

**LONGHORN ARMY
AMMUNITION PLANT**

KARNACK, TEXAS

**ADMINISTRATIVE
RECORD**

VOLUME 4 of 7

Year - 2004

**Bate Stamp Numbers
032911 - 033443**

Prepared for:

**Department of the Army
Longhorn Army Ammunition Plant**

**LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD - CHRONOLOGICAL INDEX**

VOLUME 4 of 7

Year - 2004

Note: *Volume 4 of 7, Year 2004, Letter A, Bate Stamp Numbers Are Out of Date Sequence, due to receiving this report after the July 2004 update to the Admin. Record. (This report should have been inserted in Volume 1 of 1, Year 2003, between letters E & F.)*

A: Title: Final Report - Baseline Human Health and Screening Ecological Risk Assessment: -
 Report for Group 4 Sites, Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, 67, Goose
 Prairie Creek, Sauder's Branch, Central Creek, and Caddo Lake – for the Longhorn
 Army Ammunition Plant (LHAAP), Karnack, Texas
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 Recipient: U.S. Army Corps of Engineers (USACE), Tulsa District
 Date: June, 2003
 Bate Stamp: 032911 – 033443

**Final
BASELINE HUMAN HEALTH AND
SCREENING ECOLOGICAL
RISK ASSESSMENT**

for the

GROUP 4 SITES

Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, 67, Goose Prairie
Creek, Saunder's Branch, Central Creek, and Caddo Lake



**Longhorn Army Ammunition Plant
Karnack, Texas**

Submitted to

**U.S. Army Corps of Engineers
Tulsa District**

Contract No. DACA56-97-D-0001

June 2003

**Jacobs Engineering Group Inc.
Oak Ridge, Tennessee**

Final

Baseline Human Health and Screening Ecological Risk Assessment

Group 4 Sites

**Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, 67, Goose Prairie
Creek, Saunder's Branch, Central Creek, and Caddo Lake**

**Longhorn Army Ammunition Plant
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TABLE OF CONTENTS

	<u>Page No.</u>
LIST OF TABLES.....	v
LIST OF FIGURES.....	xv
LIST OF ACRONYMS AND ABBREVIATIONS	xvii
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1-1
1.1 OBJECTIVES	1-1
1.2 FACILITY DESCRIPTION	1-1
1.2.1 Facility Location and History	1-1
1.2.2 Climate	1-3
1.2.3 Topography.....	1-4
1.2.4 Surface Hydrology.....	1-4
1.2.5 Geology	1-7
1.2.6 Hydrogeology	1-8
1.2.7 Group 4 Area Descriptions	1-9
1.3 ORGANIZATION OF THE RISK ASSESSMENT	1-16
2.0 SUMMARY OF SAMPLING INVESTIGATIONS	2-1
2.1 SITE 04: PILOT WASTEWATER TREATMENT PLANT	2-2
2.1.1 Phase III Additional Investigations.....	2-2
2.2 SITE 08: SEWAGE TREATMENT PLANT	2-4
2.2.1 Phase III Additional Investigations.....	2-6
2.3 SITE 35A: SHOP AREA	2-7
2.3.1 Phase I RI	2-7
2.3.2 Phase II RI	2-9
2.3.3 Phase III RI.....	2-10
2.3.4 Additional Investigations.....	2-12
2.4 SITE 35B: CHEMICAL LABORATORY	2-13
2.4.1 Phase I RI	2-13
2.4.2 Phase II RI	2-13
2.4.3 Phase III RI.....	2-15
2.4.4 Additional Investigations.....	2-17
2.5 SITE 35C: STATIC TEST AREA	2-17
2.5.1 Pre-RI Activities	2-17
2.5.2 Phase I RI	2-19
2.5.3 Phase II RI	2-20
2.5.4 Phase III RI.....	2-21
2.5.5 Additional Investigations.....	2-22
2.6 SITE 46: PLANT 2 AREA.....	2-23
2.6.1 Pre-RI Activities	2-23
2.6.2 Phase I RI	2-23
2.6.3 Phase II RI	2-24
2.6.4 Phase III RI.....	2-27
2.6.5 Additional Investigations.....	2-29

TABLE OF CONTENTS (continued)

	<u>Page No.</u>
2.7 SITE 47: PLANT 3 AREA.....	2-30
2.7.1 Pre-RI Activities.....	2-30
2.7.2 Phase I RI.....	2-33
2.7.3 Phase II RI.....	2-35
2.7.4 Phase III RI.....	2-36
2.7.5 Additional Investigations.....	2-37
2.8 SITE 48: Y-AREA.....	2-38
2.8.1 Phase I RI.....	2-40
2.8.2 Phase II RI.....	2-40
2.8.3 Phase III RI.....	2-41
2.8.4 Additional Investigations.....	2-42
2.9 SITE 50: FORMER SUMP WATER TANK.....	2-43
2.9.1 Site 50 Site Investigation.....	2-43
2.9.2 Phase III RI.....	2-45
2.9.3 Additional Investigations.....	2-47
2.10 SITE 60: PESTICIDE STORAGE BUILDINGS.....	2-48
2.10.1 Phase I RI.....	2-48
2.10.2 Site 60 Site Investigation.....	2-48
2.10.3 Phase III RI.....	2-50
2.11 SITE 67: ABOVE GROUND STORAGE TANK FARM.....	2-50
2.11.1 Phase III RI.....	2-52
2.12 GOOSE PRAIRIE CREEK AND WETLANDS.....	2-53
2.12.1 Phase II RI.....	2-53
2.12.2 Phase III RI.....	2-53
2.12.3 Additional Investigations.....	2-60
3.0 BASELINE HUMAN HEALTH RISK ASSESSMENT	3-1
3.1 INTRODUCTION.....	3-1
3.2 DATA EVALUATION.....	3-3
3.2.1 Evaluation of Analytical Methods.....	3-5
3.2.2 Summary of Sampling Data for Media of Interest.....	3-9
3.2.3 Guidelines for Data Reduction.....	3-10
3.2.4 Evaluation of Dioxins/Furans.....	3-12
3.2.5 Selection of Chemicals of Potential Concern.....	3-13
3.3 EXPOSURE ASSESSMENT.....	3-15
3.3.1 Land and Water Uses.....	3-16
3.3.2 Site Conceptual Model.....	3-21
3.3.3 Identification of Potential Receptors/Exposure Scenarios.....	3-21
3.3.4 Exposure Point Concentrations.....	3-26
3.3.5 Identification of Exposure Models and Assumptions.....	3-29
3.4 TOXICITY ASSESSMENT.....	3-35
3.4.1 Introduction.....	3-35
3.4.2 Carcinogenic Effects.....	3-36
3.4.3 Noncarcinogenic Effects.....	3-39

TABLE OF CONTENTS (continued)

	Page No.
3.5 RISK CHARACTERIZATION.....	3-41
3.5.1 Approaches to Evaluating Risk.....	3-42
3.5.2 Summary of Results.....	3-45
3.5.3 TPH Evaluation	3-67
3.5.4 Risks Associated with Exposure to Lead	3-68
3.5.5 Evaluation of the Soil-to-Groundwater Pathway	3-72
3.6 UNCERTAINTY ANALYSIS	3-76
3.6.1 Introduction	3-76
3.6.2 Uncertainties Associated with Data Evaluation and Reduction	3-76
3.6.3 Uncertainties Associated with the Exposure Assessment	3-78
3.6.4 Uncertainties Associated with the Toxicity Assessment.....	3-82
3.6.5 Uncertainties Associated with Risk Characterization	3-84
3.6.6 Uncertainties Associated with Background	3-84
3.6.7 Summary of Uncertainties	3-87
3.7 PRELIMINARY REMEDIAL GOAL OPTIONS.....	3-87
3.7.1 Methodology for Calculation of Risk-Based RGOs.....	3-87
3.7.2 ARAR-Based RGOs.....	3-88
3.7.3 LHAAP Preliminary RGOs	3-88
4.0 SCREENING ECOLOGICAL RISK ASSESSMENT.....	4-1
4.1 DATA ANALYSIS	4-1
4.1.1 Data Evaluation	4-1
4.1.2 Comparison of Site Data to Ecological Benchmarks	4-3
4.1.3 Summary of Benchmark Comparison.....	4-5
4.2 CHARACTERIZATION OF POTENTIAL ECOLOGICAL RECEPTORS AND ESTIMATES OF EXPOSURE.....	4-5
4.2.1 Characterization of Habitats	4-5
4.2.2 Identification of Potential Ecological Receptors.....	4-7
4.2.3 Food Web Model.....	4-8
4.2.4 Estimation of Exposure to Indicator Species	4-14
4.3 CHARACTERIZATION OF ECOLOGICAL TOXICITY.....	4-19
4.4 CHARACTERIZATION OF POTENTIAL RISK.....	4-21
4.4.1 Estimation of Risk by Hazard Quotients and Hazard Indices	4-21
4.4.2 Uncertainty Analysis.....	4-23
5.0 SUMMARY AND CONCLUSIONS.....	5-1
5.1 SITE 04	5-1
5.1.1 Human Health Risk	5-1
5.1.2 Ecological Risk.....	5-1
5.2 SITE 08	5-5
5.2.1 Human Health Risk	5-5
5.2.2 Ecological Risk.....	5-6
5.3 SITE 35A.....	5-6
5.3.1 Human Health Risk	5-6
5.3.2 Ecological Risk.....	5-8
5.4 SITE 35B.....	5-8
5.4.1 Human Health Risk	5-8
5.4.2 Ecological Risk.....	5-9

TABLE OF CONTENTS (continued)

		<u>Page No.</u>
5.5	SITE 35C.....	5-9
	5.5.1 Human Health Risk	5-9
	5.5.2 Ecological Risk.....	5-9
5.6	SITE 46	5-12
	5.6.1 Human Health Risk	5-12
	5.6.2 Ecological Risk.....	5-12
5.7	SITE 47	5-13
	5.7.1 Human Health Risk	5-13
	5.7.2 Ecological Risk.....	5-14
5.8	SITE 48	5-14
	5.8.1 Human Health Risk	5-14
	5.8.2 Ecological Risk.....	5-17
5.9	SITE 50	5-17
	5.9.1 Human Health Risk	5-17
	5.9.2 Ecological Risk.....	5-17
5.10	SITE 60	5-18
	5.10.1 Human Health Risk	5-18
	5.10.2 Ecological Risk.....	5-19
5.11	SITE 67	5-19
	5.11.1 Human Health Risk	5-19
	5.11.2 Ecological Risk.....	5-21
5.12	CENTRAL CREEK	5-21
	5.12.1 Human Health Risk	5-21
	5.12.2 Ecological Risk.....	5-23
5.13	SAUNDER'S BRANCH.....	5-24
	5.13.1 Human Health Risk	5-24
	5.13.2 Ecological Risk.....	5-25
5.14	GOOSE PRAIRIE CREEK	5-25
	5.14.1 Human Health Risk	5-25
	5.14.2 Ecological Risk.....	5-27
5.15	CADDO LAKE	5-27
	5.15.1 Human Health Risk	5-27
	5.15.2 Ecological Risk.....	5-29
5.16	CONCLUSIONS	5-29
6.0	REFERENCES	6-1

APPENDIX A:	Data Listings for Chemicals Detected in BHHRA Scenarios
APPENDIX B:	Estimation of Exposure Concentrations In Fish Tissue
APPENDIX C:	BHHRA Intake and Risk Tables
APPENDIX D:	Terrestrial Indicator Species Food Web Model
APPENDIX E:	Aquatic Indicator Species Food Web Model
APPENDIX F:	Supplemental Toxicity Data

LIST OF TABLES

No.	Page No.
ES-1 Summary of Hazard Indices and Carcinogenic Risks, Group 4 RA, LHAAP, Karnack, Texas	ES-3
ES-2 Summary of Hazard Indices for Indicator Species, Group 4 RA, LHAAP, Karnack, Texas	ES-5

(Tables in Sections 3.0 and 4.0 have been placed at the end of the sections.)

3-1 LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas	
3-2 LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas	
3-3 Selection of Samples for Groundwater Scenarios, Group 4 RA, LHAAP, Karnack, Texas	
3-4 Selection of Samples for Soil Scenarios – Site 04, Group 4 RA, LHAAP, Karnack, Texas	
3-5 Selection of Samples for Soil Scenarios – Site 08, Group 4 RA, LHAAP, Karnack, Texas	
3-6 Selection of Samples for Soil Scenarios – Site 35A, Group 4 RA, LHAAP, Karnack, Texas	
3-7 Selection of Samples for Soil Scenarios – Site 35B, Group 4 RA, LHAAP, Karnack, Texas	
3-8 Selection of Samples for Soil Scenarios – Site 35C, Group 4 RA, LHAAP, Karnack, Texas	
3-9 Selection of Samples for Soil Scenarios – Site 46, Group 4 RA, LHAAP, Karnack, Texas	
3-10 Selection of Samples for Soil Scenarios – Site 47, Group 4 RA, LHAAP, Karnack, Texas	
3-11 Selection of Samples for Soil Scenarios – Site 48, Group 4 RA, LHAAP, Karnack, Texas	
3-12 Selection of Samples for Soil Scenarios – Site 50, Group 4 RA, LHAAP, Karnack, Texas	
3-13 Selection of Samples for Soil Scenarios – Site 60, Group 4 RA, LHAAP, Karnack, Texas	
3-14 Selection of Samples for Soil Scenarios – Site 67, Group 4 RA, LHAAP, Karnack, Texas	
3-15 Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake, Group 4 RA, LHAAP, Karnack, Texas	
3-16 Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake, Group 4 RA, LHAAP, Karnack, Texas	
3-17 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas	

LIST OF TABLES (continued)

No.	Page No.
3-18	2,3,7,8-TCDD Toxicity Equivalents Results for Groundwater Samples, Group 4 RA, LHAAP, Karnack, Texas
3-19	2,3,7,8-TCDD Toxicity Equivalents Results for Site 04 Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-20	2,3,7,8-TCDD Toxicity Equivalents Results for Site 08 Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-21	2,3,7,8-TCDD Toxicity Equivalents Results for Site 35A Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-22	2,3,7,8-TCDD Toxicity Equivalents Results for Site 35B Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-23	2,3,7,8-TCDD Toxicity Equivalents Results for Site 35C Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-24	2,3,7,8-TCDD Toxicity Equivalents Results for Site 46 Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-25	2,3,7,8-TCDD Toxicity Equivalents Results for Site 47 Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-26	2,3,7,8-TCDD Toxicity Equivalents Results for Site 48 Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-27	2,3,7,8-TCDD Toxicity Equivalents Results for Site 50 Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-28	2,3,7,8-TCDD Toxicity Equivalents Results for Site 60 Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-29	2,3,7,8-TCDD Toxicity Equivalents Results for Site 67 Soil Samples, Group 4 RA, LHAAP, Karnack, Texas
3-30	2,3,7,8-TCDD Toxicity Equivalents Results for Central Creek, Goose Prairie Creek, Saunder's Branch, and Caddo Lake Surface Water and Sediment Samples, Group 4 RA, LHAAP, Karnack, Texas
3-31	Summary of COPCs Selected for On-Site Groundwater, Group 4 RA, LHAAP, Karnack, Texas
3-32	Summary of COPCs Selected for Soil – Sites 04, 08, 35A, 35B, 35C, and 46, Group 4 RA, LHAAP, Karnack, Texas

LIST OF TABLES (continued)

No.	Page No.
3-33	Summary of COPCs Selected for Soil – Sites 47, 48, 50, 60, and 67, Group 4 RA, LHAAP, Karnack, Texas
3-34	Summary of COPCs Selected for Sediment and Surface Water in On-Site Waterways, Group 4 RA, LHAAP, Karnack, Texas
3-35	Summary of COPCs Selected for Sediment and Surface Water in Caddo Lake, Group 4 RA, LHAAP, Karnack, Texas
3-36	Summary of COPCs Selected for Fish Tissue in On-Site Waterways and Caddo Lake, Group 4 RA, LHAAP, Karnack, Texas
3-37	Scenarios to be Evaluated in the Group 4 BHHRA, Group 4 RA, LHAAP, Karnack, Texas
3-38	Exposure Point Concentrations (EPCs) for Site 04 Soil, Group 4 RA, LHAAP, Karnack, Texas
3-39	Exposure Point Concentrations (EPCs) for Site 08 Soil, Group 4 RA, LHAAP, Karnack, Texas
3-40	Exposure Point Concentrations (EPCs) for Site 35A Soil, Group 4 RA, LHAAP, Karnack, Texas
3-41	Exposure Point Concentrations (EPCs) for Site 35B Soil, Group 4 RA, LHAAP, Karnack, Texas
3-42	Exposure Point Concentrations (EPCs) for Site 35C Soil, Group 4 RA, LHAAP, Karnack, Texas
3-43	Exposure Point Concentrations (EPCs) for Site 46 Soil, Group 4 RA, LHAAP, Karnack, Texas
3-44	Exposure Point Concentrations (EPCs) for Site 47 Soil, Group 4 RA, LHAAP, Karnack, Texas
3-45	Exposure Point Concentrations (EPCs) for Site 48 Soil, Group 4 RA, LHAAP, Karnack, Texas
3-46	Exposure Point Concentrations (EPCs) for Site 50 Soil, Group 4 RA, LHAAP, Karnack, Texas
3-47	Exposure Point Concentrations (EPCs) for Site 60 Soil, Group 4 RA, LHAAP, Karnack, Texas
3-48	Exposure Point Concentrations (EPCs) for Site 67 Soil, Group 4 RA, LHAAP, Karnack, Texas

LIST OF TABLES (continued)

No.		Page No.
3-49	Exposure Point Concentrations (EPCs) for On-Site Groundwater, Sites 04, 08, 35A, 35B, 35C, and 46, Group 4 RA, LHAAP, Karnack, Texas	
3-50	Exposure Point Concentrations (EPCs) for On-Site Groundwater, Sites 47, 48, 50, and 67, Group 4 RA, LHAAP, Karnack, Texas	
3-51	Exposure Point Concentrations (EPCs) for Sediment in Central Creek, Saunder's Branch, and Goose Prairie Creek, Group 4 RA, LHAAP, Karnack, Texas	
3-52	Exposure Point Concentrations (EPCs) for Surface Water in Central Creek, Saunder's Branch, and Goose Prairie Creek, Group 4 RA, LHAAP, Karnack, Texas	
3-53	Exposure Point Concentrations (EPCs) for Sediment and Surface Water in Caddo Lake, Group 4 RA, LHAAP, Karnack, Texas	
3-54	Exposure Point Concentrations (EPCs) for Fish Tissue in Central Creek and Saunder's Branch, Group 4 RA, LHAAP, Karnack, Texas	
3-55	Exposure Point Concentrations (EPCs) for Fish Tissue in Goose Prairie Creek and Caddo Lake, Group 4 RA, LHAAP, Karnack, Texas	
3-56	Model for Calculating Intakes from Incidental Soil Ingestion, Group 4 RA, LHAAP, Karnack, Texas	
3-57	Model for Calculating Doses from Dermal Contact with Soil, Group 4 RA, LHAAP, Karnack, Texas	
3-58	Model for Calculating Intakes from the Inhalation of Particulates, Group 4 RA, LHAAP, Karnack, Texas	
3-59	Model for Calculating Intakes from the Inhalation of Volatile Emissions from Soil, Group 4 RA, LHAAP, Karnack, Texas	
3-60	Model for Calculating Intakes from Drinking Water Ingestion, Group 4 RA, LHAAP, Karnack, Texas	
3-61	Model for Calculating Intakes from Inhalation of Volatiles Through Noningestion Water Use, Group 4 RA, LHAAP, Karnack, Texas	
3-62	Model for Calculating Doses from Dermal Contact with Water, Group 4 RA, LHAAP, Karnack, Texas	
3-63	Model for Calculating Intakes from Incidental Surface Water Ingestion While Swimming, Group 4 RA, LHAAP, Karnack, Texas	
3-64	Model for Calculating Intakes from Incidental Sediment Ingestion, Group 4 RA, LHAAP, Karnack, Texas	

LIST OF TABLES (continued)

No.	Page No.
3-65	Model for Calculating Doses from Dermal Contact with Sediment, Group 4 RA, LHAAP, Karnack, Texas
3-66	Model for Calculating Intakes from the Ingestion of Recreationally-Caught Fish, Group 4 RA, LHAAP, Karnack, Texas
3-67	Listing of Chemical Specific Values Used in the BHHRA, Group 4 RA, LHAAP, Karnack, Texas
3-68	Cancer Toxicity Data – Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas
3-69	Cancer Toxicity Data – Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas
3-70	Non-Cancer Toxicity Data – Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas
3-71	Non-Cancer Toxicity Data – Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas
3-72	Summary of Hazard Indices and Carcinogenic Risks, Group 4 RA, LHAAP, Karnack, Texas
3-73	Summary of Chemicals and Exposure Routes Exceeding a Carcinogenic Risk of 1E-06, Group 4 RA, LHAAP, Karnack, Texas
3-74	Summary of Chemicals and Exposure Routes Exceeding a Hazard Index of 1, Group 4 RA, LHAAP, Karnack, Texas
3-75	Summary of Uncertainty Analysis, Group 4 RA, LHAAP, Karnack, Texas
3-76	RGOs for Soil and Groundwater, Group 4 RA, LHAAP, Karnack, Texas
3-77	RGOs for Surface Water, Sediment, and Fish, Group 4 RA, LHAAP, Karnack, Texas
4-1	Background Soil Data Comparison, Group 4 RA, LHAAP, Karnack, Texas
4-2	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 04 Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-3	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 08 Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-4	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 35A Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-5	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 35B Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas

LIST OF TABLES (continued)

No.	Page No.
4-6	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 35C Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-7	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 46 Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-8	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 47 Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-9	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 48 Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-10	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 50 Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-11	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 60 Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-12	Comparison of Maximum Detections to Soil Screening Benchmarks for COPCs in Site 67 Soil (0–5 Feet), Group 4 RA, LHAAP, Karnack, Texas
4-13	Comparison of Maximum Detections to Surface Water Benchmarks for COPCs in Site 35A Surface Water, Group 4 RA, LHAAP, Karnack, Texas
4-14	Comparison of Maximum Detections to Surface Water Benchmarks for COPCs in Site 46 Surface Water, Group 4 RA, LHAAP, Karnack, Texas
4-15	Comparison of Maximum Detections to Surface Water Benchmarks for COPCs in Site 50 Surface Water, Group 4 RA, LHAAP, Karnack, Texas
4-16	Comparison of Maximum Detections to Surface Water Benchmarks for COPCs in Goose Prairie Creek Surface Water, Group 4 RA, LHAAP, Karnack, Texas
4-17	Comparison of Maximum Detections to Surface Water Benchmarks for COPCs in Central Creek Surface Water, Group 4 RA, LHAAP, Karnack, Texas
4-18	Comparison of Maximum Detections to Surface Water Benchmarks for COPCs in Saunder's Branch Surface Water, Group 4 RA, LHAAP, Karnack, Texas
4-19	Comparison of Maximum Detections to Sediment Benchmarks for Site 35A Sediment, Group 4 RA, LHAAP, Karnack, Texas
4-20	Comparison of Maximum Detections to Sediment Benchmarks for Site 46 Sediment, Group 4 RA, LHAAP, Karnack, Texas
4-21	Comparison of Maximum Detections to Sediment Benchmarks for Site 50 Sediment, Group 4 RA, LHAAP, Karnack, Texas

LIST OF TABLES (continued)

No.	Page No.
4-22	Comparison of Maximum Detections to Sediment Benchmarks for Goose Prairie Creek Sediment, Group 4 RA, LHAAP, Karnack, Texas
4-23	Comparison of Maximum Detections to Sediment Benchmarks for Central Creek Sediment, Group 4 RA, LHAAP, Karnack, Texas
4-24	Comparison of Maximum Detections to Sediment Benchmarks for Saunder's Branch Sediment, Group 4 RA, LHAAP, Karnack, Texas
4-25	Comparison of Maximum Detections to Sediment Benchmarks for Caddo Lake Sediment, Group 4 RA, LHAAP, Karnack, Texas
4-26	Summary of Ecological Constituents of Concern at Site 04 Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-27	Summary of Ecological Constituents of Concern at Site 08 Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-28	Summary of Ecological Constituents of Concern at Site 35A Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-29	Summary of Ecological Constituents of Concern at Site 35B Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-30	Summary of Ecological Constituents of Concern at Site 35C Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-31	Summary of Ecological Constituents of Concern at Site 46 Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-32	Summary of Ecological Constituents of Concern at Site 47 Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-33	Summary of Ecological Constituents of Concern at Site 48 Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-34	Summary of Ecological Constituents of Concern at Site 50 Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-35	Summary of Ecological Constituents of Concern at Site 60 Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-36	Summary of Ecological Constituents of Concern at Site 67 Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas
4-37	Summary of Ecological Constituents of Concern at Goose Prairie Creek Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas

LIST OF TABLES (continued)

No.		Page No.
4-38	Summary of Ecological Constituents of Concern at Central Creek Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas	
4-39	Summary of Ecological Constituents of Concern at Saunder's Branch Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas	
4-40	Summary of Ecological Constituents of Concern at Caddo Lake Based on Benchmark Evaluation or Due to Bioaccumulation Potential, Group 4 RA, LHAAP, Karnack, Texas	
4-41	TCEQ List of Bioaccumulative Constituents of Concern, Group 4 RA, LHAAP, Karnack, Texas	
4-42	Vegetation Types at LHAAP, Group 4 RA, LHAAP, Karnack, Texas	
4-43	Mammals Present or Potentially Present at LHAAP, Group 4 RA, LHAAP, Karnack, Texas	
4-44	Birds Present or Potentially Present at LHAAP, Group 4 RA, LHAAP, Karnack, Texas	
4-45	Amphibians Present or Potentially Present at LHAAP, Group 4 RA, LHAAP, Karnack, Texas	
4-46	Reptiles Present or Potentially Present at LHAAP, Group 4 RA, LHAAP, Karnack, Texas	
4-47	Federal and State Listings of Endangered and Threatened Species at LHAAP, Group 4 RA, LHAAP, Karnack, Texas	
4-48	Characterization of Indicator Species, Group 4 RA, LHAAP, Karnack, Texas	
4-49	Exposure Parameters for Indicator Species, Group 4 RA, LHAAP, Karnack, Texas	
4-50	Reported Soil/Sediment Ingestion Rates for Indicator and Surrogate Species, Group 4 RA, LHAAP, Karnack, Texas	
4-51	Dietary Uptake Factors for Terrestrial Indicator Species, Group 4 RA, LHAAP, Karnack, Texas	
4-52	Dietary Uptake Factors for Aquatic Indicator Species, Group 4 RA, LHAAP, Karnack, Texas	
4-53	Summary of Toxicity Factors for Indicator Species, Group 4 RA, LHAAP, Karnack, Texas	
4-54	Summary of Hazard Indices for Indicator Species, Group 4 RA, LHAAP, Karnack, Texas	

LIST OF TABLES (continued)

No.		Page No.
5-1	Summary of Hazard Indices and Carcinogenic Risks, Group 4 RA, LHAAP, Karnack, Texas	5-2
5-2	Summary of Ecological Constituents of Concern at Site 04 Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-6
5-3	Summary of Ecological Constituents of Concern at Site 08 Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-7
5-4	Summary of Ecological Constituents of Concern at Site 35A, Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-10
5-5	Summary of Ecological Constituents of Concern at Site 35B Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-11
5-6	Summary of Ecological Constituents of Concern at Site 35C Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-13
5-7	Summary of Ecological Constituents of Concern at Site 46 Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-15
5-8	Summary of Ecological Constituents of Concern at Site 47 Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-16
5-9	Summary of Ecological Constituents of Concern at Site 48 Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-18
5-10	Summary of Ecological Constituents of Concern at Site 50 Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-19
5-11	Summary of Ecological Constituents of Concern at Site 60 Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-22
5-12	Summary of Ecological Constituents of Concern at Site 67 Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-23

LIST OF TABLES (continued)

No.		Page No.
5-13	Summary of Ecological Constituents of Concern at Central Creek Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-24
5-14	Summary of Ecological Constituents of Concern at Saunder's Branch Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-26
5-15	Summary of Ecological Constituents of Concern at Goose Prairie Creek Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-28
5-16	Summary of Ecological Constituents of Concern at Caddo Lake Based on Benchmark Evaluation, Bioaccumulation Potential, or Food Web Model, Group 4 RA, LHAAP, Karnack, Texas	5-30

LIST OF FIGURES

<u>No.</u>		<u>Page No.</u>
1-1	Location Map.....	1-2
1-2	Site Locations	1-5
2-1	Site 04 Sampling Locations	2-3
2-2	Site 08 Sampling Locations	2-5
2-3	Site 35A Sampling Locations	2-8
2-4	Site 35B Sampling Locations	2-14
2-5	Site 35C Sampling Locations	2-18
2-6	Site 46 Sampling Locations	2-25
2-7	Site 47 Sampling Locations	2-31
2-8	Site 48 Sampling Locations	2-39
2-9	Site 50 Sampling Locations	2-44
2-10	Site 60 Sampling Locations	2-49
2-11	Site 67 Sampling Locations	2-51
2-12	Goose Prairie Creek/Caddo Lake 2000 Sediment Sampling Locations	2-55
2-13	Goose Prairie Creek Sampling Locations	2-57
2-14	Goose Prairie Creek Geoprobe Locations.....	2-61
3-1	Schematic of the Human Health Risk Assessment Process	3-4
3-2	Human Health Site Conceptual Model	3-23
4-1	Site Conceptual Model for the Aquatic Ecosystem.....	4-10
4-2	Site Conceptual Model for the Terrestrial Ecosystem.....	4-11

LIST OF ACRONYMS AND ABBREVIATIONS

ABS	absorption factor
ABSgi	gastrointestinal absorption factor
ALM	adult lead method
ARAR	applicable or relevant and appropriate requirement
Army	U.S. Department of the Army
AST	above ground storage tank
BAF	bioaccumulation factor
BCF	bioconcentration factor
bgs	below ground surface
BHC	benzene hexachloride
BHHRA	baseline human health risk assessment
BSAF	biota-to-sediment accumulation factor
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	contaminant of concern
COPC	contaminant of potential concern
CSF	cancer slope factor
DRO	diesel range organics
EDI	estimated daily intake
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
EPS	Environmental Protection Systems, Inc.
ERA	ecological risk assessment
FDA	U.S. Food and Drug Administration
FFA	Federal Facility Agreement
GRO	gasoline range organics
GW-Ind	groundwater-industrial
GW-Res	groundwater-residential
GWP-Ind	Industrial Groundwater Protection Standards
HI	hazard index
HQ	hazard quotient
IDL	instrument detection limit
IEUBK	Integrated Exposure Uptake Biokinetic Model
IRIS	Integrated Risk Information System
IRM	Interim Remedial Measures
ITS-ENV	Intertek Testing Services Environmental Laboratories, Inc.
Jacobs	Jacobs Engineering Group Inc.
LHAAP	Longhorn Army Ammunition Plant
LLD	lower limits of detection
LOAEL	lowest-observed-adverse-effect level
MCL	maximum contaminant level
MDL	method detection limit
MRL	minimal risk level
MSC	medium-specific concentration
NCEA	National Center for Environmental Assessment
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NGVD29	National Geodetic Vertical Datum 1929
NOAEL	no-observed-adverse-effect level

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

NPL	National Priorities List
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PEF	particulate emission factor
PQL	practical quantitation limit
PRG	preliminary remediation goal
RA	risk assessment
RAGS	Risk Assessment Guidance for Superfund
RBSV	risk-based screening value
RDX	cyclonite
RfC	reference concentration
RfD	reference dose
RGO	remedial goal option
RI	remedial investigation
RME	reasonable maximum exposure
RS-ESL	remediation-specific effects screening levels
RTV	reference toxicity value
SAI-Ind	soil to air ingestion-industrial
SAI-Res	soil to air ingestion-residential
SCAPS	Site Characterization and Analysis Penetrometer System
SDWA	Safe Drinking Water Act
SI	site investigation
SQL	sample quantitation limit
STP	Sewage Treatment Plant
Sverdrup	Sverdrup Environmental, Inc.
SVOC	semivolatile organic compound
TCDD	tetrachlorodibenzo-p-dioxin
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TEF	toxicity equivalency factor
TNT	trinitrotoluene
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TSWQS	Texas surface water quality standards
TWQS	Texas Water Quality Standards
UCL	upper confidence limit
UF	uptake factor
URF	unit risk factor
USACE	U.S. Army Corps of Engineers
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
UTL	upper tolerance limit
VOC	volatile organic compound
WES	Waterways Experiment Station
Weston	Roy F. Weston, Inc.

EXECUTIVE SUMMARY

This risk assessment (RA) report presents the results of the baseline human health risk assessment (BHHRA) and a screening ecological risk assessment (ERA) for the Group 4 Sites (04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, 67) and Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. The objective of the Group 4 RA is to identify and estimate the potential human health risk and identify potential ecological contaminants of concern associated with chemical contamination at the Group 4 Sites in the absence of any remediation. Risks are characterized separately for each Group 4 Site. The risks are calculated for each site individually.

A listing of the Group 4 Site acreages (approximate) compared to the entire LHAAP facility, which encompasses 8,493 acres, is given below:

- Site 04—1.4 acres
- Site 08—2 acres
- Site 35A—15 acres
- Site 35B—8 acres
- Site 35C—26 acres
- Site 46—190 acres
- Site 47—275 acres
- Site 48—16 acres
- Site 50—1 acre
- Site 60—<1 acre
- Site 67—12 acres

The *Group 4 Baseline Risk Assessment Work Plan* (Group 4 Work Plan) was prepared in September 1997. Specific methodologies presented in the Group 4 Work Plan for conducting the BHHRA at LHAAP were updated and superseded by those finalized in the *Final Group 2 Baseline Risk Assessment Work Plan* (Group 2 Work Plan) (Weston 1998). As such, the methodologies presented in the Group 2 Work Plan apply to the Group 4 Sites. The Group 2 Work Plan was prepared following U.S. Environmental Protection Agency (EPA) specifications and was planned for use as the primary guidance for the Group 4 RAs. However, the Texas Commission on Environmental Quality (TCEQ) expressed concerns over the methodologies presented in the Group 2 Work Plan. To address TCEQ's concerns, a combination of the TCEQ Consistency Memorandum and the Group 2 Work Plan was used to complete the Group 4 RAs (TCEQ 1998; Weston 1998). This combined approach was discussed in the Method of Accomplishment memorandum prepared by Jacobs Engineering Group Inc. (Jacobs 2001a).

The BHHRA portion of the report considers data evaluation, exposure assessment, toxicity assessment, and risk characterization. The selected on-site receptors of concern are current trespassers and future

maintenance workers. On-site exposure pathways evaluated for soil are ingestion, dermal absorption, and inhalation of dust and vapors. On-site exposure pathways evaluated for groundwater are ingestion, dermal contact while showering, and inhalation of vapors while showering. On-site exposure pathways for surface water and sediment in the on-site waterways are dermal contact with surface water and sediment, incidental ingestion of sediment, and ingestion of recreationally-caught fish. The selected off-site receptors of concern are adult and child residents. Off-site exposure pathways evaluated for surface water and sediment in Caddo Lake include use of surface water as a domestic water supply and recreational contact with the lake. Exposure through household water use is assumed to occur through drinking water ingestion and non-ingestion household water use (i.e., showering). Recreational use of Caddo Lake (swimming and fishing) is assumed to include incidental surface water ingestion, dermal contact with surface water, incidental sediment ingestion, dermal contact with sediment, and ingestion of recreationally-caught fish. The fish ingestion pathway is evaluated based on modeled concentrations of the constituents in fish. Surface water data for Caddo Lake were evaluated as part of the Group 2 BHHRA.

Noncancer hazard indices (HIs) and cancer risks are calculated for each receptor group. Hazards and risks to the current trespasser are found to be at acceptable levels (HI less than 1.0; cancer risks less than 1×10^{-4}) for all sites. Noncancer HIs at Central Creek, Saunder's Branch, and Goose Prairie Creek exceed unity, and cancer risks at these waterways exceed the EPA benchmark of 1×10^{-4} as shown in Table ES-1. Cancer risks for the current trespasser from these waterways are primarily associated with ingestion of fish containing arsenic and 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). Noncancer hazards for the current trespasser are primarily associated with ingestion of fish containing aluminum, arsenic, cadmium, and manganese from these waterways.

Noncancer HIs for the future maintenance worker exceed unity at Sites 35A, 35B, 35C, 46, 47, 48, 50, and 67 as shown in Table ES-1. Noncancer hazards for the future maintenance worker are primarily associated with perchlorate, chloroform, 1,1-dichloroethene, tetrachloroethene, trichloroethene, antimony, and thallium in groundwater. Cancer risks for the future maintenance worker exceed 1×10^{-4} at Sites 35A, 35B, 47, 48, 50, and 67. Cancer risks are primarily associated with chloroform, 1,1-dichloroethene, tetrachloroethene, trichloroethene, vinyl chloride, and 2,3,7,8-TCDD in groundwater.

Hazards and risks to the future off-site resident at Caddo Lake are acceptable for household water use and recreational swimming (Group 2 BHHRA). Noncancer HIs for future recreational fishing (fish ingestion) exceed unity and are primarily associated with aluminum, arsenic, manganese, and thallium. Cancer risks for future recreational fishing (fish ingestion) exceed 1×10^{-4} from 2,3,7,8-TCDD, carcinogenic polycyclic aromatic hydrocarbons (PAHs), and arsenic.

Table ES-1
Summary of Hazard Indices and Carcinogenic Risks, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Total Hazard Index	Total Cancer Risk
Site 04		
Current trespasser	0.03	9.7×10^{-8}
Future maintenance worker	0.46	4.6×10^{-5}
Site 08		
Current trespasser	0.005	1.4×10^{-8}
Future maintenance worker	0.24	7.3×10^{-5}
Site 35A		
Current trespasser	0.05	1.5×10^{-6}
Future maintenance worker	38	1.6×10^{-2}
Site 35B		
Current trespasser	0.02	3.8×10^{-7}
Future maintenance worker	16	5.8×10^{-4}
Site 35C		
Current trespasser	0.007	9.9×10^{-7}
Future maintenance worker	22	9.1×10^{-5}
Site 46		
Current trespasser	0.008	1.2×10^{-6}
Future maintenance worker	31	5.7×10^{-5}
Site 47		
Current trespasser	0.07	1.4×10^{-6}
Future maintenance worker	112	7.1×10^{-3}
Site 48		
Current trespasser	0.01	1.1×10^{-6}
Future maintenance worker	36	1.4×10^{-4}
Site 50		
Current trespasser	0.005	4.8×10^{-8}
Future maintenance worker	305	5.5×10^{-3}
Site 60		
Current trespasser	0	2.5×10^{-8}
Future maintenance worker	0.03	2.9×10^{-7}
Site 67		
Current trespasser	0	2.4×10^{-8}
Future maintenance worker	4.1	3.1×10^{-3}
Central Creek		
Current trespasser	10	1.6×10^{-4}
Saunders' Branch		
Current trespasser	8.2	4.6×10^{-4}
Goose Prairie Creek		
Current trespasser	14	3.0×10^{-4}
Caddo Lake		
Future child resident	855	4.5×10^{-3}
Future adult resident	366	7.6×10^{-3}
Combined future child and adult	NA	1.2×10^{-2}

LHAAP = Longhorn Army Ammunition Plant

NA = not available, child and adult noncancer hazard indices cannot be combined.

RA = risk assessment

Caddo Lake has the greatest noncarcinogenic HI. Ingestion of recreationally-caught fish generate HIs of 855 and 366 for the child and adult resident, respectively. Manganese contributes the majority of the HI for both the child and adult resident (approximately 92 percent). Site 35A has the greatest carcinogenic risk for the future maintenance worker. Groundwater exposure routes account for over 99 percent of the overall risk generating a carcinogenic risk of 1.6×10^{-2} . 1,1-Dichloroethene and tetrachloroethene account for the majority of the risk (67.9 and 31.2 percent, respectively).

The screening ERA portion of the report consists of data analysis, characterization of potential ecological receptors and estimates of exposure, characterization of ecological toxicity, and risk characterization. Screening level ecological risks are characterized for each site by identifying those contaminants that either were detected at concentrations exceeding the benchmark screening levels or that had estimated daily intakes greater than available reference toxicity values.

To conduct the screening, the data for the Group 4 Sites are reviewed and contaminants of potential concern (COPCs) are identified. Maximum detected concentrations of contaminants in soil, surface water, and sediments are compared to the appropriate ecological benchmarks. For soil, TCEQ ecological soil screening benchmarks for soil invertebrates (earthworms) and plants are used. For water, TCEQ ecological benchmarks for freshwater systems are selected. Screening levels for sediment are based on TCEQ ecological benchmarks for freshwater sediment. Constituents identified in background samples are not eliminated as COPCs in this screening evaluation. The results of the direct toxicity screen are the lists of COPCs selected for each media based on the benchmark comparison. The identified COPCs for soil, surface water, and sediment include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), inorganic compounds, pesticides/herbicides, polychlorinated biphenyls (PCBs), PAHs, dioxins/furans, explosives, and perchlorate.

For the Group 4 Sites, the exposure assessment consists of the characterization of potential ecological receptors and the development of estimates of exposure. LHAAP contains a wide diversity of vegetation and habitats and is characterized by terrestrial and aquatic habitats. The terrestrial Indicator Species selected for the Group 4 screening ERA include the northern bobwhite, American woodcock, short-tailed shrew, white-footed mouse, and red-tailed hawk. The aquatic Indicator Species selected for the Group 4 screening ERA include the belted kingfisher, osprey, alligator snapping turtle, and river otter. Exposures to the terrestrial and aquatic Indicator Species are evaluated through the use of a food web model that considers the intake of COPCs from soil, sediment, water, and food. Concentrations of the COPCs in various food items are determined from dietary uptake factors in the form of bioconcentration factors and bioaccumulation factors. In addition, an indirect sediment exposure evaluation is conducted.

As shown on Table ES-2, the HIs for one or more terrestrial indicator species exceed unity at all sites and water bodies, with the largest HI values at Sites 46 and 47. The contaminants associated with the highest HIs for the terrestrial species include aluminum, arsenic, barium, cadmium, chromium, lead, mercury, selenium, thallium, vanadium, and zinc. All of the HIs for the terrestrial Indicator Species for the waterways are below unity; the HIs for one or more aquatic Indicator Species exceeds unity at Sites 35A,

Table ES-2
Summary of Hazard Indices for Indicator Species, Group 4 RA, LHAAP, Karnack, Texas

Group 4 Site	Hazard Indices ^a										
	Terrestrial Indicator Species					Aquatic Indicator Species					
	American Woodcock	Short-Tailed Shrew	White-Footed Mouse	Red-Tailed Hawk	Northern Bobwhite	Belted Kingfisher	Osprey	River Otter	Alligator Snapping Turtle		
Site 04	121	639	31	1	35	-- ^b	--	--	--		
Site 08	370	650	34	0.9	113	--	--	--	--		
Site 35A	1,269	893	63	1.5	831	13	1.6	160	17		
Site 35B	154	674	33	1.1	35	--	--	--	--		
Site 35C	171	852	41	0.96	38	--	--	--	--		
Site 46	443	1,481	94	2.7	142	538	65	370	62		
Site 47	635	1,553	86	2.6	249	--	--	--	--		
Site 48	242	742	43	1.9	72	--	--	--	--		
Site 50	52	405	21	0.9	24	79	9.5	230	19		
Site 60	61	206	10	0.7	46	--	--	--	--		
Site 67	61	568	28	1.1	34	--	--	--	--		
Goose Prairie Creek	0.07	0.5	0.6	0.04	0.1	98	12	380	26		
Central Creek	0.01	0.2	0.2	0.002	0.01	11	1.3	13	5.2		
Saunders Branch	0.004	0.1	0.1	0.002	0.01	8	1.0	14	3.5		
Caddo Lake	--	--	--	--	--	57	6.9	42	26		

^aSee Appendices D and E for calculation of HQs and HIs. An HI is the sum of chemical-specific HQs for each species.

^bDashes indicate that the associated receptor was not relevant for the associated site.

HI = hazard index

HQ = hazard quotient

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

46, 50, Goose Prairie Creek, Central Creek, Saunder's Branch, and Caddo Lake. The largest HIs for aquatic indicator species generated through the food web model are generally associated with Site 46. The contaminants associated with the highest HIs for the aquatic species include aluminum, arsenic, chromium, copper, lead, selenium, vanadium, and zinc.

The results from the Group 4 BHHRA will be used to help focus the feasibility study for the Group 4 Sites. The results of the screening ERA correspond with Steps 1 and 2 of the Superfund ERA process. The results indicate that the ERA process should proceed to the equivalent of Step 3 of the Superfund ERA process, the scoping phase of a baseline assessment. This will be completed as part of a future LHAAP site-wide baseline ERA.

1.0 INTRODUCTION

1.1 OBJECTIVES

This risk assessment (RA) report presents the results of the Baseline Human Health Risk Assessment (BHHRA) and a screening ecological risk assessment (ERA) for the Group 4 Sites (04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, and 67), Goose Prairie Creek, Saunder's Branch, Central Creek, and Caddo Lake located at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. The RA was conducted under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the U.S. Department of the Army (Army). The RA activities were performed for the Tulsa District of the U.S. Army Corps of Engineers (USACE), Tulsa, Oklahoma (Contract DACA56-97-D-0001) by Jacobs Engineering Group Inc. (Jacobs); its subconsultant, Brown and Caldwell, Nashville, Tennessee; and subconsultant Roy F. Weston, Inc. (Weston), Houston, Texas.

The objectives of the Group 4 RA are to identify and estimate the potential human health risk associated with chemical contamination at the Group 4 Sites, Goose Prairie Creek, Saunder's Branch, Central Creek, and Caddo Lake in the absence of any remedial action. The results from the screening ERA will be used to focus a future site-wide ERA to be conducted at LHAAP.

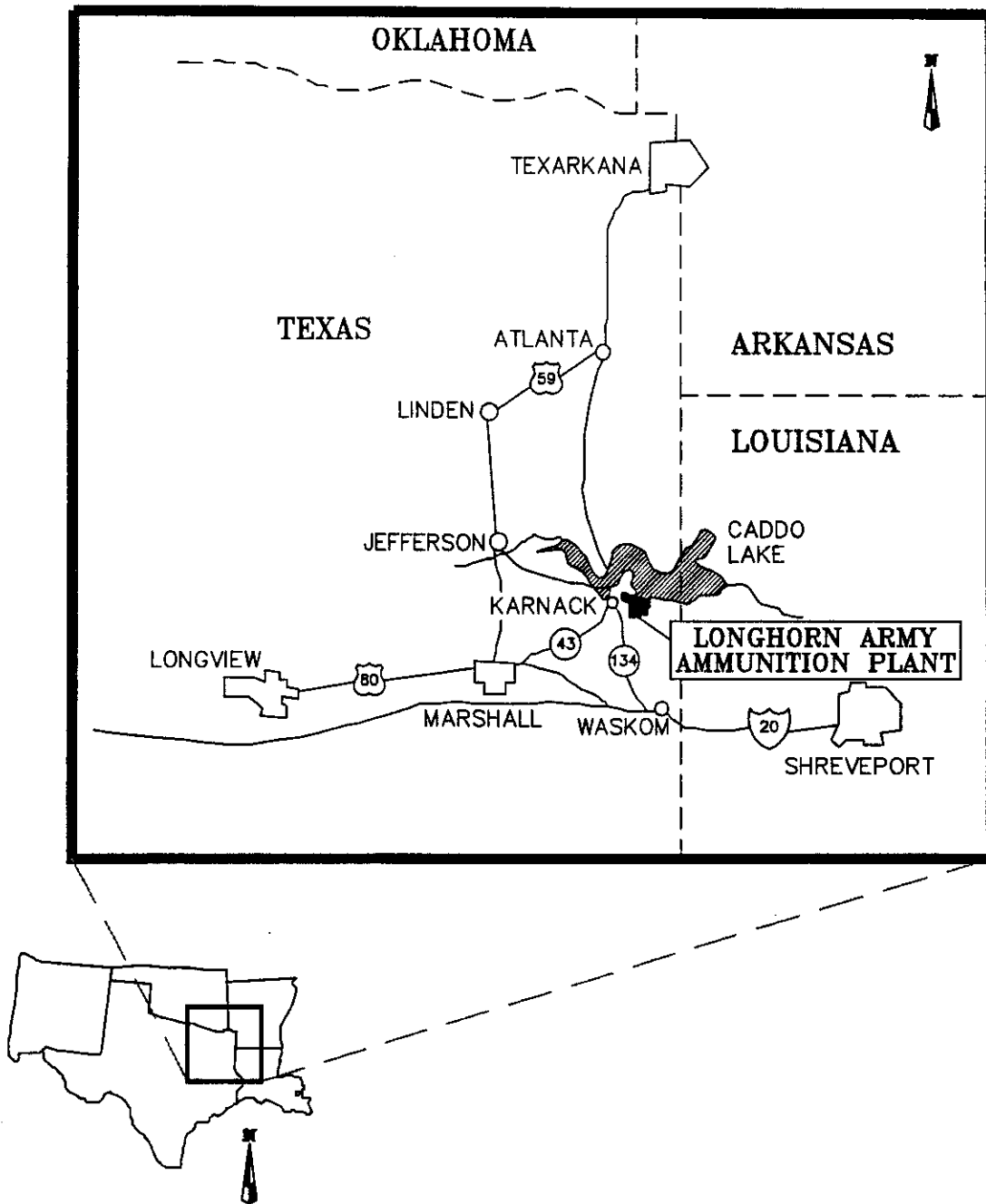
The RA was conducted as specified in the Jacobs Method of Accomplishment memorandum (Jacobs 2001a) that cited guidance from the Texas Commission on Environmental Quality (TCEQ) (previously known as the Texas Natural Resource Conservation Commission) Consistency Memorandum (TCEQ 1998) and the September 1998 *Final Group 2 Baseline Risk Assessment Work Plan* (Group 2 Work Plan) (Weston 1998). The risk assessment approach is discussed in more detail in Section 3.1.

1.2 FACILITY DESCRIPTION

This section describes the location and history of LHAAP. A discussion of the climate, topography, surface hydrology, geology, and hydrogeology for the facility and site-specific descriptions and historical summaries for each of the Group 4 Sites are also included. The sources of information for this section are predominantly the Group 4 Final Remedial Investigation (RI) Report and RI Addendum; therefore, these documents should be consulted for additional detail (Jacobs 2002a and 2002b).

1.2.1 Facility Location and History

LHAAP is a formerly government-owned, contractor-operated-and-maintained industrial facility under the jurisdiction of the Army Operations Support Command. Currently no operating contractor is present at the LHAAP installation. A site location map is presented in Figure 1-1. The installation is located in central eastern Texas in the northeastern corner of Harrison County. The facility occupies 8,493 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately



US Army Corps
of Engineers
Tulsa District

JE JACOBS

Location Map
Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Karnack, Texas

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Figure 1-1

40 miles to the east. Caddo Lake is a large freshwater lake situated on the Texas-Louisiana state line that bounds LHAAP to the north and east. Caddo Lake is approximately 51 square miles in size. The eastern fence of LHAAP is 3.5 miles from the Texas-Louisiana state border. The incorporated community of Uncertain, Texas, and the unincorporated community of Karnack, Texas, are located immediately north and west of the installation boundary, respectively. The remaining surrounding area is referred to as the Pineywoods of East Texas and is sparsely populated.

LHAAP was established in October 1942 with the primary mission to produce 2,4,6-trinitrotoluene (TNT) flake (Plant 1 Area). TNT is a yellow, odorless solid that does not occur naturally in the environment. It is an explosive used in military shells, bombs, and grenades, for industrial uses, and for underwater blasting. Monsanto Chemical Company was the first manufacturing contractor-operator of the plant. TNT flake production continued through World War II until August 1945, when Monsanto Chemical Company's role ended, and the plant went on standby status until February 1952. From 1952 until 1956, Universal Match Corporation was the contractor-operator, producing such pyrotechnic ammunition as photoflash bombs, simulators, hand signals, and 40-mm tracers. The Plant 2 area was reportedly the main site of the pyrotechnic operations at LHAAP. During November 1955, Thiokol Corporation began operation of the rocket motor facility (Plant 3 Area). Thiokol Corporation assumed responsibility for total operation of the plant with the departure of Universal Match Corporation in 1956. Production of rocket motors continued as the primary operation at LHAAP until 1965 when the production of pyrotechnic and illuminating ammunition was reestablished. The Thiokol Corporation status as contractor-operator was terminated in June 1996.

From September 1988 to May 1991, the installation was also used for the static firing and elimination of Pershing I and II rocket motors. This was done in compliance with the Intermediate-Range Nuclear Force Treaty in effect between the United States and the former Union of Soviet Socialist Republics.

LHAAP was placed on the National Priorities List (NPL) August 30, 1990. After being listed on the NPL, LHAAP, the U.S. Environmental Protection Agency (EPA), and the Texas Water Commission (now the TCEQ) entered into a CERCLA Section 120 Agreement for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective December 30, 1991.

In October 1996, approximately 1,435 acres surrounding Harrison Bayou were leased to the Caddo Lake Institute for biological and ecological studies by local schools. The plant became inactive and excess to the Army's needs in July 1997. In July 1998, the Army contracted with Earth Tech to liquidate the salvageable property.

1.2.2 Climate

LHAAP is situated near the unincorporated community of Karnack, Texas, located in the northeastern region of the state, and is approximately 32 degrees north of the equator. This geographical location produces mild winters and hot summers, with an average relative humidity of 55 percent. In winter, the

average temperature is 46 degrees, Fahrenheit (°F) and the average daily minimum temperature is 35°F. In summer, the average temperature is 81°F and the average daily maximum temperature is 92°F. Precipitation is uniformly distributed throughout the year, although summer and fall are frequently drought seasons and December through May are often the wettest months. The total average annual precipitation is 46.9 inches. Snowfalls are infrequent, with an average seasonal snowfall of 1.5 inches.

1.2.3 Topography

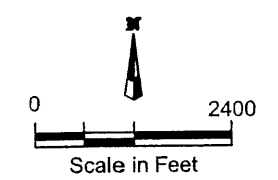
LHAAP is characterized by mixed pine-hardwood forests covering gently rolling to hilly terrain that has an average slope of 3 percent toward the northeast. Most of the terrain at LHAAP has slopes of 3 percent or less, but slopes as steep as 12 percent are common in the western and northwestern portions of the installation and along the Harrison Bayou floodplain. Land surrounding the facility is a mixture of forest and agricultural land. Ground surface elevations at LHAAP vary from 170 to 335 feet at National Geodetic Vertical Datum 1929 (NGVD29). Surface water from LHAAP drains to the northeast into Caddo Lake through Saunder's Branch, Harrison Bayou, Central Creek, and Goose Prairie Creek.

1.2.4 Surface Hydrology

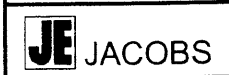
Surface water at LHAAP drains northeastwardly into Caddo Lake through four drainage systems: Saunder's Branch, Harrison Bayou, Central Creek, and Goose Prairie Creek (shown on Figure 1-2) (Jacobs 2002a). Caddo Lake is a part of Big Cypress Bayou. The boundary of the plant along Caddo Lake is determined by the 169.27-foot lake elevation. Saunder's Branch of Martin's Creek flows onto LHAAP near the southeastern corner of the installation and flows northward into Caddo Lake. Approximately 11 percent of the heavily wooded eastern section of the plant is drained by this system. Harrison Bayou enters LHAAP on the southern edge of the installation. The Bayou carries 30 percent of the surface drainage of LHAAP and bisects the installation in a northeasterly direction. Central Creek enters LHAAP on its western edge just south of the town of Karnack, Texas. Approximately 29 percent of the surface drainage from the installation is carried to Caddo Lake via Central Creek. The headwaters of Goose Prairie Creek are located near the northwestern corner of the plant and consist of one larger creek and several smaller tributaries. Goose Prairie Creek flows across the northern edge of the installation and drains approximately 30 percent of LHAAP.

First created by a natural logjam on Big Cypress Bayou before recorded history, Caddo Lake is currently sustained by Caddo Dam in Caddo Parish, Louisiana. The original dam was constructed in 1914 for local navigation purposes and was reconstructed in 1971. The spillway elevation of the lake is 168.9 feet. Twelve Mile Bayou resumes east of Caddo Lake and joins the Red River at Shreveport, Louisiana. The Red River flows southeast across Louisiana and joins the Mississippi River at Simmesport, Louisiana.

--- Site Boundary



US Army Corps
of Engineers
Tulsa District



Site Locations
Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Kamack, Texas

11 September 02
Fig_1-2.dwg

Figure 1-2



032942

1.2.5 Geology

The subsurface geology at LHAAP consists primarily of a thin veneer of Quaternary alluvium mantling Tertiary Age formations of the Wilcox and Midway Groups. Underlying these are Cretaceous Age formations of the Navarro and Taylor Groups.

The stratigraphic thickness of the Wilcox Group formation ranges from a maximum 350 feet in the northwestern corner of LHAAP to approximately 130 to 140 feet along the eastern side of the facility near Caddo Lake. The Wilcox Group formation constitutes the majority of the unconsolidated sediments underlying the LHAAP facility. This formation consists of interbedded fine- to medium-grained sand, silt, and clay that is light gray, red, brown, and/or tan and contains occasional seams of lignite. This Eocene Series undifferentiated formation was deposited in a regressive fluvial-deltaic and transgressive marine environment that leads to considerable heterogeneity across the facility (Jacobs 2002a).

According to boring logs generated during monitoring well construction, the unconsolidated sediments of the Wilcox Group formation typically consist of a series of three sandy water-bearing zones separated by silty clay, semiconfining layers. The uppermost portion of the Wilcox Group formation at LHAAP consists of medium plastic sandy silts and clays ranging in thickness from approximately 5 to 15 feet. These surficial sediments are underlain by the first or shallow saturated sand zone, which ranges in thickness from 10 to 20 feet. This sand zone consists of silty fine sand containing some silt and clay lenses and is at first dry to moist and then generally becomes saturated at 15 to 20 feet below ground surface (bgs). A 5- to 20-foot-thick medium to highly plastic silt and clay layer underlies the shallow saturated sand zone. An intermediate saturated sand zone, consisting of a fine to medium silty sand, is then encountered below the semiconfining layer at 30 to 50 feet bgs. The intermediate saturated sand zone is generally less silty than the shallow saturated sand zone and exhibits a higher hydraulic conductivity.

A silt to silty clay layer is encountered beneath the intermediate saturated sand zone and ranges in thickness from 5 to 30 feet. Underlying this silt to silty clay layer, a massive homogeneous silty, clayey, fine sand is encountered at depth and continues to the top of the underlying Midway Group formation.

The Midway Group formation that underlies the Wilcox Group formation is generally encountered at approximately 200 to 300 feet bgs and is a Tertiary, thick, calcareous to noncalcareous clay containing some sand. The exact thickness of the Midway Group formation is difficult to determine because it cannot be readily differentiated from the underlying upper Navarro Group (Upper Cretaceous). These formations tend to form the base of the overlying Eocene aquifer system, effectively isolating it from the deeper flow systems (Fogg and Kretler 1982).

Additional geologic information on a site-by-site basis is included in the Final RI Report (Jacobs 2002a).

1.2.6 Hydrogeology

Groundwater and geologic data obtained during the RI field activities at the Group 4 Sites indicate varying degrees of heterogeneity within the subsurface hydrogeology across the facility. This is indicative of the fluvial-deltaic type depositional environment typical of Quaternary and Wilcox Group sediments that comprise the unconsolidated deposits underlying LHAAP. The unconsolidated sediments of the Wilcox Group are comprised primarily of elongated, interconnected, channel-fill sand deposits within alluvial belts interbedded with less permeable interchannel sediments. These interbedded, less permeable deposits tend to form aquitards that limit the flow between the saturated zones. LHAAP can generally be characterized as consisting of three water-bearing zones within the Wilcox Group deposits: a shallow saturated sand zone, an intermediate saturated sand zone, and a deep saturated sand zone, separated by semiconfining clay aquitard units. These three water-bearing units overlay the relatively impermeable Midway Group formation. This characterization is based on boring logs, Site Characterization and Analysis Penetrometer System (SCAPS) data, down-hole geophysics, and hydrogeology.

Groundwater generally occurs under semiconfined to confined conditions within the Wilcox Group deposits that make up the primary aquifer material underlying the site. Perched and local confining conditions frequently occur within these Wilcox Group deposits due to the high clay content and highly variable stratigraphy. Due to this high degree of heterogeneity within the site, the level of interconnection between the shallow, intermediate, and deep water-bearing zones identified in the Wilcox Group deposits is highly variable. The base of the Wilcox water-bearing zones beneath LHAAP is defined by the contact of the Wilcox Group with the underlying Midway Group. The Midway Group consists predominantly of very low permeability clay that yields little or no water. Formations of the Wilcox Group are considered the base of freshwater in the area.

The depth to groundwater across the facility ranges from 1 to 70 feet bgs, with the depth to groundwater typically being 12 to 16 feet. The regional groundwater flow direction beneath the facility is generally east-northeast toward Caddo Lake but this varies by site location. Based on rising head hydraulic conductivity tests (slug tests) executed on the LHAAP monitoring wells, the site-wide range of hydraulic conductivities varies from 4.54×10^{-3} to 3.5×10^{-7} centimeters per second (cm/s).

Five active water supply wells are located near LHAAP. One well is located in and owned by Caddo Lake State Park. The well is completed to a depth of 315 feet and has been in use since 1935. A second well, owned by the Karnack Water Supply Corporation, services the town of Karnack, Texas, and is located approximately 2 miles southeast of the town. This well is completed to a depth of 430 feet, with the pump set at a depth of 200 feet, and has been in use since 1942. The Caddo Lake Water Supply Corporation has three wells located north and northwest of LHAAP that are hydraulically upgradient to LHAAP. In addition, there are several livestock and domestic wells in the vicinity of LHAAP with depths averaging 250 feet. There are two active water supply wells located on LHAAP; both supply drinking water to buildings currently in use on the installation. One well is located at the LHAAP Fire Station. It was drilled to a depth of 460 feet; it was plugged, however, back to a depth of 140 feet with a

cement plug. This well has been in use since 1997. The other well is located at the Water Tower. It was drilled to a depth of 190 feet and the pump is set at a depth of 168 feet. This well has been in use since 1999. Current and future use of groundwater is further discussed in Section 3.3.1.3.

Additional hydrogeologic information on a site-by-site basis is included in the Final RI Report (Jacobs 2002a).

1.2.7 Group 4 Area Descriptions

The following subsections provide a site description and history of the 11 Group 4 Sites (04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, and 67), and four water bodies (Caddo Lake, Goose Prairie Creek, Saunder's Branch, and Central Creek) investigated during the LHAAP RA. The location of each site is shown on Figure 1-2.

A listing of the Group 4 Site acreages (approximate) compared to the entire LHAAP facility, which encompasses 8,493 acres, is given below:

- Site 04—1.4 acres
- Site 08—2 acres
- Site 35A—15 acres
- Site 35B—8 acres
- Site 35C—26 acres
- Site 46—190 acres
- Site 47—275 acres
- Site 48—16 acres
- Site 50—1 acre
- Site 60—<1 acre
- Site 67—12 acres

1.2.7.1 Site 04—Pilot Wastewater Treatment Plant

The Pilot Wastewater Treatment Plant occupies less than 2 acres in the central portion of LHAAP at the northwest corner of 6th and 60th Streets adjacent to the former firehouse. Wastewater from sumps throughout LHAAP was treated at the plant. After settling, the wastewater was transferred to one of two storage tanks, then pumped through a heat exchanger to an evaporation tower. Solids were shipped off-site for disposal. Sludge from the settling tanks was blown down and drummed weekly, then burned at Burning Ground No. 3.

1.2.7.2 Site 08—Sewage Treatment Plant

Site 08 is located in the central portion of LHAAP and covers an area of approximately 2 acres. South Houston Avenue curves around Site 08 on the south and east sides and intersects with 51st Street, which forms the northern boundary of the site. The Sewage Treatment Plant (STP) was constructed in 1942 to serve various areas of the LHAAP. It was extensively modified and upgraded to handle a hydraulic capacity of 0.5 million gallons per day. The wastewater collection system was comprised of 6-inch to 15-inch pipelines, which provided the influent to the STP. In addition to receiving mostly domestic wastewater, the STP received stormwater, boiler blowdown, laundry wastes, vehicle wash rack wastes, and effluent from film development at the X-ray facility. The STP was not used to treat any manufacturing wastewater. The STP discharged treated effluent into the North Bayou and subsequently into the Goose Prairie Creek on Caddo Lake (Complete Environmental Service 2000).

In 1997, the Army declared the LHAAP to be excess and closed it; therefore, the services of the STP were no longer required. A closure plan was developed in accordance with the "Closure Guidance Documents" received from TCEQ and was prepared to satisfy the closure plan requirements for Longhorn's Wastewater Treatment Facility Permit No. 02713. The STP closure in 1999 included the closing of the components listed here, all of which were regulated waste management units (Complete Environmental Service 2000).

1.2.7.3 Site 35A—Shop Area

Site 35A is located in the north-central portion of LHAAP near the intersection of 6th Street and Avenue F, and covers an area of approximately 15 acres. The surface features at Site 35A include a mixture of asphalt-paved streets, asphalt parking areas around the former buildings, and some vegetation-covered areas. The topography at the site is relatively flat, with approximately 5 feet of elevation change from west to east. Surface drainage generally flows from northeast to southwest, either through runoff or as controlled by manmade drainage swales and culverts that eventually drain into Goose Prairie Creek to the southwest.

The Shop Area was established in 1942 as part of the facility's initial construction. To fulfill this logistical mission, LHAAP's production operations required a broad range of support activities. A plant-operated laundry and automotive, woodworking, metalworking, painting, refrigeration, and electrical shops served the needs of the facility's 440 production and administration buildings, utility systems, and network of streets, roads, and railroad tracks.

Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Seven waste process sumps and one waste rack sump were located on the site, which was active from approximately 1942 through 1996.

1.2.7.4 Site 35B—Chemical Laboratory

Site 35B, the Chemical Laboratory, is located in the north-central portion of LHAAP south of the intersection of Avenue P and 59th Street, and covers an area of approximately 8 acres. The laboratory consists of Building 29-A and is located in the approximate center of the site, with Avenue P forming its southwestern boundary.

The surface features at Site 35B include asphalt-paved roads and a parking area, the former Chemical Laboratory building, and a mixture of wooded and grassy, vegetation-covered areas. The topography in this area is relatively flat, with the surface drainage flowing north-northeast into Goose Prairie Creek. Goose Prairie Creek runs perpendicular to and under Avenue P to the north of the site and then turns south through the east-central portion of the site.

The Chemical Laboratory was built during the construction of Plant 3 (1953–1955) and was used to support the production activities at LHAAP. Activities included research and testing of materials used in the production processes, as well as quality assurance testing. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. One waste rack sump is located at this site. The site was used in 1998 as a staging area to support field activities associated with the Group 2 and Group 4 Phase III RI. The site was active through 1999.

1.2.7.5 Site 35C—Static Test Area

Site 35C, the Static Test Area, is located in the east-central portion of LHAAP and covers an area of approximately 26 acres. The central portion of the site is located at the intersection of Tyler, Tucson, and Truman Avenues. Site 35C is bounded by Central Creek to the northwest and Harrison Bayou to the southeast, and is a mixture of asphalt-paved roads and parking areas around the former structures in the area. Surface drainage flows predominately toward the creeks.

The Static Test Area was used for testing and evaluating products produced at LHAAP. Activities included testing of illumination devices and static test firing of rocket motors. Structures for these activities included a test tunnel and data acquisition system for flares, rocket motor test stands of earth and concrete, and conditioning facilities for reproducing arctic and tropical temperatures. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Four waste process sumps were located at Site 35C, which was active through 1998. The sumps have been removed.

1.2.7.6 Site 46—Plant 2 Area

Site 46, the Plant 2 Area, is located in the northwestern portion of LHAAP and covers an area of approximately 190 acres. Site 46 is bounded by Avenue P to the south-southwest, 11th Street and Raymer Street to the southeast and east, the northern LHAAP property fence line to the north, and a heavily wooded area to the west. This area is a mixture of asphalt-paved streets and parking areas, former Plant 2 production buildings, and heavily wooded and grassy, vegetation-covered areas. The topography

at Site 46 varies in elevation approximately 30 feet from west to east. Surface runoff follows the topography (west to east) and enters several tributaries located on the eastern side of Site 46.

Construction of Plant 2 began in November 1944; the plant was originally designed to produce JB-2 propellant fuel. Construction was halted in August 1945 with the end of World War II. Plant 2 remained in a standby mode until February 1952 when it was reactivated for the production of pyrotechnic devices. The plant was then active from 1952 until 1956, when it was again placed in a standby mode. It was reactivated in 1964 with the initiation of the Vietnam War. Plant 2 produced pyrotechnic and illumination devices until approximately 1997; industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Forty-six waste process sumps and 13 waste rack sumps were located at this site; they have since been removed.

1.2.7.7 Site 47—Plant 3 Area

Site 47 is located in the north-central portion of LHAAP to the southeast of Site 46 (Plant 2 Area), and covers an area of approximately 275 acres. Site 47 is bounded by Karnack Avenue on the east, Avenue P on the west, 51st Street on the south, and 62nd and 66th Streets on the north. The area is a combination of asphalt-paved roads and parking areas surrounding the Plant 3 buildings, with heavy vegetation and wooded areas to the north and northeast. Goose Prairie Creek runs through the southwestern portion of Site 47 and then curves back through the southeastern portion of the site. The topography of Site 47 generally slopes to the east, with surface drainage flowing to the east-southeast into Goose Prairie Creek.

Construction of Plant 3 began in July 1953 and production of rocket motors began in December 1954. Rocket motor production continued until the early 1980s. Some of the rocket motor production facilities were converted to produce pyrotechnic and illumination devices and were active until approximately 1997. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Fifty waste process sumps and three waste rack sumps were located at this site.

1.2.7.8 Site 48—Y Area

Site 48 is located in the east-central portion of LHAAP northwest of Site 35C, the Static Test Area, and covers an area of approximately 16 acres. The center of the site is located at the intersection of Yoakum Drive and Starr Ranch Road. Surface features at the site include asphalt-paved roads and parking areas around the buildings. The perimeter of Site 48 is a mixture of heavily wooded areas and grasslands. The topography slopes gently to the southeast, and surface runoff from the northern part of Site 48 enters an unnamed creek to the south. Runoff from the southern portion of Site 48 eventually enters Central Creek to the southeast and on to Caddo Lake.

The Y-Area was built during the construction of Plant 3 (1953–1955), and was used for the production of igniters for pyrotechnic and illuminating devices. In addition, the Y-Area was used for the production of some illuminating devices. The Y-Area was active until approximately 1997. Industrial solid wastes and

possibly hazardous wastes have been generated by these activities. Nine waste process sumps and three waste rack sumps were located at this site.

1.2.7.9 Site 50—Former Sump Water Tank

Site 50 is located in the north-central portion of LHAAP and covers an area of approximately 1 acre. The northeastern half of Site 50 is an open area of grass and brush that is bounded by South Crockett Avenue to the northeast. The southwestern half of the site is heavily timbered and bounded by a drainage ditch to the west, a railroad spur to the south, and Goose Prairie Creek to the north. Two gravel access lanes connect Site 50 to South Crockett Avenue.

Runoff from the northeastern half of the site is generally toward the northeast. Runoff is collected by a drainage ditch to the northeast that runs parallel to South Crockett Avenue and eventually joins Goose Prairie Creek. Runoff is collected to the west by a drainage ditch that carries the runoff north into Goose Prairie Creek. Runoff from the remainder of the site is toward the north directly into Goose Prairie Creek.

Based on historical records, Site 50 reportedly contained an aboveground storage tank (AST) for industrial wastewater collected from industrial waste production sumps located at various sites throughout the installation. All operating buildings at the installation were provided with individual concrete sumps to collect industrial wastewater. If the nature of the operations was such that contamination was considered negligible, the sump was permitted to overflow and drain into the drainage ditches. All other sumps were emptied and their wastewater transported by truck to a 47,000-gallon AST located at Site 50. Discharges from this storage tank were made upstream of the bridge on Crockett Avenue, which crosses Goose Prairie Creek just south of 51st Street. Contents from the tank were emptied into Goose Prairie Creek after all solids were filtered out and the natural flow in the creek was sufficient to “dilute the waste to a level that is safe for fish and other aquatic life.” If natural flow in the creek was considered insufficient, clean water was apparently pumped into the creek to dilute the contents. Because the storage tank was described as holding industrial wastewater, it is possible hazardous wastes may have been released by these activities.

1.2.7.10 Site 60—Pesticide Storage Buildings

Site 60, Pesticide Storage Buildings, is located in the northwestern portion of LHAAP near the steam plant and shops area within Site 35A. Site 60 consists of three buildings (411, 411A, and 714) and a shed (TS-80). These buildings were reportedly used for the storage of pesticides and herbicides. Buildings 411 and 411A and shed TS-80 are located on the west side of Avenue T. Building 714 is located on 9th Street, northwest of Avenue G and approximately 500 feet northwest of the area encompassing Buildings 411 and 411A and Shed TS-80. The three buildings have concrete floors with no curbs at entryways, and the shed has an earthen floor.

Surface features at Site 60 include asphalt paved roads and parking areas around the buildings. Buildings 411 and 411A and Shed TS-80 encompass approximately 1 acre. Building 714 encompasses

approximately 0.25 acres. The area around the buildings is open, with grass-lined drainage ditches and a graveled, fenced-in storage area.

Runoff from the Building 411 area is generally into grated culverts around the building. Runoff from the Building 411A and Shed TS-80 areas is generally toward the southeast. Runoff and culvert discharge are collected by a drainage ditch that arcs between the Buildings 411 and 411A areas and eventually empties into Goose Prairie Creek. Runoff from the Building 714 area is generally into a grass-lined drainage ditch parallel to 9th Street and Avenue G. This drainage ditch carries runoff southwest, parallel to Avenue G, into a tributary of Goose Prairie Creek.

Records indicate that pesticides and herbicides were originally stored in Building 714 and that, in 1970, the stock was moved to Building 411. A site visit and communications with LHAAP personnel indicate Building 411A and Shed TS-80, not Building 411, may have been used as a pesticide and herbicide storage area. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Two sumps are located near Buildings 411 and 411A and Shed TS-80; one sump is located near Building 714.

1.2.7.11 Site 67—Above Ground Storage Tank

Site 67 is located in the central portion of LHAAP on the southeast corner of 48th street and Ignatius Avenue and covers an area of approximately 12 acres. The site is relatively flat and, since removal of the tanks, a light vegetative cover has become established on the site. Surface drainage generally flows southeast by overland flow or through manmade drainage swales and culverts that eventually drain into Central Creek to the southeast.

With the exception of the railroad bed, no structures remain at the site. All tanks have been removed. When operational, the site consisted of seven aboveground storage tanks; their exact size is not known. The tanks were surrounded with earthen dikes to contain potential spills. According to the LHAAP Installation Action Plan (USAIOC 2000), the tanks contained Number 2 fuel oil or kerosene. However, according to interviews with site personnel conducted for this investigation, the tanks were used for solvent (methylene chloride and various degreasers during the rocket motor production era) and LP33 Resin storage. Solvent storage is consistent with the sampling results from this investigation.

1.2.7.12 Goose Prairie Creek

Goose Prairie Creek is one of four major drainage systems on the LHAAP facility. The three other drainages include Saunder's Branch, Harrison Bayou, and Central Creek. The headwaters of Goose Prairie Creek are located near the northwest corner of the plant and consist of one larger creek and several smaller tributaries. Goose Prairie Creek flows across the northern edge of the installation and drains approximately 30 percent of LHAAP. The surface area of Goose Prairie Creek is approximately 4 acres. The creek eventually empties into Caddo Lake on the eastern side of the facility. A wetlands area is present at the confluence of Goose Prairie Creek and Caddo Lake.

1.2.7.13 Saunder's Branch

As previously mentioned, Saunder's Branch flows onto LHAAP near the southeastern corner of the installation and flows northward into Caddo Lake. Approximately 11 percent of the heavily wooded eastern section of the plant is drained by this system. The surface area of Saunder's Branch is approximately 2 acres.

1.2.7.14 Central Creek

Central Creek enters LHAAP on its western edge just south of the town of Karnack, Texas. Approximately 29 percent of the surface drainage from the installation is carried to Caddo Lake by this drainage course. The surface area of Central Creek is approximately 3 acres.

1.2.7.15 Caddo Lake

Caddo Lake borders the installation to the northeast; Figure 1-2 shows its location. First created by a natural logjam on Big Cypress Bayou before recorded history, Caddo Lake is currently sustained by Caddo Dam in Caddo Parrish, Louisiana. It was the only natural lake in Texas until it was artificially dammed in the early 1900s, when oil was found, and for flood control in 1914. The dam was reconstructed in 1971. Caddo Lake has a surface area of approximately 25,400 acres, with an abundance of flora and fauna. The average depth of Caddo Lake is 8 to 10 feet, with deep water in the bayou averaging about 27 feet.

Caddo Lake was designated as an International Ramsar Site in October 1993 in recognition as one of Texas' most important and unique inland freshwater wetlands. Caddo Lake provides significant regionally critical habitat for a variety of migratory and resident wildlife species and is also a center for recreational activities. Caddo Lake serves as a public water supply source for Marshall, Texas, and Louisiana municipalities. The lake contains 71 species of fish including crappie, large-mouth bass, and white bass. Activities at Caddo Lake include camping, hiking, swimming, picnicking, fishing, and boating. The lake is the regional feature that controls groundwater flow, and all bayous and creeks in the region flow toward the lake. The ground surface elevations vary from 170 to 335 feet (NGVD29).

For purposes of this report, assessment of impacts to Caddo Lake will focus on that portion of Caddo Lake that receives drainage from the north and south portions of Goose Prairie Creek Cove as well as Central Creek and Saunder's Branch. Impacts to Caddo Lake from Harrison Bayou were presented in the Baseline Human Health and Screening Ecological Risk Assessment for the Group 2 Sites (Jacobs 2002c).

1.3 ORGANIZATION OF THE RISK ASSESSMENT

The remaining portions of the BHHRA and screening ERA report are divided into five sections as follows:

- Section 2—Summary of Sampling Investigations
- Section 3—Baseline Human Health Risk Assessment
- Section 4—Screening Ecological Risk Assessment
- Section 5—Summary and Conclusions
- Section 6—References

Appendices to this report include the following:

- Appendix A—Data Listings for Chemicals Detected in BHHRA Scenarios
- Appendix B—Estimation of Concentrations in Fish Tissue
- Appendix C—BHHRA Intake and Risk Tables
- Appendix D—Terrestrial Indicator Species Food Web Model
- Appendix E—Aquatic Indicator Species Food Web Model
- Appendix F—Supplemental Toxicity Data

2.0 SUMMARY OF SAMPLING INVESTIGATIONS

This section describes the investigations that have been conducted at each of the Group 4 Sites and the significant analytical results obtained from these investigations as reported in the RI reports. The Final RI Report for Group 4 Sites, Appendix C, "Remedial Investigation Results for Detected Compounds", and the Final RI Report Addendum for the Group 4 Sites, Appendix C, "Detected Soil and Groundwater Contaminants," may be referenced for further analytical data (Jacobs 2002a and 2002b).

In 1992, Thiokol Corporation retained BCM Engineers to evaluate the integrity of the sumps system and the wastewater treatment system at LHAAP. A total of 24 soil samples were collected at 12 random sump sites at LHAAP. The results showed contaminated soil adjacent to all 12 sumps and caused concern for further investigation.

After the sump inventory, an RI took place at the Group 4 Sites. The Group 4 Sites consist of Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, 67. Goose Prairie Creek, Saunder's Branch, Central Creek, and associated wetlands may be influenced by the sites. Phase I of the RI was initiated to evaluate potentially contaminated soils adjacent to 125 waste process and 20 waste rack sumps causing releases to the environment and to identify contaminants of potential concern (USACE 1994). The Phase II RI was conducted to further investigate whether sump overflows or leakage of sump contents were released to the surrounding environment or had contaminated underlying groundwater (USACE 1995a). The Phase II investigation also included surface water and sediment sample collection to help determine the potential for contaminant transport from sump locations by surface water runoff and sediment transport. The Phase III RI and supplemental activities included further investigation of the contamination found at the Group 4 Sites.

The U.S. Army Groundwater Modeling Technical Support Center located at the Waterways Experiment Station (WES) conducted surface water transport modeling of total volatile organic compounds (VOCs) at LHAAP (this model will be referred to as the WES model in this BHHRA) (USACE 2001). This model took into account various hydrologic processes such as rainfall distribution, infiltration, runoff, stream flow, groundwater discharge into streams, and transport of contaminants through advection and dispersion. Potentiometric data gathered between October 1999 and May 2000 were used, as well as daily lake water level readings in Caddo Lake from 1993 through 2000. The hydrogeologic parameters (i.e., hydraulic conductivity) used in the modeling were obtained from slug tests that were conducted at the LHAAP wells. Evaluation of groundwater and surface water conditions conducted at LHAAP revealed that Caddo Lake is the ultimate downgradient and downstream receptor of all groundwater and surface water flows, resulting in no existing off-site groundwater exposure pathways (USACE 2001).

It was decided that grouping all the detected concentrations of VOCs into one "total VOC" value would represent all contaminants. Based on this, groundwater was evaluated to determine groundwater discharges at specific locations along on-site surface streams (i.e., Harrison Bayou, Goose Prairie Creek,

and Central Creek). Contaminants in these three creeks were modeled to predict concentrations as they move down the various waterways toward Caddo Lake.

Resultant concentrations of total VOCs at the lake inlet ranged from 0 to 34 micrograms per liter ($\mu\text{g/L}$) (USACE 2001). It should be noted, however, that contaminant decay (volatilization, natural attenuation, and/or sorption) was not taken into consideration and this, paired with the assumptions used in the modeling, provided several levels of conservatism. The hydrogeologic information from this effort was used to identify potential receptors but the chemical results were not used due to uncertainties in the assumptions.

2.1 SITE 04: PILOT WASTEWATER TREATMENT PLANT

The Pilot Wastewater Treatment Plant is located in the central portion of LHAAP at the northwestern corner of 6th and 60th Street (Figure 2-1). Site 04 was used to treat wastewater from sumps throughout LHAAP. Following settling, the wastewater was transferred to one of two storage tanks, then pumped through a heat exchanger to an evaporation tower. Solids were shipped off-site for disposal. Sludge from the settling tanks were blown down and drummed weekly, then burned at Burning Ground No. 3 (Jacobs 2002b).

2.1.1 Phase III Additional Investigations

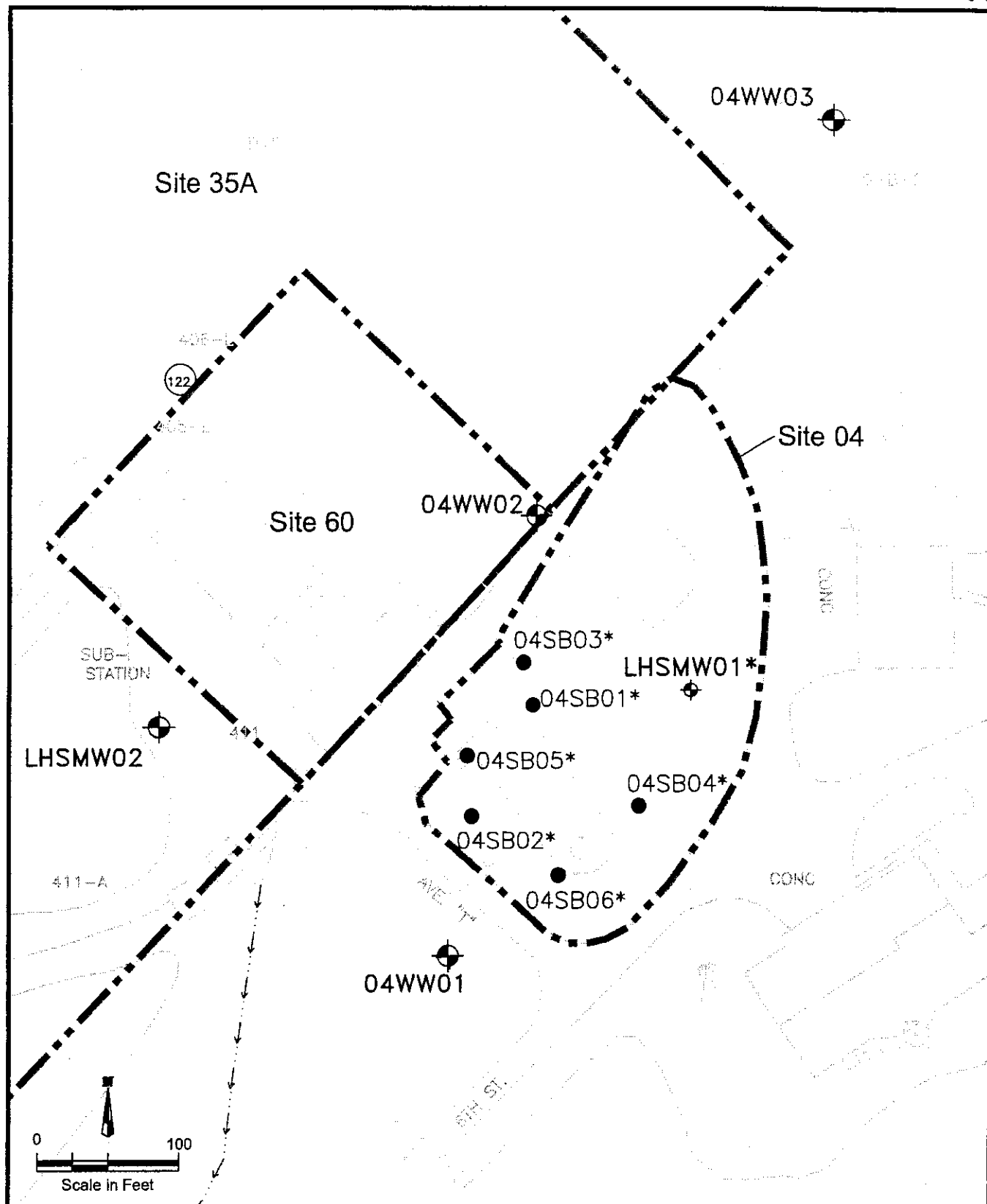
Additional investigations included the collection of 16 soil samples at six locations adjacent to the Pilot Wastewater Treatment Plant. Four samples were collected in June 2000 from two locations (04SB01 and 04SB02) at depth intervals of 0 to 0.5 feet and 1 to 2 feet and analyzed only for perchlorate. Twelve of the soil samples were collected in December 2000 from four locations (04SB03 through 04SB06) at depth intervals of 0 to 0.5 feet, 1 to 3 feet, and 3 to 5 feet.

Three groundwater wells were installed and analyzed for VOCs, semivolatile organic compounds (SVOCs), perchlorate, explosives, pesticides, polychlorinated biphenyls (PCBs), and dioxins/furans.

2.1.1.1 Soil sampling

No measurable concentrations of VOCs, SVOCs, explosive compounds, or PCBs were detected in any of the soil samples (Jacobs 2002b).

Perchlorate was detected at all sampling locations. In the 0- to 0.5-foot sampling interval, the highest concentration of perchlorate detected was 45.4 milligrams per kilogram (mg/kg) at sample location 04SB02, south of the facility. A perchlorate concentration of 36.2 mg/kg was detected at 04SB01. In the 1- to 2-foot or 1- to 3-foot sampling interval, the highest concentration detected was 144 mg/kg at 04SB01 in the 0- to 0.5-foot interval. Data review indicates that the samples collected from the 1- to 2- or 1- to 3-foot sampling interval contained the highest perchlorate concentrations. While perchlorate is only



Legend

- Soil Boring Sample Locations
- ⊕ Shallow Monitoring Well
- (122) Sump Location
- * Also Sampled for Perchlorate



US Army Corps
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Site 04 Sampling Locations Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Karnack, Texas

22August02 - Fig 2-1.DWG

Figure 2-1

intermittently present at the deepest sampling interval of 3 to 5 feet, concentrations show no consistent variation with depth.

Three pesticides were detected at two isolated sampling locations (04SB03 and 04SB04).

Lead concentrations (maximum of 56.7 mg/kg) were detected at all four soil locations (04SB03 through 04SB06) and all depth intervals sampled; however, lead only exceeds background levels at three locations, all in the 0- to 0.5-foot sampling interval. Lead concentrations decrease with depth at all four sampling locations. Cadmium (0.763 mg/kg in sampling interval 0 to 0.5 foot at 04SB03) and beryllium (0.799 mg/kg in the 0- to 0.5-foot sampling interval at 04SB04) were also detected. Barium was detected at elevated levels at one location (426 mg/kg in sampling interval 0 to 0.5 foot at 04SB06) (Jacobs 2002b).

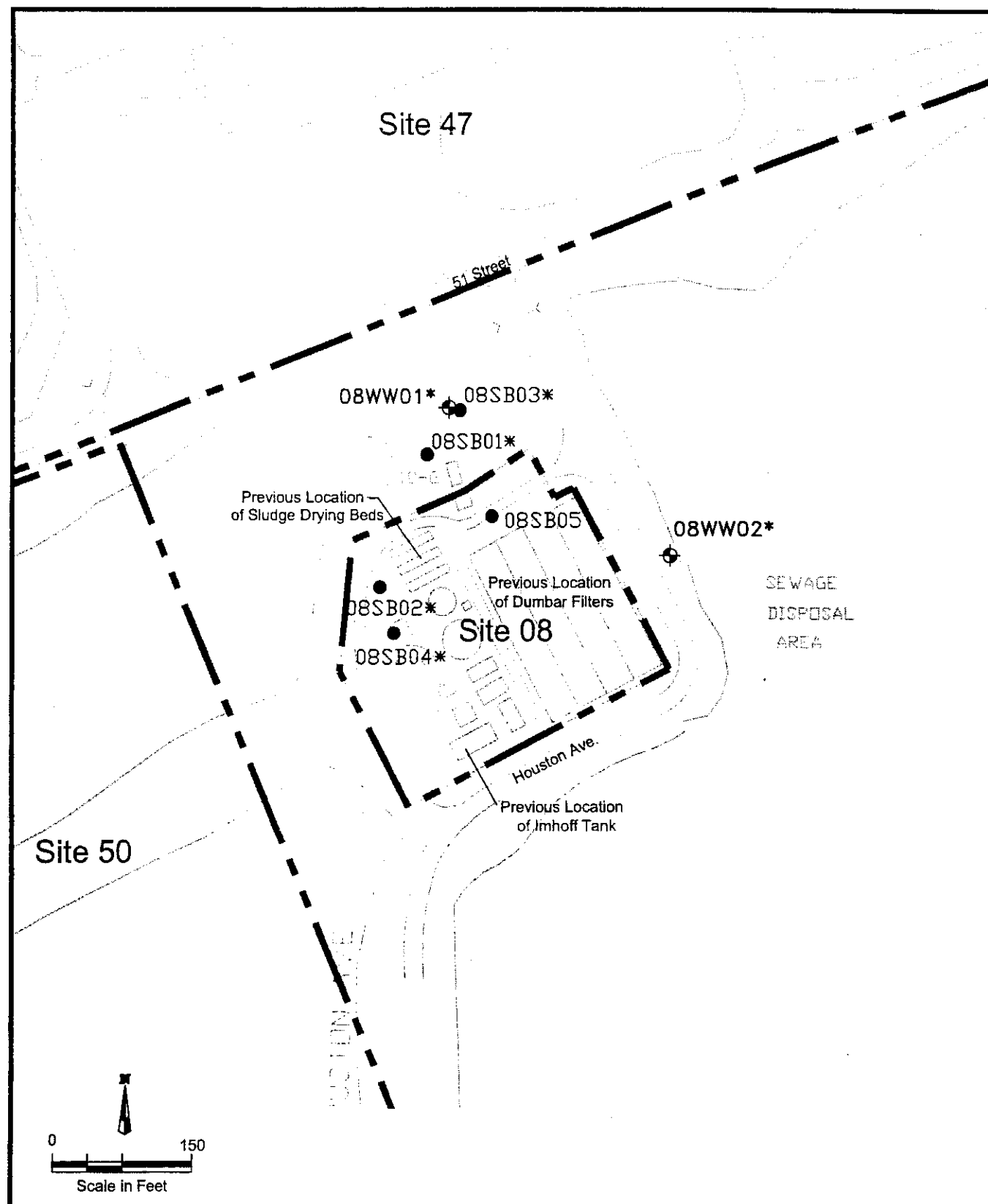
Dioxins or furans were detected at all four sampling locations. The most toxic dioxin, tetrachlorodibenzo-p-dioxin (TCDD), was detected in only two samples, 04SB03 and 04SB04, at low concentrations (i.e., below the EPA Region 6 Human Health Medium-Specific Screening Level for TCDD) in the 0- to 0.5-foot sampling interval. The most prevalent dioxin, octachlorodibenzo-p-dioxin, was detected at levels [maximum of 7 micrograms per kilogram ($\mu\text{g/kg}$)] found throughout LHAAP.

2.1.1.2 Groundwater sampling

The results from the groundwater sampling showed no detected concentrations of VOCs, SVOCs, perchlorate, explosive compounds, pesticides, or PCBs. Metals were detected at or lower than the background comparison levels. Eight dioxin/furan compounds were detected in groundwater samples. Monitoring well 04WW02, which is immediately downgradient of the site, contained the maximum detected values of all but one of the dioxin/furan compounds at Site 04 (Jacobs 2002b).

