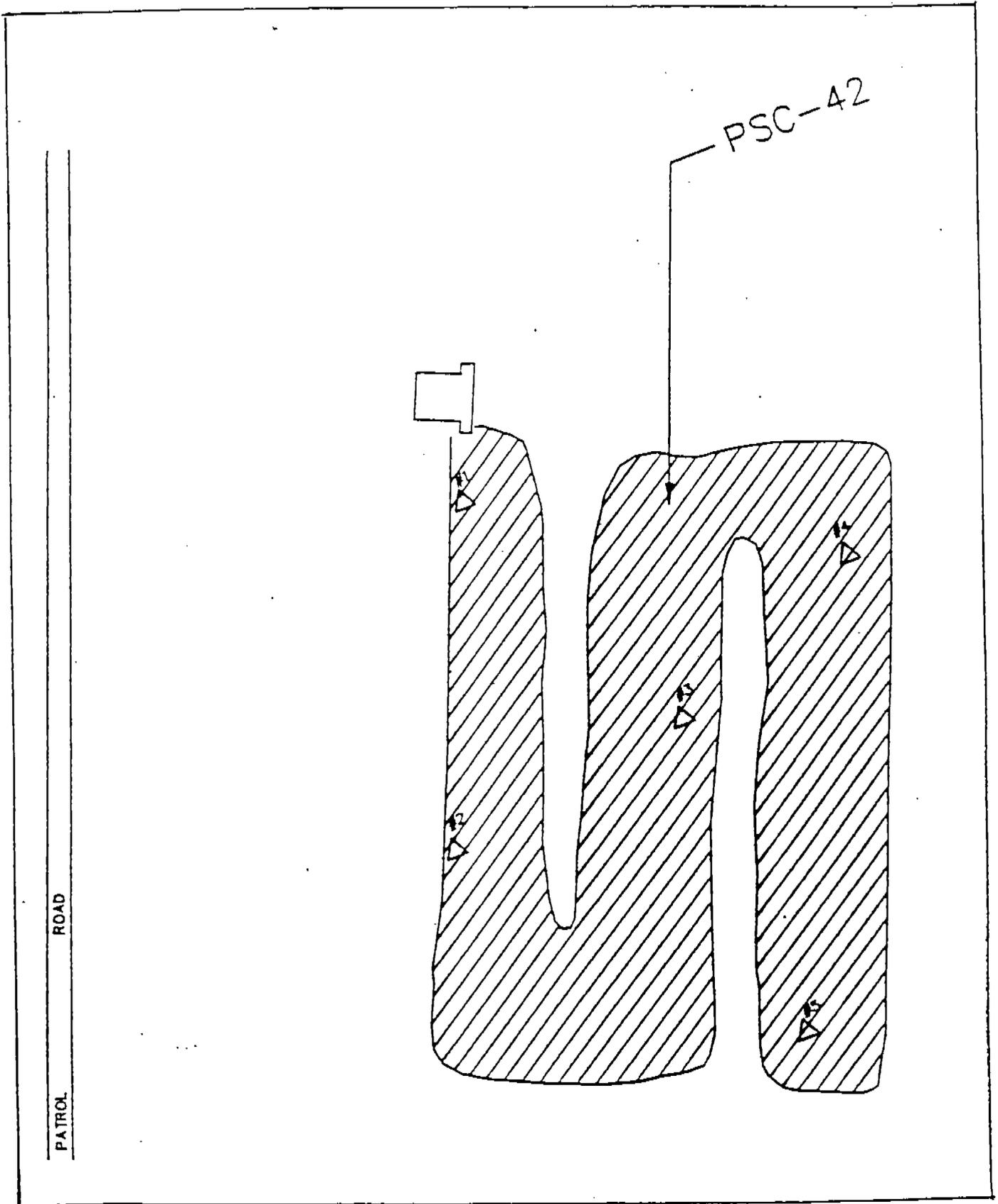


Figure 3-3 Sediment Sample Locations for PSC 42



radioisotopic concentrations in media using specific laboratory protocols. The methods used for characterizing PSCs 16, 40, and 42 involved only the analytical part of these processes.

3.2.2 Analytical Investigations

Sediment samples from selected sample areas were collected to permit study of radioisotopic concentrations in these areas.

4.0 BACKGROUND DETERMINATION

Standards for both radium-226 and thorium-232 in soil are provided in regulations from the U.S. Environmental Protection Agency (EPA) in 40 CFR 192, "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings." For concentrations in soil, this value is:

$$\leq 5.0 \text{ pCi/gram above background}^{(2)}$$

Past cleanup and disposal activities involving these materials were based on regulatory standards that have been superseded by standards that are more directly applicable to the radioisotopes of interest and, in many cases, more restrictive than the previously applied standards. NAS Jacksonville is being resurveyed to evaluate the existing levels of residual activity for determining the needs of and planning the actions for further remediation.

To support remediation, it is necessary to determine the background activity against which the release criteria will be applied. The background levels for this site have been determined and reported in "*Radiological Background Determination for the NAS Jacksonville Site*"⁽¹⁾ in detail. These results are adopted to be applicable for PSCs 16, 40, and 42 also.

The radium-226 that represents background at NAS Jacksonville is given by:

Maximum = 0.99 pCi/g

Minimum = 0.37 pCi/g

Average = 0.58 pCi/g

For conservatism, use the low value, above which the release criteria is added. This implies that remediation has satisfied the criteria for unrestricted release when the residual activity for radium or thorium is:

$$SR \leq 5.4 \text{ pCi/g}$$

The exposure rate corresponding to the site background was determined to be 6.4 μ R/hr.

5.0 DATA ACQUISITION

Five sediment samples were obtained from each PSC and were analyzed for radioisotopic content to confirm the identity of the primary contaminant(s). The results of the radiochemistry analysis for radium-226 for PSCs 16, 40, and 42 is provided in Table 5-1. The locations of these sample points are shown in Figures 3-1 through 3-3. The laboratory analysis reports and sampling data sheets are provided in Appendixes A through C.

The radium-226 activity among the samples taken within PSC 16 ranges from 0.278 pCi/g to 0.687 pCi/g, with an average concentration of 0.395 pCi/g.