2.2 SITE 08: SEWAGE TREATMENT PLANT

The STP is located in the central portion of LHAAP and covers an area of approximately two acres (Figure 2-2). South Houston Avenue curves around Site 08 on the south and east sides and intersects with 51st Street, which forms the northern boundary of the Site. The site was constructed in 1942 to serve various areas of LHAAP. It was extensively modified and upgraded to handle hydraulic capacity of 0.5 million gallons per day. The wastewater collection system was comprised of 6-inch to 15-inch pipelines, which provided the influent to the STP. In addition to receiving mostly domestic wastewater, the STP received stormwater, boiler blowdown, laundry wastes, vehicle wash rack wastes, and effluent from film development at the X-ray facility. The STP was not used to treat any manufacturing wastewater. The STP discharged treated effluent into the North Bayou and subsequently into the Goose Prairie Creek on Caddo Lake. The plant closed in 1997 when activities ceased at LHAAP and the plant was no longer needed (Jacobs 2002b).



Legend

- Soil Boring Sample Locations
- ⊕ Shallow Monitoring Well
- Site Boundary
- * Also Sampled for Perchlorate



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Site 08 Sampling Locations Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Karnack, Texas

22August02 - Figure 2-2.DWG

Figure 2-2

2.2.1 Phase III Additional Investigations

During the Phase III additional investigations, 11 soil samples were collected from four borings (08SB01, 08SB03, 08SB04, and 08SB05) in December 2000. The soil samples were collected from depth intervals of 0 to 0.5 feet, 1 to 3 feet, and 3 to 5 feet and analyzed for VOCs, SVOCs, explosive compounds, metals, perchlorate, dioxin/furan compounds, pesticides, and PCBs. No soil samples were collected from the 0- to 5-foot sampling interval of 08SB01 and none were collected from 08SB02 during the December 2000 sampling activity. Also, the three samples collected from 08SB05 were not analyzed for perchlorate.

During the additional work investigation, two groundwater monitoring wells (08WW01, located north of the site, and 08WW02, located east of the site) were installed to depths of 18 and 19 feet, respectively. The groundwater samples were submitted for laboratory analysis for VOCs, SVOCs, explosive compounds, metals, pesticides/PCBs, dioxins/furans, and perchlorate.

2.2.1.1 Soil sampling

No measurable concentrations of SVOCs, explosive compounds, pesticides or PCBs were detected in any of the soil samples. Methylene chloride, a common field and laboratory contaminant, was detected at the maximum concentration at 6.8 µg/kg in 08SB05 at the 3- to 5-foot sampling interval. This detection is isolated and does not represent significant contamination. Three metals (lead, mercury, and silver) were detected in soil at levels of interest, according to the RI Addendum (Jacobs 2002b). The concentrations of lead and mercury were evenly distributed in the sampling intervals. The concentrations of silver were distributed evenly in the sampling intervals, with the exception of 31.3 mg/kg detected at 08SB05 in the 0- to 0.5-foot sampling interval. The sample location is adjacent to the Dunbar filters, which processed wastewater from the X-ray development laboratory, which suggests that a spill could have occurred during normal operations. The concentration of silver decreased considerably in the 3- to 5-foot interval (Jacobs 2002b).

During the perchlorate investigation, a total of four soil samples were collected from two locations (08SB01 and 08SB02) in June 2000 and analyzed only for perchlorate. Samples were collected from each of these two locations at intervals of 0 to 0.5 feet and 1 to 2 feet.

Perchlorate was detected in only one sample, 08SB02, with a concentration of 0.0323 mg/kg in the 1- to 2-foot sampling interval.

The chlorinated dibenzodioxins and dibenzofurans were detected among the soil samples analyzed. The most commonly detected compound (eight out of eight samples) with the highest concentrations was octachlorodibenzo-p-dioxin with a maximum measured concentration of 9,500 nanograms per kilogram (ng/kg) (9.5 µg/kg) in sample location 08SB04 at the 3- to 5-foot sampling interval. Hexachlorodibenzo-

p-dioxin was detected in seven of the eight samples, with at a maximum concentration of 60 ng/kg in 08SB01 at the 3- to 5-foot sampling interval.

2.2.1.2 Groundwater sampling

No detectable concentrations of SVOCs, explosive compounds, perchlorate, pesticides, or PCBs were measured in either of the groundwater samples. Acetone, a common laboratory contaminant, was the only VOC with a detectable groundwater concentration. In addition, 14 metals were detected in the groundwater samples at low levels (Jacobs 2002b).

Eight chlorinated dibenzodioxin or dibenzofuran compounds were detected in at least one of the two groundwater samples. As in the soil, octachlorodibenzo-p-dioxin is the most widespread (in both samples) with the highest concentrations estimated ("J" qualified) at 100 picograms per liter (pg/L).

2.3 SITE 35A: SHOP AREA

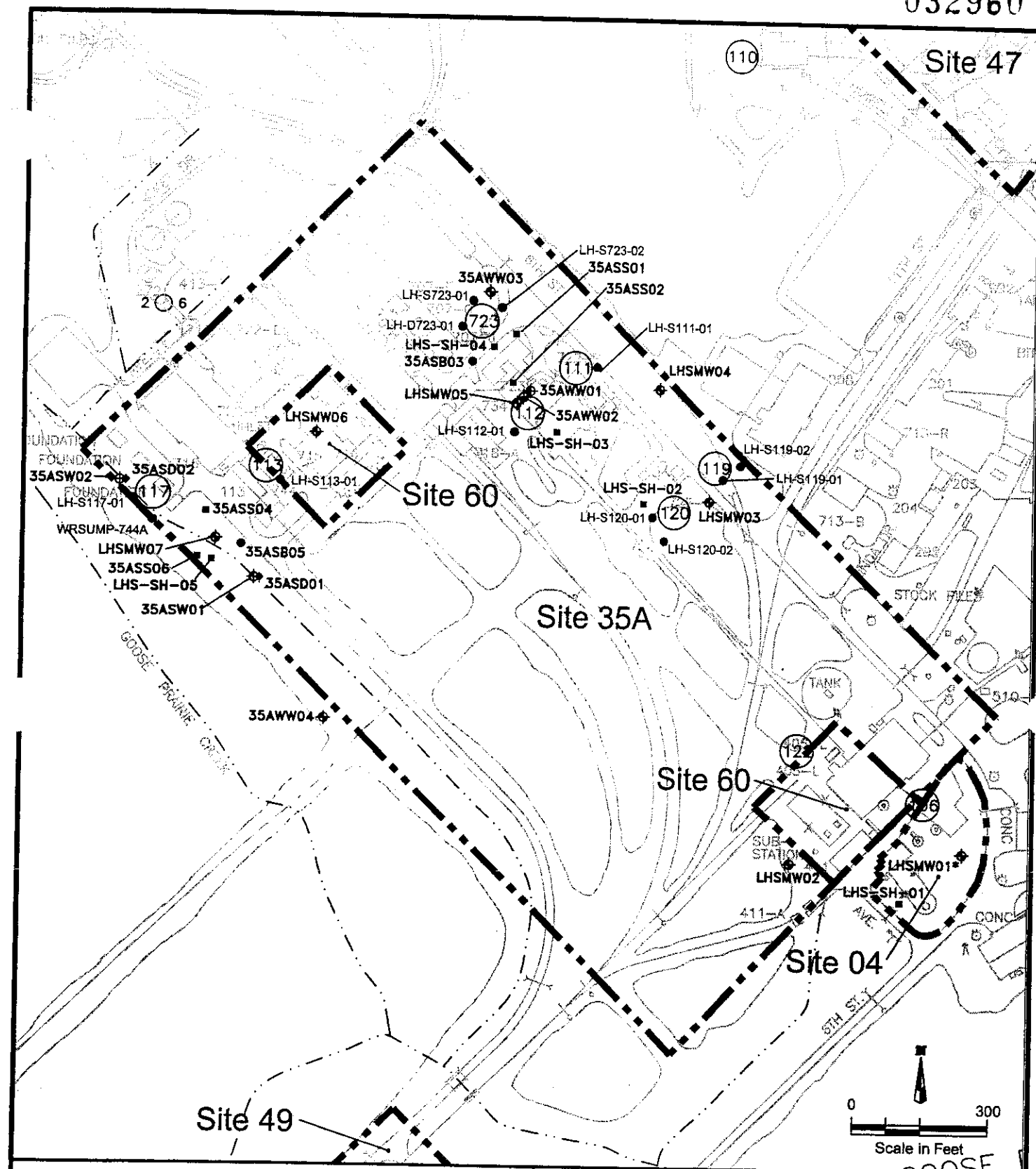
Site 35A is located in the north-central portion of LHAAP and covers an area of approximately 15 acres, as shown in Figure 2-3. The Shop Area was established in 1942 in order to provide a wide variety of support activities such as woodworking, painting, refrigeration, automotive, and electrical shops. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Seven waste process sumps and one waste rack sump were located on the site. The site was active until 1996 (Jacobs 2002a).

2.3.1 Phase I RI

The Tulsa District USACE conducted the Phase I RI in 1993. The Phase I activities at Site 35A included the collection of 10 surface soil and 11 subsurface samples from 11 soil borings (LHS-111-01, LHS-112-01, LHS-113-01, LHS-117-01, LHS-119-01, LHS-119-02, LHS-120-01, LHS-120-02, LHS-723-01, LHS-723-02, LHDL-723-01) at sumps S-111, S-112, S-113, S-117, S-119, S-120, and S-723. The sump contents were sampled at S-113 and analyzed for total petroleum hydrocarbons (TPH). The surface and subsurface soil samples were analyzed for VOCs, SVOCs, and metals. Additionally, the surface and subsurface soil samples collected from locations near S-113 and S-117 were analyzed for TPH.

2.3.1.1 Soil sampling

The results from the soil sampling showed detected concentrations of three VOCs including carbon disulfide (33 µg/kg), trichloroethene (TCE) (2.0 µg/kg), and 2-butanone (64 µg/kg) at S-723 in samples ranging from 0.5 to 5.0 feet bgs (USACE 1995). No concentrations of TPH were detected in soil samples from S-113 and S-117. Diethyl phthalate was detected near S-723 at concentrations of



Legend

- Soil Boring Sampling Location
- ◆ Sediment Sampling Location
- ⊕ Shallow Monitoring Well
- Shallow Soil Sampling Location
- ⊕ Intermediate Monitoring Well
- ⊕ Deep Monitoring Well
- ⊕ Surface Water Sampling Location
- ⊕ Sump Location
- Site Boundary
- * Also Sampled for Perchlorate



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Tulsa District

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Site 35A Sampling Locations Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Kamack, Texas

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Figure 2-3

494 µg/kg and 541 µg/kg and bis(2-ethylhexyl) phthalate was detected near S-120 at concentrations of 373–380 µg/kg.

The metal results from the soil samples showed detections of lead in soil samples near all the sumps at Site 35A with concentrations ranging from 4.1 to 123 mg/kg. Antimony was detected near S-112 with a concentration of 8.5 mg/kg. Barium was detected near S-117 at a concentration of 255 mg/kg. In addition, arsenic was detected near S-723 with an estimated concentration of 17.8J mg/kg (Jacobs 2002a).

2.3.1.2 Sump contents sampling

The contents of S-113 were analyzed for TPH to determine whether the sump was a source of gasoline or diesel fuel contamination to the environment. The results showed a detection of 600,000 µg/L for medium petroleum distillates (Jacobs 2002a). The results from the soil adjacent to S-113 detected TPH with concentrations ranging from 110 to 430 mg/kg. The level of TPH increased with depth (USACE 1994).

2.3.2 Phase II RI

The Tulsa District USACE conducted the Phase II RI during 1994 and 1995. The purpose of Phase II was to determine the presence or absence of potential contaminants in groundwater and whether past activities had impacted the surrounding environment. In order to assess the groundwater, seven monitoring wells (LHS-MW01 through LHS-MW07) were installed, and a groundwater sample was collected at each well. A surface soil sample was collected at each monitoring well to assess whether the surrounding soil had been impacted. Additionally, five surface soil samples (LHS-SH01 through LHS-SH05) were collected from ditches and shallow drainages near selected sump locations to determine whether the surrounding environment was being impacted (USACE 1995a).

2.3.2.1 Groundwater sampling

Seven groundwater samples were collected at monitoring wells LHS-MW01 through LHS-MW07 and analyzed for VOCs, SVOCs, explosive compounds, and metals.

The results from the groundwater samples showed no concentrations of explosive compounds. No VOCs were detected in groundwater samples collected from LHS-MW01 through LHS-MW04. Six VOCs were detected among three groundwater samples (LHS-MW05 through LHS-MW07). TCE was detected at a concentration of 49 µg/L in sample LHS-MW05 and 16 µg/L in sample LHS-MW07. Tetrachloroethene was detected at a concentration of 870 µg/L in LHS-MW05. 1,1-Dichloroethane was detected at an estimated concentration of 3.0J µg/L in LHS-MW06 and 65 µg/L in LHS-MW07. 1,1-Dichloroethene was detected at a concentration of 750 µg/L in LHS-MW07. 1,2-Dichloroethene was detected at a

concentration of 10 µg/L in LHS-MW07, and 1,1,2-trichloroethane was detected in LHS-MW07 at an estimated concentration of 4J µg/L.

Two SVOCs were detected in the groundwater samples. Diethyl phthalate was detected at an estimated concentration of 2J µg/L in LHS-MW02 and bis(2-ethylhexyl) phthalate was detected in the blank and in LHS-MW03 at a concentration of 88.0 µg/L.

Fourteen metals were detected in the groundwater samples during Phase II. Aluminum was detected in one groundwater sample at a concentration of 98,200 µg/L. Barium was detected in four groundwater samples at concentrations ranging from 220 to 1,600 µg/L, below the Safe Drinking Water Act of 1974 (SDWA) maximum contaminant level (MCL) of 2,000 µg/L. Chromium was detected in three monitoring wells at a maximum concentration of 2,800 µg/L, above an MCL of 100 µg/L. Lead was detected in four groundwater samples at concentrations ranging from 16 to 90 µg/L (Jacobs 2002a).

2.3.2.2 Soil sampling

Seven surface soil samples were collected at each monitoring well and five surface soil samples were collected from surrounding ditches and drainages. The samples were submitted for analysis of VOCs, SVOCs, explosive compounds, and metals. The soil sample collected at LHS-MW07 was also analyzed for TPH.

The results from the surface soil samples showed no detected concentrations of VOCs. There were no detected concentrations of TPH in LHS-MW07. Thirteen SVOCs were detected among the 12 soil samples. The most significant was bis(2-ethylhexyl) phthalate detected at a concentration of 200,000 µg/kg at LHS-SH05. This sample was located in the southwestern portion of the site southwest of S-113 and southeast of S-117.

Seventeen metals were detected in all the soil samples. Most notably, cadmium was detected in two samples at concentrations of 1.1 and 3.3 mg/kg; lead was detected in all soil samples; and mercury was detected in one sample (LHS-SH-05) at a concentration of 43.7 mg/kg.

2.3.3 Phase III RI

Sverdrup Environmental, Inc. (Sverdrup) conducted the field activities for the Phase III RI in 1998. The activities at the site included the collection of surface and subsurface soil samples at six sumps (S-111, S-112, S-113, S-117, S-119, S-120) and one waste rack sump (WRS-744A). Ten soil samples were collected from six locations (35ASS01, 35ASS02, 35ASB03, 35ASS04, 35ASB05, and 35ASS06). Two sediment samples (35ASD01 and 35ASD02) and two surface water samples (35ASW01 and 35ASW02) were collected. Four monitoring wells (35AWW01 through 35AWW04) were installed, and groundwater samples were collected from these wells along with the seven existing wells installed during Phase II.

2.3.3.1 Soil sampling

Soil samples were collected at the six sumps (S-111, S-112, S-113, S-117, S-119, and S-120) and one waste rack sump (WRS-744A). For each sump location, one surface soil and one below surface soil sample was collected. All sump soil samples were analyzed for beryllium, nickel, and vanadium. Samples collected at sumps S-112, S-113, S-117, and S-120 were also analyzed for pesticides, PCBs, and dioxins/furans.

The results from all sump locations and waste rack sump showed low-level detections of beryllium, nickel, and vanadium. Four pesticides (dieldrin, p,p-DDD, p,p-DDE, and p,p-DDT) were detected among the four sump locations. One PCB (Aroclor 1254) was detected near S-112.

The soil samples collected from locations 35ASS01, 35ASS02, 35ASB03, 35ASS04, 35ASB05, and 35ASS06 consisted of six surface and four subsurface samples. Surface soil samples collected at 35ASS01, 35ASS02, 35ASS04, and 35ASS06 were analyzed for polycyclic aromatic hydrocarbons (PAHs) and resulted in no detected concentrations. Soil samples at 35ASB03 and 35ASB05 were collected at the surface, at 1 to 3 feet, and at 3 to 5 feet. All six samples were analyzed for PAHs, VOCs, SVOCs, metals, explosive compounds, pesticides, PCBs, and dioxins/furans (Jacobs 2002a).

Sample results showed no detectable concentrations of VOCs, SVOCs, PAHs, pesticides, or explosive compounds. Metals, PCBs, and dioxins/furans were detected in these samples. Notably, the surface samples collected at 35ASB03 and 35ASB05 showed detected concentrations of chromium, lead, selenium, and silver. Aroclor 1254 was detected in the surface soil sample at 35ASB03. The samples collected from 1 to 3 feet and 3 to 5 feet showed detected concentrations of chromium, lead, selenium, and silver (Jacobs 2002a).

2.3.3.2 Sediment and surface water sampling

Two sediment and surface water samples were collected and analyzed for VOCs, SVOCs, explosive compounds, metals, pesticides/PCBs, and cyanides. Sample 35ASD01 was also analyzed for dioxins/furans. The sediment samples were analyzed for total organic carbon (TOC) and the surface water samples were analyzed for hardness.

The sediment sample results showed no detectable concentrations of VOCs, SVOCs, explosive compounds, or pesticides. Metals detected in the sediment samples of potential concern, as identified in the RI Report (Jacobs 2002a), included chromium, lead, and selenium.

The surface water sample results showed no detections of VOCs, SVOCs, explosive compounds, pesticides, or PCBs. The RI Report (Jacobs 2002a) did not identify any metals in surface water at levels of concern.

2.3.3.3 Groundwater sampling

A total of four groundwater wells were installed during Phase III at Site 35A. One intermediate monitoring well (35AWW01) and one deep monitoring well (35AWW02) were installed at depths of 71 feet and 140 feet bgs, respectively. Two shallow monitoring wells (35AWW03 and 35AWW04) were installed at depths of 19 feet and 24 feet bgs, respectively. Groundwater samples were collected from these four new wells and from the seven existing wells (LHS-MW01 through LHS-MW07). All samples were submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, and metals. Groundwater samples from wells LHS-MW05 and LHS-MW07 were also analyzed for pesticides, PCBs, and dioxins/furans.

The results from the groundwater samples showed no detectable concentrations of explosive compounds, pesticides, PCBs, and dioxins/furans. Seven VOCs were detected between groundwater samples LHS-MW05 and LHS-MW07. Tetrachloroethene was detected in LHS-MW05 at a concentration of 5,400 µg/L. 1,1-Dichloroethene was detected at a concentration of 1,200 µg/L in LHS-MW07. One SVOC [bis(2-ethylhexyl) phthalate] was detected in sample 35AWW02 at a concentration of 12.0 milligrams per liter (mg/L).

Concentrations of antimony, chromium, iron, lead, selenium, and thallium were detected above levels of interest. Antimony was detected in two samples (35AWW03 and 35AWW04) at concentrations of 0.013 mg/L and 0.01 mg/L, respectively. Chromium was detected in six samples at concentrations above MCLs, ranging from 0.12 to 0.6 mg/L. Lead and selenium were also detected in one groundwater sample (LHS-MW03). Thallium was detected in samples LHS-MW05 and LHS-MW07 with concentrations of 0.0032 mg/L and 0.0036 mg/L, respectively.

2.3.4 Additional Investigations

During 1996, a round of groundwater samples was collected at monitoring wells LHS-MW01 through LHS-MW07. This sampling occurred between the Phase II and Phase III RI activities. The groundwater samples were analyzed for VOCs, SVOCs, explosive compounds, and metals. Monitoring wells LHS-MW01 and LHS-MW05 were also analyzed for pesticides, PCBs, and chlorinated herbicides (Jacobs 2002a).

The groundwater results for the 1996 sampling round showed three explosive compounds were detected at low concentrations. Eight VOCs were detected in the groundwater samples. 1,1-Dichloroethene was detected at LHS-MW07 at a concentration of 311 µg/L, tetrachloroethene was detected at LHS-MW05 at a concentration of 2,700 µg/L, and TCE was detected at LHS-MW05 at a concentration of 39.7 µg/L. One SVOC [bis(2-ethylhexyl) phthalate] was detected at LHS-MW07 at a low concentration of 2.3 µg/L (Jacobs 2002a).

Detected metal results of interest include chromium in one sample (LHS-MW05) at an estimated concentration of 1,180 $\mu\text{g/L}$, above an MCL of 100 $\mu\text{g/L}$ and selenium in two samples, both collected from LHS-MW07, at concentrations of 56 $\mu\text{g/L}$ and 65.8 $\mu\text{g/L}$.

Groundwater samples were collected in 2000 and 2001 from LHS-MW01 and analyzed for perchlorate. The maximum perchlorate value found in groundwater was 36.9 $\mu\text{g/L}$ (Jacobs 2002a).

2.4 SITE 35B: CHEMICAL LABORATORY

Site 35B is located in the north-central portion of LHAAP and is south of the intersection of Avenue P and 59th Street covering approximately 8 acres, as shown in Figure 2-4. The surface features at Site 35B are a mixture of asphalt-paved roads and parking area, the former Chemical Laboratory building (Building 29-A), and a mixture of wooded and grassy, vegetation-covered areas. The Chemical Laboratory was constructed in 1953 to 1955 and was used to support the production activities at LHAAP. Activities included research and testing of materials used in production processes as well as quality assurance testing. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. One waste rack sump was located at Site 35B. The site was active until 1999 (Jacobs 2002a).

2.4.1 Phase I RI

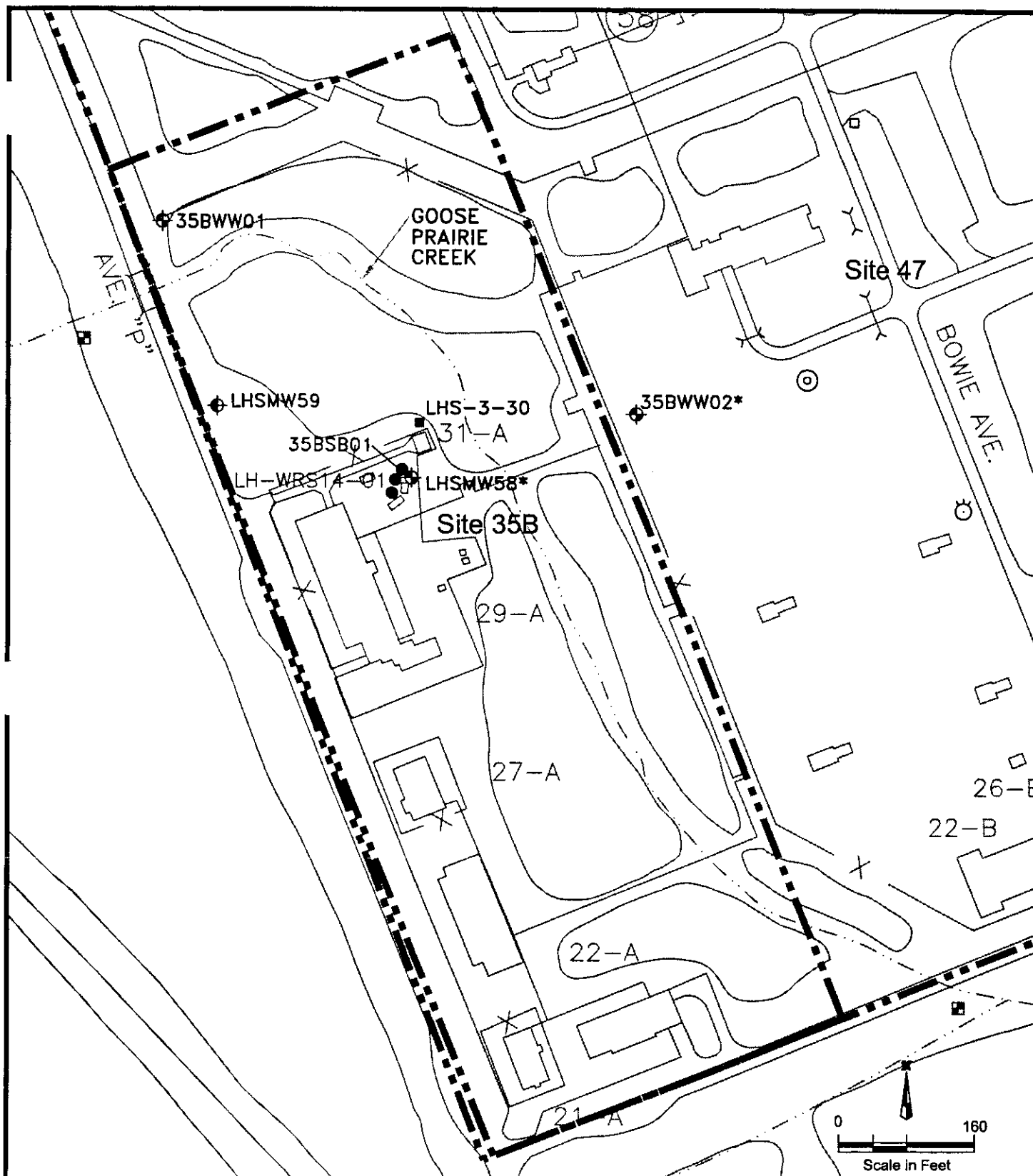
The Tulsa District USACE conducted the Phase I RI in 1993. In order to evaluate the soils immediately adjacent to the waste rack sump, a soil boring was completed (LH-WRS1401) and samples were collected from 0.5 to 1.5 feet bgs and 3.0 to 4.5 feet bgs. The samples were analyzed for VOCs, SVOCs, metals, and explosive compounds.

The soil sample results showed detections of low-level concentrations of two VOCs (carbon disulfide and TCE). The samples showed no detected concentrations of SVOCs or explosive compounds.

Two metals were detected in the soil samples at levels of potential concern, according to the RI Report (Jacobs 2002a). Cadmium was detected at concentrations ranging from 3.61 to 4.56 mg/kg. Lead was detected in the sample collected from 0.5 to 1.5 feet bgs at a concentration of 29.4 mg/kg.

2.4.2 Phase II RI

The Tulsa District USACE conducted the Phase II RI during 1994 and 1995. In order to assess whether groundwater had been impacted at Site 35B, two monitoring wells were installed (LHS-MW58 and LHS-MW59) and one groundwater sample was collected from each well and submitted for laboratory analysis of VOCs, SVOCs, metals, and explosive compounds (USACE 1995). Monitoring well LHS-MW58 is a shallow well installed at 34 feet bgs and LHS-MW59 is an intermediate well installed at



Legend

- Shallow Monitoring Well
- ⊕ Intermediate Monitoring Well
- Soil Boring Sampling Location
- Shallow Soil Sampling Location
- Site Boundary
- Also Sampled for Perchlorate



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Site 35B Sampling Locations Group 4 Sites Risk Assessment

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Figure 2-4

49.3 feet bgs. In order to determine whether surrounding soil had been impacted, three shallow soil samples were collected from three locations (LHS-MW58, LHS-MW59, and LHS-330).

2.4.2.1 Groundwater sampling

The results from the groundwater samples showed no detected concentrations of explosive compounds. The shallow well (LHS-MW58) showed detected concentrations of six VOCs. The intermediate well (LHS-MW59) showed a detected concentration of one VOC and one SVOC. Tetrachloroethene was detected in the shallow well at a concentration of 21.0 µg/L and in the intermediate well at a concentration of 11.0 µg/L. 1,1-Dichloroethene was detected at a concentration of 58 µg/L in LHS-MW58. 1,2-Dichloroethene, benzene, chlorobenzene, and 1,1,1-trichloroethane also showed detected concentrations in the shallow well. An SVOC, bis(2-ethylhexyl) phthalate, was detected in the intermediate well at a concentration of 11 µg/L.

The RI Report (Jacobs 2002a) indicates that no significant metal concentrations were found.

2.4.2.2 Soil sampling

The three shallow soil samples collected from LHS-MW58, LHS-MW59, and LHS-330 were submitted for laboratory analysis of VOC, SVOCs, explosive compounds, and metals. The results from the sampling showed no detected concentrations of VOCs or explosive compounds. One SVOC [bis(2-ethylhexyl) phthalate] was detected in all three soil samples. Two metals (cadmium and lead) were also detected at levels of potential concern. Cadmium was detected at LHS-330 at a concentration of 7.5 mg/kg and lead was detected in all three soil samples at concentrations ranging from 9.5 to 40.3 mg/kg.

2.4.3 Phase III RI

Sverdrup conducted the field activities for the Phase III RI in 1998. The activities at Site 35B included the collection of two sump soil samples at the waste rack sump, completion of one shallow soil boring (35BSB01), collection of three shallow samples at 0.0 to 0.5 feet, 1.0 to 3.0 feet, and 3.0 to 5.0 feet bgs, installation of two monitoring wells (35BWW01 and 35BWW02), and collection of one groundwater sample from each well.

2.4.3.1 Soil sampling

Two sump soil samples were collected at the waste rack sump WRS-014 at 0.0 to 0.5 feet bgs and at 3.0 to 5.0 feet bgs. The samples were analyzed for beryllium, nickel, vanadium, pesticides, PCBs, and dioxins/furans.

The two soil samples collected at WRS-014 showed low-level detections of nickel and vanadium. Beryllium was not detected in either sample. The samples showed no detected concentrations of pesticides, PCBs, or dioxins/furans at significant levels.

The three shallow soil samples were collected at soil boring 35BSB01 at intervals of 0.0 to 0.5 feet, 1.0 to 3.0 feet, and 3.0 to 5.0 feet bgs. The samples were analyzed for VOCs, SVOCs, metals, explosive compounds, pesticides, PCBs, and dioxins/furans.

The results for the shallow soil samples showed no detectable concentrations of VOCs, explosive compounds, or PCBs. Nine SVOCs were detected at low levels in the surface sample. Three pesticides (aldrin, p,p'-DDE, and p,p'-DDT) were detected among the three soil samples. Aldrin was detected in the surface sample (0.0 to 0.5 feet bgs) at a concentration of 170 µg/kg. The samples collected at 1.0 to 3.0 and 3.0 to 5.0 feet bgs showed very low concentrations of aldrin (1.8 µg/kg) and the other pesticides at low concentrations. Thirteen dioxin/furan compounds were detected at low concentrations in the three soil samples (Jacobs 2002a).

Lead and selenium were detected in all three soil samples. Lead was detected at concentrations ranging from 8.03 to 31.1 mg/kg and selenium was detected at concentrations ranging from 1.3 to 4.12 mg/kg.

2.4.3.2 Groundwater sampling

Two groundwater monitoring wells (35BWW01 and 35BWW02) were installed during Phase III at Site 35B. Groundwater samples were collected from these two new wells and from the two existing wells (LHS-MW58 and LHS-MW59) installed during the Phase II RI. The groundwater samples were analyzed for VOCs, SVOCs, explosive compounds, and metals. Groundwater from well LHS-MW59 was also analyzed for pesticides, PCBs, and dioxins/furans (Jacobs 2002a).

The results for the groundwater samples showed no detected concentrations of SVOCs, explosive compounds, pesticides, or PCBs. The groundwater sample collected at 35BWW01 showed no detected concentrations of VOCs. The other three groundwater samples showed detected concentrations of six VOCs. LHS-MW58 and LHS-MW59 showed detections of tetrachloroethene (9.5 µg/L and 7.0 µg/L) and TCE (9.4 µg/L and 300 µg/L). Two furan compounds were detected in the groundwater sample collected at LHS-MW59 at low concentrations (Jacobs 2002a).

The four groundwater samples also showed detected concentrations of aluminum, calcium, chromium, iron, magnesium, manganese, sodium, strontium, thallium, and zinc, all at low levels.

2.4.4 Additional Investigations

In February and August of 1996, groundwater samples were collected from wells LHS-MW58 and LHS-MW59. Two groundwater samples were collected from each well and submitted for laboratory analysis for VOCs, SVOCs, explosive compounds, and metals. The groundwater sample collected from LHS-MW58 in February 1996 was also analyzed for pesticides, PCBs, herbicides, TPH, and cyanide.

The results from the groundwater samples showed detected concentrations of VOCs, SVOCs, explosive compounds, and metals. 1,1-Dichloroethene was detected at concentrations of 18 µg/L and 26.5 µg/L, and TCE was detected at concentrations ranging from 9 to 249 µg/L. Two explosive compounds (1,3-dinitrobenzene and tetryl) were detected in the groundwater samples at low concentrations.

The groundwater samples also showed detected concentrations of two metals (antimony and thallium) at slightly elevated levels. Antimony was detected at estimated concentrations of 55J µg/L and 80J µg/L. Thallium was detected in LHS-MW58 at an estimated concentration of 98J µg/L.

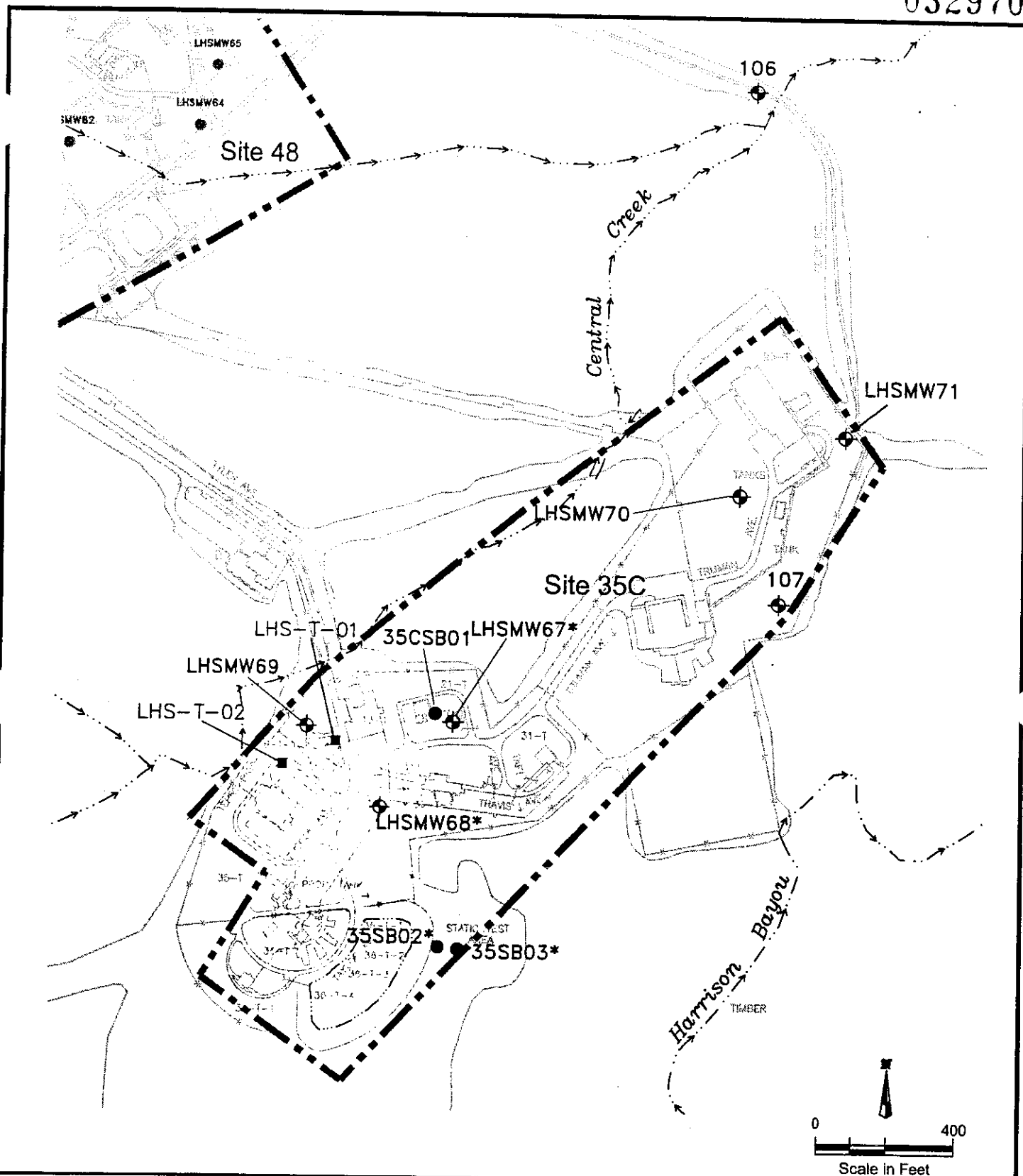
LHS-MW58 was analyzed for pesticides, PCBs, herbicides, TPH, and cyanide. No detected concentrations of these compounds were identified in this monitoring well.

2.5 SITE 35C: STATIC TEST AREA

Site 35C is located in the east-central portion of LHAAP and covers an area of approximately 26 acres, as shown in Figure 2-5. The area was used for testing and evaluating products produced at LHAAP. Activities included testing of illumination devices and static test firing of rocket motors. Structures for these activities included a test tunnel and data acquisition system for flares, rocket motor test stands of earth and concrete, and conditioning facilities for reproducing arctic and tropical temperatures. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Four waste process sumps (S-102, S-103, S-104, and S-105) were located at Site 35C. The site was active until 1998 (Jacobs 2002a).

2.5.1 Pre-RI Activities

Pre-RI activities began in 1982, when Environmental Protection Systems, Inc. (EPS) investigated the site for U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). Two monitoring wells (106 and 107) were installed and groundwater samples were collected. Additionally, three soil samples (601, 602, and 603) were collected east of well 107 (Jacobs 2002a).



Legend

- Soil Boring Sampling Location
- ⊕ Shallow Monitoring Well
- Shallow Soil Sampling Location
- Site Boundary
- * Also Sampled for Perchlorate



US Army Corps
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Tulsa District

JE JACOBS

Site 35C Sampling Locations Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Karnack, Texas

22August02 - Fig_2-5.DWG

Figure 2-5

2.5.1.1 Groundwater sampling

Aluminum, barium, cadmium, chromium, lead, manganese, strontium, and nickel were detected in the groundwater samples. Concentrations of manganese were detected at elevated levels of 652 µg/L and 187 µg/L. The sample from monitoring well 106 showed a detection of 1,3,5-trinitrobenzene at 4.38 µg/L (Jacobs 2002a).

2.5.1.2 Soil sampling

The results from the three soil samples (601, 602, and 603) showed no detected concentrations of organics or explosives. Nine metals were detected in the soil samples. Lead was detected in all three samples with concentrations ranging from 27.0 to 27.4 mg/kg, which exceeds the LHAAP background level of 13.0 mg/kg. Copper was detected in sample 601 at a concentration of 23.8 mg/kg, above the background level of 10.7 mg/kg (Jacobs 2002a).

During the 1993 Waste Sump Inventory at LHAAP, USACE identified four waste process sumps (S-102, S-103, S-104, and S-105) associated with Site 35C. Soil samples were collected adjacent to S-104 at 2 feet and 10 feet bgs. Eight metals (aluminum, arsenic, barium, beryllium, chromium, magnesium, lead, and selenium) and three VOCs (toluene, 1,1,1-trichloroethane, and TCE) were detected in the soil samples.

2.5.2 Phase I RI

The Tulsa District USACE conducted the Phase I RI in 1993. In order to evaluate the nature and extent of contaminated soil at Site 35C, USACE completed 12 soil borings (LH-S102-01, LH-S102-02, LH-DL102-01, LH-S103-01, LH-S103-02, LH-DL103-01, LH-S104-01, LH-S104-02, LH-DL104-01, LH-S105-01, LH-S105-02 and LH-DL105-01) and collected 22 samples for laboratory analyses (Jacobs 2002a).

The soil borings were located near the four sumps at Site 35C. At each sump, two soil borings were completed adjacent to the sump and one soil boring was completed along the sump drainage line to determine whether the sumps or lines were sources of contamination. Eight surface soil samples were collected from 0.5 to 2 feet bgs and submitted for laboratory analysis for VOCs, SVOCs, and metals. Fourteen subsurface soil samples were collected from 2 to 11 feet bgs and submitted for analysis of VOCs, SVOCs, and metals. One subsurface soil sample collected along the S-103 drainage line (LH-DL103-01) was also analyzed for explosive compounds (Jacobs 2002a).

The results from the soil samples showed no detectable concentrations of VOCs or explosive compounds. One SVOC [bis(2-ethylhexyl) phthalate] was identified in one soil sample (LHDL-102-01) at a concentration of 580 µg/kg.

The metals in the soil samples showing concentrations above background levels include arsenic, chromium, lead, strontium, and lead. Lead was detected in all of the soil samples at concentrations ranging from 3.1 to 21.2 mg/kg. Strontium was detected in three soil samples at concentrations ranging from 49.5 to 59.9 mg/kg.

2.5.3 Phase II RI

The Tulsa District USACE conducted the Phase II RI during 1994 and 1995. In order to assess the groundwater at Site 35C, five monitoring wells (LHS-MW67 through LHS-MW71) were installed and one groundwater sample was collected at each well. Additionally, seven soil borings (LHS-T01, LHS-T02, and LHS-MW67 through LHS-MW71) were completed and seven soil samples were collected (Jacobs 2002a).

2.5.3.1 Groundwater sampling

The groundwater monitoring wells installed during Phase II at Site 35C consisted of one intermediate well (LHS-MW69) installed at 51 feet bgs and four shallow wells installed from 17.5 to 22 feet bgs. The five groundwater samples collected at each new monitoring well were submitted for laboratory analyses for VOCs, SVOCs, explosive compounds, and metals.

The results showed no detected concentrations of explosive compounds. One VOC (1,2-dichloroethane) was detected in LHS-MW69 at an estimated concentration of 3J µg/L. The groundwater samples showed three metals (aluminum, chromium, and lead) were detected at levels of interest. Aluminum was detected in one well (LHS-MW71) at a concentration of 108,000 µg/L. Chromium was detected in two monitoring wells at concentrations of 260 µg/L and 560 µg/L, above the MCL of 100 µg/L. Lead was detected in four samples at concentrations ranging from 16 to 65 µg/L.

2.5.3.2 Soil sampling

Seven soil borings (LHS-T01, LHS-T02, and LHS-MW67 through LHS-MW71) were completed and seven soil samples were collected. The samples were analyzed for VOCs, SVOCs, explosive compounds, and metals. The results from the surface soil samples showed no detected concentrations of explosive compounds. One VOC (acetone) was detected in one sample at low levels. Eleven SVOCs were detected among the soil samples at low concentrations.

Metals detected included arsenic, lead, and silver. Arsenic was detected in the soil sample collected near LHS-MW71 at a concentration of 16.2 mg/kg. Lead was detected in all seven samples at concentrations ranging from 8.2 to 29 mg/kg. Silver was detected in five of the seven samples at concentrations ranging from 0.81 to 3.9 mg/kg.

2.5.4 Phase III RI

Sverdrup conducted the field activities for the Phase III RI in 1998. The activities at Site 35C included the collection of eight soil samples at four sump locations (S-102, S-103, S-104, S-105), the collection of three soil samples, and the collection of seven groundwater samples from seven existing wells (106, 107, LHS-MW67 through LHS-MW71) (Jacobs 2002a).

2.5.4.1 Soil sampling

A single soil boring was completed at each sump (S-102, S-103, S-104, S-105) at Site 35C. One surface and one subsurface soil sample was collected from each soil boring and submitted for laboratory analysis of beryllium, nickel, and vanadium. The samples collected near S-105 were also analyzed for pesticides, PCBs, and dioxins/furans. The surface soil samples were collected from 0.0 to 0.5 feet bgs, and the subsurface soil samples were collected from 3.0 to 10.0 feet bgs (Jacobs 2002a).

The eight soil samples showed low concentrations of beryllium, nickel, and vanadium. Many dioxin/furan compounds were detected in the two samples collected near S-105 at low concentrations; however, the surface soil sample collected at S-105 showed octachlorodibenzo-p-dioxin at a concentration of 17 µg/kg, which is higher than values found at other sites on LHAAP (Jacobs 2002a). No pesticides or PCBs were detected.

The three additional soil samples were collected from one soil boring (35CSB01). One surface soil sample (0.0 to 0.5 feet bgs) and two subsurface samples (1.0 to 3.0 and 3.0 to 5.0 feet bgs) were collected and analyzed for VOCs, SVOCs, explosive compounds, metals, pesticides, PCBs, and dioxins/furans.

The results from the soil samples showed no detectable concentrations of VOCs, SVOCs, explosive compounds, or PCBs in the three soil samples. Two pesticides (p,p-DDE and p,p-DDT) were detected in the surface soil samples at low concentrations. All dioxin/furan compounds were also detected at low concentrations. No elevated levels of metals were found.

2.5.4.2 Groundwater sampling

Seven groundwater samples were collected from the seven existing wells (106, 107, LHS-MW67 through LHS-MW71). The groundwater samples were analyzed for VOCs, SVOCs, explosive compounds, and metals. The sample collected at LHS-MW67 was also analyzed for pesticides, PCBs, and dioxins/furans.

The results for the groundwater samples showed no detectable concentrations of VOCs, SVOCs, explosive compounds, pesticides, or PCBs. Chromium, nickel, and silver were detected in the groundwater samples. Chromium was detected in three samples (LHS-MW67, LHS-MW68, and LHS-MW71) at concentrations ranging from 0.37 to 43.0 mg/L, exceeding an MCL of 0.1 mg/L. Nickel and silver were detected in the groundwater sample collected at LHS-MW71 at concentrations of

2.5 mg/L and 1.2 mg/L, respectively. Five dioxin/furan compounds were detected at low concentrations in LHS-MW67.

2.5.5 Additional Investigations

Additional activities at Site 35C included two rounds of groundwater sampling from seven monitoring wells in 1996 and perchlorate analysis of groundwater in May 2000 and February 2001. Soil samples were collected in June 2000 and analyzed for perchlorate.

2.5.5.1 Groundwater sampling

In February and August of 1996, two rounds of seven groundwater samples were collected from wells LHS-MW67 through LHS-MW71, 106, and 107. The samples collected in February 1996 were analyzed for common anions, metals, VOCs, SVOCs, and explosive compounds. The sample collected from LHS-MW69 was also analyzed for TPH, pesticides, PCBs, chlorinated herbicides, and cyanide. The samples collected in August 1996 were analyzed for common anions, metals, VOCs, SVOCs, and explosive compounds (Jacobs 2002a).

The groundwater sample results showed detected concentrations of three VOCs (1,2-dichloroethane, cis-1,2-dichloroethene, and TCE) at low levels. Four SVOCs [di-n-octylphthalate, diethyl phthalate, phenol, and bis(2-ethylhexyl) phthalate] were also detected at low concentrations in the groundwater samples. Five explosive compounds (2,6-dinitrotoluene, 2-amino-4,6-dinitrotoluene, 2-nitrotoluene, 3-nitrotoluene, and hexahydro-1,3,5-trinitro-1,3,5-triazine) were detected among the groundwater samples at low concentrations.

The sample collected from LHS-MW69 was analyzed for TPH, pesticides/PCBs, chlorinated herbicides, and cyanide. No detectable concentrations of TPH, pesticides, PCBs, chlorinated herbicides, or cyanide were identified in the groundwater sample.

The metal results from the groundwater sampling showed three metals (lead, chromium, and thallium) at levels of potential concern. Lead was detected in five samples at concentrations ranging from 49 to 298 µg/L. Chromium was detected in three samples at concentrations ranging from 101 to 7,550 µg/L. Thallium was detected in one monitoring well (LHS-MW71) at a concentration of 134 µg/L.

In May of 2000, groundwater samples were collected from LHS-MW67 and LHS-MW68 and analyzed for perchlorate (a single detection of 28 µg/L). In February 2001, a sample was also collected from monitoring well LHS-MW67 and analyzed for perchlorate (no detection).

2.5.5.2 Soil sampling

In June 2000, two surface and two subsurface soil samples were collected from two locations (35CSB02 and 35CSB03). The soil samples were analyzed for perchlorate. The results showed a detected concentration of perchlorate (60.9 µg/kg) in the surface soil sample collected at 35CSB03 (Jacobs 2002a).

2.6 SITE 46: PLANT 2 AREA

Site 46 is located in the northwestern portion of LHAAP and covers an area of approximately 190 acres, as shown in Figure 2-6. Site 46 is bounded by Avenue P to the south-southwest, by 11th Street and Raymer Street to the southeast and east, and by the northern LHAAP property fence line to the north and is heavily wooded to the west. Construction of Plant 2 began in November 1944 in order to produce JB-2 propellant fuel. At the end of World War II, construction at Plant 2 was halted in August 1945. The plant was reactivated in February 1952 to produce pyrotechnic devices. Plant 2 was active from 1952 until 1956 when activities were halted. With the initiation of the Vietnam War, the plant was reactivated in 1964. Plant 2 produced pyrotechnic and illumination devices until approximately 1997. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Forty-six waste process sumps and 13 waste rack sumps were located at the site.

2.6.1 Pre-RI Activities

In November 1991, BCM Engineers was retained by the LHAAP Operating Contractor, Thiokol Corporation, to evaluate the integrity of the sump system at LHAAP. As a part of the initial activities at Site 46, two soil samples were collected at 2 feet bgs and 10 feet bgs from soil borings drilled adjacent to sumps S-009, S-015, S-023, and S-034.

The results from the eight soil samples showed detections of eight metals (aluminum, arsenic, barium, beryllium, chromium, magnesium, lead, and selenium) and two VOCs (toluene and TCE) in the soil (Jacobs 2002a).

2.6.2 Phase I RI

The Tulsa District USACE conducted the Phase I RI in 1993. In order to evaluate the nature and extent of contaminated soil adjacent to sump locations at Site 46, 87 soil borings were completed at the 60 sumps on site. One hundred ninety-nine soil samples were submitted for laboratory analysis of VOCs, SVOCs, and metals. The sump contents were also sampled during Phase I.

2.6.2.1 Soil sampling

Eighty-seven soil borings were completed at 60 sump locations (S-001 through S-035, S-037 through S-043, S-107 through S-110, and waste rack sumps WRS-004 through WRS-013, WRS-015, WRS-016, WRS-019, and WRS-021) and 199 soil samples were submitted for analysis. The results from the soil sampling showed arsenic, barium, chromium, lead, cadmium, and antimony at levels of interest. Hexachlorobenzene was detected in soil near S-022 at a concentration of 0.224 mg/kg (USACE 1994).

2.6.2.2 Sump contents sampling

The waste materials in the waste process sumps were a source of potential contaminants at Site 46. Four liquid sump contents samples were collected from S-004, S-031, S-033, and S-110. One sludge sample was collected from S-110. All samples were analyzed for VOCs, SVOCs, and metals in order to determine whether the sumps were a source of contamination to the environment (Jacobs 2002a).

In the liquid sump content samples, seven VOCs (benzene, carbon tetrachloride, chloroform, methylene chloride, 1,1-dichloroethene, 1,1,1-trichloroethane, and TCE) and one SVOC (hexachlorobenzene) were detected at elevated levels. Nine metals (arsenic, barium, chromium, copper, lead, mercury, potassium, silver, and zinc) were detected in the liquid sump content samples at concentrations that exceed the LHAAP background groundwater concentrations (USACE 1995c). The liquid sample from S-110 was the most contaminated. S-110 was located in the southernmost corner of Plant 2 (Jacobs 2002a).

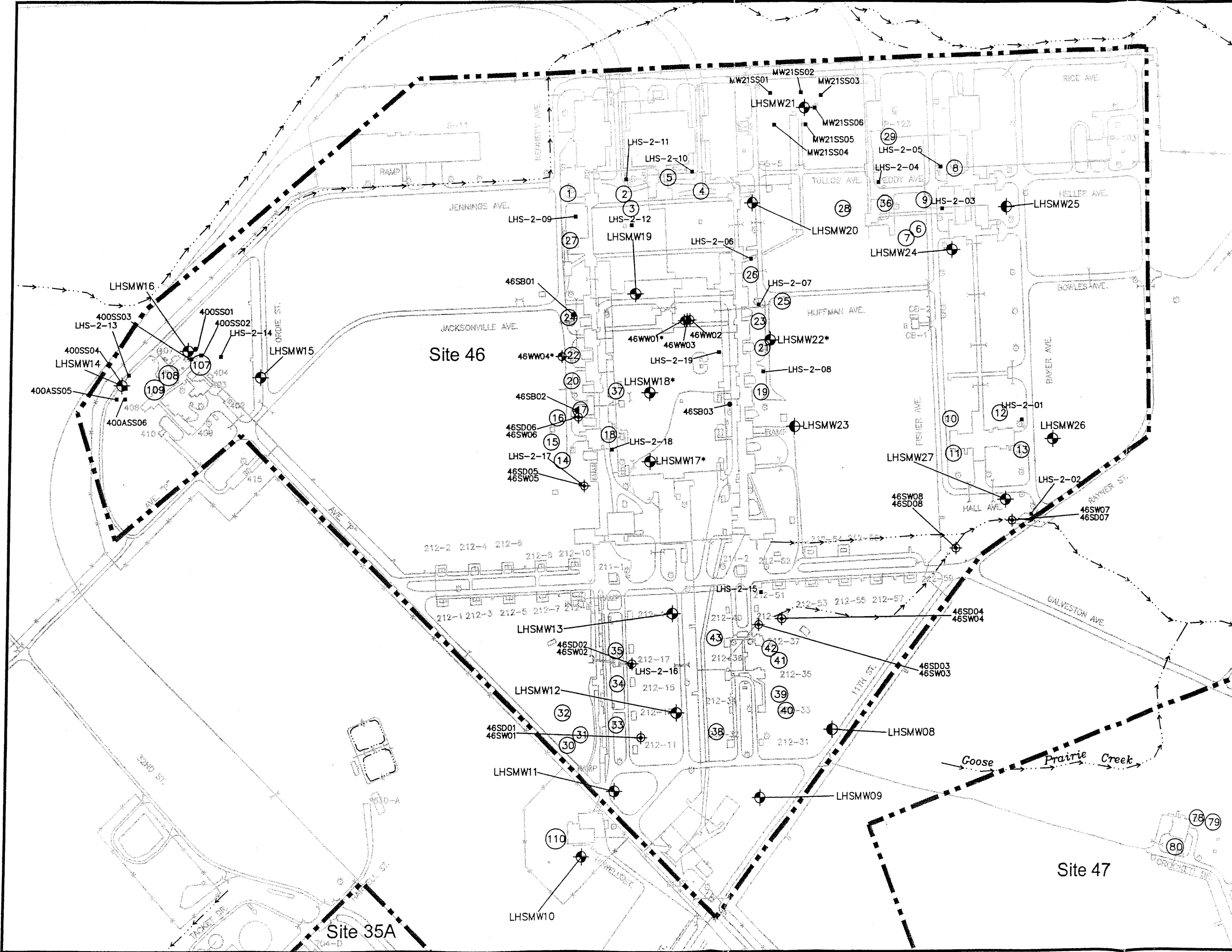
One sump sludge sample was collected from S-110. Three VOCs (carbon tetrachloride, methylene chloride, 1,1,1-trichloroethane) and two SVOCs (hexachlorobenzene and 4-methyl phenol) were detected at levels of interest. Nine metals (antimony, barium, chromium, copper, lead, mercury, silver, strontium, and zinc) were also detected in the sample at concentrations exceeding the LHAAP soil background concentrations.

2.6.3 Phase II RI

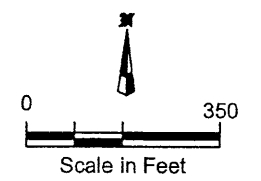
The Tulsa District USACE conducted the Phase II RI during 1994 and 1995. In order to assess the groundwater at Site 46, 20 monitoring wells (LHS-MW08 through LHS-MW27) were installed and one groundwater sample was collected from each new well. Thirty-nine shallow soil samples (LHS-201 through LHS-219 and LHS-MW08 through LHS-MW27) were collected in order to assess whether the surrounding environment had been impacted by contamination.

2.6.3.1 Groundwater sampling

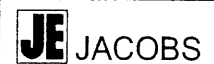
Two VOCs (TCE and 1,2-dichloroethene) were detected in the groundwater (USACE 1995). The groundwater samples also showed detected concentrations of four metals at levels of interest, as reported



- Legend**
- Shallow Monitoring Well
 - Intermediate Monitoring Well
 - Deep Monitoring Well
 - Soil Boring Sampling Location
 - Shallow Soil Sampling Location
 - Surface Water Sampling Location
 - Sediment Sampling Location
 - Sump Locations
 - Site Boundary
 - * Also Sampled for Perchlorate



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Site 46 Sampling Locations
Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Kamack, Texas

in the RI Report (Jacobs 2002a). Aluminum was detected in one monitoring well (LHS-MW16) at a concentration of 80,000 µg/L. Barium was detected in 10 of the 20 groundwater samples at concentrations ranging from 200 to 3,700 µg/L, above the MCL of 2,000 µg/L. Chromium was detected in eight groundwater samples at concentrations ranging from 120 to 470 µg/L, above the MCL of 100 µg/L. Lead was detected in eight samples as well at concentrations ranging from 28 to 100 µg/L.

2.6.3.2 Soil sampling

Thirty-nine soil samples were collected during Phase II at Site 46. Twenty soil samples were collected at the newly installed monitoring well locations and 19 samples were collected from surface ditch or drainage areas. The samples collected at the monitoring well locations showed no detected concentrations of VOCs. Fifteen metals were detected in the 20 soil samples. Thirteen SVOCs were detected in the sample collected from LHS-MW21. The 19 surface ditch and drainage samples showed detected concentrations of 16 metals. Twenty organic compounds were detected among 14 surface ditch and drainage samples. Acetone was detected in four samples at concentrations ranging from 60 to 2,800 µg/kg. The detected acetone in LHS-217 was attributed to laboratory contamination (USACE 1995a).

2.6.4 Phase III RI

Sverdrup conducted the field activities for the Phase III RI in 1998. Activities at Site 46 included the collection of 122 sump soil samples from 61 locations (S-001 through S-043, S-107 through S-110, and waste rack sumps WRS-004 through WRS-013, WRS-015, WRS-016, WRS-019, and WRS-021), the collection of eight sediment (46SD01 through 46SD08) and eight surface water samples (46SW01 through 46SW08), the collection of 21 soil samples (46SB01 through 46SB03, MW21-SS01 through MW21-SS06, and 400ASS01 through 400ASS06) at 15 locations, the installation of four monitoring wells (46WW01 through 46WW04), and the collection of groundwater samples from these new wells and the 20 existing wells installed during Phase II.

2.6.4.1 Soil sampling

The 122 sump soil samples were collected adjacent to the 46 process waste sumps and the 13 waste rack sumps. The soil samples were analyzed for PCBs, dioxins/furans, beryllium, nickel, and vanadium. No detectable concentrations of PCBs existed in the soil samples. Many dioxin/furan compounds were detected in the soil samples at low concentrations. The soil samples also showed detections of beryllium, nickel, and vanadium at low concentrations.

A total of 15 shallow soil borings were completed at Site 46 and 21 soil samples were collected. Samples were collected at the 0.0 to 0.5 feet, 1.0 to 3.0 feet, and 3.0 to 5.0 feet bgs at three locations (46SB01 through 46SB03) and submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, metals,

pesticides, PCBs, and dioxins/furans. Samples were collected from 0.0 to 0.5 feet bgs at the remaining locations and submitted for laboratory analysis for PAHs.

The results for the nine soil samples collected at 46SB01 through 46SB03 showed no detectable concentrations of explosive compounds or PCBs. Many dioxin/furan compounds were detected in the nine samples at low concentrations.

Chromium was detected in five samples at concentrations ranging from 19 to 27 mg/kg. Lead was detected in all nine soil samples at concentrations ranging from 5.17 to 18.9 mg/kg, near background levels. Selenium was detected in all nine samples at concentrations ranging from 1.1 to 2.75 mg/kg. Silver was detected in all nine samples at concentrations ranging from 1.1 to 1.6 mg/kg. Dichlorodifluoromethane was detected at a concentration of 100 µg/kg in sample 46SB03 (0.0 to 0.5 feet). Three SVOCs [benzo(a)pyrene, benzo(b)fluoranthene, and dimethyl phthalate] were detected at low concentrations. Three pesticides [4,4-DDD, alpha-benzene hexachloride (BHC), and lindane] were detected in the nine soil samples. Lindane was detected in sample 46SB02 (0.0 to 0.5 feet) at a concentration of 8.0 µg/kg. The two other pesticides were detected at low concentrations (Jacobs 2002a).

The remaining 12 samples analyzed for PAHs showed detected concentrations of five PAHs [acenaphthene, anthracene, benzo(g,h,i)perylene, naphthalene, and phenanthrene] among five samples.

2.6.4.2 Sediment sampling

Eight sediment samples (46SD01 through 46SD08) and eight surface water samples (46SW01 through 46SW08) were collected during Phase III at Site 46. Sediment and surface water samples were analyzed for VOCs, SVOCs, explosive compounds, metals, pesticides, PCBs, and cyanides. Samples 46SW02, 46SW05, 46SD02, and 46SD05 were also analyzed for dioxins/furans. Additionally, sediment samples were analyzed for TOC and surface water samples were analyzed for hardness.

The results from the sediment samples showed no detectable concentrations of VOCs, SVOCs, explosive compounds, or cyanides. Metals were detected at levels of interest in the eight sediment samples. Chromium was detected in seven samples at concentrations ranging from 15 to 29 mg/kg. Lead was detected in all eight sediment samples at concentrations ranging from 7.51 to 37.3 mg/kg. Selenium was also detected in all eight sediment samples at concentrations ranging from 1.69 to 5.69 mg/kg. One pesticide (4,4-DDT) and one PCB (Aroclor 1254) were detected in three sediment samples at low concentrations. Fourteen dioxin/furan compounds were detected in two sediment samples at low concentrations.

2.6.4.3 Surface water sampling

The results from the surface water samples showed no detectable concentrations of VOCs, SVOCs, pesticides, PCBs, or cyanides. One explosive compound (m-nitrotoluene) was detected in sample

46SW01. Numerous metals were detected in the surface water samples, but mostly at low levels. Antimony was detected in three samples at concentrations of 0.007 to 0.037 mg/L. Barium, beryllium, cadmium, chromium, lead, manganese, and thallium were also detected in sample 46SW01. Barium was detected at a concentration of 3.3 mg/L; beryllium was detected at a concentration of 0.0119 mg/L; cadmium was detected at a concentration of 0.0067 mg/L; chromium was detected at a concentration of 0.23 mg/L; lead was detected at a concentration of 0.292 mg/L; manganese was detected at a concentration of 11.8 mg/L; and thallium was detected at a concentration of 0.0024 mg/L. Four dioxin/furan compounds were detected in samples 46SW02 and 46SW05 at low concentrations.

2.6.4.4 Groundwater sampling

Groundwater monitoring wells (46WW01 through 46WW04) were installed at four different locations at Site 46 during Phase III. One sample was collected from each new well and from the 20 existing wells from previous investigations (LHS-MW08 through LHS-MW27). The 24 groundwater samples were analyzed for VOCs, SVOCs, explosive compounds, and metals. The sample collected from monitoring well LHS-MW19 was also analyzed for pesticides, PCBs, and dioxins/furans.

The results from the groundwater sampling showed no detectable concentrations of explosive compounds, pesticides, or PCBs. Ten VOCs were detected among the groundwater samples; however, TCE was the only VOC detected at concentrations of potential concern. TCE was detected in 46WW01, 46WW02, LHS-MW18, and LHS-MW19 at concentrations ranging from 6.6 to 70 µg/L, compared to an MCL of 5.0 µg/L. One SVOC [bis(2-ethylhexyl) phthalate] was detected in all 24 wells sampled at concentrations ranging from 10 to 25 µg/L. Three dioxin/furan compounds were detected in three groundwater samples at low concentrations.

Several metals were detected at levels above MCLs. Antimony was detected in 46WW01 at a concentration of 0.008 mg/L. Barium was detected in LHS-MW10 at a concentration of 2.9 mg/L. Beryllium was detected in LHS-MW12 and LHS-MW17 at concentrations of 0.0065 mg/L and 0.0054 mg/L. Chromium was detected in 11 of the 24 groundwater monitoring wells at concentrations ranging from 0.11 to 4.7 mg/L. Thallium was detected in three groundwater samples at concentrations ranging from 0.002 to 0.0045 mg/L.

2.6.5 Additional Investigations

Additional activities at Site 46 included two rounds of groundwater samples from wells LHS-MW08 through LHS-MW27 collected in February and August of 1996. In May of 2000, groundwater samples were collected from 46WW01, LHS-MW17, LHS-MW18, and LHS-MW22. In February 2001, a groundwater sample was collected from 46WW04 for perchlorate analysis.

The groundwater samples collected in 1996 were analyzed for VOCs, SVOCs, explosive compounds, anions, and metals. The results from the two rounds of groundwater sampling showed detected concentrations of 16 VOCs, one SVOC, six explosive compounds, and three anions. Of the 16 detected VOCs, only one (TCE) was detected at concentrations above its MCL of 5 µg/L, at levels ranging from 21 to 77 µg/L. One SVOC [bis(2-ethylhexyl) phthalate] was detected in the groundwater samples at low concentrations. The seven detected explosive compounds were detected at low concentrations (Jacobs 2002a).

The metals detected in monitoring wells LHS-MW08 through LHS-MW27 at elevated concentrations consisted of antimony, barium, beryllium, cadmium, chromium, lead, and thallium. Antimony was detected in two samples at concentrations of 40 µg/L and 63 µg/L. Cadmium and beryllium were only detected in one monitoring well (LHS-MW27) at concentrations of 20 µg/L and 76 µg/L, respectively. Chromium was detected in eight groundwater samples at concentrations ranging from 105 to 1,730 µg/L, above an MCL of 100 µg/L. Lead was detected in 12 of the groundwater samples, with a maximum concentration of 514 µg/L. Thallium was detected in three samples at concentrations ranging from 93 to 166 µg/L.

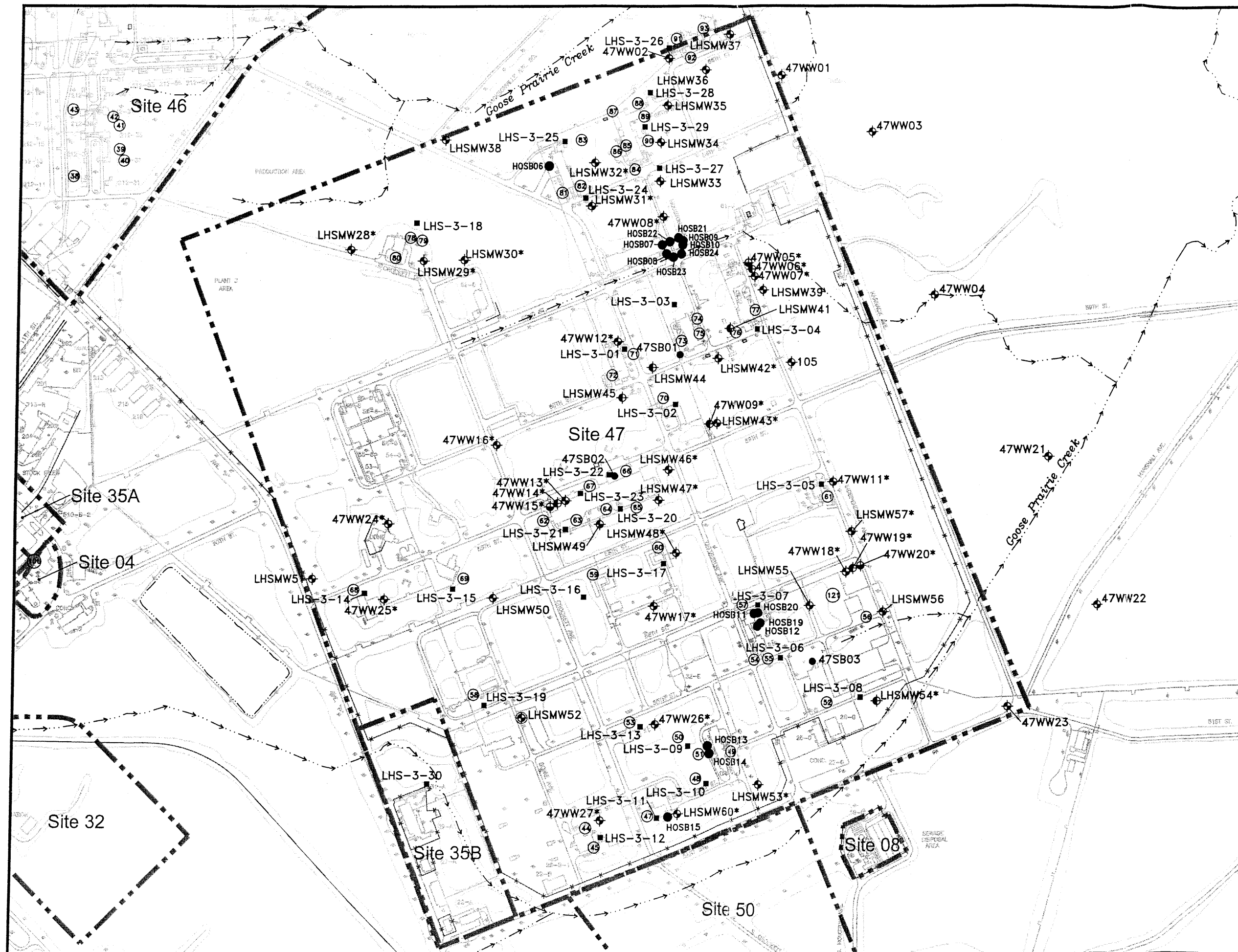
In May 2000, groundwater samples were collected from 46WW01, LHS-MW17, LHS-MW18, and LHS-MW22. The samples were analyzed for VOCs, SVOCs, and perchlorate. TCE was detected in two samples at concentrations of 6.7 µg/L and 9.8 µg/L. No elevated concentrations of SVOCs were detected. Perchlorate was detected in the groundwater samples at concentrations ranging from 4.44 to 117 µg/L. In February 2001, groundwater samples showed detected concentrations of perchlorate ranging from 30 to 550 µg/L.

2.7 SITE 47: PLANT 3 AREA

Site 47 is located in the north-central portion of LHAAP and covers approximately 275 acres, as shown in Figure 2-7. Site 47 is bounded by Karnack Avenue on the east, by Avenue P on the west, by 51st Street on the south, and by 62nd and 66th Streets on the north. Construction of Plant 3 began in July 1953 and production of rocket motors began in December 1954. Rocket motor production continued until the early 1980s. Some of the rocket motor production facilities were converted to produce pyrotechnic and illumination devices and were active until approximately 1997. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Fifty waste process sumps and three waste rack sumps were associated with Site 47 (Jacobs 2002a).

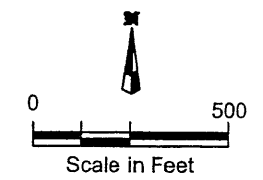
2.7.1 Pre-RI Activities

In 1982, EPS investigated the site for the USATHAMA and published a report documenting the investigation in June 1984 (EPS 1984). As a part of the investigation, monitoring well 105 was installed at Site 47 and a groundwater sample was collected (Jacobs 2002a).



Legend

- ◆ Shallow Monitoring Well
- ⊕ Intermediate Monitoring Well
- ⊕ Deep Monitoring Well
- Soil Boring Sampling Location
- 53 Sump Location
- Shallow Soil Sampling Location
- Site Boundary
- * Also Sampled for Perchlorate



US Army Corps
of Engineers
Tulsa District



**Site 47 Sampling Locations
Group 4 Sites Risk Assessment**

Longhorn Army Ammunition Plant
Kamack, Texas

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Figure 2-7

In November 1991, BCM Engineers was retained by the LHAAP Operating Contractor, Thiokol Corporation, to evaluate the integrity of the sump system at LHAAP. As a part of the initial activities at Site 47, soil samples were collected adjacent to sumps S-057, S-061, S-068, S-070, S-081, and S-086. Two samples were collected from each location at 0 to 2 feet and 8 to 10 feet bgs.

The results from these soil samples showed detections of arsenic, barium, beryllium, chromium, lead, and selenium. Chromium was detected in one sample at a level that was greater than the background level. Lead was detected in two surface soil samples above the background level, and selenium was detected just above the background level in one surface soil sample. Two VOCs (methylene chloride and TCE) were also detected in the soil samples.

2.7.2 Phase I RI

The Tulsa District USACE conducted the Phase I RI in 1993. In order to evaluate the nature and extent of contaminated soil adjacent to sump locations, 120 soil borings were completed at 52 sump locations (S-044, S-045, S-047 through S-093, S-121, WRS-17 and WRS-18) and 241 soil samples were collected. In addition to the soil samples, 15 liquid sump contents samples and 4 sludge content samples were collected from S-056, S-060, S-068, S-069, S-071, S-072, S-081, S-082, S-083, S-086, S-091, S-092, S-093, and S-121.

2.7.2.1 Soil sampling

The 241 soil samples were collected and analyzed for VOCs, SVOCs, and metals. Samples near S-061 through S-067 were analyzed for explosives. Soil samples collected near S-054, S-055, and S-061 through S-067 were analyzed for cyanide.

The 241 soil samples collected during Phase I detected three VOCs (methylene chloride, tetrachloroethene, and TCE) at elevated concentrations. Methylene chloride had a maximum concentration of 11.1 µg/kg near S-064. Tetrachloroethene had a concentration of 58 µg/kg near S-076. TCE was detected near S-063 and S-076 at concentrations ranging from 83.5 to 256 µg/kg. No SVOCs were detected in the soil samples at elevated concentrations (Jacobs 2002a). The soil sampled adjacent to S-062 showed a detectable concentration of cyanide at 0.5 mg/kg (USACE 1994). There were no detectable concentrations of explosive compounds (USACE 1994).

The soil samples showed detections of six metals at elevated concentrations. Arsenic was detected adjacent to 23 sumps at concentrations ranging from 3.5 to 26.4 mg/kg. Barium was detected adjacent to 12 sumps at concentrations ranging from 234 to 1,440 mg/kg. Cadmium was detected adjacent to 11 sumps at concentrations ranging from 2.9 to 8.88 mg/kg. Chromium was detected adjacent to 26 sumps at Site 47 at concentrations ranging from 21.9 to 56.2 mg/kg. Lead was detected adjacent to 43 sumps at concentrations ranging from 8.6 to 939 mg/kg. The sample near S-063 showed the highest

detection of lead at a concentration of 939 mg/kg. Mercury was detected near two sumps (S-073 and S-084) at concentrations of 5.78 mg/kg and 4.4 mg/kg, respectively (USACE 1994).

2.7.2.2 Sump contents sampling

The sump contents sample at Site 47 consisted of 14 liquid sump contents and four sludge contents. The 14 liquid sump contents were analyzed for VOCs, SVOCs, and metals. Seven VOCs were detected in the liquid sump contents samples. Carbon tetrachloride was detected in the sample near S-081 at a concentration of 1,455 µg/L. Chloroform was detected in S-083 at a concentration of 206.3 µg/L. 1,1,1-Trichloroethane was detected in S-082 at a concentration of 250 µg/L. Vinyl chloride was detected in S-121 at a concentration of 80 µg/L. 1,1-Dichloroethene was detected in S-081, S-082, S-083, S-093, and S-121 at concentrations ranging from 14 to 26.5 µg/L. Tetrachloroethene was detected in S-060, S-071, S-081, S-082, S-083, and S-093 at concentrations ranging from 5.2 to 150 µg/L. TCE was detected in S-060, S-083, S-121 at concentrations ranging from 31 to 4,159 µg/L. One SVOC [bis(2-ethylhexyl) phthalate] was detected in two sumps (S-060 and S-072) at concentrations of 20.2 µg/L and 13 µg/L, respectively.

Six metals were detected in the liquid sump contents samples. Antimony was detected in S-068, S-081, S-083, S-091, and S-092 at concentrations ranging from 0.0209 to 0.16 mg/L. Arsenic was detected in S-056, S-071, S-086, and S-093 at concentrations ranging from 0.2 to 0.398 mg/L. Barium was detected in S-060, S-081, S-091, S-092, and S-093 at concentrations ranging from 2.63 to 22.7 mg/L. Cadmium was detected in one sump (S-093) at a concentration of 0.024 mg/L. Chromium was detected in S-060, S-081, S-086, and S-093 at concentrations ranging from 0.21 to 1.37 mg/L. Lead was detected in S-081, S-086, and S-093 at concentrations ranging from 0.0605 to 0.158 mg/L.

The sludge samples showed elevated concentrations of six VOCs and seven metals. Toluene was detected in one sump (S-083) at a concentration of 22,000 µg/kg. 1,1-Dichloroethane was detected in S-083 at a concentration of 38,000 µg/kg. Ethylbenzene was detected in S-083 at a concentration of 16,000 µg/kg. Tetrachloroethene was detected in the sludge samples from S-081, S-082, and S-083 at concentrations ranging from 14,000 to 92,000 µg/kg. 1,1,1-Trichloroethane was detected in S-081, S-082, and S-083 sludge content samples at concentrations ranging from 60,000 to 260,000 µg/kg. TCE was detected in the sludge sample from S-121 at a concentration of 310,000,000 µg/kg (Jacobs 2002a).

Silver was detected in S-082 at a concentration of 1.28 mg/kg. Antimony was detected in S-081, S-082, S-083, and S-121 at concentrations ranging from 19 to 32.3 mg/kg. Arsenic was detected in one sump (S-121) at a concentration of 25.2 mg/kg. Barium was detected in S-081, S-082, and S-083 at concentrations ranging from 28,000 to 48,500 mg/kg. Chromium was detected in S-082 at a concentration of 2,810 mg/kg. Cadmium and lead were detected in S-081, S-082, S-083, S-086, and S-121 at elevated concentrations.

2.7.3 Phase II RI

The Tulsa District USACE conducted the Phase II RI during 1994 and 1995. In order to assess the groundwater at Site 47, thirty-two monitoring wells (LHS-MW28 through LHS-MW57, LHS-MW60 and LHS-MW61) were installed and one groundwater sample was collected at each new well. Sixty-one shallow soil samples (LHS-301 through LHS-329 and LHS-MW28 through LHS-MW57, LHS-MW60 and LHS-MW61) were collected in order to assess whether the surrounding environment had been impacted by contamination.

2.7.3.1 Groundwater sampling

The 32 groundwater samples were analyzed for VOCs, SVOCs, explosive compounds, and metals. Because of the low volume at monitoring well LHS-MW40, it was not analyzed for explosive compounds. Groundwater samples at three monitoring wells (LHS-MW47, LHS-MW48, and LHS-MW49) were also analyzed for cyanide.

Ten VOCs were detected in the groundwater samples. TCE was detected in 13 groundwater samples at concentrations ranging from 2 to 21,000 µg/L. LHS-MW43 showed the highest detection of 21,000 µg/L. 1,2-Dichloroethene was detected in nine monitoring wells at concentrations ranging from 4J to 1,400 µg/L. Vinyl chloride was detected in two monitoring wells (LHS-MW43 and LHS-MW56) at concentrations of 4J µg/L and 100 µg/L, respectively (USACE 1995a).

The groundwater samples showed detected concentrations of 16 metals. Aluminum, antimony, arsenic, cadmium, chromium, nickel, and thallium were detected at elevated concentrations.

2.7.3.2 Soil sampling

The 61 soil samples consisted of surface samples at locations more distant from the individual sumps and at the locations proposed from groundwater monitoring wells. The samples were analyzed for VOCs, SVOCs, metals, and explosive compounds. Additionally, three soil samples from LHS-MW47, LHS-MW48 and LHS-MW49 were analyzed for cyanide.

The samples collected near the monitoring well locations showed no detected concentrations of VOCs. Sixteen metals were detected in the 32 soil samples. According to the RI Report (Jacobs 2002a), concentrations of arsenic, barium, lead, and silver were detected at concentrations of interest. Two SVOCs were detected in the sample collected from LHS-MW34 and five SVOCs were detected in the sample collected at LHS-MW52. No explosive compounds were detected in the monitoring well soil samples.

Twenty-nine samples were collected from surface ditch or drainage areas during Phase II. The surface ditch and drainage samples showed detected concentrations of 18 metals and 24 organic compounds. Arsenic, barium, lead, and silver were metals that were detected at concentrations of interest. Commonly detected SVOCs included pyrene in five samples at concentrations ranging from 460 to 6,800 µg/kg, fluoranthene in three samples at concentrations of 410 to 5,400 µg/kg, and benzo(a)fluoranthene in three samples at concentrations from 670 to 2,900 µg/kg. One explosive compound (2,6-dinitrotoluene) was detected in one sample (LHS-307) at a concentration of 660 µg/kg (USACE 1995a).

2.7.4 Phase III RI

Sverdrup conducted the field activities for the Phase III RI in 1998. The activities at Site 47 included the collection of 104 soil samples from 52 sump locations (S-044, S-045, S-047-S-093, S-113, WRS-017, WRS-018), nine shallow soil samples were collected from three soil borings (47SB01 through 47SB03), 22 monitoring wells were installed (47WW01 through 47WW09, and 47WW11 through 47WW23), and a groundwater sample was collected from each of these new monitoring wells and from the 32 existing monitoring wells installed during Phase II.

2.7.4.1 Soil sampling

The soil samples collected from the sump locations were submitted for analysis of beryllium, nickel, and vanadium, which were detected at low concentrations in all samples. Twenty-nine sump locations were also analyzed for pesticides, PCBs, and dioxin/furan compounds. No pesticides or PCBs were detected in the soil samples. Many dioxin/furan compounds were detected at low concentrations in the 29 soil samples.

Nine shallow soil samples were collected from three soil borings (47SB01 through 47SB03) and the samples were submitted for laboratory analysis of VOCs, SVOCs, metals, explosive compounds, pesticides, PCBs, and dioxin/furan compounds. The results for the shallow soil samples showed no detected concentrations of VOCs, explosive compounds, or PCBs. One SVOC [bis(2-ethylhexyl) phthalate] was detected in 47SB03 (0 to 0.5 feet) at a low concentration.

Several metals were detected in the shallow soil samples at elevated concentrations. Antimony was detected in 47SB03 (0 to 0.5 feet) at a concentration of 7.59 mg/kg. Barium was detected in 47SB03 (3 to 5 feet) at a concentration of 350 mg/kg. Chromium was detected in six samples at concentrations ranging from 14 to 57 mg/kg. Lead was detected in all nine samples at concentrations ranging from 12.3 to 182 mg/kg. Two pesticides (4,4-DDE and 4,4-DDT) were detected in 47SB03 (0 to 0.5 feet) at low concentrations. Thirteen dioxin/furan compounds were detected in the soil samples at low concentrations.

2.7.4.2 Groundwater sampling

A total of 22 groundwater monitoring wells were installed during Phase III at Site 47. Groundwater samples were collected from these new wells and from the 31 existing wells installed during Phase II. The samples were submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, and metals. The samples collected from monitoring wells 47WW01, 47WW06, and 47WW20 were also analyzed for pesticides, PCBs, and dioxin/furan compounds.

The laboratory results for the groundwater samples showed no detectable concentrations of pesticides or PCBs. Nine VOCs were detected among 23 monitoring wells at elevated concentrations. Six SVOCs were detected between two monitoring wells (47WW11 and LHS-MW47); however, pentachlorophenol was the only SVOC detected at concentrations of potential interest (5 µg/L and 7.9 µg/L). Two explosive compounds (2,4-dinitrotoluene and 2,6-dinitrotoluene) were detected in monitoring well 47WW11 at low concentrations. One dioxin/furan compound (octachlorodibenzo-p-dioxin) was detected in the groundwater sample from 47WW01 at a low concentration (Jacobs 2002a).

Five metals were detected in the groundwater samples at elevated concentrations. Aluminum was detected in one monitoring well (LHS-MW48) at a concentration of 86 mg/L. Antimony was detected in ten groundwater samples at concentrations ranging from 0.007 to 0.032 mg/L. Chromium was detected in 24 samples with concentrations ranging from 0.13 to 43 mg/L. Lead was detected in two monitoring wells (LHS-MW53 and LHS-MW57) at concentrations of 0.018 mg/L and 0.016 mg/L. Nickel was detected in three groundwater samples at concentrations ranging from 0.13 to 43 mg/L.

2.7.5 Additional Investigations

Additional activities at Site 47 included two rounds of groundwater samples from wells LHS-MW28 through LHS-MW61 collected in February and August of 1996. Four monitoring wells (47WW24 through 47WW27) were installed after Phase III at Site 47. A groundwater sample was collected from each new well and the samples were analyzed for VOCs, explosive compounds, metals, and perchlorate. Soil samples were also collected from 62 locations near Building 25C, and the 132 samples were analyzed for perchlorate.

2.7.5.1 Groundwater sampling

In 1996, two rounds of groundwater samples were collected from LHS-MW28 through LHS-MW61. The samples were submitted for laboratory analysis for VOCs, SVOCs, explosive compounds, anions, and metals. Monitoring wells LHS-MW35, LHS-MW43, LHS-MW51, and LHS-MW56 were also analyzed for pesticides, PCBs, and herbicides.

According to the RI Report (Jacobs 2002a), the groundwater samples showed detected concentrations of five VOCs (1,1-dichloroethene, cis-1,2-dichloroethene, tetrachloroethene, TCE, and vinyl chloride) and

one SVOC (pentachlorophenol) at concentrations of potential concern. 1,1-Dichloroethene was detected at concentrations ranging from 12.7 to 30 µg/L. The VOC cis-1,2-dichloroethene was detected at concentrations ranging from 554 to 2,020 µg/L. Tetrachloroethene was detected at concentrations ranging from 13.6 to 168 µg/L. TCE was frequently detected in the groundwater samples at concentrations ranging from 6.2 to 29,410 µg/L, above the MCL of 5 µg/L. Vinyl chloride was detected at concentrations ranging from 2.8 to 127 µg/L. Pentachlorophenol was the only SVOC detected at elevated concentrations. Only one sample showed a detection of pentachlorophenol, at a concentration of 7.5 µg/L. Thirteen explosive compounds were detected among the groundwater samples at low concentrations.

Chromium and nickel were detected in the groundwater samples at concentrations of interest. Chromium was detected at concentrations ranging from 170 to 2,720 µg/L. Nickel was detected at concentrations ranging from 1,800 to 4,810 µg/L.

No pesticides, PCBs, or herbicides were detected in the monitoring wells analyzed for these analytes.

In 2000, samples were collected from monitoring wells 47WW24 through 47WW27 and submitted for laboratory analysis for VOCs, explosive compounds, perchlorate, and metals. The results from these four wells showed no detected concentrations for explosive compounds. Ten VOCs were detected in the groundwater samples. The VOC cis-1,2-dichloroethene was detected in two samples at concentrations of 630J µg/L and 1,310J µg/L. TCE was detected in two samples at concentrations of 100J µg/L and 9,280 µg/L. Vinyl chloride was detected in one groundwater sample at a concentration of 88.6 µg/L.

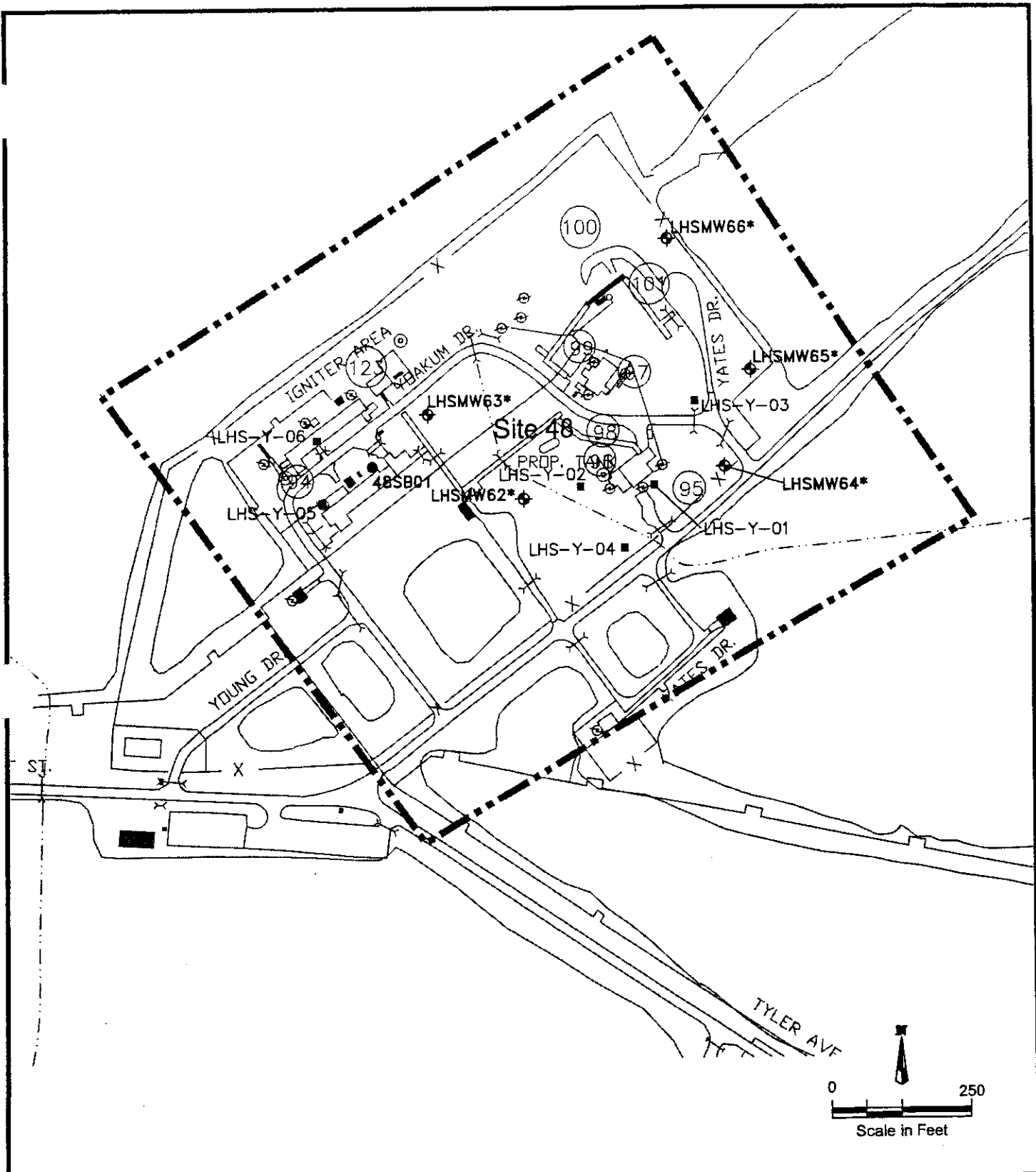
Perchlorate was detected in the groundwater samples at concentrations ranging from 0.97J to 82,900 µg/L. Metals were not detected at concentrations of potential concern.

2.7.5.2 Soil sampling

In 2000, 132 soil samples were collected near Building 25C and analyzed for perchlorate. The results from the soil samples showed detected concentrations of perchlorate ranging from 20.3 to 190,000 mg/kg.

2.8 SITE 48: Y-AREA

Site 48 is located in the east-central portion of LHAAP and covers an area of approximately 16 acres, as shown in Figure 2-8. The center of the site is located at the intersection of Yoakum Drive and Starr Ranch Road. The Y-Area was built during the construction of Plant 3 (1953 to 1955). The Y-Area was used for the production of igniters for the use in pyrotechnic and illuminating devices. The Y-Area was active until approximately 1997. Industrial solid wastes and possibly hazardous wastes have been generated by these activities. Nine waste process sumps and three waste rack sumps are associated with Site 48 (Jacobs 2002a).



Legend

- Soil Boring Sampling Location
- Shallow Soil Sampling Location
- ⊕ Shallow Monitoring Well
- ⊕ Sump
- Site Boundary
- * Also Sampled for Perchlorate



US Army Corps
of Engineers
Tulsa District

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Site 48 Sampling Locations Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Karnack, Texas

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Figure 2-8

2.8.1 Phase I RI

The Tulsa District USACE conducted the Phase I RI in 1993. In order to evaluate the nature and extent of contaminated soil adjacent to sump locations, 14 soil borings (LHS-9401, LHS-9501, LHS-9502, LHDL-9501, LHS-9601, LHS-9701, LHS-9801, LHS-9901, LHS-10101, LHS-12301, LHWRS-101, LHWRS-201, and LHWRS-301) were completed at the 12 sumps at Site 48. Samples were collected from each borehole at the surface (0 to 1.5 feet bgs) and at depths up to 12.8 feet bgs. Thirty-four soil samples were collected and submitted for laboratory analysis of VOCs, SVOCs, and metals.

The results from the soil samples showed only low concentrations of SVOCs. One VOC (vinyl chloride) was detected near S-099 at an elevated concentration.

Seven metals were detected at concentrations of interest in the soil samples. Arsenic was detected at four sump locations (S-095, S-098, S-101, WRS-002) at concentrations ranging from 3.76 to 10.7J mg/kg. Barium was detected at three sump locations (S-94, S-095, S-123) at concentration ranging from 224J to 1,620J mg/kg. Cadmium was detected at all 12 sump locations at concentrations ranging from 2.12J to 11.4J mg/kg. Antimony was detected at one sump (S-095) at a concentration of 11J mg/kg. Chromium was detected at five sumps (S-094, S-095, S-098, S-101, WRS-002) at concentrations ranging from 19.8J to 41.5J mg/kg. Lead was detected at all 12 sump locations at concentrations ranging from 10.9J to 39.7J mg/kg. Mercury was detected at one sump location (WRS-002) at a concentration of 0.31J mg/kg.

2.8.2 Phase II RI

The Tulsa District USACE conducted the Phase II RI during 1994 and 1995. In order to assess the groundwater at Site 48, five monitoring wells (LHS-MW62 through LHS-MW66) were installed and a groundwater sample was collected from each well. Eleven shallow soil samples were collected in order to assess whether the surrounding environment had been impacted by contamination.

2.8.2.1 Groundwater sampling

Five groundwater samples were collected during Phase II at Site 48 and analyzed for VOCs, SVOCs, explosive compounds, and metals. Two VOCs (TCE and chloroform) were detected in the groundwater samples at very low levels. TCE was detected in LHS-MW66 at a concentration of 2J µg/L. Chloroform was detected in LHS-MW63 at a concentration of 5 µg/L. One SVOC [bis(2-ethylhexyl) phthalate] was the detected in the groundwater samples, at a concentration of 1J µg/L in LHS-MW62 and LHS-MW66 (USACE 1995a).

The results from the laboratory analysis showed detected concentrations of 16 metals; however, only aluminum and chromium were detected at levels of potential concern. Aluminum was detected in

LHS-MW62 and LHS-MW64 at concentrations of 161,000 µg/L and 139,000 µg/L. Chromium was detected in four samples at concentrations ranging from 130 to 430 µg/L.

2.8.2.2 Soil sampling

Eleven soil samples (LHS-MW62 through LHS-MW66 and LHS-Y01 through LHS-Y06) were collected during Phase II at Site 48. Five of the samples were collected near the newly installed monitoring wells and six were collected from surface ditch and drainage areas. All soil samples were analyzed for VOCs, SVOCs, explosive compounds, and metals.

The soil samples collected at the monitoring wells showed no detections of VOCs, SVOCs, or explosive compounds. Sixteen metals were detected in the monitoring well soil samples. The surface ditch and drainage area soil samples showed no detections of explosive compounds. Methylene chloride was detected in the surface ditch and drainage soil samples at a concentration of 14 µg/kg. Ten SVOCs and 15 metals were detected at low levels in the surface ditch and drainage soil samples.

2.8.3 Phase III RI

Sverdrup conducted the field activities for the Phase III RI in 1998. The investigation activities at Site 48 included the collection of 24 soil samples at the 12 sump locations, three shallow subsurface soil samples, and groundwater samples from the five existing monitoring wells.

2.8.3.1 Soil sampling

Twenty-four soil samples were collected at the 12 sump locations (S-094 through S-101, S-123, WRS-001 through WRS-003) at Site 48. The soil samples were analyzed for beryllium, nickel, and vanadium. Samples collected at S-092, S-094, S-095, S-098, S-100, WRS-001, and WRS-003 were also analyzed for PCBs and dioxin/furan compounds.

All 24 soil samples showed detections of beryllium, nickel, and vanadium at low concentrations. The seven soil samples analyzed for PCBs showed no detected concentrations. Many dioxin/furan compounds were detected in these seven samples at low concentrations. Octachlorodibenzo-p-dioxin showed the highest concentrations of all detected dioxin/furan compounds, with results as high as 34,472 ng/kg in S-100.

One shallow soil boring (48SB01) was completed at Site 48 during Phase III. A total of three soil samples were collected at intervals of 0 to 0.5 feet, 1 to 3 feet, and 3 to 5 feet bgs. The soil samples were submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, metals, pesticides, PCBs, dioxin/furan compounds. The laboratory results showed no detected concentrations of VOCs, explosive

compounds, or pesticides in the three soil samples. Three SVOCs (fluoranthene, phenanthrene, and pyrene) were detected in the surface soil sample (0 to 0.5 feet bgs) at low concentrations.

Eighteen metals were detected in the soil samples, all at low levels, many below background. One PCB (Aroclor 1254) was detected in the surface sample (0 to 0.5 feet) at a concentration of 66 µg/kg. Many dioxin/furan compounds were detected in the three soil samples at low concentrations.

2.8.3.2 Groundwater sampling

During Phase III at Site 48, five groundwater samples were collected from the monitoring wells previously installed during Phase II (LHS-MW62 through LHS-MW66). The groundwater samples were submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, and metals. The sample collected at monitoring well LHS-MW62 was also analyzed for pesticides, PCBs, and dioxin/furan compounds.

The results from the groundwater samples showed no detectable concentrations of SVOCs, explosive compounds, pesticides, or PCBs. One VOC (tert-butylbenzene) was detected in LHS-MW64 at a concentration of 1.2 µg/L.

Fifteen metals were detected among the groundwater samples. Chromium, nickel, and silver were detected at concentrations of interest, as reported in the RI Report (Jacobs 2002a). Chromium was detected in two wells (LHS-MW63 and LHS-MW65) at concentrations of 51 mg/L and 1.9 mg/L, respectively. Nickel was detected at a concentration of 3.2 mg/L and silver was detected at a concentration of 1.4 mg/L, both in LHS-MW63. One dioxin (octachlorodibenzo-p-dioxin) was detected in LHS-MW62 at a low concentration of 7.4×10^{-5} µg/L. There is no information regarding the possible source of the dioxin in this well, and the single detection has not been confirmed through additional sampling and analysis.

2.8.4 Additional Investigations

Additional investigations at Site 48 included the collection of two rounds of groundwater samples from monitoring wells LHS-MW62 through LHS-MW66. The samples were collected in 1996 and submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, anions, and metals. LHS-MW62 and LHS-MW63 were also analyzed for pesticides, PCBs, and herbicides (Jacobs 2002a).

TCE was detected in LHS-MW62 at a concentration of 9.0 µg/L, slightly above the MCL of 5 µg/L. Five SVOCs were detected at low concentrations. Six explosive compounds were detected among the groundwater samples at low concentrations. No detected concentrations of pesticides, PCBs, or herbicides were identified in LHS-MW62 and LHS-MW63.

The groundwater samples showed detected concentrations of antimony, chromium, lead, and thallium at concentrations of interest. Antimony was detected in one sample at an estimated concentration of 51J µg/L. Chromium was detected in four samples at concentrations ranging from 183 to 7,410J µg/L. Lead was detected in three samples at concentrations ranging from 96 to 367 µg/L, and thallium was detected in three samples at concentrations ranging from 92 to 205 µg/L.

2.9 SITE 50: FORMER SUMP WATER TANK

Site 50 is located in the north-central portion of LHAAP and covers an area of approximately 1 acre, as shown in Figure 2-9. The site is bound by Goose Prairie Creek to the north and by Crockett Avenue to the northeast. Site 50 was identified through historical records as containing an aboveground storage tank for industrial wastewater collected from industrial waste production sumps located at various sites throughout LHAAP. Discharges from this storage tank were made upstream of the bridge on Crockett Avenue, which crosses Goose Prairie Creek just south of 51st Street. Contents from this storage tank were emptied into Goose Prairie Creek after all solids were filtered out and the natural flow in the creek was sufficient to "dilute the waste to level that is safe for fish and other aquatic life." If natural flow in the creek was considered insufficient, clean water was apparently pumped into the creek to dilute the contents. Because the storage tank was described as holding industrial wastewater, it is possible that hazardous wastes were released by these activities (Jacobs 2002a).

2.9.1 Site 50 Site Investigation

During 1995, a Site Investigation (SI) was performed at Site 50. During this investigation, sediments and soils were sampled in order to assess whether industrial wastewater that was stored in the tank had impacted Site 50. Two sediment samples (50SD01 and 50SD02) were collected from Goose Prairie Creek, five surface soil samples (50SS01 through 50SS05) were collected, four soil borings were completed (50SB01 through 50SB04), and 12 soil samples were collected from the soil borings.

2.9.1.1 Sediment sampling

Two sediment samples (50SD01 and 50SD02) were collected from Goose Prairie Creek and submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, and metals. The results from the sediment samples showed no detected concentrations of SVOCs or explosive compounds. One VOC (TCE) was detected at a concentration of 33 µg/kg in sample 50SD02.

Sixteen metals were detected in the sediment samples; however, the detections were all at low concentrations, often below background levels.

Site 47

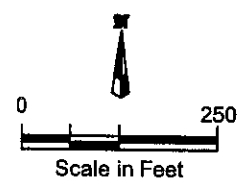
Site 08

Site 50

GOOSE PRAIRIE
CREEK

S. HOUSTON AVE.

46TH ST.

**Legend**

- ⊕ Shallow Monitoring Well
- Soil Boring Sampling Location
- Shallow Soil Sampling Location
- ⊕ Surface Water Sampling Location
- ◆ Sediment Sampling Location
- Site Boundary
- * Also Sampled for Perchlorate



US Army Corps
of Engineers
Tulsa District

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Site 50 Sampling Locations
Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Karnack, Texas

22August02 - Fig_2-9.DWG

Figure 2-9

2.9.1.2 Soil sampling

Five surface soil samples (50SS01 through 50SS05) were collected at Site 50 during the Group 5 SI. The samples were submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, and metals.

The results from the surface soil samples showed no detected concentrations of explosive compounds. TCE was detected in two surface soil samples (50SS02 and 50SS04) at concentrations of 3J $\mu\text{g/kg}$ and 5 $\mu\text{g/kg}$ respectively. Three SVOCs [benzoic acid, benzyl butyl phthalate, and bis(2-ethylhexyl) phthalate] were detected in the soil samples at low concentrations. Sixteen metals were detected in the soil samples; however, only lead was detected at an elevated concentration. Lead was detected in all five surface soil samples at concentrations ranging from 3.1 to 30.0 mg/kg (Jacobs 2002a).

Subsurface soil samples were collected at Site 50 from soil borings (50SB01 through 50SB04). A total of 12 samples were collected and submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, and metals. The soil samples showed no detected results of explosive compounds. TCE was detected in sample 50SB02 at a concentration of 519 $\mu\text{g/kg}$. Two SVOCs [benzyl butyl phthalate and bis(2-ethylhexyl) phthalate] were detected in the soil samples at low concentrations. Barium was detected in three samples at concentrations ranging from 283 to 871 mg/kg. Beryllium was detected in six samples at concentrations ranging from 0.94 to 2.7 mg/kg. Lead was detected in all 12 subsurface soil samples at concentrations ranging from 4.86 to 33.0 mg/kg (Jacobs 2002a).

2.9.2 Phase III RI

Sverdrup conducted the field activities for the Phase III RI in 1998. Activities at Site 50 included the collection of sediment, surface water, soil, and groundwater samples.

2.9.2.1 Sediment sampling

Six sediment (50SD03 through 50SD08) and six surface water samples (50SW03 through 50SW08) were collected at Site 50, with Goose Prairie Creek as the targeted area. The sediment and surface water samples were analyzed for VOCs, SVOCs, explosive compounds, cyanides, and metals. Two sediment samples (50SD06 and 50SD08) and two surface water samples (50SW06 and 50SW08) were also analyzed for pesticides, PCBs, and dioxins/furans. Sediment samples were analyzed for TOC and surface water samples were analyzed for hardness (Jacobs 2002a).

The results from the sediment samples showed no detections of SVOCs or explosive compounds. Five VOCs were detected in the sediment samples at low concentrations. Cyanide was detected in one sample (50SD05) at a concentration of 947.9 $\mu\text{g/kg}$.

Arsenic was detected in one sample (50SD08) at a concentration of 14.2 mg/kg. Beryllium was detected in four samples at concentrations ranging from 0.938 to 2.6 mg/kg. Lead was detected in all six sediment samples at concentrations ranging from 10.4 to 71.7 mg/kg. Selenium was detected in four samples at concentrations ranging from 1.5 to 3.4 mg/kg. Samples 50SD06 and 50SD08 showed no detected concentrations of PCBs. Two pesticides (p,p-DDD and p,p-DDT) were detected in 50SD08 at low concentrations. Ten dioxin/furan compounds were detected between the two sediment samples (Jacobs 2002a).

2.9.2.2 Surface water sampling

The results from the surface water samples showed three VOCs (acetone, TCE, and cis-1,2-dichloroethene) detected in two surface water samples (50SW03 and 50SW05). The other four surface water samples showed no detected concentrations for VOCs. One SVOC [bis(2-ethylhexyl) phthalate] was detected in 50SW03 at a low concentration of 7.3 µg/L. The Texas Water Quality Standard (TWQS) for bis(2-ethylhexyl) phthalate is 59 µg/L. One explosive compound (2,6-dinitrotoluene) was detected in 50SW05 at a concentration of 11 µg/L. Cyanide was detected in one of the six surface water samples at a concentration of 11 µg/L.

Fifteen metals were detected among the six surface water samples. Aluminum, arsenic, copper, lead, thallium, and zinc were detected at concentrations exceeding the TWQS values. Aluminum was detected in all six samples at concentrations from 1,100 to 11,000 µg/L, exceeding the TWQS of 991 µg/L. Copper was detected in two samples (50SW03 and 50SW07) at concentrations of 44 µg/L and 29 µg/L, respectively, exceeding the TWQS of 12.3 µg/L. Lead was detected in all six samples at concentrations ranging from 3 to 69 µg/L, above the TWQS of 2.52 µg/L. Zinc was detected in two samples (50SW03 and 50SW04) at concentrations of 140 µg/L and 470 µg/L, respectively, compared to the TWQS of 104 µg/L. Samples 50SW06 and 50SW08 were analyzed for pesticides, PCBs, and dioxin/furan compounds. No pesticides or PCBs were detected in samples. Three dioxin/furan compounds were detected between the two samples (Jacobs 2002a).

2.9.2.3 Soil sampling

Soil samples were collected during the Phase III investigation at two sample locations, 50SB06 and 50SB07. Soil samples were collected at intervals of 0 to 0.5 feet, 1 to 3 feet, 3 to 5 feet for location 50SB06 and one sample was collected at 0 to 0.5 feet at 50SB07. A total of four samples were collected and analyzed for VOCs, SVOCs, pesticides, PCBs, explosive compounds, dioxins/furans, and metals.

The results for the soil samples showed no detected concentrations of SVOCs or explosive compounds. TCE and three pesticides (p,p'-DDD, p,p'-DDE, p,p'-DDT) were detected in the soil samples at low concentrations. One PCB (Aroclor 1254) was detected in three soil samples at low concentrations. Fifteen dioxin/furan compounds were detected among the soil samples at low concentrations. Lead was

detected in all four samples at concentrations ranging from 15.4 to 29.6 mg/kg. Selenium was also detected in all four soil samples at concentrations ranging from 1.45 to 2.92 mg/kg.

2.9.2.4 Groundwater sampling

Four monitoring wells (50WW01 through 50WW04) were installed at Site 50 during the Phase III RI. One groundwater sample was collected from each well at the time of installation and the samples were submitted for laboratory analysis of VOCs, SVOCs, explosive compounds, perchlorate, and metals. Sample 50WW01 was also analyzed for pesticides, PCBs, and dioxin/furan compounds.

The results from the groundwater sampling showed no detected concentrations of SVOCs, explosive compounds, pesticides, and PCBs. 1,1-Dichloroethene was detected at a concentration of 50 µg/L and 1,2-dichloroethane was detected at a concentration of 98 µg/L. Tetrachloroethene was detected at a concentration of 35 µg/L and TCE was detected at a concentration of 19,000 µg/L. Vinyl chloride was detected at a concentration of 100 µg/L and cis-1,2-dichloroethene was detected at a concentration of 4,400 µg/L. The VOC levels are considerably above associated MCLs (Jacobs 2002a).

Perchlorate was analyzed in wells 50WW01, 50WW02, and 50WW04. No detections of perchlorate were identified in wells 50WW01 and 50WW04; however, very high levels (18,000 µg/L) were detected in 50WW02. Well 50WW01 was analyzed for dioxin/furan compounds. The results showed detections of three dioxins/furans at low concentrations (Jacobs 2002a).

2.9.3 Additional Investigations

Additional investigations at Site 50 included the collection of four soil samples and four groundwater samples in May 2000. A second round of groundwater samples were collected in February 2001. All samples collected during the additional investigations were analyzed for perchlorate.

Four soil samples were collected from two soil borings (50SB08 and 50SB09) at intervals of 0 to 0.5 feet bgs and 1 to 2 feet bgs. Perchlorate was detected in three of the samples at concentrations ranging from 30 to 36.1 µg/kg (Jacobs 2002a).

The first round of groundwater samples was collected from monitoring wells 50WW01 through 50WW04. The second round of groundwater samples were collected from 50WW01 through 50WW03. Perchlorate was detected in three wells (50WW01 through 50WW03) at concentrations ranging from 1.6 to 4,190 µg/L. The second round of groundwater samples showed detected concentrations of perchlorate in 50WW02 at 10,000 µg/L (Jacobs 2002a).

2.10 SITE 60: PESTICIDE STORAGE BUILDINGS

Site 60 consists of three buildings (411, 411A, and 714) and a shed (TS-80), as shown in Figure 2-10. These buildings were reportedly used for the storage of pesticides and herbicides. Records indicated that pesticides and herbicides were originally stored in Building 714 and that, in 1970, the stock was moved to Building 411. A site visit and communications with LHAAP personnel indicated Building 411A and Shed TS-80, not Building 411, may have been used as pesticide and herbicide storage areas. Industrial solid wastes and possibly hazardous wastes may have been generated by these activities. Two sumps (S-106 and S-122) were located near Building 411, 411A, and Shed TS-80; one sump (S-113) was located near Building 714. Sump S-113 is included in the Site 35A discussion (Section 2.3).

2.10.1 Phase I RI

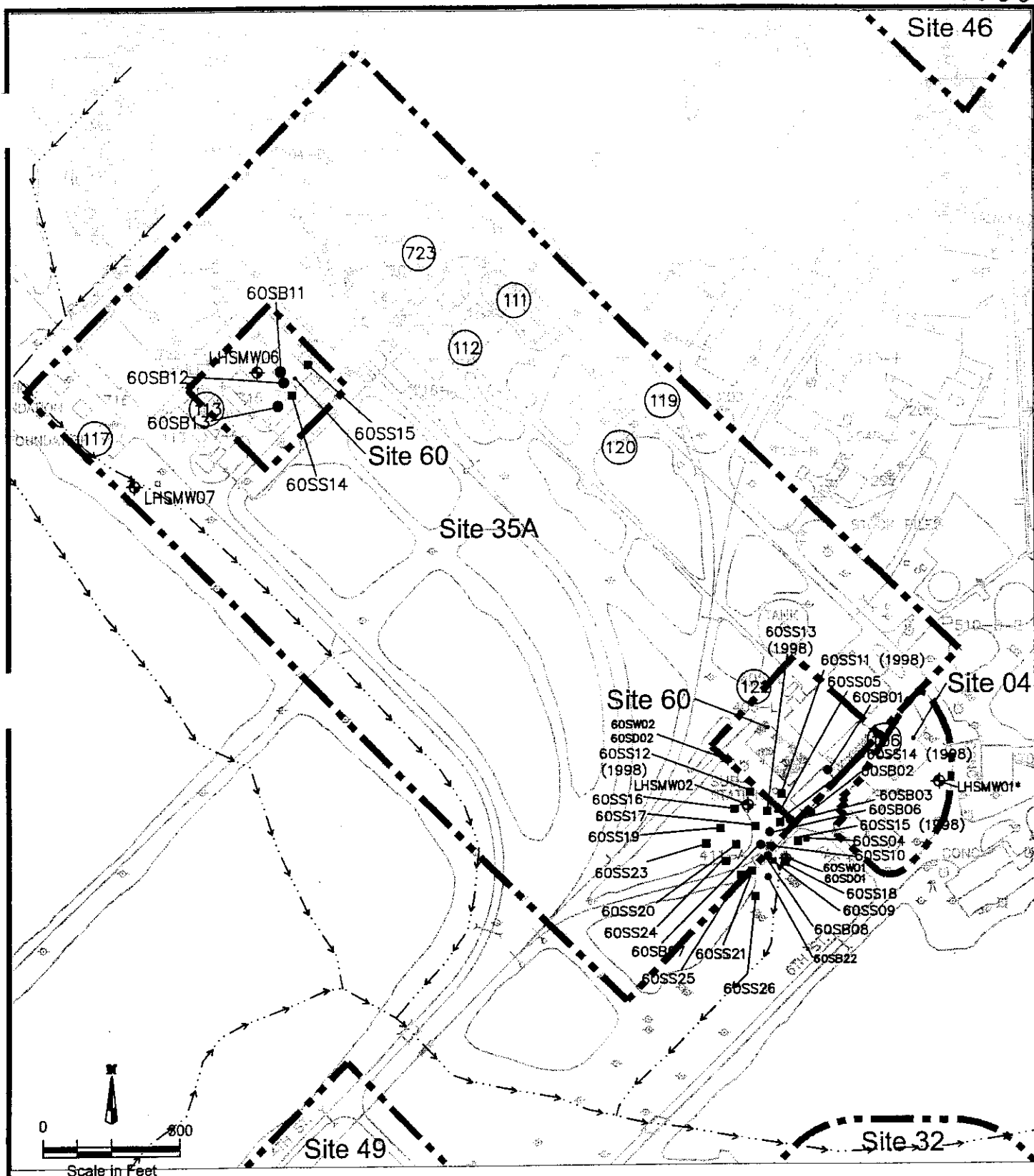
During the Phase I RI, two soil borings (LHS-122-01 and LHS-122-02) were completed at Site 60. A sample was collected at 0.5 feet bgs and 4 feet bgs at LHS-122-01 and LHS-122-02. A second subsurface soil sample was collected at 5.4 feet bgs from soil boring LHS-122-02. All five soil samples were analyzed for VOCs, SVOCs, and metals.

The results from the soil investigation showed no detected concentrations of VOCs. One SVOC (di-n-butylphthalate) was detected in LHS-122-02 at a low concentration (347 $\mu\text{g}/\text{kg}$). Metal concentrations were also low (Jacobs 2002a).

2.10.2 Site 60 Site Investigation

During the SI, 42 soil samples were collected from 24 locations (60SS01 through 60SS15, 60SB01 through 60SB03, 60SB06 through 60SB08, and 60SB11 through 60SB13) and analyzed for pesticides and herbicides. Samples collected from locations 60SS01 through 60SS15 were surface soil samples. Samples collected from locations 60SB01 through 60SB03, 60SB06 through 60SB08, and 60SB11 through 60SB13 were subsurface samples.

The results from the analysis of the soil samples showed no detected concentrations of herbicides. Five pesticides (aldrin, dieldrin, endosulfan sulfate, 4,4'-DDE, and 4,4'-DDT) were detected in the samples. Aldrin was detected in one sample (60SB13) at a concentration of 2.4J $\mu\text{g}/\text{kg}$. Dieldrin was detected in three samples at a maximum concentration of 25,404 $\mu\text{g}/\text{kg}$. Endosulfan sulfate was detected in one sample at an estimated concentration of 0.7J $\mu\text{g}/\text{kg}$. 4,4'-DDE was detected in six soil samples at a maximum concentration of 203 $\mu\text{g}/\text{kg}$. 4,4'-DDT was detected in three soil samples at a maximum estimated concentration of 458J $\mu\text{g}/\text{kg}$.



Legend

- Shallow Soil Sampling Location
- Soil Boring Sampling Location
- ◆ Sediment Sampling Location
- ⊕ Surface Water Sampling Location
- ⊙ Shallow Monitoring Well
- Site Boundary
- (120) Sump Location
- * Also Sampled for Perchlorate



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Site 60 Sampling Locations Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Karnack, Texas

22August02 - Fig_2-10.dwg

Figure 2-10

2.10.3 Phase III RI

During the Phase III investigations at Site 60, two sediment (60SD01 and 60SD02) and two surface water (60SW01 and 60SW02) locations were sampled in order to assess whether contaminants had migrated from the source area to drainage ways along the northwestern and southeastern areas of the site. The samples were analyzed for pesticides and herbicides. No detectable concentrations were found in the sediment and surface water samples.

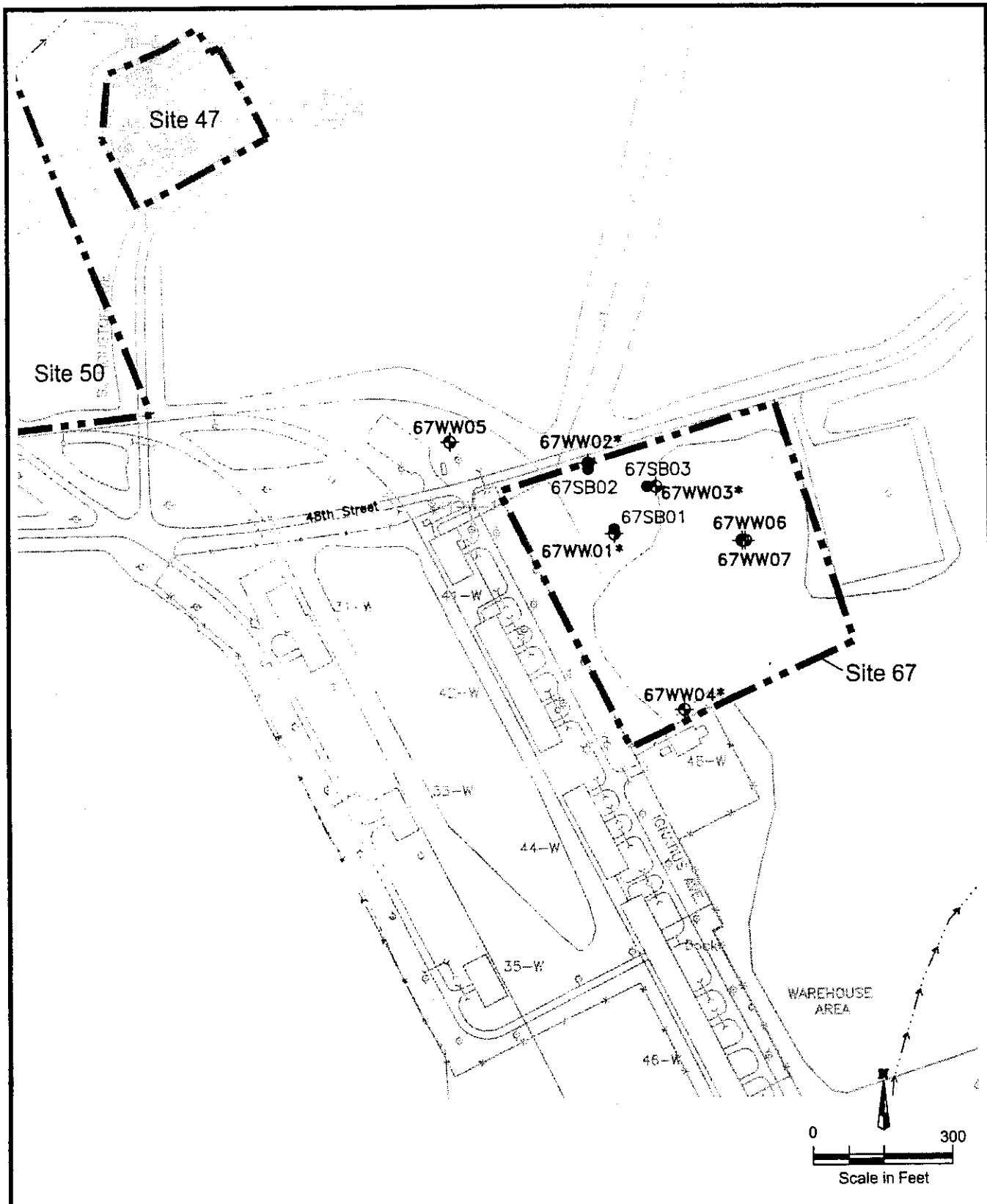
Soil samples were also collected during Phase III at Site 60. A total of 18 soil samples were collected from 16 locations (60SS11 through 60SS21, 60SB22, 60SS23 through 60SS26). The samples were analyzed for pesticides and herbicides. Three samples were collected from soil boring 60SB22 and were analyzed for VOCs, SVOCs, PCBs, pesticides, explosive compounds, metals, and dioxin/furan compounds.

The results from the soil samples showed no detected concentrations of herbicides. One pesticide (4,4'-DDE) was detected in one soil sample (60SS18) at a concentration of 25 µg/kg. The three soil samples collected at 60SB22 showed no detected concentrations of VOCs, SVOCs, PCBs, pesticides, or explosive compounds. Eight dioxin/furan compounds and several metals were detected at low concentrations (Jacobs 2002a).

Additional soil sampling at Site 60 included a surface (0 to 0.5 feet) and a subsurface (3 to 5 feet) soil sample collected near S-122 that were analyzed for pesticides, PCBs, dioxins/furans, and metals. The results of the soil sampling near S-122 showed no detected concentrations of pesticides or PCBs. Thirteen dioxin/furan compounds were detected in the soil samples at low concentrations. Metals were also detected at low concentrations.

2.11 SITE 67: ABOVE GROUND STORAGE TANK FARM

Site 67 is located in the central portion of LHAAP and covers an area of approximately 12 acres, as shown in Figure 2-11. The site is located on the southeastern corner of 48th street and Ignatius Avenue. With the exception of the railroad bed, no structures remain at the site. All tanks have been removed. When operational, the site consisted of seven ASTs of unknown size. The tanks were surrounded with earthen dikes to contain potential spills. According to the LHAAP Installation Action Plan (USAIIOC 2000), the tanks contained Number 2 fuel oil or kerosene. However, according to interviews with site personnel conducted for this investigation, the tanks were used for solvent (methylene chloride and various degreasers during the rocket motor production era) and LP33 Resin storage. Solvent storage is consistent with the sampling results from this investigation (Jacobs 2002b).



Legend

- ⊕ Shallow Monitoring Well
- Soil Boring Location
- * Also Sampled for Perchlorate



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Site 67 Sampling Locations Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Kernack, Texas

22August02 Fig_2-11.dwg

Figure 2-11

2.11.1 Phase III RI

In 1998, three groundwater wells were installed and analyzed for VOCs, SVOCs, and metals. Soil borings next to the existing monitoring wells and four additional groundwater wells were installed in 2000.

2.11.1.1 Soil sampling

Three soil borings were installed as part of the Phase III investigation. The soil borings were completed immediately adjacent to the existing wells since no soil samples were collected during their installation. Three soil samples were collected from each boring (0 to 0.5 feet bgs, 1 to 3 feet bgs, and 3 to 5 feet bgs), with a field duplicate from 3 to 5 feet at 67SB03. The samples were analyzed for VOCs, SVOCs, metals, and explosive compounds.

No SVOCs or explosive compounds were detected in any of the soil samples. One VOC (methylene chloride) was detected in two soil samples at low concentrations. The only metals detected at concentrations of potential interest were barium (two samples) and lead (four samples).

2.11.1.2 Groundwater sampling

Three groundwater monitoring wells (67WW01, 67WW02, and 67WW03) were installed and sampled in 1998. These wells had 10-foot screens positioned in the upper saturated zone (top of screen ranging from 11 to 16 feet bgs) to evaluate the shallow groundwater. Four groundwater samples (one from each well and a field duplicate from 67WW02) were collected for VOCs, SVOCs, metals, and anions.

No SVOCs were detected in the groundwater samples. Five VOCs (1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,2-dichloroethane, TCE, and 1,1-dichloroethene) were detected at elevated concentrations. Metals and anions were detected at low concentrations.

The four additional groundwater wells were installed to delineate the extent of VOC contamination. Based on the 1998 potentiometric surface and the location of Harrison Bayou, shallow groundwater flows east-southeast. Monitoring well 67WW05 was installed as an upgradient well. Wells 67WW04 and 67WW07 were installed as downgradient wells located east and southeast of the tank farm. All three of these wells were screened to monitor the shallow groundwater with the top-of-screen depth ranging from 11 feet to 16 feet bgs. Well 67WW06 (located adjacent to 67WW07) had a top-of-screen depth of 38 feet bgs and was installed to evaluate the downward migration of VOCs (if any) (Jacobs 2002b).

No SVOCs were detected in any of the four groundwater samples. No VOCs were detected at elevated concentrations. Trace concentrations (up to 3.51 µg/L) of 1,2-dichloroethane were detected in 67WW06 and 67WW07. Chloroform (2.95 µg/L), methylene chloride (1.43 µg/L) and TCE (0.14J µg/L) were also detected in 67WW06. Barium was detected in one well (67WW07) at a concentration of 3,300 µg/L.

2.12 GOOSE PRAIRIE CREEK AND WETLANDS

Goose Prairie Creek is one of four major drainage systems on the LHAAP facility. The three other drainages include Saunder's Branch, Harrison Bayou, and Central Creek. The headwaters of Goose Prairie Creek are located near the northwestern corner of the plant and consist of one larger creek and several smaller tributaries. Goose Prairie Creek flows across the northern edge of the installation and drains approximately 30 percent of LHAAP (see Figure 1-2). Goose Prairie Creek eventually empties into Caddo Lake on the eastern side of the facility, as shown in Figure 2-12. A wetlands area is formed at the confluence of Goose Prairie Creek and Caddo Lake. Goose Prairie Creek and Goose Prairie Wetlands were sampled in order to define the condition of sediments and surface water at locations within LHAAP (Jacobs 2002a).

2.12.1 Phase II RI

During the Phase II RI investigation at Goose Prairie Creek and wetlands, four sediment samples (LHS-GPC-02, LHS-GPC-04, LHS-GPC-06, and LHS-GPC-08) and four surface water samples (LHS-GPC-01, LHS-GPC-03, LHS-GPC-05, and LHS-GPC-07) were collected to evaluate the condition of the creek locations west, south, and east of the Plant 3 Area, Site 47 (Figure 2-13). Sediment and surface water samples were analyzed for VOCs, SVOCs, and metals. Sediment samples were also analyzed for explosive compounds.

2.12.1.1 Sediment sampling

The results from the sediment samples showed no detected concentrations of VOCs, SVOCs, or explosive compounds. Lead was detected in the samples at concentrations ranging from 2.7 to 7.8 mg/kg.

2.12.1.2 Surface water sampling

The surface water sampling results showed detected concentrations of two VOCs (bromodichloromethane and chloroform) and one SVOC [bis(2-ethylhexyl) phthalate]. Bromodichloromethane and chloroform were detected in sample LHS-GPC-07 at estimated concentrations of 2J µg/L and 4J µg/L, respectively. Bis(2-ethylhexyl) phthalate was detected in two samples (LHS-GPC-01 and LHS-GPC-03) at concentrations of 1J µg/L and 530 µg/L, respectively, compared to the TWQS for bis(2-ethylhexyl) phthalate of 59 µg/L. Ten metals were detected in the surface water samples; however, only lead was detected at a concentration that exceeded the TWQS value of 2.52 µg/L (sample LHS-GPC-07).

2.12.2 Phase III RI

During the Phase III RI at Goose Prairie Creek, 10 sediment samples and 10 surface water samples were collected along Goose Prairie Creek, four sediment samples and four surface water samples were collected in the wetland area of Goose Prairie Creek at Caddo Lake, and 30 groundwater samples were collected using a geoprobe sampler.

2.12.2.1 Sediment sampling and surface water sampling at Goose Prairie Creek

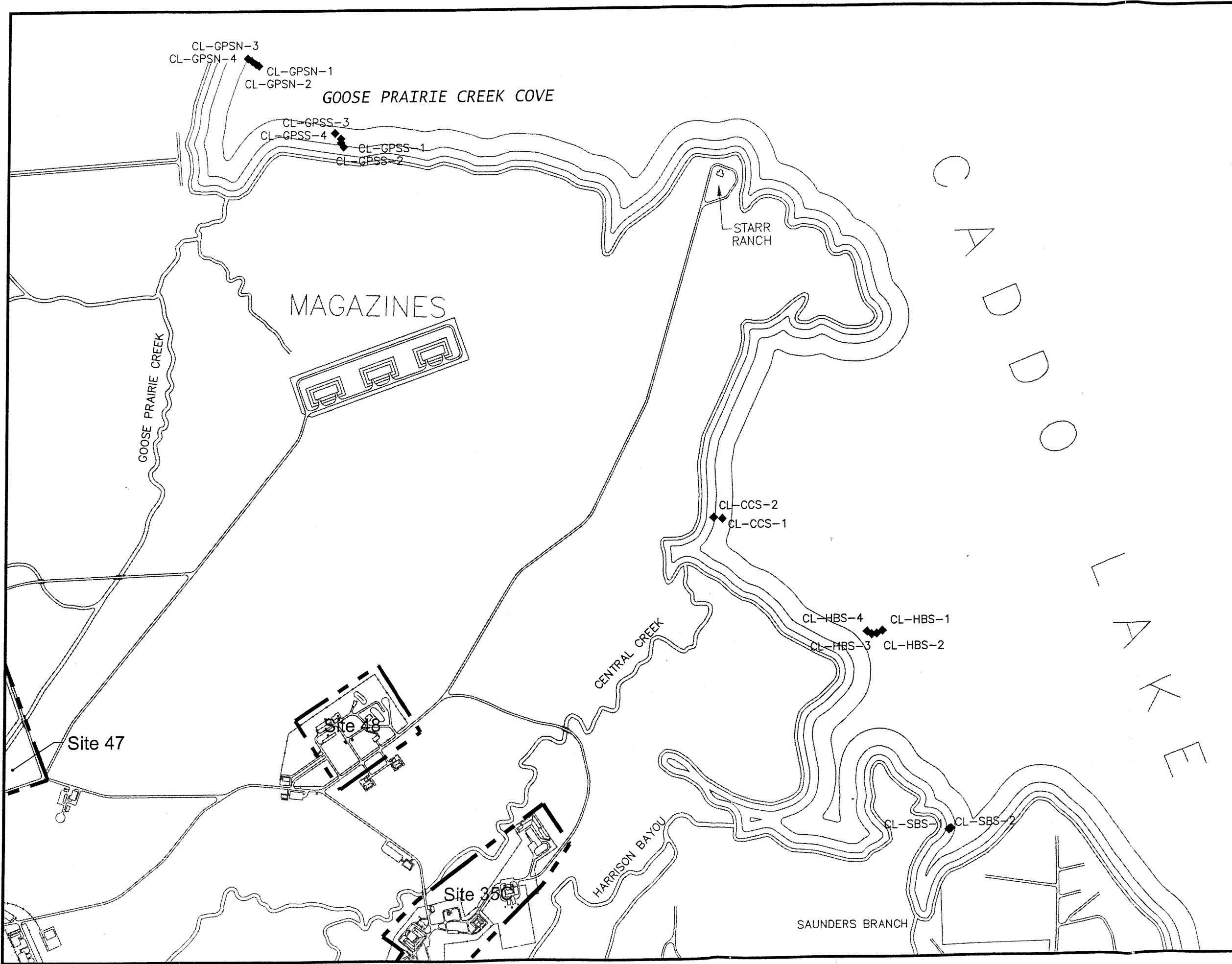
Ten sediment samples (GPC-SD-01 through GPC-SD-10) and 10 surface water samples (GPC-SW-01 through GPC-SW-10) were collected along Goose Prairie Creek from upstream of Site 47 to Caddo Lake (Figure 2-13). Sediment and surface water samples were analyzed for VOCs, SVOCs, explosive compounds, pesticides, PCBs, cyanide, and metals. The samples collected from GPC-SD-03/SW-03, GPC-SD-06/SW-06, and GPC-SD-08/SW-08 were also analyzed for dioxins/furans. Sediment samples were analyzed for grain size distribution and TOC, and surface water samples were also analyzed for hardness.

The results from the sediment samples showed no detected concentrations of SVOCs, explosive compounds, or cyanide. Five VOCs (acetone, carbon disulfide, methylene chloride, methyl ethyl ketone, and TCE) were detected among the sediment samples. Three pesticides (dieldrin, p,p'-DDD, and p,p'-DDT) were detected in two sediment samples (GPC-SD-06 and GPS-SD-07). One PCB (Aroclor 1254) was detected in one sample (GPC-SD-04) at a concentration of 39 µg/kg.

Twenty metals were detected among the sediment samples; however, most were below soil background levels or levels of interest. Barium was detected in one sample (GPC-SD-08) at a concentration of 240 mg/kg. Beryllium was detected in one sample (GPC-SD-08) at a concentration of 1.59 mg/kg. Lead was detected in all 10 sediment samples at concentrations ranging from 6.1 to 20.7 mg/kg. Selenium was detected in five samples at concentrations ranging from 1.5 to 4.97 mg/kg. In the three samples analyzed for dioxin/furan compounds, ten compounds were detected at low concentrations.

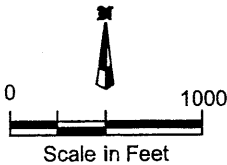
The surface water samples showed no detected concentrations of SVOCs, explosive compounds, pesticides, PCBs, or cyanides. Two VOCs (TCE and cis-1,2-dichloroethene) were detected in the surface water samples. TCE was detected in five samples at concentrations below the TWQS of 612 µg/L. Cis-1,2-dichloroethene was detected in three samples.

Eleven metals were detected in the surface water samples; however, only three (aluminum, lead, and selenium) showed concentrations above their respective TWQS values. Aluminum was detected in three samples at concentrations ranging from 1,300 to 2,300 µg/L, exceeding the TWQS of 991 µg/L. Lead was detected in nine samples at concentrations ranging from 3 to 6 µg/L, exceeding the TWQS of



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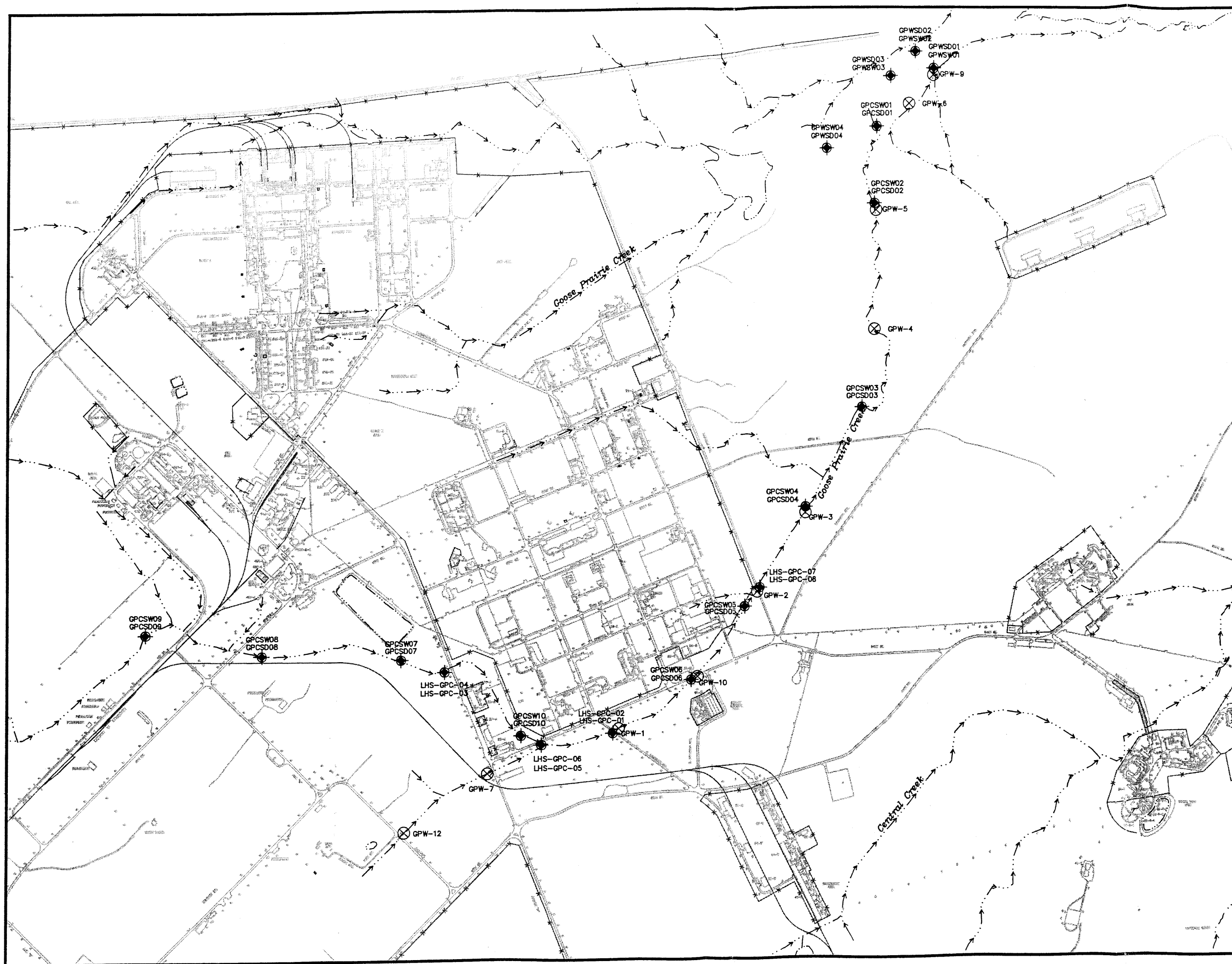
◆ Sediment Sampling Location



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Tulsa District

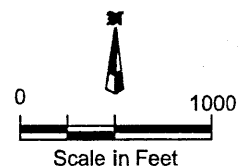


Goose Prairie Creek/Caddo Lake
2000 Sediment Sampling Locations
Group 4 Sites Risk Assessment
Longhorn Army Ammunition Plant
Kamack, Texas



Legend

- ⊕ RI Surface Water Sampling Location
- ◆ RI Sediment Sampling Location
- ⊗ USACE Surface Water Sampling Location



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Goose Prairie Creek
Sampling Locations
Group 4 Sites Risk Assessment
Longhorn Army Ammunition Plant
Karnack, Texas

09Sept02 - Figure 13-1.DWG

Figure 2-13

2.52 µg/L. Selenium was detected in GPC-SW-01 at a concentration of 6 µg/L, above the TWQS of 5 µg/L. In the three surface water samples analyzed for dioxin/furan compounds, three compounds were detected at low concentrations.

2.12.2.2 Sediment and surface water sampling at Goose Prairie Wetlands

In addition to the sediment and surface water samples collected at Goose Prairie Creek, four sediment and surface water samples were collected from the wetland area where Goose Prairie Creek drains into Caddo Lake (Figure 2-13). The four sediment samples (GPW-SD-01 through GPW-SD-04) and four surface water samples (GPW-SW-01 through GPW-SW-04) were analyzed for VOCs, SVOCs, explosive compounds, pesticides, PCBs, cyanides, and metals. The samples collected from GPW-SD-01/SW-01 and GPW-SD-04/SW-04 were also analyzed for dioxin/furan compounds. Sediment samples were analyzed for grain size and TOC, and wetland surface water samples were analyzed for hardness.

The results from the sediment samples showed no detected concentrations of SVOCs, explosive compounds, pesticides, PCBs, and cyanide. Three VOCs (acetone, methyl ethyl ketone, and TCE) were detected in one sample (GPW-SD-01) at low concentrations.

Lead was detected in all four samples at concentrations ranging from 16.7 to 97.2 mg/kg. Silver was detected in all four samples at concentrations ranging from 3.5 to 15J mg/kg. In the two sediment samples (GPW-SD-01 and GPW-SD-04) that were analyzed for dioxins/furans, 15 compounds were detected at low concentrations.

The four surface water samples showed no detectable concentrations of VOCs, SVOCs, explosive compounds, pesticides, PCBs, or cyanide. Eleven metals were detected in the surface water samples. Of these 11 metals, five (aluminum, arsenic, lead, thallium, and zinc) were detected above TWQS levels. Aluminum was detected at a level slightly above the TWQS of 991 µg/L in GPW-SW-01, GPW-SW-02, and GPW-SW-03, with concentrations ranging from 1,200 to 1,600 µg/L. Arsenic was detected in one sample at a concentration of 17 µg/L, above the TWQS of 1.4 µg/L. Lead was detected in three samples at concentrations ranging from 4 to 7 µg/L, exceeding the TWQS of 2.52 µg/L. Thallium was detected in one sample at a concentration of 45.6 µg/L, above the TWQS of 6.3 µg/L. Zinc was detected in one sample above the TWQS (104 µg/L), with a concentration of 110 µg/L. Three dioxin/furan compounds were detected in the surface water samples (GPW-SW-01 and GPW-SW04) at low concentrations.

2.12.2.3 Groundwater sampling

One of the potential sources of contamination for Goose Prairie Creek is the migration of contaminated shallow groundwater from Site 47. To determine the condition of the shallow groundwater in the area east-southeast of Site 47 and along the creek adjacent to Marshall Avenue, 30 shallow groundwater

samples (47PB01 through 47PB30) were collected using a geoprobe sample and analyzed for VOCs (Figure 2-14).

The results from the groundwater sampling showed the detection of 16 VOCs. Twelve of the 16 VOCs were chlorinated compounds and the other four were benzene, naphthalene, toluene, and xylene. Benzene was detected in one sample (47PB16) at a concentration of 1.54 $\mu\text{g/L}$. TCE was detected in all the samples except 47PB22; concentrations of TCE ranged from 1.75 to 43,000 $\mu\text{g/L}$. 1,1-Dichloroethene was detected in 12 of the groundwater samples at concentrations ranging from 11.1 to 151 $\mu\text{g/L}$. Cis-1,2-dichloroethene was detected in 16 groundwater samples at concentrations ranging from 75.5 to 14,000 $\mu\text{g/L}$. Vinyl chloride was detected in 17 groundwater samples, with a maximum concentration of 183 $\mu\text{g/L}$.

2.12.3 Additional Investigations

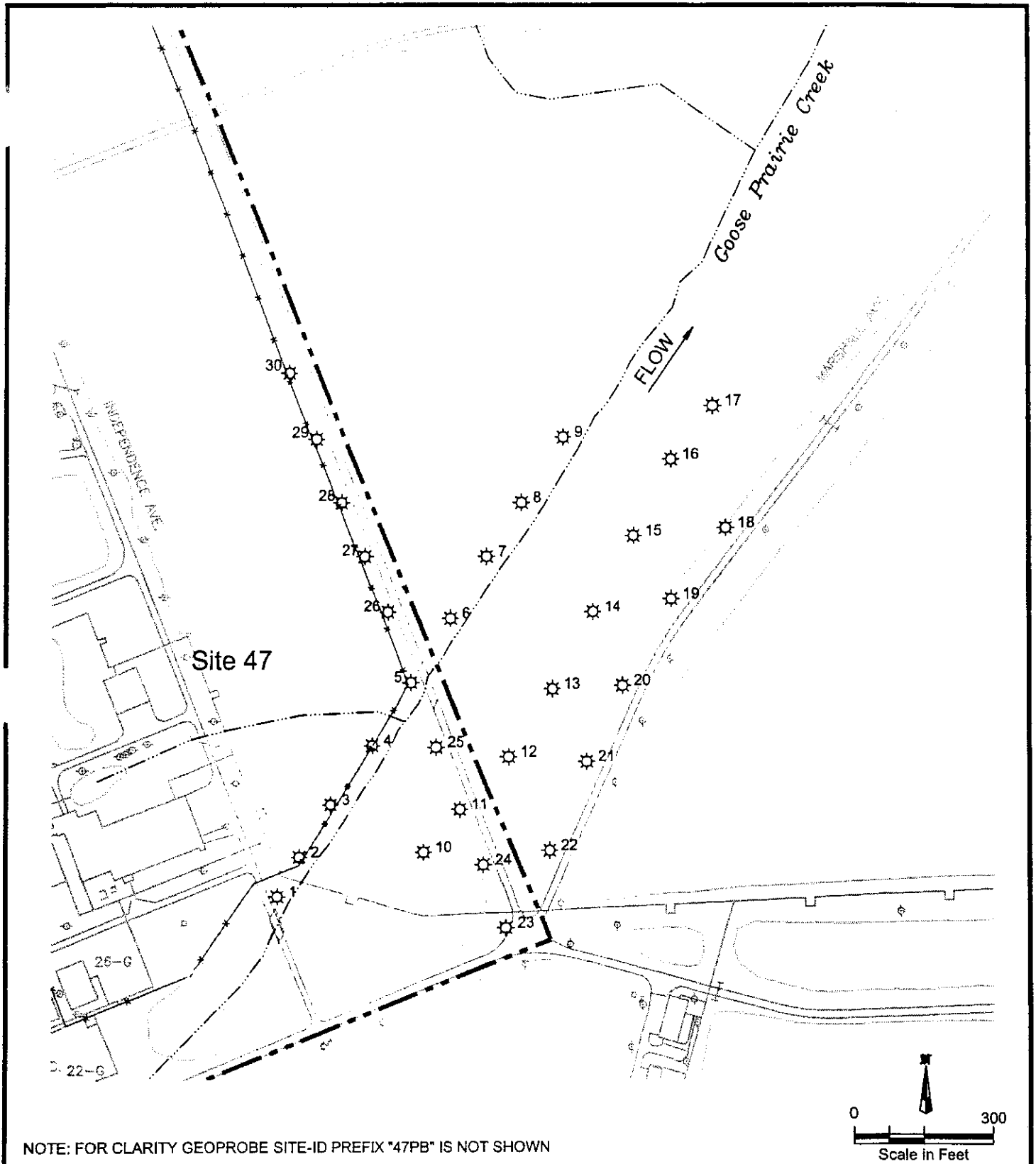
Additional investigation activities at Goose Prairie Creek and wetlands included surface water and sediment sample collection. Surface water samples were collected between 1996 and 2000 at sampling locations on Goose Prairie Creek. Eight sediment samples were collected at Goose Prairie Creek Cove, six sediment samples from Caddo Lake at Saunder's Branch, twelve sediment samples from Caddo Lake at Harrison Bayou, and six sediment samples from Caddo Lake at Central Creek. All of the sediment samples at these locations were collected in 2000.

Location GPW-8 was the most upgradient location. No detections were reported there for several quarters so sampling at that point was discontinued. Sampling point GPW-10 was from the stream at the outfall of the sewage treatment plant. When the treatment plant was abandoned and the lines plugged with concrete sampling from this point was discontinued. The samples from Caddo Lake at Saunder's Branch and Central Creek were chosen as points that would sample the sediment at the outfall of these streams. Saunder's Branch is an intermittent stream that does not drain any significant portion affected by activities at Longhorn. Both Saunder's Branch and Central Creek (as well as Goose Prairie Creek) are intermittent streams with limited drainage areas. From June to probably December many portions of their creek beds are dry.

2.12.3.1 Surface water at Goose Prairie Creek

USACE collected 10 rounds of surface water samples between August 1996 and December 2000, except no samples were collected in 1999. In general, the samples were analyzed for VOCs and explosives. In 1996, metal analyses were also conducted (Figure 2-13).

The surface water results showed detected concentrations of aluminum, arsenic, and silver exceeding their respective TWQS values. VOCs were detected consistently in all locations except at GPW-7, at the upgradient corner of the plant, and at GPW-9, just prior to discharge into Caddo Lake. However, the



Legend

☆ Geoprobe Location



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Goose Prairie Creek
Geoprobe Locations
Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Kamack, Texas

10Sept02 - Fig_2-14.DWG

Figure 2-14

VOC detections were always below the TWQS and, except for concentrations of vinyl chloride (maximum of 5 µg/L) and TCE (maximum of 12 µg/L), results were below drinking water standards (MCLs). The slightly elevated VOC results were found in sampling locations immediately adjacent to Plant 3 (Site 47) or immediately downgradient of the plant.

Explosive compounds were also detected in the surface water samples. The most prevalent compounds found were 2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, and 2,4,6-TNT. The highest concentrations were found at GPW-12 (7.1 µg/L, 12.9 µg/L, and 41.2 µg/L, respectively). This sampling location is upstream of Plant 3. The compounds were found in many sampling rounds, although the concentrations were lower (3.5 µg/L, 5.3 µg/L, and non-detect, respectively) in December 2000. Shutting off activities at Plant 3 appears to have had a positive effect on surface water quality.

Perchlorate was not analyzed as often; analysis for perchlorate began in 2000. Perchlorate has been found at several locations. Notably, perchlorate was found at GPW-1 at a concentration of 4 µg/L or non-detect, GPW-2 at 17 µg/L both times, GPW-3 at 17 µg/L and 8 µg/L, GPW-4 at 11 µg/L and 23 µg/L, GPW-5 at 11 µg/L, GPW-6 (far downstream) at 12 µg/L and 10 µg/L, and GPW-9 (most downstream location) at 11 µg/L and 7 µg/L. It appears that Goose Prairie Creek is impacted by perchlorate discharge past sampling point GPW-1 and that the perchlorate levels remain constant throughout the surface water migration to Caddo Lake. The source of perchlorate could be surface runoff or groundwater discharge, most likely from Site 47 (Plant 3).

2.12.3.2 Sediment sampling at North Cove

The sediment samples collected at Goose Prairie Creek Cove consisted of four sample locations in the North Cove and four sample locations in the South Cove (Figure 2-12). The samples were analyzed for VOCs, SVOCs, explosive compounds, pesticides, PCBs, perchlorate, TOC, and dioxin/furan compounds.

The results from the sediment samples collected at North Cove showed detected concentrations of four VOCs (acetone, carbon disulfide, ethylbenzene, TCE), two SVOCs (phenol and phenanthrene), 22 metals, and 11 dioxin/furan compounds. The sediment samples showed no detected concentrations of explosive compounds, pesticides, PCBs, or perchlorate. The detected VOCs and SVOCs were at low concentrations.

Of the 22 metals detected in the sediment samples at the North Cove, barium, lead, mercury, silver, and thallium showed concentrations at levels of interest. Barium was detected in six of the 12 samples, with a maximum concentration of 451 mg/kg. Lead was detected in 11 of the 12 samples at concentrations of 8.77 to 542 mg/kg. Mercury was detected in four samples, with a maximum concentration of 1.66 mg/kg. Silver was detected in six samples, with a maximum concentration of 17.6 mg/kg and thallium was detected in five samples, with a maximum concentration of 1.51 mg/kg.

Eleven dioxin/furan compounds were detected in only one sample [CL-GPSN-3 (1)]. The detected level of octachlorodibenzo-p-dioxin (6.9 ng/kg) is consistent with concentrations detected in soil and sediment across LHAAP.

2.12.3.3 Sediment sampling at South Cove

The sediment samples at South Cove showed no detectable concentrations of explosive compounds, pesticides, PCBs, or perchlorate. Three VOCs (acetone, carbon disulfide, and trichlorofluoromethane) were detected at low concentrations. Acetone and carbon disulfide were detected at all of the sample locations. Trichlorofluoromethane was detected at two sample locations (CL-GPSS-3 and CL-GPSS-4). SVOCs were also detected in a limited number of samples. Phenol and 15 PAHs were detected at low concentrations. Phenol was detected at estimated concentrations of 42.6J $\mu\text{g/kg}$ and 31J $\mu\text{g/kg}$ in samples CL-GPSS-1 (2) and (3), respectively. The PAHs were detected exclusively in sample CL-GPSS-4 (1).

Twenty-two metals were detected in the South Cove sediments. Of interest is lead, detected in all 12 samples collected at South Cove at concentrations ranging from 6.86 to 145 mg/kg. Silver was also detected in four samples at concentrations from 0.944 to 3.09 mg/kg.

Twelve dioxin/furan compounds were detected in only one sample [CL-GPSS-3 (1)]. The maximum value of 5.6 ng/kg was detected for octachlorodibenzo-p-dioxin.

2.12.3.4 Sediment sampling at Caddo Lake at Saunder's Branch

Sediment samples were collected at two sampling locations (CL-SBS-1 and CL-SBS-2) at Saunder's Branch (Figure 2-12). A total of six sediment samples were collected. No detectable concentrations of SVOCs, explosive compounds, pesticides, or PCBs were identified in the sediment samples. Two VOCs, twenty metals, and eight dioxin/furan compounds were detected in the sediment samples.

The two VOCs detected were acetone and carbon disulfide at low concentrations. Of the 20 metals detected in the sediment samples, none were at elevated levels.

Nine dioxin/furan compounds were detected in the one sample location where it was analyzed. Octachlorodibenzo-p-dioxin was detected at a concentration of 12 ng/kg.

2.12.3.5 Sediment sampling at Caddo Lake at Central Creek

Sediment samples were collected at two locations (CL-CCS-1 and CL-CCS-2) at Central Creek (Figure 2-12). A total of six samples were collected. No detectable concentrations of SVOCs, explosive compounds, pesticides, PCBs, or perchlorate were identified in the sediment samples.

Two VOCs (acetone and carbon disulfide) were detected at low concentrations. Twenty metals were detected in the sediment samples; however, all were at low levels.

Nine dioxins/furans were detected at the only sample location where it was analyzed. The maximum concentration found was of octachlorodibenzo-p-dioxin (12 ng/kg).

3.0 BASELINE HUMAN HEALTH RISK ASSESSMENT

This section presents the results of the BHHRA conducted for the LHAAP Group 4 Sites.

3.1 INTRODUCTION

The primary objective of this BHHRA is to assess potential human health risks associated with LHAAP Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, and 67 individually. In addition, potential human health risks associated with exposure to on-site Goose Prairie Creek, Central Creek, Saunder's Branch, and off-site Caddo Lake were assessed. A separate screening assessment was performed to evaluate TPH data collected during the Group 4 investigations (see Section 3.5.3).

The *Group 4 Baseline Risk Assessment Final Work Plan* (Group 4 Work Plan) was prepared in September 1997. Specific methodologies presented in the Group 4 Work Plan for conducting the BHHRA at LHAAP were updated and superseded by those finalized in the Group 2 Work Plan (Weston 1998). As such, the methodologies presented in the Group 2 Work Plan also apply to the Group 4 Sites.

The TCEQ expressed concerns over the methodologies presented in the Group 2 Work Plan. To address TCEQ's concerns, a combination of the TCEQ Consistency Memorandum (TCEQ 1998) and the Group 2 Work Plan (Weston 1998) were used in completing the Group 4 RA. The goal of the Consistency Memorandum is to provide a consistent framework upon which to evaluate human health risk and to establish cleanup levels for all contaminated sites subject to the existing TCEQ Risk Reduction Rules [30 *Texas Administrative Code* (TAC) 335 Subchapter S]. A Method of Accomplishment memorandum detailing the methods for accomplishing the Group 4 RA was finalized by Jacobs in September 2001 (Jacobs 2001a). In accordance with this memorandum, the TCEQ Consistency Memorandum (TCEQ 1998) generally took precedence over the Group 2 Work Plan in areas where there was any difference in approach. In addition, to satisfy both TCEQ and EPA Region 6 requirements for evaluating surface soil, receptors were evaluated based on exposure to soil at both the 0- to 6-inch and 0- to 2-foot depth intervals as described below.

In accordance with the Group 2 Work Plan and the Method of Accomplishment memorandum, risks associated with each of the aforementioned on- and off-site areas are evaluated assuming no action. This BHHRA is evaluated based on the following scenarios:

- Surface soil (0 to 6 inches bgs) exposure to current on-site trespassers and future on-site maintenance workers. Combined surface/subsurface soil, down to a maximum of 7 feet bgs, is evaluated for inhalation of volatiles for both receptors. The maximum depth interval is extended in cases where 7 feet was included in the depth interval (e.g., 6.5 to 7.5 feet).

- Soil (0 to 2 feet bgs) exposure to future on-site maintenance workers. As stated previously, combined surface/subsurface soil, down to a maximum of 7 feet bgs, is used to evaluate inhalation of volatiles.
- Groundwater exposure to future on-site maintenance workers.
- Current on-site trespasser exposure to Goose Prairie Creek, Central Creek, and Saunder's Branch surface water and sediment. This scenario also includes ingestion of recreationally-caught fish.
- Future off-site child and adult resident exposure to Caddo Lake surface water and sediment during recreational activities such as swimming. This scenario also includes ingestion of recreationally-caught fish and exposure to Caddo Lake as a future potable water source (i.e., ingestion and noningestion water use). Exposure to Caddo Lake surface water was previously evaluated in the Group 2 RA.

Scenarios not specifically evaluated in the Group 4 BHHRA are described below:

- Off-site groundwater exposure to future child and adult residents through the use of off-site groundwater wells was identified in the Group 2 Work Plan as a future exposure scenario (Weston 1998). Based on modeling information provided by WES (USACE 2001), however, this scenario is not evaluated in the Group 4 BHHRA. WES conducted surface water transport modeling of total VOCs at LHAAP. An evaluation conducted at LHAAP of groundwater conditions revealed that Caddo Lake is the ultimate downgradient and downstream receptor of all groundwater and surface water flows (USACE 2001). According to the WES model (see Section 2.0), "There are no existing exposure pathways for any contaminants of concern to migrate off of LHAAP installation property before reaching Caddo Lake" (USACE 2001). As a result, no exposure and no risk would be expected through the future off-site groundwater pathway. Elimination of this scenario is also described in the September 2001 Method of Accomplishment memorandum (Jacobs 2001a).
- Exposure to sump contents was not evaluated in the BHHRA. Sump content samples (e.g., liquid and sludge) were not included in the BHHRA evaluation because the sumps and their contents have been removed. Soil samples collected in the vicinity of the sumps were evaluated in the BHHRA.

The rationale for the development of exposure scenarios used in this BHHRA is discussed in Section 3.3. Because there are a large number of tables, they have been placed after the text at the end of Section 3.0.

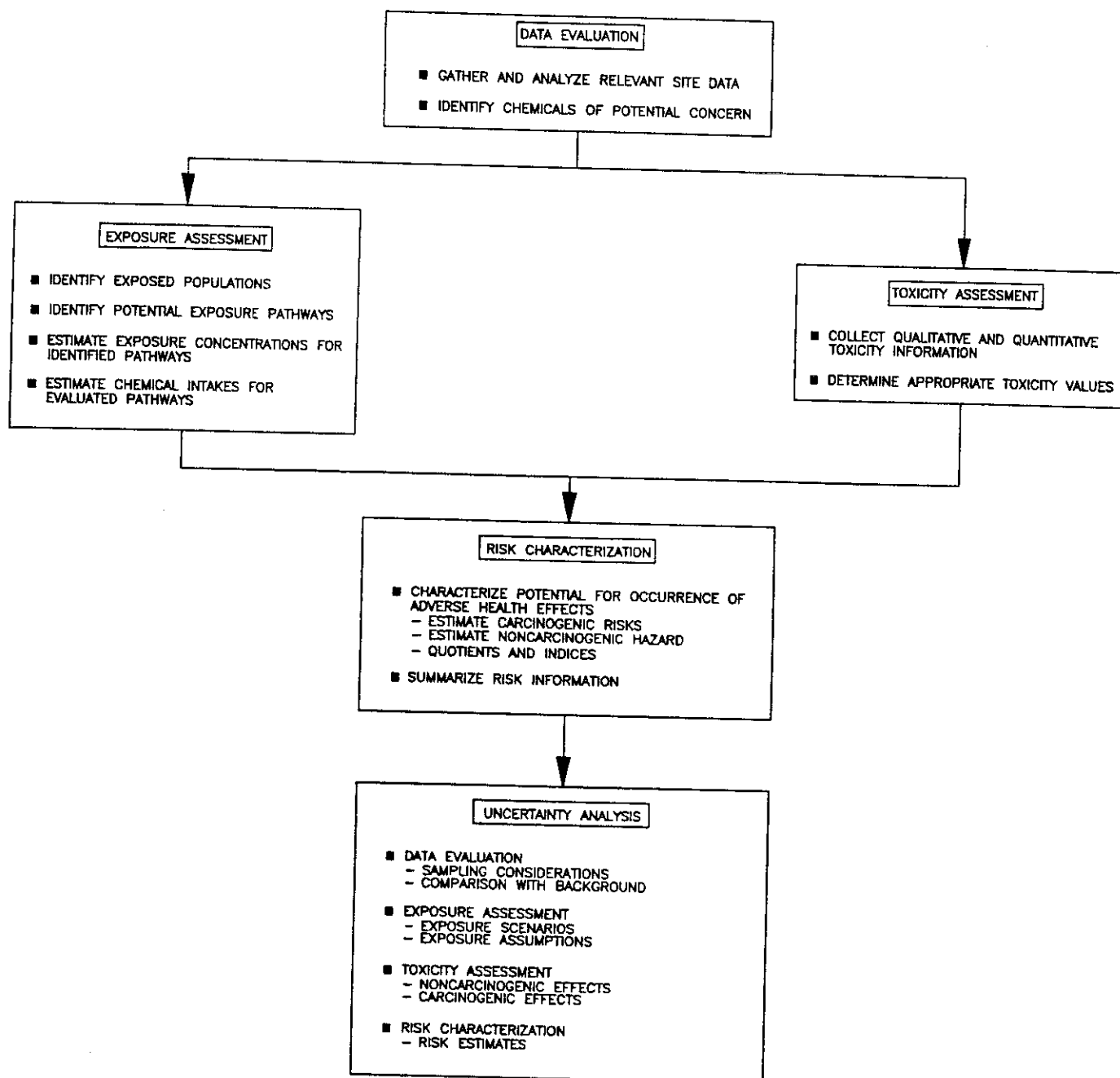
The principal guidance documents that were used to conduct the BHHRA include the following:

- Risk Assessment Guidance for Superfund (RAGS) (Parts A, B, and E) (EPA 1989, 1991a, 2000).
- Supplemental Guidance to RAGS: Standard Default Exposure Factors (EPA 1991b).
- *Exposure Factors Handbook* (EPA 1997a).
- *Dermal Exposure Assessment: Principles and Applications* (EPA 1992a).
- TCEQ Consistency Memorandum (TCEQ 1998).
- EPA Region 6 Risk Assessment Guidance (EPA 1995).

Figure 3-1 illustrates the risk assessment process used to evaluate the LHAAP Group 4 Sites.

3.2 DATA EVALUATION

The objectives of this section are to review and summarize the analytical data for each medium sampled at the LHAAP site and to select the contaminants of potential concern (COPCs) to be evaluated in the BHHRA. Chemicals evaluated in the BHHRA include VOCs, SVOCs, PAHs, explosives, dioxins/furans, PCBs, pesticides, perchlorate, TPH, and metals. The analytical data from three phases of the LHAAP Group 4 RI (Phases I, II, and III); a supplemental RI for Sites 04, 08, and 67; a supplemental hydrocarbon investigation of Sites 46, 47, and 48; USACE perchlorate investigations; and USACE waterway and Caddo Lake investigations are used in this assessment. Data from Pre-RI activities are not used due to the age of the data, as the data may not represent current conditions. Phases I through III LHAAP Group 4 RI activities have been summarized in the *Final Remedial Investigation Report, Group 4 Sites: 35A, 35B, 35C, 46, 47, 48, 50, 60, and Goose Prairie Creek, at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas* (Jacobs 2002a). The supplemental RI for Sites 04, 08, and 67 including the hydrocarbon study has been summarized in the *Final Remedial Investigation Report Addendum, Group 4 Sites: Sites 04, 08, 67, and Hydrocarbon Study, Longhorn Army Ammunition Plant, Karnack, Texas* (Jacobs 2002b). Data from USACE perchlorate investigations have been summarized in the *First Quarter Data Summary for the Perchlorate Investigation at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas* (Jacobs 2000), *Second Quarter Data Summary for the Perchlorate Investigation at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas* (Jacobs 2001b), and *Third Quarter Data Summary for the Perchlorate Investigation at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas* (Jacobs 2001c). Data from USACE surface water and sediment investigations of Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake are not available as a formal report, but were provided to the risk assessment team in the form of a data summary table.



Source: Weston



US Army Corps
of Engineers
Tulsa District

JE JACOBS

Schematic of the Human Health
Risk Assessment Process
Group 4 Sites Risk Assessment

Longhorn Army Ammunition Plant
Kamack, Texas

28Jun02 - Figure 3-1.DWG

Figure 3-1

The following sets of data are not used in the BHHRA:

- Explosives analyses for some samples collected during the Phase II Investigation were analyzed by Intertek Testing Services Environmental Laboratories, Inc. (ITS-ENV). Data from samples analyzed by ITS-ENV have been deemed by EPA to be unreliable and therefore unusable for EPA environmental decision making. Therefore, these data were not used in the BHHRA.
- In the Phase II RI and during additional perchlorate investigations, shallow groundwater samples were collected by using a geoprobe unit. The objective of the geoprobe sampling was to delineate the extent of contamination in shallow groundwater and focus future monitoring well installation in areas with significant contamination. While geoprobe sampling was an important field-screening tool for focusing future sampling efforts and in identifying data gaps, an off-site laboratory did not validate the analytical data from the geoprobe samples. In addition, these data do not meet the stringent data quality requirements of the types of data that are typically used in a baseline RA. Therefore, the geoprobe groundwater data were not used in the BHHRA.

3.2.1 Evaluation of Analytical Methods

An evaluation of analytical methods used in the BHHRA is presented in the following sections.

3.2.1.1 Phases I, II, III, and Supplemental RI

For all analyses in each of the four investigative phases, definitive chemical analysis methods were used. The analytical method selected was the most sensitive method promulgated by EPA and accepted for use by USACE.

At a minimum, the laboratory practical quantitation limits (PQLs) were achieved. In some cases, the laboratories reported sample concentrations near the method detection limits (MDLs) or instrument detection limits (IDLs).

All data were evaluated based on various reports, electronic data deliverables, and field/data acquisition plans. Professional judgment was used to assess the data relative to the stated analytical methods, reported results, and project objectives.

Following is a summary of analytical methods used for all Group 4 analyses. All methods reference *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), Third Edition, (September 1992), with Updates I–III* (EPA 1992b) or *Methods for Chemical Analysis of Water and Wastes*, USEPA-600/4-79-0202, March 1983 (EPA 1983).

Phase I—Water and Soil/Sediment Methods

Cyanide—SW846 Method 9010
VOCs—SW846 Method 8240
SVOCs—SW846 Method 8720
Explosives—SW846 Method 8330
Total Metals—SW846 6010, 7041—Antimony; 7060—Arsenic; 7421—Lead;
7470/7471—Mercury; 7740—Selenium; 7841—Thallium
TPH—USEPA 418.1

Phase II—Water and Soil/Sediment Methods

Cyanide—SW846 Method 9010
VOCs—SW846 Method 8240
Explosives—SW846 Method 8330
Total Metals—SW846 6010, 7041—Antimony; 7060—Arsenic; 7421—Lead;
7470/7471—Mercury; 7740—Selenium; 7841—Thallium
TPH—USEPA 418.1

Phase III—Water and Soil/Sediment Methods

Cyanide—SW846 Method 9010A
Herbicides—SW846 8150B
VOCs—SW846 Method 8260A
SVOCs—SW846 Method 8270B
Explosives—SW846 Method 8330
Pesticides—SW846 Method 8081
PCBs—SW846 Method 8080/8082
Dioxins/Furans—SW846 Method 8290
TPH—SW846 Method 8015A
Total Metals—SW846 6010A, 7041—Antimony; 7060A—Arsenic; 7131A—Cadmium;
7421—Lead; 7470A/7471—Mercury; 7740A—Selenium; 7841—Thallium

Supplemental RI—Water and Soil/Sediment Methods

Common Anions—SW846 Method 9056
VOCs—SW846 Method 8260
SVOCs—SW846 Method 8270
Explosives—SW846 Method 8330
Pesticides—SW846 Method 8081
PCBs—SW846 Method 8080/8082

Dioxins/Furans—SW846 Method 8290

TPH—SW846 Method 8015A

Total Metals—SW846 6020, 7041—Antimony; 7060—Arsenic; 7421—Lead;
7470/7471—Mercury; 7740—Selenium; 7841—Thallium

Detection limits, defined as the lower limits of detection (LLD), have been determined for each analyte within each parameter for each Group 4 RI Phase (I to III) and the Addendum for Sites 04, 08, and 67. The LLD refers to either the PQL or to the method/instrument detection limit (MDL/IDL). Although the empirical definition varies, the PQL defines the lower limit of certainty when quantifying an element or compound in a sample preparation. The MDL/IDL represents the lowest value at which the element or compound may be positively identified in a sample preparation, even though the exact concentration may not be determined.

In the case of soil, sediment, or solid compounds, laboratories may report an apparent MDL/IDL that represents a sample-specific LLD that is dependent upon the mass of sample subjected for analysis and the percent moisture in that sample aliquot. Generally, data are flagged as an estimated value (J) when their concentrations fall below the PQL and MDL/IDL. Detection limit data, such as LLD, for the Group 4 Sites Phase I to III investigations including the Addendum for Sites 04, 08, and 67 are presented in Tables 3-1 (Soil/Sediment) and 3-2 (Water) without specific regard for estimated data. In addition, TCEQ medium-specific concentrations (MSCs) for soil [soil to air ingestion (SAI)-residential (Res) and SAI-industrial (Ind)] and water [groundwater (GW)-Res and GW-Ind] are presented for comparison purposes (TCEQ 2001).

3.2.1.2 Supplemental RI Data—Central Creek, Saunder's Branch, and Goose Prairie Creek Investigation

Definitive chemical analysis methods were used for all analyses in the waterways investigation. In each case, the analytical method selected was the most sensitive method promulgated by EPA and accepted for use by USACE. At a minimum, the laboratory PQLs were achieved. In some cases, the laboratories reported sample concentrations near the MDLs/IDLs.

Actual laboratory reports were not available; however, data validation reports were reviewed for this data assessment. Professional judgment was used to assess the data relative to the stated analytical methods, reported results, and project objectives.

Detection limit data, defined as the LLD, for the Central Creek, Saunder's Branch, and Goose Prairie Creek investigations were also compared to TCEQ MSCs for soil (SAI-Res and SAI-Ind) and water (GW-Res and GW-Ind). The range of detection limits for 1,2,3-trichloropropane, 1,2-dibromo-3-chloropropane, 1,2-dibromoethane, 2-chloroethyl vinyl ether, acrylonitrile, 3,3-dichlorobenzidine, 4-bromophenyl-phenylether, 4-chlorophenyl-phenylether, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, dibenzo(a,h)anthracene,

hexachlorobenzene, hexachlorobutadiene, indeno(1,2,3,cd)pyrene, n-nitrosodimethylamine, n-nitroso-di-n-propylamine, pentachlorophenol, cadmium, mercury, and thallium in surface water samples collected from these waterways exceeded TCEQ MSCs. The range of detection limits for all constituents analyzed in sediment samples from these waterways was below TCEQ MSCs.

3.2.1.3 Supplemental RI Data—Caddo Lake Investigation

Definitive chemical analysis methods were used for all analyses in the Caddo Lake investigation. In each case, the analytical method selected was the most sensitive method promulgated by EPA and accepted for use by USACE. At a minimum, the laboratory PQLs were achieved. In some cases, the laboratories reported sample concentrations near the MDLs/IDLs.

Actual laboratory reports were not available; however, data validation reports were reviewed for this data assessment. Professional judgment was used to assess the data relative to the stated analytical methods, reported results, and project objectives.

Detection limits, defined as the LLD, have been determined for each analyte within each parameter for Caddo Lake. Detection limit data (i.e., LLD) for the Caddo Lake investigations were also compared to TCEQ MSCs for soil (SAI-Res and SAI-Ind) and water (GW-Res and GW-Ind). The range of detection limits for the constituents analyzed in surface water and sediment samples collected from Caddo Lake was below TCEQ MSCs.

3.2.1.4 Supplemental RI Data—Perchlorate Investigation

Definitive chemical analysis methods were used for all analyses in the perchlorate investigation. In each case, the analytical method selected was the most sensitive method promulgated by EPA and accepted for use by USACE. At a minimum, the laboratory PQLs were achieved. In some cases, the laboratories reported sample concentrations near the MDLs/IDLs.

Actual laboratory reports and data validation reports were reviewed for this data assessment. Professional judgment was used to assess the data relative to the stated analytical methods, reported results, and project objectives.

Detection limits, defined as the LLD, have been determined for perchlorate within each medium (soil and groundwater) sampled. The LLD for the perchlorate investigation were compared to TCEQ MSCs for soil (SAI-Res and SAI-Ind) and water (GW-Res and GW-Ind). The range of detection limits for perchlorate in groundwater exceeded the TCEQ MSCs at Sites 47 and 50. However, maximum detected concentrations were also well above the TCEQ MSCs at these sites. The range of detection limits for perchlorate in soil samples collected from the Group 4 Sites was below TCEQ MSCs.

3.2.2 Summary of Sampling Data for Media of Interest

In accordance with the Group 2 Work Plan (Weston 1998) and the Method of Accomplishment memorandum (Jacobs 2001a), human health exposure pathway scenarios were evaluated in the BHHRA based on the extent of on-site and off-site contamination and possible current/future land use in the on-site and off-site areas. Fourteen on-site areas (Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, 67, Central Creek, Saunder's Branch, and Goose Prairie Creek) and one off-site area (Caddo Lake) were addressed. Specifics regarding the exposure scenarios evaluated for each area are presented below.

3.2.2.1 On-site Areas

- **Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, and 67 (soil and groundwater)**—The scenarios evaluated for each site were current trespassers and future maintenance workers potentially frequenting these on-site areas. Exposure to groundwater at Site 60 was evaluated as part of Site 35A. The following sampling data were included for the evaluation of these areas:
 - For the current trespasser, data from on-site surface soil and drainage ditch sediments (0 to 6 inches) were used to evaluate incidental ingestion of soil, dermal contact with soil, and inhalation of particulates. Inhalation of volatiles was evaluated based on data from on-site surface and subsurface soil (0 to 7 feet). Although 7 feet was the maximum depth evaluated, not all of the areas had soil samples collected to a depth of 7 feet.
 - For the future maintenance workers, data from on-site surface soil and drainage ditch sediments from two separate depth intervals (0 to 6 inches and 0 to 2 feet) were used to evaluate incidental ingestion of soil, dermal contact with soil, and inhalation of particulates. Inhalation of volatiles was evaluated based on data from on-site surface and subsurface soil (0 to 7 feet).
 - For the future maintenance workers, on-site groundwater data were used to evaluate incidental ingestion of groundwater, dermal contact while showering, and inhalation of volatiles while showering.
- **Central Creek, Saunder's Branch, Goose Prairie Creek**—For the current trespassers, data from sediment and surface water in the aforementioned waterways were used to evaluate incidental ingestion of sediment, dermal contact with sediment, and dermal contact with surface water. Surface water and sediment data collected from these waterways were used to predict concentrations in fish tissue to evaluate ingestion of fish.

3.2.2.2 Off-site Area

- **Caddo Lake**—For future off-site child and adult residents, sediment data collected from Caddo Lake (near points where Central Creek, Saunder's Branch, and Goose Prairie Creek enter Caddo Lake) were used to evaluate incidental ingestion of and dermal contact with sediment (surface water data were not available for evaluation). Sediment data collected from Caddo Lake were used to predict concentrations in fish tissue to evaluate ingestion of fish. It was assumed that Caddo Lake would be a source of future potable water for off-site residents. Surface water data collected from Caddo Lake were used to evaluate incidental ingestion of surface water and as a future drinking water source, as presented in the Group 2 BHHRA.

Groundwater samples used in the BHHRA are presented in Table 3-3, sorted by site and data group. Soil and drainage ditch samples used in the BHHRA to evaluate soil exposure are presented by site in Tables 3-4 through 3-14. Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake surface water and sediment samples used in the BHHRA are presented in Tables 3-15 and 3-16, respectively. Perchlorate samples used in the BHHRA are presented in Table 3-17 and are sorted by site and media. Sampling locations used in the BHHRA are presented in Section 2.0.

Statistical summaries for all results used in the BHHRA are provided in Appendix A by site and media. Analytical data results for all samples used in the BHHRA are contained in the reports referenced in the first paragraph of Section 3.2.

3.2.3 Guidelines for Data Reduction

Approaches used for data reduction, including the evaluation of data qualifiers, are consistent with *Risk Assessment Guidance for Superfund (RAGS), Volume 1, Human Health Evaluation Manual (Part A)* (EPA 1989) and the Group 2 Work Plan (Weston 1998). The following guidelines for data reduction were used to produce the data summaries for each medium.

- If a chemical was not positively identified in any sample from a given medium because it was reported as a non-detect and/or because of blank contamination (as explained below), it was not quantitatively evaluated in the BHHRA. If a chemical's MDL, however, exceeded the TCEQ risk-based screening value for that chemical, it was identified as a COPC but was not quantitatively evaluated in the BHHRA. These constituents were evaluated in the uncertainty analysis.
- If a chemical was reported in a field sample and a method or field blank, it was considered a positive identification if the chemical was present in the field sample at a concentration greater than ten times (for common laboratory contaminants) or five times (for all other substances) the maximum concentration reported in any blank. Common laboratory

contaminants include acetone, methylene chloride, methyl ethyl ketone (2-butanone), phthalate esters, and toluene.

- “J” values are estimated concentrations reported below the minimum confident quantitation limit. All data with “J” qualifiers were assumed to be positive identifications for that medium and the corresponding reported concentrations were used.
- If a chemical was reported as a nondetect (e.g., “U” qualified data) in a sample set containing at least one detection, it was assumed to be present at one-half of the sample quantitation limit (SQL) for that sample in the calculation of the mean concentration and the 95 percent upper confidence limit (UCL) concentration of the arithmetic mean.
- “R” qualified data are considered rejected data based on quality control information and were not used in the BHHRA.
- Duplicate samples from the same sampling location were considered as one data point in summarizing the frequency of detection and in calculating the mean and 95 percent UCL concentrations. The values reported for the duplicate samples were averaged, and the average concentration was assumed as the concentration for that sampling location. The analytical results of all duplicate samples were used in summarizing the range of detected concentrations.
- Where soils were sampled at multiple depths for a specific depth interval (i.e., 0 to 2 feet) for a single location, the results from the various depths were averaged first, and then the average obtained at that location was used to summarize the data and to calculate the exposure point concentration (EPC). The range of detected concentrations, however, was based on the raw data (before averaging). The analytical results for all sampling depths were used in summarizing the range of detected concentrations.
- Adequate groundwater sampling data were not available to conduct a trend analysis on the concentrations of chemicals detected in individual wells located in each Group 4 Site. The best data for conducting a trend analysis is quarterly groundwater monitoring data. This type of data, however, was not available from wells sampled as part of the Group 4 BHHRA. Often, if wells were sampled more than once, different analyses were conducted. As a result, it could not be determined whether groundwater data collected from multiple sampling events were statistically different and the data were combined in the BHHRA.
- Adequate surface water and sediment sampling data were not available to conduct a trend analysis on the concentration of chemicals detected at individual sampling locations in the waterways and Caddo Lake. Only VOCs and perchlorate are sampled quarterly. As a result,

it could not be determined whether data collected from multiple events were statistically different and the data were combined in the BHHRA.

3.2.4 Evaluation of Dioxins/Furans

Dioxins/furans were detected in groundwater, soil, sediment, and surface water samples evaluated in the BHHRA. The reported concentrations of dioxin and furan congeners in each sample were converted to toxic equivalents of 2,3,7,8-TCDD using the toxicity equivalency factor (TEF) method recommended by Van den Berg et al. 1998 as follows:

- 2,3,7,8-Tetrachlorodibenzo-p-dioxin—1
- 1,2,3,7,8-Pentachlorodibenzo-p-dioxin—1
- 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin—0.1
- 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin—0.1
- 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin—0.1
- 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin—0.01
- Octachlorodibenzo-p-dioxin—0.0001
- 2,3,7,8-Tetrachlorodibenzo-p-dioxin—0.1
- 1,2,3,7,8-Pentachlorodibenzofuran—0.05
- 2,3,4,7,8-Pentachlorodibenzofuran—0.5
- 1,2,3,4,7,8-Hexachlorodibenzofuran—0.1
- 1,2,3,6,7,8-Hexachlorodibenzofuran—0.1
- 1,2,3,7,8,9-Hexachlorodibenzofuran—0.1
- 2,3,4,6,7,8-Hexachlorodibenzofuran—0.1
- 1,2,3,4,6,7,8-Heptachlorodibenzofuran—0.01
- 1,2,3,4,7,8,9-Heptachlorodibenzofuran—0.01
- Octachlorodibenzofuran—0.0001

The World Health Organization and EPA use the TEF values described in the review by Van den Berg et al. 1998. The 2,3,7,8-TCDD equivalents were then added for each sample. The values presented for dioxins/furans in the data summaries are based on the individual congeners. However, 2,3,7,8-TCDD equivalents were used in developing dioxin/furan EPCs. Results for 2,3,7,8-TCDD equivalents determined for groundwater and soil samples used in the BHHRA are presented by site in Tables 3-18 through 3-29. Results for 2,3,7,8-TCDD equivalents calculated for surface water and sediment data collected in Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake are presented in Table 3-30.

3.2.5 Selection of Chemicals of Potential Concern

The objective of this step is to screen the available analytical data for the media of concern and to identify the COPCs for each medium. The screening criteria that are used to eliminate detected inorganic or organic chemicals as COPCs in each respective medium are briefly summarized as follows:

- A chemical is generally excluded as a COPC in the BHHRA if it was not detected in any samples. However, some chemicals not positively detected in any sample are identified as COPCs (due to detection limits), but are not quantitatively evaluated in the BHHRA, as explained in the next bullet.
- Maximum detected concentrations and MDLs of contaminants in on-site soil and groundwater are compared to published TCEQ risk-based screening values (RBSVs) updated March 15, 2001 by TCEQ (TCEQ 2001). The TCEQ RBSVs for soil and groundwater are based on achieving a risk level of 1×10^{-6} for all carcinogens and a hazard quotient (HQ) of 0.1 for all noncarcinogens. In cases where contaminants had both carcinogenic and noncarcinogenic toxicity factors, the lowest RBSV is selected as the comparison value (i.e., most conservative). In addition, MDLs are also compared to TCEQ MSCs (TCEQ 2001). MSCs for soil and groundwater are based on achieving a risk level of 1×10^{-6} for all carcinogens and an HQ of 1 for all noncarcinogens. A chemical is selected as a COPC if the maximum concentration detected exceeds its associated RBSV. Chemicals having MDLs in excess of their associated MSCs but not positively detected in any sample are also selected as COPCs. These chemicals, however, are not quantitatively evaluated in the BHHRA, but are discussed in the uncertainty section.
- Maximum detected concentrations and MDLs of contaminants in Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake surface water and sediment are also compared to published TCEQ RBSVs updated March 15, 2001 by TCEQ. Although the TCEQ RBSVs are for soil and groundwater, they are assumed to also be protective of sediment and surface water. In addition, Texas Surface Water Quality Standards for the protection of human health are also used as screening criteria for surface water. MDLs are also compared to TCEQ MSCs (TCEQ 2001). MSCs are based on achieving a risk level of 1×10^{-6} for all carcinogens and an HQ of 1 for all noncarcinogens. A chemical is selected as a COPC if either the maximum detected concentration or MDL exceeds its associated screening criteria. As noted in the previous bullet, chemicals having a MDL in excess of the screening criteria but not positively detected in any sample are also selected as COPCs. Although these chemicals are not quantitatively evaluated in the BHHRA, they are discussed in the uncertainty section.

- Inorganic chemicals that are at or below background are not eliminated as COPCs per EPA Region 6 guidance (EPA 1995). On-site concentrations of inorganic chemicals are compared with background groundwater and soil concentrations, however, to determine which inorganic COPCs have maximum detected concentrations below the designated background levels. Designated background concentrations for inorganics in groundwater and soil are from facility-wide soil and groundwater background investigations completed in 1995 (USACE 1995b, 1995c). The upper tolerance limit (UTL) at a 95 percent confidence level, as reported in the aforementioned background studies, is used as the designated background level. The relative contributions to the total risk of the inorganics that are not above background are considered separately and are discussed in the uncertainty analysis. Background levels are not considered in the selection of COPCs for surface water and sediment; however, they are discussed in the uncertainty section.
- Inorganic chemicals are eliminated if the chemical is considered to be a natural or an essential nutrient with relatively low toxicity (e.g., calcium, magnesium, iron, potassium, and sodium).

A summary of COPCs identified in groundwater and soil for each Group 4 Site is provided in Tables 3-31 through 3-33. Tables 3-34 and 3-35 present summaries of COPCs identified in sediment and surface water. Table 3-36 presents a summary of COPCs identified for fish. Chemicals identified as COPCs but not quantitatively evaluated in the BHHRA are identified in the data summaries described below.

Data summaries for all chemicals detected in the media of concern for each exposure pathway, with the exception of fish ingestion (fish samples were not collected; see Appendix B), and the lists of COPCs selected for this RA are presented in Appendix A, Tables A-41 through A-90, as follows:

- Groundwater data summaries (Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, and 67): Tables A-41 through A-50.
- Groundwater perchlorate data (Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, and 67): Table A-51.
- Soil data summaries:
 - Site 04: Tables A-52 and A-53
 - Site 08: Tables A-54 and A-55
 - Site 35A: Tables A-56, A-57, and A-58
 - Site 35B: Tables A-59, A-60, and A-61
 - Site 35C: Tables A-62, A-63, and A-64
 - Site 46: Tables A-65, A-66, and A-67
 - Site 47: Tables A-68, A-69, and A-70

- Site 48: Tables A-71, A-72, and A-73
 - Site 50: Tables A-74 and A-75
 - Site 60: Tables A-76, A-77, and A-78
 - Site 67: Tables A-79, A-80, A-81
-
- Soil perchlorate data (Sites 04, 08, 35C, 47, and 50): Table A-82 (There are no perchlorate data for soil for Sites 35A, 35B, 46, 48, 60, and 67)
 - Central Creek sediment and surface water: Tables A-83 and A-84
 - Saunder's Branch sediment and surface water: Tables A-85 and A-86
 - Goose Prairie Creek sediment and surface water: Tables A-87 and A-88
 - Caddo Lake sediment and surface water: Tables A-89 and A-90

For each COPC, the data summary tables include the frequency of detection, range of detection limits, mean concentration based on sampling stations with detected concentrations only (nondetect data were multiplied by 0.5 when a sampling station had both nondetect and detect data), range of detected concentrations, soil and groundwater designated background levels for inorganics only, and screening concentrations where available. The data summary tables also present the reasons for eliminating or including a chemical as a COPC.