Table 5-1
 Analytical Results of Soil/Sediment Samples for ²²⁶Ra

Sample location	γ count at sample location (cpm)	²²⁶ Ra concentration (pCi/g)	Comment
PSC 16			
1SD	NP*	0.278	MIN
2SD	NP	0.383	
3SD	NP	0.314	
4SD	NP	0.687	MAX
5SD	NP	0.312	
5SD	NP	0.416	Duplicate
	Average	0.395	
PSC 40			
1SD	NP*	0.297	MIN
2SD	NP	0.379	
3SD	NP	0.400	
4SD	NP	0.401	MAX
5SD	NP	0.400	
	Average	0.375	
PSC 42			
1SD	NP*	0.254	MIN
2SD	NP	0.534	
3SD	NP	0.581	
4SD	NP	0.369	
5SD	NP	1.04	MAX
	Average	0.556	

* = Not performed

The radium-226 activity among the samples taken within PSC 40 ranges from 0.297 pCi/g to 0.401 pCi/g, with an average concentration of 0.375 pCi/g.

The radium-226 activity among the samples taken within PSC 42 ranges from 0.254 pCi/g to 1.04 pCi/g, with an average concentration of 0.556 pCi/g.

None of the samples analyzed exhibited radium-226 concentrations greater than the 5.4 pCi/g release criteria established for this site.

6.0 SUMMARY OF RESULTS

None of the sediment samples taken from selected locations in PSCs 16, 40, and 42 contained elevated radium-226 concentrations > 5.4 pCi/g. Based on these results, PSCs 16, 40, and 42 may be excluded from further remediation consideration involving radiological contamination.

REFERENCES

1. Bauer, V. Hermann (BEI) to B. K. Moring (SOUTHDIV), "Radiological Background Determination for the NAS Jacksonville Site," Jan. 11, 1995.
2. USEPA, 40 CFR 192, "Health and Environmental Standards for Uranium and Thorium Mill Tailings," January 5, 1983.

APPENDIX A

**PSC 16 SEDIMENT SAMPLES
LABORATORY ANALYSIS RESULTS**

NAVY RAC SED SAMPLING RECORD

Sampling Event: <u>PSC-16</u>		Logbook		Form ID - 1 of 1	
SAMPLING STATION <input type="checkbox"/> Planned Coordinates <input type="checkbox"/> Estimated <input checked="" type="checkbox"/> Surveyed Coordinates					
Station ID <u>JX00115</u>	Station Type <u>SEDIMENT SAMPLING</u>	Grid Plane	Northing	Easting	Units
SAMPLE					
Sample ID <u>JX0011501</u>	Sample Type <u>ENV - SED</u>	Collection	Interval Start: Interval End:		
Collection Method <u>CLAWSTELL / DREDGE</u>		Date <u>2/2</u>	Time <u>905</u>	By <u>T. Rountree</u>	
Weather Conditions: _____					
Field Logbook(s)/Pgs. <u>- / -</u>		ES&H Jnl(s)/Pgs. <u># 1 pg 84</u>		SEIR No. <u>JX.005</u>	
Container Information					
ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT	
BNAE/PEST/PCB	250 ML AMBER	NONE			
CYANIDE	250 ML AMBER	NONE			
METALS	250 ML AMBER	NONE			
RAD ANAL	IC CONTAINER	NONE	<u>30142933</u>	<u>Gamma spec</u>	
VOC	125 ML	NONE 4°C			
PAH	8 oz. clear wide mouth				
REMARKS: <u>PSC 16 POSITION 1</u>					
Recorded By: <u>T. Rountree</u>		Date <u>2-2-95</u>		Checked and Reviewed By: _____	
				Date _____	

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 16 Logbook JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>JX 00104</u>	<u>ENV</u>				

Sample ID	Sample Type	Collection	Interval Start:		
			Interval End:		
<u>JX0010401</u>	<u>ENV</u>	<u>DREDGE</u>	<u>2-2-95</u> Date	<u>0910</u> Time	<u>T. Row Tree</u> By

Weather Conditions: Clear 45°

Field Logbook(s)/Pgs.	ES&H Jnl(s)Pgs	SEIR No.
<u>- 1 -</u>	<u>#1 pg 584</u>	<u>JX.005</u>

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
<u>UNAE/PEST/PCB</u>	<u>250 ML AMBER</u>	<u>NONE</u>		
<u>NIDE</u>	<u>250 ML AMBER</u>	<u>NONE</u>		
<u>METALS</u>	<u>250 ML AMBER</u>	<u>NONE</u>		
<u>RAD ANAL</u>	<u>IC CONTAINER</u>	<u>NONE</u>	<u>Gamma Spec</u>	
<u>DOC</u>	<u>125 ML</u>	<u>NONE 4°C</u>		
<u>PAH</u>	<u>8 oz. clear wide mouth</u>			

REMARKS: PSC 16 POSITION 2 26 Feet

Recorded By: T. Row Tree Date: 2-2-95 Checked and Reviewed By: _____ Date: _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 16 Logbook JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>JX00105</u>	<u>ENV</u>				

SAMPLE

Sample ID	Sample Type	Collection	Interval Start:	Interval End:
<u>JX0010501</u>	<u>ENV</u>	<u>DRedger</u>	<u>2-2-95</u> Date	<u>0920</u> Time
			To Round By	

Weather Conditions: Clear 45°

Field Logbook(s)/Pgs. 1 ES&H Jnl(s)Pgs #1 pg 584 SEIR No. JX.005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
INAE/PEST/PCB	250 ML AMBER	NONE		
CYANIDE	250 ML AMBER	NONE		
ALS	250 ML AMBER	NONE		
RAD ANAL	IC CONTAINER	NONE	<u>Gamma Spec</u>	
VOC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 16 POSITION: 3

Recorded By: To Roundree Date 2-2-95 Checked and Reviewed By: _____ Date _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 16 Logbook JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID JX 00108 Station Type ENV Grid Plane _____ Northing _____ Easting _____ Units _____

SAMPLE

Sample ID JX0010801 Sample Type ENV Collection Dredge Interval Start: _____ Interval End: _____
 Date 2-2-95 Time 0925 By T. Rowntree

Weather Conditions: Clear 45°F

Field Logbook(s)/Pgs. - / - ES&H Jrn(s)/Pgs #1 pg 84 SEIR No. JX.005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
INAE/PEST/PCB	250 ML AMBER	NONE		
CYANIDE	250 ML AMBER	NONE		
ALS	250 ML AMBER	NONE		
RAD ANAL	IC CONTAINER	NONE	<u>Gamma Spec</u>	
DOC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 16 Location 4