3.3 EXPOSURE ASSESSMENT

The objectives of the exposure assessment are to characterize potentially exposed human populations at the Group 4 Sites and in the off-site areas around the Group 4 Sites, to identify actual or potential exposure pathways, and to determine the potential extent of exposure.

The exposure assessment involves the following:

- Definition of local land and water uses.
- Identification of the potential receptors/exposure scenarios.
- Identification of exposure routes.
- Estimation of EPCs.

- Identification of the exposure models and assumptions used to calculate daily intakes or doses.

The following sections discuss each of these key technical elements in relation to the on-site and off-site areas at the Group 4 Sites.

3.3.1 Land and Water Uses

3.3.1.1 Land use

LHAAP is located in east-central Texas in the northeastern corner of Harrison County, approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. LHAAP is situated in a region that is commonly called the Pineywoods, characterized by mixed pine-hardwood forests that cover gently rolling to hilly terrain. LHAAP is bordered by Caddo Lake to the north-northeast, Caddo Lake State Park to the west-northwest, and the small unincorporated town of Karnack, Texas, to the west. Much of the surrounding land is forested. There is an oil and natural gas field located to the east of LHAAP along the Louisiana border.

The installation is bordered on three sides by state roads that provide access to recreational areas and communities. Other small communities nearby include South Shore residential development and Long Point to the east, Elizabeth Church to the southeast, Potters Point residential development to the northeast, and Annie Glade Bluff residential area to the northwest. Although surrounded by small communities, LHAAP is located in a relatively rural setting.

LHAAP was established in 1942 with the primary mission to produce 2,4,6-TNT flake. This first production area is referred to as Plant 1. TNT flake production continued until 1945 when the plant went into standby mode. Construction of Plant 2 began in November 1944 but was halted in August 1945 with the end of World War II. Beginning in February 1952 through 1956, Plant 2 was operational, producing such pyrotechnic ammunition as photoflash bombs, simulators, hand signals, and 40-mm tracers. In 1955, Plant 3, a rocket motor facility, began operation. Rocket motor production became the primary operation at LHAAP until 1965 when the production of pyrotechnic and illuminating ammunition was reestablished. From 1988 to 1991, the installation was also used for the static firing and elimination of rocket motors. In 1990, LHAAP was placed on the CERCLA NPL. The EPA, Texas Water Commission, now called the TCEQ, and LHAAP entered into an FFA in December 1991. The installation became inactive in 1997 (Jacobs 2002b). Currently, there is no manufacturing/operating contractor at the LHAAP installation. Although the installation is inactive (with regard to manufacturing), a few contractor employees remain at the site for maintenance and remediation purposes.

Limited deer hunting is allowed on the property. Based on information obtained from the USACE Tulsa District, hunting activities are very remote and extremely limited during the hunting season and occur only on weekends (Weston 1997). These activities are normally restricted to LHAAP employees. It is

also possible that the property could be frequented by a recreational user (occasional hiker or bird-watcher), although current security measures at the plant preclude unlimited public access to the property areas.

The facility is currently owned by the U.S. Government. There is a Memorandum of Understanding that identifies LHAAP as a future wildlife refuge. This memorandum was facilitated by EPA Region 6 and signed October 21, 2000, by the Army and the U.S. Fish and Wildlife Service.

3.3.1.2 Surface water use

LHAAP obtains its water supply from on-site groundwater (see Section 3.3.1.3); no surface water source is currently used. LHAAP formerly obtained its water supply from Big Cypress Creek located northwest of the installation. The city of Marshall, Texas, draws its water further upstream on Big Cypress Creek. Most of the small communities near LHAAP draw their water supply from either public or private water wells.

The LHAAP property is adjacent to and drains into Caddo Lake, an impoundment on Big Cypress Creek. Caddo Lake straddles the Texas-Louisiana border and was created by Caddo Dam, which is constructed on the Big Cypress Bayou in Caddo Parish, Louisiana. Caddo Lake has supported commercial fisheries and commercial harvests of aquatic plants and is used for recreational purposes as well as a backup drinking water supply for Shreveport, Louisiana. The lake is also used for off-shore oil production. Community/water supply districts in Louisiana that are supplied by Caddo Lake include Oil City (serving approximately 3,760 residents), Blanchard Water Supply (serving approximately 6,555 residents), Vivian (serving approximately 4,300 residents), and Mooringsport (serving approximately 1,012 residents) (USACE 1992).

Surface water at LHAAP drains northeastwardly into Caddo Lake through four drainage systems: Saunder's Branch, Harrison Bayou, Central Creek, and Goose Prairie Creek. Harrison Bayou was evaluated as part of the Group 2 BHHRA. Caddo Lake is part of the Big Cypress Bayou; a small portion of the northwestern corner of the installation drains directly into the bayou. A brief description of surface features and surface hydrology at each Group 4 Site is presented below.

- **Site 04**—Site 04, the Pilot Wastewater Treatment Plant, occupies less than 2 acres in the central portion of LHAAP at the northwestern corner of 6th and 60th Streets adjacent to the former firehouse. Contaminants carried from sumps throughout LHAAP may have entered the plant and been released during operations. Site 04 eventually drains into Goose Prairie Creek, which flows across the northern edge of the installation (Jacobs 2002b).
- **Site 08**—Site 08 is located in the central portion of LHAAP and covers an area of approximately 2 acres. South Houston Avenue curves around Site 08 on the southern and eastern sides and intersects with 51st Street, which forms the northern boundary of the site.

This facility is a potential source of many contaminants. Incidental and/or accidental releases from the sludge drying beds and the waste collection system are the most probable sources of contamination found in the vicinity. Site 08 eventually drains into Goose Prairie Creek, which flows across the northern edge of the installation (Jacobs 2002b).

- **Site 35A**—Site 35A is located in the northwestern portion of LHAAP, near the intersection of 6th Street and Avenue F. The surface features at Site 35A include a mixture of asphalt-paved streets, asphalt parking areas around the former buildings, and some vegetation-covered areas. The topography at the site is relatively flat, with approximately 5 feet of elevation change from west to east. Surface drainage generally flows from northeast to southwest, either through runoff or manmade drainage swales and culverts that eventually drain into Goose Prairie Creek to the southwest (Jacobs 2002a). Site 60 is located within Site 35A boundaries.
- **Site 35B**—Site 35B, the Chemical Laboratory, is located in the central portion of LHAAP and is south of the intersection of Avenue P and 59th Street. The surface features at Site 35B are a mixture of asphalt-paved roads and parking area, the former Chemical Laboratory building, and wooded and grassy, vegetation-covered areas. The topography in this area is relatively flat, with the surface drainage flowing north-northeast into Goose Prairie Creek. Goose Prairie Creek runs perpendicular and under Avenue P to the north of the site and then turns south through the east-central portion of the site (Jacobs 2002a).
- **Site 35C**—The Static Test Area, Site 35C, is located in the east-central portion of LHAAP and is bounded by Central Creek to the northwest and Harrison Bayou to the southeast. Site 35C is a mixture of asphalt-paved roads and parking areas around the former structures in the area. Surface drainage flows predominately toward the creeks (Jacobs 2002a).
- **Site 46**—Site 46, Plant 2 Area, is located in the northwestern portion of LHAAP. This area is a mixture of asphalt-paved streets and parking areas, former Plant 2 production buildings, and heavily wooded and grassy, vegetation-covered areas. The topography at Site 46 varies in elevation approximately 30 feet from west to east. Surface runoff follows the topography (west to east) and enters several tributaries located on the eastern side of the Site 46 area (Jacobs 2002a).
- **Site 47**—Site 47, Plant 3 Area, is located in the north-central portion of LHAAP to the southeast of Site 46. The area is a combination of asphalt-paved roads and parking areas surrounding the Plant 3 buildings, with heavy vegetation and wooded areas to the north and northeast. Goose Prairie Creek runs through the southwestern portion of Site 47 and then curves back through the southeastern portion of the site. The topography of Site 47 generally

slopes to the east, with surface drainage flowing to the east-southeast into Goose Prairie Creek (Jacobs 2002a).

- **Site 48**—Site 48, the Y-Area, is located in the eastern portion of LHAAP northwest of Site 35C, the Static Test Area. Surface features at the site include asphalt-paved roads and parking areas around the buildings. The perimeter of Site 48 is a mixture of heavily wooded areas and grasslands. The topography slopes gently to the southeast, and surface runoff from the northern part of Site 48 enters an unnamed creek to the south. Runoff from the southern portion of Site 48 eventually enters Central Creek to the southeast and on to Caddo Lake (Jacobs 2002a).
- **Site 50**—Site 50 is located in the central portion of LHAAP and encompasses approximately one acre. The northeastern half of Site 50 is an open area of grass and brush that is bounded by South Crockett Avenue to the northeast. The southwestern half of the site is an area of heavy timber bounded by a drainage ditch to the west, a railroad spur to the south, and Goose Prairie Creek to the north. Two gravel access lanes connect Site 50 to South Crockett Avenue. Runoff from the northeastern half of the site is generally toward the northeast. Runoff is collected by a drainage ditch in the northeast that runs parallel to South Crockett Avenue and eventually joins Goose Prairie Creek. Runoff from the remainder of the site is toward the north directly into Goose Prairie Creek. Runoff is collected to the west by a drainage ditch that carries the runoff north into Goose Prairie Creek (Jacobs 2002a).
- **Site 60**—Site 60 is located in the northwestern portion of LHAAP near the steam plant and shops area within Site 35A. Surface features at the site include asphalt-paved roads and parking areas around the buildings. Buildings 411 and 411A and Shed TS-80 encompass approximately 1 acre. Building 714 encompasses approximately 0.25 acre. The area around the buildings is open, with grass-lined drainage ditches and a graveled, fenced-in storage area. Runoff from the area of Building 411 is generally into grated culverts around the building. Runoff from the area of Building 411A and Shed TS-80 is generally toward the southeast. Runoff and culvert discharge are collected by a drainage ditch that arcs between Buildings 411 and 411A and eventually empties into Goose Prairie Creek. Runoff from the Building 714 area is generally into a grass-lined drainage ditch parallel to 9th Street and Avenue G. This drainage ditch carries runoff southwest, parallel to Avenue G, into a tributary of Goose Prairie Creek (Jacobs 2002a).
- **Site 67**—Site 67 is located in the central portion of LHAAP and covers an area of approximately 12 acres. The site is located on the southeastern corner of 48th Street and Ignatius Avenue. While there are no known releases at the site, it is included in the RI because of the potential for incidental releases from fuel/chemical storage and transfer. Site 67 eventually drains into Central Creek and on to Caddo Lake (Jacobs 2002b).

3.3.1.3 Groundwater use

LHAAP is situated on an outcrop of the Wilcox Group (basal unit on the Cypress Aquifer), which crops out over a large part of the eastern half of Harrison County. As the basal unit of the Cypress Aquifer, the Wilcox Group is considered to be the base of fresh groundwater in the area. The underlying Midway Group does not yield usable quantities of water and tends to serve as a relatively impermeable base to the overlying Wilcox water-bearing zone, which is approximately 120 to 300 feet thick beneath the LHAAP installation (Weston 1998).

The depth to groundwater across the facility ranges from 1 to 70 feet, with a typical depth of 12 to 16 feet. The regional groundwater flow direction beneath the facility is generally east-northeast toward Caddo Lake, but varies by site location (Jacobs 2001b). As previously discussed, Caddo Lake is the ultimate downgradient and downstream receptor of all ground- and surface-water flows (USACE 2001).

The Wilcox Group member of the Cypress Aquifer reportedly yields small [less than 50 gallons per minute (gpm)] to moderate (50 to 500 gpm) quantities of fresh water in wells in the region. Several small communities near LHAAP draw their water supply from water wells completed in the Wilcox Group, as described below (USACE 1992 and Jacobs 2002b).

- There are two public supply wells in the vicinity of LHAAP that are currently in use. One of these wells is located in Caddo Lake State Park and owned by the State of Texas. It was completed to a depth of 315 feet and has been in use since 1935. As previously mentioned, there are no existing exposure pathways for any contaminants of concern to migrate off of LHAAP; therefore, no impact to groundwater in this well is anticipated. The other well is a public supply well owned by the Karnack Water Supply Corporation that services the town of Karnack, Texas. The well is located upgradient of LHAAP, approximately 0.5 mile southeast of the town, and is 430 feet deep, with the pump set at a depth of 200 feet. It has been in use since 1942.
- There are two water supply wells in use at LHAAP. One well is located at the Fire Station/Security Office in the vicinity of Sites 04 and 60 and supplies water to the buildings currently in use on the installation. This well was drilled to a depth of 460 feet; however, it was plugged with cement back to a depth of 140 feet. Based on results of laboratory analysis (i.e., no COPCs detected), this on-site well does not draw water impacted by any of the Group 4 Sites. The other well is located at the Water Tower and is 190 feet deep.
- The Caddo Lake Water Supply Corporation has three wells located both north and northwest of LHAAP. These three wells are identified as Caddo Lake Water Supply Corporation Wells 1, 2, and 3 and are all hydraulically upgradient to LHAAP. Due to the remote locations of these wells from LHAAP, water removal from these wells is not expected to

affect groundwater flow at the site. In addition, there are several livestock and domestic wells located in the vicinity of LHAAP, with depths averaging approximately 250 feet.

3.3.2 Site Conceptual Model

A site conceptual model describes the potential chemical sources, affected media, routes of migration, and known or potential human receptors and exposure routes. The purpose of the site conceptual model is to provide a framework for problem definition, aid in the identification of data gaps, and assist in the identification of appropriate remedial technologies if needed.

The site conceptual model for the Group 4 Sites is shown in Figure 3-2. Based on the potential contaminant migration routes at the Group 4 Sites and on current and predicted future land and water uses, receptors were selected for evaluation in the BHHRA. These receptors and the potential exposure routes by which these receptors may be exposed to site-associated contaminants are indicated in the conceptual model and discussed further in the following sections.

3.3.3 Identification of Potential Receptors/Exposure Scenarios

The BHHRA focuses on those receptors that are likely to be maximally exposed to each of the contaminated media currently and in the future. This approach ensures that the maximum potential risk is characterized and that all potential receptors are adequately protected. Each receptor included in the BHHRA is evaluated using reasonable maximum exposure (RME) assumptions. The RME case is designed to be a measure of high-end exposure and ultimately leads to an estimate of upper-bound risk.

The site conceptual model (Figure 3-2) identifies two types of receptors that are evaluated for each Group 4 Site (Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, and 67): a current on-site trespasser and a future on-site worker. The current on-site trespasser is also evaluated based on exposure to Central Creek, Saunder's Branch, and Goose Prairie Creek. Figure 3-2 identifies an additional receptor, a future off-site resident (child and adult), which is evaluated based on exposure to Caddo Lake. The following sections describe the scenarios that are evaluated, including the potential exposure routes. The exposure durations, exposure times, and exposure frequencies that are used for each scenario are also discussed.

3.3.3.1 Current trespasser

LHAAP is currently surrounded by a fence; the areas of the plant that are bordered by bodies of water, however, are not fenced. Approved access to the site (areas within the fence) is limited to workers and visitors. Limited deer hunting is allowed on the property. Based on information obtained from the USACE Tulsa District, the hunting activities are very remote and extremely limited during the hunting season (Weston 1998). These activities occur only on weekends and are normally restricted to LHAAP employees.

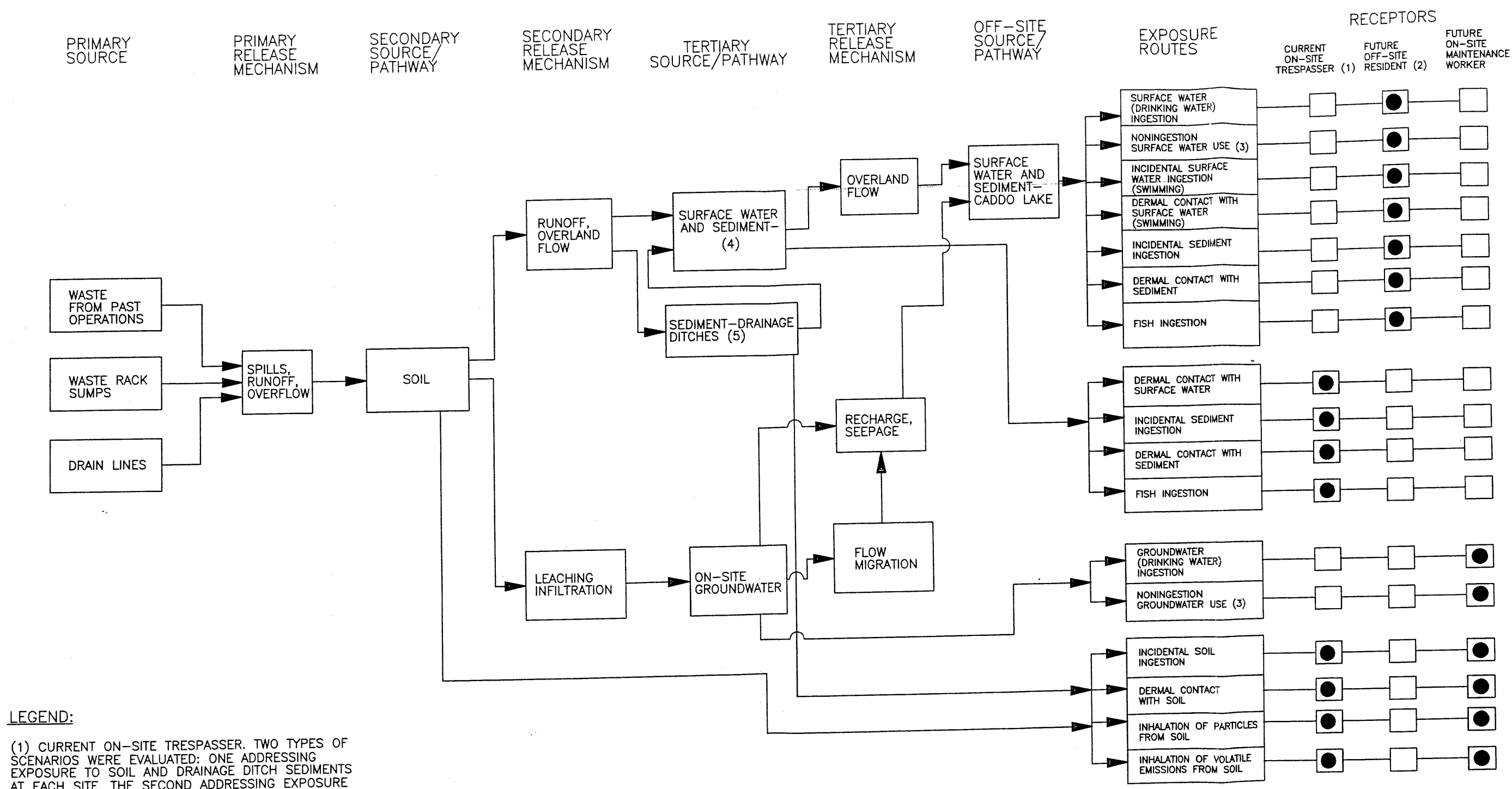
In addition to the employees allowed to hunt, trespassers such as hunters and recreational users could also potentially contact site soil and waterway surface water and sediment. Although current security measures limit this access, the exposure assumptions for the employees allowed to hunt would be the same or similar to the trespasser, resulting in similar risks and HIs; therefore, only the trespasser was evaluated in the BHHRA. Because of the remote nature of the hunting activities, ingestion of game meat such as deer was not evaluated in the BHHRA. In addition, the relatively large home range size for deer would most likely preclude them from spending a large percentage of time at any one Group 4 Site.

Exposure to the trespasser at each of the Group 4 Sites was evaluated only for soil-mediated exposure routes (i.e., incidental soil ingestion, dermal contact with soil, inhalation of particulates generated from soil, and the inhalation of volatile emissions from soil). Access to the groundwater is only at the active areas of the plant, which does not include any of the Group 4 Sites. As recommended by TCEQ for a trespasser, the exposure frequency and exposure duration for the trespasser was assumed to be 50 days/year and 12 years, respectively (TCEQ 1998).

The trespasser scenario for Central Creek, Saunder's Branch, and Goose Prairie Creek addresses potential contact with each creek. It is also expected that trespassers may engage in fishing activities while spending time at the aforementioned water bodies. The evaluated exposure routes include dermal contact with surface water, incidental ingestion of sediment, dermal contact with sediment, and ingestion of recreationally-caught fish. Because the depth of these surface water bodies ranges from a few inches to a few feet, it is unlikely that they would be used for swimming to any significant extent; therefore, the incidental ingestion of surface water is not evaluated. The exposure frequency and duration used for evaluating contact with sediment and surface water are assumed to be the same as those used for evaluating soil contact (i.e., 50 days/year and 12 years). The exposure time for the surface water bodies is assumed to be 2.6 hours/day (EPA 1995). Also, the exposure frequency for the ingestion of recreationally-caught fish is assumed to be 365 days/year because the fish ingestion rate that is used to calculate contaminant intakes is a daily rate averaged over a year.

3.3.3.2 Future on-site worker

Based on information from the Army, anticipated future use of the site may include industrial as well as continued recreational activities (Army 1997). As a result, a future worker was selected for evaluation under future site use conditions. Workers may include office workers, maintenance workers, construction workers, and workers engaged in remediation activities. Office workers and visitors are unlikely to contact contaminated soil on a regular basis if at all. Soil contact by maintenance workers also is likely to be limited because current maintenance activities are limited (i.e., mowing, clearing vegetation, maintaining roads, etc.). Workers engaged in remedial activities are protected by careful implementation of a health and safety plan. Risk to remediation workers is addressed under Section 300.150 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and by the Occupational Safety and Health Administration.



LEGEND:

- (1) CURRENT ON-SITE TRESPASSER. TWO TYPES OF SCENARIOS WERE EVALUATED: ONE ADDRESSING EXPOSURE TO SOIL AND DRAINAGE DITCH SEDIMENTS AT EACH SITE, THE SECOND ADDRESSING EXPOSURE TO SURFACE WATER AND SEDIMENT IN GOOSE PRAIRIE CR., CENTRAL CR., AND SAUNDERS BRANCH.
- (2) FUTURE OFF-SITE RESIDENT. THE SCENARIO EVALUATED ADDRESSES EXPOSURE ROUTES ASSOCIATED WITH CADDO LAKE.
- (3) INCLUDES DERMAL CONTACT AND INHALATION OF VOLATILES.
- (4) EVALUATED SURFACE WATER AND SEDIMENT DATA COLLECTED FROM GOOSE PRAIRIE CR., CENTRAL CR., AND SAUNDERS BRANCH.
- (5) THE SEDIMENTS FROM THE DRAINAGE DITCHES WERE EVALUATED AS SOILS.

● SCENARIO EVALUATED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT

Source: Weston



Human Health
Site Conceptual Model
Group 4 Sites Risk Assessment
Longhorn Army Ammunition Plant
Kamack, Texas

28Jun02 - Figure 3-2.DWG

Figure 3-2

Of the aforementioned receptors, maintenance and construction workers are more likely to contact contaminated soil. In addition, the maintenance worker may be exposed to groundwater contaminants if installation groundwater continues to be used as the water supply. Group 4 groundwater, however, is not currently used on the installation. The maintenance worker is a more conservative scenario primarily because the exposure duration and frequency assumed for the maintenance worker are greater than those that would be assumed for the construction worker. In addition, the use of subchronic toxicity data (where available) for the construction worker would generate lower risk values. Based on this, it is expected that human health risk estimates would be higher (more conservative) for the maintenance worker, and any remediation goals (if necessary) would be more conservative than those for a construction worker. The maintenance worker, therefore, is evaluated as the most likely maximally exposed future on-site receptor.

A separate maintenance worker scenario is evaluated for each of the Group 4 Sites. The soil exposure routes that are addressed include incidental soil ingestion, dermal contact with soil, inhalation of particulates generated from soil, and inhalation of volatile emissions from soil. The groundwater pathways that are included consist of groundwater ingestion and noningestion water use. Noningestion water use is likely to be limited to hand-washing and showering.

Based on EPA (1991b) and EPA Region 6 guidance (1995), the exposure frequency and exposure duration are assumed to be 250 days/year and 25 years, respectively. The exposure time used for showering, which is assumed to be 12 minutes (0.20 hour), represents the 90th percentile value that has been reported for showering (EPA 1989).

Although a maintenance worker could potentially be exposed to on-site waterways, contact is likely to be limited and would not be expected to exceed the exposure that would be assumed for the current trespasser. A maintenance worker scenario, therefore, is not evaluated for contact with waterway surface water and sediment.

3.3.3.3 Future off-site child and adult residents

The off-site child and adult resident scenarios are evaluated based on exposure to Caddo Lake. Caddo Lake is a current and also likely to be a future drinking water source. In addition, exposure to sediment in Caddo Lake through recreational contact (swimming and fishing) is evaluated. As mentioned previously, exposure to Caddo Lake surface water has been evaluated as part of the Group 2 BHHRA. These results are discussed separately in Section 5.

The future child and adult resident scenario addresses exposure to sediment in Caddo Lake through recreational contact with the lake. Recreational use is assumed to include swimming and fishing. The exposure routes that are evaluated based on recreational use include incidental sediment ingestion, dermal contact with sediment, and the ingestion of recreationally-caught fish.

The exposure frequency used for swimming is 150 days/year, which represents the EPA-recommended upper-bound value for swimming (EPA 1992a). The exposure frequency for the ingestion of recreationally-caught fish is assumed to be 365 days/year because the fish ingestion rate used to calculate contaminant intakes is a daily rate averaged over a year. The exposure duration for all recreational use exposure routes is assumed to be 30 years.

Although an off-site resident could potentially be exposed to contaminants through the inhalation of dispersed particulates and volatile emissions from contaminated on-site soils, these exposure routes were not evaluated for the residents. In general, exposure through these routes would be expected to be relatively insignificant, and would be considerably less for off-site receptors than for on-site receptors, for whom these exposure routes were addressed. In addition, much of the site is vegetated, which would minimize emissions due to suspension of on-site soils.

3.3.3.4 Summary of scenarios

The scenarios evaluated in the BHHRA are summarized in Table 3-37. The table presents the receptors and the exposure routes that were evaluated quantitatively.

3.3.4 Exposure Point Concentrations

The approaches used to calculate EPCs are medium-specific. These approaches are discussed in the following sections.

3.3.4.1 Soil

EPCs for soil are developed separately for each of the Group 4 Sites. Samples collected as background, away from potential sources, or upgradient are not combined with other samples in estimating the EPC.

For the current trespasser scenario, the EPC for soil is based on data from on-site surface soil and drainage ditch sediments (i.e., 0 to 6 inches deep). For the future maintenance worker scenario, the EPC for soil is based on data from on-site surface soil and drainage ditch sediments from two separate depth intervals (0 to 6 inches and 0 to 2 feet). For the evaluation of chemicals identified as volatile, EPCs are estimated based on data from on-site surface and subsurface soil (0 to 7 feet). Seven feet was the maximum depth evaluated; not all of the areas had soil samples collected to a depth of 7 feet.

According to EPA, "most large or complete environmental data sets from soil sampling are lognormally distributed" (EPA 1992c). Consequently, it is assumed that the soil data were distributed lognormally. Consistent with EPA guidance, EPCs for the RME case are calculated for each data set based on the 95 percent UCL concentrations of the arithmetic means of the log transformed data, using an equation recommended by EPA (1992c). If the 95 percent UCL concentration exceeded the maximum detected concentration for a chemical, the maximum detected concentration is used as the EPC. According to the

TCEQ Consistency Memorandum, in cases where a lognormal distribution has been assumed and a significant number of nondetected results have been included in the data set, it is possible for the 95 percent UCL on the mean to be below the sample arithmetic mean (TCEQ 1998). As such, the 95 percent UCL was compared to the calculated mean, and if it was less than the mean, the maximum detected concentration was used to estimate the EPC.

The following formula was used to determine the 95 percent UCL concentrations (EPA 1992c):

$$UCL = e^{\left(\bar{x}_i + 0.5 S^2 + \frac{SH}{\sqrt{n-1}} \right)}$$

Where:

- e = constant (natural log)
 \bar{x}_i = arithmetic mean of the logtransformed data for contaminant i
 S = standard deviation of the log transformed data

$$S = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x}_i)^2}{n-1}}$$

- H = statistic determined by the standard deviation and sample size
 n = sample size for contaminant in the particular media set

Chemicals in soil where a 95 percent UCL was used as the EPC include aluminum (Sites 35A, 35C, 46, 47, 48), antimony (Site 46), arsenic (Site 47), barium (Site 46), cadmium (Site 48), manganese (Sites 46, 47), vanadium (Site 35A, 46, 47, 48), benzo(a)anthracene (Site 35A, 46), benzo(k)anthracene (Site 46), and 2,3,7,8-TCDD (Sites 46 and 47). Data associated with the 95 percent UCL concentrations for the constituents and locations listed above were reviewed for "hot spots". The term "hot spot" is used to describe a localized area where one or more chemicals occur in concentrations substantially greater than those found elsewhere in the remainder of a facility zone. No apparent "hot spots" were identified for the aforementioned Group 4 sites.

Concentrations associated with the aforementioned samples were not evaluated independently in the BHHRA since a definitive localized area of high concentrations (representing multiple samples) was not identified. Soil EPCs estimated for each of the Group 4 Sites are presented in Tables 3-38 through 3-48. Instances in which one-half the detection limit exceeds the EPC are also presented in the tables.

3.3.4.2 Groundwater

All groundwater data are combined in the BHHRA, including those from different sampling rounds. In accordance with the TCEQ Consistency Memorandum, the maximum detected concentration of a COPC in groundwater from all sampling events and among all of the sampled wells is conservatively used as the EPC (TCEQ 1998).

Groundwater EPCs estimated for each of the Group 4 Sites are presented in Tables 3-49 and 3-50. Instances in which one-half the detection limit exceeds the EPC are also presented in this table.

3.3.4.3 Surface water and sediment

The EPCs for surface water and sediment in Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake are based on the same methodology as described for soil. As for soil and groundwater, all sampling rounds were combined. Arsenic was the only chemical in waterway sediment (i.e., Central Creek) where a 95 percent UCL was used as the EPC. Chemicals in Caddo Lake sediment where a 95 percent UCL was used as the EPC include barium, beryllium, cadmium, chromium, copper, lead, mercury, selenium, silver, thallium, vanadium, and zinc. Data associated with the 95 percent UCL concentrations for the constituents and locations listed above were reviewed for "hot spots". No apparent "hot spots" were identified for the aforementioned locations. All surface water EPCs were based on the maximum detected concentration.

Surface water and sediment EPCs estimated for Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake are presented in Tables 3-51 through 3-53. Surface water data for Caddo Lake are based on the same data that were used to evaluate exposure to Caddo Lake in the Group 2 BHHRA.

3.3.4.4 Recreationally-caught fish

The EPCs for recreationally-caught fish from Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake are estimated based on surface water and/or sediment EPC concentrations calculated for each surface water body. Caddo Lake fish EPCs are based on sediment concentrations. In accordance with the Group 2 Work Plan (Weston 1998), the chemical concentration in fish is calculated per the methodology recommended in the EPA Region 6 *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA 1998). The concentration in fish is calculated by using a bioconcentration factor (BCF), a bioaccumulation factor (BAF), or a biota-to-sediment accumulation factor (BSAF), as appropriate, on a chemical-by-chemical basis. Although this method overestimates risk, use of Caddo Lake sediment data next to LHAAP better estimates the impact of LHAAP on fish. Use of Caddo Lake fish samples would represent impacts from all sources of contamination to the Lake. Fish samples in Central Creek, Saunder's Branch, and Goose Prairie Creek would be difficult to collect, as fish of edible size are not generally present. Appendix B contains the methodology and results for estimating concentrations in fish tissue.

EPCs estimated for fish tissue in Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake are presented in Tables 3-54 and 3-55.

3.3.4.5 Air

Exposure through the air pathway is evaluated for three exposure routes: the inhalation of particulates generated from soil; the inhalation of volatile emissions from soil; and the inhalation of VOCs through noningestion water use (e.g., showering). In the absence of air monitoring data, exposure concentrations for the air pathway are modeled based on the concentrations of contaminants in soil and groundwater. The exposure concentrations for air are not presented separately, but are incorporated into the equations that are used to calculate contaminant intakes through the air pathway. The models that are used for the air pathway are those recommended by EPA in the *Soil Screening Guidance: Technical Background Document* (EPA 1996a).

The exposure concentrations for the inhalation of particulates generated from the soil exposure route are estimated based on the corresponding EPCs for soil (i.e., based on 0 to 6 inches for the current trespasser scenario, and 0 to 6 inches and 0 to 2 feet deep for the future maintenance worker scenario). For both the trespasser and maintenance worker scenarios, exposure concentrations for the inhalation of volatile emissions from soil exposure routes are estimated based on the EPC determined for soil data up to a maximum depth of 7 feet. The air exposure concentrations for the noningestion water use exposure route are calculated from the corresponding EPCs determined for groundwater.

3.3.5 Identification of Exposure Models and Assumptions

3.3.5.1 Approach

This section describes the mathematical models that are used to calculate the intakes or doses of the COPCs for each receptor through the applicable exposure routes. The mathematical models used to calculate intakes are presented in Tables 3-56 through 3-66. A listing of chemical-specific values used in the intake equations is presented in Table 3-67. Each table defines the variables used in estimating doses and includes the assumptions, such as exposure parameters, used in the model. Most of the exposure parameters that are used are standard values recommended by TCEQ, EPA, and EPA Region 6 guidance. The basis for the exposure time, exposure frequency, and exposure duration assumptions is presented in Section 3.3.3. Additional information and discussion of the rationale behind the assumptions for each exposure route are presented in the following sections.

Two sets of doses are calculated using the mathematical models discussed in the following sections. One set, in which the doses are averaged over the exposure duration, include all of the COPCs and are used to evaluate the potential for noncarcinogenic health effects. The other set, in which the doses are averaged over a 70-year lifetime, included only carcinogens and are used to evaluate potential carcinogenic risk.

With the exception of inhalation doses, the exposure doses are expressed as intakes or absorbed doses, in milligrams contaminant per kilogram body weight per day (mg/kg-day). The algorithms used to evaluate inhalation of particulates (airborne soil), inhalation of volatile organic compounds released from soil, and inhalation of volatile chemicals while showering generate an air concentration of milligrams per cubic meter (mg/m³) rather than an absorbed dose (mg/kg-day).

3.3.5.2 Incidental soil ingestion

Incidental soil ingestion could result from placing dirt-contaminated hands or objects such as cigarettes in the mouth. This exposure route is evaluated for the on-site scenarios (i.e., current trespasser and future maintenance worker). The equation and assumptions that are used to calculate intakes through the incidental ingestion of soil are presented in Table 3-56.

A soil ingestion rate of 100 mg/day is used for the trespasser scenario. This value is recommended by TCEQ and EPA Region 6 for a trespasser (TCEQ 1998; EPA 1995). The fraction of soil ingested from a contaminated source is conservatively assumed to be 100 percent (1.0).

For the future maintenance worker scenarios, an assumption of 100 mg/day is used as the soil ingestion rate. An ingestion rate of 100 mg/day is used instead of the standard EPA default value of 50 mg/day for an adult worker (EPA 1991b) because the maintenance worker spends the majority of his/her time outdoors. All of the soil ingested is assumed to be from a contaminated source (i.e., fraction ingested = 1.0) because a maintenance worker's activities could potentially be confined primarily to contaminated areas.

3.3.5.3 Dermal contact with soil

Dermal contact with soil could result in the absorption of chemicals through the skin. This exposure route is evaluated for the on-site scenarios (current trespasser and future maintenance worker). The equation and assumptions that are used to calculate absorbed dermal doses through skin contact with soil are presented in Table 3-57.

An exposed skin surface area of 3,500 square centimeters (cm²) is used for the trespasser scenario based on TCEQ guidance (1998). For the maintenance worker scenario, the skin surface area exposed to soil is assumed to be limited to the upper extremities because most maintenance workers wear protective clothing. An exposed skin surface area of 3,200 cm² is used as an estimate for the maintenance worker based on the means of data for adult males presented in Table 6-4 of the *Exposure Factor Handbook* (EPA 1997a). For the maintenance worker, it is conservatively assumed that the entire area of the upper extremities (hands, forearms, and upper-arms) is exposed.

Soil-to-skin adherence factors of 0.1 mg/cm² and 0.2 mg/cm² are used for the trespasser and maintenance worker, respectively (TCEQ 1998).

Chemical-specific dermal absorption factors recommended by TCEQ are used when available (TCEQ 1998). If a chemical-specific value is not available, default dermal absorption factors recommended by TCEQ such as 0.0 for VOCs, 0.1 for SVOCs, and 0.01 for metals are used (TCEQ 1998).

3.3.5.4 Inhalation of particulates

The inhalation of airborne particulates that are generated from soil are evaluated for the on-site scenarios (current trespasser and future maintenance worker). The intake equation and the assumptions that are used to calculate doses from the inhalation of particulates are summarized in Table 3-58.

According to TCEQ, for the evaluation of inhalation risk from soil, reference concentrations (RfCs) and unit risk factors (URFs) should not be converted to a dose (TCEQ 1998). Instead, the inhalation pathway should be evaluated by making direct comparisons of URFs and RfCs to measured or modeled air concentrations rather than conversions to inhaled doses. As such, the algorithm used to evaluate inhalation of particulates (airborne soil) released from soil generates an air concentration (mg/m^3) rather than an absorbed dose ($\text{mg}/\text{kg}\cdot\text{day}$).

The exposure to airborne particulates is evaluated using a particulate emission factor (PEF). The PEF relates the contaminant concentration in soil to the concentration of respirable particles (PM_{10}) in air due to fugitive emissions from the contaminated surface and/or subsurface soil. A default PEF value of 4.63×10^9 cubic meters per kilogram (m^3/kg) is recommended by TCEQ (1998). The default PEF recommended by TCEQ is obtained from RAGS Part B (EPA 1991a) and is representative of a surface with "unlimited erosion potential" that is characterized by bare surfaces of finely divided material, such as sandy agricultural soil, with a large number ("unlimited reservoir") of erodible particles.

3.3.5.5 Inhalation of volatile emissions from soil

The inhalation of volatile emissions from a soil exposure route is evaluated for the on-site scenarios (current trespasser and future maintenance worker). The intake equation and the assumptions that are used to calculate doses are summarized in Table 3-59.

As with inhalation of particulates, the algorithm used to evaluate inhalation of volatile emissions released from soil generates an air concentration (mg/m^3) rather than an absorbed dose ($\text{mg}/\text{kg}\cdot\text{day}$). The emission of volatile chemicals is determined for the combined surface and subsurface soil (0 to a maximum depth of 7 feet) for all exposure scenarios. Based on TCEQ guidance (1998) and EPA RAGS Part B guidance (1991a), only chemicals having a Henry's Law constant greater than $1 \times 10^{-5} \text{ atm}\cdot\text{m}^3/\text{mol}$ and a molecular weight of less than 200 grams/mol are evaluated through inhalation of volatile emissions released from soil.

3.3.5.6 Drinking water ingestion

Drinking water ingestion is considered a potential route of exposure for the future on-site maintenance workers and the future off-site residents. The intake equation and assumptions that are used to calculate doses from drinking water ingestion are presented in Table 3-60.

Drinking water ingestion rates recommended by EPA (1991b) are used for all scenarios. An ingestion rate of 1 liter per day (L/day) is used for both the maintenance worker and a child resident. An ingestion rate of 2 L/day is used for the adult resident.

3.3.5.7 Noningestion water use

Noningestion water use can result in exposure to contaminants as a result of the inhalation of volatilized chemicals or dermal absorption (e.g., showering, bathing, and cooking). Exposure to chemicals through both inhalation and dermal absorption resulting from noningestion water use is evaluated for the future on-site maintenance worker.

Inhalation of Volatilized Chemicals. The equation and assumptions that are used to calculate inhalation intakes from the inhalation of volatilized chemicals through noningestion water use are presented in Table 3-61. As with inhalation of particulates and volatile chemicals released from soil, the algorithm used to evaluate inhalation of volatilized chemicals through noningestion water use generates an air concentration (mg/m^3) rather than an absorbed dose ($\text{mg}/\text{kg}\cdot\text{day}$). As suggested by EPA Region 6 (1995), a model developed by EPA is used to calculate inhalation intakes through noningestion water use (EPA 1991a). This model applies, however, to residential water use by a family of four and estimates exposure through all noningestion water uses, including showering, laundering, and dishwashing. Because a maintenance worker is expected to spend much of the day outside and exposure would likely be limited to brief showers, total inhalation exposure to workers would likely be less than that for a resident. To adjust for the lesser exposure by a maintenance worker, an adjustment factor of 50 percent is applied which accounts for a lower indoor inhalation rate for the worker. In deriving chronic RfCs and URFs, the data are adjusted to a particular set of ventilatory patterns (i.e., $20 \text{ m}^3/\text{day}$). Applying the adjustment factor will effectively reduce the inhalation rate ($20 \text{ m}^3/\text{day}$) assumed in deriving the RfC or URF by 50 percent.

Based on TCEQ guidance (1998) and EPA RAGS Part B guidance (1991a), only chemicals having a Henry's Law constant greater than $1 \times 10^{-5} \text{ atm}\cdot\text{m}^3/\text{mol}$ and a molecular weight of less than 200 grams/mol are evaluated through inhalation of volatile emissions released from groundwater.

Dermal Absorption. In accordance with EPA Region 6 guidance, dermal absorption through showering is evaluated only for COPCs with a permeability coefficient equal to or greater than 0.01 centimeter per hour (cm/hr) (EPA 1995). The equation and assumptions that are used to evaluate this exposure route are presented in Table 3-62.

For the maintenance worker, a surface area of 20,000 cm² is used based on the average total body surface areas for adults (EPA 1997a).

The dermal permeability coefficients (K_p) are obtained where available from EPA (2000). Predicted K_p values, as presented in Exhibit B-2 of the EPA RAGS Part E (*Supplemental Guidance for Dermal Risk Assessment*), are used in the BHHRA (EPA 2000). If a K_p value was not available, a value is calculated using the equation below (EPA 2000a, Equation 3.8).

$$\log k_p = -2.8 + (0.67 \times \log k_{ow}) - (0.0056 \times \text{Molecular Weight})$$

3.3.5.8 Incidental ingestion of surface water

The incidental ingestion of surface water is evaluated for the future off-site resident. Incidental water ingestion may occur as a result of swimming in Caddo Lake. The intake equation and assumptions that are used to evaluate incidental surface water ingestion are presented in Table 3-63.

The incidental surface water ingestion rate is assumed to be 0.05 L/hour for the child and adult (EPA 1989).

3.3.5.9 Dermal contact with surface water

Dermal contact with surface water bodies is evaluated for the current trespasser (exposure to waterways) and for the future off-site resident (Caddo Lake). The intake equation and assumptions that are used to calculate absorbed doses resulting from dermal contact with surface water are summarized in Table 3-62.

Surface water contact for the trespasser is assumed to be limited to wading in Central Creek, Saunder's Branch, and Goose Prairie Creek. An exposed skin surface area of 4,100 cm² is used based on the 95th mean total body surface areas for youths between the ages of 7 and 16 (EPA 1997a).

The child and adult residents are assumed to be dermally exposed to surface water through swimming in Caddo Lake. Based on information presented in Table 6-6 of the 1997 *Exposure Factors Handbook* (EPA 1997a), a total body surface area of 8,600 cm² is used for the child resident based on the 95th percentile total body surface areas for male children, beginning with the 2 < 3 year age category and ending with the 6 < 7 year age category. For the adult resident, a surface area of 23,000 cm² is used based on the upper-bound total body surface area for adults (EPA 1997a).

The dermal permeability coefficients are selected as described in Section 3.3.5.7 (see "Dermal Absorption").

3.3.5.10 Incidental sediment ingestion

Incidental sediment ingestion could occur from placing sediment-contaminated hands in the mouth. This exposure route is evaluated for the trespasser who is assumed to be in contact with on-site waterways (Central Creek, Saunder's Branch, and Goose Prairie Creek) and the off-site resident who is assumed to swim in Caddo Lake. The equation and assumptions that are used to calculate intakes through incidental sediment ingestion are presented in Table 3-64.

A sediment ingestion rate of 100 mg/day is used for the trespasser and the adult resident. This value is recommended by EPA Region 6 for soil and sediment ingestion for both a trespasser (age 7 to 16 years) and an adult resident (EPA 1995). A sediment ingestion rate of 200 mg/day, which is recommended for soil and sediment ingestion for a child age 1 to 6 years, is used for the child resident (EPA 1995). The fraction ingested from a contaminated source is conservatively assumed to be 100 percent (1.0).

3.3.5.11 Dermal contact with sediment

Dermal contact with sediment could result in the absorption of contaminants through the skin. This exposure route is evaluated for a current trespasser who is assumed to contact sediment in the on-site waterways through wading and for the resident who is assumed to contact sediment in Caddo Lake through swimming or other recreational activities. The equation and assumptions that are used to calculate intakes through dermal contact with sediment are presented in Table 3-65.

An exposed skin surface area of 4,100 cm² is used for the trespasser scenarios. This value corresponds to the trespasser skin surface area assumed for the dermal contact with the surface water exposure route (see Section 3.3.5.9). A skin surface area of 5,800 cm² is used for the adult resident scenario based on the 95th upper percentile value recommended by EPA for outdoor adult contact with soil [EPA 1997a (Table 6-26)]. A skin surface area of 1,800 cm² is used for the child resident (EPA 1995).

In the absence of sediment-to-skin adherence factors, adherence factors recommended for soil are used by default. Soil-to-skin adherence factors of 0.1 and 0.2 milligrams per square centimeter (mg/cm²) are used for the trespasser and off-site resident, respectively (TCEQ 1998).

Similarly, in the absence of information regarding dermal absorption from sediment, dermal absorption factors recommended for soil are used. Chemical-specific dermal absorption factors recommended by TCEQ are used when available (TCEQ 1998). If a chemical-specific value was not available, default dermal absorption factors recommended by TCEQ, such as 0.0 for VOCs, 0.1 for SVOCs, and 0.01 for metals, are used (TCEQ 1998).

3.3.5.12 Ingestion of recreationally-caught fish

The exposure route for ingestion of recreationally-caught fish is evaluated for a trespasser who ingests fish caught in the on-site waterways (Central Creek, Saunder's Branch, and Goose Prairie Creek) and an off-site resident who ingests fish caught in Caddo Lake. The intake equation and assumptions that are used to evaluate this exposure route are presented in Table 3-66.

For the ingestion of recreationally-caught fish, an ingestion rate of 54 grams per day (g/day) is used for both the trespasser and the off-site adult resident (EPA 1995 and 1991b). According to age-specific ingestion rates for finfish published by Pao et al. (1982), young children ingest approximately one-half of the fish ingested by adults on a daily basis. Therefore, a fish ingestion rate of 27 g/day, or one-half of the adult ingestion rate, is used for the off-site child resident. The ingestion rates represent the total quantity of fish ingested during a year, averaged over 365 days. The EPA *Exposure Factor Handbook* (1997a) was reviewed to obtain information on child fish ingestion rates; however, no recommended values were identified.

The on-site waterways are not considered to be significant recreational fisheries. Caddo Lake is more likely to be used for recreational fishing on a regular basis. Based on professional judgment, for the trespasser scenario, the fraction of fish ingested from a contaminated source such as Central Creek is assumed to be 0.25. Although Caddo Lake is relatively large, only a small area of the lake is expected to be affected by contamination from the site. Because it is unlikely that a sportsman would spend all of his time fishing in one small area, for the off-site resident, it is assumed based on professional judgment that the fraction of fish ingested from a contaminated source such as Caddo Lake is 0.50.

3.4 TOXICITY ASSESSMENT

3.4.1 Introduction

The toxic effects of a chemical generally depend not only upon the inherent toxicity of the compound and the level of exposure (dose), but also on the route of exposure (oral, dermal, or inhalation) and the duration of exposure (subchronic, chronic, or lifetime). Thus, a full description of the toxic effects of a chemical includes a listing of what adverse effects the chemical may cause and how the occurrence of these effects depends on the dose, route, and duration of exposure.

The toxicity assessment discusses the information used in deriving the toxicity values for the Group 4 Sites. These toxicity values are applied to the estimated EPCs and exposure doses to calculate potential cancer risks and noncarcinogenic health effects. The use of reference doses (RfDs) and RfCs are suggested when evaluating adverse health effects from chronic and subchronic exposures to noncarcinogenic chemicals (EPA 1989). These are route- and duration-specific estimates of the average daily exposure that may occur without the presence of any adverse health effects.

Chemicals with evidence of carcinogenicity are referred to as carcinogens. The use of cancer slope factors (CSFs) and URFs is suggested for estimating potential cancer risk from exposures to carcinogenic chemicals (EPA 1989). The chemical-induced risk that may be incurred is considered as an excess risk of developing cancer from other causes over a person's lifetime. Thus, risk estimates generated in human health risk assessments are frequently referred to as excess lifetime cancer risks. Excessive exposure to all chemicals can produce possible adverse noncarcinogenic health effects, while the potential for causing cancer is limited to only carcinogens. Noncarcinogenic toxicity values can, therefore, be developed for all chemicals in which there is available data, while cancer toxicity values can only be developed for carcinogens.

The most recent data in the Integrated Risk Information System (IRIS), an EPA-maintained computerized database, are used to develop toxicity values for the Group 4 contaminants when available (EPA 2001a). If a toxicity value is not available from IRIS, the following sources are used, as listed in order of preference:

- *Health Effects Assessment Summary Tables* (EPA 1997b).
- EPA National Center for Environmental Assessment (NCEA).
 - NCEA values were obtained from the May 8, 2001 EPA Region 3 Risk-Based Concentration Table (EPA 2001b).
- TCEQ March 15, 2001 Toxicity Factors Table (TCEQ 2001).
 - TCEQ Chronic Remediation-Specific Effects Screening Levels (RS-ESL).
 - TCEQ Derived Toxicity Values.
 - Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs).

3.4.2 Carcinogenic Effects

Oral and dermal CSFs are used to evaluate human carcinogens for the Group 4 COPCs. CSFs are expressed as an inverse of the dose in units of milligrams of chemical per kilogram of body weight per day (mg/kg-day^{-1}). Through IRIS, EPA has developed inhalation URFs to express carcinogenic potency for the inhalation exposure route. The URF is expressed as an inverse concentration in air in units of micrograms of chemical per cubic meter of air ($\mu\text{g/m}^3$)⁻¹. URFs are used to assess carcinogenic inhalation risk as discussed in more detail below. In instances where inhalation URFs are not available, inhalation CSFs are converted to inhalation URFs.

3.4.2.1 Potency of cancer-causing chemicals

CSFs are developed by EPA under the assumption that the risk of cancer from a given chemical is linearly related to dose. EPA may develop CSFs from laboratory animal or epidemiological studies in which

relatively high doses of the chemical are administered. It is conservatively assumed that these high doses can be extrapolated downward to extremely small doses, with some incremental risk of cancer always remaining until the dose is zero. This nonthreshold theory assumes that even a small number of molecules (possibly even one molecule) of a carcinogen may cause changes in a single cell that could result in uncontrolled cell division, eventually leading to cancer. There is some dispute as to whether the extrapolation from high to low doses is a realistic approach. It has been argued that at low doses, cells may have the ability to detoxify carcinogens or repair chemical-induced cellular damage. Although it is important to recognize the possibility that some carcinogens may have a threshold, it is assumed in the estimates of cancer risk that no threshold exists.

The CSF for a chemical is usually derived by EPA using a linearized multistage model and reflects the upper-bound limit of the cancer potency of the chemical. As a result, the estimated carcinogenic risk is likely to represent a plausible upper limit to the risk. The actual risk is unknown, but is likely to be considerably lower than the predicted risk, and may even be as low as zero (EPA 1989).

RAs follow the rationale used by EPA in developing categories of classification for carcinogens. Only those chemicals classified by the EPA as "A" have sufficient human evidence of carcinogenicity. Carcinogens classified as "B" and "C" have insufficient human data to support their cancer-causing potential, but they also have varying degrees of supportive animal data. Carcinogens classified as "D" cannot be evaluated at this time because there is no evidence in animals or humans. Both known and potential A, B, and C carcinogens are evaluated in the RA as carcinogens pursuant to EPA guidance (EPA 1989). CSFs are periodically under review by the EPA; in some cases, the EPA may withdraw the criteria completely until the review becomes final.

The categorization of carcinogens according to the EPA is summarized as follows (EPA 1986):

- A—Human carcinogen (sufficient evidence from epidemiological studies).
- B1—Probable human carcinogen (at least limited evidence of carcinogenicity to humans).
- B2—Probable human carcinogen (a combination of sufficient evidence in animals and inadequate data in humans).
- C—Possible human carcinogen (limited evidence in animals in the absence of human data).
- D—Not classified (inadequate animal and human data).
- E—No evidence for carcinogenicity (no evidence for carcinogenicity in at least two adequate animals tests in different species, or in both epidemiological and animal studies).

3.4.2.2 Estimates of carcinogenicity

The carcinogenic potency of a contaminant depends in part on its route of entry into the body, such as oral, inhalation or dermal. CSFs and URFs are, therefore, developed and classified according to the route of administration. In some cases, a carcinogen may produce tumors only at or near a specific route of entry (nasal passages) and may not be carcinogenic through other exposure routes. Carcinogenic factors for the oral and dermal (Table 3-68) and inhalation (Table 3-69) routes of exposure are discussed below.

Oral Route. Oral CSFs expressed as an inverse of the dose (mg/kg-day)⁻¹ were used to evaluate the risk from exposure to potential carcinogens through oral exposure pathways, including the ingestion of soil and groundwater.

Oral carcinogenic PAH toxicity values were derived from TEFs using the slope factor for benzo(a)pyrene as the basis for the relative comparisons (EPA 1993a). The following are the TEFs used:

• Benzo(a)pyrene	1.0
• Benzo(a)anthracene	0.1
• Benzo(b)fluoranthene	0.1
• Benzo(k)fluoranthene	0.01
• Chrysene	0.001
• Dibenzo(a,h)anthracene	1.0
• Indeno(1,2,3-cd)pyrene	0.1

Oral CSFs are presented in Table 3-68.

Dermal Route. Whereas oral and inhalation CSFs are typically developed based on administered doses, dermal exposures are expressed in terms of an absorbed dose (i.e., the amount of chemical that crosses body membranes and enters the bloodstream). Consequently, dermal CSFs must be based on absorbed doses rather than administered ones (EPA 1989). Although dermal CSFs have not been derived by the EPA for any chemicals, EPA has published guidance for calculating dermal slope factors for chemicals for which an oral CSF is available.

In accordance with the EPA 1989 guidance, dermal CSFs are derived for the Group 4 COPCs by dividing the oral CSF by a unitless gastrointestinal absorption factor (ABSGi) obtained from the literature (EPA 1989). The result is a conversion of the oral CSF, which represents the carcinogenic potency of an administered dose, to a dermal CSF, which represents the carcinogenic potency of an absorbed dose. The conversion from oral to dermal exposure is necessary to be able to calculate risk for the dermal exposure pathway. Dermal CSFs must be consistent with dermal carcinogenic doses generated from the exposure assessment, which are calculated as absorbed doses. TCEQ has published ABSGi values for most of the

Group 4 COPCs (TCEQ 1998). The recommendations for these and other contaminants are summarized in this reference. Converted dermal CSFs and ABSgi values are summarized in Table 3-68.

Inhalation Route. URFs are used when available to evaluate all potential risks from exposure to carcinogens through the inhalation exposure route. In instances where an inhalation URF is not available but the inhalation CSF is, the inhalation CSF is converted to a URF in units of $(\text{mg}/\text{m}^3)^{-1}$ by multiplying the CSF by an inhalation rate of $20 \text{ m}^3/\text{day}$ and dividing by an adult body weight of 70 kg (EPA 1997b). This is shown in the equation below.

$$\text{URF} = \text{CSF}_{\text{inhalation}} \left(\frac{\text{kg} \cdot \text{day}}{\text{mg}} \right) \times \frac{1}{70 \text{ kg}} \times \frac{20 \text{ m}^3}{\text{day}} = \frac{\text{m}^3}{\text{kg}}$$

Inhalation URFs are summarized in Table 3-69.

3.4.3 Noncarcinogenic Effects

RfDs and RfCs are used to evaluate potential noncarcinogenic effects for the Group 4 Sites. The term RfD refers to the daily intake of a chemical to which an individual can be exposed without any expectation of noncarcinogenic health effects such as organ damage, biochemical alterations, and birth defects occurring during a given exposure duration (EPA 1989). Oral and dermal toxicity factors are expressed as a dose in units of $\text{mg}/\text{kg} \cdot \text{day}$. Through IRIS, EPA has developed inhalation RfCs to express noncarcinogenic effects through the inhalation exposure route. The RfC is expressed as a concentration in air in units of mg/m^3 . RfCs are used to assess noncarcinogenic inhalation health effects, as discussed in detail below. In instances where inhalation RfCs are not available, inhalation RfDs are converted to RfCs.

3.4.3.1 Estimates of noncarcinogenic toxicity

In developing RfDs for noncarcinogens, EPA has assumed that a threshold dose exists below which there is no potential for human toxicity to occur. The RfD is derived from a no-observed-adverse-effect level (NOAEL) or lowest-observed-adverse-effect level (LOAEL) obtained from human or animal studies by the application of standard uncertainty factors, and in certain cases, an additional modifying factor to account for professional assessment of scientific uncertainties in the available data (EPA 1989).

A NOAEL is the highest dose of chemical at which no toxic effects are observed in any of the test subjects or animals. The study chosen to establish the NOAEL is based on the criterion that the measured toxic endpoint represents the most sensitive ("critical") target organ or tissue to that chemical (i.e., that target organ or tissue that shows evidence of damage at the lowest dose). Since many chemicals can produce toxic effects on several organ systems, the distinction of the critical toxic effect provides added confidence that the NOAEL is protective of human health. In contrast to a NOAEL, a LOAEL is the

lowest dose at which the most sensitive toxic effect is observed in any of the test subjects or animals. If a LOAEL is used in place of a NOAEL to derive the RfD, a higher level of uncertainty is involved and, therefore, an additional uncertainty factor is applied.

A variety of regulatory agencies have used the threshold approach for noncarcinogens in the development of health effects criteria such as worker-related threshold limit values, air quality standards, and food additive and drinking water regulations. Chronic RfDs have been developed for the oral and inhalation routes, but not for the dermal route. As with carcinogen classification, human data are used preferentially if they are deemed adequate through scientific evaluation; however, in many cases, adequate human toxicity data are not available and, therefore, animal studies have to be used.

3.4.3.2 Duration of exposure

Only chronic RfDs, which are developed to evaluate potential toxicity at greater than 7 years of exposure, are used in estimating both childhood and adult noncarcinogenic risk. Subchronic RfDs, when available, are sometimes used to evaluate shorter exposures ranging from 2 weeks to 7 years. This may be more appropriate to address childhood exposure (1 to 6 years). However, chronic RfDs, which are expressed in lower doses than subchronic RfDs, are used in the Group 4 assessment to ensure a conservative estimate of noncarcinogenic effects.

3.4.3.3 Route of entry into the body

The level of adverse effect that can be caused by a noncarcinogenic contaminant depends in part on its route of entry into the body such as oral, inhalation or dermal. RfDs and RfCs are, therefore, developed and classified according to the route of administration. In some cases, noncarcinogens may produce effects that are specific to only one route of entry into the body (oral, inhalation). These route-specific effects are identified by the toxic or target endpoints in which the contaminant expresses its toxicity (reproductive or developmental effects). Noncarcinogenic reference criteria, including listing of target endpoints and modifying factors, for the oral, dermal, and inhalation routes of exposure are discussed below and presented in Tables 3-70 and 3-71, respectively.

Oral Route. Oral RfDs expressed as a dose (mg/kg-day) are used to evaluate potential adverse health effects from exposure to noncarcinogens through oral routes of exposure, including the ingestion of soil and groundwater. Oral RfDs are presented in Table 3-70.

Dermal Route. Whereas oral and inhalation RfDs are typically developed based on administered doses, dermal exposures are usually expressed in terms of absorbed doses (i.e., the amount of chemical that crosses body membranes and enters the bloodstream). Consequently, dermal RfDs, similar to dermal CSFs, must be based on absorbed doses rather than administered ones (EPA 1989). Although dermal RfDs have not been derived by the EPA for any chemicals, EPA has published guidance for calculating dermal RfDs for chemicals for which an oral RfD is available.

In accordance with the guidance, dermal RfDs are derived for the Group 4 noncarcinogens by multiplying the oral RfD by the unitless ABSgi (EPA 1989). The result is a conversion of the oral RfD, which represents the adverse effects for an administered dose, to a dermal RfD, which represents the adverse effects of an absorbed dose. The conversion from oral to dermal exposure is necessary to be able to calculate possible adverse effects for the dermal exposure pathway. Dermal RfDs must be consistent with dermal exposure doses generated from the exposure assessment. TCEQ has published ABSgi values for most of the Group 4 COPCs (TCEQ 1998). The recommendations for these and other contaminants are summarized in this reference. Converted dermal RfDs and ABSgi values are summarized in Table 3-70.

Inhalation Route. Inhalation RfCs are used when available to evaluate the noncancer health effects from exposure to noncarcinogens through the inhalation exposure route. In instances where an inhalation RfC is not available but the RfD is available, the inhalation RfD is converted to an inhalation RfC by multiplying the RfD by an adult body weight of 70 kg and dividing by an inhalation rate of 20 m³/day, as shown in the equation below (EPA 1997b).

$$\text{RfC} = \text{RfD}_{\text{inhalation}} \left(\frac{\text{mg}}{\text{kg} \cdot \text{day}} \right) \times \frac{70 \text{ kg}}{1} \times \frac{\text{day}}{20 \text{ m}^3} = \frac{\text{mg}}{\text{m}^3}$$

Inhalation RfCs are summarized in Table 3-71.

Inhalation noncancer toxicity values are available for approximately 64 percent of the Group 4 COPCs. Of the COPCs for which no noncancer values are available, approximately 62 percent are carcinogens that have inhalation factors and thus are evaluated for potential cancer risk through the inhalation exposure pathway. The absence of noncancer criteria does not implicitly indicate a data gap because in most cases the constituent is considered a carcinogen and evaluated on the basis of carcinogenic effects. The absence of noncancer toxicity values may also be due to a review that found no adverse effect through the inhalation pathway.

3.5 RISK CHARACTERIZATION

The objective of the risk characterization is to integrate the information developed in the "Exposure Assessment" (Section 3.3) and the "Toxicity Assessment" (Section 3.4) to estimate the potential current and future health risks associated with exposure to the COPCs in the on-site areas as well as off-site Caddo Lake.

Human health risks are presented separately for carcinogenic and noncarcinogenic effects of contaminants because of their different toxicological endpoints, relevant exposure averaging times, and risk characterization methods. Excessive exposure to all contaminants can potentially produce

noncarcinogenic health effects while the potential for carcinogenic effects is limited to exposure to those chemicals categorized by EPA as carcinogens (see Section 3.4.1).

The general approaches to determining carcinogenic and noncarcinogenic risks are presented in Section 3.5.1. The results of the risk evaluation are summarized in Section 3.5.2, and uncertainties associated with the risk estimates are discussed in Section 3.6. Preliminary remedial goal options (RGOs) are presented in Section 3.7.

Cancer risk results are expressed in scientific notation. For example, a risk of one in ten thousand is expressed as 1×10^{-4} , which equates to one excess cancer case in a population of 10,000 individuals over a lifetime. Noncancer health effects are expressed in arithmetic format as a unitless ratio of calculated intake to acceptable intake, which for each chemical is called an HQ. The HQ (noncancer ratio) for each chemical may then be summed as a cumulative hazard index (HI) to represent the total pathway hazard for noncarcinogenic chemicals.

3.5.1 Approaches to Evaluating Risk

Approaches to evaluating carcinogenic risks and noncarcinogenic health effects are presented in the following sections.

3.5.1.1 Carcinogenic risk

Carcinogenic risk is calculated by multiplying the estimated daily intake (EDI) (i.e., exposure dose) of a compound that is averaged over a lifetime by an exposure route-specific (oral, inhalation, or dermal) CSF. The CSF converts EDIs averaged over a lifetime of exposure directly to incremental risk of an individual developing cancer. The calculation of carcinogenic risk for a specific chemical via a specific exposure pathway assuming a low-dose, linear relationship is illustrated by the following equation:

$$\text{Cancer Risk} = \text{EDI} \times \text{CSF}$$

Where:

EDI	=	Estimated daily intake (averaged over a 70-year lifetime) for a specific exposure pathway (mg/kg-day)
CSF	=	Chemical- and route-specific cancer slope factor (mg/kg-day) ⁻¹

Because the aforementioned equation assumes a low dose (relatively low intakes are most likely from environmental exposures), the linear equation is valid only at low risk levels (i.e., below estimated risks of 1×10^{-2}). The combined potential upper-bound cancer risk for a particular exposure pathway (e.g., soil ingestion) is then estimated by summing the risk estimates for all the COPCs for that pathway. This approach is in accordance with EPA guidelines on chemical mixtures in which risks associated with

carcinogens are considered additive (EPA 1986). This approach assumes independence of action by the chemicals (i.e., that there are no synergistic or antagonistic interactions), and that all of the chemicals have an identical toxicological endpoint (i.e., cancer). The total potential upper-bound lifetime cancer risk to an individual in a specified population (e.g., adult construction worker) is estimated by summing the combined cancer risks for all chemicals from all relevant exposure pathways.

The algorithm used to evaluate inhalation for this BHHRA generates an air concentration (mg/m^3) rather than a dose ($\text{mg}/\text{kg}\text{-day}$). As such, cancer risks for inhalation exposure routes are calculated using the following equation:

$$\text{Cancer Risk} = \text{URF} \times \text{CF} \times \text{Air Concentration}$$

Where:

$$\begin{aligned} \text{URF} &= \text{Unit risk per air concentration } (\mu\text{g}/\text{m}^3)^{-1} \\ \text{CF} &= \text{Conversion factor } (1,000 \mu\text{g}/\text{mg}) \\ \text{Air Concentration} &= \text{Modeled air concentration } (\text{mg}/\text{m}^3) \end{aligned}$$

The EPA policy set in place for establishing remediation goals based on excess cancer risks follows the CERCLA NCP. In assessing the carcinogenic risks posed by a site, the NCP established an excess cumulative cancer risk of 1×10^{-6} as a "point of departure" for establishing remediation goals (EPA 1994a). Excess cumulative cancer risks lower than 1×10^{-6} need not be addressed by the NCP as they are considered acceptable. EPA clarified its position on risk management decisions and the role of the baseline risk assessment as follows:

"Where the cumulative carcinogenic site risk to an individual based on reasonable maximum exposure for both current and future land use is less than $1\text{E-}04$, and the noncarcinogenic HI is less than 1, action generally is not warranted unless there are adverse environmental impacts" (EPA 1991c).

Therefore, it is EPA's general policy to consider cancer risks up to 1×10^{-4} to be acceptable. According to the NCP, excess cumulative cancer risks in the range of 1×10^{-6} to 1×10^{-4} may or may not be considered acceptable, depending on site-specific factors such as the potential for exposure, technical limitations of remediation, and data uncertainties. EPA has considered lifetime cumulative cancer risks of greater than 1×10^{-6} and up to 1×10^{-4} as acceptable either because of cost, feasibility, or the size of the exposed population.

The aforementioned target cancer risk levels are based on cumulative risks and not on risks posed by individual chemicals. Exposure scenarios that generate cumulative cancer risks in excess of 1×10^{-5} and up to 1×10^{-4} will generally have cancer risks from individual chemicals in excess of 1×10^{-6} . It would take 100 chemicals with a 1×10^{-6} cancer risk to generate a cumulative cancer risk of 1×10^{-4} .

With respect to carcinogens, TCEQ policy [Section 335.563(b)] for establishing remediation goals states that for known or suspected carcinogens, media cleanup levels shall be established at concentrations which represent an excess upperbound lifetime risk of between 1×10^{-4} and 1×10^{-6} . TCEQ policy further clarifies that “one starts with the goal of 1×10^{-6} for an individual carcinogen but then may modify this ‘preliminary remediation goal’ according to the criteria presented in Section 335.563(d)”. The executive director may consider a higher (i.e., less conservative) risk goal based on the following criteria: technical limitations, effectiveness, practicability, or other relevant features of available remedies. In addition, the risk reduction rule further states that when the background concentration of an individual contaminant is greater than the risk-based level, then the background value shall serve as the cleanup level.

As specified in Section 335.563 of the risk reduction rule, for carcinogens, a cumulative cancer risk level of 1×10^{-4} shall be used to establish media cleanup levels that are protective of exposures to multiple carcinogenic contaminants. Evaluation of cumulative risk is only for the purpose of determining whether the media cleanup levels established for individual carcinogens need to be adjusted downward to account for exposures to multiple contaminants in a medium.

3.5.1.2 Noncarcinogenic effects

Noncarcinogenic health effects are evaluated by calculating HQs and HIs. This is accomplished by comparing the EDIs of the COPCs, which are averaged over the period of exposure, to chemical and route-specific RfDs. The RfD represents the daily intake of a chemical to which a person can be exposed over a given length of time without any reasonable expectation of adverse noncarcinogenic health effects. The HQ for a particular chemical is the ratio of the EDI through a given exposure pathway to the applicable RfD. The HQ-RfD relationship is illustrated by the following equation:

$$HQ = EDI/RfD$$

Where:

HQ	=	Hazard quotient
EDI	=	Estimated daily intake (averaged over the exposure period) (mg/kg-day)
RfD	=	Chemical- and route-specific reference dose (mg/kg-day)

As previously mentioned, the algorithm used to evaluate inhalation exposures for this BHHRA generates an air concentration (mg/m^3) rather than a dose ($\text{mg}/\text{kg}\cdot\text{day}$). As such, noncancer HQs for inhalation exposures are calculated using the following equation:

$$HQ = \text{Air Concentration}/RfC$$

Where:

$$\begin{aligned} \text{HQ} &= \text{Hazard quotient} \\ \text{Air Concentration} &= \text{Modeled air concentration (mg/m}^3\text{)} \\ \text{RfC} &= \text{Reference concentration (mg/m}^3\text{)} \end{aligned}$$

The HQs determined for each COPC by exposure pathway are summed within an exposure scenario to obtain a total HI. The HI is an expression of the additivity of noncarcinogenic health effects from all exposure routes and pathways for a given age group within an exposed population. The principle of additivity conservatively assumes that, for a given age group and scenario, all COPCs have the same toxic endpoint. This is conservative (health-protective) because there may be a broad range of toxic endpoints at the critical doses for each COPC and, therefore, they are not truly additive.

The methodology used to evaluate noncancer health effects, unlike the methodology used to evaluate carcinogenic risk, is not a quantitative measure of risk. The HQ or HI is not a mathematical prediction of the incidence or severity of those effects (EPA 1989). If a HQ or HI exceeds unity (1), there may be a potential for noncancer health effects occurring under the defined exposure conditions. Implicit in the determination of an individual RfD is an assumed margin of safety (refer to Section 3.4, "Toxicity Assessment"), and the range of RfDs for a series of chemicals in an exposure scenario can potentially represent a number of individual toxic endpoints (as discussed above). Therefore, a HQ or HI of greater than 1 does not necessarily indicate that an adverse noncancer effect is likely to occur. Furthermore, an HI of less than or equal to 1 indicates that it is unlikely for even sensitive populations to experience adverse noncancer health effects.

With respect to noncarcinogens, TCEQ policy (Section 335.563) for establishing remediation goals states that media cleanup levels shall be established at concentrations which represent an HQ of 1. For noncarcinogens (systemic toxicants), an HI of 1 shall be used to establish media cleanup levels that are protective of exposures to multiple noncarcinogenic contaminants.

3.5.2 Summary of Results

The following sections summarize the risk results for the receptors evaluated in this BHHRA. The uncertainties involved in arriving at these results are presented in Section 3.6. The results should be interpreted with an understanding of the associated uncertainties.

Table 3-72 presents by site and scenario a summary of the total carcinogenic risks and HIs for the on-site and off-site receptors evaluated in this BHHRA. Tables 3-73 and 3-74 summarize by site and scenario those chemicals and exposure routes that exceed a carcinogenic risk of 1×10^{-6} and a HI of 1 under RME exposure assumptions, respectively. Detailed tables presenting the EDIs, risks and HIs posed by each chemical through each exposure route and their percent contribution to the total risk and HI are presented by site and scenario in Appendix C.

The following sections discuss the carcinogenic risk and HIs calculated by site. The discussions below focus on those chemicals and exposure routes that exceed carcinogenic risks of 1×10^{-6} and an HI of 1.

3.5.2.1 Site 04

A summary of the noncancer HIs and carcinogenic risks calculated for Site 04 is presented below.

3.5.2.1.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 04 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-2 and C-3, respectively. A total HI of 0.03 is calculated for the current trespasser. This HI is below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 04 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-8 and C-9, respectively. A total HI of 0.35 is calculated for the future maintenance worker. This HI is below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 04 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-14 and C-15, respectively. A total HI of 0.46 is calculated for the future maintenance worker. This HI is below the benchmark of concern of 1.

3.5.2.1.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 04 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-5 and C-6. A total carcinogenic risk of 9.7×10^{-8} is calculated for the current trespasser at Site 04. This risk is well below the benchmark of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 04 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-11 and C-12, respectively. A total carcinogenic risk of 4.7×10^{-5} is calculated for the future maintenance worker at Site 04. This risk is within the target risk range of 1×10^{-6} to 1×10^{-4} .

Exposure routes associated with soil generate a carcinogenic risk of 1.2×10^{-6} based on risks from 2,3,7,8-TCDD. Groundwater exposure routes account for approximately 98 percent of the overall risk, generating a carcinogenic risk of 4.5×10^{-5} based on exposure to 2,3,7,8-TCDD. Dermal contact while showering accounts for the majority of the groundwater risk (approximately 89 percent), generating a carcinogenic risk of 4.0×10^{-5} .

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). For Site 04, carcinogenic risks for the 0- to 2-foot interval (Tables C-17 and C-18) are the same as those listed above for the 0- to 0.5-foot interval.

3.5.2.2 Site 08

A summary of the noncancer HIs and carcinogenic risks calculated for Site 08 is presented below.

3.5.2.2.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 08 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-20 and C-21, respectively. A total HI of 0.005 is calculated for the current trespasser. This HI is below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 08 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-26 and C-27, respectively. A total HI of 0.24 is calculated for the future maintenance worker. This HI is below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 08 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-32 and C-33, respectively. A total HI of 0.24 is calculated for the future maintenance worker. This HI is below the benchmark of concern of 1.

3.5.2.2.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 08 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-23 and C-24. A total carcinogenic risk of 1.4×10^{-8} is calculated for the current trespasser at Site 08. This risk is well below the benchmark of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 08 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-29 and C-30, respectively. A total carcinogenic risk of 7.3×10^{-5} is calculated for the future maintenance worker at Site 08. This risk is within the target risk range.

Exposure routes associated with soil generate a carcinogenic risk below the benchmark of 1×10^{-6} (1.7×10^{-7}) based on risks to 2,3,7,8-TCDD. Groundwater exposure routes account for approximately 99 percent of the overall risk generating a carcinogenic risk of 7.3×10^{-5} based on exposure to 2,3,7,8-TCDD. Dermal contact while showering accounts for the majority of the groundwater risk (approximately 89 percent), generating a carcinogenic risk of 6.5×10^{-5} .

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). For Site 08, carcinogenic risks for the 0- to 2-foot interval (Tables C-35 and C-36) are the same as those listed above for the 0- to 0.5-foot interval.

3.5.2.3 Site 35A

A summary of the noncancer HIs and carcinogenic risks calculated for Site 35A is presented below.

3.5.2.3.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 35A and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-38 and C-39, respectively. A total HI of 0.05 is calculated for the current trespasser. This HI is below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 35A and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-44 and C-45, respectively. A total HI of 38 is calculated for the future maintenance worker. This HI is above the benchmark of 1.

Exposure routes associated with groundwater account for approximately 99 percent of the overall HI, generating an HI of 38. Exposure routes associated with soil generate an HI of 0.34, which is below the benchmark of 1.

Groundwater exposure routes that exceed an HI of 1 include ingestion (13), inhalation (2), and dermal contact (23). Dermal contact with groundwater and ingestion of groundwater account for approximately

49 percent of the groundwater HI. Tetrachloroethene (28), 1,1-dichloroethene (3.4), and manganese (1.2) account for approximately 87 percent of the groundwater HI.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker are based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 35A. The percent contribution of each chemical and exposure route to the total HI are presented in Tables C-50 and C-51, respectively. A total HI of 38 is calculated for the future maintenance worker. This HI is above the benchmark of 1.

The HI calculated for groundwater is the same as that presented for the 0- to 0.5-foot depth interval (38). Exposure routes associated with soil generate an HI of 0.47, which is below the benchmark of 1.

3.5.2.3.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 35A and the percent distribution of these risks are presented by chemical and exposure route in Tables C-41 and C-42. A total carcinogenic risk of 1.5×10^{-6} is calculated for the current trespasser at Site 35A. This risk is at the benchmark of 1×10^{-6} . No chemicals generate a risk in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 35A and the percent distribution of these risks are presented by chemical and exposure route in Tables C-47 and C-48, respectively. A total carcinogenic risk of 1.6×10^{-2} is calculated for the future maintenance worker at Site 35A. This risk is well above the benchmark of 1×10^{-4} . As mentioned in Section 3.5.1.1, the linear equation used for estimating carcinogenic risks is valid only at low risk levels (i.e., below estimated risks of 1.0×10^{-2}). RAGS Part A recommends using the "one-hit equation," which is consistent with the linear low-dose model (EPA 1989). While the "one-hit equation" will yield a slightly more accurate result, the recalculated risks associated with this scenario will still significantly exceed the benchmark of 1×10^{-4} . The risks, therefore, were not recalculated.

Exposure routes associated with soil generate a carcinogenic risk 2×10^{-5} . Dermal contact and ingestion contribute approximately 53 percent and 48 percent of the soil risks, respectively. Chemicals in soil generating a risk at or in excess of 1×10^{-6} include benzo(a)pyrene (9.9×10^{-6}), bis(2-ethylhexyl) phthalate (4.3×10^{-6}), 2,3,7,8-TCDD (1.8×10^{-6}), benzo(b)fluoranthene (1.5×10^{-6}), dibenzo(a,h)anthracene (1.5×10^{-6}), and indeno(1,2,3-cd)pyrene (1×10^{-6}).

Groundwater exposure routes account for over 99 percent of the overall risk, generating a carcinogenic risk of 1.6×10^{-2} . Dermal contact while showering accounts for the majority of the groundwater risk (approximately 49 percent) generating a carcinogenic risk of 7.7×10^{-3} . Inhalation of volatile chemicals in groundwater (4.1×10^{-3}) and groundwater ingestion (3.9×10^{-3}) account for approximately 26 percent

and 25 percent of the groundwater risk, respectively. 1,1-Dichloroethene (1.1×10^{-2}) and tetrachloroethene (4.9×10^{-3}) account for approximately 99 percent of the total groundwater risk. Vinyl chloride (5.8×10^{-5}), cyclonite (RDX) (3.4×10^{-5}), and TCE (3.1×10^{-5}) generate risks in excess of 1×10^{-5} . 1,1,2-Trichloroethane (3×10^{-6}), 1,2-dichloroethane (6.2×10^{-6}), and bis(2-ethylhexyl) phthalate (7.1×10^{-6}) generate risks in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 2 feet bgs) and groundwater at Site 35A and the percent distribution of these risks are presented by chemical and exposure route in Tables C-53 and C-54, respectively. A total carcinogenic risk of 1.6×10^{-2} is calculated for the future maintenance worker at Site 35A.

Exposure routes associated with soil generate a carcinogenic risk of 2.1×10^{-5} . Dermal contact and ingestion contribute approximately 53 percent and 48 percent of the risks, respectively. Chemicals in soil generating a risk at or in excess of 1×10^{-6} and their associated risk levels are the same as those reported for the future maintenance worker under the 0- to 0.5-foot depth interval. In addition, groundwater risks are the same as those reported for the future maintenance worker under the 0- to 0.5-foot depth interval.

3.5.2.4 Site 35B

A summary of the noncancer HIs and carcinogenic risks calculated for Site 35B is presented below.

3.5.2.4.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 35B and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-56 and C-57, respectively. A total HI of 0.02 is calculated for the current trespasser, which is well below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 35B and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-62 and C-63, respectively. A total HI of 16 is calculated for the future maintenance worker, above the benchmark of 1.

Exposure routes associated with groundwater account for approximately 99 percent of the overall HI, generating an HI of 16. Exposure routes associated with soil generate an HI of 0.11, which is below the benchmark of 1.

Groundwater ingestion is the only exposure route that exceeds an HI of 1 (15) and accounts for approximately 94 percent of the groundwater risk. Thallium (12), antimony (2), and TCE (1.2) account for approximately 96 percent of the groundwater HI.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 35B and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-68 and C-69, respectively. A total HI of 16 is calculated for the future maintenance worker. This HI is above the benchmark of 1.

HQ and HIs calculated for groundwater are the same as those presented for the 0 to 0.5 foot depth interval. Exposure routes associated with soil generate an HI of 0.14, which is below the benchmark of 1.

3.5.2.4.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 35B and the percent distribution of these risks are presented by chemical and exposure route in Tables C-59 and C-60, respectively. A total carcinogenic risk of 3.8×10^{-7} is calculated for the current trespasser at Site 35B, which is below the benchmark of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 35B and the percent distribution of these risks are presented by chemical and exposure route in Tables C-65 and C-66, respectively. A total carcinogenic risk of 5.9×10^{-4} is calculated for the future maintenance worker at Site 35B. This risk is above the benchmark of 1×10^{-4} .

Exposure routes associated with soil generate a carcinogenic risk of 5.2×10^{-6} . Dermal contact and ingestion contribute approximately 51 percent and 49 percent of the soil risks, respectively. Chemicals in soil generating a risk at or in excess of 1×10^{-6} include aldrin (2.3×10^{-6}) and benzo(a)pyrene (2×10^{-6}).

Groundwater exposure routes account for approximately 99 percent of the overall risk, generating a carcinogenic risk of 5.8×10^{-4} . Dermal contact while showering accounts for the majority of the groundwater risk (approximately 39 percent), generating a carcinogenic risk of 2.3×10^{-4} . Inhalation of volatile chemicals in groundwater (2.1×10^{-4}) and groundwater ingestion (1.4×10^{-4}) account for approximately 36 percent and 25 percent of the groundwater risk, respectively. 1,1-Dichloroethene (4.6×10^{-4}) accounts for approximately 80 percent of the total groundwater risk. TCE (6.3×10^{-5}), tetrachloroethene (3.1×10^{-5}), and 2,3,7,8-TCDD (2.4×10^{-5}) generate risks in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 2 feet bgs) and groundwater at Site 35B and the percent

distribution of these risks are presented by chemical and exposure route in Tables C-71 and C-72, respectively. A total carcinogenic risk of 5.9×10^{-4} is calculated for the future maintenance worker at Site 35B. This risk is above the benchmark of 1×10^{-4} .

Risks calculated for soil and groundwater for the 0- to 2-foot depth interval are the same as those presented above for the 0- to 0.5-foot depth interval.

3.5.2.5 Site 35C

A summary of the noncancer HIs and carcinogenic risks calculated for Site 35C is presented below.

3.5.2.5.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 35C and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-74 and C-75, respectively. A total HI of 0.007 is calculated for the current trespasser, well below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 35C and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-80 and C-81, respectively. A total HI of 22 is calculated for the future maintenance worker. This HI is above the benchmark of 1.

Exposure routes associated with groundwater account for over 99 percent of the overall HI, generating an HI of 22. Exposure routes associated with soil generate an HI of 0.045, which is below the benchmark of 1.

Groundwater ingestion is the only exposure route that exceeds an HI of 1 (22) and accounts for approximately 99 percent of the groundwater risk. Thallium (16), silver (2.3), nickel (1.2), and aluminum (1.1) account for approximately 96 percent of the groundwater HI.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 35C and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-86 and C-87, respectively. A total HI of 22 is calculated for the future maintenance worker. This HI is above the benchmark of 1.

HQ and HIs calculated for groundwater are the same as those presented for the 0- to 0.5-foot depth interval. Exposure routes associated with soil generate an HI of 0.05, which is below the benchmark of 1.

3.5.2.5.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 35C and the percent distribution of these risks are presented by chemical and exposure route in Tables C-77 and C-78, respectively. A total carcinogenic risk of 9.9×10^{-7} is calculated for the current trespasser at Site 35B. This risk is at the benchmark of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 35C and the percent distribution of these risks are presented by chemical and exposure route in Tables C-83 and C-84, respectively. A total carcinogenic risk of 9.1×10^{-5} is calculated for the future maintenance worker at Site 35C, within the target risk range.

Exposure routes associated with soil generate a carcinogenic risk of 1.2×10^{-5} . Ingestion and dermal contact contribute approximately 71 percent and 29 percent of the soil risks, respectively. 2,3,7,8-TCDD is the only chemical that generates a risk in excess of 1×10^{-6} (1.1×10^{-5}), accounting for approximately 95 percent of the soil risk.

Groundwater exposure routes account for approximately 87 percent of the overall risk, generating a carcinogenic risk of 8.0×10^{-5} . Dermal contact while showering accounts for the majority of the groundwater risk (approximately 79 percent), generating a carcinogenic risk of 6.3×10^{-5} . Groundwater ingestion (1.1×10^{-5}) and inhalation of volatile chemicals in groundwater (5.5×10^{-6}) account for approximately 14 percent and 7 percent of the groundwater risk, respectively. 2,3,7,8-TCDD (6.9×10^{-5}) accounts for approximately 87 percent of the total groundwater risk. 1,2-Dichloroethane (6.2×10^{-6}), 2,6-dinitrotoluene (1.5×10^{-6}), and TCE (1.4×10^{-6}) generate risks in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 2 feet bgs) and groundwater at Site 35C and the percent distribution of these risks are presented by chemical and exposure route in Tables C-89 and C-90, respectively. A total carcinogenic risk of 9.1×10^{-5} is calculated for the future maintenance worker at Site 35C.

Risks calculated for soil and groundwater for the 0- to 2-foot depth interval are the same as those presented above for the 0- to 0.5-foot depth interval.

3.5.2.6 Site 46

A summary of the noncancer HIs and carcinogenic risks calculated for Site 46 is presented below.

3.5.2.6.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 46 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-92 and C-93, respectively. A total HI of 0.008 is calculated for the current trespasser, well below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 46 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-98 and C-99, respectively. A total HI of 31 is calculated for the future maintenance worker, which is above the benchmark of 1.

Exposure routes associated with groundwater account for over 99 percent of the overall HI, generating an HI of 31. Exposure routes associated with soil generate an HI of 0.05, which is below the benchmark of 1.

Groundwater ingestion is the only exposure route that exceeds an HI of 1 (31) and accounts for over 99 percent of the groundwater risk. Thallium (24), antimony (1.5), and manganese (1.4) account for approximately 88 percent of the groundwater HI.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 46 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-104 and C-105, respectively. A total HI of 31 is calculated for the future maintenance worker, which is above the benchmark of 1.

HQs and HIs calculated for groundwater are the same as those presented for the 0- to 0.5-foot depth interval. Exposure routes associated with soil generate an HI of 0.1, which is below the benchmark of 1.

3.5.2.6.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 46 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-95 and C-96, respectively. A total carcinogenic risk of 1.2×10^{-6} is calculated for the current trespasser at Site 46. This risk is at the benchmark of 1×10^{-6} . No chemicals have a risk in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 46 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-101 and C-102,

respectively. A total carcinogenic risk of 5.6×10^{-5} is calculated for the future maintenance worker at Site 46. This risk is within the target risk range.

Exposure routes associated with soil generate a carcinogenic risk of 1.6×10^{-5} . Ingestion and dermal contact contribute approximately 52 percent and 48 percent of the soil risks, respectively. Benzo(a)pyrene (1×10^{-5}) is the only chemical that generates a risk at or above 1×10^{-5} and accounts for approximately 65 percent of the soil risk. Benzo(b)fluoranthene (2.2×10^{-6}) and dibenzo(a,h)anthracene (1.9×10^{-6}) both generate risks in excess of 1×10^{-6} .

Groundwater exposure routes account for approximately 72 percent of the overall risk, generating a carcinogenic risk of 4×10^{-5} . Dermal contact while showering accounts for the majority of the groundwater risk (approximately 75 percent), generating a carcinogenic risk of 3×10^{-5} . Groundwater ingestion (9.7×10^{-6}) accounts for approximately 24 percent of the groundwater risk. 2,3,7,8-TCDD (3.1×10^{-5}) accounts for approximately 77 percent of the total groundwater risk. Vinyl chloride (4.1×10^{-6}), bis(2-ethylhexyl) phthalate (2.2×10^{-6}), and tetrachloroethene (2.2×10^{-6}) generate risks in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 2 feet bgs) and groundwater at Site 46 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-107 and C-108, respectively. A total carcinogenic risk of 5.7×10^{-5} is calculated for the future maintenance worker at Site 46. This risk is within the target risk range.

Risks calculated for groundwater for the 0- to 2-foot depth interval are the same as those presented above for the 0- to 0.5-foot depth interval. Exposure routes associated with soil generate a carcinogenic risk of 1.7×10^{-5} . Ingestion and dermal contact contribute approximately 52 percent and 48 percent of the soil risks, respectively. Benzo(a)pyrene (1×10^{-5}) is the only chemical that generates a risk at or above 1×10^{-5} and accounts for approximately 62 percent of the soil risk. Benzo(b)fluoranthene (2.2×10^{-6}), dibenzo(a,h)anthracene (1.9×10^{-6}), and benzo(a)anthracene (1.1×10^{-6}) generate risks in excess of 1×10^{-6} .

3.5.2.7 Site 47

A summary of the noncancer HIs and carcinogenic risks calculated for Site 47 is presented below.

3.5.2.7.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 47 and the percent contribution of each chemical and exposure route to the total HI are presented in

Tables C-110 and C-111, respectively. A total HI of 0.07 is calculated for the current trespasser. This HI is below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 47 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-116 and C-117, respectively. A total HI of 1,100 is calculated for the future maintenance worker, which is well above the benchmark of 1.

Exposure routes associated with groundwater account for over 99 percent of the overall HI, generating an HI of 1,100. Exposure routes associated with soil generate an HI of 0.4, which is below the benchmark of 1.

Groundwater ingestion accounts for 87 percent of the groundwater risk, generating an HI of 980. Perchlorate generates an HI of 900 and accounts for approximately 80 percent of the HI. TCE generates an HI of 110 and accounts for approximately 10 percent of the HI. Other chemicals that generate an HI greater than 1 include: chloroform (69), thallium (11), acetone (8.1), cadmium (3.9), nickel (3.9), cis-1,2-dichloroethene (2.5), silver (2), tin (2), antimony (1.9), and manganese (1.6).

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 47 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-122 and C-123, respectively. A total HI of 1,100 is calculated for the future maintenance worker, which is well above the benchmark of 1.

HQs and HIs calculated for groundwater are the same as those presented for the 0- to 0.5-foot depth interval. Exposure routes associated with soil generate an HI of 0.46, which is below the benchmark of 1.

3.5.2.7.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 47 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-113 and C-114, respectively. A total carcinogenic risk of 1.4×10^{-6} is calculated for the current trespasser at Site 47. This risk is at the benchmark of 1×10^{-6} . No chemicals have a risk in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 47 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-119 and C-120, respectively. A total carcinogenic risk of 7.1×10^{-3} is calculated for the future maintenance worker at Site 47. This risk is above the benchmark of 1×10^{-4} .

Exposure routes associated with soil generate a carcinogenic risk above the benchmark of 1×10^{-6} (1.8×10^{-5}). Ingestion and dermal contact contribute approximately 58 percent and 42 percent of the soil risks, respectively. Benzo(a)pyrene (1.1×10^{-5}) is the only chemical that generated a risk at or above 1×10^{-5} and accounts for approximately 62 percent of the soil risk. Arsenic (3.5×10^{-6}), benzo(b)fluoranthene (1.7×10^{-6}), and benzo(a)anthracene (1.2×10^{-6}) generate risks in excess of 1×10^{-6} .

Groundwater exposure routes account for over 99 percent of the overall risk, generating a carcinogenic risk of 7.1×10^{-3} . Inhalation while showering accounts for the majority of the groundwater risk (approximately 48 percent), generating a carcinogenic risk of 3.4×10^{-3} . Groundwater ingestion (1.9×10^{-3}) and dermal contact with groundwater (1.8×10^{-3}) account for approximately 27 percent and 25 percent, respectively. TCE (5.7×10^{-3}) accounts for approximately 81 percent of the total groundwater risk. Vinyl chloride (7.3×10^{-4}), 1,1-dichloroethene (2.6×10^{-4}), chloroform (1.8×10^{-4}), and tetrachloroethene (1.5×10^{-4}) generate risks in excess of 1×10^{-4} and account for approximately 19 percent of the risk.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 2 feet bgs) and groundwater at Site 47 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-125 and C-126, respectively. A total carcinogenic risk of 7.1×10^{-3} is calculated for the future maintenance worker at Site 47. This risk is above the benchmark of 1×10^{-4} .

Risks calculated for groundwater for the 0- to 2-foot depth interval are the same as those presented above for the 0- to 0.5-foot depth interval. Exposure routes associated with soil generate a carcinogenic risk above the benchmark of concern of 1×10^{-6} (1.8×10^{-5}). Ingestion and dermal contact contribute approximately 57 percent and 43 percent of the soil risks, respectively. Benzo(a)pyrene (1×10^{-5}) is the only chemical that generates a risk at or above 1×10^{-5} and accounts for approximately 64 percent of the soil risk. Arsenic (3×10^{-6}), benzo(b)fluoranthene (1.7×10^{-6}), and benzo(a)anthracene (1.2×10^{-6}) generate risks in excess of 1×10^{-6} .

3.5.2.8 Site 48

A summary of the noncancer HIs and carcinogenic risks calculated for Site 48 is presented below.

3.5.2.8.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 48 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-128 and C-129, respectively. A total HI of 0.01 is calculated for the current trespasser, below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 48 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-134 and C-135, respectively. A total HI of 36 is calculated for the future maintenance worker, which is above the benchmark of 1.

Exposure routes associated with groundwater account for over 99 percent of the overall HI, generating an HI of 36. Exposure routes associated with soil generate an HI of 0.07, which is below the benchmark of 1.

Groundwater ingestion accounts for over 99 percent of the groundwater risk, generating an HI of 36. Thallium generates an HI of 25 and accounts for approximately 69 percent of the HI. Other chemicals that generate an HI greater than 1 include: silver (3.5), nickel (2), perchlorate (1.7), aluminum (1.6), and antimony (1.2).

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 48 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-140 and C-141, respectively. A total HI of 36 is calculated for the future maintenance worker, which is above the benchmark of 1.

HQs and HIs calculated for groundwater are the same as those presented for the 0- to 0.5-foot depth interval. Exposure routes associated with soil generate an HI of 0.09, which is below the benchmark of 1.

3.5.2.8.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 48 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-131 and C-132, respectively. A total carcinogenic risk of 1.1×10^{-6} is calculated for the current trespasser at Site 48. This risk is at the benchmark of 1×10^{-6} . No chemicals have a risk in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 48 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-137 and C-138, respectively. A total carcinogenic risk of 1.4×10^{-4} is calculated for the future maintenance worker at Site 48.

Exposure routes associated with soil generate a carcinogenic risk above the benchmark of 1×10^{-6} (1.4×10^{-5}). Ingestion and dermal contact contribute approximately 49 percent and 43 percent of the soil risks,

respectively. Benzo(a)pyrene generates a risk of 7.9×10^{-6} and contributes approximately 56 percent of the soil risk. Benzo(b)fluoranthene (1.4×10^{-6}), 2,3,7,8-TCDD (1.1×10^{-6}), dibenzo(a,h)anthracene (1.1×10^{-6}), and vinyl chloride (1.1×10^{-6}) generate risks in excess of 1×10^{-6} .

Groundwater exposure routes contribute over 90 percent of the overall risk, generating a carcinogenic risk of 1.3×10^{-4} . Dermal contact while showering accounts for the majority of the groundwater risk (approximately 87 percent), generating a carcinogenic risk of 1.1×10^{-4} . Groundwater ingestion (1.5×10^{-5}) accounts for approximately 12 percent of the risk. 2,3,7,8-TCDD (1.2×10^{-4}) accounts for approximately 95 percent of the total groundwater risk. Tetrachloroethene (1.8×10^{-6}) and TCE (1.7×10^{-6}) generate risks in excess of 1×10^{-6} and account for approximately 3 percent of the risk.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 2 feet bgs) and groundwater at Site 48 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-143 and C-144, respectively. A total carcinogenic risk of 1.4×10^{-4} is calculated for the future maintenance worker at Site 48.

Risks calculated for soil and groundwater for the 0- to 2-foot depth interval are the same as those presented above for the 0- to 0.5-foot depth interval.

3.5.2.9 Site 50

With the exception of perchlorate samples, samples greater than 0.5 feet but less than or equal to 2 feet bgs are not available at Site 50. EPCs for perchlorate for the 0- to 0.5-foot interval (0.03 mg/kg) and the 0- to 2-foot interval (0.0361 mg/kg) are essentially the same. Therefore, only one interval is evaluated (0 to 0.5 feet bgs), using the maximum perchlorate concentration as the EPC. A summary of the noncancer HIs and carcinogenic risks calculated for Site 50 is presented below.

3.5.2.9.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 50 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-146 and C-147, respectively. A total HI of 0.005 is calculated for the current trespasser, well below the benchmark of concern of 1.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 50 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-152 and C-153, respectively. A total HI of 300 is calculated for the future maintenance worker. This HI is above the benchmark of 1.

Exposure routes associated with groundwater contribute over 99 percent of the overall HI, generating an HI of 300. Exposure routes associated with soil have an estimated HI of 0.03, which is below the benchmark of 1.

Groundwater ingestion accounts for over 78 percent of the groundwater risk, generating an HI of 240. Perchlorate generates an HI of 200 and accounts for approximately 64 percent of the HI. TCE generates an HI of 84 and accounts for approximately 27 percent of the HI. Other chemicals that contribute to an HI greater than 1 include: chloroform (14), cis-1,2-dichloroethene (5.3), and 1,2-dichloroethane (3.4).

3.5.2.9.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 50 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-149 and C-150, respectively. A total carcinogenic risk of 4.8×10^{-8} is calculated for the current trespasser at Site 50. This risk is below the benchmark of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 50 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-155 and C-156, respectively. A total carcinogenic risk of 5.5×10^{-3} is calculated for the future maintenance worker at Site 50. This risk is above the benchmark of 1×10^{-4} .

Exposure routes associated with soil contribute a carcinogenic risk of 5.8×10^{-7} . Groundwater exposure routes account for over 99 percent of the overall risk, generating a carcinogenic risk of 5.5×10^{-3} . Inhalation while showering accounts for the majority of the groundwater risk (approximately 48 percent), generating a carcinogenic risk of 2.7×10^{-3} . Groundwater ingestion (1.5×10^{-3}) and dermal contact with groundwater (1.3×10^{-3}) account for approximately 27 percent and 24 percent, respectively. TCE (4.3×10^{-3}) accounts for approximately 77 percent of the total groundwater risk. Vinyl chloride (5.8×10^{-4}), 1,1-dichloroethene (4×10^{-4}), and 1,2-dichloroethane (2×10^{-4}) generate risks in excess of 1×10^{-4} . Chloroform (3.8×10^{-5}), 2,3,7,8-TCDD (3.6×10^{-5}), and tetrachloroethene (3.2×10^{-5}) generate risks in excess of 1×10^{-5} . 1,1,2-Trichloroethane (1.4×10^{-6}) generates a risk in excess of 1×10^{-6} .

3.5.2.10 Site 60

A summary of the noncancer HIs and carcinogenic risks calculated for Site 60 is presented below. Groundwater data associated with Site 60 are discussed as part of Site 35A and, as a result, the HIs and risks presented below are based only on soil exposure.

3.5.2.10.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 60 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-158 and C-159, respectively. 2,3,7,8-TCDD is the only chemical selected as a COPC in surface soil (0 to 0.5 foot bgs) at Site 60. Noncancer toxicity values are not available for 2,3,7,8-TCDD and as a result, an HI is not calculated.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) at Site 60 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-164 and C-165, respectively.

2,3,7,8-TCDD is the only chemical selected as a COPC in surface soil (0 to 0.5 foot bgs) at Site 60. Noncancer toxicity values are not available for 2,3,7,8-TCDD and, as a result, an HI is not calculated.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 60 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-170 and C-171, respectively. A total HI of 0.03 is calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs). This HI is below the benchmark of 1.

3.5.2.10.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 60 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-161 and C-162, respectively. A total carcinogenic risk of 2.5×10^{-8} is calculated for the current trespasser at Site 60, which is below the benchmark of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 60 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-167 and C-168, respectively. A total carcinogenic risk of 2.9×10^{-7} is calculated for the future maintenance worker at Site 60 based on exposure to surface soil. This risk is below the benchmark of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 2 feet bgs) and groundwater at Site 60 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-173 and C-174, respectively. A total carcinogenic risk of 2.9×10^{-7} is calculated for the future maintenance worker at Site 60 based on exposure to surface soil (0 to 2 feet bgs). This risk is below the benchmark of 1×10^{-6} .

3.5.2.11 Site 67

A summary of the noncancer HIs and carcinogenic risks calculated for Site 67 is presented below.

3.5.2.11.1 Noncancer HIs

Current Trespasser. The HQs and HIs calculated for the current trespasser based on exposure to soil at Site 67 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-176 and C-177, respectively. 2,3,7,8-TCDD is the only chemical selected as a COPC in surface soil (0 to 0.5 foot bgs) at Site 67. Noncancer toxicity values are not available for 2,3,7,8-TCDD and, as a result, an HI is not calculated.

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 67 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-182 and C-183, respectively. A total HI of 4.1 is calculated for the future maintenance worker, which is above the benchmark of 1.

Exposure routes associated with groundwater contribute 100 percent of the overall HI, generating an HI of 4.1. As mentioned previously, 2,3,7,8-TCDD is the only chemical selected as a COPC in surface soil (0 to 0.5 foot bgs) at Site 67. Noncancer toxicity values are not available for 2,3,7,8-TCDD and, as a result, an HI is not calculated.

Groundwater ingestion (2.3) and inhalation of volatile chemicals while showering (1.1) are the only exposure routes that exceed an HI of 1, and contribute approximately 82 percent of the groundwater risk. No chemicals have an HI greater than 1.

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The HQs and HIs calculated for the future maintenance worker based on exposure to soil (0 to 2 feet bgs) and groundwater at Site 67 and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-188 and C-189, respectively. A total HI of 4.1 is calculated for the future maintenance worker, which is above the benchmark of 1.

HQs and HIs calculated for groundwater are the same as those presented for the 0- to 0.5-foot depth interval. Exposure routes associated with soil generate an HI of 0.03, which is below the benchmark of 1.

3.5.2.11.2 Carcinogenic risks

Current Trespasser. The carcinogenic risk to the current trespasser from exposure to soil at Site 67 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-179 and

C-180, respectively. A total carcinogenic risk of 2.4×10^{-8} is calculated for the current trespasser at Site 67, which is below the benchmark of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 0.5 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 0.5 feet bgs) and groundwater at Site 67 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-185 and C-186, respectively. A total carcinogenic risk of 3.1×10^{-3} is calculated for the future maintenance worker at Site 67, which is above the benchmark of 1×10^{-4} .

Exposure routes associated with soil generate a carcinogenic risk below the benchmark of 1×10^{-6} (2.9×10^{-7}). Groundwater exposure routes contribute over 99 percent of the overall risk, generating a carcinogenic risk of 3.1×10^{-3} . Inhalation while showering accounts for the majority of the groundwater risk (approximately 39 percent), generating a carcinogenic risk of 1.2×10^{-3} . Dermal contact with groundwater (1.1×10^{-3}) and groundwater ingestion (8.1×10^{-4}) account for approximately 35 percent and 26 percent of the groundwater risk, respectively. 1,1-Dichloroethene (3×10^{-3}) contributes approximately 98 percent of the total groundwater risk. 1,2-Dichloroethane (5.5×10^{-5}), 1,1,2-trichloroethane (1.3×10^{-5}), and TCE (1.2×10^{-6}) generate risks in excess of 1×10^{-6} .

Future Maintenance Worker (Soil Exposure—0 to 2 feet bgs). The carcinogenic risk to the future maintenance worker from exposure to soil (0 to 2 feet bgs) and groundwater at Site 67 and the percent distribution of these risks are presented by chemical and exposure route in Tables C-191 and C-192, respectively. A total carcinogenic risk of 3.1×10^{-3} is calculated for the future maintenance worker at Site 67, which is above the benchmark of 1×10^{-6} .

Risks calculated for groundwater and soil for the 0- to 2-foot depth interval are the same as those presented above for the 0- to 0.5-foot depth interval.

3.5.2.12 Central Creek

A summary of the noncancer HIs and carcinogenic risks calculated for trespasser exposure to Central Creek is presented below.

3.5.2.12.1 Noncancer HIs

The HQs and HIs for the current trespasser from exposure to sediment, surface water, and fish in Central Creek and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-194 and C-195, respectively. A total HI of 10 is calculated for the current trespasser, which exceeds the benchmark of 1.

The only exposure route that exceeds an HI of 1 for Central Creek is ingestion of recreationally-caught fish, which contributes over 99 percent of the total HI. Cadmium accounts for the majority of the HI (approximately 40 percent), generating an HQ of 4.1. Other chemicals that exceed an HQ of 1 include arsenic (1.9) and manganese (1.3).

3.5.2.12.2 Carcinogenic risks

The carcinogenic risks to the current trespasser from exposure to sediment, surface water, and fish in Central Creek and the percent distribution of these risks are presented by chemical and exposure route in Tables C-197 and C-198. A total carcinogenic risk of 1.6×10^{-4} is calculated for the current trespasser. Exposure routes that have greater than a 1×10^{-6} cancer risk include ingestion of recreationally-caught fish (1.5×10^{-4}) and dermal contact with surface water (1.3×10^{-6}). 2,3,7,8-TCDD is the only surface water COPC that generates a carcinogenic risk greater than 1×10^{-6} (1.3×10^{-6}). Arsenic (1.5×10^{-4}) is the COPC that contributes the majority of the risk for fish ingestion (approximately 94 percent). 2,3,7,8-TCDD generates a risk of 9.1×10^{-6} and accounts for 6 percent of the risk generated by fish ingestion.

3.5.2.13 Saunder's Branch

A summary of the noncancer HIs and carcinogenic risks calculated for trespasser exposure to Saunder's Branch is presented below.

3.5.2.13.1 Noncancer HIs

The HQs and HIs for the current trespasser from exposure to sediment, surface water, and fish in Saunder's Branch and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-200 and C-201, respectively. A total HI of 8.2 is calculated for the current trespasser, which exceeds the benchmark of 1.

The only exposure route that exceeds an HI of 1 for Saunder's Branch is ingestion of recreationally-caught fish, which contributes over 99 percent of the total HI. Arsenic accounts for the majority of the HI (approximately 72 percent), generating an HQ of 5.9, and is the only COPC that exceeds an HI of 1.

3.5.2.13.2 Carcinogenic risks

The carcinogenic risks to the current trespasser from exposure to sediment, surface water, and fish in Saunder's Branch and the percent distribution of these risks are presented by chemical and exposure route in Tables C-203 and C-204, respectively. A total carcinogenic risk of 4.6×10^{-4} is calculated for the current trespasser, which exceeds the benchmark of 1×10^{-4} . Ingestion of recreationally-caught fish (4.6×10^{-4}) is the only exposure route that has greater than a 1×10^{-6} cancer risk. Arsenic (4.6×10^{-4}) is

the COPC that accounts for the majority of the risk for fish ingestion (approximately 99 percent) and is the only COPC that exceeds a cancer risk of 1×10^{-6} .

3.5.2.14 Goose Prairie Creek

A summary of the noncancer HIs and carcinogenic risks calculated for trespasser exposure to Goose Prairie Creek is presented below.

3.5.2.14.1 Noncancer HIs

The HQs and HIs for the current trespasser from exposure to sediment, surface water, and fish in Goose Prairie Creek and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-206 and C-208. A total HI of 15 is calculated for the current trespasser, which exceeds the benchmark of 1.

The only exposure route that exceeds an HI of 1 for Goose Prairie Creek is ingestion of recreationally-caught fish, which contributes over 99 percent of the total HI. Chemicals that exceed an HQ of 1 include di-n-butyl phthalate (3.9), arsenic (2.4), bis(2-ethylhexyl) phthalate (1.8), and aluminum (1.1).

3.5.2.14.2 Carcinogenic risks

The carcinogenic risks to the current trespasser from exposure to sediment, surface water, and fish in Goose Prairie Creek and the percent distribution of these risks are presented by chemical and exposure route in Tables C-209 and C-210, respectively. A total carcinogenic risk of 3×10^{-4} is calculated for the current trespasser, which exceeds the benchmark of 1×10^{-4} . Exposure routes that have greater than a 1×10^{-6} cancer risk include ingestion of recreationally-caught fish (2.9×10^{-4}) and dermal contact with surface water (5.2×10^{-6}). 2,3,7,8-TCDD (1×10^{-6}) and bis(2-ethylhexyl) phthalate (3.8×10^{-6}) are the only surface water COPCs that generate a carcinogenic risk greater than 1×10^{-6} . Arsenic (1.9×10^{-4}) and bis(2-ethylhexyl) phthalate (8.8×10^{-5}) are the COPCs that account for the majority of the risk for fish ingestion (approximately 93 percent). 2,3,7,8-TCDD (1.3×10^{-5}), vinyl chloride (2.1×10^{-6}), and 2,6-dinitrotoluene (1.5×10^{-6}) generate risks in excess of 1×10^{-6} .

3.5.2.15 Caddo Lake

A summary of the noncancer HIs and carcinogenic risks calculated for future child and adult resident exposure to Caddo Lake is presented below. Exposure to surface water through swimming and as a future water source was evaluated as part of the Group 2 BHHRA.

3.5.2.15.1 Noncancer HIs

The HQs and HIs for the future child and adult resident based on exposure to sediment, surface water, and fish in Caddo Lake and the percent contribution of each chemical and exposure route to the total HI are presented in Tables C-212 and C-213 for the child resident and Tables C-218 and C-219 for the adult resident. Total HIs of 850 and 370 are calculated for the future child and adult resident, respectively. These HIs exceed the benchmark of 1.

The only exposure route that exceeds an HI of 1 for Caddo Lake for both the child and adult resident is the ingestion of recreationally-caught fish, which contributes over 99 percent of the total HI for both receptors. Ingestion of recreationally-caught fish generates HIs of 850 and 370 for the child and adult resident, respectively. Manganese contributes the majority of the HI for both the child and adult resident (approximately 92 percent), generating HIs of 790 for the child, and 340 for the adult. Chemicals exceeding an HQ of 1 for both the child and adult resident include arsenic (20 child; 8.7 adult), aluminum (16 child; 6.8 adult), thallium (11 child; 4.7 adult), vanadium (3.7 child; 1.6 adult), and barium (3.1 child; 1.3 adult). Chemicals exceeding an HQ of 1 for the child resident include mercury (2.1) and silver (1.7).

3.5.2.15.2 Carcinogenic risks

The carcinogenic risks to the future child and adult resident from exposure to sediment, surface water, and fish in Caddo Lake and the percent distribution of these risks are presented by chemical and exposure route in Tables C-215 and C-216 for the child resident and Tables C-221 and C-222 for the adult resident. Total carcinogenic risks of 4.5×10^{-3} and 7.6×10^{-3} are calculated for the future child and adult resident, respectively, which exceed the benchmark of 1×10^{-4} .

Exposure routes for the future child and adult residents that have greater than a 1×10^{-6} cancer risk include ingestion of recreationally-caught fish (4.4×10^{-3} child; 7.6×10^{-3} adult) and exposure to sediment through ingestion (2×10^{-5} child; 8.5×10^{-6} adult) and dermal contact (4×10^{-6} child; 1.1×10^{-5} adult). Benzo(a)pyrene (1.1×10^{-5} child; 1×10^{-5} adult), arsenic (5.6×10^{-6} child; 3.1×10^{-6} adult), dibenzo(a,h)anthracene (3.8×10^{-6} child; 3.5×10^{-6} adult), benzo(b)fluoranthene (1.3×10^{-6} child; 1.2×10^{-6} adult), and benzo(a)anthracene (1.3×10^{-6} child; 1.2×10^{-6} adult) exceed a carcinogenic risk of 1×10^{-6} based on exposure to sediment in Caddo Lake for both the future child and adult resident.

Benzo(a)pyrene (2.3×10^{-3} child; 4×10^{-3} adult) is the COPC that accounts for the majority of the risk for fish ingestion (approximately 52 percent) for both the future child and adult resident. Chemicals exceeding a risk of 1×10^{-6} for both the child and adult resident exposure through fish ingestion include dibenzo(a,h)anthracene (7.9×10^{-4} child; 1.4×10^{-3} adult), arsenic (7.8×10^{-4} child; 1.3×10^{-3} adult), benzo(b)fluoranthene (2.7×10^{-4} child; 4.6×10^{-4} adult), benzo(a)anthracene (2.4×10^{-4} child; 4.2×10^{-4} adult), 2,3,7,8-TCDD (1.9×10^{-5} child; 3.3×10^{-5} adult), benzo(k)fluoranthene (9.8×10^{-6} child; 1.7×10^{-5} adult), and chrysene (2.2×10^{-6} child; 3.8×10^{-6} adult).

3.5.2.15.3 Caddo Lake Surface Water Risks and Hazard Indices

The HQs and HIs for the future child and adult resident based on exposure to surface water in Caddo Lake are presented in the Group 2 BHHRA. Total HIs of 0.70 and 0.29 are calculated for the future child and adult resident, respectively. These HIs are below the benchmark of 1.

Perchlorate was the only surface water COPC identified for Caddo Lake under the Group 2 BHHRA. Cancer toxicity data were not available for perchlorate and as a result, a cancer risk was not calculated.

3.5.3 TPH Evaluation

Soil and groundwater samples were analyzed for TPH using three methods: 418.1, 8015M, and TCEQ 1005. Methods 418.1 and 8015M report only one total hydrocarbon concentration, where TCEQ 1005 speciates the hydrocarbon results into C12–C28 or C12–C35 boiling point ranges [diesel range organics (DRO)] and C6–C12 boiling point ranges [gasoline range organics (GRO)].

Soil samples collected during the Phase I and II investigations were analyzed using 418.1 and 8015M. These samples were also analyzed for VOCs and SVOCs. TCEQ has established MSCs for TPH for each aromatic and aliphatic boiling point range. Two drawbacks that severely limit the use of 418.1 and 8015M data are (1) the aromatic and aliphatic makeup of the TPH cannot be determined and (2) the approximate boiling point ranges have not been defined. Since 418.1 and 8015M results are reported as one total concentration representing several boiling point ranges, it is difficult to determine which MSC to use for comparison. Additionally, TCEQ 1006 data are not available to establish an MSC for TPH mixture. Furthermore, extensive VOCs and SVOCs data are available and are addressed in the risk calculations. Thus TPH data collected during Phase I and II investigations are not addressed in this evaluation.

Soil samples collected from Sites 46, 47, and 48 during the Supplemental RI were analyzed for DRO and GRO using method TCEQ 1005. The GRO data were compared to the lower of the soil industrial MSC for groundwater protection (GWP-Ind) and soil to air ingestion (SAI-Ind) for the C8–C10 aromatic boiling point range (410 mg/kg). The DRO data are compared to the lower of the soil industrial MSC for GWP-Ind and SAI-Ind for the C12–C16 aromatic boiling point range (410 mg/kg). No GRO hydrocarbons were reported in any of the samples. Four samples (two from Site 46 and two from Site 47) reported concentrations of DRO, with three of the concentrations exceeding the MSC. The samples that exceeded the DRO MSC are HOSB01(0-0.5), HOSB02(0-0.5), and HOSB24(0-0.5), with concentrations of 493 mg/kg, 1,150 mg/kg, and 1,760 mg/kg, respectively.

One groundwater sample from Phase II was analyzed using method 8015M. This sample was also analyzed for VOCs and SVOCs; therefore, for reasons cited for soil samples, the TPH results are not addressed in this evaluation. Groundwater samples collected during the USACE February and August 1996 sampling events were analyzed for DRO and GRO, also using method 8511M. The

groundwater industrial MSC for carbon range C8–C10 aromatics (4.1 mg/L) is used for GRO, and carbon range C12–C16 aromatics (4.1 mg/L) is used for DRO. Two samples reported GRO concentrations exceeding the MSC of 4.1 mg/L. These two samples were collected from monitoring well LHS-MW43 (Site 47) in February and August 1996, with concentrations of 12.9 mg/L and 14.7 mg/L, respectively. No DRO concentrations were reported above the laboratory detection limit.

The August 1996 SVOC results for LHS-MW43 and February 1996 VOC quality control results for MW-25 are not available. For the remaining wells sampled for DRO and GRO, however, VOC and SVOC results exist; therefore, the organic results associated with these samples are quantitatively addressed in the calculation of risks associated with VOCs and SVOCs.

3.5.4 Risks Associated with Exposure to Lead

Risks associated with exposure to lead cannot be quantified in the same way as other constituents because there are no EPA verified RfDs or CSFs for lead. To develop screening levels for lead, EPA used the Integrated Exposure Uptake Biokinetic Model (IEUBK) for children, with default input parameters (EPA 1994b). The model was developed to recognize the multimedia nature of lead exposure, incorporate important absorption and pharmacokinetic information, and allow the risk manager to consider the potential distributions of exposure and risk likely to occur at a site. The model integrates exposure from lead in air, water, soil, dust, diet, and paint with pharmacokinetic modeling to predict blood lead levels in children (i.e., children 6–84 months) as a particularly sensitive population. EPA determined that it would seek to achieve a specific lead soil concentration for protectiveness in site cleanups using this model. Generally, EPA would attempt to limit exposure to soil lead levels such that a typical (or hypothetical) child or group of similarly exposed children would have an estimated risk of no more than 5 percent exceeding a 10 micrograms per deciliter ($\mu\text{g}/\text{dl}$) blood lead level. This approach results in a screening level preliminary remediation goal (PRG) of 400 mg/kg.

EPA determined that the IEUBK model developed for children was not appropriate for calculating a nonresidential (adult) screening level. In 1996, EPA's Technical Review Workgroup for lead recommended an interim approach for assessing risk associated with adult exposure to lead in soil (EPA 1996b) called the adult lead method (ALM). The method focuses on estimating fetal blood levels in women exposed to lead-contaminated soil. The approach also provides tools that can be used for evaluating risks of elevated blood lead levels among exposed adults. The method presents a simplified representation of lead biokinetics to predict quasi-steady state blood lead levels among adults who have relatively steady patterns of site exposure (e.g., sites where places of employment are, or will be, situated on lead-contaminated soil, such as commercial/industrial development). If default values were used in the model for commercial/industrial workers, PRGs in the range of 750 mg/kg to 1,750 mg/kg would result (EPA 1999).

For purposes of this evaluation, EPCs in soil and sediment are compared to the default RGOs based on the ALM. For groundwater and surface water, EPCs are compared to the EPA drinking water action level

for lead (0.015 mg/L). For fish, EPCs are compared to the U.S. Food and Drug Administration (FDA) allowable consumption limit for lead of 100 µg/day.

3.5.4.1 Site 04

The receptors of concern at Site 04 are nonresidential adults. Lead was not selected as a COPC in soil or groundwater at Site 04.

3.5.4.2 Site 08

The receptors of concern at Site 08 are nonresidential adults. Lead was not selected as a COPC in soil or groundwater at Site 08.

3.5.4.3 Site 35A

The receptors of concern at Site 35A are nonresidential adults. The EPC for lead in groundwater at Site 35A is 0.09 mg/L (maximum detected concentration of lead in groundwater at Site 35A). This EPC exceeds the drinking water action level and suggests that lead in groundwater at Site 35A may pose a health hazard to the receptors of concern. Lead was not selected as a COPC in soil.

3.5.4.4 Site 35B

The receptors of concern at Site 35B are nonresidential adults. Lead was selected as a COPC in groundwater at Site 35B because of high detection limits. The maximum detection limit for lead at Site 35B is 0.09 mg/L, which exceeds the EPA drinking water action level of 0.015 mg/L. The EPC for lead in groundwater at Site 35B is 0.0039 mg/L (maximum detected concentration of lead in groundwater at Site 35B). Although this EPC does not exceed the drinking water action level, lead in groundwater at Site 35B may still pose a health hazard to the receptors of concern based on the uncertainties associated with elevated detection limits. Lead was not selected as a COPC in soil.

3.5.4.5 Site 35C

The receptors of concern at Site 35C are nonresidential adults. The EPC for lead in groundwater at Site 35C is 0.298 mg/L (maximum detected concentration of lead in groundwater at Site 35C). This EPC exceeds the drinking water action level and suggests that lead in groundwater at Site 35C may pose a health hazard to the receptors of concern. Lead was not selected as a COPC in soil.

3.5.4.6 Site 46

The receptors of concern at Site 46 are nonresidential adults. The EPC for lead in groundwater at Site 46 is 0.673 mg/L (maximum detected concentration of lead in groundwater at Site 46). This EPC exceeds

the drinking water action level and suggests that lead in groundwater at Site 46 may pose a health hazard to the receptors of concern. Lead was not selected as a COPC in soil.

3.5.4.7 Site 47

The receptors of concern at Site 47 are nonresidential adults. The EPC for lead in groundwater at Site 47 is 0.248 mg/L (maximum detected concentration of lead in groundwater at Site 47). This EPC exceeds the drinking water action level and suggests that lead in groundwater at Site 47 may pose a health hazard to the receptors of concern. Lead was not selected as a COPC in soil.

3.5.4.8 Site 48

The receptors of concern at Site 48 are nonresidential adults. The EPC for lead in groundwater at Site 48 is 0.267 mg/L (maximum detected concentration of lead in groundwater at Site 48). This EPC exceeds the drinking water action level and suggests that lead in groundwater at Site 48 may pose a health hazard to the receptors of concern. Lead was not selected as a COPC in soil.

3.5.4.9 Site 50

The receptors of concern at Site 50 are nonresidential adults. Lead was not selected as a COPC in soil or groundwater at Site 50.

3.5.4.10 Site 60

The receptors of concern at Site 60 are nonresidential adults. Lead was not selected as a COPC in soil at Site 60.

3.5.4.11 Site 67

The receptors of concern at Site 67 are nonresidential adults. Lead was not selected as a COPC in soil or groundwater at Site 67.

3.5.4.12 Central Creek

The receptors of concern at Central Creek are nonresidential adults. The EPC for lead in sediment within Central Creek is 13.6 mg/kg (maximum concentration). This EPC is below the range of default PRGs (750 mg/kg to 1,750 mg/kg) and suggests that the lead in sediment at Central Creek does not pose a health hazard to the receptors of concern.

3.5.4.13 Saunder's Branch

The receptors of concern at Saunder's Branch are nonresidential adults. The EPC for lead in sediment within Saunder's Branch is 29.6 mg/kg (maximum concentration). This EPC is below the range of default PRGs (750 mg/kg to 1,750 mg/kg) and suggests that the lead in sediment at Saunder's Branch does not pose a health hazard to the receptors of concern.

3.5.4.14 Goose Prairie Creek

The receptors of concern at Goose Prairie Creek are nonresidential adults. The EPC for lead in sediment within Goose Prairie Creek is 19.5 mg/kg (95 percent UCL concentration). This EPC is below the range of default PRGs (750 mg/kg to 1,750 mg/kg) and suggests that the lead in sediment at Goose Prairie Creek does not pose a health hazard to the receptors of concern.

Lead was selected as a COPC in surface water at Goose Prairie Creek. The EPC for lead in surface water within Goose Prairie Creek is 0.0327 mg/L (95 percent UCL concentration). This EPC exceeds the drinking water action level and suggests that lead in surface water at Goose Prairie Creek may pose a health hazard to the receptors of concern.

3.5.4.15 Caddo Lake

The receptors of concern at Caddo Lake are residential children and adults. Lead was not selected as a COPC in surface water at Caddo Lake for the Group 2 Sites. The EPC for lead in sediment within Caddo Lake is 371 mg/kg (95 percent UCL concentration). This EPC is below the default PRG for child residential exposures (400 mg/kg). This comparison suggests that the lead in sediment at Caddo Lake does not pose a health hazard to the receptors of concern.

3.5.4.16 Lead in fish

The receptors of concern for fish in Caddo Lake are residential children and adults. Lead concentrations in fish were estimated based on a lead uptake model (no fish tissue analysis was available). The estimated EPCs for lead in fish at Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake are 8.6 mg/kg, 18.6 mg/kg, 12.3 mg/kg, and 234 mg/kg.

The FDA allowable consumption limit for lead is 100 µg/day (ODEQ 2002). This value can be converted to an estimated reference dose by dividing it by an assumed body weight of 70 kg and multiplying it by a conversion factor of 1.0×10^{-3} mg/µg. Applying this calculation results in an estimated reference dose of 1.4×10^{-3} mg/kg-day. It is important to note that this is only an estimated reference dose based on the FDA allowable consumption limit for lead. A published reference dose for lead is not available. Using this estimated reference dose in the fish ingestion intake equation for the child and adult resident results in

target fish tissue levels (based on a HQ of 1) of 1.6 and 3.7 mg/kg for the child and adult receptor, respectively. The estimated EPCs exceed these levels and suggest that lead in fish may pose a health hazard to the receptors of concern.

3.5.5 Evaluation of the Soil-to-Groundwater Pathway

As required by the TCEQ Consistency Memorandum (TCEQ 1998) and in accordance with the September 2001 Method of Accomplishment memorandum (Jacobs 2002c), an evaluation of the soil-to-groundwater pathway was performed. As part of this evaluation, reported soil concentrations at each site were compared to TCEQ Industrial Groundwater Protection Standards (GWP-Ind) (TCEQ 2001). A summary by site of the chemicals that exceeded the TCEQ GWP-Ind standards is provided below. A summary of the GWP-Ind standards for those chemicals that exceeded the standards is included at the end of this evaluation.

3.5.5.1 Site 04

Eight metals are reported in Site 04 soils at concentrations exceeding their respective GWP-Ind standards. These metals include aluminum, arsenic, barium, beryllium, cadmium, chromium, lead, and manganese.

3.5.5.2 Site 08

Aluminum, barium, beryllium, chromium, lead, and mercury are reported in Site 08 soils at concentrations exceeding the GWP-Ind standards.

3.5.5.3 Site 35A

Ten metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, and mercury) are reported in Site 35A soils samples at concentrations exceeding their respective GWP-Ind standards. In addition, eight SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and bis(2-ethylhexyl) phthalate] and two pesticides (dieldrin and 4,4,'-DDD) are also reported at concentrations exceeding the GWP-Ind standards. In some of the samples, several SVOCs, antimony, beryllium, cadmium, and dieldrin are not reported above the detection limit; however, the detection limits in these samples exceed the standard.

Four metals are also reported at concentrations exceeding the standards in two drainage ditch samples. These metals include aluminum, arsenic, chromium, and lead.

3.5.5.4 Site 35B

Aluminum, arsenic, beryllium, cadmium, chromium, lead, and manganese are reported in soil samples at concentrations exceeding their respective GWP-Ind standards. SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene] and pesticides (4,4'-DDD, 4,4'-DDE, and aldrin) are also reported above the standards. The aforementioned SVOCs, aldrin, and beryllium have detection limits in several samples that exceed the GWP-Ind standards (results are reported as nondetect in these samples).

3.5.5.5 Site 35C

Seven metals are reported at concentrations in soil samples exceeding their respective standard. The seven metals include aluminum, arsenic, beryllium, cadmium, chromium, lead, and mercury. Benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene are reported in one soil sample at a concentration exceeding the GWP-Ind standards. Several SVOCs and cadmium are reported as nondetect in most of the samples; however, the laboratory detection limits exceed the standards.

3.5.5.6 Site 46

Aluminum, arsenic, antimony, barium, beryllium, cadmium, chromium, copper, lead, mercury, manganese, and vanadium are reported in soil at concentrations exceeding the standards. Seven SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and hexachlorobenzene] and one pesticide (alpha-BHC) are also reported at concentrations exceeding GWP-Ind standards. The aforementioned SVOCs, plus bis(2-ethylhexyl) phthalate, aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, and lead, are reported as nondetect in many samples, although the laboratory detection limits exceed the standards.

Eight metals (aluminum, arsenic, barium, beryllium, chromium, lead, selenium, and vanadium) are reported in Site 46 drainage ditch samples at concentrations exceeding the GWP-Ind standards. In samples where beryllium was nondetect, the detection limit exceeds the GWP-Ind standard.

3.5.5.7 Site 47

Eleven metals are reported in Site 47 soil samples with concentrations exceeding the standards. These metals include arsenic, aluminum, antimony, barium, beryllium, chromium, copper, cadmium, lead, mercury, and vanadium. Six SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl) phthalate, and 2,6-dinitrotoluene] and three pesticides (4,4'-DDD, 4,4'-DDE, and dieldrin) are also reported at concentrations exceeding the GWP-Ind standards. The aforementioned SVOCs, dieldrin, aluminum, antimony, cadmium, chromium, and lead are reported as nondetects in many samples, although the detection limits exceed their respective standards.

2,6-Dinitrotoluene has detection limits in excess of the standards when analyzed with SVOCs and explosives.

3.5.5.8 Site 48

Seven metals (aluminum, arsenic barium, beryllium, cadmium, chromium, and lead) and six SVOCs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene] are reported in Site 48 soils samples at concentrations exceeding their respective GWP-Ind standards. Antimony is not reported in any of the soil samples; however, its detection limit exceeds the standard. Several SVOCs, beryllium, and cadmium are also reported as nondetect, with detection limits in excess of their respective MSCs.

3.5.5.9 Site 50

Arsenic, aluminum, beryllium, chromium, and lead are reported in Site 50 soils samples at concentrations exceeding the GWP-Ind standards. In addition, TCE is reported in one sample at a concentration exceeding its GWP-Ind standards. In samples where beryllium is reported as nondetect, the detection limits exceed the standard.

Arsenic, beryllium, cadmium, chromium, and lead are reported in Site 50 drainage ditch samples with concentrations exceeding the standards. Cadmium and chromium are reported in several samples as nondetect; however, the detection limits exceed the GWP-Ind standards.

3.5.5.10 Site 60

Three metals (aluminum, chromium, and lead) and four pesticides (4,4'-DDT, 4,4'-DDE, dieldrin, and aldrin) are reported in Site 60 soil samples at concentrations exceeding the GWP-Ind standards. In samples where aldrin and dieldrin are reported as nondetect, the detection limits exceed the GWP-Ind standards.

Dieldrin is reported as nondetect in the Site 60 drainage ditch samples; however, the detection limits exceed the GWP-Ind standard.

3.5.5.11 Site 67

Aluminum, arsenic, barium, beryllium, chromium, and lead are reported in Site 67 soil samples at concentrations exceeding the standards. None of the metals are reported as nondetect.

3.5.5.12 Summary

The following TCEQ GWP-Ind standards are exceeded at least once in soil samples from Group 4 Sites:

- Aluminum—10,220 mg/kg
- Antimony—0.6 mg/kg
- Arsenic—5 mg/kg
- Barium—200 mg/kg
- Beryllium—0.4 mg/kg
- Cadmium—0.5 mg/kg
- Chromium—10 mg/kg
- Copper—130 mg/kg
- Lead—1.5 mg/kg
- Manganese—1,430.8 mg/kg
- Mercury—0.2 mg/kg
- Vanadium—71.54 mg/kg
- Benzo(a)anthracene—39.2 µg/kg
- Benzo(a)pyrene—20 µg/kg
- Benzo(b)fluoranthene—39.2 µg/kg
- Benzo(k)fluoranthene—292 µg/kg
- Dibenzo(a,h)anthracene—20 µg/kg
- Indeno(1,2,3-cd)pyrene—39.2 µg/kg
- bis(2-Ethylhexyl)phthalate—600 µg/kg
- 2,6-Dinitrotoluene—42.08 µg/kg
- Hexachlorobenzene—100 µg/kg
- TCE—500 µg/kg
- 4,4'-DDD—119.2 µg/kg
- 4,4'-DDE—84.16 µg/kg
- 4,4'-DDT—84.16 µg/kg
- alpha-BHC—4.542 µg/kg
- Dieldrin—1.788 µg/kg
- Aldrin—1.683 µg/kg

3.6 UNCERTAINTY ANALYSIS

3.6.1 Introduction

The objectives of the uncertainty analysis are defined in two EPA guidance documents (EPA 1989 and 1992c). Those objectives are to:

- Provide to the appropriate decision makers a summary of those factors that significantly influence the risk results, evaluate their range of variability, and assess the contribution of these factors to the under- or overestimation of risk.
- Discuss the data underlying the assumptions that most significantly influence risk to highlight the strengths and weaknesses of the risk assessment results.

Virtually every step in the BHHRA process requires numerous assumptions, all of which contribute to uncertainty in the risk evaluation. In the absence of empirical or site-specific data, assumptions are developed based on best estimates of data quality, exposure parameters, and dose-response relationships. To assist in the development of these estimates, EPA provides guidelines and standard default exposure factors to be used in the BHHRA (EPA 1989 and 1991b). The use of these standard factors is intended to promote consistency among risk assessments where assumptions must be made. However, their usefulness in accurately predicting risk depends on their applicability to the site-specific conditions. In the BHHRA for the LHAAP Group 4 Sites, an effort was made to use default and site-specific assumptions that were conservative, yet realistic. It is likely, therefore, that the net effect of all the assumptions yields a conservative estimate of total risk.

This section discusses the assumptions and uncertainties associated with the chemicals and exposure routes that contributed most significantly to the calculated risks. The focus, where appropriate, is on those chemicals and exposure routes that posed a potential carcinogenic risk of greater than one-in-one million (1×10^{-6}) or had an HI of greater than 1. The potential for health risks posed by these chemicals and exposure routes is discussed in Section 3.5. Some general and site-specific uncertainties in this BHHRA are discussed in the following sections.

3.6.2 Uncertainties Associated with Data Evaluation and Reduction

Uncertainties associated with data evaluation and reduction are discussed below.

3.6.2.1 General uncertainties

The following are some of the uncertainties related to the data evaluation and reduction approaches used in this BHHRA.

- Various types of data qualifiers are attached to analytical data by either the laboratory conducting the analyses or by the person performing data validation. A common data qualifier in data packages is the "J" qualifier. Data qualified with a J are estimated concentrations reported below the minimum confident SQL, or estimated because quality assurance parameters were out of range. In this BHHRA, all data qualified with a J are used the same way as positive data that does not have the qualifier. Sometimes, a level of bias is associated with the J-qualified data, indicating whether the concentration is biased high or low. Other times, the level of bias is unknown. The use of J-qualified data as the reported concentration may result in either an under- or overestimation of the actual concentration.
- The data set for a particular chemical generally will contain some samples with positive results and others with nondetect results. The nondetect results are usually reported as SQLs. The chemical may be present at a concentration just below the reported SQL, or it may not be present in the sample at all. In this BHHRA, if a chemical was reported as a nondetect in a sample, it was assumed to be present at one-half the SQL for that sample in the calculation of the 95 percent UCL of the mean concentration. The use of one-half the SQL may result in either an under- or overestimation of the actual exposure concentration.

3.6.2.2 Site-specific uncertainties

Significant site-specific uncertainties associated with the data evaluation and reduction are described below.

- Data summaries (Tables A-41 to A-90) were generated for all chemicals analyzed in the media of concern for each exposure pathway, with the exception of fish ingestion (fish samples were not collected; see Appendix B). Minimum and maximum detection limits are reported for chemicals having at least one nondetect result. The maximum detection limits are compared to the selected TCEQ MSCs. In many instances, chemicals that are never detected in any sample for a particular medium have maximum detection limits in excess of the TCEQ MSCs. As a result, these chemicals may be present at concentrations below the detection limit, but greater than the TCEQ MSCs. These chemicals are identified as COPCs in the data summaries (noted with an "X") but are not quantitatively evaluated in the BHHRA (refer to Tables A-41 to A-90). Based on this, risks may be underestimated if these chemicals are present at concentrations below the detection limit but greater than the TCEQ MSC; however, the degree of underestimation cannot be determined. If the concentrations were below both the detection limit and the TCEQ MSC, the risk would not be considered either under- or overestimated.
- Actual fish tissue data are not available for Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake. As a result, surface water and sediment data collected from these

water bodies were used to model concentrations in fish tissue to evaluate ingestion of fish. This modeling most likely results in an overestimation of fish tissue concentrations and risk. Uncertainties associated with fish modeling are explained in more detail in Section 3.6.3.

3.6.3 Uncertainties Associated with the Exposure Assessment

Uncertainties associated with the exposure assessment are discussed below.

3.6.3.1 General uncertainties

The exposure assumptions directly influence the calculated doses (daily intakes or absorbed doses) and ultimately the calculation of risk. In general, conservative exposure assumptions are made in calculating exposure doses. The assumptions include the selection of exposure routes and scenarios and the exposure input factors (e.g., contact rate, exposure frequency, exposure duration, body weight, and skin surface area) used to estimate exposure doses. In most cases, these uncertainties contribute to the overestimation of plausible real-life exposures and, therefore, true risk is overestimated. These assumptions are appropriate when performing RAs of this type because the risk managers can be reasonably assured that human health risks are not underestimated and RAs for different sites can be compared.

The concept of RME is used to develop exposure doses for all of the receptors that are evaluated. RME is defined as the "maximum exposure that is reasonably expected to occur at the site" (EPA 1989). Several significant variables that determine the exposure doses for the RME are based on upper-bound (typically 90th to 95th percentile or greater) estimates. These variables are the following:

- Exposure point concentrations for soil, sediment, and surface water, which are either based on: (1) the 95 percent UCL of the mean chemical concentration or (2) the maximum detected concentration (only if the 95 percent UCL was greater than the maximum detected concentration),
- Intake/contact rate,
- Exposure frequency, and
- Exposure duration.

Therefore, the calculated exposure dose for any given chemical that results from the integration of all of these variables represents an upper-bound estimate of the probable exposure dose. The use of these upper-bound exposure parameters, coupled with conservative estimates of toxicity, in turn will yield risk results that represent an upper-bound estimate of the carcinogenic risk and noncarcinogenic HI.

3.6.3.2 Site-specific uncertainties

Significant site-specific uncertainties associated with the exposure assessment include:

- In accordance with the TCEQ Consistency Memorandum (TCEQ 1998), the maximum detected concentration of a COPC in groundwater over all sampling events and among all of the sampled wells is conservatively used as the EPC. As a result, maximum detected concentrations in groundwater based on historical data may not be representative of current conditions, as the plume may be in a state of decline. It is important to recognize that this approach represents a sort of “worst-case” analysis, focusing on potential risks to future receptors if a well in the center of the plume were used for drinking and other indoor uses. Risks to people with wells located outside the center of the plume will be lower, depending on the distance from the plume.
- In the exposure assessment, it is assumed that the concentration of volatile substances in the groundwater will remain unchanged for a lifetime of exposure. However, volatile chemicals are subject to biological and chemical degradation processes, and may also slowly dissipate by volatilization through the soil into air. As a result, the carcinogenic and noncarcinogenic risks by this pathway could be overestimated.
- In the development of EPCs for 2,3,7,8-TCDD equivalents, there is uncertainty associated with the use of one-half the detection limit as a surrogate for those dioxin/furan congeners that were not detected. If a dioxin/furan congener was not detected, the TEF for that congener was applied to one-half the detection limit and the result was included in the total 2,3,7,8-TCDD equivalents. Based on this, risks may be slightly underestimated if these chemicals are present at concentrations below the detection limit but greater than one-half the detection limit. If the concentrations are below one-half the detection limit, or if the chemical is actually not present, the risks would be considered overestimated. The degree of under- or overestimation, however, cannot be determined, but overestimation is more likely.
- An inhalation rate of 20 m³/day represents a reasonable upper bound inhalation rate for the occupational setting based on an 8-hour work day (EPA 1991b). Supplemental RAGS guidance recommends using an inhalation rate of 15 m³/day as a reasonable upper bound inhalation rate for daily, indoor, residential activities (EPA 1991b). URFs and RfCs, which are based on an inhalation rate of 20 m³/day, are not adjusted to compensate for a lower inhalation rate that is expected for child and adult exposures to volatiles through non-ingestion groundwater use. This will generally result in a conservative estimate of inhalation risks.

- The uncertainty surrounding the development of constituent concentrations in fish tissue can be attributed primarily to desk-top modeling of the processes of bioconcentration and bioaccumulation. The bioconcentration of constituents involves estimating site-specific uptake of constituents directly from water or sediment into fish tissue. Bioconcentration is most commonly described by the BCF. The BCF is a constituent-specific value that is developed under both field and experimental conditions. A significant degree of uncertainty can be introduced by using BCFs that do not accurately represent conditions specific to the waterways and Caddo Lake, since field conditions can vary from each other and vary from conditions experienced in the laboratory. It is recommended that BCFs be used, especially for metals in water, with dissolved phase constituent concentrations. Although an attempt is made to convert total concentrations to dissolved phase concentrations for the waterways and Caddo Lake surface water, considerable uncertainty is still introduced by estimating a dissolved concentration rather than using actual field-measured dissolved concentration data. Use of constituents that may be more representative of total than dissolved concentrations in surface water will significantly overestimate concentrations in fish tissue. Experimentally derived variables that are used in estimating dissolved constituent concentrations also introduce an unknown level of uncertainty into the final fish tissue values.

BCFs that are based on a sediment to benthic invertebrate uptake model are used on constituents detected in the waterways and Caddo Lake sediment. Use of a sediment to invertebrate model rather than a sediment to fish model may under- or overestimate the actual uptake into fish tissue, depending on constituent-specific and experimental conditions.

Bioaccumulation is similar to bioconcentration; however, the uncertainty surrounding the modeling of bioaccumulation is much greater because bioaccumulation is a much more complex process. Bioaccumulation is most commonly described by the BAF, which is the ratio of the constituent concentration in fish tissue to the constituent concentration in the water body where the fish are exposed. The BAF accounts for uptake of constituents by fish not only from water (as dissolved phase) and suspended particulates (as totals) passing across the gills, but also from the consumption of various foods including plankton, daphnids, and other fish. Bioaccumulation that occurs specifically through constituents in the sediment can be described by the BSAF, which accounts for the transfer of constituents from the sediment to the lipid in fish tissue. The BSAF is commonly applied to highly lipophilic compounds such as dioxins/furans and PCBs that have a strong affinity for binding to sediment. The greatest uncertainty associated with use of the BAF and BSAF is the difference between experimental conditions (field and laboratory) and actual site conditions. Because of the complex nature of the bioaccumulation process, it is almost impossible to duplicate what is actually occurring in the field without obtaining measured data. Modeling bioaccumulation may also result in an overestimate of the fish tissue concentration because 100 percent of the concentration is assumed to be attributable to what was detected in the surface water or

sediment rather than distributing the balance of the accumulated concentration between the water column, the sediment, and the diet.

Additional uncertainty associated with modeling concentrations in fish lies in the bioavailability of metals in the sediment and surface waters of the waterways and Caddo Lake. Use of dissolved metals (excluding selenium and mercury) that were measured in the field would represent a more appropriate and accurate measure of bioavailability and subsequent toxicity than would modeled concentrations. The toxicity would tend to be overestimated in cases where total concentrations were used (EPA 1993c).

A large degree of uncertainty is introduced by not accounting for the aging of organic constituents in sediment. As organics persist, or age, in sediment they become progressively less bioavailable for uptake by organisms and, ultimately, for exerting toxic effects on organisms. The current methods for analyzing constituents have focused on increasing the recovery and sensitivity of chemical procedures while ignoring the relevancy of this to living organisms. The underlying issue is one of bioavailability or the ability of a constituent to pass through membranes and into the organism. Relying on total recoveries during the analytical process assumes that 100 percent of this material is available to pass into the organism while, in reality, this is incorrect. This assumption greatly overestimates exposure and subsequent risk to the organism (Alexander 2000).

- A source of uncertainty associated with the exposure assessment is the lack of chemical-specific dermal absorption factors (ABS). Default ABSs used in the BHHRA, as recommended by TCEQ, are 1 percent for inorganics, 10 percent for SVOCs, and 0 percent for VOCs (TCEQ 1998). The absorption of a chemical from a soil matrix is dependent on many factors, including the physical and chemical properties of both the chemical and the soil and the exposure time. The dermal ABS used to calculate dermal doses are estimated values and do not take these parameters into account. The use of the default dermal ABS may have under- or overestimated risk for each chemical.
- In some cases, the EPC based on either the maximum detected concentration or the 95 percent UCL is lower than one-half its associated maximum detection limit. Risk calculations presented in Appendix C do not use one-half the maximum detection limit when it exceeds the EPC. This may result in an underestimation of risk to an unknown degree.
- The exposure to airborne particulates was evaluated using a particulate emission factor (PEF). The PEF relates the contaminant concentration in soil to the concentration of respirable particles (PM_{10}) in air due to fugitive emissions from the contaminated surface and/or subsurface soil. A default PEF value of 4.63×10^9 cubic meters per kilogram (m^3/kg) was used in the BHHRA as recommended by TCEQ (1998). The default PEF recommended by

TNRRC was obtained from RAGS Part B (EPA 1991a). Based on the method of accomplishment memorandum, it was agreed that TCEQ guidance as presented in their consistency document would be used in the BHHRA. A revised EPA default PEF value of $1.32 \times 10^9 \text{ m}^3/\text{kg}$ is available from EPA's 1996 *Soil Screening Guidance: Technical Background Document* (EPA 1996a). Note, the revised EPA default PEF of $1.32 \times 10^9 \text{ m}^3/\text{kg}$ would result in approximately 3.5 times greater exposure to particulates in air. However, this pathway was found to contribute less than 5 percent to the total hazard and risk calculated for each site. Hazard indices for the inhalation of particulates pathway are generally 1×10^{-3} or less, and cancer risks were generally 1×10^{-9} or less. Using the revised EPA default PEF of 1.32×10^9 would not result in a significant change in the total calculated hazard or risk.

3.6.4 Uncertainties Associated with the Toxicity Assessment

Uncertainties associated with the toxicity assessment are discussed in the sections below.

3.6.4.1 General uncertainties

For a risk to exist, there must be significant exposure to the COPCs, and the COPCs must be toxic at the predicted exposure levels. The toxicological uncertainties primarily relate to the methodology by which carcinogenic and noncarcinogenic criteria (i.e., CSFs and RfDs) are developed. In general, the methodology currently used to develop CSFs and RfDs is conservative and likely results in an overestimation of human toxicity (EPA 1989). These and other factors are discussed in the following sections.

- Although there is evidence to suggest some carcinogens may exhibit thresholds, CSFs are developed assuming there is no safe level of exposure to any chemical proven or suspected to cause cancer. This approach implies that exposure to even a single molecule of a chemical may be associated with a finite risk, however small. The assumption is that even if relatively large doses of a pollutant were required to cause cancer in laboratory animals (i.e., much higher than a person would ever likely be exposed to over a lifetime), these exposure doses can be linearly extrapolated downward many orders of magnitude to estimate CSFs for humans. A significant uncertainty for the carcinogens is whether the CSFs accurately reflect the carcinogenic potency of these chemicals at low exposure concentrations. The CSF is used to estimate an upper-bound lifetime probability of an individual developing cancer as a result of exposure to a particular level of a carcinogen. Therefore, the CSFs developed by EPA are generally conservative and represent the upper-bound limit of the carcinogenic potency of each chemical. The actual risk posed by each chemical is unknown, but it is likely to be lower than the calculated risk and may even be as low as zero (EPA 1989). The conclusion is that these toxicity assumptions typically result in an overestimation of carcinogenic risk.

- The assumption that all carcinogens (whether Groups A, B1, B2, or C) can cause cancer in humans is also conservative. Only those chemicals classified as Group A carcinogens by EPA are unequivocally considered human carcinogens. The other three classes are probable (Groups B1 and B2) or possible (Group C) human carcinogens. In this BHHRA, all “probable” and “possible” carcinogens are given the same weight in the toxicity assessment (and consequently in the estimation of risk) as known human carcinogens. This assumption most likely overestimates actual carcinogenic risk to humans.
- In the development of RfDs, it is assumed that a threshold dose exists below which there is no potential for adverse health effects to the most sensitive individuals in the population. The RfD is typically derived by applying several uncertainty factors of 10 each to a NOAEL or a LOAEL determined from a dose-response study in animals. An additional modifying factor of up to 10, which accounts for a qualitative professional assessment of additional uncertainties in the available toxicity data, may also be applied (EPA 1989). The final degree of extrapolation for a given chemical can range anywhere from less than 10 to 100,000 and, therefore, results in a human subthreshold dose of up to one-hundred-thousandth of the study dose. In general, the calculated RfD is likely to be overly protective, and its use probably results in a moderate to high overestimation (approximately equates to an order of magnitude) of the potential for noncarcinogenic risk.
- The use of chronic RfDs and RfCs to evaluate noncancer health effects for the future child scenario may have resulted in an overestimate of risks, as chronic toxicity values are generally more conservative (i.e., the allowable, “safe” dose is lower) than subchronic RfDs and RfCs. Because the scenario evaluated includes an exposure duration of 6 years, subchronic factors could be more accurate; however, subchronic toxicity factors are not widely available, and their use would have generated additional data gaps in the toxicity assessment.
- There is uncertainty due to the use of default ABSgi factors to derive dermal CSFs and RfDs from oral toxicity criteria. The degree of ABSgi of chemicals in experimental animals depends on the method of administration (e.g., gavage, dietary) and the lipid solubility of the chemical. Therefore, actual ABSgi factors may vary considerably from chemical to chemical. The use of default ABSgi factors may mask this variability. Consequently, risks through the dermal pathway may be over- or underestimated to an undetermined degree.

3.6.4.2 Site-specific uncertainties

The major site-specific uncertainty associated with the BHHRA toxicity assessment is that several COPCs lack established EPA toxicity factors and, therefore, a toxicity data gap exists that might underestimate risks. However, for example, chromium is not believed to be a carcinogen when ingested

and therefore has only an inhalation CSF. Consequently, the absence of a pathway-specific (oral CSF) toxicity factor or RfD does not, in and of itself, imply a significant data gap that will automatically underestimate risks.

3.6.5 Uncertainties Associated with Risk Characterization

In the absence of quantitative information on the synergistic and antagonistic effects of COPCs, cancer risk/HI estimates for a given receptor are assumed to be additive through all applicable exposure routes. Also, in summing the HQs for different chemicals, the assumption is made that all of the chemicals have the same toxic endpoint and target organ, which is not usually the case. The use of an additive approach to calculate cancer risks and HIs may have resulted in an over- or underestimation of potential risk.

3.6.6 Uncertainties Associated with Background

Another source of uncertainty associated with the risk characterization is background. Constituents present at naturally occurring levels (background concentrations) contribute to the overall risk associated with exposure to soil, groundwater, surface water, and sediment. These background risks should be considered in risk management decisions pertaining to the site. To evaluate the contribution of background to the total HIs and cancer risks associated with a site, EPCs are compared to available background data. Designated background concentrations for inorganics in groundwater and soil used in the BHHRA came from unapproved facility-wide soil and groundwater background investigations completed in 1995 (USACE 1995b, 1995c). Site-specific background data for sediment and surface water are currently not available. Two calculations for the determination of soil and groundwater background values were used from the USACE 1995 reports. The two values calculated as part of the USACE 1995 background investigations were the 95 percent UTL and the 95 percent UCL of the mean. A tolerance interval describes the range of values that is expected to contain a certain percentage of the population with a certain degree of confidence. The UCL of a mean is defined as a value that, when calculated repeatedly for randomly drawn subsets of data, equals or exceeds the true mean a desired percentage of the time.

Background comparisons presented below focus only on those metals that generate an HQ greater than 1 or a carcinogenic risk greater than 1×10^{-6} .

3.6.6.1 Site 35A

For Site 35A, one metal (manganese) exceeds an HI of 1 in groundwater. The maximum concentration of manganese (5.8 mg/L) in groundwater at Site 35A is below the background 95 percent UTL (11.8 mg/L) and slightly exceeds the UCL (4.6 mg/L). Based on this comparison, a portion of the noncarcinogenic effects associated with manganese in groundwater at Site 35A may be due to background.

3.6.6.2 Site 35B

For Site 35B, two metals (thallium and antimony) exceed an HI of 1 in groundwater. The maximum concentration of thallium (0.098 mg/L) detected at Site 35B is below the background 95 percent UTL (0.1 mg/L) and above the UCL (0.05 mg/L). The maximum concentration of antimony (0.08 mg/L) in groundwater at Site 35B only slightly exceeds the background 95 percent UTL (0.05 mg/L) and is below the 95 percent UCL (0.1 mg/L). Based on this comparison, a portion of the noncarcinogenic effects associated with thallium and antimony in groundwater at Site 35B may be due to background.

3.6.6.3 Site 35C

For Site 35C, four metals (thallium, silver, nickel, aluminum) exceed an HI of 1 in groundwater. All of the EPCs for thallium, silver, nickel, and aluminum exceed their respective 95 percent UCL and 95 percent UTL background values. Based on this comparison, concentrations of these metals in groundwater may be elevated and not representative of background.

3.6.6.4 Site 46

For Site 46, three metals (thallium, antimony, and manganese) exceed an HI of 1 in groundwater. The maximum concentration of thallium (0.2 mg/L) detected exceeds its associated background 95 percent UTL and UCL. The maximum concentration of antimony (0.063 mg/L) in groundwater at Site 46 only slightly exceeds the background 95 percent UTL (0.05 mg/L) and is below the 95 percent UCL (0.1 mg/L). The maximum concentration of manganese (6.5 mg/L) in groundwater at Site 46 is below the background 95 percent UTL (0.05 mg/L) and exceeds the 95 percent UCL (0.1 mg/L). Based on this comparison, a portion of the noncarcinogenic effects associated with antimony and manganese in groundwater at Site 46 may be due to background.

3.6.6.5 Site 47

For Site 47, seven metals exceed an HI of 1 in groundwater. A portion of the noncarcinogenic effects associated with thallium, antimony, and manganese in groundwater at Site 47 may be due to background. Each EPC exceeds the background 95 percent UCL but is less than the 95 percent UTL.

Arsenic was selected as a COPC in soil at Site 47. Arsenic has EPCs of 5.5 mg/kg and 4.7 mg/kg for the 0- to 0.5-foot bgs interval and 0- to 2-foot bgs interval, respectively. These EPCs result in risks of 3.5×10^{-6} for the 0- to 0.5-foot bgs interval and 3×10^{-6} for the 0- to 2-foot bgs interval. The background UCL for arsenic is 7 mg/kg. Based on this comparison, a portion of the carcinogenic risk associated with arsenic in soil at Site 47 may be due to background.

3.6.6.6 Site 48

For Site 48, five metals exceed an HI of 1 in groundwater. A portion of the noncarcinogenic effects associated with antimony at Site 48 may be due to background because the EPC of 0.051 mg/L is at the 95 percent UTL for background of 0.05 mg/L and below the 95 percent UCL for background of 0.1 mg/L.

3.6.6.7 Central Creek

Noncarcinogenic HIs and carcinogenic risks associated with exposure to fish (as a result of uptake from surface water or sediment) in Central Creek are in part due to concentrations of manganese in surface water, as well as cadmium and arsenic in sediment. With the exception of arsenic, no information is available regarding background levels in sediment and surface water. The EPC for arsenic in Central Creek sediment (3.25 mg/kg) is below reported background levels for arsenic (8.2 to 9.79 mg/kg) in sediment (Long et al. 1995). Based on this comparison, a portion of the noncarcinogenic hazard and carcinogenic risk associated with arsenic in Central Creek may be due to background.

3.6.6.8 Saunder's Branch

Noncarcinogenic HIs and carcinogenic risks associated with exposure to fish (as a result of uptake from surface water or sediment) in Saunder's Branch are in part due to concentrations of arsenic in sediment. The EPC for arsenic in Saunder's Branch sediment (10.2 mg/kg) is above reported background levels for arsenic (8.2 to 9.79 mg/kg) in sediment (Long et al. 1995). Based on this comparison, arsenic sediment concentrations in Saunder's Branch may be elevated above background.

3.6.6.9 Goose Prairie Creek

Noncarcinogenic HIs and carcinogenic risks associated with exposure to fish (as a result of uptake from surface water or sediment) in Goose Prairie Creek are in part due to concentrations of aluminum in surface water, as well as arsenic and aluminum in sediment. With the exception of arsenic, no information is available regarding background levels in sediment and surface water. The EPC for arsenic in Goose Prairie Creek sediment (4.2 mg/kg) is below reported background levels for arsenic (8.2 to 9.79 mg/kg) in sediment (Long et al. 1995). Based on this comparison, a portion of the noncarcinogenic hazard and carcinogenic risk associated with arsenic in Goose Prairie Creek may be due to background.

3.6.6.10 Caddo Lake

Noncarcinogenic HIs and carcinogenic risks associated with exposure to fish (as a result of uptake from surface water or sediment) in Caddo Lake are in part due to concentrations of manganese, arsenic, aluminum, thallium, vanadium, barium, cadmium, mercury, and silver in sediment. Arsenic is the only chemical contributing to the carcinogenic risk. No information is available regarding background levels of the other chemicals in sediment. The EPC for arsenic in Caddo Lake sediment (7.5 mg/kg) is below

reported background levels for arsenic (8.2 to 9.79 mg/kg) in sediment (Long et al. 1995). Based on this comparison, a portion of the noncarcinogenic hazard and carcinogenic risk associated with arsenic in Caddo Lake may be due to background.

3.6.7 Summary of Uncertainties

Table 3-75 summarizes the primary uncertainties and their probable direction of effect on the evaluation of risk. In some cases, risk may be overestimated, and in others, risk may be underestimated. For a number of parameters, risk may be under- or overestimated.

The net effect of these uncertainties depends on their relative potential impacts. In general, the potential magnitude of effect of the factors that tend to overestimate risk (e.g., exposure assumptions and toxicity values) would be expected to outweigh the potential magnitude of effect of the factors that tend to underestimate risk or for which the direction of effect is unknown.

The results of this uncertainty analysis suggest, based on the integration of all key assumptions used in the BHHRA, that risks and HIs are overestimated and, therefore, the BHHRA should be considered a conservative evaluation.

3.7 PRELIMINARY REMEDIAL GOAL OPTIONS

RGOs are chemical-specific cleanup goals, either risk-based concentrations protective of human health or applicable or relevant and appropriate requirements (ARARs) such as SDWA MCLs.

3.7.1 Methodology for Calculation of Risk-Based RGOs

The risk-based RGOs for the LHAAP Group 4 BHHRA were calculated based on the risk and HI results under the RME exposure assumptions. The RGOs were calculated only for those scenarios that generated a cancer risk greater than 1×10^{-6} or an HI greater than 1. If a scenario generated cancer risks in excess of 1×10^{-6} and/or HIs greater than 1, RGOs were developed for each of the COPCs that posed a cancer risk equal to or greater than 1×10^{-6} or an HI equal to or greater than 0.1.

The exposure assumptions and intake models developed in the BHHRA were used to develop the RGOs. Because the cancer risk or HI for a chemical is directly proportional to the exposure concentration, a simplified equation was developed to estimate RGOs. RGOs were calculated based on target cancer risks of 1×10^{-6} , 1×10^{-5} , and 1×10^{-4} , and chemical-specific HIs of 0.1 and 1. The following equation was used to calculate the RGOs:

$$RGO = \frac{TL \times EPC}{CR \text{ (or HI)}}$$

Where:

- RGO = Remedial Goal Option
 TL = Target Level (HI = 0.1 and 1 for noncarcinogenic effects and cancer risk = 1×10^{-6} , 1×10^{-5} , and 1×10^{-4} for carcinogenic effects)
 EPC = Medium-Specific Exposure Point Concentration
 CR (or HI) = Cancer Risk or HI calculated based on the EPC

As an example calculation, for the future maintenance worker at Site 04, 2,3,7,8-TCDD had a cancer risk that exceeded 1×10^{-6} for groundwater (4.5×10^{-5}). Based on a target cancer risk of 1×10^{-6} and an EPC of 9.33×10^{-9} mg/L, an RGO of 2×10^{-10} mg/L was calculated for 2,3,7,8-TCDD in groundwater under the future maintenance worker scenario at Site 04.

3.7.2 ARAR-Based RGOs

EPA federal MCLs or SDWA standards are potential ARARs for groundwater at LHAAP, and have been considered as preliminary RGOs for LHAAP groundwater. In addition, Texas surface water quality standards (TSWQS) are potential ARARs for surface water and have been considered as preliminary RGOs for LHAAP surface water.

3.7.3 LHAAP Preliminary RGOs

The preliminary risk- and ARAR-based RGOs for soil and groundwater are summarized in Table 3-76, and those for surface water, sediment, and fish are summarized in Table 3-77.

Table 3-1
LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI- Res2	TCEQ SAI- Ind2	Phase 1 - Soil/Sediment	Phase 2 - Soil/Sediment	Phase 3 - Soil/Sediment	RI Addendum Soil/Sediment
Dioxin/Furan Congener (ng/kg) - Phase 3 And RI Addendum - SW846 8290								
1,2,3,4,6,7,8-HpCDD	Dioxin/Furan	35822-46-9	NA	NA	NA	NA	0.2	0.5
1,2,3,4,6,7,8-HpCDF	Dioxin/Furan	67562-39-4	NA	NA	NA	NA	0.2	0.2
1,2,3,4,7,8,9-HpCDF	Dioxin/Furan	55673-89-7	NA	NA	NA	NA	0.1	0.2
1,2,3,4,7,8-HxCDD	Dioxin/Furan	39227-28-6	NA	NA	NA	NA	0.15	0.2
1,2,3,4,7,8-HxCDF	Dioxin/Furan	70648-26-9	NA	NA	NA	NA	0.2	0.1
1,2,3,6,7,8-HxCDD	Dioxin/Furan	57653-85-7	NA	NA	NA	NA	0.15	0.2
1,2,3,6,7,8-HxCDF	Dioxin/Furan	57117-44-9	NA	NA	NA	NA	0.1	0.16
1,2,3,7,8,9-HxCDD	Dioxin/Furan	19408-74-3	NA	NA	NA	NA	0.13	0.2
1,2,3,7,8,9-HxCDF	Dioxin/Furan	72918-21-9	NA	NA	NA	NA	0.1	0.2
1,2,3,7,8-PeCDD	Dioxin/Furan	40321-76-4	NA	NA	NA	NA	0.1	0.2
1,2,3,7,8-PeCDF	Dioxin/Furan	57117-41-6	NA	NA	NA	NA	0.1	0.12
2,3,4,6,7,8-HxCDF	Dioxin/Furan	60851-34-5	NA	NA	NA	NA	0.1	0.12
2,3,4,7,8-PeCDF	Dioxin/Furan	57117-31-4	NA	NA	NA	NA	0.1	0.14
2,3,7,8-TCDD	Dioxin/Furan	1746-01-6	NA	NA	NA	NA	0.1	0.2
2,3,7,8-TCDF	Dioxin/Furan	51207-31-9	NA	NA	NA	NA	0.1	0.16
Heptachlorodibenzo-p-dioxins	Dioxin/Furan	37871-00-4	NA	NA	NA	NA	0.2	0.5
Hexachlorodibenzo-p-dioxins	Dioxin/Furan	34465-46-8	NA	NA	NA	NA	0.2	0.2
HpCDF	Dioxin/Furan	38998-75-3	NA	NA	NA	NA	0.2	0.2
HxCDF	Dioxin/Furan	55684-94-1	NA	NA	NA	NA	0.2	0.14
Octachlorodibenzofuran	Dioxin/Furan	39001-02-0	NA	NA	NA	NA	0.25	0.4
Octachlorodibenzo-p-dioxin	Dioxin/Furan	3268-87-9	NA	NA	NA	NA	NA	NA
PeCDD	Dioxin/Furan	36088-22-9	NA	NA	NA	NA	0.2	0.2
Pentachlorodibenzofuran	Dioxin/Furan	30402-15-4	NA	NA	NA	NA	0.1	0.18
TCDF	Dioxin/Furan	55722-27-5	NA	NA	NA	NA	0.2	0.2
Tetrachlorodibenzo-p-dioxin	Dioxin/Furan	41903-57-5	NA	NA	NA	NA	0.15	0.2
Explosives (ug/kg) - Phases 1 through 3 And RI Addendum - SW846 8330								
1,3,5-Trinitrobenzene	Explosive	99-35-4	4.65E+06	3.07E+07	250	250	250	180
1,3-Dinitrobenzene	Explosive	99-65-0	1.55E+04	1.02E+05	250	250	250	90
2,4,6-Trinitrotoluene	Explosive	118-96-7	7.74E+04	5.11E+05	250	250	250	180
2,4-Dinitrotoluene	Explosive	121-14-2	7.20E+02	4.21E+03	250	250	250	180
2,6-Dinitrotoluene	Explosive	606-20-2	7.20E+02	4.21E+03	260	260	260	280
2-Amino-4,6-dinitrotoluene	Explosive	35572-78-2	2.58E+04	1.70E+05	NA	NA	NA	90
4-Amino-2,6-dinitrotoluene	Explosive	19406-51-0	2.58E+04	1.70E+05	NA	NA	NA	480
HMX	Explosive	2691-41-0	1.37E+07	1.02E+08	2200	2200	2200	280
m-Nitrotoluene	Explosive	99-08-1	4.40E+05	7.93E+05	250	250	250	380
Nitrobenzene	Explosive	98-95-3	6.49E+04	2.68E+05	260	260	260	280
o-Nitrotoluene	Explosive	88-72-2	4.67E+05	8.58E+05	250	250	250	480

Table 3-1
LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI- Res2	TCEQ SAI- Ind2	Phase 1 - Soil/Sediment	Phase 2 - Soil/Sediment	Phase 3 - Soil/Sediment	RI Addendum Soil/Sediment
p-Nitrotoluene	Explosive	99-99-0	4.37E+05	7.87E+05	250	250	250	480
RDX	Explosive	121-82-4	3.59E+04	5.36E+04	1000	1000	1000	280
Tetryl	Explosive	479-45-8	1.55E+06	1.02E+07	650	650	650	180
Herbicides (ug/kg) - Phase 3 - SW846 8150B								
2,4-Dichlorophenoxyacetic acid	Herbicides	94-75-7	2.00E+03	1.40E+04	NA	NA	45	NA
2,4-Dichlorophenoxybutyric acid	Herbicides	94-82-6	NA	NA	NA	NA	45	NA
2,4,5-Trichlorophenoxy acetic acid	Herbicides	93-76-5	1.5E+03	1.0E+04	NA	NA	4.5	NA
2,4,5-Trichlorophenoxypropionic acid	Herbicides	93-72-1	1.2E+03	8.2E+03	NA	NA	4.5	NA
Dalapon	Herbicides	75-99-0	NA	NA	NA	NA	110	NA
Dicamba	Herbicides	1918-00-9	4.6E+03	3.1E+04	NA	NA	4.5	NA
Dichlorprop	Herbicides	120-36-5	NA	NA	NA	NA	45	NA
Dinoseb	Herbicides	88-85-7	1.5E+02	1.0E+03	NA	NA	23	NA
MCPA	Herbicides	94-74-6	NA	NA	NA	NA	4.5	NA
MCPP	Herbicides	93-65-2	NA	NA	NA	NA	4.5	NA
Metals (mg/kg) - Phase 1 And 2 - SW846 6010, Phase 3 - SW846 6010A, RI Addendum - SW846 6020								
Aluminum	Metal	7429-90-5	1.55E+05	1.02E+06	NA	NA	NA	NA
Antimony	Metal	7440-36-0	7.25E+01	4.91E+02	1	8.7 (SW7041)	1 (SW7041)	1 (SW7041)
Arsenic	Metal	7440-38-2	2.00E+01	2.00E+02	1 (SW7060)	.74 (SW7060)	1 (SW7060A)	1 (SW7060)
Barium	Metal	7440-39-3	9.14E+03	5.89E+04	10	8.7	10	10
Beryllium	Metal	7440-41-7	4.56E+01	2.67E+02	NA	NA	0.5	0.1
Cadmium	Metal	7440-43-9	2.40E+02	1.46E+03	1	0.8	0.5 (SW7131A)	0.1
Calcium	Metal	7440-70-2	NA	NA	NA	NA	NA	NA
Chromium (Total)	Metal	7440-47-3	5.90E+04	3.50E+05	1	1.4	1	1
Cobalt	Metal	7440-48-4	1.53E+04	1.11E+05	1	1.4	5	0.5
Copper	Metal	7440-50-8	1.02E+04	7.43E+04	1	1.7	1	1
Iron	Metal	7439-89-6	NA	NA	1	4.3	NA	NA
Lead	Metal	7439-92-1	5.00E+02	1.00E+03	1 (SW7421)	1 (SW7421)	1 (SW7421)	1 (SW7421)
Magnesium	Metal	7439-95-4	NA	NA	NA	NA	550	NA
Manganese	Metal	7439-96-5	1.68E+04	1.07E+05	1	0.87	NA	1.5
Mercury	Metal	7439-97-6	1.08E-01	1.51E-01	0.1 (SW7471)	0.1 (SW7471)	0.1 (SW7471)	0.1 (SW7471)
Nickel	Metal	7440-02-0	1.87E+03	1.17E+04	1	NA	1	1
Potassium	Metal	7440-09-7	NA	NA	NA	NA	550	NA
Selenium	Metal	7782-49-2	1.27E+03	9.29E+03	1 (SW7740)	0.45 (SW7740)	1 (SW7740A)	0.5 (SW7740)
Silver	Metal	7440-22-4	4.68E+02	2.92E+03	1	1.4	1	1
Sodium	Metal	7440-23-5	NA	NA	NA	NA	550	55
Strontium	Metal	7440-24-6	NA	NA	1	10	NA	7
Thallium	Metal	7440-28-0	2.04E+01	1.49E+02	1	8.7 (SW7841)	0.5 (SW7841)	1 (SW7841)
Vanadium	Metal	7440-62-2	4.84E+02	2.95E+03	NA	NA	1	1

Table 3-1
LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI- Res2	TCEQ SAI- Ind2	Phase 1 - Soil/Sediment	Phase 2 - Soil/Sediment	Phase 3 - Soil/Sediment	RI Addendum Soil/Sediment
Zinc	Metal	7440-66-6	5.94E+04	4.09E+05	1	1.7	1	1
Pesticides (ug/kg) - Phase 3 - SW846 8081 And RI Addendum - SW846 8081A								
4,4'-DDD	Pesticide	72-54-8	2.44E+03	1.83E+04	NA	NA	3.6	3
4,4'-DDE	Pesticide	72-55-9	1.72E+03	1.29E+04	NA	NA	3.6	3
4,4'-DDT	Pesticide	50-29-3	1.69E+03	1.19E+04	NA	NA	3.6	3
Aldrin	Pesticide	309-00-2	2.75E+01	1.45E+02	NA	NA	1.8	3
alpha-BHC	Pesticide	319-84-6	9.05E+01	6.49E+02	NA	NA	1.8	3
alpha-Chlordane	Pesticide	5103-71-9	1.39E+03	8.05E+03	NA	NA	NA	3
gamma-Chlordane	Pesticide	12789-03-6	1.80E+00	1.60E+01	NA	NA	NA	3
beta-BHC	Pesticide	319-85-7	3.17E+03	2.27E+04	NA	NA	1.8	3
Chlordane	Pesticide	57-74-9	1.83E+03	1.64E+04	NA	NA	3.6	10
delta-BHC	Pesticide	319-86-8	3.17E+02	2.27E+03	NA	NA	1.8	3
Dieldrin	Pesticide	60-57-1	3.06E+01	1.79E+02	NA	NA	3.6	3
Endosulfan I	Pesticide	959-98-8	3.10E+05	2.04E+06	NA	NA	1.8	3
Endosulfan II	Pesticide	33213-65-9	9.29E+05	6.13E+06	NA	NA	3.6	3
Endosulfan sulfate	Pesticide	1031-07-8	9.29E+05	6.13E+06	NA	NA	3.6	3
Endrin	Pesticide	72-20-8	4.65E+04	3.07E+05	NA	NA	3.6	3
Endrin aldehyde	Pesticide	7421-93-4	4.65E+04	3.07E+05	NA	NA	3.6	3
Endrin ketone	Pesticide	53494-70-5	4.65E+04	3.07E+05	a	NA	3.6	3
gamma-BHC (Lindane)	Pesticide	58-89-9	4.38E+02	3.14E+03	NA	NA	1.8	3
Heptachlor	Pesticide	76-44-8	9.35E+01	4.05E+02	NA	NA	1.8	3
Heptachlor epoxide	Pesticide	1024-57-3	5.38E+01	3.14E+02	NA	NA	1.8	3
Methoxychlor	Pesticide	72-43-5	7.51E+05	4.45E+06	NA	NA	18	3
Toxaphene	Pesticide	8001-35-2	4.45E+02	2.60E+03	NA	NA	36	300
Polychlorinated Biphenyls (PCBs) (ug/kg) - Phase 3 And 4 - SW846 8082								
Aroclor-1016	PCB	12674-11-2	1.00E+04	1.00E+04	NA	NA	36	50
Aroclor-1221	PCB	11104-28-2	1.00E+04	1.00E+04	NA	NA	72	50
Aroclor-1232	PCB	11141-16-5	1.00E+04	1.00E+04	NA	NA	36	50
Aroclor-1242	PCB	53469-21-9	1.00E+04	1.00E+04	NA	NA	36	50
Aroclor-1248	PCB	12672-29-6	1.00E+04	1.00E+04	NA	NA	36	50
Aroclor-1254	PCB	11097-69-1	1.00E+04	1.00E+04	NA	NA	36	50
Aroclor-1260	PCB	11096-82-5	1.00E+04	1.00E+04	NA	NA	36	50
Semivolatile Organic Compounds (SVOCs) (ug/kg) - Phase 1 And RI Addendum - SW846 8270, Phase 3 - SW846 8270B								
1,2,4-Trichlorobenzene	SVOC	120-82-1	1.36E+06	6.13E+06	330	NA	330	220
1,2-Dichlorobenzene	SVOC	95-50-1	2.57E+06	3.93E+06	330	NA	330	220
1,2-Diphenylhydrazine	SVOC	122-66-7	6.12E+02	3.58E+03	1600	NA	1600	NA
1,3-Dichlorobenzene	SVOC	541-73-1	5.05E+04	7.11E+04	330	NA	330	220
1,4-Dichlorobenzene	SVOC	106-46-7	2.67E+05	2.38E+06	330	NA	330	220

Table 3-1
LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI- Res2	TCEQ SAI- Ind2	Phase 1 - Soil/Sediment	Phase 2 - Soil/Sediment	Phase 3 - Soil/Sediment	RI Addendum Soil/Sediment
1-Chloronaphthalene	SVOC	90-13-1	1.10E+07	b	660	NA	330	NA
2,4,5-Trichlorophenol	SVOC	95-95-4	1.55E+07	1.02E+08	1600	NA	1600	220
2,4,6-Trichlorophenol	SVOC	88-06-2	4.45E+04	2.60E+05	330	NA	330	220
2,4-Dichlorophenol	SVOC	120-83-2	4.65E+05	3.07E+06	330	NA	330	220
2,4-Dimethylphenol	SVOC	105-67-9	3.10E+06	2.04E+07	330	NA	330	220
2,4-Dinitrophenol	SVOC	51-28-5	3.10E+05	2.04E+06	1600	NA	1600	750
2,4-Dinitrotoluene	SVOC	121-14-2	7.20E-01	4.20E+00	330	NA	330	220
2,6-Dinitrotoluene	SVOC	606-20-2	7.20E-01	4.20E+00	330	NA	330	110
2-Chloronaphthalene	SVOC	91-58-7	1.10E+07	7.11E+07	330	NA	660	220
2-Chlorophenol	SVOC	95-57-8	1.06E+06	4.01E+06	330	NA	330	220
2-Methylnaphthalene	SVOC	91-57-6	2.74E+06	1.78E+07	330	NA	330	220
2-Methylphenol	SVOC	95-48-7	7.74E+06	5.11E+07	330	NA	330	110
2-Nitroaniline	SVOC	88-74-4	4.65E+04	3.07E+05	1600	NA	1600	220
2-Nitrophenol	SVOC	88-75-5	3.10E+05	2.04E+06	330	NA	330	110
3,3'-Dichlorobenzidine	SVOC	91-94-1	1.09E+03	6.36E+03	660	NA	660	220
4,6-Dinitro-2-methylphenol	SVOC	534-52-1	3.10E+05	2.04E+06	1600	NA	1600	440
4-Bromophenyl-phenylether	SVOC	101-55-3	3.12E+02	1.64E+03	330	NA	330	220
4-Chloro-3-methylphenol	SVOC	59-50-7	7.74E+05	5.11E+06	330	NA	330	220
4-Chloroaniline	SVOC	106-47-8	6.20E+05	4.09E+06	330	NA	330	220
4-Chlorophenyl-phenylether	SVOC	7005-72-3	2.77E+02	1.17E+03	330	NA	330	220
4-Methylphenol	SVOC	106-44-5	7.74E+05	5.11E+06	330	NA	330	220
4-Nitroaniline	SVOC	100-01-6	1.29E+05	7.53E+05	1600	NA	1600	220
4-Nitrophenol	SVOC	100-02-7	3.10E+05	2.04E+06	1600	NA	1600	220
Acenaphthene	SVOC	83-32-9	8.22E+06	5.33E+07	330	NA	330	220
Acenaphthylene	SVOC	208-96-8	8.22E+06	5.33E+07	330	NA	330	220
Anthracene	SVOC	120-12-7	4.11E+07	2.67E+08	330	NA	330	220
Benzo(a)anthracene	SVOC	56-55-3	6.26E+02	3.41E+03	330	NA	330	220
Benzo(a)pyrene	SVOC	50-32-8	6.26E+01	3.41E+02	330	NA	330	220
Benzo(b)fluoranthene	SVOC	205-99-2	6.25E+02	3.39E+03	330	NA	330	220
Benzo(g,h,i)perylene	SVOC	191-24-2	4.11E+06	2.67E+07	330	NA	330	220
Benzo(k)fluoranthene	SVOC	207-08-9	6.26E+03	3.41E+04	330	NA	330	220
Benzoic acid	SVOC	65-85-0	6.20E+08	4.09E+09	1600	NA	1600	NA
Benzyl alcohol	SVOC	100-51-6	4.65E+07	3.07E+08	330	NA	330	220
bis(2-Chloroethoxy)methane	SVOC	111-91-1	2.22E+00	1.30E+01	330	NA	330	110
bis-(2-Chloroethyl)ether	SVOC	111-44-4	1.49E+02	3.16E+02	330	NA	330	220
bis-(2-Chloroisopropyl)ether	SVOC	39638-32-9	4.80E+01	1.50E+02	330	NA	330	110
bis(2-Ethylhexyl)phthalate	SVOC	117-81-7	1.74E+04	6.53E+04	330	NA	330	220
Butylbenzylphthalate	SVOC	85-68-7	3.10E+07	2.04E+08	330	NA	330	220

Table 3-1
LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase 1 - Soil/Sediment	Phase 2 - Soil/Sediment	Phase 3 - Soil/Sediment	RI Addendum Soil/Sediment
Carbazole	SVOC	86-74-8	2.45E+04	1.43E+05	NA	NA	NA	220
Chrysene	SVOC	218-01-9	6.26E+04	3.41E+05	330	NA	330	110
Dibenzofluanthracene	SVOC	53-70-3	6.26E+01	3.41E+02	330	NA	330	220
Dibenzofuran	SVOC	132-64-9	6.20E+05	4.09E+06	330	NA	330	220
Diethylphthalate	SVOC	84-66-2	1.24E+08	8.18E+08	330	NA	330	110
Dimethylphthalate	SVOC	131-11-3	1.24E+08	8.18E+08	330	NA	330	220
Di-n-butylphthalate	SVOC	84-74-2	1.55E+07	1.02E+08	330	NA	330	220
Di-n-octylphthalate	SVOC	117-84-0	1.10E+06	2.04E+07	330	NA	330	220
Diptyenylamine	SVOC	122-39-4	1.87E+06	2.56E+07	1000	NA	1000	NA
Fluoranthene	SVOC	206-44-0	5.48E+06	3.55E+07	330	NA	330	220
Fluorene	SVOC	86-73-7	5.48E+06	3.55E+07	330	NA	330	110
Hexachloro-1,3-butadiene	SVOC	87-68-3	1.60E+01	3.20E+01	330	NA	330	220
Hexachlorobenzene	SVOC	118-74-1	2.51E+02	1.01E+03	330	NA	330	220
Hexachlorocyclopentadiene	SVOC	77-47-4	3.59E+03	5.04E+03	330	NA	330	110
Hexachloroethane	SVOC	67-72-1	1.55E+05	7.46E+05	330	NA	330	110
Indeno(1,2,3-cd)pyrene	SVOC	193-39-5	6.26E+02	3.41E+03	330	NA	330	220
Isophorone	SVOC	78-59-1	5.15E+06	3.01E+07	330	NA	330	220
Naphthalene	SVOC	91-20-3	1.81E+05	2.68E+05	330	NA	330	220
Nitrobenzene	SVOC	98-95-3	6.50E+01	2.70E+02	330	NA	330	110
N-Nitroso-di-n-propylamine	SVOC	621-64-7	4.10E+01	1.64E+02	1600	NA	1600	220
N-Nitrosodiphenylamine	SVOC	86-30-6	5.85E+04	2.34E+05	330	NA	330	220
Pentachlorophenol	SVOC	87-86-5	3.01E+03	1.36E+04	1600	NA	1600	550
Phenanthrene	SVOC	85-01-8	4.11E+06	2.67E+07	330	NA	330	220
Phenol	SVOC	108-95-2	9.29E+07	6.13E+08	330	NA	330	110
Pyrene	SVOC	129-00-0	4.11E+06	2.67E+07	330	NA	330	220
Total Petroleum Hydrocarbons (TPH) (mg/kg) - Phase 1 And 2 - EPA-600 418.1, RI Addendum - SW-846 8015A								
Total Petroleum Hydrocarbons	TPH	NA	NA	NA	1	10	NA	55
Volatile Organic Compounds (VOCs) (ug/kg) - Phase 1 And 2 - SW846 8240, Phase 3 - SW846 8260A, RI Addendum - SW846 8260								
1,1,1,2-Tetrachloroethane	VOC	630-20-6	5.20E+01	1.00E+02	NA	5	5	NA
1,1,1-Trichloroethane	VOC	71-55-6	2.32E+06	3.37E+06	5	5	5	1.5
1,1,2,2-Tetrachloroethane	VOC	79-34-5	5.08E+03	9.80E+03	5	5	5	1.2
1,1,2-Trichloroethane	VOC	79-00-5	9.69E+03	1.75E+04	5	5	5	1.3
1,1-Dichloroethane	VOC	75-34-3	8.89E+05	1.28E+06	5	5	5	NA
1,1-Dichloroethene	VOC	75-35-4	6.01E+02	1.06E+03	5	5	5	1.3
1,1-Dichloropropene	VOC	563-58-6	9.92E+02	1.91E+03	NA	NA	5	NA
1,2,3-Trichlorobenzene	VOC	87-61-6	4.20E+02	2.00E+03	NA	NA	5	NA
1,2,3-Trichloropropane	VOC	96-18-4	9.15E+01	8.18E+02	5	5	15	NA
1,2,4-Trichlorobenzene	VOC	120-82-1	1.36E+06	6.13E+06	NA	NA	5	NA

Table 3-1
LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI- Res2	TCEQ SAI- Ind2	Phase 1 - Soil/Sediment	Phase 2 - Soil/Sediment	Phase 3 - Soil/Sediment	RI Addendum Soil/Sediment
1,2,4-Trimethylbenzene	VOC	95-63-6	9.60E+04	1.35E+05	NA	NA	5	NA
1,2-Dibromo-3-Chloropropane	VOC	96-12-8	3.50E-01	2.00E+00	NA	100	10	NA
1,2-Dibromoethane	VOC	106-93-4	7.22E+00	5.47E+01	NA	5	5	NA
1,2-Dichlorobenzene	VOC	95-50-1	2.60E+03	3.90E+03	NA	NA	5	NA
1,2-Dichloroethane	VOC	107-06-2	2.69E+02	4.67E+02	5	5	5	1.5
1,2-Dichloropropane	VOC	78-87-5	9.42E+03	2.52E+04	5	5	5	1.5
1,3,5-Trimethylbenzene	VOC	108-67-8	8.28E+04	1.17E+05	NA	NA	5	NA
1,3-Dichlorobenzene	VOC	541-73-1	5.05E+04	7.11E+04	NA	NA	5	NA
1,3-Dichloropropane	VOC	142-28-9	2.98E+04	8.04E+04	NA	NA	5	NA
1,4-Dichloro-2-butene	VOC	764-41-0	2.25E+01	3.78E+01	10	100	5	NA
1,4-Dichlorobenzene	VOC	106-46-7	2.67E+05	2.38E+06	NA	NA	5	NA
1,4-Dioxane	VOC	123-91-1	5.82E+04	5.20E+05	NA	NA	NA	NA
2,2-Dichloropropane	VOC	590-20-7	1.70E+04	2.38E+04	NA	NA	15	NA
2-Butanone	VOC	78-93-3	5.97E+06	8.61E+06	10	100	5	14
2-Chloroethyl Vinyl Ether	VOC	100-75-8	2.10E+00	3.00E+00	NA	10	NA	NA
2-Chlorotoluene	VOC	95-49-8	1.54E+06	3.53E+06	NA	NA	5	NA
2-Hexanone	VOC	591-78-6	6.20E+04	8.71E+04	10	50	5	7.5
4-Chlorotoluene	VOC	106-43-4	3.44E+03	4.82E+03	NA	NA	5	NA
4-Methyl-2-pentanone	VOC	108-10-1	1.95E+06	2.95E+06	10	50	5	8
Acetone	VOC	67-64-1	1.65E+06	2.43E+06	10	100	5	58
Acetonitrile	VOC	75-05-8	1.80E+02	2.60E+02	NA	100	NA	NA
Acrolein	VOC	107-02-8	5.49E+06	4.09E+07	5	NA	5	NA
Acrylonitrile	VOC	107-13-1	7.86E+01	1.40E+02	10	NA	5	NA
Allyl Chloride	VOC	107-05-1	1.30E+00	1.80E+00	NA	5	NA	NA
Benzene	VOC	71-43-2	8.82E+02	1.58E+03	5	5	5	1.4
Benzyl Chloride	VOC	100-44-7	3.80E+00	3.40E+01	NA	100	NA	NA
Bromobenzene	VOC	108-86-1	7.98E+03	1.12E+04	NA	NA	5	NA
Bromodichloromethane	VOC	75-27-4	1.03E+04	9.23E+04	5	5	5	1.2
Bromoform	VOC	75-25-2	3.35E+04	8.49E+04	NA	5	5	1.2
Bromomethane	VOC	74-83-9	3.49E+03	4.93E+03	10	10	10	2.3
Carbon Disulfide	VOC	75-15-0	1.03E+06	1.49E+06	5	100	5	7
Carbon Tetrachloride	VOC	56-23-5	3.53E+02	6.30E+02	5	5	10	1.2
Chlorobenzene	VOC	108-90-7	3.98E+05	5.91E+05	5	5	5	1.2
Chlorobromomethane	VOC	74-97-5	2.41E+05	3.44E+05	NA	NA	5	NA
Chlorobutadiene	VOC	126-99-8	1.00E+01	1.40E+01	NA	5	NA	NA
Chloroethane	VOC	75-00-3	1.13E+07	1.73E+07	10	10	10	1.2
Chloroform	VOC	67-66-3	3.05E+02	5.14E+02	5	5	5	1.5
Chloromethane	VOC	74-87-3	2.27E+03	3.83E+03	10	10	10	2.4

Table 3-1
LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res ²	TCEQ SAI-Ind ²	Phase 1 - Soil/Sediment	Phase 2 - Soil/Sediment	Phase 3 - Soil/Sediment	RI Addendum Soil/Sediment
cis-1,2-Dichloroethene	VOC	156-59-2	1.15E+06	2.45E+06	5	NA	5	1.2
cis-1,3-Dichloropropene	VOC	10061-01-5	1.19E+04	3.42E+04	NA	5	NA	1.4
Dibromochloromethane	VOC	124-48-1	7.62E+04	6.81E+05	5	5	5	1.3
Dibromomethane	VOC	74-95-3	1.88E+05	2.66E+05	5	5	10	NA
Dichlorodifluoromethane	VOC	75-71-8	2.16E+06	3.13E+06	5	5	15	NA
Ethyl cyanide	VOC	107-12-0	4.31E+04	8.87E+04	NA	100	NA	NA
Ethyl methacrylate	VOC	97-63-2	5.72E+06	9.86E+06	5	5	NA	NA
Ethylbenzene	VOC	100-41-4	4.31E+06	6.91E+06	5	5	5	1.2
Hexachlorobutadiene	VOC	87-68-3	1.58E+04	3.23E+04	NA	NA	5	NA
Iodomethane	VOC	74-88-4	1.77E+04	2.58E+04	10	5	5	NA
Isobutyl alcohol	VOC	78-83-1	2.99E+06	4.32E+06	NA	100	NA	NA
Isopropylbenzene	VOC	98-82-8	5.38E+06	8.96E+06	NA	NA	5	NA
Methylene Chloride	VOC	75-09-2	8.68E+03	1.59E+04	5	5	5	5.5
Naphthalene	VOC	91-20-3	1.81E+05	2.68E+05	NA	NA	5	NA
n-Butylbenzene	VOC	104-51-8	2.70E+06	5.74E+06	NA	NA	5	NA
n-Propylbenzene	VOC	103-65-1	3.21E+06	5.91E+06	NA	NA	5	NA
Pentachloroethane	VOC	76-01-7	NA	NA	NA	10	NA	NA
p-Isopropyltoluene	VOC	99-87-6	4.20E+06	6.72E+06	NA	NA	5	NA
sec-Butylbenzene	VOC	135-98-8	3.00E+06	5.41E+06	NA	NA	5	NA
Styrene	VOC	100-42-5	1.31E+07	2.28E+07	5	5	5	1.2
t-Butylbenzene	VOC	98-06-6	2.61E+06	4.53E+06	NA	NA	5	NA
Tetrachloroethene	VOC	127-18-4	6.02E+03	1.68E+04	5	5	5	1.2
Toluene	VOC	108-88-3	1.66E+06	2.38E+06	5	5	5	3.1
Total Xylenes	VOC	1330-20-7	2.55E+06	3.59E+06	5	5	NA	NA
trans-1,2-Dichloroethene	VOC	156-60-5	1.38E+06	2.42E+06	5	5	5	1.2
trans-1,3-Dichloropropene	VOC	10061-02-6	1.83E+04	4.00E+04	5	5	5	1.6
Trichloroethene	VOC	79-01-6	3.73E+03	6.61E+03	5	5	10	2.1
Trichlorofluoromethane	VOC	75-69-4	2.63E+06	3.79E+06	5	NA	5	2.3
Vinyl acetate	VOC	108-05-4	5.74E+05	8.04E+05	5	50	5	1.5
Vinyl Chloride	VOC	75-01-4	3.64E+01	6.58E+01	10	10	10	2.4

¹ Lower Limit of Detection (LLD) refers to either the practical quantitation limit or the method/instrument detection limit.