Recorded By: T. Rowntree Date 2-2-95 Checked and Reviewed By: _____ Date _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 16 Logbook JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>X00110</u>	<u>ENV</u>				

SAMPLE

Sample ID	Sample Type	Collection	Interval Start:	Interval End:
<u>X0011001</u>	<u>ENV</u>	<u>Dredge</u>	<u>2-2-75</u> Date	<u>09:35</u> Time
			By <u>T. Rountree</u>	

Weather Conditions: Clear 45°F

Field Logbook(s)/Pgs. - 1 - ES&H Jrn(s)Pgs #1 pg 84 SEIR No. JX-005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
NAE/PEST/PCB	250 ML AMBER	NONE		
CYANIDE	250 ML AMBER	NONE		
ALS	250 ML AMBER	NONE		
RAD ANAL	IC CONTAINER	NONE	<u>Grams Spc</u>	
OC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 16 Location 5

Recorded By: T. Rountree Date 2-2-75 Checked and Reviewed By: _____ Date _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 16 Logbook JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>JX00103</u>	<u>ENV FDP</u>				

SAMPLE

Sample ID	Sample Type	Collection	Interval Start:	Interval End:
<u>JX0010301</u>	<u>ENV</u>	<u>300 Dredge</u>	<u>2-2-95</u>	<u>0850</u>
			Date	Time
				<u>To Routine</u>
				By

Weather Conditions: Clear 45°F

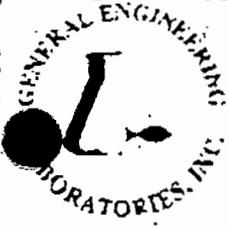
Field Logbook(s)/Pgs. - 1 - ES&H Jnl(s)Pgs #1 Pg 84 SEIR No. JX,005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
BNAE/PEST/PCB	250 ML AMBER	NONE		
IDE	250 ML AMBER	NONE		
METALS	250 ML AMBER	NONE		
AD ANAL	IC CONTAINER	NONE	<u>Gamma Spec</u>	
VOC	125 ML	NONE 4°C		
AH	8 oz. clear wide mouth			

REMARKS: PSC 16 FIELD Duplicate of POSITION 5

Recorded By: To Routine Date: 2-2-95 Checked and Reviewed By: _____ Date: _____



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	EB7156/87294	EB7472/87458
NC	233	
SC	10121	10382
TN	02934	
VA	00131	
WI	99948779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller
 Project Description: Cecil Field/IX

cc: BECH00394

Report Date: February 14, 1995

Page 1 of 2

Sample ID : JX00110 SED
 Lab ID : 9502078-10 PSC 16 POSITION # 5
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	C
Radiological												
Gamma PHA - 10 items												
Cesium-137	J	0.0282 +/- 0.0136	0.0165	0.100	pCi/g	1.0	MDS	02/10/95	0053	61066	1	N
Potassium-40		1.64 +/- 0.274	0.149	1.00	pCi/g	1.0						
Radium-226	J	0.312 +/- 0.0456	0.0304	1.00	pCi/g	1.0						
Radium-228	J	0.434 +/- 0.0678	0.0494	1.00	pCi/g	1.0						
Thorium-228	J	0.461 +/- 0.0308	0.0268	5.00	pCi/g	1.0						
Thorium-230	J	0.312 +/- 0.0456	0.0304	1.00	pCi/g	1.0						
Thorium-232	J	0.457 +/- 0.0306	0.0266	2.00	pCi/g	1.0						
Thorium-234	J	1.21 +/- 0.483	0.462	5.00	pCi/g	1.0						
Uranium-235	J	0.126 +/- 0.0941	0.102	1.00	pCi/g	1.0						
Uranium-238	J	1.21 +/- 0.483	0.462	5.00	pCi/g	1.0						

M = Method	Method-Description
M 1	HASL 300

Notes:
 The qualifiers in this report are defined as follows:
 J indicates presence of analyte < RL (Report Limit)
 U indicates presence of analyte < DL (Detect Limit)





GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	DEL	EPI
FL	E87156/87294	E87472/87451
NC	233	
SC	10120	10382
TN	02934	
VA	00151	
WI	99928779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Kaller

Project Description: Cecil Field/IX

cc: BECH00394

Report Date: February 14, 1995

Page 2 of 2

Sample ID : IX00110 SED

M = Method Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara H. Seibert
 Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	OSL	EPK
FL	EN7156/67294	EN7472/67458
NC	233	
SC	10120	10551
TN	02934	
VA	00151	
WI	99988779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/IX

cc: BECH00394

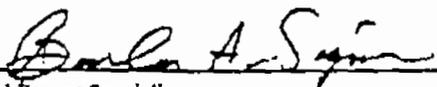
Report Date: February 14, 1995

Page 2 of 2

Sample ID : JX00103 SED

M = Method Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.


Analytical Report Specialist

APPENDIX B

**PSC 40 SEDIMENT SAMPLES
LABORATORY ANALYSIS RESULTS**

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 40 Logbook JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>JX 00106</u>	<u>ENV</u>				

SAMPLE

Sample ID	Sample Type	Collection	Interval Start:	Interval End:
<u>JX0010601</u>	<u>ENV</u>	<u>Dredge</u>		
		Collection Method	Date	By
		<u>Dredge</u>	<u>0955</u> Time	<u>T. Rountree</u>

Weather Conditions: Clear 45°F

Field Logbook(s)/Pgs. - / - ES&H Jnl(s)/Pgs #1 Pg 84 SEIR No. JX.005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
BNAE/PEST/PCB	250 ML AMBER	NONE		
INIDE	250 ML AMBER	NONE		
METALS	250 ML AMBER	NONE		
RAD ANAL	IC CONTAINER	NONE		<u>Gamma Spec</u>
VOC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 40 LOCATION 1

Recorded By: T. Rountree Date: 2-2-95 Checked and Reviewed By: _____ Date: _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 40 Logbook JX-6D-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID JX 00107 Station Type ENV Grid Plane _____ Northing _____ Easting _____ Units _____

SAMPLE

Sample ID X0010701 Sample Type ENV Collection DBedge Interval Start: _____ Interval End: _____
 Date 2-2-95 Time 1005 By T. Rountree

Weather Conditions: Clear 45°F

Field Logbook(s)/Pgs. 1 ES&H Jrnl(s) Pgs. #1 Pg 85 SEIR No. JX.005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
NAE/PEST/PCB	250 ML AMBER	NONE		
CYANIDE	250 ML AMBER	NONE		
ALS	250 ML AMBER	NONE		
RAD ANAL	IC CONTAINER	NONE	<u>gamma spec</u>	
OC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 40 Location 2

Recorded By: T. Rountree Date 2-2-95 Checked and Reviewed By: _____ Date _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 40 Logbook JX-SD 001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>JX 0011</u>	<u>ENV</u>				

SAMPLE

Sample ID	Sample Type	Collection	Interval Start:	Interval End:
<u>JX001101</u>	<u>ENV</u>	<u>Dredge</u>		
		Collection Method	Date	Time
		<u>Dredge</u>	<u>2-2-95</u>	<u>1015</u>
				By <u>T. Rowntree</u>

Weather Conditions: Clear 45°F

Field Logbook(s)/Pgs. - / - ES&H Jnl(s)/Pgs #1 pg 84 SEIR No. JX.008

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
UNAE/PEST/PCB	250 ML AMBER	NONE		
INIDE	250 ML AMBER	NONE		
METALS	250 ML AMBER	NONE		
RAD ANAL	IC CONTAINER	NONE		<u>Gamma Spc</u>
DOC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 40 POSITION 3

Recorded By: T. Rowntree Date: 2-2-95 Checked and Reviewed By: _____ Date: _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 42^{IR 2-2-95} 40 Logbook JX SD001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID <u>JX 0010001</u>	Station Type <u>ENV</u>	Grid Plane	Northing	Easting	Units
---------------------------------	----------------------------	------------	----------	---------	-------

SAMPLE

Sample ID <u>JX 00101</u>	Sample Type <u>ENV</u>	Collection	Interval Start: Interval End:		
		Collection Method <u>DRedger</u>	<u>2-2-95</u> Date	<u>10:20</u> Time	<u>T ROUNTREE</u> By

Weather Conditions: Clear 45°F

Field Logbook(s)/Pgs. 1 ES&H Jrn(s)Pgs #1 pg 84 SEIR No. JX 005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
3NAE/PEST/PCB	250 ML AMBER	NONE		
CYANIDE	250 ML AMBER	NONE		
ALS	250 ML AMBER	NONE		
RAD ANAL	IC CONTAINER	NONE	<u>Gamma Spec</u>	
VOC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 40 APPROXIMATELY 2⁶ DEEP^{IR 2-2-95} POSITION 4

Recorded By: T. Rountree Date 2-2-95 Checked and Reviewed By: _____ Date _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 40 Logbook: JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>JX 00102</u>	<u>ENV</u>				

SAMPLE

Sample ID	Sample Type	Collection	Interval Start:	Interval End:
<u>JX0010201</u>	<u>ENV</u>	<u>DRedge</u>	<u>2-2-95</u> Date	<u>1029</u> Time
		Collection Method	By <u>T. Rountree</u>	

Weather Conditions: Clear 45°F

Field Logbook(s)/Pgs. - 1 - ES&H Jrn(s)/Pgs. #1 pg 84 SEIR No. JX.005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
DAE/PEST/PCB	250 ML AMBER	NONE		
AMIDE	250 ML AMBER	NONE		
METALS	250 ML AMBER	NONE		
RAD ANAL	IC CONTAINER	NONE	<u>Gamma Spec</u>	
DOC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 40 POSITION 5

Recorded By: T. Rountree Date: 2-2-95 Checked and Reviewed By: _____ Date: _____



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	RFI
FL	EM7156/RT294	EM7472/RT458
NC	253	
SC	10120	10582
TN	02954	
VA	00451	
WI	990ERT70	

CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/IX

cc: BECH00394

Report Date: February 14, 1995

Page 2 of 2

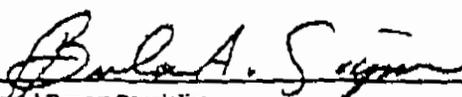
Sample ID

: JKD0106 5ED

M or Method

Method-Description

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, WALTER SELBERT at (603) 769-7388.


Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	OR	EPI
FL	EF7156/87294	EF7472/87458
NC	230	
SC	1012D	105E2
IN	02834	
VA	00131	
WI	99988779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller
 Project Description: Cecil Field/JX

cc: BECH00394

Report Date: February 14, 1995

Page 1 of 2

Sample ID : JX00107 SED
 Lab ID : 9502078-07
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

PSC to Position # 2

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	C
Radiological												
Gamma PRA - 10 Items												
Cesium-137	J	0.0713 +/- 0.0364	0.0220	0.100	pCi/g	1.0	RDT	02/10/95	0028	61066	1	N
Potassium-40		1.41 +/- 0.329	0.219	1.00	pCi/g	1.0						
Radium-226	J	0.379 +/- 0.0882	0.0428	1.00	pCi/g	1.0						
Radium-228	J	0.364 +/- 0.113	0.155	1.00	pCi/g	1.0						
Thorium-228	J	0.350 +/- 0.0584	0.0339	5.00	pCi/g	1.0						
Thorium-230	J	0.379 +/- 0.0882	0.0428	1.00	pCi/g	1.0						
Thorium-232	J	0.347 +/- 0.0579	0.0336	2.00	pCi/g	1.0						
Thorium-234	U	0.375 +/- 0.629	0.736	5.00	pCi/g	1.0						
Uranium-235	U	0.0527 +/- 0.0801	0.136	1.00	pCi/g	1.0						
Uranium-238	U	0.375 +/- 0.629	0.736	5.00	pCi/g	1.0						

M = Method

Method-Description

M 1

HAASL 300

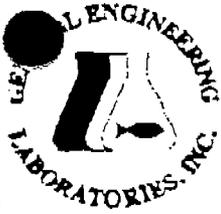
Notes:

The qualifiers in this report are defined as follows:

J indicates presence of analyte < RL (Report Limit)

U indicates presence of analyte < DL (Detect Limit)





GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GR7	EPI
FL	887156/87294	887472/87431
NC	233	
SC	10121	10543
TN	82934	
VA	00151	
WI	9998779	

CERTIFICATE OF ANALYSIS

Client: Bectnal
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: February 14, 1995

Page 2 of 2

Sample ID : IX00107 SED

M = Method Method-Description

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Winner Seibert at (803) 769-7386.