² TCEQ Standard No. 2, Appendix II Medium-Specific Concentrations (MSCs) 15 March 2001. SAI-Res (Soil Residential); SAI-Ind (Soil Industrial).

a = TCEQ SAI-Res and SAI-Ind based on Endrin.

b = TCEQ SAI-Res and SAI-Ind based on 2-Chloronaphthalene.

LHAAP = Longhorn Army Ammunition Plant

Table 3-1
LHAAP Lower Limits of Detection (Soil/Sediment Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase 1 - Soil/Sediment	Phase 2 - Soil/Sediment	Phase 3 - Soil/Sediment	RI Addendum Soil/Sediment
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LLD = lower limit of detection

NA = chemical was not analyzed or SAI-Res/SAI-Ind was not available, or LLD was not available.

PCB = polychlorinated biphenyl

RA = risk assessment

RI = remedial investigation

SVOC = semi-volatile organic compound

TCEQ = Texas Commission on Environmental Quality

TPH = total petroleum hydrocarbon

VOC = volatile organic compound

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
Common Anions (ug/L)								
Chloride	Anion	16887-00-6	NA	NA	NA	NA	2000	NA
Cyanide	Anion	57-12-5	5.10E+03	3.70E+04	50 (SW9010)	20 (SW9010)	0.01(SW9010A)	NA
Nitrate	Anion	14797-55-8	4.10E+05	3.00E+06	NA	NA	100(353.2/353.3)	NA
Nitrite	Anion	14797-65-0	2.50E+04	1.90E+05	NA	NA	100	NA
Perchlorate	Anion	14797-73-0	6.60E+01	1.20E+03	NA	NA	1	0.3 (300.0)
Sulfate	Anion	14808-79-8	NA	NA	NA	NA	2000	NA
Dioxin/Furan Congener (pg/L) - Phase 3 and RI Addendum - SW846 8290								
1,2,3,4,6,7,8-HpCDD	Dioxin/Furan	35822-46-9	NA	NA	NA	NA	1	5.4
1,2,3,4,6,7,8-HpCDF	Dioxin/Furan	67562-39-4	NA	NA	NA	NA	0.5	9.4
1,2,3,4,7,8,9-HpCDF	Dioxin/Furan	55673-89-7	NA	NA	NA	NA	0.7	3.4
1,2,3,4,7,8-HxCDD	Dioxin/Furan	39227-28-6	NA	NA	NA	NA	1	2.4
1,2,3,4,7,8-HxCDF	Dioxin/Furan	70648-26-9	NA	NA	NA	NA	0.8	1.4
1,2,3,6,7,8-HxCDD	Dioxin/Furan	57653-85-7	NA	NA	NA	NA	1	2.2
1,2,3,6,7,8-HxCDF	Dioxin/Furan	57117-44-9	NA	NA	NA	NA	0.8	1.7
1,2,3,7,8,9-HxCDD	Dioxin/Furan	19408-74-3	NA	NA	NA	NA	1	2.2
1,2,3,7,8,9-HxCDF	Dioxin/Furan	72918-21-9	NA	NA	NA	NA	1	2.3
1,2,3,7,8-PeCDD	Dioxin/Furan	40321-76-4	NA	NA	NA	NA	1.4	2.5
1,2,3,7,8-PeCDF	Dioxin/Furan	57117-41-6	NA	NA	NA	NA	1	1.5
2,3,4,6,7,8-HxCDF	Dioxin/Furan	60851-34-5	NA	NA	NA	NA	0.9	1.4
2,3,4,7,8-PeCDF	Dioxin/Furan	57117-31-4	NA	NA	NA	NA	1	2
2,3,7,8-TCDD	Dioxin/Furan	1746-01-6	NA	NA	NA	NA	1.7	3.3
2,3,7,8-TCDF	Dioxin/Furan	51207-31-9	NA	NA	NA	NA	1.5	2.2
Heptachlorodibenzo-p-dioxins	Dioxin/Furan	37871-00-4	NA	NA	NA	NA	2.8	5.2
Hexachlorodibenzo-p-dioxins	Dioxin/Furan	34465-46-8	NA	NA	NA	NA	1	2.3
HpCDF	Dioxin/Furan	38998-75-3	NA	NA	NA	NA	0.5	3.7
HxCDF	Dioxin/Furan	55684-94-1	NA	NA	NA	NA	0.8	1.9
Octachlorodibenzofuran	Dioxin/Furan	39001-02-0	NA	NA	NA	NA	1.5	11
Octachlorodibenzo-p-dioxin	Dioxin/Furan	3268-87-9	NA	NA	NA	NA	NA	20
PeCDD	Dioxin/Furan	36088-22-9	NA	NA	NA	NA	1.4	2.5
Pentachlorodibenzofuran	Dioxin/Furan	30402-15-4	NA	NA	NA	NA	1	1.7

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
TCDF	Dioxin/Furan	55722-27-5	NA	NA	NA	NA	1.5	2.2
Tetrachlorodibenzo-p-dioxin	Dioxin/Furan	41903-57-5	NA	NA	NA	NA	1.5	3.3
Explosives (ug/L) - Phase 1 Through 3 And RI Addendum - SW846 8330								
1,3,5-Trinitrobenzene	Explosive	99-35-4	1.10E+03	3.07E+03	0.55	0.12	0.55	0.1
1,3-Dinitrobenzene	Explosive	99-65-0	3.65E+00	1.02E+01	0.25	0.12	0.25	0.1
2,4,6-Trinitrotoluene	Explosive	118-96-7	1.83E+01	5.11E+01	0.55	0.12	0.55	0.3
2,4-Dinitrotoluene	Explosive	121-14-2	1.25E-01	4.21E-01	0.55	0.12	0.55	0.2
2,6-Dinitrotoluene	Explosive	606-20-2	1.25E-01	4.21E-01	0.45	0.13	0.45	0.3
2-Amino-4,6-dinitrotoluene	Explosive	35572-78-2	6.08E+00	1.70E+01	NA	NA	NA	0.3
4-Amino-2,6-dinitrotoluene	Explosive	19406-51-0	6.08E+00	1.70E+01	NA	0.25	NA	0.3
HMX	Explosive	2691-41-0	1.83E+03	5.11E+03	0.5	1.1	0.5	0.2
m-Nitrotoluene	Explosive	99-08-1	3.65E+02	1.02E+03	0.5	0.5	0.5	0.3
Nitrobenzene	Explosive	98-95-3	1.83E+01	5.11E+01	0.8	0.13	0.8	0.3
o-Nitrotoluene	Explosive	88-72-2	3.65E+02	1.02E+03	0.7	0.5	0.7	0.2
p-Nitrotoluene	Explosive	99-99-0	3.65E+02	1.02E+03	0.5	1.5	0.5	0.3
RDX	Explosive	121-82-4	7.74E+00	2.60E+01	0.85	0.54	0.85	1.1
Tetryl	Explosive	479-45-8	3.65E+02	1.02E+03	0.7	0.37	0.7	0.2
Herbicides (ug/L) - Phase 3 - SW846 8150B								
2,4-Dichlorophenoxyacetic acid	Herbicides	94-75-7	2.00E+03	1.40E+04	NA	NA	0.01	NA
2,4,5-Trichlorophenoxypropionic acid	Herbicides	93-72-1	1.50E+03	1.00E+04	NA	NA	0.002	NA
Metals (ug/L) - Phase 1 And 2 - SW846 6010, Phase 3 - SW846 6010A, RI Addendum - SW846 6020								
Aluminum	Metal	7429-90-5	3.65E+04	1.02E+05	NA	NA	200	NA
Antimony	Metal	7440-36-0	6.00E+00	6.00E+00	30 (SW7041)	20 (SW7041)	5 (SW7041)	5 (SW7041)
Arsenic	Metal	7440-38-2	5.00E+01	5.00E+01	10 (SW7060)	5 (SW7060)	10 (SW7060A)	7 (SW7060)
Barium	Metal	7440-39-3	2.00E+03	2.00E+03	20	40	200	NA
Beryllium	Metal	7440-41-7	4.00E+00	4.00E+00	NA	NA	0.5	0.8
Cadmium	Metal	7440-43-9	5.00E+00	5.00E+00	5	5	0.8 (SW7131A)	1
Calcium	Metal	7440-70-2	NA	NA	NA	NA	NA	NA
Chromium (Total)	Metal	7440-47-3	5.90E+04	3.50E+05	10	10	10	5
Cobalt	Metal	7440-48-4	2.19E+03	6.13E+03	50	NA	50	10
Copper	Metal	7440-50-8	1.30E+03	1.30E+03	50	20	25	10

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI- Res2	TCEQ SAI- Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
Iron	Metal	7439-89-6	NA	NA	NA	NA	NA	100
Lead	Metal	7439-92-1	1.50E+01	1.50E+01	2 (SW7421)	5 (SW7421)	3 (SW7421)	3 (SW7421)
Magnesium	Metal	7439-95-4	NA	NA	NA	NA	NA	NA
Manganese	Metal	7439-96-5	1.72E+03	1.43E+04	100	10	15	NA
Mercury	Metal	7439-97-6	2.00E+00	2.00E+00	2 (SW7470)	0.2 (SW7470)	2 (SW7470A)	0.2 (SW7470)
Nickel	Metal	7440-02-0	7.30E+02	2.04E+03	50	NA	40	10
Potassium	Metal	7440-09-7	NA	NA	NA	NA	5000	NA
Selenium	Metal	7782-49-2	5.00E+01	5.00E+01	10 (SW7740)	5 (SW7740)	5 (SW7740A)	10 (SW7740)
Silver	Metal	7440-22-4	1.83E+02	5.11E+02	70	10	10	2
Sodium	Metal	7440-23-5	NA	NA	NA	NA	NA	NA
Strontium	Metal	7440-24-6	NA	NA	100	50	NA	NA
Thallium	Metal	7440-28-0	2.00E+00	2.00E+00	10 (SW7841)	3 (SW7841)	1 (SW7841)	5 (SW7841)
Vanadium	Metal	7440-62-2	2.56E+02	7.15E+02	NA	NA	50	NA
Zinc	Metal	7440-66-6	1.10E+04	3.07E+04	100	20	20	10
Pesticides (ug/L) - Phase 3 And RI Addendum - SW846 8081								
4,4'-DDD	Pesticide	72-54-8	3.55E-01	1.19E+00	NA	NA	1.1	0.03
4,4'-DDE	Pesticide	72-55-9	2.50E-01	8.42E-01	NA	NA	0.4	0.03
4,4'-DDT	Pesticide	50-29-3	2.50E-01	8.42E-01	NA	NA	1.2	0.03
Aldrin	Pesticide	309-00-2	5.01E-03	1.68E-02	NA	NA	0.4	0.03
alpha-BHC	Pesticide	319-84-6	1.35E-02	4.54E-02	NA	NA	0.3	0.03
alpha-Chlordane	Pesticide	5103-71-9	2.43E-01	8.18E-01	NA	NA	NA	0.03
gamma-Chlordane	Pesticide	12789-03-6	1.80E+00	1.60E+01	NA	NA	NA	0.03
beta-BHC	Pesticide	319-85-7	4.73E-01	1.59E+00	NA	NA	0.6	0.03
Chlordane	Pesticide	57-74-9	2.43E-01	8.18E-01	NA	NA	1.4	0.1
delta-BHC	Pesticide	319-86-8	4.73E-02	1.59E-01	NA	NA	0.9	0.03
Dieldrin	Pesticide	60-57-1	5.32E-03	1.79E-02	NA	NA	0.2	0.03
Endosulfan I	Pesticide	959-98-8	7.30E+01	2.04E+02	NA	NA	1.4	0.03
Endosulfan II	Pesticide	33213-65-9	2.19E+02	6.13E+02	NA	NA	0.4	0.03
Endosulfan sulfate	Pesticide	1031-07-8	2.19E+02	6.13E+02	NA	NA	6.6	0.03
Endrin	Pesticide	72-20-8	2.00E+00	2.00E+00	NA	NA	0.6	0.03
Endrin aldehyde	Pesticide	7421-93-4	1.10E+01	3.07E+01	NA	NA	2.3	0.03
Endrin ketone	Pesticide	53494-70-5	2.00E+00	2.00E+00	a	NA	NA	0.03

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
gamma-BHC (Lindane)	Pesticide	58-89-9	2.00E-01	2.00E-01	NA	NA	0.4	0.03
Heptachlor	Pesticide	76-44-8	4.00E-01	4.00E-01	NA	NA	0.3	0.03
Heptachlor epoxide	Pesticide	1024-57-3	2.00E-01	2.00E-01	NA	NA	8.3	0.03
Methoxychlor	Pesticide	72-43-5	4.00E+01	4.00E+01	NA	NA	18	0.03
Toxaphene	Pesticide	8001-35-2	3.00E+00	3.00E+00	NA	NA	24	2
Polychlorinated Biphenyls (PCBs) (ug/L) - Phase 3 And RI Addendum - SW846 8080								
Aroclor-1016	PCB	12674-11-2	5.00E-01	5.00E-01	NA	NA	1	0.5
Aroclor-1221	PCB	11104-28-2	5.00E-01	5.00E-01	NA	NA	1	0.5
Aroclor-1232	PCB	11141-16-5	5.00E-01	5.00E-01	NA	NA	1	0.5
Aroclor-1242	PCB	53469-21-9	5.00E-01	5.00E-01	NA	NA	1	0.5
Aroclor-1248	PCB	12672-29-6	5.00E-01	5.00E-01	NA	NA	1	0.5
Aroclor-1254	PCB	11097-69-1	5.00E-01	5.00E-01	NA	NA	1	0.5
Aroclor-1260	PCB	11096-82-5	5.00E-01	5.00E-01	NA	NA	1	0.5
Semivolatile Organic Compounds (SVOCs) (ug/L) - Phase 1 And RI Addendum - SW846 8270, Phase 3 - SW846 8270B								
1,2,4-Trichlorobenzene	SVOC	120-82-1	7.00E+01	7.00E+01	10	NA	10	2
1,2-Dichlorobenzene	SVOC	95-50-1	6.00E+02	6.00E+02	10	NA	10	2
1,2-Diphenylhydrazine	SVOC	122-66-7	1.06E-01	3.58E-01	50	NA	50	NA
1,3-Dichlorobenzene	SVOC	541-73-1	1.10E+03	3.07E+03	10	NA	10	2
1,4-Dichlorobenzene	SVOC	106-46-7	7.50E+01	7.50E+01	10	NA	10	2
1-Chloronaphthalene	SVOC	90-13-1	2.92E+03	b	10	NA	10	NA
2,4,5-Trichlorophenol	SVOC	95-95-4	3.65E+03	1.02E+04	50	NA	50	2
2,4,6-Trichlorophenol	SVOC	88-06-2	7.74E+00	2.60E+01	10	NA	10	2
2,4-Dichlorophenol	SVOC	120-83-2	1.10E+02	3.07E+02	10	NA	10	2
2,4-Dimethylphenol	SVOC	105-67-9	7.30E+02	2.04E+03	10	NA	10	2
2,4-Dinitrophenol	SVOC	51-28-5	7.30E+01	2.04E+02	50	NA	50	7
2,4-Dinitrotoluene	SVOC	121-14-2	7.20E-01	4.20E+00	10	NA	10	2
2,6-Dinitrotoluene	SVOC	606-20-2	7.20E-01	4.20E+00	10	NA	10	2
2-Chloronaphthalene	SVOC	91-58-7	2.92E+03	8.18E+03	10	NA	10	2
2-Chlorophenol	SVOC	95-57-8	1.83E+02	5.11E+02	10	NA	10	2
2-Methylnaphthalene	SVOC	91-57-6	7.30E+02	2.04E+03	10	NA	10	2
2-Methylphenol	SVOC	95-48-7	1.83E+03	5.11E+03	10	NA	10	1
2-Nitroaniline	SVOC	88-74-4	1.10E+01	3.07E+01	50	NA	50	2

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
2-Nitrophenol	SVOC	88-75-5	7.30E+01	2.04E+02	10	NA	10	2
3,3'-Dichlorobenzidine	SVOC	91-94-1	1.89E-01	6.36E-01	20	NA	20	2
3-Methylphenol	SVOC	108-39-4	1.83E+03	5.11E+03	10	NA	10	NA
3-Nitroaniline	SVOC	99-09-2	1.10E+01	3.07E+01	50	NA	50	2
4,6-Dinitro-2-methylphenol	SVOC	534-52-1	7.30E+01	2.04E+02	50	NA	50	4
4-Bromophenyl-phenylether	SVOC	101-55-3	5.68E-02	1.91E-01	10	NA	10	2
4-Chloro-3-methylphenol	SVOC	59-50-7	1.83E+02	5.11E+02	10	NA	10	2
4-Chloroaniline	SVOC	106-47-8	1.46E+02	4.09E+02	10	NA	10	2
4-Chlorophenyl-phenylether	SVOC	7005-72-3	5.68E-02	1.91E-01	10	NA	10	2
4-Methylphenol	SVOC	106-44-5	1.83E+02	5.11E+02	10	NA	10	2
4-Nitroaniline	SVOC	100-01-6	2.24E+01	7.53E+01	50	NA	50	2
4-Nitrophenol	SVOC	100-02-7	7.30E+01	2.04E+02	50	NA	50	2
Acenaphthene	SVOC	83-32-9	2.19E+03	6.13E+03	10	NA	10	2
Acenaphthylene	SVOC	208-96-8	2.19E+03	6.13E+03	10	NA	10	2
Anthracene	SVOC	120-12-7	1.10E+04	3.07E+04	10	NA	10	2
Benzo(a)anthracene	SVOC	56-55-3	2.00E-01	3.92E-01	10	NA	10	2
Benzo(a)pyrene	SVOC	50-32-8	2.00E-01	2.00E-01	10	NA	10	2
Benzo(b)fluoranthene	SVOC	205-99-2	2.00E-01	3.92E-01	10	NA	10	2
Bis-(2-Chloroisopropyl)ether	SVOC	191-24-2	1.10E+03	3.07E+03	10	NA	10	2
Benzo(k)fluoranthene	SVOC	207-08-9	1.17E+00	3.92E+00	10	NA	10	2
Benzoic acid	SVOC	65-85-0	1.46E+05	4.09E+05	50	NA	50	NA
Benzyl alcohol	SVOC	100-51-6	1.10E+04	3.07E+04	10	NA	10	2
Bis(2-Chloroethoxy)methane	SVOC	111-91-1	3.87E-04	1.30E-03	10	NA	10	1
Bis-(2-Chloroethyl)ether	SVOC	111-44-4	7.74E-02	2.60E-01	10	NA	10	2
Bis-(2-Chloroisopropyl)ether	SVOC	39638-32-9	4.80E+01	1.50E+02	10	NA	10	1
Bis(2-Ethylhexyl)phthalate	SVOC	117-81-7	6.00E+00	6.00E+00	10	NA	10	2
Butylbenzylphthalate	SVOC	85-68-7	7.30E+03	2.04E+04	10	NA	10	4
Carbazole	SVOC	86-74-8	4.26E+00	1.43E+01	NA	NA	NA	2
Chrysene	SVOC	218-01-9	1.17E+01	3.92E+01	10	NA	10	2
Dibenzo(a,h)anthracene	SVOC	53-70-3	2.00E-01	2.00E-01	10	NA	10	2
Dibenzofuran	SVOC	132-64-9	1.46E+02	4.09E+02	10	NA	10	2
Diethylphthalate	SVOC	84-66-2	2.92E+04	8.18E+04	10	NA	10	4

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
Dimethylphthalate	SVOC	131-11-3	2.92E+04	8.18E+04	10	NA	10	4
Di-n-butylphthalate	SVOC	84-74-2	3.65E+03	1.02E+04	10	NA	10	4
Di-n-octylphthalate	SVOC	117-84-0	7.30E+02	2.04E+03	10	NA	10	4
Diphenylamine	SVOC	122-39-4	9.13E+02	2.56E+03	20	NA	20	NA
Fluoranthene	SVOC	206-44-0	1.46E+03	4.09E+03	10	NA	10	2
Fluorene	SVOC	86-73-7	1.46E+03	4.09E+03	10	NA	10	2
Hexachloro-1,3-butadiene	SVOC	87-68-3	1.60E+01	3.20E+01	10	NA	10	2
Hexachlorobenzene	SVOC	118-74-1	1.00E+00	1.00E+00	10	NA	10	2
Hexachlorocyclopentadiene	SVOC	77-47-4	5.00E+01	5.00E+01	10	NA	10	2
Hexachloroethane	SVOC	67-72-1	3.65E+01	1.02E+02	10	NA	10	2
Indeno(1,2,3-cd)pyrene	SVOC	193-39-5	2.00E-01	3.92E-01	10	NA	10	2
Isophorone	SVOC	78-59-1	8.96E+02	3.01E+03	10	NA	10	2
Naphthalene	SVOC	91-20-3	7.30E+02	2.04E+03	10	NA	10	2
Nitrobenzene	SVOC	98-95-3	6.50E+01	2.70E+02	10	NA	10	2
N-Nitroso-di-n-propylamine	SVOC	621-64-7	1.22E-02	4.09E-02	50	NA	50	2
N-Nitrosodiphenylamine	SVOC	86-30-6	1.74E+01	5.84E+01	10	NA	10	2
Pentachlorophenol	SVOC	87-86-5	1.00E+00	1.00E+00	50	NA	50	2
Phenanthrene	SVOC	85-01-8	1.10E+03	3.07E+03	10	NA	10	2
Phenol	SVOC	108-95-2	2.19E+04	6.13E+04	10	NA	10	2
Pyrene	SVOC	129-00-0	1.10E+03	3.07E+03	10	NA	10	2
Total Petroleum Hydrocarbons (TPH) - Phase I And 2 - EPA-600 418.1, Phase 3 - SW846 8015A								
Volatiles Organic Compounds (VOCs) (ug/L) - Phase 1 and 2 - SW846 8240, Phase 3 - SW846 8260A, RI Addendum - SW846 8260								
1,1,1,2-Tetrachloroethane	VOC	630-20-6	5.20E+01	1.00E+02	NA	5	1	NA
1,1,1-Trichloroethane	VOC	71-55-6	2.00E+02	2.00E+02	NA	5	1	NA
1,1,2,2-Tetrachloroethane	VOC	79-34-5	4.26E+00	1.43E+01	5	5	1	0.1
1,1,2-Trichloroethane	VOC	79-00-5	5.00E+00	5.00E+00	5	5	1	0.1
1,1-Dichloroethane	VOC	75-34-3	3.65E+03	1.02E+04	5	5	1	0.1
1,1-Dichloroethene	VOC	75-35-4	7.00E+00	7.00E+00	5	5	1	NA
1,1-Dichloropropene	VOC	563-58-6	8.52E-01	2.86E+00	NA	NA	1	0.2
1,2,3-Trichlorobenzene	VOC	87-61-6	4.20E+02	2.00E-03	NA	NA	1	0.1
1,2,3-Trichloropropane	VOC	96-18-4	1.22E-02	4.09E-02	5	5	1	NA

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
1,2,4-Trichlorobenzene	VOC	120-82-1	7.00E+01	7.00E+01	NA	NA	1	NA
1,2,4-Trimethylbenzene	VOC	95-63-6	1.83E+03	5.11E+03	NA	NA	1	NA
1,2-Dibromo-3-Chloropropane	VOC	96-12-8	3.50E-01	2.00E+00	NA	100	4	NA
1,2-Dibromoethane	VOC	106-93-4	5.00E-02	5.00E-02	NA	5	1	NA
1,2-Dichlorobenzene	VOC	95-50-1	2.60E+03	3.90E+03	NA	NA	1	NA
1,2-Dichloroethane	VOC	107-06-2	5.00E+00	5.00E+00	5	5	1	0.1
1,2-Dichloropropane	VOC	78-87-5	5.00E+00	5.00E+00	5	5	1	NA
1,3,5-Trimethylbenzene	VOC	108-67-8	1.83E+03	5.11E+03	NA	NA	1	NA
1,3-Dichlorobenzene	VOC	541-73-1	1.10E+03	3.07E+03	NA	NA	1	NA
1,3-Dichloropropane	VOC	142-28-9	8.52E+00	2.86E+01	NA	NA	1	NA
1,4-Dichloro-2-butene	VOC	764-41-0	2.25E+01	3.78E+01	10	100	1	NA
1,4-Dichlorobenzene	VOC	106-46-7	7.50E+01	7.50E+01	10	NA	1	NA
1,4-Dioxane	VOC	123-91-1	7.74E+00	2.60E+01	NA	NA	NA	NA
2,2-Dichloropropane	VOC	590-20-7	1.25E+01	4.21E+01	NA	NA	1	NA
2-Butanone	VOC	78-93-3	2.19E+04	6.13E+04	10	100	5	25
2-Chloroethyl Vinyl Ether	VOC	100-75-8	2.10E+00	3.00E+00	NA	10	NA	NA
2-Chlorotoluene	VOC	95-49-8	7.30E+02	2.04E+03	NA	NA	1	NA
2-Hexanone	VOC	591-78-6	2.19E+03	6.13E+03	10	50	5	12
4-Chlorotoluene	VOC	106-43-4	7.30E+02	2.04E+03	NA	NA	1	NA
4-Methyl-2-pentanone	VOC	108-10-1	2.92E+03	8.18E+03	10	50	5	10
Acetone	VOC	67-64-1	3.65E+03	1.02E+04	10	100	5	14
Acetonitrile	VOC	75-05-8	1.80E+02	2.60E+02	NA	100	NA	NA
Acrolein	VOC	107-02-8	7.30E+02	2.04E+03	5	NA	5	NA
Acrylonitrile	VOC	107-13-1	1.58E-01	5.30E-01	10	NA	5	NA
Allyl Chloride	VOC	107-05-1	1.30E+00	1.80E+00	NA	5	NA	NA
Benzene	VOC	71-43-2	5.00E+00	5.00E+00	5	5	1	0.4
Benzyl Chloride	VOC	100-44-7	3.80E+00	3.40E+01	NA	100	NA	NA
Bromobenzene	VOC	108-86-1	7.30E+02	2.04E+03	NA	NA	1	NA
Bromodichloromethane	VOC	75-27-4	1.00E+02	1.00E+02	5	5	1	0.1
Bromoform	VOC	75-25-2	1.00E+02	1.00E+02	NA	5	1	0.1
Bromomethane	VOC	74-83-9	5.11E+01	1.43E+02	10	10	2	0.1
Carbon Disulfide	VOC	75-15-0	3.65E+03	1.02E+04	5	10	1	2.5

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI- Res2	TCEQ SAI- Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
Carbon Tetrachloride	VOC	56-23-5	5.00E+00	5.00E+00	5	5	2	0.1
Chlorobenzene	VOC	108-90-7	1.00E+02	1.00E+02	5	5	1	0.1
Chlorobromomethane	VOC	74-97-5	1.46E+03	4.09E+03	NA	NA	1	NA
Chlorobutadiene	VOC	126-99-8	1.00E+01	1.40E+01	NA	5	NA	NA
Chloroethane	VOC	75-00-3	1.46E+04	4.09E+04	10	10	2	0.2
Chloroform	VOC	67-66-3	1.00E+02	1.00E+02	5	5	1	0.1
Chloromethane	VOC	74-87-3	6.55E+01	2.20E+02	10	10	2	0.1
cis-1,2-Dichloroethene	VOC	156-59-2	7.00E+01	7.00E+01	5	NA	1	0.1
cis-1,3-Dichloropropene	VOC	10061-01-5	1.58E+00	5.30E+00	NA	5	NA	0.1
Dibromochloromethane	VOC	124-48-1	1.00E+02	1.00E+02	5	5	1	0.1
Dibromomethane	VOC	74-95-3	1.14E+02	3.82E+02	5	5	2	NA
Dichlorodifluoromethane	VOC	75-71-8	7.30E+03	2.04E+04	5	5	1	NA
Ethyl cyanide	VOC	107-12-0	1.46E+01	4.09E+01	NA	100	NA	NA
Ethyl methacrylate	VOC	97-63-2	3.29E+03	9.20E+03	5	5	NA	NA
Ethylbenzene	VOC	100-41-4	7.00E+02	7.00E+02	5	5	1	0.1
Hexachlorobutadiene	VOC	87-68-3	7.30E+00	2.04E+01	NA	NA	1	0.1
Iodomethane	VOC	74-88-4	5.11E+01	1.43E+02	10	5	1	NA
Isobutyl alcohol	VOC	78-83-1	1.10E+04	3.07E+04	NA	100	5	NA
Isopropylbenzene	VOC	98-82-8	3.65E+03	1.02E+04	NA	NA	NA	NA
Methyl methacrylate	VOC	80-62-6	5.11E+04	1.43E+05	NA	5	1	NA
Methylacrylonitrile	VOC	126-98-7	3.65E+00	1.02E+01	NA	100	NA	NA
Methylene Chloride	VOC	75-09-2	5.00E+00	5.00E+00	5	5	1	1
Naphthalene	VOC	91-20-3	7.30E+02	2.04E+03	NA	NA	1	NA
n-Butylbenzene	VOC	104-51-8	1.46E+03	4.09E+03	NA	NA	1	NA
n-Propylbenzene	VOC	103-65-1	1.46E+03	4.09E+03	NA	NA	1	NA
Pentachloroethane	VOC	76-01-7	NA	NA	NA	10	NA	NA
p-Isopropyltoluene	VOC	99-87-6	3.65E+03	1.02E+04	NA	NA	1	NA
sec-Butylbenzene	VOC	135-98-8	1.46E+03	4.09E+03	NA	NA	1	NA
Styrene	VOC	100-42-5	1.00E+02	1.00E+02	5	5	1	0.1
t-Butylbenzene	VOC	98-06-6	1.46E+03	4.09E+03	NA	NA	1	NA
Tetrachloroethene	VOC	127-18-4	5.00E+00	5.00E+00	5	5	1	0.1
Toluene	VOC	108-88-3	1.00E+03	1.00E+03	5	5	1	0.8

Table 3-2
LHAAP Lower Limits of Detection (Water Media), Group 4 RA, LHAAP, Karnack, Texas¹

Chemical	Data Group	CAS Number	TCEQ SAI-Res2	TCEQ SAI-Ind2	Phase I - water (SW/GW)	Phase II - water (SW/GW)	Phase III - water (SW/GW)	RI Addendum water (SW/GW)
Total Xylenes	VOC	1330-20-7	1.00E+04	1.00E+04	5	5	NA	NA
trans-1,2-Dichloroethene	VOC	156-60-5	1.00E+02	1.00E+02	5	5	1	0.1
trans-1,3-Dichloropropene	VOC	10061-02-6	8.52E+00	2.86E+01	5	5	1	NA
Trichloroethene	VOC	79-01-6	5.00E+00	5.00E+00	5	5	1	0.1
Trichlorofluoromethane	VOC	75-69-4	1.10E+04	3.07E+04	5	NA	1	0.2
Vinyl acetate	VOC	108-05-4	3.65E+04	1.02E+05	10	50	5	2.8
Vinyl Chloride	VOC	75-01-4	2.00E+00	2.00E+00	10	10	2	0.2

¹Lower Limit of Detection (LLD) refers to either the practical quantitation limit or the method/instrument detection limit.

²TCEQ Standard No. 2, Appendix II Medium-Specific Concentrations (MSCs) 15 March 2001. SAI-Res (Soil Residential); SAI-Ind (Soil Industrial).

a = TCEQ SAI-Res and SAI-Ind based on Endrin.

b = TCEQ SAI-Res and SAI-Ind based on 2-Chloronaphthalene.

LHAAP = Longhorn Army Ammunition Plant

LLD = lower limit of detection

NA = chemical was not analyzed or SAI-Res/SAI-Ind was not available, or LLD was not available.

PCB = polychlorinated biphenyl

RA = risk assessment

RI = remedial investigation

SVOC = semivolatile organic compound

SW/GW = surface water and groundwater

TCEQ = Texas Commission on Environmental Quality

TPH = total petroleum hydrocarbon

VOC = volatile organic compound

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
04WW01	Site 04	04WW01	0012083-09F	19-Dec-00	BNA	Normal	Supplemental RI
04WW02	Site 04	04WW02	0012083-10F	19-Dec-00	BNA	Normal	Supplemental RI
04WW02	Site 04	04WW02QC	0012083-11F	19-Dec-00	BNA	Duplicate	Supplemental RI
04WW03	Site 04	04WW03	0012083-12F	19-Dec-00	BNA	Normal	Supplemental RI
04WW01	Site 04	04WW01	0012083-09E	19-Dec-00	Explosive	Normal	Supplemental RI
04WW02	Site 04	04WW02	0012083-10E	19-Dec-00	Explosive	Normal	Supplemental RI
04WW02	Site 04	04WW02QC	0012083-11E	19-Dec-00	Explosive	Duplicate	Supplemental RI
04WW03	Site 04	04WW03	0012083-12E	19-Dec-00	Explosive	Normal	Supplemental RI
04WW01	Site 04	04WW01	0012083-09B	19-Dec-00	Metal	Normal	Supplemental RI
04WW02	Site 04	04WW02	0012083-10B	19-Dec-00	Metal	Normal	Supplemental RI
04WW02	Site 04	04WW02QC	0012083-11B	19-Dec-00	Metal	Duplicate	Supplemental RI
04WW03	Site 04	04WW03	0012083-12B	19-Dec-00	Metal	Normal	Supplemental RI
04WW01	Site 04	04WW01	0012083-09G	19-Dec-00	PCDD/PCDF	Normal	Supplemental RI
04WW02	Site 04	04WW02	0012083-10G	19-Dec-00	PCDD/PCDF	Normal	Supplemental RI
04WW02	Site 04	04WW02QC	0012083-11G	19-Dec-00	PCDD/PCDF	Duplicate	Supplemental RI
04WW03	Site 04	04WW03	0012083-12G	19-Dec-00	PCDD/PCDF	Normal	Supplemental RI
04WW01	Site 04	04WW01	0012083-09D	19-Dec-00	Pesticide	Normal	Supplemental RI
04WW02	Site 04	04WW02	0012083-10D	19-Dec-00	Pesticide	Normal	Supplemental RI
04WW02	Site 04	04WW02QC	0012083-11D	19-Dec-00	Pesticide	Duplicate	Supplemental RI
04WW03	Site 04	04WW03	0012083-12D	19-Dec-00	Pesticide	Normal	Supplemental RI
04WW01	Site 04	04WW01	0012083-09A	19-Dec-00	Volatile	Normal	Supplemental RI
04WW02	Site 04	04WW02	0012083-10A	19-Dec-00	Volatile	Normal	Supplemental RI
04WW02	Site 04	04WW02QC	0012083-11A	19-Dec-00	Volatile	Duplicate	Supplemental RI
04WW03	Site 04	04WW03	0012083-12A	19-Dec-00	Volatile	Normal	Supplemental RI
08WW01	Site 08	08WW01	0012083-04E	19-Dec-00	BNA	Normal	Supplemental RI
08WW01	Site 08	08WW01QC	0012083-05E	19-Dec-00	BNA	Duplicate	Supplemental RI
08WW02	Site 08	08WW02	0012083-07E	19-Dec-00	BNA	Normal	Supplemental RI
08WW01	Site 08	08WW01	0012083-04D	19-Dec-00	Explosive	Normal	Supplemental RI
08WW01	Site 08	08WW01QC	0012083-05D	19-Dec-00	Explosive	Duplicate	Supplemental RI
08WW02	Site 08	08WW02	0012083-07D	19-Dec-00	Explosive	Normal	Supplemental RI
08WW01	Site 08	08WW01	0012083-04B	19-Dec-00	Metal	Normal	Supplemental RI
08WW01	Site 08	08WW01QC	0012083-05B	19-Dec-00	Metal	Duplicate	Supplemental RI
08WW02	Site 08	08WW02	0012083-07B	19-Dec-00	Metal	Normal	Supplemental RI
08WW01	Site 08	08WW01	0012083-04F	19-Dec-00	PCDD/PCDF	Normal	Supplemental RI
08WW01	Site 08	08WW01QC	0012083-05F	19-Dec-00	PCDD/PCDF	Duplicate	Supplemental RI
08WW02	Site 08	08WW02	0012083-07F	19-Dec-00	PCDD/PCDF	Normal	Supplemental RI
08WW01	Site 08	08WW01	0012083-04C	19-Dec-00	Pesticide	Normal	Supplemental RI
08WW01	Site 08	08WW01QC	0012083-05C	19-Dec-00	Pesticide	Duplicate	Supplemental RI
08WW02	Site 08	08WW02	0012083-07C	19-Dec-00	Pesticide	Normal	Supplemental RI
08WW01	Site 08	08WW01	0012083-04A	19-Dec-00	Volatile	Normal	Supplemental RI
08WW01	Site 08	08WW01QC	0012083-05A	19-Dec-00	Volatile	Duplicate	Supplemental RI
08WW02	Site 08	08WW02	0012083-07A	19-Dec-00	Volatile	Normal	Supplemental RI
35A WW01	Site 35A	35A WW01	4987.011	08-Nov-98	BNA	Normal	3
35A WW01	Site 35A	35A WW01QC	4987.012	08-Nov-98	BNA	Duplicate	3
35A WW02	Site 35A	35A WW02	4987.010	08-Nov-98	BNA	Normal	3
35A WW03	Site 35A	35A WW03	4987.015	08-Nov-98	BNA	Normal	3
35A WW04	Site 35A	35A WW04-1	4944.003	30-Sep-98	BNA	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
35AWW04	Site 35A	35AWW04-2	4987.013	08-Nov-98	BNA	Normal	3
LHSMW01	Site 35A	LHS-MW-01	4627.001	13-May-98	BNA	Normal	3
LHSMW02	Site 35A	LHS-MW-02	4627.002	13-May-98	BNA	Normal	3
LHSMW03	Site 35A	LHS-MW-03	4627.003	13-May-98	BNA	Normal	3
LHSMW04	Site 35A	LHS-MW-04	4627.004	13-May-98	BNA	Normal	3
LHSMW05	Site 35A	LHS-MW-05-1	4627.005	13-May-98	BNA	Normal	3
LHSMW06	Site 35A	LHS-MW-06	4627.006	13-May-98	BNA	Normal	3
LHSMW07	Site 35A	LHS-MW-07-1	4627.007	13-May-98	BNA	Normal	3
LHSMW01	Site 35A	LHS-MW-1-01311996	22316-002	31-Jan-96	BNA	Normal	USACE 1996
LHSMW01	Site 35A	LHS-MW-1-08121996	23041-002	12-Aug-96	BNA	Normal	USACE 1996
LHSMW01	Site 35A	LHS-MW1-1 (001)	9412G867-003	29-Nov-94	BNA	Normal	2
LHSMW02	Site 35A	LHS-MW-2-08121996	23041-003	12-Aug-96	BNA	Normal	USACE 1996
LHSMW02	Site 35A	LHS-MW2-1 (001)	9412G867-002	29-Nov-94	BNA	Normal	2
LHSMW03	Site 35A	LHS-MW-3-08131996	23046-002	13-Aug-96	BNA	Normal	USACE 1996
LHSMW03	Site 35A	LHS-MW3-1 (001)	9412G867-004	29-Nov-94	BNA	Normal	2
LHSMW04	Site 35A	LHS-MW-4-08121996	23041-004	12-Aug-96	BNA	Normal	USACE 1996
LHSMW04	Site 35A	LHS-MW4-1 (001)	9412G885-001	01-Dec-94	BNA	Normal	2
LHSMW05	Site 35A	LHS-MW-5	23041-005	12-Aug-96	BNA	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW-5-01311996	22316-001	31-Jan-96	BNA	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW5-1 (001)	9412G885-002	01-Dec-94	BNA	Normal	2
LHSMW06	Site 35A	LHS-MW-6-08131996	23046-004	13-Aug-96	BNA	Normal	USACE 1996
LHSMW06	Site 35A	LHS-MW6-1 (001)	9412G885-003	01-Dec-94	BNA	Normal	2
LHSMW07	Site 35A	LHS-MW-7-08121996	23041-006	12-Aug-96	BNA	Normal	USACE 1996
LHSMW07	Site 35A	LHS-MW7-1 (001)	9412G885-006	01-Dec-94	BNA	Normal	2
LHSMW07	Site 35A	LHS-MW7-1 (001) QC	9412G885-004	01-Dec-94	BNA	Duplicate	2
35AWW01	Site 35A	35AWW01	4987.011	08-Nov-98	Explosive	Normal	3
35AWW01	Site 35A	35AWW01QC	4987.012	08-Nov-98	Explosive	Duplicate	3
35AWW02	Site 35A	35AWW02	4987.010	08-Nov-98	Explosive	Normal	3
35AWW03	Site 35A	35AWW03	4987.015	08-Nov-98	Explosive	Normal	3
35AWW04	Site 35A	35AWW04-1	4944.003	30-Sep-98	Explosive	Normal	3
35AWW04	Site 35A	35AWW04-2	4987.013	08-Nov-98	Explosive	Normal	3
LHSMW01	Site 35A	LHS-MW-01	4627.001	13-May-98	Explosive	Normal	3
LHSMW02	Site 35A	LHS-MW-02	4627.002	13-May-98	Explosive	Normal	3
LHSMW03	Site 35A	LHS-MW-03	4627.003	13-May-98	Explosive	Normal	3
LHSMW04	Site 35A	LHS-MW-04	4627.004	13-May-98	Explosive	Normal	3
LHSMW05	Site 35A	LHS-MW-05-1	4627.005	13-May-98	Explosive	Normal	3
LHSMW06	Site 35A	LHS-MW-06	4627.006	13-May-98	Explosive	Normal	3
LHSMW07	Site 35A	LHS-MW-07-1	4627.007	13-May-98	Explosive	Normal	3
LHSMW01	Site 35A	LHS-MW-1-01311996	22316-002	31-Jan-96	Explosive	Normal	USACE 1996
LHSMW01	Site 35A	LHS-MW-1-08121996	23041-002	12-Aug-96	Explosive	Normal	USACE 1996
LHSMW01	Site 35A	LHS-MW1-1 (001)	9412L193-001	29-Nov-94	Explosive	Normal	2
LHSMW02	Site 35A	LHS-MW-2-08121996	23041-003	12-Aug-96	Explosive	Normal	USACE 1996
LHSMW02	Site 35A	LHS-MW2-1 (001)	9412L193-002	29-Nov-94	Explosive	Normal	2
LHSMW03	Site 35A	LHS-MW-3-08131996	23046-002	13-Aug-96	Explosive	Normal	USACE 1996
LHSMW03	Site 35A	LHS-MW3-1 (001)	9412L193-003	29-Nov-94	Explosive	Normal	2
LHSMW04	Site 35A	LHS-MW-4-08121996	23041-004	12-Aug-96	Explosive	Normal	USACE 1996
LHSMW04	Site 35A	LHS-MW4-1 (001)	9412L202-001	01-Dec-94	Explosive	Normal	2

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW05	Site 35A	LHS-MW-5	23041-005	12-Aug-96	Explosive	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW-5-01311996	22316-001	31-Jan-96	Explosive	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW5-1 (001)	9412L202-002	01-Dec-94	Explosive	Normal	2
LHSMW06	Site 35A	LHS-MW-6-08131996	23046-004	13-Aug-96	Explosive	Normal	USACE 1996
LHSMW06	Site 35A	LHS-MW6-1 (001)	9412L202-003	01-Dec-94	Explosive	Normal	2
LHSMW07	Site 35A	LHS-MW-7-08121996	23041-006	12-Aug-96	Explosive	Normal	USACE 1996
LHSMW07	Site 35A	LHS-MW7-1 (001)	9412L202-004	01-Dec-94	Explosive	Normal	2
LHSMW07	Site 35A	LHS-MW7-1 (001) QC	9412L202-005	01-Dec-94	Explosive	Duplicate	2
35A WW01	Site 35A	35A WW01	4987.011	08-Nov-98	Metal	Normal	3
35A WW01	Site 35A	35A WW01QC	4987.012	08-Nov-98	Metal	Duplicate	3
35A WW02	Site 35A	35A WW02	4987.010	08-Nov-98	Metal	Normal	3
35A WW03	Site 35A	35A WW03	4987.015	08-Nov-98	Metal	Normal	3
35A WW04	Site 35A	35A WW04-1	4944.003	30-Sep-98	Metal	Normal	3
35A WW04	Site 35A	35A WW04-2	4987.013	08-Nov-98	Metal	Normal	3
LHSMW01	Site 35A	LHS-MW-01	4627.001	13-May-98	Metal	Normal	3
LHSMW02	Site 35A	LHS-MW-02	4627.002	13-May-98	Metal	Normal	3
LHSMW03	Site 35A	LHS-MW-03	4627.003	13-May-98	Metal	Normal	3
LHSMW04	Site 35A	LHS-MW-04	4627.004	13-May-98	Metal	Normal	3
LHSMW05	Site 35A	LHS-MW-05-1	4627.005	13-May-98	Metal	Normal	3
LHSMW06	Site 35A	LHS-MW-06	4627.006	13-May-98	Metal	Normal	3
LHSMW07	Site 35A	LHS-MW-07-1	4627.007	13-May-98	Metal	Normal	3
LHSMW01	Site 35A	LHS-MW-1-01311996	22316-002	31-Jan-96	Metal	Normal	USACE 1996
LHSMW01	Site 35A	LHS-MW-1-08121996	S60636-2	12-Aug-96	Metal	Normal	USACE 1996
LHSMW01	Site 35A	LHS-MW1-1 (001)	9412G867-003	29-Nov-94	Metal	Normal	2
LHSMW02	Site 35A	LHS-MW-2	S60062-2	31-Jan-96	Metal	Normal	USACE 1996
LHSMW02	Site 35A	LHS-MW-2-08121996	S60636-3	12-Aug-96	Metal	Normal	USACE 1996
LHSMW02	Site 35A	LHS-MW2-1 (001)	9412G867-002	29-Nov-94	Metal	Normal	2
LHSMW03	Site 35A	LHS-MW-3	S60062-3	31-Jan-96	Metal	Normal	USACE 1996
LHSMW03	Site 35A	LHS-MW-3-08131996	S60640-2	13-Aug-96	Metal	Normal	USACE 1996
LHSMW03	Site 35A	LHS-MW3-1 (001)	9412G867-004	29-Nov-94	Metal	Normal	2
LHSMW04	Site 35A	LHS-MW-4	S60062-1	31-Jan-96	Metal	Normal	USACE 1996
LHSMW04	Site 35A	LHS-MW-4-08121996	S60636-4	12-Aug-96	Metal	Normal	USACE 1996
LHSMW04	Site 35A	LHS-MW4-1 (001)	9412G885-001	01-Dec-94	Metal	Normal	2
LHSMW05	Site 35A	LHS-MW-5	S60636-5	12-Aug-96	Metal	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW-5-01311996	22316-001	31-Jan-96	Metal	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW5-1 (001)	9412G885-002	01-Dec-94	Metal	Normal	2
LHSMW06	Site 35A	LHS-MW-6	S60066-2	01-Feb-96	Metal	Normal	USACE 1996
LHSMW06	Site 35A	LHS-MW-6-08131996	S60640-4	13-Aug-96	Metal	Normal	USACE 1996
LHSMW06	Site 35A	LHS-MW6-1 (001)	9412G885-003	01-Dec-94	Metal	Normal	2
LHSMW07	Site 35A	LHS-MW-7	S60062-4	31-Jan-96	Metal	Normal	USACE 1996
LHSMW07	Site 35A	LHS-MW-7-08121996	S60636-6	12-Aug-96	Metal	Normal	USACE 1996
LHSMW07	Site 35A	LHS-MW7-1 (001)	9412G885-006	01-Dec-94	Metal	Normal	2
LHSMW07	Site 35A	LHS-MW7-1 (001) QC	9412G885-004	01-Dec-94	Metal	Duplicate	2
LHSMW05	Site 35A	LHS-MW-05-2	4849.005	26-Aug-98	PCB	Normal	3
LHSMW07	Site 35A	LHS-MW-07-2	4849.001	26-Aug-98	PCB	Normal	3
LHSMW05	Site 35A	LHS-MW-05-2	35407.01	26-Aug-98	PCDD/PCDF	Normal	3
LHSMW07	Site 35A	LHS-MW-07-2	35407.02	26-Aug-98	PCDD/PCDF	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW05	Site 35A	LHS-MW-05-2	4849.005	26-Aug-98	Pesticide	Normal	3
LHSMW07	Site 35A	LHS-MW-07-2	4849.001	26-Aug-98	Pesticide	Normal	3
LHSMW01	Site 35A	LHS-MW-1-01311996	22316-002	31-Jan-96	Pesticide	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW-5-01311996	22316-001	31-Jan-96	Pesticide	Normal	USACE 1996
35AWW01	Site 35A	35AWW01	4987.011	08-Nov-98	Volatile	Normal	3
35AWW01	Site 35A	35AWW01QC	4987.012	08-Nov-98	Volatile	Duplicate	3
35AWW02	Site 35A	35AWW02	4987.010	08-Nov-98	Volatile	Normal	3
35AWW03	Site 35A	35AWW03	4987.015	08-Nov-98	Volatile	Normal	3
35AWW04	Site 35A	35AWW04-1	4944.003	30-Sep-98	Volatile	Normal	3
35AWW04	Site 35A	35AWW04-2	4987.013	08-Nov-98	Volatile	Normal	3
LHSMW01	Site 35A	LHS-MW-01	4627.001	13-May-98	Volatile	Normal	3
LHSMW02	Site 35A	LHS-MW-02	4627.002	13-May-98	Volatile	Normal	3
LHSMW03	Site 35A	LHS-MW-03	4627.003	13-May-98	Volatile	Normal	3
LHSMW04	Site 35A	LHS-MW-04	4627.004	13-May-98	Volatile	Normal	3
LHSMW05	Site 35A	LHS-MW-05-1	4627.005	13-May-98	Volatile	Normal	3
LHSMW06	Site 35A	LHS-MW-06	4627.006	13-May-98	Volatile	Normal	3
LHSMW07	Site 35A	LHS-MW-07-1	4627.007	13-May-98	Volatile	Normal	3
LHSMW01	Site 35A	LHS-MW-1-01311996	S60061-3	31-Jan-96	Volatile	Normal	USACE 1996
LHSMW01	Site 35A	LHS-MW-1-08121996	23041-002	12-Aug-96	Volatile	Normal	USACE 1996
LHSMW01	Site 35A	LHS-MW1-1 (001)	9412G867-003	29-Nov-94	Volatile	Normal	2
LHSMW02	Site 35A	LHS-MW-2	S60062-2	31-Jan-96	Volatile	Normal	USACE 1996
LHSMW02	Site 35A	LHS-MW-2-08121996	23041-003	12-Aug-96	Volatile	Normal	USACE 1996
LHSMW02	Site 35A	LHS-MW2-1 (001)	9412G867-002	29-Nov-94	Volatile	Normal	2
LHSMW03	Site 35A	LHS-MW-3	S60062-3	31-Jan-96	Volatile	Normal	USACE 1996
LHSMW03	Site 35A	LHS-MW-3-08121996	23046-002	13-Aug-96	Volatile	Normal	USACE 1996
LHSMW03	Site 35A	LHS-MW3-1 (001)	9412G867-004	29-Nov-94	Volatile	Normal	2
LHSMW04	Site 35A	LHS-MW-4	S60062-1	31-Jan-96	Volatile	Normal	USACE 1996
LHSMW04	Site 35A	LHS-MW-4-08121996	23041-004	12-Aug-96	Volatile	Normal	USACE 1996
LHSMW04	Site 35A	LHS-MW4-1 (001)	9412G885-001	01-Dec-94	Volatile	Normal	2
LHSMW05	Site 35A	LHS-MW-5	23041-005	12-Aug-96	Volatile	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW-5-01311996	S60061-2	31-Jan-96	Volatile	Normal	USACE 1996
LHSMW05	Site 35A	LHS-MW5-1 (001)	9412G885-002	01-Dec-94	Volatile	Normal	2
LHSMW06	Site 35A	LHS-MW-6	S60066-2	01-Feb-96	Volatile	Normal	USACE 1996
LHSMW06	Site 35A	LHS-MW-6-08131996	23046-004	13-Aug-96	Volatile	Normal	USACE 1996
LHSMW06	Site 35A	LHS-MW6-1 (001)	9412G885-003	01-Dec-94	Volatile	Normal	2
LHSMW07	Site 35A	LHS-MW-7	S60062-4	31-Jan-96	Volatile	Normal	USACE 1996
LHSMW07	Site 35A	LHS-MW-7-08121996	23041-006	12-Aug-96	Volatile	Normal	USACE 1996
LHSMW07	Site 35A	LHS-MW7-1 (001)	9412G885-006	01-Dec-94	Volatile	Normal	2
LHSMW07	Site 35A	LHS-MW7-1 (001) QC	9412G885-004	01-Dec-94	Volatile	Duplicate	2
35BWW01	Site 35B	35BWW01	4987.008	08-Nov-98	BNA	Normal	3
35BWW02	Site 35B	35BWW02-2	4987.001-2	08-Nov-98	BNA	Normal	3
35BWW02	Site 35B	35BWW02-2QC	4987.002-2	08-Nov-98	BNA	Duplicate	3
LHSMW58	Site 35B	LHS-MW-58	4647.007	20-May-98	BNA	Normal	3
LHSMW58	Site 35B	LHS-MW-58-02101996	22347-001	10-Feb-96	BNA	Normal	USACE 1996
LHSMW58	Site 35B	LHS-MW-58-08211996	23107-005	21-Aug-96	BNA	Normal	USACE 1996
LHSMW58	Site 35B	LHS-MW58-1 (001)	9412G074-011	11-Dec-94	BNA	Normal	2
LHSMW58	Site 35B	LHS-MW58-1 (001) QC	9412G074-012	11-Dec-94	BNA	Duplicate	2