Paula A. Seibert
Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	EST156/47294	EST472/87451
NC	233	
SC	10120	10282
TN	02934	
VA	00131	
WI	99968779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Kailer

Project Description: Cecil Field/JX

cc: BECHD0394

Report Date: February 14, 1995

Page 1 of 2

Sample ID : IX00111 SED
 Lab ID : 9502078-11
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

PSC 40 POSITION #3

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	C
Biological												
Alpha PMA - 10 items												
Cesium-137		0.191 +/- 0.0447	0.0337	0.100	pCi/g	1.0	RDT	02/10/95	0108	61066	1	N
Potassium-40		1.36 +/- 0.410	0.295	1.00	pCi/g	1.0						
Sodium-226	J	0.400 +/- 0.0767	0.0662	1.00	pCi/g	1.0						
Sodium-228	J	0.221 +/- 0.0813	0.164	1.00	pCi/g	1.0						
Thorium-228	J	0.211 +/- 0.0376	0.0407	5.00	pCi/g	1.0						
Bismuth-230	J	0.400 +/- 0.0766	0.0662	1.00	pCi/g	1.0						
Bismuth-232	J	0.209 +/- 0.0373	0.0404	2.00	pCi/g	1.0						
Thorium-234	J	1.07 +/- 0.594	1.04	5.00	pCi/g	1.0						
Uranium-235	U	0.0803 +/- 0.0877	0.162	1.00	pCi/g	1.0						
Uranium-238	J	1.07 +/- 0.594	1.04	5.00	pCi/g	1.0						

M = Method

Method-Description

M1

HASL 300

Notes:

The qualifiers in this report are defined as follows:
 J indicates presence of analyte < RL (Report Limit)
 U indicates presence of analyte < DL (Detect Limit)





GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	BE7136/17294	BE7472/87458
NC	233	
SC	10120	10582
TX	02934	
VA	00131	
WI	99985779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/IX

Page 1 of 2

cc: BECH00394

Report Date: February 14, 1995

Sample ID : JX00101 SED
 Lab ID : 9502078-01
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/13/95
 Priority : Rush
 Collector : Client

PSC 40 POSITION # 4

Parameter	Qualifier	Result	DL	RL	Units	DV	Analyst	Date	Time	Batch	M	C
Biological												
<i>Gamma PHA - 10 items</i>												
Cesium-137		0.167 +/- 0.0489	0.0312	0.100	pCi/g	1.0	RDT	02/09/95	2109	61066	1	N
Potassium-40		1.09 +/- 0.383	0.376	1.00	pCi/g	1.0						
Radium-226	J	0.401 +/- 0.0794	0.0591	1.00	pCi/g	1.0						
Radium-228	J	0.237 +/- 0.0785	0.181	1.00	pCi/g	1.0						
Thorium-232	J	0.121 +/- 0.0472	0.0595	5.00	pCi/g	1.0						
Thorium-230	J	0.401 +/- 0.0794	0.0591	1.00	pCi/g	1.0						
Thorium-232	J	0.120 +/- 0.0468	0.0590	2.00	pCi/g	1.0						
Thorium-234	U	0.681 +/- 0.864	1.15	5.00	pCi/g	1.0						
Uranium-235	U	-0.0515 +/- 0.0973	0.166	1.00	pCi/g	1.0						
Uranium-238	U	0.681 +/- 0.864	1.15	5.00	pCi/g	1.0						

M = Method

Method-Description

M 1

HASL 300

Notes:

The qualifiers in this report are defined as follows:
 J indicates presence of analyte < RL (Report Limit)
 U indicates presence of analyte < DL (Detect Limit)





GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	QMS	NET
FL	EE7156A7254	EE7471K7453
NC	233	
SC	10120	10082
TN	02994	
VA	00151	
WI	99988779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Kellar
 Cecil Field/JX

Project Description:

cc: BECH00394

Report Date: February 14, 1995

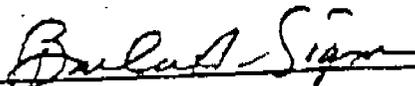
Page 2 of 2

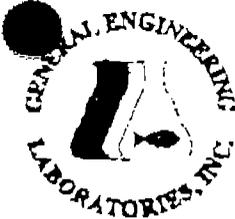
Sample ID : JX00102 EHD

M = Method

Method-Description

This data report has been prepared and reviewed
 in accordance with General Engineering Laboratories
 standard operating procedures. Please direct
 any questions to your Project Manager, Winter Seibert at (803) 769-7388.


 Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	INEL	EPK
FL	EN7156/87254	EN7472/77458
NC	Z33	
NC	10120	10352
TN	C2834	
VA	00131	
WI	99943773	

CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller
Project Description: Cecil Field/DX

cc: BECH00394

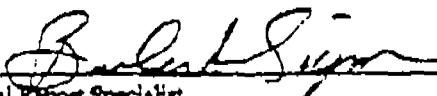
Report Date: February 14, 1995

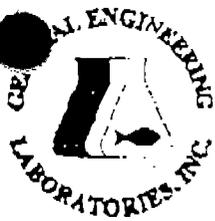
Page 2 of 2

Sample ID : JX00114-SEID

M = Method Method-Description

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Winter Seibert at (803) 769-7388.


Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	ORL	RFI
FL	BR7156/87294	BR7472/87458
NC	233	
SC	10120	10582
TN	02934	
VA	00131	
WI	99948779	

CERTIFICATE OF ANALYSIS

Client: Hechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350
 Contact: Ms. Lori Keller
 Project Description: Cecil Field/IX

cc: BECH00394

Report Date: February 14, 1995

Page 1 of 2

Sample ID : IX00113 SED
 Lab ID : 9502078-13
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

PSC 42 POSITION #2

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	C
Radiological												
<i>Gamma FHA - 10 Lems</i>												
Cesium-137	J	0.0418 +/- 0.0216	0.0271	0.100	pCi/g	1.0	MDS	02/10/95	0857	61066	1	N
Potassium-40	J	0.599 +/- 0.276	0.202	1.00	pCi/g	1.0						
Radium-226	J	0.534 +/- 0.0683	0.0486	1.00	pCi/g	1.0						
Radium-228	U	0.0727 +/- 0.0624	0.122	1.00	pCi/g	1.0						
Thorium-232	J	0.220 +/- 0.0416	0.0421	5.00	pCi/g	1.0						
Thorium-230	J	0.534 +/- 0.0683	0.0486	1.00	pCi/g	1.0						
Thorium-232	J	0.218 +/- 0.0413	0.0700	2.00	pCi/g	1.0						
Thorium-234	J	1.53 +/- 0.667	0.761	5.00	pCi/g	1.0						
Uranium-235	U	-0.0166 +/- 0.0990	0.169	1.00	pCi/g	1.0						
Uranium-238	J	1.53 +/- 0.667	0.761	5.00	pCi/g	1.0						

M = Method

Method-Description

M 1

HASL 500

Notes:

The qualifiers in this report are defined as follows:

J indicates presence of analyte < RL (Report Limit)

U indicates presence of analyte < DL (Detect Limit)



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	CEL	EPI
FL	EX7156/87294	ES7472/87458
NC	233	
SC	10120	10382
TN	02934	
VA	00151	
WI	99948/19	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller
 Project Description: Cecil Field/IX

cc: BECH00394

Report Date: February 14, 1995

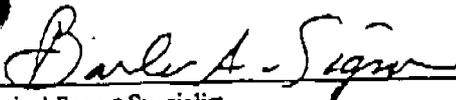
Page 2 of 2

Sample ID : JX00111 SED

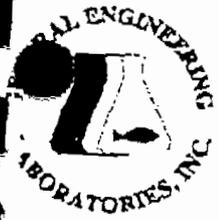
M = Method

Method-Description

This data report has been prepared and reviewed
 accordance with General Engineering Laboratories
 standard operating procedures. Please direct
 questions to your Project Manager, Winter Seibert at (803) 769-7388.



Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	QEL	EPI
FL	EW7156/7194	EE7472/7458
NC	233	
SC	10120	10582
TN	02954	
VA	00131	
WI	9098677	

CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller
Project Description: Cecil Field/JX

cc: BECH00394

Report Date: February 14, 1995

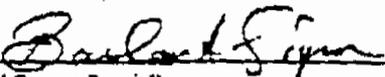
Page 2 of 2

Sample ID : JX00101 SED

M = Method

Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Saibert at (803) 769-7388.


Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	OFF	EPH
FL	EX7156/RT254	EX7472/71451
NC	233	
SC	10120	10582
TN	02834	
VA	00151	
WI	49988779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Kaller
 Project Description: Cecil Field/IX

Page 1 of 2

Report Date: February 14, 1995

no: BECHD0394

Sample ID : JX00102 SED
 Lab ID : 9502078-02
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

PSC 40 POSITION # 5

Isotope	Qualifier	Result	DL	RL	Units	DE	Analyst	Date	Time	Batch	M	C
Radiological												
Gamma PMA - 10 items												
Cesium-137		0.186 +/- 0.0405	0.0293	0.100	pCi/g	1.0	RDT	02/09/95	2113	61066	1	N
Potassium-40		1.04 +/- 0.532	0.341	1.00	pCi/g	1.0						
Radium-226	J	0.400 +/- 0.0813	0.0695	1.00	pCi/g	1.0						
Radium-228	J	0.242 +/- 0.133	0.178	1.00	pCi/g	1.0						
Thorium-228	J	0.223 +/- 0.0518	0.0534	5.00	pCi/g	1.0						
Thorium-230	J	0.400 +/- 0.0813	0.0695	1.00	pCi/g	1.0						
Thorium-232	J	0.222 +/- 0.0513	0.0530	2.00	pCi/g	1.0						
Thorium-234	J	1.18 +/- 1.01	1.12	5.00	pCi/g	1.0						
Uranium-235	U	0.0685 +/- 0.157	0.191	1.00	pCi/g	1.0						
Uranium-238	J	1.18 +/- 1.01	1.12	5.00	pCi/g	1.0						

Method-Description

M = Method

HAEL 300

M 1

Notes:

The qualifiers in this report are defined as follows:
 J indicates presence of analyte < RL (Report Limit)
 U indicates presence of analyte < DL (Detect Limit)



APPENDIX C

PSC 42 SEDIMENT SAMPLES
LABORATORY ANALYSIS RESULTS

NAVY RAC SED SAMPLING RECORD

Sampling Event: <u>PSC-42</u>		Logbook		Form ID - 1 of 1	
SAMPLING STATION <input type="checkbox"/> Planned Coordinates <input type="checkbox"/> Estimated <input checked="" type="checkbox"/> Surveyed Coordinates					
Station ID <u>JX0011#</u>	Station Type <u>SEDIMENT SAMPLING</u>	Grid Plane	Northing	Easting	Units
SAMPLE					
Sample ID <u>JX0011#01</u>	Sample Type <u>ENV - SED</u>	Collection	Interval Start:	Interval End:	
		Collection Method <u>CLAMSHELL / DREDGE</u>	Date <u>2/2</u>	Time <u>1340</u>	By <u>T. Rountree</u>
Weather Conditions: <u>CLEAR / WINDY</u>					
Field Logbook(s)/Pgs. <u>1</u>		ES&H Jnl(s)/Pgs. <u>#1 pg 84</u>		SEIR No. <u>JX.005</u>	
Container Information					
ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT	
BNAE/PEST/PCB	250 ML AMBER	NONE			
CYANIDE	250 ML AMBER	NONE			
METALS	250 ML AMBER	NONE			
RAD ANAL	IC CONTAINER	NONE	<u>301A2912</u>	<u>Gamma Spec</u>	
VOC	125 ML	NONE 4°C			
PAH	8 oz. clear wide mouth				
REMARKS: <u>PSC-42 POSITION 1</u>					
Recorded By: <u>T. Rountree</u>		Date: <u>2-2-95</u>		Checked and Reviewed By: 	
				Date 	

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 42 Logbook JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>JX 00112</u>	<u>ENVU</u>				

SAMPLE

Sample ID	Sample Type	Collection	Interval Start:	Interval End:
<u>JX 0011201</u>	<u>ENVU</u>	<u>Dredge</u>	<u>2-3-95</u> Date	<u>1350</u> Time
			By <u>T. Rountree</u>	

Weather Conditions: Clear 45°

Field Logbook(s)/Pgs. 1 ES&H Jnl(s)/Pgs. #1 P8 59 SEIR No. JX-005

Container Information

ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
BNAE/PEST/PCB	250 ML AMBER	NONE		
WIDE	250 ML AMBER	NONE		
METALS	250 ML AMBER	NONE		
AD ANAL	IC CONTAINER	NONE	<u>Human Spec</u>	
VOC	125 ML	NONE 4°C		
HAH	8 oz. clear wide mouth			