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW59	Site 35B	LHS-MW-59-02101996	22346-004	10-Feb-96	BNA	Normal	USACE 1996
LHSMW59	Site 35B	LHS-MW-59-08211996	23107-004	21-Aug-96	BNA	Normal	USACE 1996
LHSMW59	Site 35B	LHS-MW-59-1	4647.008	20-May-98	BNA	Normal	3
LHSMW59	Site 35B	LHS-MW59-1 (001)	9412G074-013	11-Dec-94	BNA	Normal	2
LHSMW59	Site 35B	LHS-MW59-1 (001) QC	9412G074-014	11-Dec-94	BNA	Duplicate	2
35BWW01	Site 35B	35BWW01	4987.008	08-Nov-98	Explosive	Normal	3
35BWW02	Site 35B	35BWW02-2	4987.001-2	08-Nov-98	Explosive	Normal	3
35BWW02	Site 35B	35BWW02-2QC	4987.002-2	08-Nov-98	Explosive	Duplicate	3
LHSMW58	Site 35B	LHS-MW-58	4647.007	20-May-98	Explosive	Normal	3
LHSMW58	Site 35B	LHS-MW-58-02101996	22347-001	10-Feb-96	Explosive	Normal	USACE 1996
LHSMW58	Site 35B	LHS-MW-58-08211996	23107-005	21-Aug-96	Explosive	Normal	USACE 1996
LHSMW58	Site 35B	LHS-MW58-1 (001)	9412L354-008	11-Dec-94	Explosive	Normal	2
LHSMW58	Site 35B	LHS-MW58-1 (001) QC	9412L354-007	11-Dec-94	Explosive	Duplicate	2
LHSMW59	Site 35B	LHS-MW-59-02101996	22346-004	10-Feb-96	Explosive	Normal	USACE 1996
LHSMW59	Site 35B	LHS-MW-59-08211996	23107-004	21-Aug-96	Explosive	Normal	USACE 1996
LHSMW59	Site 35B	LHS-MW-59-1	4647.008	20-May-98	Explosive	Normal	3
LHSMW59	Site 35B	LHS-MW59-1 (001)	9412L354-006	11-Dec-94	Explosive	Normal	2
LHSMW59	Site 35B	LHS-MW59-1 (001) QC	9412L354-005	11-Dec-94	Explosive	Duplicate	2
35BWW01	Site 35B	35BWW01	4987.008	08-Nov-98	Metal	Normal	3
35BWW02	Site 35B	35BWW02-1	4987.001-1	05-Nov-98	Metal	Normal	3
35BWW02	Site 35B	35BWW02-1QC	4987.002-1	05-Nov-98	Metal	Duplicate	3
LHSMW58	Site 35B	LHS-MW-58	4647.007	20-May-98	Metal	Normal	3
LHSMW58	Site 35B	LHS-MW-58-02101996	22347-001	10-Feb-96	Metal	Normal	USACE 1996
LHSMW58	Site 35B	LHS-MW-58-08211996	S60671-6	21-Aug-96	Metal	Normal	USACE 1996
LHSMW58	Site 35B	LHS-MW58-1 (001)	9412G074-011	11-Dec-94	Metal	Normal	2
LHSMW58	Site 35B	LHS-MW58-1 (001) QC	9412G074-012	11-Dec-94	Metal	Duplicate	2
LHSMW59	Site 35B	LHS-MW-59-02101996	S60093-5	10-Feb-96	Metal	Normal	USACE 1996
LHSMW59	Site 35B	LHS-MW-59-08211996	S60671-5	21-Aug-96	Metal	Normal	USACE 1996
LHSMW59	Site 35B	LHS-MW-59-1	4647.008	20-May-98	Metal	Normal	3
LHSMW59	Site 35B	LHS-MW59-1 (001)	9412G074-013	11-Dec-94	Metal	Normal	2
LHSMW59	Site 35B	LHS-MW59-1 (001) QC	9412G074-014	11-Dec-94	Metal	Duplicate	2
LHSMW59	Site 35B	LHS-MW-59-2	4849.003	26-Aug-98	PCB	Normal	3
LHSMW59	Site 35B	LHS-MW-59-2QC	4849.004	26-Aug-98	PCB	Duplicate	3
LHSMW59	Site 35B	LHS-MW-59-2	35407.04	26-Aug-98	PCDD/PCDF	Normal	3
LHSMW59	Site 35B	LHS-MW-59-2QC	35407.05	26-Aug-98	PCDD/PCDF	Duplicate	3
LHSMW58	Site 35B	LHS-MW-58-02101996	22347-001	10-Feb-96	Pesticide	Normal	USACE 1996
LHSMW59	Site 35B	LHS-MW-59-2	4849.003	26-Aug-98	Pesticide	Normal	3
LHSMW59	Site 35B	LHS-MW-59-2QC	4849.004	26-Aug-98	Pesticide	Duplicate	3
35BWW01	Site 35B	35BWW01	4987.008	08-Nov-98	Volatile	Normal	3
35BWW02	Site 35B	35BWW02-2	4987.001-2	08-Nov-98	Volatile	Normal	3
35BWW02	Site 35B	35BWW02-2QC	4987.002-2	08-Nov-98	Volatile	Duplicate	3
LHSMW58	Site 35B	LHS-MW-58	4647.007	20-May-98	Volatile	Normal	3
LHSMW58	Site 35B	LHS-MW-58-02101996	S60094-2	10-Feb-96	Volatile	Normal	USACE 1996
LHSMW58	Site 35B	LHS-MW-58-08211996	23107-005	21-Aug-96	Volatile	Normal	USACE 1996
LHSMW58	Site 35B	LHS-MW58-1 (001)	9412G074-011	11-Dec-94	Volatile	Normal	2
LHSMW58	Site 35B	LHS-MW58-1 (001) QC	9412G074-012	11-Dec-94	Volatile	Duplicate	2
LHSMW59	Site 35B	LHS-MW-59-02101996	S60093-5	10-Feb-96	Volatile	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW59	Site 35B	LHS-MW-59-08211996	23107-004	21-Aug-96	Volatile	Normal	USACE 1996
LHSMW59	Site 35B	LHS-MW-59-1	4647.008	20-May-98	Volatile	Normal	3
LHSMW59	Site 35B	LHS-MW59-1 (001)	9412G074-013	11-Dec-94	Volatile	Normal	2
LHSMW59	Site 35B	LHS-MW59-1 (001) QC	9412G074-014	11-Dec-94	Volatile	Duplicate	2
LHSMW106	Site 35C	LHS-MW-106-05281998	4664.006	28-May-98	BNA	Normal	3
LHSMW106	Site 35C	LHS-MW-106-08151996	23073-026	15-Aug-96	BNA	Normal	USACE 1996
LHSMW107	Site 35C	LHS-MW-107-02131996	22355-002	13-Feb-96	BNA	Normal	USACE 1996
LHSMW107	Site 35C	LHS-MW-107-05281998	4664.005	28-May-98	BNA	Normal	3
LHSMW107	Site 35C	LHS-MW-107-08151996	23073-015	15-Aug-96	BNA	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67	22344-003	09-Feb-96	BNA	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67-08141996	23062-004	14-Aug-96	BNA	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67-1	4659.007	27-May-98	BNA	Normal	3
LHSMW67	Site 35C	LHS-MW67-1 (001)	9412G074-001	10-Dec-94	BNA	Normal	2
LHSMW68	Site 35C	LHS-MW-68	4659.008	27-May-98	BNA	Normal	3
LHSMW68	Site 35C	LHS-MW-68-02091996	22344-002	09-Feb-96	BNA	Normal	USACE 1996
LHSMW68	Site 35C	LHS-MW-68-08151996	23073-016	15-Aug-96	BNA	Normal	USACE 1996
LHSMW68	Site 35C	LHS-MW68-1 (001)	9412G074-002	10-Dec-94	BNA	Normal	2
LHSMW69	Site 35C	LHS-MW-69-02091996	22345-001	09-Feb-96	BNA	Normal	USACE 1996
LHSMW69	Site 35C	LHS-MW-69-05171998	4659.009	27-May-98	BNA	Normal	3
LHSMW69	Site 35C	LHS-MW-69-08151996	23073-018	15-Aug-96	BNA	Normal	USACE 1996
LHSMW69	Site 35C	LHS-MW69-1 (001)	9412G074-003	10-Dec-94	BNA	Normal	2
LHSMW69	Site 35C	LHS-MW69-1 (001) QC	9412G074-004	10-Dec-94	BNA	Duplicate	2
LHSMW69	Site 35C	LHS-MW-69-QC	23073-019	15-Aug-96	BNA	Duplicate	USACE 1996
LHSMW70	Site 35C	LHS-MW-70	4664.002	28-May-98	BNA	Normal	3
LHSMW70	Site 35C	LHS-MW-70-02091996	22344-001	09-Feb-96	BNA	Normal	USACE 1996
LHSMW70	Site 35C	LHS-MW-70-08141996	23062-003	14-Aug-96	BNA	Normal	USACE 1996
LHSMW70	Site 35C	LHS-MW70-1 (001)	9412G074-019	12-Dec-94	BNA	Normal	2
LHSMW70	Site 35C	LHS-MW-70QC	4664.003	28-May-98	BNA	Duplicate	3
LHSMW71	Site 35C	LHS-MW-71	4664.004	28-May-98	BNA	Normal	3
LHSMW71	Site 35C	LHS-MW-71-02101996	22346-001	10-Feb-96	BNA	Normal	USACE 1996
LHSMW71	Site 35C	LHS-MW-71-08141996	23062-002	14-Aug-96	BNA	Normal	USACE 1996
LHSMW71	Site 35C	LHS-MW71-1 (001)	9412G074-020	12-Dec-94	BNA	Normal	2
LHSMW106	Site 35C	MW-106	22355-001	13-Feb-96	BNA	Normal	USACE 1996
LHSMW106	Site 35C	LHS-MW-106-05281998	4664.006	28-May-98	Explosive	Normal	3
LHSMW106	Site 35C	LHS-MW-106-08151996	23073-026	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW107	Site 35C	LHS-MW-107-02131996	22355-002	13-Feb-96	Explosive	Normal	USACE 1996
LHSMW107	Site 35C	LHS-MW-107-05281998	4664.005	28-May-98	Explosive	Normal	3
LHSMW107	Site 35C	LHS-MW-107-08151996	23073-015	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67	22344-003	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67-08141996	23062-004	14-Aug-96	Explosive	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67-1	4659.007	27-May-98	Explosive	Normal	3
LHSMW67	Site 35C	LHS-MW67-1 (001)	9412L352-007	10-Dec-94	Explosive	Normal	2
LHSMW68	Site 35C	LHS-MW-68	4659.008	27-May-98	Explosive	Normal	3
LHSMW68	Site 35C	LHS-MW-68-02091996	22344-002	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW68	Site 35C	LHS-MW-68-08151996	23073-016	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW68	Site 35C	LHS-MW68-1 (001)	9412L354-002	10-Dec-94	Explosive	Normal	2
LHSMW69	Site 35C	LHS-MW-69-02091996	22345-001	09-Feb-96	Explosive	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW69	Site 35C	LHS-MW-69-05171998	4659.009	27-May-98	Explosive	Normal	3
LHSMW69	Site 35C	LHS-MW-69-08151996	23073-018	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW69	Site 35C	LHS-MW69-1 (001)	9412L354-003	10-Dec-94	Explosive	Normal	2
LHSMW69	Site 35C	LHS-MW69-1 (001) QC	9412L354-004	10-Dec-94	Explosive	Duplicate	2
LHSMW69	Site 35C	LHS-MW-69-QC	23073-019	15-Aug-96	Explosive	Duplicate	USACE 1996
LHSMW70	Site 35C	LHS-MW-70	4664.002	28-May-98	Explosive	Normal	3
LHSMW70	Site 35C	LHS-MW-70-02091996	22344-001	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW70	Site 35C	LHS-MW-70-08141996	23062-003	14-Aug-96	Explosive	Normal	USACE 1996
LHSMW70	Site 35C	LHS-MW70-1 (001)	9412L352-003	12-Dec-94	Explosive	Normal	2
LHSMW70	Site 35C	LHS-MW-70QC	4664.003	28-May-98	Explosive	Duplicate	3
LHSMW71	Site 35C	LHS-MW-71	4664.004	28-May-98	Explosive	Normal	3
LHSMW71	Site 35C	LHS-MW-71-02101996	22346-001	10-Feb-96	Explosive	Normal	USACE 1996
LHSMW71	Site 35C	LHS-MW-71-08141996	23062-002	14-Aug-96	Explosive	Normal	USACE 1996
LHSMW71	Site 35C	LHS-MW71-1 (001)	9412L352-004	12-Dec-94	Explosive	Normal	2
LHSMW106	Site 35C	MW-106	22355-001	13-Feb-96	Explosive	Normal	USACE 1996
LHSMW106	Site 35C	LHS-MW-106-02131996	S60106-2	13-Feb-96	Metal	Normal	USACE 1996
LHSMW106	Site 35C	LHS-MW-106-05281998	4664.006	28-May-98	Metal	Normal	3
LHSMW106	Site 35C	LHS-MW-106-08151996	S60652-27	15-Aug-96	Metal	Normal	USACE 1996
LHSMW107	Site 35C	LHS-MW-107-02131996	S60106-3	13-Feb-96	Metal	Normal	USACE 1996
LHSMW107	Site 35C	LHS-MW-107-05281998	4664.005	28-May-98	Metal	Normal	3
LHSMW107	Site 35C	LHS-MW-107-08151996	S60652-15	15-Aug-96	Metal	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67	S60091-4	09-Feb-96	Metal	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67-08141996	S60646-4	14-Aug-96	Metal	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67-1	4659.007	27-May-98	Metal	Normal	3
LHSMW67	Site 35C	LHS-MW67-1 (001)	9412G074-001	10-Dec-94	Metal	Normal	2
LHSMW68	Site 35C	LHS-MW-68	4659.008	27-May-98	Metal	Normal	3
LHSMW68	Site 35C	LHS-MW-68-02091996	S60091-3	09-Feb-96	Metal	Normal	USACE 1996
LHSMW68	Site 35C	LHS-MW-68-08151996	S60652-16	15-Aug-96	Metal	Normal	USACE 1996
LHSMW68	Site 35C	LHS-MW68-1 (001)	9412G074-002	10-Dec-94	Metal	Normal	2
LHSMW69	Site 35C	LHS-MW-69	S60652-18	15-Aug-96	Metal	Normal	USACE 1996
LHSMW69	Site 35C	LHS-MW-69-02091996	22345-001	09-Feb-96	Metal	Normal	USACE 1996
LHSMW69	Site 35C	LHS-MW-69-05171998	4659.009	27-May-98	Metal	Normal	3
LHSMW69	Site 35C	LHS-MW69-1 (001)	9412G074-003	10-Dec-94	Metal	Normal	2
LHSMW69	Site 35C	LHS-MW69-1 (001) QC	9412G074-004	10-Dec-94	Metal	Duplicate	2
LHSMW70	Site 35C	LHS-MW-70	4664.002	28-May-98	Metal	Normal	3
LHSMW70	Site 35C	LHS-MW-70-02091996	S60091-2	09-Feb-96	Metal	Normal	USACE 1996
LHSMW70	Site 35C	LHS-MW-70-08141996	S60646-3	14-Aug-96	Metal	Normal	USACE 1996
LHSMW70	Site 35C	LHS-MW70-1 (001)	9412G074-019	12-Dec-94	Metal	Normal	2
LHSMW70	Site 35C	LHS-MW-70QC	4664.003	28-May-98	Metal	Duplicate	3
LHSMW71	Site 35C	LHS-MW-71	4664.004	28-May-98	Metal	Normal	3
LHSMW71	Site 35C	LHS-MW-71-02101996	S60093-2	10-Feb-96	Metal	Normal	USACE 1996
LHSMW71	Site 35C	LHS-MW-71-08141996	S60646-2	14-Aug-96	Metal	Normal	USACE 1996
LHSMW71	Site 35C	LHS-MW71-1 (001)	9412G074-020	12-Dec-94	Metal	Normal	2
LHSMW67	Site 35C	LHS-MW-67-2	4842.002	25-Aug-98	PCB	Normal	3
LHSMW67	Site 35C	LHS-MW-67-2	35391.07	25-Aug-98	PCDD/PCDF	Normal	3
LHSMW67	Site 35C	LHS-MW-67-2	4842.002	25-Aug-98	Pesticide	Normal	3
LHSMW69	Site 35C	LHS-MW-69-02091996	22345-001	09-Feb-96	Pesticide	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW106	Site 35C	LHS-MW-106-02131996	S60106-2	13-Feb-96	Volatile	Normal	USACE 1996
LHSMW106	Site 35C	LHS-MW-106-05281998	4664.006	28-May-98	Volatile	Normal	3
LHSMW106	Site 35C	LHS-MW-106-08151996	23073-026	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW107	Site 35C	LHS-MW-107-02131996	S60106-3	13-Feb-96	Volatile	Normal	USACE 1996
LHSMW107	Site 35C	LHS-MW-107-05281998	4664.005	28-May-98	Volatile	Normal	3
LHSMW107	Site 35C	LHS-MW-107-08151996	23073-015	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67	S60091-4	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67-08141996	23062-004	14-Aug-96	Volatile	Normal	USACE 1996
LHSMW67	Site 35C	LHS-MW-67-1	4659.007	27-May-98	Volatile	Normal	3
LHSMW67	Site 35C	LHS-MW67-1 (001)	9412G074-001	10-Dec-94	Volatile	Normal	2
LHSMW68	Site 35C	LHS-MW-68	4659.008	27-May-98	Volatile	Normal	3
LHSMW68	Site 35C	LHS-MW-68-02091996	S60091-3	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW68	Site 35C	LHS-MW-68-08151996	23073-016	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW68	Site 35C	LHS-MW68-1 (001)	9412G074-002	10-Dec-94	Volatile	Normal	2
LHSMW69	Site 35C	LHS-MW-69-02091996	S60092-2	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW69	Site 35C	LHS-MW-69-05171998	4659.009	27-May-98	Volatile	Normal	3
LHSMW69	Site 35C	LHS-MW-69-08151996	23073-018	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW69	Site 35C	LHS-MW69-1 (001)	9412G074-003	10-Dec-94	Volatile	Normal	2
LHSMW69	Site 35C	LHS-MW69-1 (001) QC	9412G074-004	10-Dec-94	Volatile	Duplicate	2
LHSMW69	Site 35C	LHS-MW-69-QC	23073-019	15-Aug-96	Volatile	Duplicate	USACE 1996
LHSMW70	Site 35C	LHS-MW-70	4664.002	28-May-98	Volatile	Normal	3
LHSMW70	Site 35C	LHS-MW-70-02091996	S60091-2	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW70	Site 35C	LHS-MW-70-08141996	23062-003	14-Aug-96	Volatile	Normal	USACE 1996
LHSMW70	Site 35C	LHS-MW70-1 (001)	9412G074-019	12-Dec-94	Volatile	Normal	2
LHSMW70	Site 35C	LHS-MW-70QC	4664.003	28-May-98	Volatile	Duplicate	3
LHSMW71	Site 35C	LHS-MW-71	4664.004	28-May-98	Volatile	Normal	3
LHSMW71	Site 35C	LHS-MW-71-02101996	S60093-2	10-Feb-96	Volatile	Normal	USACE 1996
LHSMW71	Site 35C	LHS-MW-71-08141996	23062-002	14-Aug-96	Volatile	Normal	USACE 1996
LHSMW71	Site 35C	LHS-MW71-1 (001)	9412G074-020	12-Dec-94	Volatile	Normal	2
46WW01	Site 46	46WW01-1	4948.001	01-Oct-98	BNA	Normal	3
46WW01	Site 46	46WW01-2	4987.009	07-Nov-98	BNA	Normal	3
46WW01	Site 46	46WW01-2QC	4987.014	07-Nov-98	BNA	Duplicate	3
46WW02	Site 46	46WW02	4986.005	06-Nov-98	BNA	Normal	3
46WW03	Site 46	46WW03	4986.006	06-Nov-98	BNA	Normal	3
46WW04	Site 46	46WW04	4987.006	07-Nov-98	BNA	Normal	3
LHSMW08	Site 46	LHS-MW-08	4627.008	13-May-98	BNA	Normal	3
LHSMW09	Site 46	LHS-MW-09	4630.001	14-May-98	BNA	Normal	3
LHSMW10	Site 46	LHS-MW-10-02091996	22344-009	09-Feb-96	BNA	Normal	USACE 1996
LHSMW10	Site 46	LHS-MW-10-05141998	4630.002	14-May-98	BNA	Normal	3
LHSMW10	Site 46	LHS-MW-10-08131996	23046-006	13-Aug-96	BNA	Normal	USACE 1996
LHSMW10	Site 46	LHS-MW-10-1 (001)	9412G958-011	03-Dec-94	BNA	Normal	2
LHSMW11	Site 46	LHS-MW-11-05141998	4630.003	14-May-98	BNA	Normal	3
LHSMW11	Site 46	LHS-MW-11-08131996	23046-007	13-Aug-96	BNA	Normal	USACE 1996
LHSMW11	Site 46	LHS-MW-11-1 (001)	9412G958-008	02-Dec-94	BNA	Normal	2
LHSMW11	Site 46	LHS-MW-11QC	4630.004	14-May-98	BNA	Duplicate	3
LHSMW12	Site 46	LHS-MW-12-05141998	4630.005	14-May-98	BNA	Normal	3
LHSMW12	Site 46	LHS-MW-12-08131996	23046-008	13-Aug-96	BNA	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW12	Site 46	LHS-MW-12-1 (001)	9412G958-007	02-Dec-94	BNA	Normal	2
LHSMW13	Site 46	LHS-MW-13	23073-003	15-Aug-96	BNA	Normal	USACE 1996
LHSMW13	Site 46	LHS-MW-13-05141998	4630.006	14-May-98	BNA	Normal	3
LHSMW13	Site 46	LHS-MW-13-1 (001)	9412G958-006	02-Dec-94	BNA	Normal	2
LHSMW14	Site 46	LHS-MW-14	4630.007	14-May-98	BNA	Normal	3
LHSMW14	Site 46	LHS-MW-14-08141996	23062-006	14-Aug-96	BNA	Normal	USACE 1996
LHSMW14	Site 46	LHS-MW14-1 (001)	9412G867-001	29-Nov-94	BNA	Normal	2
LHSMW14	Site 46	LHS-MW-14-QC	23062-007	14-Aug-96	BNA	Duplicate	USACE 1996
LHSMW15	Site 46	LHS-MW-15	23073-004	15-Aug-96	BNA	Normal	USACE 1996
LHSMW15	Site 46	LHS-MW-15-05141998	4630.008	14-May-98	BNA	Normal	3
LHSMW15	Site 46	LHS-MW-15-1 (001)	9412G958-002	03-Dec-94	BNA	Normal	2
LHSMW16	Site 46	LHS-MW-16	4630.009	14-May-98	BNA	Normal	3
LHSMW16	Site 46	LHS-MW-16-08151996	23073-005	15-Aug-96	BNA	Normal	USACE 1996
LHSMW16	Site 46	LHS-MW16-1 (001)	9411G814-001	29-Nov-94	BNA	Normal	2
LHSMW17	Site 46	LHS-MW-17	23073-006	15-Aug-96	BNA	Normal	USACE 1996
LHSMW17	Site 46	LHS-MW-17-02121996	22353-002	12-Feb-96	BNA	Normal	USACE 1996
LHSMW17	Site 46	LHS-MW-17-05141998	4630.010	14-May-98	BNA	Normal	3
LHSMW17	Site 46	LHS-MW-17-1 (001)	9412G958-005	02-Dec-94	BNA	Normal	2
LHSMW18	Site 46	LHS-MW-18	23073-007	15-Aug-96	BNA	Normal	USACE 1996
LHSMW18	Site 46	LHS-MW-18-02121996	22353-001	12-Feb-96	BNA	Normal	USACE 1996
LHSMW18	Site 46	LHS-MW-18-05141998	4630.011	14-May-98	BNA	Normal	3
LHSMW18	Site 46	LHS-MW-18-1 (001)	9412G958-004	02-Dec-94	BNA	Normal	2
LHSMW19	Site 46	LHS-MW-19	23073-008	15-Aug-96	BNA	Normal	USACE 1996
LHSMW19	Site 46	LHS-MW-19-1	4632.001	15-May-98	BNA	Normal	3
LHSMW19	Site 46	LHS-MW-19-1 (001)	9412G958-003	02-Dec-94	BNA	Normal	2
LHSMW20	Site 46	LHS-MW-20	22335-002	07-Feb-96	BNA	Normal	USACE 1996
LHSMW20	Site 46	LHS-MW-20-05151998	4632.002	15-May-98	BNA	Normal	3
LHSMW20	Site 46	LHS-MW-20-08151996	23073-010	15-Aug-96	BNA	Normal	USACE 1996
LHSMW20	Site 46	LHS-MW-20-1 (001)	9412G958-014	04-Dec-94	BNA	Normal	2
LHSMW21	Site 46	LHS-MW-21	4632.003	15-May-98	BNA	Normal	3
LHSMW21	Site 46	LHS-MW-21-08151996	23073-011	15-Aug-96	BNA	Normal	USACE 1996
LHSMW21	Site 46	LHS-MW-21-1 (001)	9412G958-012	04-Dec-94	BNA	Normal	2
LHSMW22	Site 46	LHS-MW-22	4632.010	15-May-98	BNA	Normal	3
LHSMW22	Site 46	LHS-MW-22-08151996	23073-012	15-Aug-96	BNA	Normal	USACE 1996
LHSMW22	Site 46	LHS-MW-22-1 (001)	9412G958-015	04-Dec-94	BNA	Normal	2
LHSMW23	Site 46	LHS-MW-23	4632.004	15-May-98	BNA	Normal	3
LHSMW23	Site 46	LHS-MW-23-08151996	23073-013	15-Aug-96	BNA	Normal	USACE 1996
LHSMW23	Site 46	LHS-MW-23-1 (001)	9412G959-001	04-Dec-94	BNA	Normal	2
LHSMW23	Site 46	LHS-MW-23-1 (001) QC	9412G959-002	04-Dec-94	BNA	Duplicate	2
LHSMW24	Site 46	LHS-MW-24	4632.005	15-May-98	BNA	Normal	3
LHSMW24	Site 46	LHS-MW-24-08201996	23099-002	20-Aug-96	BNA	Normal	USACE 1996
LHSMW24	Site 46	LHS-MW-24-1 (001)	9412G959-005	04-Dec-94	BNA	Normal	2
LHSMW25	Site 46	LHS-MW-25	4632.006	15-May-98	BNA	Normal	3
LHSMW25	Site 46	LHS-MW-25-08201996	23099-003	20-Aug-96	BNA	Normal	USACE 1996
LHSMW25	Site 46	LHS-MW-25-1 (001)	9412G959-004	04-Dec-94	BNA	Normal	2
LHSMW26	Site 46	LHS-MW-26	4632.007	15-May-98	BNA	Normal	3
LHSMW26	Site 46	LHS-MW-26-02121996	22353-003	12-Feb-96	BNA	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW26	Site 46	LHS-MW-26-08201996	23099-004	20-Aug-96	BNA	Normal	USACE 1996
LHSMW26	Site 46	LHS-MW-26-1 (001)	9412G959-003	04-Dec-94	BNA	Normal	2
LHSMW26	Site 46	LHS-MW-26-QC	23099-005	20-Aug-96	BNA	Duplicate	USACE 1996
LHSMW27	Site 46	LHS-MW-27	4632.008	15-May-98	BNA	Normal	3
LHSMW27	Site 46	LHS-MW-27-02081996	22339-001	08-Feb-96	BNA	Normal	USACE 1996
LHSMW27	Site 46	LHS-MW-27-08201996	23099-006	20-Aug-96	BNA	Normal	USACE 1996
LHSMW27	Site 46	LHS-MW-27-1 (001)	9412G958-013	03-Dec-94	BNA	Normal	2
LHSMW08	Site 46	LHS-MW-8-08131996	23046-005	13-Aug-96	BNA	Normal	USACE 1996
LHSMW08	Site 46	LHS-MW-8-1 (001)	9412G958-010	03-Dec-94	BNA	Normal	2
LHSMW08	Site 46	LHS-MW-8-QC	23046-009	13-Aug-96	BNA	Duplicate	USACE 1996
LHSMW09	Site 46	LHS-MW-9-08151996	23073-002	15-Aug-96	BNA	Normal	USACE 1996
LHSMW09	Site 46	LHS-MW-9-1 (001)	9412G958-009	03-Dec-94	BNA	Normal	2
LHSMW13	Site 46	MW-13	22326-001	06-Feb-96	BNA	Normal	USACE 1996
LHSMW14	Site 46	MW-14	22326-002	06-Feb-96	BNA	Normal	USACE 1996
LHSMW15	Site 46	MW-15	22326-003	06-Feb-96	BNA	Normal	USACE 1996
LHSMW16	Site 46	MW-16	22327-001	06-Feb-96	BNA	Normal	USACE 1996
LHSMW19	Site 46	MW-19	22327-002	06-Feb-96	BNA	Normal	USACE 1996
LHSMW21	Site 46	MW-21	22335-003	07-Feb-96	BNA	Normal	USACE 1996
LHSMW22	Site 46	MW-22	22335-001	07-Feb-96	BNA	Normal	USACE 1996
LHSMW23	Site 46	MW-23	22326-004	06-Feb-96	BNA	Normal	USACE 1996
LHSMW24	Site 46	MW-24	22335-004	07-Feb-96	BNA	Normal	USACE 1996
LHSMW25	Site 46	MW-25	22336-001	07-Feb-96	BNA	Normal	USACE 1996
LHSMW25	Site 46	MW-25-QC	22336-002	07-Feb-96	BNA	Duplicate	USACE 1996
46WW01	Site 46	46WW01-1	4948.001	01-Oct-98	Explosive	Normal	3
46WW01	Site 46	46WW01-2	4987.009	07-Nov-98	Explosive	Normal	3
46WW01	Site 46	46WW01-2QC	4987.014	07-Nov-98	Explosive	Duplicate	3
46WW02	Site 46	46WW02	4986.005	06-Nov-98	Explosive	Normal	3
46WW03	Site 46	46WW03	4986.006	06-Nov-98	Explosive	Normal	3
46WW04	Site 46	46WW04	4987.006	07-Nov-98	Explosive	Normal	3
LHSMW08	Site 46	LHS-MW-08	4627.008	13-May-98	Explosive	Normal	3
LHSMW09	Site 46	LHS-MW-09	4630.001	14-May-98	Explosive	Normal	3
LHSMW10	Site 46	LHS-MW-10-02091996	22344-009	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW10	Site 46	LHS-MW-10-05141998	4630.002	14-May-98	Explosive	Normal	3
LHSMW10	Site 46	LHS-MW-10-08131996	22344-009	13-Aug-96	Explosive	Normal	USACE 1996
LHSMW10	Site 46	LHS-MW10-1 (001)	9412L253-001	03-Dec-94	Explosive	Normal	2
LHSMW11	Site 46	LHS-MW-11-05141998	4630.003	14-May-98	Explosive	Normal	3
LHSMW11	Site 46	LHS-MW-11-08131996	23046-007	13-Aug-96	Explosive	Normal	USACE 1996
LHSMW11	Site 46	LHS-MW11-1 (001)	9412L232-006	02-Dec-94	Explosive	Normal	2
LHSMW11	Site 46	LHS-MW-11QC	4630.004	14-May-98	Explosive	Duplicate	3
LHSMW12	Site 46	LHS-MW-12-05141998	4630.005	14-May-98	Explosive	Normal	3
LHSMW12	Site 46	LHS-MW-12-08131996	23046-008	13-Aug-96	Explosive	Normal	USACE 1996
LHSMW12	Site 46	LHS-MW12-1 (001)	9412L232-005	02-Dec-94	Explosive	Normal	2
LHSMW13	Site 46	LHS-MW-13	23073-003	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW13	Site 46	LHS-MW-13-05141998	4630.006	14-May-98	Explosive	Normal	3
LHSMW13	Site 46	LHS-MW13-1 (001)	9412L232-004	02-Dec-94	Explosive	Normal	2
LHSMW14	Site 46	LHS-MW-14	4630.007	14-May-98	Explosive	Normal	3
LHSMW14	Site 46	LHS-MW-14-08141996	23062-006	14-Aug-96	Explosive	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW14	Site 46	LHS-MW14-1 (001)	9412L193-004	29-Nov-94	Explosive	Normal	2
LHSMW14	Site 46	LHS-MW-14-QC	23062-007	14-Aug-96	Explosive	Duplicate	USACE 1996
LHSMW15	Site 46	LHS-MW-15	23073-004	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW15	Site 46	LHS-MW-15-05141998	4630.008	14-May-98	Explosive	Normal	3
LHSMW15	Site 46	LHS-MW15-1 (001)	9412L253-004	03-Dec-94	Explosive	Normal	2
LHSMW16	Site 46	LHS-MW-16	4630.009	14-May-98	Explosive	Normal	3
LHSMW16	Site 46	LHS-MW-16-08151996	23073-005	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW16	Site 46	LHS-MW16-1 (001)	9411L177-001	29-Nov-94	Explosive	Normal	2
LHSMW17	Site 46	LHS-MW-17	23073-006	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW17	Site 46	LHS-MW-17-02121996	22353-002	12-Feb-96	Explosive	Normal	USACE 1996
LHSMW17	Site 46	LHS-MW-17-05141998	4630.010	14-May-98	Explosive	Normal	3
LHSMW17	Site 46	LHS-MW17-1 (001)	9412L232-003	02-Dec-94	Explosive	Normal	2
LHSMW18	Site 46	LHS-MW-18	23073-007	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW18	Site 46	LHS-MW-18-02121996	22353-001	12-Feb-96	Explosive	Normal	USACE 1996
LHSMW18	Site 46	LHS-MW-18-05141998	4630.011	14-May-98	Explosive	Normal	3
LHSMW18	Site 46	LHS-MW18-1 (001)	9412L232-002	02-Dec-94	Explosive	Normal	2
LHSMW19	Site 46	LHS-MW-19	23073-008	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW19	Site 46	LHS-MW-19-1	4632.001	15-May-98	Explosive	Normal	3
LHSMW19	Site 46	LHS-MW19-1 (001)	9412L232-001	02-Dec-94	Explosive	Normal	2
LHSMW20	Site 46	LHS-MW-20	22335-002	07-Feb-96	Explosive	Normal	USACE 1996
LHSMW20	Site 46	LHS-MW-20-05151998	4632.002	15-May-98	Explosive	Normal	3
LHSMW20	Site 46	LHS-MW-20-08151996	23073-010	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW20	Site 46	LHS-MW20-1 (001)	9412L256-001	04-Dec-94	Explosive	Normal	2
LHSMW21	Site 46	LHS-MW-21	4632.003	15-May-98	Explosive	Normal	3
LHSMW21	Site 46	LHS-MW-21-08151996	23073-011	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW21	Site 46	LHS-MW21-1 (001)	9412L256-006	04-Dec-94	Explosive	Normal	2
LHSMW22	Site 46	LHS-MW-22	4632.010	15-May-98	Explosive	Normal	3
LHSMW22	Site 46	LHS-MW-22-08151996	23073-012	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW22	Site 46	LHS-MW22-1 (001)	9412L255-003	04-Dec-94	Explosive	Normal	2
LHSMW23	Site 46	LHS-MW-23	4632.004	15-May-98	Explosive	Normal	3
LHSMW23	Site 46	LHS-MW-23-08151996	23073-013	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW23	Site 46	LHS-MW23-1 (001)	9412L256-002	04-Dec-94	Explosive	Normal	2
LHSMW23	Site 46	LHS-MW23-1 (001) QC	9412L255-006	04-Dec-94	Explosive	Duplicate	2
LHSMW24	Site 46	LHS-MW-24	4632.005	15-May-98	Explosive	Normal	3
LHSMW24	Site 46	LHS-MW-24-08201996	23099-002	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW24	Site 46	LHS-MW24-1 (001)	9412L256-003	04-Dec-94	Explosive	Normal	2
LHSMW25	Site 46	LHS-MW-25	4632.006	15-May-98	Explosive	Normal	3
LHSMW25	Site 46	LHS-MW-25-08201996	23099-003	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW25	Site 46	LHS-MW25-1 (001)	9412L256-004	04-Dec-94	Explosive	Normal	2
LHSMW26	Site 46	LHS-MW-26	4632.007	15-May-98	Explosive	Normal	3
LHSMW26	Site 46	LHS-MW-26-02121996	22353-003	12-Feb-96	Explosive	Normal	USACE 1996
LHSMW26	Site 46	LHS-MW-26-08201996	23099-004	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW26	Site 46	LHS-MW26-1 (001)	9412L256-005	04-Dec-94	Explosive	Normal	2
LHSMW26	Site 46	LHS-MW-26-QC	23099-005	20-Aug-96	Explosive	Duplicate	USACE 1996
LHSMW27	Site 46	LHS-MW-27	4632.008	15-May-98	Explosive	Normal	3
LHSMW27	Site 46	LHS-MW-27-02081996	22339-001	08-Feb-96	Explosive	Normal	USACE 1996
LHSMW27	Site 46	LHS-MW-27-08201996	23099-006	20-Aug-96	Explosive	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW27	Site 46	LHS-MW27-1(001)	9412L253-005	03-Dec-94	Explosive	Normal	2
LHSMW08	Site 46	LHS-MW-8-08131996	23046-005	13-Aug-96	Explosive	Normal	USACE 1996
LHSMW08	Site 46	LHS-MW8-1 (001)	9412L253-002	03-Dec-94	Explosive	Normal	2
LHSMW08	Site 46	LHS-MW-8-QC	23046-009	13-Aug-96	Explosive	Duplicate	USACE 1996
LHSMW09	Site 46	LHS-MW-9-08151996	23073-002	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW09	Site 46	LHS-MW9-1 (001)	9412L253-003	03-Dec-94	Explosive	Normal	2
LHSMW13	Site 46	MW-13	22326-001	06-Feb-96	Explosive	Normal	USACE 1996
LHSMW14	Site 46	MW-14	22326-002	06-Feb-96	Explosive	Normal	USACE 1996
LHSMW15	Site 46	MW-15	22326-003	06-Feb-96	Explosive	Normal	USACE 1996
LHSMW16	Site 46	MW-16	22327-001	06-Feb-96	Explosive	Normal	USACE 1996
LHSMW19	Site 46	MW-19	22327-002	06-Feb-96	Explosive	Normal	USACE 1996
LHSMW21	Site 46	MW-21	22335-003	07-Feb-96	Explosive	Normal	USACE 1996
LHSMW22	Site 46	MW-22	22335-001	07-Feb-96	Explosive	Normal	USACE 1996
LHSMW23	Site 46	MW-23	22326-004	06-Feb-96	Explosive	Normal	USACE 1996
LHSMW24	Site 46	MW-24	22335-004	07-Feb-96	Explosive	Normal	USACE 1996
LHSMW25	Site 46	MW-25	22336-001	07-Feb-96	Explosive	Normal	USACE 1996
LHSMW25	Site 46	MW-25-QC	22336-002	07-Feb-96	Explosive	Duplicate	USACE 1996
46WW01	Site 46	46WW01-1	4948.001	01-Oct-98	Metal	Normal	3
46WW01	Site 46	46WW01-2	4987.009	07-Nov-98	Metal	Normal	3
46WW01	Site 46	46WW01-2QC	4987.014	07-Nov-98	Metal	Duplicate	3
46WW02	Site 46	46WW02	4986.005	06-Nov-98	Metal	Normal	3
46WW03	Site 46	46WW03	4986.006	06-Nov-98	Metal	Normal	3
46WW04	Site 46	46WW04	4987.006	07-Nov-98	Metal	Normal	3
LHSMW08	Site 46	LHS-MW-08	4627.008	13-May-98	Metal	Normal	3
LHSMW09	Site 46	LHS-MW-09	4630.001	14-May-98	Metal	Normal	3
LHSMW10	Site 46	LHS-MW-10-02091996	S60091-10	09-Feb-96	Metal	Normal	USACE 1996
LHSMW10	Site 46	LHS-MW-10-05141998	4630.002	14-May-98	Metal	Normal	3
LHSMW10	Site 46	LHS-MW-10-08131996	S60640-6	13-Aug-96	Metal	Normal	USACE 1996
LHSMW10	Site 46	LHS-MW-10-1 (001)	9412G958-011	03-Dec-94	Metal	Normal	2
LHSMW11	Site 46	LHS-MW-11-02011996	S60066-6	01-Feb-96	Metal	Normal	USACE 1996
LHSMW11	Site 46	LHS-MW-11-05141998	4630.003	14-May-98	Metal	Normal	3
LHSMW11	Site 46	LHS-MW-11-08131996	S60640-7	13-Aug-96	Metal	Normal	USACE 1996
LHSMW11	Site 46	LHS-MW-11-1 (001)	9412G958-008	02-Dec-94	Metal	Normal	2
LHSMW11	Site 46	LHS-MW-11QC	4630.004	14-May-98	Metal	Duplicate	3
LHSMW12	Site 46	LHS-MW-12	S60066-8	01-Feb-96	Metal	Normal	USACE 1996
LHSMW12	Site 46	LHS-MW-12-05141998	4630.005	14-May-98	Metal	Normal	3
LHSMW12	Site 46	LHS-MW-12-08131996	S60640-8	13-Aug-96	Metal	Normal	USACE 1996
LHSMW12	Site 46	LHS-MW-12-1 (001)	9412G958-007	02-Dec-94	Metal	Normal	2
LHSMW13	Site 46	LHS-MW-13	S60652-3	15-Aug-96	Metal	Normal	USACE 1996
LHSMW13	Site 46	LHS-MW-13-05141998	4630.006	14-May-98	Metal	Normal	3
LHSMW13	Site 46	LHS-MW-13-1 (001)	9412G958-006	02-Dec-94	Metal	Normal	2
LHSMW14	Site 46	LHS-MW-14	4630.007	14-May-98	Metal	Normal	3
LHSMW14	Site 46	LHS-MW-14-08141996	S60646-6	14-Aug-96	Metal	Normal	USACE 1996
LHSMW14	Site 46	LHS-MW14-1 (001)	9412G867-001	29-Nov-94	Metal	Normal	2
LHSMW14	Site 46	LHS-MW-14-QC	S60646-8	14-Aug-96	Metal	Duplicate	USACE 1996
LHSMW15	Site 46	LHS-MW-15	S60652-4	15-Aug-96	Metal	Normal	USACE 1996
LHSMW15	Site 46	LHS-MW-15-05141998	4630.008	14-May-98	Metal	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW15	Site 46	LHS-MW-15-1 (001)	9412G958-002	03-Dec-94	Metal	Normal	2
LHSMW16	Site 46	LHS-MW-16	4630.009	14-May-98	Metal	Normal	3
LHSMW16	Site 46	LHS-MW-16-08151996	S60652-5	15-Aug-96	Metal	Normal	USACE 1996
LHSMW16	Site 46	LHS-MW16-1 (001)	9411G814-001	29-Nov-94	Metal	Normal	2
LHSMW17	Site 46	LHS-MW-17	S60652-6	15-Aug-96	Metal	Normal	USACE 1996
LHSMW17	Site 46	LHS-MW-17-02121996	S60102-3	12-Feb-96	Metal	Normal	USACE 1996
LHSMW17	Site 46	LHS-MW-17-05141998	4630.010	14-May-98	Metal	Normal	3
LHSMW17	Site 46	LHS-MW-17-1 (001)	9412G958-005	02-Dec-94	Metal	Normal	2
LHSMW18	Site 46	LHS-MW-18	S60652-7	15-Aug-96	Metal	Normal	USACE 1996
LHSMW18	Site 46	LHS-MW-18-02121996	S60102-2	12-Feb-96	Metal	Normal	USACE 1996
LHSMW18	Site 46	LHS-MW-18-05141998	4630.011	14-May-98	Metal	Normal	3
LHSMW18	Site 46	LHS-MW-18-1 (001)	9412G958-004	02-Dec-94	Metal	Normal	2
LHSMW19	Site 46	LHS-MW-19	S60652-7	15-Aug-96	Metal	Normal	USACE 1996
LHSMW19	Site 46	LHS-MW-19-1	4632.001	15-May-98	Metal	Normal	3
LHSMW19	Site 46	LHS-MW-19-1 (001)	9412G958-003	02-Dec-94	Metal	Normal	2
LHSMW20	Site 46	LHS-MW-20-05151998	4632.002	15-May-98	Metal	Normal	3
LHSMW20	Site 46	LHS-MW-20-08151996	S60652-10	15-Aug-96	Metal	Normal	USACE 1996
LHSMW20	Site 46	LHS-MW-20-1 (001)	9412G958-014	04-Dec-94	Metal	Normal	2
LHSMW21	Site 46	LHS-MW-21	4632.003	15-May-98	Metal	Normal	3
LHSMW21	Site 46	LHS-MW-21-08151996	S60652-11	15-Aug-96	Metal	Normal	USACE 1996
LHSMW21	Site 46	LHS-MW-21-1 (001)	9412G958-012	04-Dec-94	Metal	Normal	2
LHSMW22	Site 46	LHS-MW-22	4632.010	15-May-98	Metal	Normal	3
LHSMW22	Site 46	LHS-MW-22-08151996	S60652-12	15-Aug-96	Metal	Normal	USACE 1996
LHSMW22	Site 46	LHS-MW-22-1 (001)	9412G958-015	04-Dec-94	Metal	Normal	2
LHSMW23	Site 46	LHS-MW-23	4632.004	15-May-98	Metal	Normal	3
LHSMW23	Site 46	LHS-MW-23-08151996	S60652-13	15-Aug-96	Metal	Normal	USACE 1996
LHSMW23	Site 46	LHS-MW-23-1 (001)	9412G959-001	04-Dec-94	Metal	Normal	2
LHSMW23	Site 46	LHS-MW-23-1 (001) QC	9412G959-002	04-Dec-94	Metal	Duplicate	2
LHSMW24	Site 46	LHS-MW-24	4632.005	15-May-98	Metal	Normal	3
LHSMW24	Site 46	LHS-MW-24-08201996	S60665-2	20-Aug-96	Metal	Normal	USACE 1996
LHSMW24	Site 46	LHS-MW-24-1 (001)	9412G959-005	04-Dec-94	Metal	Normal	2
LHSMW25	Site 46	LHS-MW-25	4632.006	15-May-98	Metal	Normal	3
LHSMW25	Site 46	LHS-MW-25-08201996	S60665-3	20-Aug-96	Metal	Normal	USACE 1996
LHSMW25	Site 46	LHS-MW-25-1 (001)	9412G959-004	04-Dec-94	Metal	Normal	2
LHSMW26	Site 46	LHS-MW-26	4632.007	15-May-98	Metal	Normal	3
LHSMW26	Site 46	LHS-MW-26-02121996	S60102-4	12-Feb-96	Metal	Normal	USACE 1996
LHSMW26	Site 46	LHS-MW-26-08201996	S60665-4	20-Aug-96	Metal	Normal	USACE 1996
LHSMW26	Site 46	LHS-MW-26-1 (001)	9412G959-003	04-Dec-94	Metal	Normal	2
LHSMW26	Site 46	LHS-MW-26-QC	S60665-5	20-Aug-96	Metal	Duplicate	USACE 1996
LHSMW27	Site 46	LHS-MW-27	4632.008	15-May-98	Metal	Normal	3
LHSMW27	Site 46	LHS-MW-27-02081996	S60083-2	08-Feb-96	Metal	Normal	USACE 1996
LHSMW27	Site 46	LHS-MW-27-08201996	S60665-7	20-Aug-96	Metal	Normal	USACE 1996
LHSMW27	Site 46	LHS-MW-27-1 (001)	9412G958-013	03-Dec-94	Metal	Normal	2
LHSMW08	Site 46	LHS-MW-8	S60066-7	01-Feb-96	Metal	Normal	USACE 1996
LHSMW08	Site 46	LHS-MW-8-08131996	S60640-5	13-Aug-96	Metal	Normal	USACE 1996
LHSMW08	Site 46	LHS-MW-8-1 (001)	9412G958-010	03-Dec-94	Metal	Normal	2
LHSMW08	Site 46	LHS-MW-8-QC	S60640-10	13-Aug-96	Metal	Duplicate	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW09	Site 46	LHS-MW-9	S60066-9	01-Feb-96	Metal	Normal	USACE 1996
LHSMW09	Site 46	LHS-MW-9-08151996	S60652-2	15-Aug-96	Metal	Normal	USACE 1996
LHSMW09	Site 46	LHS-MW-9-1 (001)	9412G958-009	03-Dec-94	Metal	Normal	2
LHSMW13	Site 46	MW-13	S60071-2	06-Feb-96	Metal	Normal	USACE 1996
LHSMW14	Site 46	MW-14	S60071-3	06-Feb-96	Metal	Normal	USACE 1996
LHSMW15	Site 46	MW-15	S60071-4	06-Feb-96	Metal	Normal	USACE 1996
LHSMW16	Site 46	MW-16	22327-001	06-Feb-96	Metal	Normal	USACE 1996
LHSMW19	Site 46	MW-19	22327-002	06-Feb-96	Metal	Normal	USACE 1996
LHSMW21	Site 46	MW-21	S60077-4	07-Feb-96	Metal	Normal	USACE 1996
LHSMW22	Site 46	MW-22	S60077-2	07-Feb-96	Metal	Normal	USACE 1996
LHSMW23	Site 46	MW-23	S60071-5	06-Feb-96	Metal	Normal	USACE 1996
LHSMW24	Site 46	MW-24	S60077-5	07-Feb-96	Metal	Normal	USACE 1996
LHSMW25	Site 46	MW-25	22336-001	07-Feb-96	Metal	Normal	USACE 1996
LHSMW25	Site 46	MW-25-QC	22336-002	07-Feb-96	Metal	Duplicate	USACE 1996
46WW01	Site 46	46WW01-1	4948.001	01-Oct-98	PCB	Normal	3
46WW01	Site 46	46WW01-2	4987.009	07-Nov-98	PCB	Normal	3
46WW01	Site 46	46WW01-2QC	4987.014	07-Nov-98	PCB	Duplicate	3
LHSMW19	Site 46	LHS-MW-19-2	4849.002	26-Aug-98	PCB	Normal	3
46WW01	Site 46	46WW01-1	35777.01	01-Oct-98	PCDD/PCDF	Normal	3
46WW01	Site 46	46WW01-2	36329.01	07-Nov-98	PCDD/PCDF	Normal	3
46WW01	Site 46	46WW01-2QC	36329.02	07-Nov-98	PCDD/PCDF	Duplicate	3
LHSMW19	Site 46	LHS-MW-19-2	35407.03	26-Aug-98	PCDD/PCDF	Normal	3
46WW01	Site 46	46WW01-1	4948.001	01-Oct-98	Pesticide	Normal	3
46WW01	Site 46	46WW01-2	4987.009	07-Nov-98	Pesticide	Normal	3
46WW01	Site 46	46WW01-2QC	4987.014	07-Nov-98	Pesticide	Duplicate	3
LHSMW19	Site 46	LHS-MW-19-2	4849.002	26-Aug-98	Pesticide	Normal	3
LHSMW16	Site 46	MW-16	22327-001	06-Feb-96	Pesticide	Normal	USACE 1996
LHSMW19	Site 46	MW-19	22327-002	06-Feb-96	Pesticide	Normal	USACE 1996
LHSMW25	Site 46	MW-25	22336-001	07-Feb-96	Pesticide	Normal	USACE 1996
LHSMW25	Site 46	MW-25-QC	22336-002	07-Feb-96	Pesticide	Duplicate	USACE 1996
46WW01	Site 46	46WW01-1	4948.001	01-Oct-98	Volatile	Normal	3
46WW01	Site 46	46WW01-2	4987.009	07-Nov-98	Volatile	Normal	3
46WW01	Site 46	46WW01-2QC	4987.014	07-Nov-98	Volatile	Duplicate	3
46WW02	Site 46	46WW02	4986.005	06-Nov-98	Volatile	Normal	3
46WW03	Site 46	46WW03	4986.006	06-Nov-98	Volatile	Normal	3
46WW04	Site 46	46WW04	4987.006	07-Nov-98	Volatile	Normal	3
LHSMW08	Site 46	LHS-MW-08	4627.008	13-May-98	Volatile	Normal	3
LHSMW09	Site 46	LHS-MW-09	4630.001	14-May-98	Volatile	Normal	3
LHSMW10	Site 46	LHS-MW-10-02091996	S60091-10	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW10	Site 46	LHS-MW-10-05141998	4630.002	14-May-98	Volatile	Normal	3
LHSMW10	Site 46	LHS-MW-10-08131996	23046-006	13-Aug-96	Volatile	Normal	USACE 1996
LHSMW10	Site 46	LHS-MW-10-1 (001)	9412G958-011	03-Dec-94	Volatile	Normal	2
LHSMW11	Site 46	LHS-MW-11-02011996	S60066-6	01-Feb-96	Volatile	Normal	USACE 1996
LHSMW11	Site 46	LHS-MW-11-05141998	4630.003	14-May-98	Volatile	Normal	3
LHSMW11	Site 46	LHS-MW-11-08131996	23046-007	13-Aug-96	Volatile	Normal	USACE 1996
LHSMW11	Site 46	LHS-MW-11-1 (001)	9412G958-008	02-Dec-94	Volatile	Normal	2
LHSMW11	Site 46	LHS-MW-11QC	4630.004	14-May-98	Volatile	Duplicate	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW12	Site 46	LHS-MW-12	S60066-8	01-Feb-96	Volatile	Normal	USACE 1996
LHSMW12	Site 46	LHS-MW-12-05141998	4630.005	14-May-98	Volatile	Normal	3
LHSMW12	Site 46	LHS-MW-12-08131996	23046-008	13-Aug-96	Volatile	Normal	USACE 1996
LHSMW12	Site 46	LHS-MW-12-1 (001)	9412G958-007	02-Dec-94	Volatile	Normal	2
LHSMW13	Site 46	LHS-MW-13	23073-003	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW13	Site 46	LHS-MW-13-05141998	4630.006	14-May-98	Volatile	Normal	3
LHSMW13	Site 46	LHS-MW-13-1 (001)	9412G958-006	02-Dec-94	Volatile	Normal	2
LHSMW14	Site 46	LHS-MW-14	4630.007	14-May-98	Volatile	Normal	3
LHSMW14	Site 46	LHS-MW-14-08141996	23062-006	14-Aug-96	Volatile	Normal	USACE 1996
LHSMW14	Site 46	LHS-MW-14-1 (001)	9412G867-001	29-Nov-94	Volatile	Normal	2
LHSMW14	Site 46	LHS-MW-14-QC	23062-007	14-Aug-96	Volatile	Duplicate	USACE 1996
LHSMW15	Site 46	LHS-MW-15	23073-004	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW15	Site 46	LHS-MW-15-05141998	4630.008	14-May-98	Volatile	Normal	3
LHSMW15	Site 46	LHS-MW-15-1 (001)	9412G958-002	03-Dec-94	Volatile	Normal	2
LHSMW16	Site 46	LHS-MW-16	4630.009	14-May-98	Volatile	Normal	3
LHSMW16	Site 46	LHS-MW-16-08151996	23073-005	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW16	Site 46	LHS-MW-16-1 (001)	9411G814-001	29-Nov-94	Volatile	Normal	2
LHSMW17	Site 46	LHS-MW-17	23073-006	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW17	Site 46	LHS-MW-17-02121996	S60102-3	12-Feb-96	Volatile	Normal	USACE 1996
LHSMW17	Site 46	LHS-MW-17-05141998	4630.010	14-May-98	Volatile	Normal	3
LHSMW17	Site 46	LHS-MW-17-1 (001)	9412G958-005	02-Dec-94	Volatile	Normal	2
LHSMW18	Site 46	LHS-MW-18	23073-007	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW18	Site 46	LHS-MW-18-02121996	S60102-2	12-Feb-96	Volatile	Normal	USACE 1996
LHSMW18	Site 46	LHS-MW-18-05141998	4630.011	14-May-98	Volatile	Normal	3
LHSMW18	Site 46	LHS-MW-18-1 (001)	9412G958-004	02-Dec-94	Volatile	Normal	2
LHSMW19	Site 46	LHS-MW-19	23073-008	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW19	Site 46	LHS-MW-19-1	4632.001	15-May-98	Volatile	Normal	3
LHSMW19	Site 46	LHS-MW-19-1 (001)	9412G958-003	02-Dec-94	Volatile	Normal	2
LHSMW20	Site 46	LHS-MW-20-02081996	S60077-3	08-Feb-96	Volatile	Normal	USACE 1996
LHSMW20	Site 46	LHS-MW-20-05151998	4632.002	15-May-98	Volatile	Normal	3
LHSMW20	Site 46	LHS-MW-20-08151996	23073-010	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW20	Site 46	LHS-MW-20-1 (001)	9412G958-014	04-Dec-94	Volatile	Normal	2
LHSMW21	Site 46	LHS-MW-21	4632.003	15-May-98	Volatile	Normal	3
LHSMW21	Site 46	LHS-MW-21-08151996	23073-011	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW21	Site 46	LHS-MW-21-1 (001)	9412G958-012	04-Dec-94	Volatile	Normal	2
LHSMW22	Site 46	LHS-MW-22	4632.010	15-May-98	Volatile	Normal	3
LHSMW22	Site 46	LHS-MW-22-08151996	23073-012	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW22	Site 46	LHS-MW-22-1 (001)	9412G958-015	04-Dec-94	Volatile	Normal	2
LHSMW23	Site 46	LHS-MW-23	4632.004	15-May-98	Volatile	Normal	3
LHSMW23	Site 46	LHS-MW-23-08151996	23073-013	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW23	Site 46	LHS-MW-23-1 (001)	9412G959-001	04-Dec-94	Volatile	Normal	2
LHSMW23	Site 46	LHS-MW-23-1 (001) QC	9412G959-002	04-Dec-94	Volatile	Duplicate	2
LHSMW24	Site 46	LHS-MW-24	4632.005	15-May-98	Volatile	Normal	3
LHSMW24	Site 46	LHS-MW-24-08201996	23099-002	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW24	Site 46	LHS-MW-24-1 (001)	9412G959-005	04-Dec-94	Volatile	Normal	2
LHSMW25	Site 46	LHS-MW-25	4632.006	15-May-98	Volatile	Normal	3
LHSMW25	Site 46	LHS-MW-25-08201996	23099-003	20-Aug-96	Volatile	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW25	Site 46	LHS-MW-25-1 (001)	9412G959-004	04-Dec-94	Volatile	Normal	2
LHSMW26	Site 46	LHS-MW-26	4632.007	15-May-98	Volatile	Normal	3
LHSMW26	Site 46	LHS-MW-26-02121996	S60102-4	12-Feb-96	Volatile	Normal	USACE 1996
LHSMW26	Site 46	LHS-MW-26-08201996	23099-004	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW26	Site 46	LHS-MW-26-1 (001)	9412G959-003	04-Dec-94	Volatile	Normal	2
LHSMW26	Site 46	LHS-MW-26-QC	23099-005	20-Aug-96	Volatile	Duplicate	USACE 1996
LHSMW27	Site 46	LHS-MW-27	4632.008	15-May-98	Volatile	Normal	3
LHSMW27	Site 46	LHS-MW-27-02081996	S60083-2	08-Feb-96	Volatile	Normal	USACE 1996
LHSMW27	Site 46	LHS-MW-27-08201996	23099-006	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW27	Site 46	LHS-MW-27-1 (001)	9412G958-013	03-Dec-94	Volatile	Normal	2
LHSMW08	Site 46	LHS-MW-8	S60066-7	01-Feb-96	Volatile	Normal	USACE 1996
LHSMW08	Site 46	LHS-MW-8-08131996	23046-005	13-Aug-96	Volatile	Normal	USACE 1996
LHSMW08	Site 46	LHS-MW-8-1 (001)	9412G958-010	03-Dec-94	Volatile	Normal	2
LHSMW08	Site 46	LHS-MW-8-QC	23046-009	13-Aug-96	Volatile	Duplicate	USACE 1996
LHSMW09	Site 46	LHS-MW-9	S60066-9	01-Feb-96	Volatile	Normal	USACE 1996
LHSMW09	Site 46	LHS-MW-9-08151996	23073-002	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW09	Site 46	LHS-MW-9-1 (001)	9412G958-009	03-Dec-94	Volatile	Normal	2
LHSMW13	Site 46	MW-13	S60071-2	06-Feb-96	Volatile	Normal	USACE 1996
LHSMW14	Site 46	MW-14	S60071-3	06-Feb-96	Volatile	Normal	USACE 1996
LHSMW15	Site 46	MW-15	S60071-4	06-Feb-96	Volatile	Normal	USACE 1996
LHSMW16	Site 46	MW-16	S60072-1	06-Feb-96	Volatile	Normal	USACE 1996
LHSMW19	Site 46	MW-19	S60072-2	06-Feb-96	Volatile	Normal	USACE 1996
LHSMW21	Site 46	MW-21	S60077-4	07-Feb-96	Volatile	Normal	USACE 1996
LHSMW22	Site 46	MW-22	S60077-2	07-Feb-96	Volatile	Normal	USACE 1996
LHSMW23	Site 46	MW-23	S60071-5	06-Feb-96	Volatile	Normal	USACE 1996
LHSMW24	Site 46	MW-24	S60077-5	07-Feb-96	Volatile	Normal	USACE 1996
LHSMW25	Site 46	MW-25	S60078-1	07-Feb-96	Volatile	Normal	USACE 1996
47WW01	Site 47	47WW01-1	4944.004	29-Sep-98	BNA	Normal	3
47WW01	Site 47	47WW01-2	4987.003	07-Nov-98	BNA	Normal	3
47WW02	Site 47	47WW02	4983.003	04-Nov-98	BNA	Normal	3
47WW03	Site 47	47WW03	4985.001	05-Nov-98	BNA	Normal	3
47WW04	Site 47	47WW04	4985.002	05-Nov-98	BNA	Normal	3
47WW05	Site 47	47WW05	4987.004	09-Nov-98	BNA	Normal	3
47WW06	Site 47	47WW06	4986.002	06-Nov-98	BNA	Normal	3
47WW07	Site 47	47WW07	4986.003	06-Nov-98	BNA	Normal	3
47WW08	Site 47	47WW08	4983.005	04-Nov-98	BNA	Normal	3
47WW09	Site 47	47WW09	4983.006	04-Nov-98	BNA	Normal	3
47WW11	Site 47	47WW11	4987.007	07-Nov-98	BNA	Normal	3
47WW12	Site 47	47WW12	4983.001	04-Nov-98	BNA	Normal	3
47WW13	Site 47	47WW13	4983.007	04-Nov-98	BNA	Normal	3
47WW14	Site 47	47WW14	4983.008	04-Nov-98	BNA	Normal	3
47WW15	Site 47	47WW15	4983.004	04-Nov-98	BNA	Normal	3
47WW16	Site 47	47WW16	4983.002	04-Nov-98	BNA	Normal	3
47WW17	Site 47	47WW17	4987.005	09-Nov-98	BNA	Normal	3
47WW18	Site 47	47WW18-1	4944.006	29-Sep-98	BNA	Normal	3
47WW18	Site 47	47WW18-2	4986.001	06-Nov-98	BNA	Normal	3
47WW19	Site 47	47WW19	4986.004	06-Nov-98	BNA	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
47WW20	Site 47	47WW20	4985.007	05-Nov-98	BNA	Normal	3
47WW21	Site 47	47WW21	4985.003	05-Nov-98	BNA	Normal	3
47WW22	Site 47	47WW22	4985.004	05-Nov-98	BNA	Normal	3
47WW23	Site 47	47WW23-1	4944.007	29-Sep-98	BNA	Normal	3
47WW23	Site 47	47WW23-2	4985.005	05-Nov-98	BNA	Normal	3
47WW23	Site 47	47WW23-2QC	4985.006	05-Nov-98	BNA	Duplicate	3
LHSMW105	Site 47	LHS-MW-105-02131996	22355-007	13-Feb-96	BNA	Normal	USACE 1996
LHSMW105	Site 47	LHS-MW-105-05181998	4639.021	18-May-98	BNA	Normal	3
LHSMW28	Site 47	LHS-MW-28	4639.001	16-May-98	BNA	Normal	3
LHSMW28	Site 47	LHS-MW-28-02111996	22349-001	11-Feb-96	BNA	Normal	USACE 1996
LHSMW27	Site 47	LHS-MW-28-08201996	23099-007	20-Aug-96	BNA	Normal	USACE 1996
LHSMW28	Site 47	LHS-MW28-1 (001)	9412G995-007	07-Dec-94	BNA	Normal	2
LHSMW29	Site 47	LHS-MW-29	4639.002	16-May-98	BNA	Normal	3
LHSMW29	Site 47	LHS-MW-29-02111996	22348-008	11-Feb-96	BNA	Normal	USACE 1996
LHSMW29	Site 47	LHS-MW-29-08201996	23099-008	20-Aug-96	BNA	Normal	USACE 1996
LHSMW29	Site 47	LHS-MW29-1 (001)	9412G995-002	07-Dec-94	BNA	Normal	2
LHSMW29	Site 47	LHS-MW-29-QC	22348-009	11-Feb-96	BNA	Duplicate	USACE 1996
LHSMW30	Site 47	LHS-MW-30	22353-004	12-Feb-96	BNA	Normal	USACE 1996
LHSMW30	Site 47	LHS-MW-30-05161998	4639.003	16-May-98	BNA	Normal	3
LHSMW30	Site 47	LHS-MW-30-08201996	23099-009	20-Aug-96	BNA	Normal	USACE 1996
LHSMW30	Site 47	LHS-MW30-1 (001)	9412G995-006	07-Dec-94	BNA	Normal	2
LHSMW31	Site 47	LHS-MW-31	4639.004	16-May-98	BNA	Normal	3
LHSMW31	Site 47	LHS-MW-31-02121996	22353-006	12-Feb-96	BNA	Normal	USACE 1996
LHSMW31	Site 47	LHS-MW-31-08201996	23099-010	20-Aug-96	BNA	Normal	USACE 1996
LHSMW31	Site 47	LHS-MW31-1 (001)	9412G975-001	06-Dec-94	BNA	Normal	2
LHSMW31	Site 47	LHS-MW-31-QC	23099-011	20-Aug-96	BNA	Duplicate	USACE 1996
LHSMW32	Site 47	LHS-MW-32	4639.007	17-May-98	BNA	Normal	3
LHSMW32	Site 47	LHS-MW-32-02121996	22353-007	12-Feb-96	BNA	Normal	USACE 1996
LHSMW32	Site 47	LHS-MW-32-08201996	23099-012	20-Aug-96	BNA	Normal	USACE 1996
LHSMW32	Site 47	LHS-MW-32-1 (001)	9412G959-009	05-Dec-94	BNA	Normal	2
LHSMW33	Site 47	LHS-MW-33	4639.008	17-May-98	BNA	Normal	3
LHSMW33	Site 47	LHS-MW-33-02131996	22355-003	13-Feb-96	BNA	Normal	USACE 1996
LHSMW33	Site 47	LHS-MW-33-08201996	23099-013	20-Aug-96	BNA	Normal	USACE 1996
LHSMW33	Site 47	LHS-MW-33-1 (001)	9412G959-008	05-Dec-94	BNA	Normal	2
LHSMW34	Site 47	LHS-MW-34	4639.009	17-May-98	BNA	Normal	3
LHSMW34	Site 47	LHS-MW-34-02131996	22355-004	13-Feb-96	BNA	Normal	USACE 1996
LHSMW34	Site 47	LHS-MW-34-08201996	23099-014	20-Aug-96	BNA	Normal	USACE 1996
LHSMW34	Site 47	LHS-MW-34-1 (001)	9412G959-011	05-Dec-94	BNA	Normal	2
LHSMW34	Site 47	LHS-MW-34-QC	22355-005	13-Feb-96	BNA	Duplicate	USACE 1996
LHSMW35	Site 47	LHS-MW-35	4639.010	17-May-98	BNA	Normal	3
LHSMW35	Site 47	LHS-MW-35-02081996	22340-001	08-Feb-96	BNA	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW-35-08201996	23099-015	20-Aug-96	BNA	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW-35-1 (001)	9412G959-010	05-Dec-94	BNA	Normal	2
LHSMW36	Site 47	LHS-MW-36	4639.012	17-May-98	BNA	Normal	3
LHSMW36	Site 47	LHS-MW-36-02131996	22355-006	13-Feb-96	BNA	Normal	USACE 1996
LHSMW36	Site 47	LHS-MW-36-1 (001)	9412G959-007	05-Dec-94	BNA	Normal	2
LHSMW36	Site 47	LHS-MW-36QC	4639.013	17-May-98	BNA	Duplicate	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW37	Site 47	LHS-MW-37	22339-006	08-Feb-96	BNA	Normal	USACE 1996
LHSMW37	Site 47	LHS-MW-37-1	4639.014	17-May-98	BNA	Normal	3
LHSMW37	Site 47	LHS-MW-37-1 (001)	9412G959-006	05-Dec-94	BNA	Normal	2
LHSMW37	Site 47	LHS-MW-37-1QC	4639.015	17-May-98	BNA	Duplicate	3
LHSMW37	Site 47	LHS-MW-37-2	4664.007	28-May-98	BNA	Normal	3
LHSMW37	Site 47	LHS-MW-37-2QC	4664.008	28-May-98	BNA	Duplicate	3
LHSMW38	Site 47	LHS-MW-38	4639.016	17-May-98	BNA	Normal	3
LHSMW38	Site 47	LHS-MW-38-02121996	22353-005	12-Feb-96	BNA	Normal	USACE 1996
LHSMW38	Site 47	LHS-MW-38-08211996	23107-010	21-Aug-96	BNA	Normal	USACE 1996
LHSMW38	Site 47	LHS-MW38-1 (001)	9412G975-003	06-Dec-94	BNA	Normal	2
LHSMW38	Site 47	LHS-MW-38-QC	23107-011	21-Aug-96	BNA	Duplicate	USACE 1996
LHSMW39	Site 47	LHS-MW-39	4639.019	18-May-98	BNA	Normal	3
LHSMW39	Site 47	LHS-MW-39-02101996	22346-006	10-Feb-96	BNA	Normal	USACE 1996
LHSMW39	Site 47	LHS-MW39-1 (001)	9412G975-004	06-Dec-94	BNA	Normal	2
LHSMW41	Site 47	LHS-MW-41	4639.020	18-May-98	BNA	Normal	3
LHSMW41	Site 47	LHS-MW-41-02091996	22344-004	09-Feb-96	BNA	Normal	USACE 1996
LHSMW41	Site 47	LHS-MW41-1 (001)	9412G015-005	08-Dec-94	BNA	Normal	2
LHSMW42	Site 47	LHS-MW-42	4639.022	18-May-98	BNA	Normal	3
LHSMW42	Site 47	LHS-MW-42-02111996	22348-007	11-Feb-96	BNA	Normal	USACE 1996
LHSMW42	Site 47	LHS-MW42-1 (001)	9412G975-005	06-Dec-94	BNA	Normal	2
LHSMW43	Site 47	LHS-MW-43	4639.023	18-May-98	BNA	Normal	3
LHSMW43	Site 47	LHS-MW43-1 (001)	9412G015-002	08-Dec-94	BNA	Normal	2
LHSMW44	Site 47	LHS-MW-44	4639.024	18-May-98	BNA	Normal	3
LHSMW44	Site 47	LHS-MW-44-02081996	22339-007	08-Feb-96	BNA	Normal	USACE 1996
LHSMW44	Site 47	LHS-MW44-1 (001)	9412G015-006	08-Dec-94	BNA	Normal	2
LHSMW45	Site 47	LHS-MW-45	4639.025	18-May-98	BNA	Normal	3
LHSMW45	Site 47	LHS-MW-45-02101996	22346-005	10-Feb-96	BNA	Normal	USACE 1996
LHSMW45	Site 47	LHS-MW45-1 (001)	9412G015-003	08-Dec-94	BNA	Normal	2
LHSMW45	Site 47	LHS-MW45-1 (001) QC	9412G015-004	08-Dec-94	BNA	Duplicate	2
LHSMW46	Site 47	LHS-MW-46	4639.026	18-May-98	BNA	Normal	3
LHSMW46	Site 47	LHS-MW-46-02081996	22339-003	08-Feb-96	BNA	Normal	USACE 1996
LHSMW46	Site 47	LHS-MW46-1 (001)	9412G015-001	08-Dec-94	BNA	Normal	2
LHSMW47	Site 47	LHS-MW-47	4639.027	18-May-98	BNA	Normal	3
LHSMW47	Site 47	LHS-MW-47-02081996	22339-002	08-Feb-96	BNA	Normal	USACE 1996
LHSMW47	Site 47	LHS-MW47-1 (001)	9412G995-004	07-Dec-94	BNA	Normal	2
LHSMW48	Site 47	LHS-MW48-1 (001)	9412G036-002	09-Dec-94	BNA	Normal	2
LHSMW48	Site 47	LHS-MW-48-2	4664.009	28-May-98	BNA	Normal	3
LHSMW49	Site 47	LHS-MW-49	4644.003	19-May-98	BNA	Normal	3
LHSMW49	Site 47	LHS-MW-49-02091996	22344-007	09-Feb-96	BNA	Normal	USACE 1996
LHSMW49	Site 47	LHS-MW49-1 (001)	9412G995-001	07-Dec-94	BNA	Normal	2
LHSMW49	Site 47	LHS-MW-49QC	4644.004	19-May-98	BNA	Duplicate	3
LHSMW50	Site 47	LHS-MW-50	4644.005	19-May-98	BNA	Normal	3
LHSMW50	Site 47	LHS-MW-50-02091996	22344-005	09-Feb-96	BNA	Normal	USACE 1996
LHSMW50	Site 47	LHS-MW50-1 (001)	9412G036-006	09-Dec-94	BNA	Normal	2
LHSMW51	Site 47	LHS-MW-51	4644.006	19-May-98	BNA	Normal	3
LHSMW51	Site 47	LHS-MW-51-02131996	22357-001	13-Feb-96	BNA	Normal	USACE 1996
LHSMW51	Site 47	LHS-MW51-1 (001)	9412G074-017	11-Dec-94	BNA	Normal	2

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW52	Site 47	LHS-MW-52	4644.007	19-May-98	BNA	Normal	3
LHSMW52	Site 47	LHS-MW-52-02091996	22344-008	09-Feb-96	BNA	Normal	USACE 1996
LHSMW52	Site 47	LHS-MW52-1 (001)	9412G074-016	11-Dec-94	BNA	Normal	2
LHSMW53	Site 47	LHS-MW-53	22346-003	10-Feb-96	BNA	Normal	USACE 1996
LHSMW53	Site 47	LHS-MW-53-1	4647.002	20-May-98	BNA	Normal	3
LHSMW53	Site 47	LHS-MW53-1 (001)	9412G995-003	07-Dec-94	BNA	Normal	2
LHSMW54	Site 47	LHS-MW-54	4647.003	20-May-98	BNA	Normal	3
LHSMW54	Site 47	LHS-MW-54-02121996	22354-002	12-Feb-96	BNA	Normal	USACE 1996
LHSMW54	Site 47	LHS-MW-54-08211996	23107-008	21-Aug-96	BNA	Normal	USACE 1996
LHSMW54	Site 47	LHS-MW54-1 (001)	9412G036-005	09-Dec-94	BNA	Normal	2
LHSMW54	Site 47	LHS-MW-54-QC	22354-003	12-Feb-96	BNA	Duplicate	USACE 1996
LHSMW55	Site 47	LHS-MW-55	4647.004	20-May-98	BNA	Normal	3
LHSMW55	Site 47	LHS-MW-55-02101996	22346-002	10-Feb-96	BNA	Normal	USACE 1996
LHSMW55	Site 47	LHS-MW55-1 (001)	9412G036-004	09-Dec-94	BNA	Normal	2
LHSMW56	Site 47	LHS-MW-56	4647.005	20-May-98	BNA	Normal	3
LHSMW56	Site 47	LHS-MW-56-02091996	22345-003	09-Feb-96	BNA	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW-56-08211996	23107-007	21-Aug-96	BNA	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW56-1 (001)	9412G995-008	07-Dec-94	BNA	Normal	2
LHSMW57	Site 47	LHS-MW-57	4647.006	20-May-98	BNA	Normal	3
LHSMW57	Site 47	LHS-MW-57-02081996	22339-004	08-Feb-96	BNA	Normal	USACE 1996
LHSMW57	Site 47	LHS-MW-57-08211996	23107-006	21-Aug-96	BNA	Normal	USACE 1996
LHSMW57	Site 47	LHS-MW57-1 (001)	9412G036-003	09-Dec-94	BNA	Normal	2
LHSMW57	Site 47	LHS-MW-57-QC	22339-005	08-Feb-96	BNA	Duplicate	USACE 1996
LHSMW60	Site 47	LHS-MW-60-02091996	22344-006	09-Feb-96	BNA	Normal	USACE 1996
LHSMW60	Site 47	LHS-MW-60-08211996	23107-002	21-Aug-96	BNA	Normal	USACE 1996
LHSMW60	Site 47	LHS-MW-60-1	4647.009	20-May-98	BNA	Normal	3
LHSMW60	Site 47	LHS-MW60-1 (001)	9412G074-015	11-Dec-94	BNA	Normal	2
LHSMW60	Site 47	LHS-MW-60-QC	23107-003	21-Aug-96	BNA	Duplicate	USACE 1996
LHSMW61	Site 47	LHS-MW-61	4647.010	20-May-98	BNA	Normal	3
LHSMW61	Site 47	LHS-MW-61-02111996	22348-006	11-Feb-96	BNA	Normal	USACE 1996
LHSMW61	Site 47	LHS-MW-61-08151996	23073-025	15-Aug-96	BNA	Normal	USACE 1996
LHSMW61	Site 47	LHS-MW61-1 (001)	9412G074-005	10-Dec-94	BNA	Normal	2
LHSMW43	Site 47	MW-43	22345-002	09-Feb-96	BNA	Normal	USACE 1996
47WW01	Site 47	47WW01-1	4944.004	29-Sep-98	Explosive	Normal	3
47WW01	Site 47	47WW01-2	4987.003	07-Nov-98	Explosive	Normal	3
47WW02	Site 47	47WW02	4983.003	04-Nov-98	Explosive	Normal	3
47WW03	Site 47	47WW03	4985.001	05-Nov-98	Explosive	Normal	3
47WW04	Site 47	47WW04	4985.002	05-Nov-98	Explosive	Normal	3
47WW05	Site 47	47WW05	4987.004	09-Nov-98	Explosive	Normal	3
47WW06	Site 47	47WW06	4986.002	06-Nov-98	Explosive	Normal	3
47WW07	Site 47	47WW07	4986.003	06-Nov-98	Explosive	Normal	3
47WW08	Site 47	47WW08	4983.005	04-Nov-98	Explosive	Normal	3
47WW09	Site 47	47WW09	4983.006	04-Nov-98	Explosive	Normal	3
47WW11	Site 47	47WW11	4987.007	07-Nov-98	Explosive	Normal	3
47WW12	Site 47	47WW12	4983.001	04-Nov-98	Explosive	Normal	3
47WW13	Site 47	47WW13	4983.007	04-Nov-98	Explosive	Normal	3
47WW14	Site 47	47WW14	4983.008	04-Nov-98	Explosive	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
47WW15	Site 47	47WW15	4983.004	04-Nov-98	Explosive	Normal	3
47WW16	Site 47	47WW16	4983.002	04-Nov-98	Explosive	Normal	3
47WW17	Site 47	47WW17	4987.005	09-Nov-98	Explosive	Normal	3
47WW18	Site 47	47WW18-1	4944.006	29-Sep-98	Explosive	Normal	3
47WW18	Site 47	47WW18-2	4986.001	06-Nov-98	Explosive	Normal	3
47WW19	Site 47	47WW19	4986.004	06-Nov-98	Explosive	Normal	3
47WW20	Site 47	47WW20	4985.007	05-Nov-98	Explosive	Normal	3
47WW21	Site 47	47WW21	4985.003	05-Nov-98	Explosive	Normal	3
47WW22	Site 47	47WW22	4985.004	05-Nov-98	Explosive	Normal	3
47WW23	Site 47	47WW23-1	4944.007	29-Sep-98	Explosive	Normal	3
47WW23	Site 47	47WW23-2	4985.005	05-Nov-98	Explosive	Normal	3
47WW23	Site 47	47WW23-2QC	4985.006	05-Nov-98	Explosive	Duplicate	3
47WW24	Site 47	47WW24	0012089-07D	20-Dec-00	Explosive	Normal	Supplemental RI
47WW25	Site 47	47WW25	0012089-05D	20-Dec-00	Explosive	Normal	Supplemental RI
47WW26	Site 47	47WW26	0012089-06D	20-Dec-00	Explosive	Normal	Supplemental RI
47WW27	Site 47	47WW27	0012083-01D	19-Dec-00	Explosive	Normal	Supplemental RI
47WW27	Site 47	47WW27QC	0012083-02D	19-Dec-00	Explosive	Duplicate	Supplemental RI
LHSMW105	Site 47	LHS-MW-105-02131996	22355-007	13-Feb-96	Explosive	Normal	USACE 1996
LHSMW105	Site 47	LHS-MW-105-05181998	4639.021	18-May-98	Explosive	Normal	3
LHSMW105	Site 47	LHS-MW-105-08221996	23118-005	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW28	Site 47	LHS-MW-28	4639.001	16-May-98	Explosive	Normal	3
LHSMW28	Site 47	LHS-MW-28-02111996	22349-001	11-Feb-96	Explosive	Normal	USACE 1996
LHSMW27	Site 47	LHS-MW-28-08201996	23099-007	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW28	Site 47	LHS-MW28-1 (001)	9412L288-003	07-Dec-94	Explosive	Normal	2
LHSMW29	Site 47	LHS-MW-29	4639.002	16-May-98	Explosive	Normal	3
LHSMW29	Site 47	LHS-MW-29-02111996	22348-008	11-Feb-96	Explosive	Normal	USACE 1996
LHSMW29	Site 47	LHS-MW-29-08201996	23099-008	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW29	Site 47	LHS-MW29-1 (001)	9412L288-004	07-Dec-94	Explosive	Normal	2
LHSMW29	Site 47	LHS-MW-29-QC	22348-009	11-Feb-96	Explosive	Duplicate	USACE 1996
LHSMW30	Site 47	LHS-MW-30	22353-004	12-Feb-96	Explosive	Normal	USACE 1996
LHSMW30	Site 47	LHS-MW-30-05161998	4639.003	16-May-98	Explosive	Normal	3
LHSMW30	Site 47	LHS-MW-30-08201996	23099-009	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW30	Site 47	LHS-MW30-1 (001)	9412L288-005	07-Dec-94	Explosive	Normal	2
LHSMW31	Site 47	LHS-MW-31	4639.004	16-May-98	Explosive	Normal	3
LHSMW31	Site 47	LHS-MW-31-02121996	22353-006	12-Feb-96	Explosive	Normal	USACE 1996
LHSMW31	Site 47	LHS-MW-31-08201996	23099-010	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW31	Site 47	LHS-MW31-1 (001)	9412L267-004	06-Dec-94	Explosive	Normal	2
LHSMW31	Site 47	LHS-MW-31-QC	23099-011	20-Aug-96	Explosive	Duplicate	USACE 1996
LHSMW32	Site 47	LHS-MW-32	4639.007	17-May-98	Explosive	Normal	3
LHSMW32	Site 47	LHS-MW-32-02121996	22353-007	12-Feb-96	Explosive	Normal	USACE 1996
LHSMW32	Site 47	LHS-MW-32-08201996	23099-012	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW32	Site 47	LHS-MW32-1 (001)	9412L255-005	05-Dec-94	Explosive	Normal	2
LHSMW33	Site 47	LHS-MW-33	4639.008	17-May-98	Explosive	Normal	3
LHSMW33	Site 47	LHS-MW-33-02131996	22355-003	13-Feb-96	Explosive	Normal	USACE 1996
LHSMW33	Site 47	LHS-MW-33-08201996	23099-013	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW33	Site 47	LHS-MW33-1 (001)	9412L255-002	05-Dec-94	Explosive	Normal	2
LHSMW34	Site 47	LHS-MW-34	4639.009	17-May-98	Explosive	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW34	Site 47	LHS-MW-34-02131996	22355-004	13-Feb-96	Explosive	Normal	USACE 1996
LHSMW34	Site 47	LHS-MW-34-08201996	23099-014	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW34	Site 47	LHS-MW34-1 (001)	9412L255-004	05-Dec-94	Explosive	Normal	2
LHSMW34	Site 47	LHS-MW-34-QC	22355-005	13-Feb-96	Explosive	Duplicate	USACE 1996
LHSMW35	Site 47	LHS-MW-35	4639.010	17-May-98	Explosive	Normal	3
LHSMW35	Site 47	LHS-MW-35-02081996	22340-001	08-Feb-96	Explosive	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW-35-08201996	23099-015	20-Aug-96	Explosive	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW35-1 (001)	9412L255-001	05-Dec-94	Explosive	Normal	2
LHSMW36	Site 47	LHS-MW-36	4639.012	17-May-98	Explosive	Normal	3
LHSMW36	Site 47	LHS-MW-36-02131996	22355-006	13-Feb-96	Explosive	Normal	USACE 1996
LHSMW36	Site 47	LHS-MW-36-08221996	23118-008	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW36	Site 47	LHS-MW36-1 (001)	9412L255-008	05-Dec-94	Explosive	Normal	2
LHSMW36	Site 47	LHS-MW-36QC	4639.013	17-May-98	Explosive	Duplicate	3
LHSMW37	Site 47	LHS-MW-37	22339-006	08-Feb-96	Explosive	Normal	USACE 1996
LHSMW37	Site 47	LHS-MW-37-08221996	23118-009	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW37	Site 47	LHS-MW-37-1	4639.014	17-May-98	Explosive	Normal	3
LHSMW37	Site 47	LHS-MW37-1 (001)	9412L255-007	05-Dec-94	Explosive	Normal	2
LHSMW37	Site 47	LHS-MW-37-1QC	4639.015	17-May-98	Explosive	Duplicate	3
LHSMW38	Site 47	LHS-MW-38	4639.016	17-May-98	Explosive	Normal	3
LHSMW38	Site 47	LHS-MW-38-02121996	22353-005	12-Feb-96	Explosive	Normal	USACE 1996
LHSMW38	Site 47	LHS-MW-38-08211996	23107-010	21-Aug-96	Explosive	Normal	USACE 1996
LHSMW38	Site 47	LHS-MW38-1 (001)	9412L267-003	06-Dec-94	Explosive	Normal	2
LHSMW38	Site 47	LHS-MW-38-QC	23107-011	21-Aug-96	Explosive	Duplicate	USACE 1996
LHSMW39	Site 47	LHS-MW-39	4639.019	18-May-98	Explosive	Normal	3
LHSMW39	Site 47	LHS-MW-39-02101996	22346-006	10-Feb-96	Explosive	Normal	USACE 1996
LHSMW39	Site 47	LHS-MW-39-08221996	23118-011	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW39	Site 47	LHS-MW39-1 (001)	9412L267-006	06-Dec-94	Explosive	Normal	2
LHSMW41	Site 47	LHS-MW-41	4639.020	18-May-98	Explosive	Normal	3
LHSMW41	Site 47	LHS-MW-41-02091996	22344-004	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW41	Site 47	LHS-MW-41-08221996	23118-012	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW41	Site 47	LHS-MW41-1 (001)	9412L308-006	08-Dec-94	Explosive	Normal	2
LHSMW42	Site 47	LHS-MW-42	4639.022	18-May-98	Explosive	Normal	3
LHSMW42	Site 47	LHS-MW-42-02111996	22348-007	11-Feb-96	Explosive	Normal	USACE 1996
LHSMW42	Site 47	LHS-MW-42-08221996	23118-013	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW42	Site 47	LHS-MW42-1 (001)	9412L267-002	06-Dec-94	Explosive	Normal	2
LHSMW43	Site 47	LHS-MW-43	4639.023	18-May-98	Explosive	Normal	3
LHSMW43	Site 47	LHS-MW-43-08221996	23118-016	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW43	Site 47	LHS-MW43-1 (001)	9412L308-002	08-Dec-94	Explosive	Normal	2
LHSMW43	Site 47	LHS-MW-43-QC	23118-017	22-Aug-96	Explosive	Duplicate	USACE 1996
LHSMW44	Site 47	LHS-MW-44	4639.024	18-May-98	Explosive	Normal	3
LHSMW44	Site 47	LHS-MW-44-02081996	22339-007	08-Feb-96	Explosive	Normal	USACE 1996
LHSMW44	Site 47	LHS-MW-44-08221996	23118-014	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW44	Site 47	LHS-MW44-1 (001)	9412L308-005	08-Dec-94	Explosive	Normal	2
LHSMW45	Site 47	LHS-MW-45	4639.025	18-May-98	Explosive	Normal	3
LHSMW45	Site 47	LHS-MW-45-02101996	22346-005	10-Feb-96	Explosive	Normal	USACE 1996
LHSMW45	Site 47	LHS-MW-45-08221996	23118-015	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW45	Site 47	LHS-MW45-1 (001)	9412L308-003	08-Dec-94	Explosive	Normal	2

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW45	Site 47	LHS-MW45-1 (001) QC	9412L308-004	08-Dec-94	Explosive	Duplicate	2
LHSMW46	Site 47	LHS-MW-46	4639.026	18-May-98	Explosive	Normal	3
LHSMW46	Site 47	LHS-MW-46-02081996	22339-003	08-Feb-96	Explosive	Normal	USACE 1996
LHSMW46	Site 47	LHS-MW-46-08221996	23118-010	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW46	Site 47	LHS-MW46-1 (001)	9412L308-001	08-Dec-94	Explosive	Normal	2
LHSMW47	Site 47	LHS-MW-47	4639.027	18-May-98	Explosive	Normal	3
LHSMW47	Site 47	LHS-MW-47-02081996	22339-002	08-Feb-96	Explosive	Normal	USACE 1996
LHSMW47	Site 47	LHS-MW-47-08221996	23118-018	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW47	Site 47	LHS-MW47-1 (001)	9412L288-007	07-Dec-94	Explosive	Normal	2
LHSMW48	Site 47	LHS-MW-48	23118-019	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW48	Site 47	LHS-MW-48-1	4644.002	19-May-98	Explosive	Normal	3
LHSMW48	Site 47	LHS-MW48-1 (001)	9412L328-001	09-Dec-94	Explosive	Normal	2
LHSMW49	Site 47	LHS-MW-49	4644.003	19-May-98	Explosive	Normal	3
LHSMW49	Site 47	LHS-MW-49-02091996	22344-007	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW49	Site 47	LHS-MW-49-08221996	23118-020	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW49	Site 47	LHS-MW49-1 (001)	9412L288-006	07-Dec-94	Explosive	Normal	2
LHSMW49	Site 47	LHS-MW-49QC	4644.004	19-May-98	Explosive	Duplicate	3
LHSMW50	Site 47	LHS-MW-50	4644.005	19-May-98	Explosive	Normal	3
LHSMW50	Site 47	LHS-MW-50-02091996	22344-005	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW50	Site 47	LHS-MW-50-08221996	23118-021	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW50	Site 47	LHS-MW50-1 (001)	9412L328-005	09-Dec-94	Explosive	Normal	2
LHSMW51	Site 47	LHS-MW-51	4644.006	19-May-98	Explosive	Normal	3
LHSMW51	Site 47	LHS-MW-51-02131996	22357-001	13-Feb-96	Explosive	Normal	USACE 1996
LHSMW51	Site 47	LHS-MW-51-08221996	23118-006	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW51	Site 47	LHS-MW51-1 (001)	9412L352-001	11-Dec-94	Explosive	Normal	2
LHSMW52	Site 47	LHS-MW-52	4644.007	19-May-98	Explosive	Normal	3
LHSMW52	Site 47	LHS-MW-52-02091996	22344-008	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW52	Site 47	LHS-MW-52-08221996	23118-004	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW52	Site 47	LHS-MW52-1 (001)	9412L352-005	11-Dec-94	Explosive	Normal	2
LHSMW53	Site 47	LHS-MW-53	22346-003	10-Feb-96	Explosive	Normal	USACE 1996
LHSMW53	Site 47	LHS-MW-53-08221996	23118-003	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW53	Site 47	LHS-MW-53-1	4647.002	20-May-98	Explosive	Normal	3
LHSMW53	Site 47	LHS-MW53-1 (001)	9412L288-002	07-Dec-94	Explosive	Normal	2
LHSMW54	Site 47	LHS-MW-54	4647.003	20-May-98	Explosive	Normal	3
LHSMW54	Site 47	LHS-MW-54-02121996	22354-002	12-Feb-96	Explosive	Normal	USACE 1996
LHSMW52	Site 47	LHS-MW-54-08211996	23107-008	21-Aug-96	Explosive	Normal	USACE 1996
LHSMW54	Site 47	LHS-MW54-1 (001)	9412L328-004	09-Dec-94	Explosive	Normal	2
LHSMW54	Site 47	LHS-MW-54-QC	22354-003	12-Feb-96	Explosive	Duplicate	USACE 1996
LHSMW55	Site 47	LHS-MW-55	4647.004	20-May-98	Explosive	Normal	3
LHSMW55	Site 47	LHS-MW-55-02101996	22346-002	10-Feb-96	Explosive	Normal	USACE 1996
LHSMW55	Site 47	LHS-MW-55-08221996	23118-002	22-Aug-96	Explosive	Normal	USACE 1996
LHSMW55	Site 47	LHS-MW55-1 (001)	9412L328-003	09-Dec-94	Explosive	Normal	2
LHSMW56	Site 47	LHS-MW-56	4647.005	20-May-98	Explosive	Normal	3
LHSMW56	Site 47	LHS-MW-56-02091996	22345-003	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW-56-08211996	23107-007	21-Aug-96	Explosive	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW56-1 (001)	9412L288-001	07-Dec-94	Explosive	Normal	2
LHSMW57	Site 47	LHS-MW-57	4647.006	20-May-98	Explosive	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW57	Site 47	LHS-MW-57-02081996	22339-004	08-Feb-96	Explosive	Normal	USACE 1996
LHSMW57	Site 47	LHS-MW-57-08211996	23107-006	21-Aug-96	Explosive	Normal	USACE 1996
LHSMW57	Site 47	LHS-MW57-1 (001)	9412L328-002	09-Dec-94	Explosive	Normal	2
LHSMW57	Site 47	LHS-MW-57-QC	22339-005	08-Feb-96	Explosive	Duplicate	USACE 1996
LHSMW60	Site 47	LHS-MW-60-02091996	22344-006	09-Feb-96	Explosive	Normal	USACE 1996
LHSMW60	Site 47	LHS-MW-60-08211996	23107-002	21-Aug-96	Explosive	Normal	USACE 1996
LHSMW60	Site 47	LHS-MW-60-1	4647.009	20-May-98	Explosive	Normal	3
LHSMW60	Site 47	LHS-MW60-1 (001)	9412L352-006	11-Dec-94	Explosive	Normal	2
LHSMW60	Site 47	LHS-MW-60-QC	23107-003	21-Aug-96	Explosive	Duplicate	USACE 1996
LHSMW61	Site 47	LHS-MW-61	4647.010	20-May-98	Explosive	Normal	3
LHSMW61	Site 47	LHS-MW-61-02111996	22348-006	11-Feb-96	Explosive	Normal	USACE 1996
LHSMW61	Site 47	LHS-MW-61-08151996	23073-025	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW61	Site 47	LHS-MW61-1 (001)	9412L351-001	10-Dec-94	Explosive	Normal	2
LHSMW43	Site 47	MW-43	22345-002	09-Feb-96	Explosive	Normal	USACE 1996
47WW01	Site 47	47WW01-1	4944.004	29-Sep-98	Metal	Normal	3
47WW01	Site 47	47WW01-2	4987.003	07-Nov-98	Metal	Normal	3
47WW02	Site 47	47WW02	4983.003	04-Nov-98	Metal	Normal	3
47WW03	Site 47	47WW03	4985.001	05-Nov-98	Metal	Normal	3
47WW04	Site 47	47WW04	4985.002	05-Nov-98	Metal	Normal	3
47WW05	Site 47	47WW05	4987.004	09-Nov-98	Metal	Normal	3
47WW06	Site 47	47WW06	4986.002	06-Nov-98	Metal	Normal	3
47WW07	Site 47	47WW07	4986.003	06-Nov-98	Metal	Normal	3
47WW08	Site 47	47WW08	4983.005	04-Nov-98	Metal	Normal	3
47WW09	Site 47	47WW09	4983.006	04-Nov-98	Metal	Normal	3
47WW11	Site 47	47WW11	4987.007	07-Nov-98	Metal	Normal	3
47WW12	Site 47	47WW12	4983.001	04-Nov-98	Metal	Normal	3
47WW13	Site 47	47WW13	4983.007	04-Nov-98	Metal	Normal	3
47WW14	Site 47	47WW14	4983.008	04-Nov-98	Metal	Normal	3
47WW15	Site 47	47WW15	4983.004	04-Nov-98	Metal	Normal	3
47WW16	Site 47	47WW16	4983.002	04-Nov-98	Metal	Normal	3
47WW17	Site 47	47WW17	4987.005	09-Nov-98	Metal	Normal	3
47WW18	Site 47	47WW18-1	4944.006	29-Sep-98	Metal	Normal	3
47WW18	Site 47	47WW18-2	4986.001	06-Nov-98	Metal	Normal	3
47WW19	Site 47	47WW19	4986.004	06-Nov-98	Metal	Normal	3
47WW20	Site 47	47WW20	4985.007	05-Nov-98	Metal	Normal	3
47WW21	Site 47	47WW21	4985.003	05-Nov-98	Metal	Normal	3
47WW22	Site 47	47WW22	4985.004	05-Nov-98	Metal	Normal	3
47WW23	Site 47	47WW23-1	4944.007	29-Sep-98	Metal	Normal	3
47WW23	Site 47	47WW23-2	4985.005	05-Nov-98	Metal	Normal	3
47WW23	Site 47	47WW23-2QC	4985.006	05-Nov-98	Metal	Duplicate	3
47WW24	Site 47	47WW24	0012089-07B	20-Dec-00	Metal	Normal	Supplemental RI
47WW25	Site 47	47WW25	0012089-05B	20-Dec-00	Metal	Normal	Supplemental RI
47WW26	Site 47	47WW26	0012089-06B	20-Dec-00	Metal	Normal	Supplemental RI
47WW27	Site 47	47WW27	0012083-01B	19-Dec-00	Metal	Normal	Supplemental RI
47WW27	Site 47	47WW27QC	0012083-02B	19-Dec-00	Metal	Duplicate	Supplemental RI
LHSMW105	Site 47	LHS-MW-105-02131996	S60106-9	13-Feb-96	Metal	Normal	USACE 1996
LHSMW105	Site 47	LHS-MW-105-05181998	4639.021	18-May-98	Metal	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW28	Site 47	LHS-MW-28	4639.001	16-May-98	Metal	Normal	3
LHSMW28	Site 47	LHS-MW-28-02111996	22349-001	11-Feb-96	Metal	Normal	USACE 1996
LHSMW27	Site 47	LHS-MW-28-08201996	S60665-8	20-Aug-96	Metal	Normal	USACE 1996
LHSMW28	Site 47	LHS-MW28-1 (001)	9412G995-007	07-Dec-94	Metal	Normal	2
LHSMW29	Site 47	LHS-MW-29	4639.002	16-May-98	Metal	Normal	3
LHSMW29	Site 47	LHS-MW-29-02111996	S60097-10	11-Feb-96	Metal	Normal	USACE 1996
LHSMW29	Site 47	LHS-MW-29-08201996	S60665-9	20-Aug-96	Metal	Normal	USACE 1996
LHSMW29	Site 47	LHS-MW29-1 (001)	9412G995-002	07-Dec-94	Metal	Normal	2
LHSMW29	Site 47	LHS-MW-29-QC	S60097-12	11-Feb-96	Metal	Duplicate	USACE 1996
LHSMW30	Site 47	LHS-MW-30	S60102-5	12-Feb-96	Metal	Normal	USACE 1996
LHSMW30	Site 47	LHS-MW-30-05161998	4639.003	16-May-98	Metal	Normal	3
LHSMW30	Site 47	LHS-MW-30-08201996	S60665-10	20-Aug-96	Metal	Normal	USACE 1996
LHSMW30	Site 47	LHS-MW30-1 (001)	9412G995-006	07-Dec-94	Metal	Normal	2
LHSMW31	Site 47	LHS-MW-31	4639.004	16-May-98	Metal	Normal	3
LHSMW31	Site 47	LHS-MW-31-02121996	S60102-7	12-Feb-96	Metal	Normal	USACE 1996
LHSMW31	Site 47	LHS-MW-31-08201996	S60665-11	20-Aug-96	Metal	Normal	USACE 1996
LHSMW31	Site 47	LHS-MW31-1 (001)	9412G975-001	06-Dec-94	Metal	Normal	2
LHSMW32	Site 47	LHS-MW-32	4639.007	17-May-98	Metal	Normal	3
LHSMW32	Site 47	LHS-MW-32-02121996	S60102-8	12-Feb-96	Metal	Normal	USACE 1996
LHSMW32	Site 47	LHS-MW-32-08201996	S60665-14	20-Aug-96	Metal	Normal	USACE 1996
LHSMW32	Site 47	LHS-MW-32-1 (001)	9412G959-009	05-Dec-94	Metal	Normal	2
LHSMW33	Site 47	LHS-MW-33	4639.008	17-May-98	Metal	Normal	3
LHSMW33	Site 47	LHS-MW-33-02131996	S60106-4	13-Feb-96	Metal	Normal	USACE 1996
LHSMW33	Site 47	LHS-MW-33-1 (001)	9412G959-008	05-Dec-94	Metal	Normal	2
LHSMW34	Site 47	LHS-MW-34	4639.009	17-May-98	Metal	Normal	3
LHSMW34	Site 47	LHS-MW-34-02131996	S60106-5	13-Feb-96	Metal	Normal	USACE 1996
LHSMW34	Site 47	LHS-MW-34-08201996	S60665-16	20-Aug-96	Metal	Normal	USACE 1996
LHSMW34	Site 47	LHS-MW-34-1 (001)	9412G959-011	05-Dec-94	Metal	Normal	2
LHSMW34	Site 47	LHS-MW-34-QC	S60106-7	13-Feb-96	Metal	Duplicate	USACE 1996
LHSMW35	Site 47	LHS-MW-35	4639.010	17-May-98	Metal	Normal	3
LHSMW35	Site 47	LHS-MW-35-02081996	22340-001	08-Feb-96	Metal	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW-35-08201996	S60665-17	20-Aug-96	Metal	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW-35-1 (001)	9412G959-010	05-Dec-94	Metal	Normal	2
LHSMW36	Site 47	LHS-MW-36	4639.012	17-May-98	Metal	Normal	3
LHSMW36	Site 47	LHS-MW-36-02131996	S60106-8	13-Feb-96	Metal	Normal	USACE 1996
LHSMW36	Site 47	LHS-MW-36-1 (001)	9412G959-007	05-Dec-94	Metal	Normal	2
LHSMW36	Site 47	LHS-MW-36QC	4639.013	17-May-98	Metal	Duplicate	3
LHSMW37	Site 47	LHS-MW-37-1	4639.014	17-May-98	Metal	Normal	3
LHSMW37	Site 47	LHS-MW-37-1 (001)	9412G959-006	05-Dec-94	Metal	Normal	2
LHSMW37	Site 47	LHS-MW-37-1QC	4639.015	17-May-98	Metal	Duplicate	3
LHSMW38	Site 47	LHS-MW-38	4639.016	17-May-98	Metal	Normal	3
LHSMW38	Site 47	LHS-MW-38-02121996	S60102-6	12-Feb-96	Metal	Normal	USACE 1996
LHSMW38	Site 47	LHS-MW-38-08211996	S60671-11	21-Aug-96	Metal	Normal	USACE 1996
LHSMW38	Site 47	LHS-MW38-1 (001)	9412G975-003	06-Dec-94	Metal	Normal	2
LHSMW38	Site 47	LHS-MW-38-QC	4639.017	21-Aug-96	Metal	Duplicate	USACE 1996
LHSMW39	Site 47	LHS-MW-39	4639.019	18-May-98	Metal	Normal	3
LHSMW39	Site 47	LHS-MW-39-02101996	S60093-7	10-Feb-96	Metal	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW39	Site 47	LHS-MW39-1 (001)	9412G975-004	06-Dec-94	Metal		
LHSMW41	Site 47	LHS-MW-41	4639.020	18-May-98	Metal	Normal	2
LHSMW41	Site 47	LHS-MW-41-02091996	S60091-5	09-Feb-96	Metal	Normal	3
LHSMW41	Site 47	LHS-MW41-1 (001)	9412G015-005	08-Dec-94	Metal	Normal	USACE 1996
LHSMW42	Site 47	LHS-MW-42	4639.022	18-May-98	Metal	Normal	2
LHSMW42	Site 47	LHS-MW-42-02111996	S60097-9	11-Feb-96	Metal	Normal	3
LHSMW42	Site 47	LHS-MW42-1 (001)	9412G975-005	06-Dec-94	Metal	Normal	USACE 1996
LHSMW43	Site 47	LHS-MW-43	4639.023	18-May-98	Metal	Normal	2
LHSMW43	Site 47	LHS-MW43-1 (001)	9412G015-002	08-Dec-94	Metal	Normal	3
LHSMW44	Site 47	LHS-MW-44	4639.024	18-May-98	Metal	Normal	2
LHSMW44	Site 47	LHS-MW-44-02081996	S60083-9	08-Feb-96	Metal	Normal	3
LHSMW44	Site 47	LHS-MW44-1 (001)	9412G015-006	08-Dec-94	Metal	Normal	USACE 1996
LHSMW45	Site 47	LHS-MW-45	4639.025	18-May-98	Metal	Normal	2
LHSMW45	Site 47	LHS-MW-45-02101996	S60093-6	10-Feb-96	Metal	Normal	3
LHSMW45	Site 47	LHS-MW45-1 (001)	9412G015-003	08-Dec-94	Metal	Normal	USACE 1996
LHSMW45	Site 47	LHS-MW45-1 (001) QC	9412G015-004	08-Dec-94	Metal	Normal	2
LHSMW46	Site 47	LHS-MW-46	4639.026	18-May-98	Metal	Duplicate	2
LHSMW46	Site 47	LHS-MW-46-02081996	S60083-4	08-Feb-96	Metal	Normal	3
LHSMW46	Site 47	LHS-MW46-1 (001)	9412G015-001	08-Dec-94	Metal	Normal	USACE 1996
LHSMW47	Site 47	LHS-MW-47	4639.027	18-May-98	Metal	Normal	2
LHSMW47	Site 47	LHS-MW-47-02081996	S60083-3	08-Feb-96	Metal	Normal	3
LHSMW47	Site 47	LHS-MW47-1 (001)	9412G995-004	07-Dec-94	Metal	Normal	USACE 1996
LHSMW48	Site 47	LHS-MW-48-1	4644.002	19-May-98	Metal	Normal	2
LHSMW48	Site 47	LHS-MW48-1 (001)	9412G036-002	09-Dec-94	Metal	Normal	3
LHSMW49	Site 47	LHS-MW-49	4644.003	19-May-98	Metal	Normal	2
LHSMW49	Site 47	LHS-MW-49-02091996	S60091-8	09-Feb-96	Metal	Normal	3
LHSMW49	Site 47	LHS-MW49-1 (001)	9412G995-001	07-Dec-94	Metal	Normal	USACE 1996
LHSMW49	Site 47	LHS-MW-49QC	4644.004	19-May-98	Metal	Normal	2
LHSMW50	Site 47	LHS-MW-50	4644.005	19-May-98	Metal	Duplicate	3
LHSMW50	Site 47	LHS-MW-50-02091996	S60091-6	09-Feb-96	Metal	Normal	3
LHSMW50	Site 47	LHS-MW50-1 (001)	9412G036-006	09-Dec-94	Metal	Normal	USACE 1996
LHSMW51	Site 47	LHS-MW-51	4644.006	19-May-98	Metal	Normal	2
LHSMW51	Site 47	LHS-MW-51-02131996	22357-001	13-Feb-96	Metal	Normal	3
LHSMW51	Site 47	LHS-MW51-1 (001)	9412G074-017	11-Dec-94	Metal	Normal	USACE 1996
LHSMW52	Site 47	LHS-MW-52	4644.007	19-May-98	Metal	Normal	2
LHSMW52	Site 47	LHS-MW-52-02091996	S60091-9	09-Feb-96	Metal	Normal	3
LHSMW52	Site 47	LHS-MW52-1 (001)	9412G074-016	11-Dec-94	Metal	Normal	USACE 1996
LHSMW53	Site 47	LHS-MW-53	S60093-4	10-Feb-96	Metal	Normal	2
LHSMW53	Site 47	LHS-MW-53-1	4647.002	20-May-98	Metal	Normal	USACE 1996
LHSMW53	Site 47	LHS-MW53-1 (001)	9412G995-003	07-Dec-94	Metal	Normal	3
LHSMW54	Site 47	LHS-MW-54	4647.003	20-May-98	Metal	Normal	2
LHSMW54	Site 47	LHS-MW-54-02121996	S60103-3	12-Feb-96	Metal	Normal	3
LHSMW52	Site 47	LHS-MW-54-08211996	S60671-9	21-Aug-96	Metal	Normal	USACE 1996
LHSMW54	Site 47	LHS-MW54-1 (001)	9412G036-005	09-Dec-94	Metal	Normal	USACE 1996
LHSMW54	Site 47	LHS-MW-54-QC	S60103-4	12-Feb-96	Metal	Normal	2
LHSMW55	Site 47	LHS-MW-55	4647.004	20-May-98	Metal	Duplicate	USACE 1996
LHSMW55	Site 47	LHS-MW-55-02101996	S60093-3	10-Feb-96	Metal	Normal	3
LHSMW55	Site 47	LHS-MW-55-02101996	S60093-3	10-Feb-96	Metal	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW55	Site 47	LHS-MW55-1 (001)	9412G036-004	09-Dec-94	Metal	Normal	2
LHSMW56	Site 47	LHS-MW-56	4647.005	20-May-98	Metal	Normal	3
LHSMW56	Site 47	LHS-MW-56-02091996	22345-003	09-Feb-96	Metal	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW-56-08211996	S60671-8	21-Aug-96	Metal	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW56-1 (001)	9412G995-008	07-Dec-94	Metal	Normal	2
LHSMW57	Site 47	LHS-MW-57	4647.006	20-May-98	Metal	Normal	3
LHSMW57	Site 47	LHS-MW-57-02081996	S60083-5	08-Feb-96	Metal	Normal	USACE 1996
LHSMW57	Site 47	LHS-MW-57-08211996	S60671-7	21-Aug-96	Metal	Normal	USACE 1996
LHSMW57	Site 47	LHS-MW57-1 (001)	9412G036-003	09-Dec-94	Metal	Normal	2
LHSMW57	Site 47	LHS-MW-57QC	S60083-7	08-Feb-96	Metal	Duplicate	USACE 1996
LHSMW60	Site 47	LHS-MW-60-02091996	S60091-7	09-Feb-96	Metal	Normal	USACE 1996
LHSMW60	Site 47	LHS-MW-60-08211996	S60671-2	21-Aug-96	Metal	Normal	USACE 1996
LHSMW60	Site 47	LHS-MW-60-1	4647.009	20-May-98	Metal	Normal	3
LHSMW60	Site 47	LHS-MW60-1 (001)	9412G074-015	11-Dec-94	Metal	Normal	2
LHSMW60	Site 47	LHS-MW-60-QC	S60671-4	21-Aug-96	Metal	Duplicate	USACE 1996
LHSMW61	Site 47	LHS-MW-61	4647.010	20-May-98	Metal	Normal	3
LHSMW61	Site 47	LHS-MW-61-02111996	S60097-8	11-Feb-96	Metal	Normal	USACE 1996
LHSMW61	Site 47	LHS-MW-61-08151996	S60652-26	15-Aug-96	Metal	Normal	USACE 1996
LHSMW61	Site 47	LHS-MW61-1 (001)	9412G074-005	10-Dec-94	Metal	Normal	2
LHSMW43	Site 47	MW-43	22345-002	09-Feb-96	Metal	Normal	USACE 1996
47WW01	Site 47	47WW01-1	4944.004	29-Sep-98	PCB	Normal	3
47WW01	Site 47	47WW01-2	4987.003	07-Nov-98	PCB	Normal	3
47WW06	Site 47	47WW06	4986.002	06-Nov-98	PCB	Normal	3
47WW20	Site 47	47WW20	4985.007	05-Nov-98	PCB	Normal	3
47WW01	Site 47	47WW01-1	35777.02	29-Sep-98	PCDD/PCDF	Normal	3
47WW06	Site 47	47WW06	36329.04	06-Nov-98	PCDD/PCDF	Normal	3
47WW20	Site 47	47WW20	36329.07	05-Nov-98	PCDD/PCDF	Normal	3
47WW01	Site 47	47WW01-1	4944.004	29-Sep-98	Pesticide	Normal	3
47WW01	Site 47	47WW01-2	4987.003	07-Nov-98	Pesticide	Normal	3
47WW06	Site 47	47WW06	4986.002	06-Nov-98	Pesticide	Normal	3
47WW20	Site 47	47WW20	4985.007	05-Nov-98	Pesticide	Normal	3
LHSMW28	Site 47	LHS-MW-28-02111996	22349-001	11-Feb-96	Pesticide	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW-35-02081996	22340-001	08-Feb-96	Pesticide	Normal	USACE 1996
LHSMW51	Site 47	LHS-MW-51-02131996	22357-001	13-Feb-96	Pesticide	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW-56-02091996	22345-003	09-Feb-96	Pesticide	Normal	USACE 1996
LHSMW43	Site 47	MW-43	22345-002	09-Feb-96	Pesticide	Normal	USACE 1996
47WW01	Site 47	47WW01-1	4944.004	29-Sep-98	Volatile	Normal	3
47WW01	Site 47	47WW01-2	4987.003	07-Nov-98	Volatile	Normal	3
47WW02	Site 47	47WW02	4983.003	04-Nov-98	Volatile	Normal	3
47WW03	Site 47	47WW03	4985.001	05-Nov-98	Volatile	Normal	3
47WW04	Site 47	47WW04	4985.002	05-Nov-98	Volatile	Normal	3
47WW05	Site 47	47WW05	4987.004	09-Nov-98	Volatile	Normal	3
47WW06	Site 47	47WW06	4986.002	06-Nov-98	Volatile	Normal	3
47WW07	Site 47	47WW07	4986.003	06-Nov-98	Volatile	Normal	3
47WW08	Site 47	47WW08	4983.005	04-Nov-98	Volatile	Normal	3
47WW09	Site 47	47WW09	4983.006	04-Nov-98	Volatile	Normal	3
47WW11	Site 47	47WW11	4987.007	07-Nov-98	Volatile	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
47WW12	Site 47	47WW12	4983.001	04-Nov-98	Volatile	Normal	3
47WW13	Site 47	47WW13	4983.007	04-Nov-98	Volatile	Normal	3
47WW14	Site 47	47WW14	4983.008	04-Nov-98	Volatile	Normal	3
47WW15	Site 47	47WW15	4983.004	04-Nov-98	Volatile	Normal	3
47WW16	Site 47	47WW16	4983.002	04-Nov-98	Volatile	Normal	3
47WW17	Site 47	47WW17	4987.005	09-Nov-98	Volatile	Normal	3
47WW18	Site 47	47WW18-1	4944.006	29-Sep-98	Volatile	Normal	3
47WW18	Site 47	47WW18-2	4986.001	06-Nov-98	Volatile	Normal	3
47WW19	Site 47	47WW19	4986.004	06-Nov-98	Volatile	Normal	3
47WW20	Site 47	47WW20	4985.007	05-Nov-98	Volatile	Normal	3
47WW21	Site 47	47WW21	4985.003	05-Nov-98	Volatile	Normal	3
47WW22	Site 47	47WW22	4985.004	05-Nov-98	Volatile	Normal	3
47WW23	Site 47	47WW23-1	4944.007	29-Sep-98	Volatile	Normal	3
47WW23	Site 47	47WW23-2	4985.005	05-Nov-98	Volatile	Normal	3
47WW23	Site 47	47WW23-2QC	4985.006	05-Nov-98	Volatile	Duplicate	3
47WW24	Site 47	47WW24	0012089-07A	20-Dec-00	Volatile	Normal	Supplemental RI
47WW25	Site 47	47WW25	0012089-05A	20-Dec-00	Volatile	Normal	Supplemental RI
47WW26	Site 47	47WW26	0012089-06A	20-Dec-00	Volatile	Normal	Supplemental RI
47WW27	Site 47	47WW27	0012083-01A	19-Dec-00	Volatile	Normal	Supplemental RI
47WW27	Site 47	47WW27QC	0012083-02A	19-Dec-00	Volatile	Duplicate	Supplemental RI
LHSMW105	Site 47	LHS-MW-105-02131996	S60106-9	13-Feb-96	Volatile	Normal	USACE 1996
LHSMW105	Site 47	LHS-MW-105-05181998	4639.021	18-May-98	Volatile	Normal	3
LHSMW105	Site 47	LHS-MW-105-08221996	23118-005	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW28	Site 47	LHS-MW-28	4639.001	16-May-98	Volatile	Normal	3
LHSMW28	Site 47	LHS-MW-28-02111996	S60098-2	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW27	Site 47	LHS-MW-28-08201996	23099-007	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW28	Site 47	LHS-MW28-1 (001)	9412G995-007	07-Dec-94	Volatile	Normal	2
LHSMW29	Site 47	LHS-MW-29	4639.002	16-May-98	Volatile	Normal	3
LHSMW29	Site 47	LHS-MW-29-02111996	S60097-10	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW29	Site 47	LHS-MW-29-08201996	23099-008	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW29	Site 47	LHS-MW29-1 (001)	9412G995-002	07-Dec-94	Volatile	Normal	2
LHSMW30	Site 47	LHS-MW-30	S60102-5	12-Feb-96	Volatile	Normal	USACE 1996
LHSMW30	Site 47	LHS-MW-30-05161998	4639.003	16-May-98	Volatile	Normal	3
LHSMW30	Site 47	LHS-MW-30-08201996	23099-009	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW30	Site 47	LHS-MW30-1 (001)	9412G995-006	07-Dec-94	Volatile	Normal	2
LHSMW31	Site 47	LHS-MW-31	4639.004	16-May-98	Volatile	Normal	3
LHSMW31	Site 47	LHS-MW-31-02121996	S60102-7	12-Feb-96	Volatile	Normal	USACE 1996
LHSMW31	Site 47	LHS-MW-31-08201996	23099-010	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW31	Site 47	LHS-MW31-1 (001)	9412G975-001	06-Dec-94	Volatile	Normal	2
LHSMW31	Site 47	LHS-MW-31-QC	23099-011	20-Aug-96	Volatile	Duplicate	USACE 1996
LHSMW32	Site 47	LHS-MW-32	4639.007	17-May-98	Volatile	Normal	3
LHSMW32	Site 47	LHS-MW-32-02121996	S60102-8	12-Feb-96	Volatile	Normal	USACE 1996
LHSMW32	Site 47	LHS-MW-32-08201996	23099-012	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW32	Site 47	LHS-MW-32-1 (001)	9412G959-009	05-Dec-94	Volatile	Normal	2
LHSMW33	Site 47	LHS-MW-33	4639.008	17-May-98	Volatile	Normal	3
LHSMW33	Site 47	LHS-MW-33-02131996	S60106-4	13-Feb-96	Volatile	Normal	USACE 1996
LHSMW33	Site 47	LHS-MW-33-08201996	23099-013	20-Aug-96	Volatile	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW33	Site 47	LHS-MW-33-1 (001)	9412G959-008	05-Dec-94	Volatile	Normal	2
LHSMW34	Site 47	LHS-MW-34	4639.009	17-May-98	Volatile	Normal	3
LHSMW34	Site 47	LHS-MW-34-02131996	S60106-5	13-Feb-96	Volatile	Normal	USACE 1996
LHSMW34	Site 47	LHS-MW-34-08201996	23099-014	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW34	Site 47	LHS-MW-34-1 (001)	9412G959-011	05-Dec-94	Volatile	Normal	2
LHSMW35	Site 47	LHS-MW-35	4639.010	17-May-98	Volatile	Normal	3
LHSMW35	Site 47	LHS-MW-35-02081996	S60084-1	08-Feb-96	Volatile	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW-35-08201996	23099-015	20-Aug-96	Volatile	Normal	USACE 1996
LHSMW35	Site 47	LHS-MW-35-1 (001)	9412G959-010	05-Dec-94	Volatile	Normal	2
LHSMW36	Site 47	LHS-MW-36	4639.012	17-May-98	Volatile	Normal	3
LHSMW36	Site 47	LHS-MW-36-02131996	S60106-8	13-Feb-96	Volatile	Normal	USACE 1996
LHSMW36	Site 47	LHS-MW-36-08221996	23118-008	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW36	Site 47	LHS-MW-36-1 (001)	9412G959-007	05-Dec-94	Volatile	Normal	2
LHSMW36	Site 47	LHS-MW-36QC	4639.013	17-May-98	Volatile	Duplicate	3
LHSMW37	Site 47	LHS-MW-37	S60083-8	08-Feb-96	Volatile	Normal	USACE 1996
LHSMW37	Site 47	LHS-MW-37-08221996	23118-009	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW37	Site 47	LHS-MW-37-1	4639.014	17-May-98	Volatile	Normal	3
LHSMW37	Site 47	LHS-MW-37-1 (001)	9412G959-006	05-Dec-94	Volatile	Normal	2
LHSMW37	Site 47	LHS-MW-37-1QC	4639.015	17-May-98	Volatile	Duplicate	3
LHSMW38	Site 47	LHS-MW-38	4639.016	17-May-98	Volatile	Normal	3
LHSMW38	Site 47	LHS-MW-38-02121996	S60102-6	12-Feb-96	Volatile	Normal	USACE 1996
LHSMW38	Site 47	LHS-MW-38-08211996	23107-010	21-Aug-96	Volatile	Normal	USACE 1996
LHSMW38	Site 47	LHS-MW-38-1 (001)	9412G975-003	06-Dec-94	Volatile	Normal	2
LHSMW38	Site 47	LHS-MW-38-QC	23107-011	21-Aug-96	Volatile	Duplicate	USACE 1996
LHSMW39	Site 47	LHS-MW-39	4639.019	18-May-98	Volatile	Normal	3
LHSMW39	Site 47	LHS-MW-39-02101996	S60093-7	10-Feb-96	Volatile	Normal	USACE 1996
LHSMW39	Site 47	LHS-MW-39-08221996	23118-011	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW39	Site 47	LHS-MW-39-1 (001)	9412G975-004	06-Dec-94	Volatile	Normal	2
LHSMW40	Site 47	LHS-MW-40-1 (001)	9412G036-007	09-Dec-94	Volatile	Normal	2
LHSMW41	Site 47	LHS-MW-41	4639.020	18-May-98	Volatile	Normal	3
LHSMW41	Site 47	LHS-MW-41-02091996	S60091-5	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW41	Site 47	LHS-MW-41-08221996	23118-012	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW41	Site 47	LHS-MW-41-1 (001)	9412G015-005	08-Dec-94	Volatile	Normal	2
LHSMW42	Site 47	LHS-MW-42	4639.022	18-May-98	Volatile	Normal	3
LHSMW42	Site 47	LHS-MW-42-02111996	S60097-9	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW42	Site 47	LHS-MW-42-08221996	23118-013	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW42	Site 47	LHS-MW-42-1 (001)	9412G975-005	06-Dec-94	Volatile	Normal	2
LHSMW43	Site 47	LHS-MW-43	4639.023	18-May-98	Volatile	Normal	3
LHSMW43	Site 47	LHS-MW-43-08221996	23118-016	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW43	Site 47	LHS-MW-43-1 (001)	9412G015-002	08-Dec-94	Volatile	Normal	2
LHSMW43	Site 47	LHS-MW-43-QC	23118-017	22-Aug-96	Volatile	Duplicate	USACE 1996
LHSMW44	Site 47	LHS-MW-44	4639.024	18-May-98	Volatile	Normal	3
LHSMW44	Site 47	LHS-MW-44-02081996	S60083-9	08-Feb-96	Volatile	Normal	USACE 1996
LHSMW44	Site 47	LHS-MW-44-08221996	23118-014	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW44	Site 47	LHS-MW-44-1 (001)	9412G015-006	08-Dec-94	Volatile	Normal	2
LHSMW45	Site 47	LHS-MW-45	4639.025	18-May-98	Volatile	Normal	3
LHSMW45	Site 47	LHS-MW-45-02101996	S60093-6	10-Feb-96	Volatile	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW45	Site 47	LHS-MW-45-08221996	23118-015	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW45	Site 47	LHS-MW45-1 (001)	9412G015-003	08-Dec-94	Volatile	Normal	2
LHSMW45	Site 47	LHS-MW45-1 (001) QC	9412G015-004	08-Dec-94	Volatile	Duplicate	2
LHSMW46	Site 47	LHS-MW-46	4639.026	18-May-98	Volatile	Normal	3
LHSMW46	Site 47	LHS-MW-46-02081996	S60083-4	08-Feb-96	Volatile	Normal	USACE 1996
LHSMW46	Site 47	LHS-MW-46-08221996	23118-010	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW46	Site 47	LHS-MW46-1 (001)	9412G015-001	08-Dec-94	Volatile	Normal	2
LHSMW47	Site 47	LHS-MW-47	4639.027	18-May-98	Volatile	Normal	3
LHSMW47	Site 47	LHS-MW-47-02081996	S60083-3	08-Feb-96	Volatile	Normal	USACE 1996
LHSMW47	Site 47	LHS-MW-47-08221996	23118-018	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW47	Site 47	LHS-MW47-1 (001)	9412G995-004	07-Dec-94	Volatile	Normal	2
LHSMW48	Site 47	LHS-MW-48	23118-019	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW48	Site 47	LHS-MW-48-1	4644.002	19-May-98	Volatile	Normal	3
LHSMW48	Site 47	LHS-MW48-1 (001)	9412G036-002	09-Dec-94	Volatile	Normal	2
LHSMW49	Site 47	LHS-MW-49	4644.003	19-May-98	Volatile	Normal	3
LHSMW49	Site 47	LHS-MW-49-02091996	S60091-8	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW49	Site 47	LHS-MW-49-08221996	23118-020	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW49	Site 47	LHS-MW49-1 (001)	9412G995-001	07-Dec-94	Volatile	Normal	2
LHSMW49	Site 47	LHS-MW-49QC	4644.004	19-May-98	Volatile	Duplicate	3
LHSMW50	Site 47	LHS-MW-50	4644.005	19-May-98	Volatile	Normal	3
LHSMW50	Site 47	LHS-MW-50-02091996	S60091-6	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW50	Site 47	LHS-MW-50-08221996	23118-021	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW50	Site 47	LHS-MW50-1 (001)	9412G036-006	09-Dec-94	Volatile	Normal	2
LHSMW51	Site 47	LHS-MW-51	4644.006	19-May-98	Volatile	Normal	3
LHSMW51	Site 47	LHS-MW-51-02131996	S60108-2	13-Feb-96	Volatile	Normal	USACE 1996
LHSMW51	Site 47	LHS-MW-51-08221996	23118-006	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW51	Site 47	LHS-MW51-1 (001)	9412G074-017	11-Dec-94	Volatile	Normal	2
LHSMW52	Site 47	LHS-MW-52	4644.007	19-May-98	Volatile	Normal	3
LHSMW52	Site 47	LHS-MW-52-02091996	S60091-9	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW52	Site 47	LHS-MW-52-08221996	23118-004	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW52	Site 47	LHS-MW52-1 (001)	9412G074-016	11-Dec-94	Volatile	Normal	2
LHSMW53	Site 47	LHS-MW-53	S60093-4	10-Feb-96	Volatile	Normal	USACE 1996
LHSMW53	Site 47	LHS-MW-53-08221996	23118-003	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW53	Site 47	LHS-MW-53-1	4647.002	20-May-98	Volatile	Normal	3
LHSMW53	Site 47	LHS-MW53-1 (001)	9412G995-003	07-Dec-94	Volatile	Normal	2
LHSMW54	Site 47	LHS-MW-54	4647.003	20-May-98	Volatile	Normal	3
LHSMW54	Site 47	LHS-MW-54-02121996	S60103-3	12-Feb-96	Volatile	Normal	USACE 1996
LHSMW54	Site 47	LHS-MW-54-08211996	23107-008	21-Aug-96	Volatile	Normal	USACE 1996
LHSMW54	Site 47	LHS-MW54-1 (001)	9412G036-005	09-Dec-94	Volatile	Normal	2
LHSMW55	Site 47	LHS-MW-55	4647.004	20-May-98	Volatile	Normal	3
LHSMW55	Site 47	LHS-MW-55-02101996	S60093-3	10-Feb-96	Volatile	Normal	USACE 1996
LHSMW55	Site 47	LHS-MW-55-08221996	23118-002	22-Aug-96	Volatile	Normal	USACE 1996
LHSMW55	Site 47	LHS-MW55-1 (001)	9412G036-004	09-Dec-94	Volatile	Normal	2
LHSMW56	Site 47	LHS-MW-56	4647.005	20-May-98	Volatile	Normal	3
LHSMW56	Site 47	LHS-MW-56-02091996	S60092-4	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW-56-08211996	23107-007	21-Aug-96	Volatile	Normal	USACE 1996
LHSMW56	Site 47	LHS-MW56-1 (001)	9412G995-008	07-Dec-94	Volatile	Normal	2