REMARKS: PSC 42 Location 3

Recorded By: T. Rountree Date: 2-3-95 Checked and Reviewed By: _____ Date: _____

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC 42 Logbook JX-SD-001 Form ID - 1 of 1

SAMPLING STATION Planned Coordinates Estimated Surveyed Coordinates

Station ID	Station Type	Grid Plane	Northing	Easting	Units
<u>JX00109</u>	<u>ENU</u>				

Sample ID	Sample Type	Collection	Interval Start:	Interval End:
<u>JX0010901</u>	<u>ENU</u>	<u>Dredge</u>		
			<u>2-2-95</u> Date	<u>1355</u> Time
			<u>T. Rountree</u> By	

Weather Conditions: Clear 45°F

Field Logbook(s)/Pgs. 1 ES&H Jrnl(s)/Pgs. #1 Pg 84 SEIR No. JX-005

Container Information				
ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT
UNAE/PEST/PCB	250 ML AMBER	NONE		
ARSENIC	250 ML AMBER	NONE		
HEAVY METALS	250 ML AMBER	NONE		
RADIOID ANAL	IC CONTAINER	NONE	<u>Gamma Spec</u>	
DOC	125 ML	NONE 4°C		
PAH	8 oz. clear wide mouth			

REMARKS: PSC 42 Location 4

Recorded By: <u>T. Rountree</u>	Date: <u>2-2-95</u>	Checked and Reviewed By: _____	Date: _____
---------------------------------	---------------------	--------------------------------	-------------

NAVY RAC SED SAMPLING RECORD

Sampling Event: PSC-842		Logbook		Form ID - 1 of 1	
SAMPLING STATION <input type="checkbox"/> Planned Coordinates <input type="checkbox"/> Estimated <input checked="" type="checkbox"/> Surveyed Coordinates					
Station ID JX001160	Station Type SEDIMENT SAMPLING	Grid Plane	Northing	Easting	Units
SAMPLE					
Sample ID JX0011601	Sample Type ENV - SED	Collection	Interval Start: Interval End:		
		Collection Method CLAMSHELL / DREDGE	Date 2/2	Time 4:00	By
Weather Conditions: _____					
Field Logbook(s)/Pgs. _____		ES&H Jnl(s)/Pgs _____		SEIR No. _____	
Container Information					
ANALYTES	CONTAINER	PRESSER	CONTAINER ID	COMMENT	
BNAE/PEST/PCB	250 ML AMBER	NONE			
CYANIDE	250 ML AMBER	NONE			
METALS	250 ML AMBER	NONE			
RAD ANAL	IC CONTAINER	NONE			
VOC	125 ML	NONE 4°C			
PAH	8 oz. clear wide mouth				
REMARKS: PSC 42 - POSITION 5					
Recorded By: T. Row + Bee		Date: 2-2-95		Checked and Reviewed By: _____	
				Date: _____	



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GH	EP
PL	887136/37254	887472/37453
NC	233	
SC	10120	10383
TN	02034	
VA	00131	
WI	9993779	

CERTIFICATE OF ANALYSIS

Client: **Bechtel**
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: **Ms. Lori Keller**

Project Description: **Cecil Field/TX**

cc: BECH00394

Report Date: February 14, 1995

Page 1 of 2

Sample ID : IX00114 SED
 Lab ID : 9502078-14
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

PSC 42 POSITION #1

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	C
Radiological												
<i>Gamma PHA - 10 Items</i>												
Cesium-137	J	0.0218 +/- 0.0216	0.0207	0.100	pCi/g	1.0	MDS	02/10/95	0901	61066	1	N
Potassium-40		1.47 +/- 0.271	0.192	1.00	pCi/g	1.0						
Radium-226	J	0.254 +/- 0.0526	0.0387	1.00	pCi/g	1.0						
Radium-228	J	0.260 +/- 0.0603	0.0603	1.00	pCi/g	1.0						
Thorium-232	J	0.189 +/- 0.0277	0.0269	5.00	pCi/g	1.0						
Thorium-230	J	0.254 +/- 0.0526	0.0387	1.00	pCi/g	1.0						
Thorium-232	J	0.188 +/- 0.0275	0.0266	2.00	pCi/g	1.0						
Thorium-234	J	0.744 +/- 0.585	0.617	5.00	pCi/g	1.0						
Uranium-235	U	0.00778 +/- 0.0561	0.0997	1.00	pCi/g	1.0						
Uranium-238	J	0.744 +/- 0.585	0.617	5.00	pCi/g	1.0						

M = Method

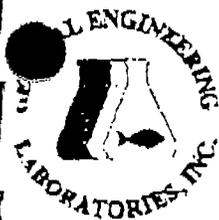
Method-Description

M 1

HASL 300

Notes:

The qualifiers in this report are defined as follows:
 J indicates presence of analyte < RL (Report Limit)
 U indicates presence of analyte < DL (Detect Limit)



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	QEL	QFI
FL	EE7156/87294	EE7472/87438
NC	233	
NC	10120	10582
TN	02954	
VA	00131	
WI	9908879	

CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller
Project Description: Cecil Field/IX

cc: BECH00394

Report Date: February 14, 1995

Page 2 of 2

Sample ID : D000113 SED

M = Method Method-Description

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Winder Seibert at (803) 769-7388.


Barbara A. Sawyer
Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	URL	REF
FL	18715687234	27747207458
NC	233	
SC	10120	10342
TN	00034	
VA	00151	
WI	9998779	

CERTIFICATE OF ANALYSIS

Client: **Bachal**
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: **Ms. Lori Keller**
 Project Description: **Cecil Field/IX**

Page 1 of 2

oo: BECH00394 Report Date: February 14, 1995

Sample ID : JX00112 SED
 Lab ID : 9502078-12
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

PSC 42 POSITION # 3

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	C
Radiochemical												
<i>Gamma PHA - 10 items</i>												
Cesium-137	U	0.00538 ± 0.0250	0.0455	0.100	pCi/g	1.0	MDS	02/10/95	0855	61066	1	N
Potassium-40	J	0.804 ± 0.412	0.304	1.00	pCi/g	1.0						
Radium-226	J	0.581 ± 0.0874	0.0742	1.00	pCi/g	1.0						
Radium-228	U	0.121 ± 0.154	0.183	1.00	pCi/g	1.0						
Thorium-228	J	0.174 ± 0.0552	0.0637	5.00	pCi/g	1.0						
Thorium-230	J	0.581 ± 0.0874	0.0742	1.00	pCi/g	1.0						
Thorium-232	J	0.173 ± 0.0547	0.0632	2.00	pCi/g	1.0						
Thorium-234	J	1.33 ± 1.16	1.50	3.00	pCi/g	1.0						
Uranium-235	U	0.157 ± 0.137	0.250	1.00	pCi/g	1.0						
Uranium-238	J	1.35 ± 1.16	1.50	3.00	pCi/g	1.0						

M = Method Method-Description
 M 1 HASL 300

Notes:
 The qualifiers in this report are defined as follows:
 J indicates presence of analyte < RL (Report Limit)
 U indicates presence of analyte < DL (Detect Limit)





GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	CEIL	EPI
FL	887156/87294	887472/87438
NC	268	
SC	10120	10582
TX	02894	
VA	00181	
WI	99982779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller
 Project Description: Cecil Field/IX

cc: BECH00394

Report Date: February 14, 1995

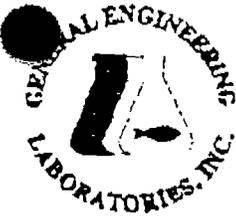
Page 2 of 2

Sample ID : JXD0112 SED

M = Method	Method-Description
------------	--------------------

This data report has been prepared and reviewed
 in accordance with General Engineering Laboratories
 standard operating procedures. Please direct
 any questions to your Project Manager, Wincox Seibert at (803) 769-7388.


 Analytical Report Specialist



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	OH	BP
FL	ERT13617394	ERT47278453
NC	235	
SC	10120	10561
TX	02994	
VA	00151	
WI	99968779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Kellar

Project Description: Cecil Field/DX

cc: BECH00394

Report Date: February 14, 1995

Page 1 of 2

Sample ID : DX00109 SED
 Lab ID : 9502073-09
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

PSC 42 POSITION # 4

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	C
Radiological												
<i>Gamma PMA - 10 items</i>												
Cesium-137	U	0.00285 +/- 0.0184	0.0332	0.100	pCi/g	1.0	RDT	02/10/95	0030	61066	1	N
Potassium-40	J	0.418 +/- 0.379	0.301	1.00	pCi/g	1.0						
Radium-226	J	0.369 +/- 0.0655	0.0601	1.00	pCi/g	1.0						
Radium-228	J	0.227 +/- 0.0933	0.157	1.00	pCi/g	1.0						
Thorium-228	J	0.196 +/- 0.0456	0.0463	5.00	pCi/g	1.0						
Thorium-230	J	0.369 +/- 0.0655	0.0601	1.00	pCi/g	1.0						
Thorium-232	J	0.195 +/- 0.0452	0.0461	2.00	pCi/g	1.0						
Thorium-234	J	2.39 +/- 1.11	0.850	5.00	pCi/g	1.0						
Uranium-235	U	0.0140 +/- 0.0995	0.172	1.00	pCi/g	1.0						
Uranium-238	J	2.39 +/- 1.11	0.850	5.00	pCi/g	1.0						

M = Method

Method-Description

M 1

EAASL 300

Notes:

The qualifiers in this report are defined as follows:

J indicates presence of analyte < RL (Report Limit)

U indicates presence of analyte < DL (Detect Limit)





GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	KPI
FL	EN7156/87294	EN7472/87458
NC	233	
SC	10120	10502
TN	028934	
VA	00151	
WI	999EX779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Mr. Lori Keller
 Project Description: Cecil Field/IX

cc: BECHM00394

Report Date: February 14, 1995

Page 2 of 2

Sample ID : DC00109 SED

M = Method	Method-Description
------------	--------------------

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Wimmer Seibert at (603) 769-7388.

Analytical Report Specialist:



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	QEL	KPI
FL	24715647294	2874727458
NC	233	
SC	10120	10542
TN	02934	
VA	00131	
WI	99948779	

CERTIFICATE OF ANALYSIS

Client: Bechtel
 PO Box 350
 Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Kaller

Project Description: Cecil Field/TX

cc: BECH00394

Report Date: February 14, 1995

Page 1 of 2

Sample ID : IX00116 SED
 Lab ID : 9902078-16
 Matrix : Soil
 Date Collected : 02/02/95
 Date Received : 02/03/95
 Priority : Rush
 Collector : Client

PSC 42 POSITION # 5

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	C
Radiological												
<i>Gamma PHA - 10 Items</i>												
Cesium-137	U	0.0297 +/- 0.0277	0.0339	0.100	pCi/g	1.0	MDS	02/10/95	1210	61066	1	N
Potassium-40		1.01 +/- 0.359	0.407	1.00	pCi/g	1.0						
Radium-226		1.04 +/- 0.111	0.0723	1.00	pCi/g	1.0						
Radium-228	J	0.342 +/- 0.108	0.146	1.00	pCi/g	1.0						
Thorium-232	J	0.491 +/- 0.0613	0.0571	5.00	pCi/g	1.0						
Thorium-230		1.04 +/- 0.111	0.0723	1.00	pCi/g	1.0						
Thorium-232	J	0.488 +/- 0.0608	0.0566	2.00	pCi/g	1.0						
Thorium-234	J	2.35 +/- 0.836	0.992	5.00	pCi/g	1.0						
Uranium-235	U	0.209 +/- 0.135	0.246	1.00	pCi/g	1.0						
Uranium-238	J	2.35 +/- 0.836	0.992	5.00	pCi/g	1.0						

M = Method	Method-Description
M 1	HASL 300

Notes:

The qualifiers in this report are defined as follows:
 J indicates presence of analyte < RL (Report Limit)
 U indicates presence of analyte < DL (Detect Limit)





GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	QEL	EPI
FL	827136/87294	827472/87454
NC	233	
SC	10120	10583
TN	02934	
VA	00151	
WI	90048779	

CERTIFICATE OF ANALYSIS

Client: Hechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Kaller
Project Description: Cecil Field/TX

cc: BECH00394

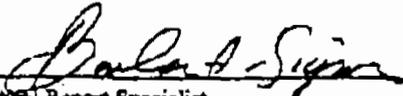
Report Date: February 14, 1995

Page 2 of 2

Sample ID : JX00116 SED

M = Method Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Selbert at (803) 769-7388.


Analytical Report Specialist