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW57	Site 47	LHS-MW-57	4647.006	20-May-98	Volatile	Normal	3
LHSMW57	Site 47	LHS-MW-57-02081996	S60083-5	08-Feb-96	Volatile	Normal	USACE 1996
LHSMW57	Site 47	LHS-MW-57-08211996	23107-006	21-Aug-96	Volatile	Normal	USACE 1996
LHSMW57	Site 47	LHS-MW57-1 (001)	9412G036-003	09-Dec-94	Volatile	Normal	2
LHSMW60	Site 47	LHS-MW-60-02091996	S60091-7	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW60	Site 47	LHS-MW-60-08211996	23107-002	21-Aug-96	Volatile	Normal	USACE 1996
LHSMW60	Site 47	LHS-MW-60-1	4647.009	20-May-98	Volatile	Normal	3
LHSMW60	Site 47	LHS-MW60-1 (001)	9412G074-015	11-Dec-94	Volatile	Normal	2
LHSMW60	Site 47	LHS-MW-60-QC	23107-003	21-Aug-96	Volatile	Duplicate	USACE 1996
LHSMW61	Site 47	LHS-MW-61	4647.010	20-May-98	Volatile	Normal	3
LHSMW61	Site 47	LHS-MW-61-02111996	S60097-8	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW61	Site 47	LHS-MW-61-08151996	23073-025	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW61	Site 47	LHS-MW61-1 (001)	9412G074-005	10-Dec-94	Volatile	Normal	2
LHSMW43	Site 47	MW-43	S60092-3	09-Feb-96	Volatile	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62	22349-003	11-Feb-96	BNA	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-08151996	23073-024	15-Aug-96	BNA	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-1	4647.011	20-May-98	BNA	Normal	3
LHSMW62	Site 48	LHS-MW62-1 (001)	9412G074-010	10-Dec-94	BNA	Normal	2
LHSMW63	Site 48	LHS-MW-63	4659.002	27-May-98	BNA	Normal	3
LHSMW63	Site 48	LHS-MW-63-02111996	22349-002	11-Feb-96	BNA	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW-63-08151996	23073-023	15-Aug-96	BNA	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW63-1 (001)	9412G074-006	10-Dec-94	BNA	Normal	2
LHSMW63	Site 48	LHS-MW-63QC	4659.003	27-May-98	BNA	Duplicate	3
LHSMW64	Site 48	LHS-MW-64	4659.004	27-May-98	BNA	Normal	3
LHSMW64	Site 48	LHS-MW-64-02111996	22348-004	11-Feb-96	BNA	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW-64-08151996	23073-022	15-Aug-96	BNA	Normal	USACE 1996
LHSMW64	Site 48	LHS-MW64-1 (001)	9412G074-008	10-Dec-94	BNA	Normal	2
LHSMW64	Site 48	LHS-MW-64-QC	22348-005	11-Feb-96	BNA	Duplicate	USACE 1996
LHSMW65	Site 48	LHS-MW-65	4659.005	27-May-98	BNA	Normal	3
LHSMW65	Site 48	LHS-MW-65-02111996	22348-002	11-Feb-96	BNA	Normal	USACE 1996
LHSMW65	Site 48	LHS-MW-65-08151996	23073-021	15-Aug-96	BNA	Normal	USACE 1996
LHSMW65	Site 48	LHS-MW65-1 (001)	9412G074-009	10-Dec-94	BNA	Normal	2
LHSMW66	Site 48	LHS-MW-66	4659.006	27-May-98	BNA	Normal	3
LHSMW66	Site 48	LHS-MW-66-02111996	22348-001	11-Feb-96	BNA	Normal	USACE 1996
LHSMW66	Site 48	LHS-MW-66-08151996	23073-020	15-Aug-96	BNA	Normal	USACE 1996
LHSMW66	Site 48	LHS-MW66-1 (001)	9412G074-007	10-Dec-94	BNA	Normal	2
LHSMW62	Site 48	LHS-MW-62	22349-003	11-Feb-96	Explosive	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-08151996	23073-024	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-1	4647.011	20-May-98	Explosive	Normal	3
LHSMW62	Site 48	LHS-MW62-1 (001)	9412L354-001	10-Dec-94	Explosive	Normal	2
LHSMW63	Site 48	LHS-MW-63	4659.002	27-May-98	Explosive	Normal	3
LHSMW63	Site 48	LHS-MW-63-02111996	22349-002	11-Feb-96	Explosive	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW-63-08151996	23073-023	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW63-1 (001)	9412L351-004	10-Dec-94	Explosive	Normal	2
LHSMW63	Site 48	LHS-MW-63QC	4659.003	27-May-98	Explosive	Duplicate	3
LHSMW64	Site 48	LHS-MW-64	4659.004	27-May-98	Explosive	Normal	3
LHSMW64	Site 48	LHS-MW-64-02111996	22348-004	11-Feb-96	Explosive	Normal	USACE 1996

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW63	Site 48	LHS-MW-64-08151996	23073-022	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW64	Site 48	LHS-MW64-1 (001)	9412L351-003	10-Dec-94	Explosive	Normal	2
LHSMW64	Site 48	LHS-MW-64-QC	22348-005	11-Feb-96	Explosive	Duplicate	USACE 1996
LHSMW65	Site 48	LHS-MW-65	4659.005	27-May-98	Explosive	Normal	3
LHSMW65	Site 48	LHS-MW-65-02111996	22348-002	11-Feb-96	Explosive	Normal	USACE 1996
LHSMW65	Site 48	LHS-MW-65-08151996	23073-021	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW65	Site 48	LHS-MW65-1 (001)	9412L352-002	10-Dec-94	Explosive	Normal	2
LHSMW66	Site 48	LHS-MW-66	4659.006	27-May-98	Explosive	Normal	3
LHSMW66	Site 48	LHS-MW-66-02111996	22348-001	11-Feb-96	Explosive	Normal	USACE 1996
LHSMW66	Site 48	LHS-MW-66-08151996	23073-020	15-Aug-96	Explosive	Normal	USACE 1996
LHSMW66	Site 48	LHS-MW66-1 (001)	9412L351-002	10-Dec-94	Explosive	Normal	2
LHSMW62	Site 48	LHS-MW-62	22349-003	11-Feb-96	Metal	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-08151996	S60652-25	15-Aug-96	Metal	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-1	4647.011	20-May-98	Metal	Normal	3
LHSMW62	Site 48	LHS-MW62-1 (001)	9412G074-010	10-Dec-94	Metal	Normal	2
LHSMW63	Site 48	LHS-MW-63	4659.002	27-May-98	Metal	Normal	3
LHSMW63	Site 48	LHS-MW-63-02111996	22349-002	11-Feb-96	Metal	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW-63-08151996	S60652-24	15-Aug-96	Metal	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW63-1 (001)	9412G074-006	10-Dec-94	Metal	Normal	2
LHSMW63	Site 48	LHS-MW-63QC	4659.003	27-May-98	Metal	Duplicate	3
LHSMW64	Site 48	LHS-MW-64	4659.004	27-May-98	Metal	Normal	3
LHSMW64	Site 48	LHS-MW-64-02111996	S60097-5	11-Feb-96	Metal	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW-64-08151996	S60652-23	15-Aug-96	Metal	Normal	USACE 1996
LHSMW64	Site 48	LHS-MW64-1 (001)	9412G074-008	10-Dec-94	Metal	Normal	2
LHSMW64	Site 48	LHS-MW-64-QC	S60097-6	11-Feb-96	Metal	Duplicate	USACE 1996
LHSMW65	Site 48	LHS-MW-65	4659.005	27-May-98	Metal	Normal	3
LHSMW65	Site 48	LHS-MW-65-02111996	S60097-3	11-Feb-96	Metal	Normal	USACE 1996
LHSMW65	Site 48	LHS-MW-65-08151996	S60652-22	15-Aug-96	Metal	Normal	USACE 1996
LHSMW65	Site 48	LHS-MW65-1 (001)	9412G074-009	10-Dec-94	Metal	Normal	2
LHSMW66	Site 48	LHS-MW-66	4659.006	27-May-98	Metal	Normal	3
LHSMW66	Site 48	LHS-MW-66-02111996	S60097-2	11-Feb-96	Metal	Normal	USACE 1996
LHSMW66	Site 48	LHS-MW-66-08151996	S60652-21	15-Aug-96	Metal	Normal	USACE 1996
LHSMW66	Site 48	LHS-MW66-1 (001)	9412G074-007	10-Dec-94	Metal	Normal	2
LHSMW62	Site 48	LHS-MW-62-2	4842.001	25-Aug-98	PCB	Normal	3
LHSMW62	Site 48	LHS-MW-62-2	35391.06	25-Aug-98	PCDD/PCDF	Normal	3
LHSMW62	Site 48	LHS-MW-62	22349-003	11-Feb-96	Pesticide	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-2	4842.001	25-Aug-98	Pesticide	Normal	3
LHSMW63	Site 48	LHS-MW-63-02111996	22349-002	11-Feb-96	Pesticide	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62	S60098-4	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-08151996	23073-024	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW62	Site 48	LHS-MW-62-1	4647.011	20-May-98	Volatile	Normal	3
LHSMW62	Site 48	LHS-MW62-1 (001)	9412G074-010	10-Dec-94	Volatile	Normal	2
LHSMW63	Site 48	LHS-MW-63	4659.002	27-May-98	Volatile	Normal	3
LHSMW63	Site 48	LHS-MW-63-02111996	S60098-3	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW-63-08151996	23073-023	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW63-1 (001)	9412G074-006	10-Dec-94	Volatile	Normal	2
LHSMW63	Site 48	LHS-MW-63QC	4659.003	27-May-98	Volatile	Duplicate	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
LHSMW64	Site 48	LHS-MW-64	4659.004	27-May-98	Volatile	Normal	3
LHSMW64	Site 48	LHS-MW-64-02111996	S60097-5	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW63	Site 48	LHS-MW-64-08151996	23073-022	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW64	Site 48	LHS-MW64-1 (001)	9412G074-008	10-Dec-94	Volatile	Normal	2
LHSMW65	Site 48	LHS-MW-65	4659.005	27-May-98	Volatile	Normal	3
LHSMW65	Site 48	LHS-MW-65-02111996	S60097-3	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW65	Site 48	LHS-MW-65-08151996	23073-021	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW65	Site 48	LHS-MW65-1 (001)	9412G074-009	10-Dec-94	Volatile	Normal	2
LHSMW66	Site 48	LHS-MW-66	4659.006	27-May-98	Volatile	Normal	3
LHSMW66	Site 48	LHS-MW-66-02111996	S60097-2	11-Feb-96	Volatile	Normal	USACE 1996
LHSMW66	Site 48	LHS-MW-66-08151996	23073-020	15-Aug-96	Volatile	Normal	USACE 1996
LHSMW66	Site 48	LHS-MW66-1 (001)	9412G074-007	10-Dec-94	Volatile	Normal	2
50WW01	Site 50	50WW01-1	4944.008	30-Sep-98	BNA	Normal	3
50WW01	Site 50	50WW01-1QC	4944.001	30-Sep-98	BNA	Duplicate	3
50WW02	Site 50	50WW02-1	4944.002	30-Sep-98	BNA	Normal	3
50WW03	Site 50	50WW03	4944.005	30-Sep-98	BNA	Normal	3
50WW04	Site 50	50WW04-1	4944.009	30-Sep-98	BNA	Normal	3
50WW01	Site 50	50WW01-1	4944.008	30-Sep-98	Explosive	Normal	3
50WW01	Site 50	50WW01-1QC	4944.001	30-Sep-98	Explosive	Duplicate	3
50WW02	Site 50	50WW02-1	4944.002	30-Sep-98	Explosive	Normal	3
50WW03	Site 50	50WW03	4944.005	30-Sep-98	Explosive	Normal	3
50WW04	Site 50	50WW04-1	4944.009	30-Sep-98	Explosive	Normal	3
50WW01	Site 50	50WW01-1	4944.008	30-Sep-98	Metal	Normal	3
50WW01	Site 50	50WW01-1QC	4944.001	30-Sep-98	Metal	Duplicate	3
50WW02	Site 50	50WW02-1	4944.002	30-Sep-98	Metal	Normal	3
50WW03	Site 50	50WW03	4944.005	30-Sep-98	Metal	Normal	3
50WW04	Site 50	50WW04-1	4944.009	30-Sep-98	Metal	Normal	3
50WW01	Site 50	50WW01-1	4944.008	30-Sep-98	PCB	Normal	3
50WW01	Site 50	50WW01-1QC	4944.001	30-Sep-98	PCB	Duplicate	3
50WW01	Site 50	50WW01-1	35777.03	30-Sep-98	PCDD/PCDF	Normal	3
50WW01	Site 50	50WW01-1QC	35777.04	30-Sep-98	PCDD/PCDF	Duplicate	3
50WW01	Site 50	50WW01-1	4944.008	30-Sep-98	Pesticide	Normal	3
50WW01	Site 50	50WW01-1QC	4944.001	30-Sep-98	Pesticide	Duplicate	3
50WW01	Site 50	50WW01-1	4944.008	30-Sep-98	Volatile	Normal	3
50WW01	Site 50	50WW01-1QC	4944.001	30-Sep-98	Volatile	Duplicate	3
50WW02	Site 50	50WW02-052000	6112.005	24-May-00	Volatile	Normal	Supplemental RI
50WW02	Site 50	50WW02-1	4944.002	30-Sep-98	Volatile	Normal	3
50WW02	Site 50	50WW02D-052000	6112.010	24-May-00	Volatile	Normal	Supplemental RI
50WW03	Site 50	50WW03	4944.005	30-Sep-98	Volatile	Normal	3
50WW04	Site 50	50WW04-1	4944.009	30-Sep-98	Volatile	Normal	3
67WW04	Site 67	67WW04	0012083-14C	19-Dec-00	BNA	Normal	Supplemental RI
67WW05	Site 67	67WW05	0012083-15C	19-Dec-00	BNA	Normal	Supplemental RI
67WW06	Site 67	67WW06	0012083-16C	19-Dec-00	BNA	Normal	Supplemental RI
67WW06	Site 67	67WW06QC	0012083-17C	19-Dec-00	BNA	Duplicate	Supplemental RI
67WW07	Site 67	67WW07	0012083-18C	19-Dec-00	BNA	Normal	Supplemental RI
G4WW01	Site 67	G4WW01	5023.002	08-Dec-98	BNA	Normal	3
G4WW02	Site 67	G4WW02	5023.003	08-Dec-98	BNA	Normal	3

Table 3-3
Selection of Samples for Groundwater Scenarios¹, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Date Collected	Data Group	Data Type	RI Phase
G4WW02	Site 67	G4WW02QC	5023.004	08-Dec-98	BNA	Duplicate	3
G4WW03	Site 67	G4WW03	5023.005	08-Dec-98	BNA	Normal	3
67WW04	Site 67	67WW04	0012083-14D	19-Dec-00	Explosive	Normal	Supplemental RI
67WW05	Site 67	67WW05	0012083-15D	19-Dec-00	Explosive	Normal	Supplemental RI
67WW06	Site 67	67WW06	0012083-16D	19-Dec-00	Explosive	Normal	Supplemental RI
67WW06	Site 67	67WW06QC	0012083-17D	19-Dec-00	Explosive	Duplicate	Supplemental RI
67WW07	Site 67	67WW07	0012083-18D	19-Dec-00	Explosive	Normal	Supplemental RI
67WW04	Site 67	67WW04	0012083-14B	19-Dec-00	Metal	Normal	Supplemental RI
67WW05	Site 67	67WW05	0012083-15B	19-Dec-00	Metal	Normal	Supplemental RI
67WW06	Site 67	67WW06	0012083-16B	19-Dec-00	Metal	Normal	Supplemental RI
67WW06	Site 67	67WW06QC	0012083-17B	19-Dec-00	Metal	Duplicate	Supplemental RI
67WW07	Site 67	67WW07	0012083-18B	19-Dec-00	Metal	Normal	Supplemental RI
G4WW01	Site 67	G4WW01	5023.002	08-Dec-98	Metal	Normal	3
G4WW02	Site 67	G4WW02	5023.003	08-Dec-98	Metal	Normal	3
G4WW02	Site 67	G4WW02QC	5023.004	08-Dec-98	Metal	Duplicate	3
G4WW03	Site 67	G4WW03	5023.005	08-Dec-98	Metal	Normal	3
67WW04	Site 67	67WW04	0012083-14A	19-Dec-00	Volatile	Normal	Supplemental RI
67WW05	Site 67	67WW05	0012083-15A	19-Dec-00	Volatile	Normal	Supplemental RI
67WW06	Site 67	67WW06	0012083-16A	19-Dec-00	Volatile	Normal	Supplemental RI
67WW06	Site 67	67WW06QC	0012083-17A	19-Dec-00	Volatile	Duplicate	Supplemental RI
67WW07	Site 67	67WW07	0012083-18A	19-Dec-00	Volatile	Normal	Supplemental RI
G4WW01	Site 67	G4WW01	5023.002	08-Dec-98	Volatile	Normal	3
G4WW02	Site 67	G4WW02	5023.003	08-Dec-98	Volatile	Normal	3
G4WW02	Site 67	G4WW02QC	5023.004	08-Dec-98	Volatile	Duplicate	3
G4WW03	Site 67	G4WW03	5023.005	08-Dec-98	Volatile	Normal	3

¹Only groundwater samples collected from developed wells were used in the BHHRA. Geoprobe and/or groundwater grab samples were not used in the BHHRA

BHHRA = baseline human health risk assessment

BNA = base neutral acids

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

USACE = U.S. Army Corps of Engineers

Table 3-4
Selection of Samples for Soil Scenarios - Site 04, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Depth (ft)	Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
04SB03	Site 04	04SB03(0-0.5)	0012062-05C	0	0.5	14-Dec-00	BNA	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)QC	0012062-06C	0	0.5	14-Dec-00	BNA	Duplicate	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)	0012062-07C	0	0.5	14-Dec-00	BNA	Normal	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)QC	0012062-08C	0	0.5	14-Dec-00	BNA	Duplicate	Supplemental RI
04SB05	Site 04	04SB05(0-0.5)	0012062-09C	0	0.5	14-Dec-00	BNA	Normal	Supplemental RI
04SB06	Site 04	04SB06(0-0.5)	0012063-02C	0	0.5	14-Dec-00	BNA	Normal	Supplemental RI
04SB03	Site 04	04SB03(1-3)	0012038-04C	1	3	07-Dec-00	BNA	Normal	Supplemental RI
04SB04	Site 04	04SB04(1-3)	0012038-06C	1	3	06-Dec-00	BNA	Normal	Supplemental RI
04SB05	Site 04	04SB05(1-3)	0012038-08C	1	3	06-Dec-00	BNA	Normal	Supplemental RI
04SB06	Site 04	04SB06(1-3)	0012038-10C	1	3	06-Dec-00	BNA	Normal	Supplemental RI
04SB03	Site 04	04SB03(3-5)	0012038-05C	3	5	06-Dec-00	BNA	Normal	Supplemental RI
04SB04	Site 04	04SB04(3-5)	0012038-07C	3	5	06-Dec-00	BNA	Normal	Supplemental RI
04SB05	Site 04	04SB05(3-5)	0012038-09C	3	5	06-Dec-00	BNA	Normal	Supplemental RI
04SB06	Site 04	04SB06(3-5)	0012038-11C	3	5	06-Dec-00	BNA	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)	0012062-05D	0	0.5	14-Dec-00	Explosive	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)QC	0012062-06D	0	0.5	14-Dec-00	Explosive	Duplicate	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)	0012062-07D	0	0.5	14-Dec-00	Explosive	Normal	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)QC	0012062-08D	0	0.5	14-Dec-00	Explosive	Duplicate	Supplemental RI
04SB05	Site 04	04SB05(0-0.5)	0012062-09D	0	0.5	14-Dec-00	Explosive	Normal	Supplemental RI
04SB06	Site 04	04SB06(0-0.5)	0012063-02D	0	0.5	14-Dec-00	Explosive	Normal	Supplemental RI
04SB03	Site 04	04SB03(1-3)	0012038-04D	1	3	07-Dec-00	Explosive	Normal	Supplemental RI
04SB04	Site 04	04SB04(1-3)	0012038-06D	1	3	06-Dec-00	Explosive	Normal	Supplemental RI
04SB05	Site 04	04SB05(1-3)	0012038-08D	1	3	06-Dec-00	Explosive	Normal	Supplemental RI
04SB06	Site 04	04SB06(1-3)	0012038-10D	1	3	06-Dec-00	Explosive	Normal	Supplemental RI
04SB03	Site 04	04SB03(3-5)	0012038-05D	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
04SB04	Site 04	04SB04(3-5)	0012038-07D	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
04SB05	Site 04	04SB05(3-5)	0012038-09D	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
04SB06	Site 04	04SB06(3-5)	0012038-11D	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)	0012062-05D	0	0.5	14-Dec-00	Metal	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)QC	0012062-06D	0	0.5	14-Dec-00	Metal	Duplicate	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)	0012062-07D	0	0.5	14-Dec-00	Metal	Normal	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)QC	0012062-08D	0	0.5	14-Dec-00	Metal	Duplicate	Supplemental RI
04SB05	Site 04	04SB05(0-0.5)	0012062-09D	0	0.5	14-Dec-00	Metal	Normal	Supplemental RI
04SB06	Site 04	04SB06(0-0.5)	0012063-02D	0	0.5	14-Dec-00	Metal	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)	0012062-05B	0	0.5	14-Dec-00	PCDD/PCDF	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)QC	0012062-06B	0	0.5	14-Dec-00	PCDD/PCDF	Duplicate	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)	0012062-07B	0	0.5	14-Dec-00	PCDD/PCDF	Normal	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)QC	0012062-08B	0	0.5	14-Dec-00	PCDD/PCDF	Duplicate	Supplemental RI
04SB05	Site 04	04SB05(0-0.5)	0012062-09B	0	0.5	14-Dec-00	PCDD/PCDF	Normal	Supplemental RI
04SB06	Site 04	04SB06(0-0.5)	0012063-02B	0	0.5	14-Dec-00	PCDD/PCDF	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)	0012062-05C	0	0.5	14-Dec-00	Pesticide	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)QC	0012062-06C	0	0.5	14-Dec-00	Pesticide	Duplicate	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)	0012062-07C	0	0.5	14-Dec-00	Pesticide	Normal	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)QC	0012062-08C	0	0.5	14-Dec-00	Pesticide	Duplicate	Supplemental RI
04SB05	Site 04	04SB05(0-0.5)	0012062-09C	0	0.5	14-Dec-00	Pesticide	Normal	Supplemental RI
04SB06	Site 04	04SB06(0-0.5)	0012063-02C	0	0.5	14-Dec-00	Pesticide	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)	0012062-05A	0	0.5	14-Dec-00	Volatile	Normal	Supplemental RI
04SB03	Site 04	04SB03(0-0.5)QC	0012062-06A	0	0.5	14-Dec-00	Volatile	Duplicate	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)	0012062-07A	0	0.5	14-Dec-00	Volatile	Normal	Supplemental RI
04SB04	Site 04	04SB04(0-0.5)QC	0012062-08A	0	0.5	14-Dec-00	Volatile	Duplicate	Supplemental RI
04SB05	Site 04	04SB05(0-0.5)	0012062-09A	0	0.5	14-Dec-00	Volatile	Normal	Supplemental RI
04SB06	Site 04	04SB06(0-0.5)	0012063-02A	0	0.5	14-Dec-00	Volatile	Normal	Supplemental RI
04SB03	Site 04	04SB03(1-3)	0012038-04A	1	3	07-Dec-00	Volatile	Normal	Supplemental RI
04SB04	Site 04	04SB04(1-3)	0012038-06A	1	3	06-Dec-00	Volatile	Normal	Supplemental RI
04SB05	Site 04	04SB05(1-3)	0012038-08A	1	3	06-Dec-00	Volatile	Normal	Supplemental RI

Table 3-4
Selection of Samples for Soil Scenarios - Site 04, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Depth (ft)	Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
04SB06	Site 04	04SB06(1-3)	0012038-10A	1	3	06-Dec-00	Volatile	Normal	Supplemental RI
04SB03	Site 04	04SB03(3-5)	0012038-05A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI
04SB04	Site 04	04SB04(3-5)	0012038-07A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI
04SB05	Site 04	04SB05(3-5)	0012038-09A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI
04SB06	Site 04	04SB06(3-5)	0012038-11A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-5
Selection of Samples for Soil Scenarios - Site 08, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
08SB03	Site 08	08SB03(0-0.5)	0012062-01C	0	0.5	14-Dec-00	BNA	Normal	Supplemental RI
08SB04	Site 08	08SB04(0-0.5)	0012062-02C	0	0.5	14-Dec-00	BNA	Normal	Supplemental RI
08SB05	Site 08	08SB05(0-0.5)	0012040-05D	0	0.5	07-Dec-00	BNA	Normal	Supplemental RI
08SB01	Site 08	08SB01(1-3)	0012037-05C	1	3	06-Dec-00	BNA	Normal	Supplemental RI
08SB03	Site 08	08SB03(1-3)	0012037-03C	1	3	06-Dec-00	BNA	Normal	Supplemental RI
08SB04	Site 08	08SB04(1-3)	0012037-01C	1	3	06-Dec-00	BNA	Normal	Supplemental RI
08SB05	Site 08	08SB05(1-3)	0012040-06D	1	3	07-Dec-00	BNA	Normal	Supplemental RI
08SB05	Site 08	08SB05(1-3)QC	0012040-07D	1	3	07-Dec-00	BNA	Duplicate	Supplemental RI
08SB01	Site 08	08SB01(3-5)	0012037-06C	3	5	06-Dec-00	BNA	Normal	Supplemental RI
08SB03	Site 08	08SB03(3-5)	0012037-04C	3	5	06-Dec-00	BNA	Normal	Supplemental RI
08SB04	Site 08	08SB04(3-5)	0012037-02C	3	5	06-Dec-00	BNA	Normal	Supplemental RI
08SB05	Site 08	08SB05(3-5)	0012040-08D	3	5	07-Dec-00	BNA	Normal	Supplemental RI
08SB03	Site 08	08SB03(0-0.5)	0012062-01D	0	0.5	14-Dec-00	Explosive	Normal	Supplemental RI
08SB04	Site 08	08SB04(0-0.5)	0012062-02D	0	0.5	14-Dec-00	Explosive	Normal	Supplemental RI
08SB05	Site 08	08SB05(0-0.5)	0012040-05C	0	0.5	07-Dec-00	Explosive	Normal	Supplemental RI
08SB01	Site 08	08SB01(1-3)	0012037-05D	1	3	06-Dec-00	Explosive	Normal	Supplemental RI
08SB03	Site 08	08SB03(1-3)	0012037-03D	1	3	06-Dec-00	Explosive	Normal	Supplemental RI
08SB04	Site 08	08SB04(1-3)	0012037-01D	1	3	06-Dec-00	Explosive	Normal	Supplemental RI
08SB05	Site 08	08SB05(1-3)	0012040-06C	1	3	07-Dec-00	Explosive	Normal	Supplemental RI
08SB05	Site 08	08SB05(1-3)QC	0012040-07C	1	3	07-Dec-00	Explosive	Duplicate	Supplemental RI
08SB01	Site 08	08SB01(3-5)	0012037-06D	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
08SB03	Site 08	08SB03(3-5)	0012037-04D	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
08SB04	Site 08	08SB04(3-5)	0012037-02D	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
08SB05	Site 08	08SB05(3-5)	0012040-08C	3	5	07-Dec-00	Explosive	Normal	Supplemental RI
08SB03	Site 08	08SB03(0-0.5)	0012062-01D	0	0.5	14-Dec-00	Metal	Normal	Supplemental RI
08SB04	Site 08	08SB04(0-0.5)	0012062-02D	0	0.5	14-Dec-00	Metal	Normal	Supplemental RI
08SB05	Site 08	08SB05(0-0.5)	0012040-05D	0	0.5	07-Dec-00	Metal	Normal	Supplemental RI
08SB03	Site 08	08SB03(0-0.5)	0012062-01B	0	0.5	14-Dec-00	PCDD/PCDF	Normal	Supplemental RI
08SB04	Site 08	08SB04(0-0.5)	0012062-02B	0	0.5	14-Dec-00	PCDD/PCDF	Normal	Supplemental RI
08SB03	Site 08	08SB03(0-0.5)	0012062-01C	0	0.5	14-Dec-00	Pesticide	Normal	Supplemental RI
08SB04	Site 08	08SB04(0-0.5)	0012062-02C	0	0.5	14-Dec-00	Pesticide	Normal	Supplemental RI
08SB03	Site 08	08SB03(0-0.5)	0012062-01A	0	0.5	14-Dec-00	Volatile	Normal	Supplemental RI
08SB04	Site 08	08SB04(0-0.5)	0012062-02A	0	0.5	14-Dec-00	Volatile	Normal	Supplemental RI
08SB05	Site 08	08SB05(0-0.5)	0012040-05A	0	0.5	07-Dec-00	Volatile	Normal	Supplemental RI
08SB01	Site 08	08SB01(1-3)	0012037-05A	1	3	06-Dec-00	Volatile	Normal	Supplemental RI
08SB03	Site 08	08SB03(1-3)	0012037-03A	1	3	06-Dec-00	Volatile	Normal	Supplemental RI
08SB04	Site 08	08SB04(1-3)	0012037-01A	1	3	06-Dec-00	Volatile	Normal	Supplemental RI
08SB05	Site 08	08SB05(1-3)	0012040-06A	1	3	07-Dec-00	Volatile	Normal	Supplemental RI
08SB05	Site 08	08SB05(1-3)QC	0012040-07A	1	3	07-Dec-00	Volatile	Duplicate	Supplemental RI
08SB01	Site 08	08SB01(3-5)	0012037-06A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI
08SB03	Site 08	08SB03(3-5)	0012037-04A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI
08SB04	Site 08	08SB04(3-5)	0012037-02A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI
08SB05	Site 08	08SB05(3-5)	0012040-08A	3	5	07-Dec-00	Volatile	Normal	Supplemental RI

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-6
Selection of Samples for Soil Scenarios - Site 35A, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
35ASB03	Site 35A	35ASB03(0-0.5)	4784.024	0	0.5	26-Jul-98	BNA	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)QC	4784.025	0	0.5	26-Jul-98	BNA	Duplicate	3
35ASB05	Site 35A	35ASB05(0-0.5)	4784.029	0	0.5	26-Jul-98	BNA	Normal	3
35ASD01	Site 35A	35ASD01-1	4987.026	0	0.5	09-Nov-98	BNA	Normal	3
35ASD02	Site 35A	35ASD02-1	4987.029	0	0.5	09-Nov-98	BNA	Normal	3
LHSMW01	Site 35A	LHS-MW-1-09301994	9410G668-001	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW02	Site 35A	LHS-MW2	9410G668-002	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW03	Site 35A	LHS-MW3	9410G668-003	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW04	Site 35A	LHS-MW4	9410G668-004	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW05	Site 35A	LHS-MW5	9410G668-005	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW06	Site 35A	LHS-MW6	9410G668-006	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW07	Site 35A	LHS-MW7	9410G668-007	0	0.5	30-Sep-94	BNA	Normal	2
SH-01	Site 35A	LHS-SH-01	9501G638-001	0	0.5	11-Jan-95	BNA	Normal	2
SH-01	Site 35A	LHS-SH-01 QC	9501G638-002	0	0.5	11-Jan-95	BNA	Duplicate	2
SH-02	Site 35A	LHS-SH-02	9501G638-003	0	0.5	12-Jan-95	BNA	Normal	2
SH-03	Site 35A	LHS-SH-03	9501G638-004	0	0.5	12-Jan-95	BNA	Normal	2
SH-04	Site 35A	LHS-SH-04	9501G638-005	0	0.5	12-Jan-95	BNA	Normal	2
SH-05	Site 35A	LHS-SH-05	9501G638-006	0	0.5	12-Jan-95	BNA	Normal	2
723	Site 35A	LH-S723-01_1	3-5313	0.5	1.5	- -	BNA	Normal	1
723	Site 35A	LH-S723-02_1	3-5315	0.5	1.5	- -	BNA	Normal	1
723	Site 35A	LH-DL723-01	3-5312	1	2	- -	BNA	Normal	1
111	Site 35A	LH-S111-01_1	D93-7789-9	0	2	08-Jul-93	BNA	Normal	1
112	Site 35A	LH-S112-01_1	D93-7789-11	0	2	08-Jul-93	BNA	Normal	1
113	Site 35A	LH-S113-01_1	D93-9106-8	0.5	2	04-Aug-93	BNA	Normal	1
117	Site 35A	LH-S117-01_1	D93-9106-10	0.5	2	04-Aug-93	BNA	Normal	1
119	Site 35A	LH-S119-01 QC	D93-9046-25	0.5	2	04-Aug-93	BNA	Duplicate	1
119	Site 35A	LH-S119-01_1	D93-9046-21	0.5	2	04-Aug-93	BNA	Normal	1
119	Site 35A	LH-S119-02_1	D93-9046-23	0.5	2	04-Aug-93	BNA	Normal	1
120	Site 35A	LH-S120-01_1	D93-9046-26	0.5	2	04-Aug-93	BNA	Normal	1
120	Site 35A	LH-S120-02_1	D93-9046-28	0.5	2	04-Aug-93	BNA	Normal	1
35ASB03	Site 35A	35ASB03(1-3)	4784.026	1	3	26-Jul-98	BNA	Normal	3
35ASB05	Site 35A	35ASB05(1-3)	4784.030	1	3	26-Jul-98	BNA	Normal	3
111	Site 35A	LH-S111-01_2	D93-7789-10	2	4	08-Jul-93	BNA	Normal	1
723	Site 35A	LH-S723-01_2	3-5314	4	4.5	- -	BNA	Normal	1
35ASB03	Site 35A	35ASB03(3-5)	4784.027	3	5	26-Jul-98	BNA	Normal	3
35ASB05	Site 35A	35ASB05(3-5)	4784.031	3	5	26-Jul-98	BNA	Normal	3
112	Site 35A	LH-S112-01_2	D93-7789-12	3	5	08-Jul-93	BNA	Normal	1
120	Site 35A	LH-S120-02_2	D93-9046-29	4	5	04-Aug-93	BNA	Normal	1
723	Site 35A	LH-S723-02_2	3-5316	4	5	- -	BNA	Normal	1
113	Site 35A	LH-S113-01_2	D93-9106-9	4	6	04-Aug-93	BNA	Normal	1
120	Site 35A	LH-S120-01_2	D93-9046-27	4	6	04-Aug-93	BNA	Normal	1
117	Site 35A	LH-S117-01_2	D93-9106-11	5	7	04-Aug-93	BNA	Normal	1
119	Site 35A	LH-S119-01_2	D93-9046-22	5	7	04-Aug-93	BNA	Normal	1
119	Site 35A	LH-S119-02_2	D93-9046-24	5	7	04-Aug-93	BNA	Normal	1
35ASB03	Site 35A	35ASB03(0-0.5)	4784.024	0	0.5	26-Jul-98	Explosive	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)QC	4784.025	0	0.5	26-Jul-98	Explosive	Duplicate	3
35ASB05	Site 35A	35ASB05(0-0.5)	4784.029	0	0.5	26-Jul-98	Explosive	Normal	3
35ASD01	Site 35A	35ASD01-1	4987.026	0	0.5	09-Nov-98	Explosive	Normal	3
35ASD02	Site 35A	35ASD02-1	4987.029	0	0.5	09-Nov-98	Explosive	Normal	3
LHSMW01	Site 35A	LHS-MW-1-09301994	9410G669-001	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW02	Site 35A	LHS-MW2	9410G669-002	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW03	Site 35A	LHS-MW3	9410G669-003	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW04	Site 35A	LHS-MW4	9410G669-004	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW05	Site 35A	LHS-MW5	9410G669-005	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW06	Site 35A	LHS-MW6	9410G669-006	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW07	Site 35A	LHS-MW7	9410G669-007	0	0.5	30-Sep-94	Explosive	Normal	2

Table 3-6
Selection of Samples for Soil Scenarios - Site 35A, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
SH-01	Site 35A	LHS-SH-01	9501L631-011	0	0.5	11-Jan-95	Explosive	Normal	2
SH-01	Site 35A	LHS-SH-01 QC	9501L631-012	0	0.5	11-Jan-95	Explosive	Duplicate	2
SH-02	Site 35A	LHS-SH-02	9501L631-013	0	0.5	12-Jan-95	Explosive	Normal	2
SH-03	Site 35A	LHS-SH-03	9501L631-014	0	0.5	12-Jan-95	Explosive	Normal	2
SH-04	Site 35A	LHS-SH-04	9501L631-015	0	0.5	12-Jan-95	Explosive	Normal	2
SH-05	Site 35A	LHS-SH-05	9501L631-016	0	0.5	12-Jan-95	Explosive	Normal	2
35ASB03	Site 35A	35ASB03(1-3)	4784.026	1	3	26-Jul-98	Explosive	Normal	3
35ASB05	Site 35A	35ASB05(1-3)	4784.030	1	3	26-Jul-98	Explosive	Normal	3
35ASB03	Site 35A	35ASB03(3-5)	4784.027	3	5	26-Jul-98	Explosive	Normal	3
35ASB05	Site 35A	35ASB05(3-5)	4784.031	3	5	26-Jul-98	Explosive	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)	4784.024	0	0.5	26-Jul-98	Explosive	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)QC	4784.025	0	0.5	26-Jul-98	Metal	Duplicate	3
35ASB05	Site 35A	35ASB05(0-0.5)	4784.029	0	0.5	26-Jul-98	Metal	Normal	3
35ASD01	Site 35A	35ASD01-1	4987.026	0	0.5	09-Nov-98	Metal	Normal	3
35ASD02	Site 35A	35ASD02-1	4987.029	0	0.5	09-Nov-98	Metal	Normal	3
LHSMW01	Site 35A	LHS-MW-1-09301994	9410G668-001	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW02	Site 35A	LHS-MW2	9410G668-002	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW03	Site 35A	LHS-MW3	9410G668-003	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW04	Site 35A	LHS-MW4	9410G668-004	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW05	Site 35A	LHS-MW5	9410G668-005	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW06	Site 35A	LHS-MW6	9410G668-006	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW07	Site 35A	LHS-MW7	9410G668-007	0	0.5	30-Sep-94	Metal	Normal	2
SH-01	Site 35A	LHS-SH-01	9501G638-001	0	0.5	11-Jan-95	Metal	Normal	2
SH-01	Site 35A	LHS-SH-01 QC	9501G638-002	0	0.5	11-Jan-95	Metal	Duplicate	2
SH-02	Site 35A	LHS-SH-02	9501G638-003	0	0.5	12-Jan-95	Metal	Normal	2
SH-03	Site 35A	LHS-SH-03	9501G638-004	0	0.5	12-Jan-95	Metal	Normal	2
SH-04	Site 35A	LHS-SH-04	9501G638-005	0	0.5	12-Jan-95	Metal	Normal	2
SH-05	Site 35A	LHS-SH-05	9501G638-006	0	0.5	12-Jan-95	Metal	Normal	2
SUMP111	Site 35A	SUMP111(0-0.5)	4936.121	0	0.5	25-Sep-98	Metal	Normal	3
SUMP112	Site 35A	SUMP112(0-0.5)	4819.016	0	0.5	12-Aug-98	Metal	Normal	3
SUMP113	Site 35A	SUMP113(0-0.5)	4819.018	0	0.5	12-Aug-98	Metal	Normal	3
SUMP117	Site 35A	SUMP117(0-0.5)	4803.017	0	0.5	05-Aug-98	Metal	Normal	3
SUMP119	Site 35A	SUMP119(0-0.5)	4936.125	0	0.5	25-Sep-98	Metal	Normal	3
SUMP120	Site 35A	SUMP120(0-0.5)	4819.025	0	0.5	12-Aug-98	Metal	Normal	3
WRSUMP744A	Site 35A	WRSP744A(0-0.5)	4936.022	0	0.5	28-Sep-98	Metal	Normal	3
WRSUMP744A	Site 35A	WRSP744A(0-0.5)QC	4936.023	0	0.5	28-Sep-98	Metal	Duplicate	3
723	Site 35A	LH-S723-01_1	3-5313	0.5	1.5	- -	Metal	Normal	1
723	Site 35A	LH-S723-02_1	3-5315	0.5	1.5	- -	Metal	Normal	1
723	Site 35A	LH-DL723-01	3-5312	1	2	- -	Metal	Normal	1
111	Site 35A	LH-S111-01_1	3-3733	0	2	08-Jul-93	Metal	Normal	1
112	Site 35A	LH-S112-01_1	3-3735	0	2	08-Jul-93	Metal	Normal	1
113	Site 35A	LH-S113-01_1	3-4763	0.5	2	04-Aug-93	Metal	Normal	1
117	Site 35A	LH-S117-01_1	3-4765	0.5	2	04-Aug-93	Metal	Normal	1
119	Site 35A	LH-S119-01 QC	3-4691	0.5	2	04-Aug-93	Metal	Duplicate	1
119	Site 35A	LH-S119-01_1	3-4687	0.5	2	04-Aug-93	Metal	Normal	1
119	Site 35A	LH-S119-02_1	3-4689	0.5	2	04-Aug-93	Metal	Normal	1
120	Site 35A	LH-S120-01_1	3-4693	0.5	2	04-Aug-93	Metal	Normal	1
120	Site 35A	LH-S120-02_1	3-4695	0.5	2	04-Aug-93	Metal	Normal	1
35ASB03	Site 35A	35ASB03(0-0.5)	4784.024	0	0.5	26-Jul-98	PAH	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)QC	4784.025	0	0.5	26-Jul-98	PAH	Duplicate	3
35ASB05	Site 35A	35ASB05(0-0.5)	4784.029	0	0.5	26-Jul-98	PAH	Normal	3
35ASS01	Site 35A	35ASS01(0-0.5)	4784.022	0	0.5	26-Jul-98	PAH	Normal	3
35ASS02	Site 35A	35ASS02(0-0.5)	4784.023	0	0.5	26-Jul-98	PAH	Normal	3
35ASS04	Site 35A	35ASS04(0-0.5)	4784.028	0	0.5	26-Jul-98	PAH	Normal	3
35ASS06	Site 35A	35ASS06(0-0.5)	4784.032	0	0.5	26-Jul-98	PAH	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)	4784.024	0	0.5	26-Jul-98	PCB	Normal	3

Table 3-6
Selection of Samples for Soil Scenarios - Site 35A, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
35ASB03	Site 35A	35ASB03(0-0.5)QC	4784.025	0	0.5	26-Jul-98	PCB	Duplicate	3
35ASB05	Site 35A	35ASB05(0-0.5)	4784.029	0	0.5	26-Jul-98	PCB	Normal	3
35ASD01	Site 35A	35ASD01-1	4987.026	0	0.5	09-Nov-98	PCB	Normal	3
35ASD01	Site 35A	35ASD01-2	5017.039	0	0.5	03-Dec-98	PCB	Normal	3
35ASD02	Site 35A	35ASD02-2	5017.040	0	0.5	03-Dec-98	PCB	Normal	3
SUMP112	Site 35A	SUMP112(0-0.5)	4819.016	0	0.5	12-Aug-98	PCB	Normal	3
SUMP113	Site 35A	SUMP113(0-0.5)	4819.018	0	0.5	12-Aug-98	PCB	Normal	3
SUMP117	Site 35A	SUMP117(0-0.5)	4803.017	0	0.5	05-Aug-98	PCB	Normal	3
SUMP120	Site 35A	SUMP120(0-0.5)	4819.025	0	0.5	12-Aug-98	PCB	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)	35001.01	0	0.5	26-Jul-98	PCDD/PCDF	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)QC	35001.02	0	0.5	26-Jul-98	PCDD/PCDF	Duplicate	3
35ASB05	Site 35A	35ASB05(0-0.5)	35001.05	0	0.5	26-Jul-98	PCDD/PCDF	Normal	3
35ASD01	Site 35A	35ASD01-1	36354.06	0	0.5	09-Nov-98	PCDD/PCDF	Normal	3
SUMP112	Site 35A	SUMP112(0-0.5)	35264.14	0	0.5	12-Aug-98	PCDD/PCDF	Normal	3
SUMP113	Site 35A	SUMP113(0-0.5)	35264.16	0	0.5	12-Aug-98	PCDD/PCDF	Normal	3
SUMP117	Site 35A	SUMP117(0-0.5)	35134.19	0	0.5	05-Aug-98	PCDD/PCDF	Normal	3
SUMP120	Site 35A	SUMP120(0-0.5)	35265.05	0	0.5	12-Aug-98	PCDD/PCDF	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)	4784.024	0	0.5	26-Jul-98	Pesticide	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)QC	4784.025	0	0.5	26-Jul-98	Pesticide	Duplicate	3
35ASB05	Site 35A	35ASB05(0-0.5)	4784.029	0	0.5	26-Jul-98	Pesticide	Normal	3
35ASD01	Site 35A	35ASD01-1	4987.026	0	0.5	09-Nov-98	Pesticide	Normal	3
35ASD01	Site 35A	35ASD01-2	5017.039	0	0.5	03-Dec-98	Pesticide	Normal	3
35ASD02	Site 35A	35ASD02-2	5017.040	0	0.5	03-Dec-98	Pesticide	Normal	3
SUMP112	Site 35A	SUMP112(0-0.5)	4819.016	0	0.5	12-Aug-98	Pesticide	Normal	3
SUMP113	Site 35A	SUMP113(0-0.5)	4819.018	0	0.5	12-Aug-98	Pesticide	Normal	3
SUMP117	Site 35A	SUMP117(0-0.5)	4803.017	0	0.5	05-Aug-98	Pesticide	Normal	3
SUMP120	Site 35A	SUMP120(0-0.5)	4819.025	0	0.5	12-Aug-98	Pesticide	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)	4784.024	0	0.5	26-Jul-98	Volatile	Normal	3
35ASB03	Site 35A	35ASB03(0-0.5)QC	4784.025	0	0.5	26-Jul-98	Volatile	Duplicate	3
35ASB05	Site 35A	35ASB05(0-0.5)	4784.029	0	0.5	26-Jul-98	Volatile	Normal	3
35ASD01	Site 35A	35ASD01-1	4987.026	0	0.5	09-Nov-98	Volatile	Normal	3
35ASD02	Site 35A	35ASD02-1	4987.029	0	0.5	09-Nov-98	Volatile	Normal	3
LHSMW01	Site 35A	LHS-MW-1-09301994	9410G668-001	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW02	Site 35A	LHS-MW2	9410G668-002	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW03	Site 35A	LHS-MW3	9410G668-003	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW04	Site 35A	LHS-MW4	9410G668-004	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW05	Site 35A	LHS-MW5	9410G668-005	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW06	Site 35A	LHS-MW6	9410G668-006	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW07	Site 35A	LHS-MW7	9410G668-007	0	0.5	30-Sep-94	Volatile	Normal	2
SH-01	Site 35A	LHS-SH-01	9501G638-001	0	0.5	11-Jan-95	Volatile	Normal	2
SH-01	Site 35A	LHS-SH-01 QC	9501G638-002	0	0.5	11-Jan-95	Volatile	Duplicate	2
SH-02	Site 35A	LHS-SH-02	9501G638-003	0	0.5	12-Jan-95	Volatile	Normal	2
SH-03	Site 35A	LHS-SH-03	9501G638-004	0	0.5	12-Jan-95	Volatile	Normal	2
SH-04	Site 35A	LHS-SH-04	9501G638-005	0	0.5	12-Jan-95	Volatile	Normal	2
SH-05	Site 35A	LHS-SH-05	9501G638-006	0	0.5	12-Jan-95	Volatile	Normal	2
723	Site 35A	LH-S723-01_1	3-5313	0.5	1.5	- -	Volatile	Normal	1
723	Site 35A	LH-S723-02_1	3-5315	0.5	1.5	- -	Volatile	Normal	1
723	Site 35A	LH-DL723-01	3-5312	1	2	- -	Volatile	Normal	1
111	Site 35A	LH-S111-01_1	D93-7789-9	0	2	08-Jul-93	Volatile	Normal	1
112	Site 35A	LH-S112-01_1	D93-7789-11	0	2	08-Jul-93	Volatile	Normal	1
113	Site 35A	LH-S113-01_1	D93-9106-8	0.5	2	04-Aug-93	Volatile	Normal	1
117	Site 35A	LH-S117-01_1	D93-9106-10	0.5	2	04-Aug-93	Volatile	Normal	1
119	Site 35A	LH-S119-01 QC	D93-9046-25	0.5	2	04-Aug-93	Volatile	Duplicate	1
119	Site 35A	LH-S119-01_1	D93-9046-21	0.5	2	04-Aug-93	Volatile	Normal	1
119	Site 35A	LH-S119-02_1	D93-9046-23	0.5	2	04-Aug-93	Volatile	Normal	1
120	Site 35A	LH-S120-01_1	D93-9046-26	0.5	2	04-Aug-93	Volatile	Normal	1

Table 3-6
Selection of Samples for Soil Scenarios - Site 35A, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
120	Site 35A	LH-S120-02_1	D93-9046-28	0.5	2	04-Aug-93	Volatile	Normal	1
35ASB03	Site 35A	35ASB03(1-3)	4784.026	1	3	26-Jul-98	Volatile	Normal	3
35ASB05	Site 35A	35ASB05(1-3)	4784.030	1	3	26-Jul-98	Volatile	Normal	3
111	Site 35A	LH-S111-01_2	D93-7789-10	2	4	08-Jul-93	Volatile	Normal	1
723	Site 35A	LH-S723-01_2	3-5314	4	4.5	- -	Volatile	Normal	1
35ASB03	Site 35A	35ASB03(3-5)	4784.027	3	5	26-Jul-98	Volatile	Normal	3
35ASB05	Site 35A	35ASB05(3-5)	4784.031	3	5	26-Jul-98	Volatile	Normal	3
112	Site 35A	LH-S112-01_2	D93-7789-12	3	5	08-Jul-93	Volatile	Normal	1
120	Site 35A	LH-S120-02_2	D93-9046-29	4	5	04-Aug-93	Volatile	Normal	1
723	Site 35A	LH-S723-02_2	3-5316	4	5	- -	Volatile	Normal	1
113	Site 35A	LH-S113-01_2	D93-9106-9	4	6	04-Aug-93	Volatile	Normal	1
120	Site 35A	LH-S120-01_2	D93-9046-27	4	6	04-Aug-93	Volatile	Normal	1
117	Site 35A	LH-S117-01_2	D93-9106-11	5	7	04-Aug-93	Volatile	Normal	1
119	Site 35A	LH-S119-01_2	D93-9046-22	5	7	04-Aug-93	Volatile	Normal	1
119	Site 35A	LH-S119-02_2	D93-9046-24	5	7	04-Aug-93	Volatile	Normal	1

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PAH = polycyclic aromatic hydrocarbon

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-7
Selection of Samples for Soil Scenarios - Site 35B, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
35BSB01	Site 35B	35BSB01(0-0.5)	4784.048	0	0.5	27-Jul-98	BNA	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)QC	4784.049	0	0.5	27-Jul-98	BNA	Duplicate	3
3-30	Site 35B	LHS-3-30	9501G639-014	0	0.5	11-Jan-95	BNA	Normal	2
LHSMW58	Site 35B	LHS-MW58	9410G761-016	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW59	Site 35B	LHS-MW59	9410G761-017	0	0.5	05-Oct-94	BNA	Normal	2
WRS-14	Site 35B	LH-WRS14-01_1	3-5268	0.5	1.5	- -	BNA	Normal	1
35BSB01	Site 35B	35BSB01(1-3)	4784.050	1	3	27-Jul-98	BNA	Normal	3
WRS-14	Site 35B	LH-WRS14-01_2	3-5269	3	4.5	- -	BNA	Normal	1
35BSB01	Site 35B	35BSB01(3-5)	4784.051	3	5	27-Jul-98	BNA	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)	4784.048	0	0.5	27-Jul-98	Explosive	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)QC	4784.049	0	0.5	27-Jul-98	Explosive	Duplicate	3
3-30	Site 35B	LHS-3-30	9501L624-013	0	0.5	11-Jan-95	Explosive	Normal	2
LHSMW58	Site 35B	LHS-MW58	9410G763-016	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW59	Site 35B	LHS-MW59	9410G763-017	0	0.5	05-Oct-94	Explosive	Normal	2
35BSB01	Site 35B	35BSB01(1-3)	4784.050	1	3	27-Jul-98	Explosive	Normal	3
35BSB01	Site 35B	35BSB01(3-5)	4784.051	3	5	27-Jul-98	Explosive	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)	4784.048	0	0.5	27-Jul-98	Metal	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)QC	4784.049	0	0.5	27-Jul-98	Metal	Duplicate	3
3-30	Site 35B	LHS-3-30	9501G639-014	0	0.5	11-Jan-95	Metal	Normal	2
LHSMW58	Site 35B	LHS-MW58	9410G761-016	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW59	Site 35B	LHS-MW59	9410G761-017	0	0.5	05-Oct-94	Metal	Normal	2
WRSUMP014	Site 35B	WRSUMP14(0-0.5)	4808.008	0	0.5	07-Aug-98	Metal	Normal	3
WRS-14	Site 35B	LH-WRS14-01_1	3-5268	0.5	1.5	- -	Metal	Normal	1
35BSB01	Site 35B	35BSB01(0-0.5)	4784.048	0	0.5	27-Jul-98	PCB	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)QC	4784.049	0	0.5	27-Jul-98	PCB	Duplicate	3
WRSUMP014	Site 35B	WRSUMP14(0-0.5)	4808.008	0	0.5	07-Aug-98	PCB	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)	35001.10	0	0.5	27-Jul-98	PCDD/PCDF	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)QC	35001.11	0	0.5	27-Jul-98	PCDD/PCDF	Duplicate	3
WRSUMP014	Site 35B	WRSUMP14(0-0.5)	35190.21	0	0.5	07-Aug-98	PCDD/PCDF	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)	4784.048	0	0.5	27-Jul-98	Pesticide	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)QC	4784.049	0	0.5	27-Jul-98	Pesticide	Duplicate	3
WRSUMP014	Site 35B	WRSUMP14(0-0.5)	4808.008	0	0.5	07-Aug-98	Pesticide	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)	4784.048	0	0.5	27-Jul-98	Volatile	Normal	3
35BSB01	Site 35B	35BSB01(0-0.5)QC	4784.049RA	0	0.5	27-Jul-98	Volatile	Duplicate	3
3-30	Site 35B	LHS-3-30	9501G639-014	0	0.5	11-Jan-95	Volatile	Normal	2
LHSMW58	Site 35B	LHS-MW58	9410G761-016	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW59	Site 35B	LHS-MW59	9410G761-017	0	0.5	05-Oct-94	Volatile	Normal	2
WRS-14	Site 35B	LH-WRS14-01_1	3-5268	0.5	1.5	- -	Volatile	Normal	1
35BSB01	Site 35B	35BSB01(1-3)	4784.050	1	3	27-Jul-98	Volatile	Normal	3
WRS-14	Site 35B	LH-WRS14-01_2	3-5269	3	4.5	- -	Volatile	Normal	1
35BSB01	Site 35B	35BSB01(3-5)	4784.051	3	5	27-Jul-98	Volatile	Normal	3

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-8
Selection of Samples for Soil Scenarios - Site 35C, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
103	Site 35C	LH-S103-02 QC	D93-8687-1	0	0	27-Jul-93	BNA	Duplicate	1
35CSB01	Site 35C	35CSB01(0-0.5)	4784.052	0	0.5	27-Jul-98	BNA	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)QC	4784.053	0	0.5	27-Jul-98	BNA	Duplicate	3
LHSMW67	Site 35C	LHS-MW67	9410G762-007	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW68	Site 35C	LHS-MW68	9410G762-008	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW69	Site 35C	LHS-MW69	9410G762-009	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW70	Site 35C	LHS-MW70	9410G762-010	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW70	Site 35C	LHS-MW70 QC	9410G762-016	0	0.5	05-Oct-94	BNA	Duplicate	2
LHSMW71	Site 35C	LHS-MW71	9410G762-011	0	0.5	05-Oct-94	BNA	Normal	2
T-01	Site 35C	LHS-T-01	9501G640-002	0	0.5	11-Jan-95	BNA	Normal	2
T-02	Site 35C	LHS-T-02	9501G640-003	0	0.5	11-Jan-95	BNA	Normal	2
T-02	Site 35C	LHS-T-02QC	9501G640-004	0	0.5	11-Jan-95	BNA	Duplicate	2
102	Site 35C	LH-S102-01 QC	D93-8981-12	0.5	2	03-Aug-93	BNA	Duplicate	1
102	Site 35C	LH-S102-01_1	D93-8981-7	0.5	2	03-Aug-93	BNA	Normal	1
102	Site 35C	LH-S102-02_1	D93-8981-9	0.5	2	03-Aug-93	BNA	Normal	1
103	Site 35C	LH-S103-01_1	D93-8552-39	0.5	2	24-Jul-93	BNA	Normal	1
103	Site 35C	LH-S103-02_1	D93-8552-42	0.5	2	25-Jul-93	BNA	Normal	1
104	Site 35C	LH-S104-02 QC	D93-8981-15	0.5	2	03-Aug-93	BNA	Duplicate	1
104	Site 35C	LH-S104-02_1	D93-8981-13	0.5	2	03-Aug-93	BNA	Normal	1
105	Site 35C	LH-S105-01_1	D93-8981-16	0.5	2	03-Aug-93	BNA	Normal	1
105	Site 35C	LH-S105-02_1	D93-8981-18	0.5	2	03-Aug-93	BNA	Normal	1
104	Site 35C	LH-S104-01_1	D93-9046-8	1.5	2.5	03-Aug-93	BNA	Normal	1
35CSB01	Site 35C	35CSB01(1-3)	4784.054	1	3	27-Jul-98	BNA	Normal	3
102	Site 35C	LH-DL102-01	D93-8981-11	2	4	03-Aug-93	BNA	Normal	1
103	Site 35C	LH-DL103-01	D93-8552-47	2	4	25-Jul-93	BNA	Normal	1
104	Site 35C	LH-DL104-01	D93-9046-10	2	4	04-Aug-93	BNA	Normal	1
105	Site 35C	LH-DL105-01	D93-8981-20	2	4	03-Aug-93	BNA	Normal	1
35CSB01	Site 35C	35CSB01(3-5)	4784.055	3	5	27-Jul-98	BNA	Normal	3
102	Site 35C	LH-S102-01_2	D93-8981-8	4	6	03-Aug-93	BNA	Normal	1
102	Site 35C	LH-S102-02_2	D93-8981-10	4	6	03-Aug-93	BNA	Normal	1
103	Site 35C	LH-S103-01_2	D93-8552-40	4	6	24-Jul-93	BNA	Normal	1
103	Site 35C	LH-S103-02_2	D93-8552-43	4	6	25-Jul-93	BNA	Normal	1
105	Site 35C	LH-S105-01_2	D93-8981-17	4	6	03-Aug-93	BNA	Normal	1
105	Site 35C	LH-S105-02_2	D93-8981-19	4	6	03-Aug-93	BNA	Normal	1
35CSB01	Site 35C	35CSB01(0-0.5)	4784.052	0	0.5	27-Jul-98	Explosive	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)QC	4784.053	0	0.5	27-Jul-98	Explosive	Duplicate	3
LHSMW67	Site 35C	LHS-MW67	9410G764-007	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW68	Site 35C	LHS-MW68	9410G764-008	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW69	Site 35C	LHS-MW69	9410G764-009	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW70	Site 35C	LHS-MW70	9410G764-010	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW70	Site 35C	LHS-MW70 QC	9410G764-014	0	0.5	05-Oct-94	Explosive	Duplicate	2
LHSMW71	Site 35C	LHS-MW71	9410G764-011	0	0.5	05-Oct-94	Explosive	Normal	2
T-01	Site 35C	LHS-T-01	9501L631-028	0	0.5	11-Jan-95	Explosive	Normal	2
T-02	Site 35C	LHS-T-02	9501L631-029	0	0.5	11-Jan-95	Explosive	Normal	2
T-02	Site 35C	LHS-T-02QC	9501L631-030	0	0.5	11-Jan-95	Explosive	Duplicate	2
35CSB01	Site 35C	35CSB01(1-3)	4784.054	1	3	27-Jul-98	Explosive	Normal	3
35CSB01	Site 35C	35CSB01(3-5)	4784.055	3	5	27-Jul-98	Explosive	Normal	3
103	Site 35C	LH-S103-02 QC	3-4244	0	0	27-Jul-93	Metal	Duplicate	1
35CSB01	Site 35C	35CSB01(0-0.5)	4784.052	0	0.5	27-Jul-98	Metal	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)QC	4784.053	0	0.5	27-Jul-98	Metal	Duplicate	3
LHSMW67	Site 35C	LHS-MW67	9410G762-007	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW68	Site 35C	LHS-MW68	9410G762-008	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW69	Site 35C	LHS-MW69	9410G762-009	0	0.5	05-Oct-94	Metal	Normal	2

Table 3-8
Selection of Samples for Soil Scenarios - Site 35C, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
LHSMW70	Site 35C	LHS-MW70	9410G762-010	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW70	Site 35C	LHS-MW70 QC	9410G762-016	0	0.5	05-Oct-94	Metal	Duplicate	2
LHSMW71	Site 35C	LHS-MW71	9410G762-011	0	0.5	05-Oct-94	Metal	Normal	2
T-01	Site 35C	LHS-T-01	9501G640-002	0	0.5	11-Jan-95	Metal	Normal	2
T-02	Site 35C	LHS-T-02	9501G640-003	0	0.5	11-Jan-95	Metal	Normal	2
T-02	Site 35C	LHS-T-02QC	9501G640-004	0	0.5	11-Jan-95	Metal	Duplicate	2
SUMP102	Site 35C	SUMP102(0-0.5)	4936.109	0	0.5	25-Sep-98	Metal	Normal	3
SUMP102	Site 35C	SUMP102(0-0.5)QC	4936.110	0	0.5	25-Sep-98	Metal	Duplicate	3
SUMP103	Site 35C	SUMP103(0-0.5)	4936.112	0	0.5	25-Sep-98	Metal	Normal	3
SUMP104	Site 35C	SUMP104(0-0.5)	4936.114	0	0.5	25-Sep-98	Metal	Normal	3
SUMP105	Site 35C	SUMP105(0-0.5)	4819.005	0	0.5	11-Aug-98	Metal	Normal	3
102	Site 35C	LH-S102-01 QC	3-4641	0.5	2	03-Aug-93	Metal	Duplicate	1
102	Site 35C	LH-S102-01_1	3-4636	0.5	2	03-Aug-93	Metal	Normal	1
102	Site 35C	LH-S102-02_1	3-4638	0.5	2	03-Aug-93	Metal	Normal	1
103	Site 35C	LH-S103-01_1	3-4194	0.5	2	24-Jul-93	Metal	Normal	1
103	Site 35C	LH-S103-02_1	3-4197	0.5	2	25-Jul-93	Metal	Normal	1
104	Site 35C	LH-S104-02 QC	3-4645	0.5	2	03-Aug-93	Metal	Duplicate	1
104	Site 35C	LH-S104-02_1	3-4643	0.5	2	03-Aug-93	Metal	Normal	1
105	Site 35C	LH-S105-01_1	3-4647	0.5	2	03-Aug-93	Metal	Normal	1
105	Site 35C	LH-S105-02_1	3-4649	0.5	2	03-Aug-93	Metal	Normal	1
35CSB01	Site 35C	35CSB01(0-0.5)	4784.052	0	0.5	27-Jul-98	PCB	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)QC	4784.053	0	0.5	27-Jul-98	PCB	Duplicate	3
SUMP105	Site 35C	SUMP105(0-0.5)	4819.005	0	0.5	11-Aug-98	PCDD/PCDF	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)	35001.14	0	0.5	27-Jul-98	PCDD/PCDF	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)QC	35001.15	0	0.5	27-Jul-98	PCDD/PCDF	Duplicate	3
SUMP105	Site 35C	SUMP105(0-0.5)	35265.01	0	0.5	11-Aug-98	PCDD/PCDF	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)	4784.052	0	0.5	27-Jul-98	Pesticide	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)QC	4784.053	0	0.5	27-Jul-98	Pesticide	Duplicate	3
SUMP105	Site 35C	SUMP105(0-0.5)	4819.005	0	0.5	11-Aug-98	Pesticide	Normal	3
103	Site 35C	LH-S103-02 QC	1993.8687-1	0	0	27-Jul-93	Volatile	Duplicate	1
35CSB01	Site 35C	35CSB01(0-0.5)	4784.052	0	0.5	27-Jul-98	Volatile	Normal	3
35CSB01	Site 35C	35CSB01(0-0.5)QC	4784.053	0	0.5	27-Jul-98	Volatile	Duplicate	3
LHSMW67	Site 35C	LHS-MW67	9410G762-007	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW68	Site 35C	LHS-MW68	9410G762-008	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW69	Site 35C	LHS-MW69	9410G762-009	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW70	Site 35C	LHS-MW70	9410G762-010	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW70	Site 35C	LHS-MW70 QC	9410G762-016	0	0.5	05-Oct-94	Volatile	Duplicate	2
LHSMW71	Site 35C	LHS-MW71	9410G762-011	0	0.5	05-Oct-94	Volatile	Normal	2
T-01	Site 35C	LHS-T-01	9501G640-002	0	0.5	11-Jan-95	Volatile	Normal	2
T-02	Site 35C	LHS-T-02	9501G640-003	0	0.5	11-Jan-95	Volatile	Normal	2
T-02	Site 35C	LHS-T-02QC	9501G640-004	0	0.5	11-Jan-95	Volatile	Duplicate	2
102	Site 35C	LH-S102-01 QC	D93-8981-12	0.5	2	03-Aug-93	Volatile	Duplicate	1
102	Site 35C	LH-S102-01_1	D93-8981-7	0.5	2	03-Aug-93	Volatile	Normal	1
102	Site 35C	LH-S102-02_1	D93-8981-9	0.5	2	03-Aug-93	Volatile	Normal	1
103	Site 35C	LH-S103-01_1	D93-8552-39	0.5	2	24-Jul-93	Volatile	Normal	1
103	Site 35C	LH-S103-02_1	D93-8552-42	0.5	2	25-Jul-93	Volatile	Normal	1
104	Site 35C	LH-S104-02 QC	D93-8981-15	0.5	2	03-Aug-93	Volatile	Duplicate	1
104	Site 35C	LH-S104-02_1	D93-8981-13	0.5	2	03-Aug-93	Volatile	Normal	1
105	Site 35C	LH-S105-01_1	D93-8981-16	0.5	2	03-Aug-93	Volatile	Normal	1
105	Site 35C	LH-S105-02_1	D93-8981-18	0.5	2	03-Aug-93	Volatile	Normal	1
104	Site 35C	LH-S104-01_1	D93-9046-8	1.5	2.5	03-Aug-93	Volatile	Normal	1
35CSB01	Site 35C	35CSB01(1-3)	4784.054	1	3	27-Jul-98	Volatile	Normal	3
102	Site 35C	LH-DL102-01	D93-8981-11	2	4	03-Aug-93	Volatile	Normal	1

Table 3-8
Selection of Samples for Soil Scenarios - Site 35C, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
103	Site 35C	LH-DL103-01	D93-8552-47	2	4	25-Jul-93	Volatile	Normal	1
104	Site 35C	LH-DL104-01	D93-9046-10	2	4	04-Aug-93	Volatile	Normal	1
105	Site 35C	LH-DL105-01	D93-8981-20	2	4	03-Aug-93	Volatile	Normal	1
35CSB01	Site 35C	35CSB01(3-5)	4784.055	3	5	27-Jul-98	Volatile	Normal	3
102	Site 35C	LH-S102-01_2	D93-8981-8	4	6	03-Aug-93	Volatile	Normal	1
102	Site 35C	LH-S102-02_2	D93-8981-10	4	6	03-Aug-93	Volatile	Normal	1
103	Site 35C	LH-S103-01_2	D93-8552-40	4	6	24-Jul-93	Volatile	Normal	1
103	Site 35C	LH-S103-02_2	D93-8552-43	4	6	25-Jul-93	Volatile	Normal	1
105	Site 35C	LH-S105-01_2	D93-8981-17	4	6	03-Aug-93	Volatile	Normal	1
105	Site 35C	LH-S105-02_2	D93-8981-19	4	6	03-Aug-93	Volatile	Normal	1

BNB = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
29	Site 46	LH-S29-01 QA_2	9306433-13A	0	0	25-Jun-93	BNA	Duplicate	1
46SB01	Site 46	46SB01(0-0.5)	4784.037	0	0.5	27-Jul-98	BNA	Normal	3
46SB02	Site 46	46SB02(0-0.5)	4784.063	0	0.5	27-Jul-98	BNA	Normal	3
46SB03	Site 46	46SB03(0-0.5)	4784.033	0	0.5	27-Jul-98	BNA	Normal	3
46SB03	Site 46	46SB03(0-0.5)QC	4784.034	0	0.5	27-Jul-98	BNA	Duplicate	3
46SD01	Site 46	46SD01-1	4987.027	0	0.5	09-Nov-98	BNA	Normal	3
46SD02	Site 46	46SD02-1	4987.028	0	0.5	09-Nov-98	BNA	Normal	3
46SD03	Site 46	46SD03-1	4988.006	0	0.5	10-Nov-98	BNA	Normal	3
46SD04	Site 46	46SD04-1	4988.007	0	0.5	10-Nov-98	BNA	Normal	3
46SD05	Site 46	46SD05-1	4988.008	0	0.5	10-Nov-98	BNA	Normal	3
46SD05	Site 46	46SD05-1QC	4988.009	0	0.5	10-Nov-98	BNA	Duplicate	3
46SD06	Site 46	46SD06-1	4988.010	0	0.5	10-Nov-98	BNA	Normal	3
46SD07	Site 46	46SD07-1	4988.013	0	0.5	10-Nov-98	BNA	Normal	3
46SD08	Site 46	46SD08-1	4988.014	0	0.5	10-Nov-98	BNA	Normal	3
2-01	Site 46	LHS-2-01	9501G551-001	0	0.5	09-Jan-95	BNA	Normal	2
2-02	Site 46	LHS-2-02	9501G551-002	0	0.5	09-Jan-95	BNA	Normal	2
2-03	Site 46	LHS-2-03	9501G551-003	0	0.5	09-Jan-95	BNA	Normal	2
2-04	Site 46	LHS-2-04	9501G551-004	0	0.5	10-Jan-95	BNA	Normal	2
2-05	Site 46	LHS-2-05	9501G638-011	0	0.5	10-Jan-95	BNA	Normal	2
2-06	Site 46	LHS-2-06	9501G638-012	0	0.5	10-Jan-95	BNA	Normal	2
2-07	Site 46	LHS-2-07	9501G638-013	0	0.5	10-Jan-95	BNA	Normal	2
2-08	Site 46	LHS-2-08	9501G638-014	0	0.5	10-Jan-95	BNA	Normal	2
2-09	Site 46	LHS-2-09	9501G638-015	0	0.5	10-Jan-95	BNA	Normal	2
2-10	Site 46	LHS-2-10	9501G638-016	0	0.5	10-Jan-95	BNA	Normal	2
2-11	Site 46	LHS-2-11	9501G638-017	0	0.5	11-Jan-95	BNA	Normal	2
2-12	Site 46	LHS-2-12	9501G638-018	0	0.5	11-Jan-95	BNA	Normal	2
2-13	Site 46	LHS-2-13	9501G638-019	0	0.5	11-Jan-95	BNA	Normal	2
2-14	Site 46	LHS-2-14	9501G638-020	0	0.5	11-Jan-95	BNA	Normal	2
2-14	Site 46	LHS-2-14 QC	9501G639-001	0	0.5	11-Jan-95	BNA	Duplicate	2
2-15	Site 46	LHS-2-15	9501G640-005	0	0.5	11-Jan-95	BNA	Normal	2
2-16	Site 46	LHS-2-16	9501G640-006	0	0.5	11-Jan-95	BNA	Normal	2
2-17	Site 46	LHS-2-17	9501G640-007	0	0.5	11-Jan-95	BNA	Normal	2
2-18	Site 46	LHS-2-18	9501G640-008	0	0.5	11-Jan-95	BNA	Normal	2
2-19	Site 46	LHS-2-19	9501G640-009	0	0.5	11-Jan-95	BNA	Normal	2
LHSMW10	Site 46	LHS-MW10	9410G668-010	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW11	Site 46	LHS-MW11	9410G668-011	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW11	Site 46	LHS-MW11 QC	9410G668-021	0	0.5	30-Sep-94	BNA	Duplicate	2
LHSMW12	Site 46	LHS-MW12	9410G668-012	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW13	Site 46	LHS-MW13	9410G668-013	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW14	Site 46	LHS-MW14	9410G668-014	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW15	Site 46	LHS-MW15	9410G668-015	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW16	Site 46	LHS-MW16	9410G668-016	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW17	Site 46	LHS-MW17	9410G668-017	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW18	Site 46	LHS-MW18	9410G668-018	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW19	Site 46	LHS-MW19	9410G668-019	0	0.5	30-Sep-94	BNA	Normal	2
LHSMW20	Site 46	LHS-MW20	9410G680-001	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW20	Site 46	LHS-MW20 QC	9410G680-014	0	0.5	03-Oct-94	BNA	Duplicate	2
LHSMW21	Site 46	LHS-MW21	9410G680-002	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW22	Site 46	LHS-MW22	9410G680-003	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW23	Site 46	LHS-MW23	9410G680-004	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW24	Site 46	LHS-MW24	9410G680-005	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW25	Site 46	LHS-MW25	9410G680-006	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW26	Site 46	LHS-MW26	9410G680-007	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW27	Site 46	LHS-MW27	9410G680-008	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW08	Site 46	LHS-MW8	9410G668-008	0	0.5	30-Sep-94	BNA	Normal	2

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
LHSMW09	Site 46	LHS-MW9	9410G668-009	0	0.5	30-Sep-94	BNA	Normal	2
17	Site 46	LH-S017-02_1	D93-9141-14	0.5	1	08-Aug-93	BNA	Normal	1
21	Site 46	LH-S021-02_1	D93-9105-13	0.5	1	06-Aug-93	BNA	Normal	1
25	Site 46	LH-S025-01 QC	D93-9105-17	0.5	1	06-Aug-93	BNA	Duplicate	1
25	Site 46	LH-S025-01_1	D93-9105-16	0.5	1	06-Aug-93	BNA	Normal	1
25	Site 46	LH-S025-02_1	D93-9105-19	0.5	1	06-Aug-93	BNA	Normal	1
26	Site 46	LH-S026-01 QC	D93-9141-24	0.5	1	08-Aug-93	BNA	Duplicate	1
26	Site 46	LH-S026-01_1	D93-9141-22	0.5	1	08-Aug-93	BNA	Normal	1
26	Site 46	LH-S026-02_1	D93-9141-25	0.5	1	08-Aug-93	BNA	Normal	1
23	Site 46	LH-S23-01 QC	D93-8552-3	0.5	1	25-Jul-93	BNA	Duplicate	1
23	Site 46	LH-S23-01_1	D93-8552-1	0.5	1	25-Jul-93	BNA	Normal	1
28	Site 46	LH-S28-01_1	D93-8425-1	0.5	1	22-Jul-93	BNA	Normal	1
31	Site 46	LH-S31-01_1	D93-8379-12	0.5	1	21-Jul-93	BNA	Normal	1
33	Site 46	LH-S33-01_1	D93-8379-14	0.5	1	21-Jul-93	BNA	Normal	1
37	Site 46	LH-S37-01_1	D93-8552-6	0.5	1	25-Jul-93	BNA	Normal	1
43	Site 46	LH-S43-01_1	3-5425	0.5	1	- -	BNA	Normal	1
WRS-7	Site 46	LH-WRS07-01 QC	D93-8425-23	0.5	1	22-Jul-93	BNA	Duplicate	1
WRS-7	Site 46	LH-WRS07-01_1	D93-8425-20	0.5	1	22-Jul-93	BNA	Normal	1
WRS-10	Site 46	LH-WRS10-01_1	D93-9141-1	0.5	1	08-Aug-93	BNA	Normal	1
12	Site 46	LH-WRS12-01_1	D93-9141-7	0.5	1	08-Aug-93	BNA	Normal	1
WRS-15	Site 46	LH-WRS15-01_1	D93-8981-1	0.5	1	03-Aug-93	BNA	Normal	1
WRS-21	Site 46	LH-WRS21-01_1	D93-9141-20	0.5	1	08-Aug-93	BNA	Normal	1
WRS-8	Site 46	LH-WRS8-01_1	D93-9105-1	0.5	1	06-Aug-93	BNA	Normal	1
WRS-9	Site 46	LH-WRS9-01_1	D93-9105-3	0.5	1	06-Aug-93	BNA	Normal	1
18	Site 46	LH-S018-01_1	D93-9141-17	0.5	1.1	08-Aug-93	BNA	Normal	1
WRS-11	Site 46	LH-WRS11-01 QC	D93-9141-4	0.5	1.2	08-Aug-93	BNA	Duplicate	1
WRS-11	Site 46	LH-WRS11-01_1	D93-9141-3	0.5	1.2	08-Aug-93	BNA	Normal	1
1	Site 46	LH-S01-01_1	D93-7395-1	0.5	1.5	26-Jun-93	BNA	Normal	1
1	Site 46	LH-S01-02_1	D93-7395-4	0.5	1.5	26-Jun-93	BNA	Normal	1
17	Site 46	LH-S017-01 QC	D93-9141-13	0.5	1.5	08-Aug-93	BNA	Duplicate	1
17	Site 46	LH-S017-01_1	D93-9141-11	0.5	1.5	08-Aug-93	BNA	Normal	1
21	Site 46	LH-S021-01 QC	D93-9105-11	1	1.5	06-Aug-93	BNA	Duplicate	1
21	Site 46	LH-S021-01_1	D93-9105-10	1	1.5	06-Aug-93	BNA	Normal	1
26	Site 46	LH-S026-02_2	D93-9141-26	1	1.5	08-Aug-93	BNA	Normal	1
9	Site 46	LH-S09-01 QC	3-5377	0.5	1.5	- -	BNA	Duplicate	1
9	Site 46	LH-S09-01_1	3-5374	0.5	1.5	- -	BNA	Normal	1
9	Site 46	LH-S09-02_1	3-5379	0.5	1.5	- -	BNA	Normal	1
107	Site 46	LH-S107-01_2	3-5441	1	1.5	- -	BNA	Normal	1
108	Site 46	LH-S108-01_1	3-5445	0.5	1.5	- -	BNA	Normal	1
109	Site 46	LH-S109-01_1	3-5448	0.5	1.5	- -	BNA	Normal	1
11	Site 46	LH-S11-02_1	D93-7395-13	0.5	1.5	26-Jun-93	BNA	Normal	1
14	Site 46	LH-S14-01_1	D93-7789-1	0.5	1.5	08-Jul-93	BNA	Normal	1
14	Site 46	LH-S14-02_1	D93-7789-3	0.5	1.5	08-Jul-93	BNA	Normal	1
15	Site 46	LH-S15-01_1	D93-7789-5	0.5	1.5	08-Jul-93	BNA	Normal	1
15	Site 46	LH-S15-02_1	D93-7789-7	0.5	1.5	08-Jul-93	BNA	Normal	1
16	Site 46	LH-S16-01_1	D93-7882-18	0.5	1.5	08-Jul-93	BNA	Normal	1
19	Site 46	LH-S19-01	D93-9105-5	1	1.5	06-Aug-93	BNA	Normal	1
19	Site 46	LH-S19-02_1	D93-9105-8	1	1.5	06-Aug-93	BNA	Normal	1
23	Site 46	LH-S23-02_1	D93-8552-4	1	1.5	25-Jul-93	BNA	Normal	1
27	Site 46	LH-S27-02_1	D93-7358-12	0.5	1.5	24-Jun-93	BNA	Normal	1
34	Site 46	LH-S34-01_2	D93-7880-16	0.5	1.5	10-Jul-93	BNA	Normal	1
38	Site 46	LH-S38-01_1	D93-7395-14	0.5	1.5	26-Jun-93	BNA	Normal	1
39	Site 46	LH-S39-01 QC	3-5423	0.5	1.5	- -	BNA	Duplicate	1
39	Site 46	LH-S39-01_1	3-5421	0.5	1.5	- -	BNA	Normal	1
40	Site 46	LH-S40-01_1	D93-7395-16	0.5	1.5	26-Jun-93	BNA	Normal	1

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
41	Site 46	LH-S41-01_1	D93-7358-17	0.5	1.5	25-Jun-93	BNA	Normal	1
42	Site 46	LH-S42-01_QC	D93-7358-21	0.5	1.5	25-Jun-93	BNA	Duplicate	1
42	Site 46	LH-S42-01_1	D93-7358-19	0.5	1.5	25-Jun-93	BNA	Normal	1
WRS-13	Site 46	LH-WRS13-01_1	3-5264	0.5	1.5	- -	BNA	Normal	1
WRS-16	Site 46	LH-WRS16-01_1	3-5450	0.5	1.5	- -	BNA	Normal	1
WRS-19	Site 46	LH-WRS19-01_1	3-5452	0.5	1.5	- -	BNA	Normal	1
WRS-4	Site 46	LH-WRS4-01_1	D93-7880-39	0.5	1.5	10-Jul-93	BNA	Normal	1
18	Site 46	LH-S018-01_2	D93-9141-18	1.1	1.6	08-Aug-93	BNA	Normal	1
WRS-11	Site 46	LH-WRS11-01_2	D93-9141-5	1.2	1.7	08-Aug-93	BNA	Normal	1
25	Site 46	LH-S025-02_2	D93-9105-20	1.5	2	06-Aug-93	BNA	Normal	1
3	Site 46	LH-S03-01_1	D93-7880-1	0	2	10-Jul-93	BNA	Normal	1
3	Site 46	LH-S03-02_1	D93-7880-3	0	2	10-Jul-93	BNA	Normal	1
4	Site 46	LH-S04-01_1	D93-7882-1	0	2	09-Jul-93	BNA	Normal	1
4	Site 46	LH-S04-02_1	D93-7882-3	0	2	09-Jul-93	BNA	Normal	1
5	Site 46	LH-S05-01_1	D93-7882-5	0	2	09-Jul-93	BNA	Normal	1
5	Site 46	LH-S05-02_1	D93-7882-7	0	2	09-Jul-93	BNA	Normal	1
6	Site 46	LH-S06-01_QC	D93-7882-13	0	2	09-Jul-93	BNA	Duplicate	1
6	Site 46	LH-S06-01_1	D93-7882-10	0	2	09-Jul-93	BNA	Normal	1
6	Site 46	LH-S06-02_1	D93-7882-14	0	2	09-Jul-93	BNA	Normal	1
7	Site 46	LH-S07-02_1	D93-7358-6	0	2	25-Jun-93	BNA	Normal	1
8	Site 46	LH-S08-01_1	D93-8006-3	0	2	12-Jul-93	BNA	Normal	1
8	Site 46	LH-S08-02_1	D93-8006-5	0	2	12-Jul-93	BNA	Normal	1
10	Site 46	LH-S10-02_1	D93-7880-5	0	2	11-Jul-93	BNA	Normal	1
110	Site 46	LH-S110-01_1	D93-9046-11	0.5	2	04-Aug-93	BNA	Normal	1
11	Site 46	LH-S11-01_1	D93-7358-8	0	2	25-Jun-93	BNA	Normal	1
12	Site 46	LH-S12-01_1	D93-7880-7	0	2	11-Jul-93	BNA	Normal	1
12	Site 46	LH-S12-02_1	D93-7880-9	0	2	11-Jul-93	BNA	Normal	1
13	Site 46	LH-S13-01_QC	D93-7880-13	0	2	10-Jul-93	BNA	Duplicate	1
13	Site 46	LH-S13-01_1	D93-7880-11	0	2	10-Jul-93	BNA	Normal	1
13	Site 46	LH-S13-02_1	D93-7880-14	0	2	10-Jul-93	BNA	Normal	1
19	Site 46	LH-S19-01_1	D93-9105-6	1.5	2	06-Aug-93	BNA	Normal	1
20	Site 46	LH-S20-01_1	9306433-01A	0.5	2	25-Jun-93	BNA	Normal	1
20	Site 46	LH-S20-02_1	9306433-03A	0.5	2	25-Jun-93	BNA	Normal	1
24	Site 46	LH-S24-01_1	9306433-09A	0.5	2	25-Jun-93	BNA	Normal	1
27	Site 46	LH-S27-01_1	D93-7358-10	0.5	2	24-Jun-93	BNA	Normal	1
29	Site 46	LH-S29-02_1	9306433-15A	0	2	25-Jun-93	BNA	Normal	1
35	Site 46	LH-S35-01_1	D93-7358-15	0.5	2	25-Jun-93	BNA	Normal	1
43	Site 46	LH-S43-01_2	3-5426	1.5	2	- -	BNA	Normal	1
WRS-5	Site 46	LH-WRS-5_1	D93-8006-1	0	2	12-Jul-93	BNA	Normal	1
WRS-6	Site 46	LH-WRS-6_1	D93-7880-37	0	2	10-Jul-93	BNA	Normal	1
27	Site 46	LH-DL27-01	D93-7358-1	1.5	2.5	24-Jun-93	BNA	Normal	1
2	Site 46	LH-S02-01_1	D93-7395-7	0.5	2.5	26-Jun-93	BNA	Normal	1
2	Site 46	LH-S02-02_1	D93-7395-9	0.5	2.5	26-Jun-93	BNA	Normal	1
21	Site 46	LH-S021-02_2	D93-9105-14	2	2.5	06-Aug-93	BNA	Normal	1
7	Site 46	LH-S07-01_1	D93-7358-3	0.5	2.5	25-Jun-93	BNA	Normal	1
10	Site 46	LH-S10-01_1	D93-7395-11	0.5	2.5	26-Jun-93	BNA	Normal	1
107	Site 46	LH-S107-01_3	3-5442	2	2.5	- -	BNA	Normal	1
108	Site 46	LH-S108-01_2	3-5446	2	2.5	- -	BNA	Normal	1
109	Site 46	LH-S109-01_2	3-5449	2	2.5	- -	BNA	Normal	1
22	Site 46	LH-S22-01_1	9306433-05A	0.5	2.5	25-Jun-93	BNA	Normal	1
22	Site 46	LH-S22-02_1	9306433-07A	0.5	2.5	25-Jun-93	BNA	Normal	1
29	Site 46	LH-S29-01_1	9306433-11A	0.5	2.5	25-Jun-93	BNA	Normal	1
30	Site 46	LH-S30-01_1	9306433-18A	0.5	2.5	25-Jun-93	BNA	Normal	1
32	Site 46	LH-S32-01_1	9306433-20A	0.5	2.5	25-Jun-93	BNA	Normal	1
46SB01	Site 46	46SB01(1-3)	4784.038	1	3	27-Jul-98	BNA	Normal	3

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
46SB02	Site 46	46SB02(1-3)	4784.064	1	3	27-Jul-98	BNA	Normal	3
46SB03	Site 46	46SB03(1-3)	4784.035	1	3	27-Jul-98	BNA	Normal	3
29	Site 46	LH-DL29-01	D93-7358-2	2	3	25-Jun-93	BNA	Normal	1
17	Site 46	LH-S017-01_2	D93-9141-12	2.5	3	08-Aug-93	BNA	Normal	1
17	Site 46	LH-S017-02_2	D93-9141-15	2.5	3	08-Aug-93	BNA	Normal	1
42	Site 46	LH-S42-01_2	D93-7358-20	2.5	3.3	25-Jun-93	BNA	Normal	1
33	Site 46	LH-S33-01_2	D93-8379-15	3	3.4	21-Jul-93	BNA	Normal	1
28	Site 46	LH-S28-01_2	D93-8425-2	3	3.5	22-Jul-93	BNA	Normal	1
31	Site 46	LH-S31-01_2	D93-8379-13	3	3.5	21-Jul-93	BNA	Normal	1
12	Site 46	LH-WRS12-01_2	D93-9141-8	3	3.5	08-Aug-93	BNA	Normal	1
WRS-19	Site 46	LH-WRS19-01_2	3-5453	3	3.5	- -	BNA	Normal	1
21	Site 46	LH-S021-02_3	D93-9105-15	3.4	3.9	06-Aug-93	BNA	Normal	1
21	Site 46	LH-S021-01_2	D93-9105-12	3.5	4	06-Aug-93	BNA	Normal	1
25	Site 46	LH-S025-02_3	D93-9105-21	3.5	4	06-Aug-93	BNA	Normal	1
26	Site 46	LH-S026-01_2	D93-9141-23	3.5	4	08-Aug-93	BNA	Normal	1
26	Site 46	LH-S026-02_3	D93-9141-27	3.5	4	08-Aug-93	BNA	Normal	1
7	Site 46	LH-S07-02_2	D93-7358-7	2	4	25-Jun-93	BNA	Normal	1
20	Site 46	LH-S20-01_2	9306433-02A	2	4	25-Jun-93	BNA	Normal	1
23	Site 46	LH-S23-02_2	D93-8552-5	3.5	4	25-Jul-93	BNA	Normal	1
24	Site 46	LH-S24-01_2	9306433-10A	2	4	25-Jun-93	BNA	Normal	1
29	Site 46	LH-S29-01_2	9306433-12A	2.5	4	25-Jun-93	BNA	Normal	1
29	Site 46	LH-S29-02_2	9306433-16A	2	4	25-Jun-93	BNA	Normal	1
39	Site 46	LH-S39-01_2	3-5422	3	4	- -	BNA	Normal	1
WRS-7	Site 46	LH-WRS07-01_2	D93-8425-21	3.5	4	22-Jul-93	BNA	Normal	1
WRS-10	Site 46	LH-WRS10-01_2	D93-9141-2	3.5	4	08-Aug-93	BNA	Normal	1
WRS-11	Site 46	LH-WRS11-01_3	D93-9141-6	3.5	4	08-Aug-93	BNA	Normal	1
12	Site 46	LH-WRS12-01_3	D93-9141-9	3.5	4	08-Aug-93	BNA	Normal	1
WRS-16	Site 46	LH-WRS16-01_2	3-5451	3.5	4	- -	BNA	Normal	1
WRS-21	Site 46	LH-WRS21-01_2	D93-9141-21	3.5	4	08-Aug-93	BNA	Normal	1
WRS-8	Site 46	LH-WRS8-01_2	D93-9105-2	3.5	4	06-Aug-93	BNA	Normal	1
WRS-9	Site 46	LH-WRS9-01_2	D93-9105-4	3.5	4	06-Aug-93	BNA	Normal	1
38	Site 46	LH-S38-01_2	D93-7395-15	3.2	4.1	26-Jun-93	BNA	Normal	1
41	Site 46	LH-S41-01_2	D93-7358-18	3.2	4.1	25-Jun-93	BNA	Normal	1
14	Site 46	LH-S14-01_2	D93-7789-2	3.2	4.2	08-Jul-93	BNA	Normal	1
40	Site 46	LH-S40-01_2	D93-7395-17	3.3	4.2	26-Jun-93	BNA	Normal	1
WRS-4	Site 46	LH-WRS4-01_2	D93-7880-40	3.5	4.3	10-Jul-93	BNA	Normal	1
7	Site 46	LH-S07-01_2	D93-7358-4	2.5	4.5	25-Jun-93	BNA	Normal	1
108	Site 46	LH-S108-01_3	3-5447	4	4.5	- -	BNA	Normal	1
14	Site 46	LH-S14-02_2	D93-7789-4	3.5	4.5	08-Jul-93	BNA	Normal	1
23	Site 46	LH-S23-01_2	D93-8552-2	3	4.5	25-Jul-93	BNA	Normal	1
30	Site 46	LH-S30-01_2	9306433-19A	2.5	4.5	25-Jun-93	BNA	Normal	1
34	Site 46	LH-S34-01_1	D93-7358-14	3.5	4.5	25-Jun-93	BNA	Normal	1
37	Site 46	LH-S37-01_2	D93-8552-7	3	4.5	25-Jul-93	BNA	Normal	1
WRS-13	Site 46	LH-WRS13-01_2	3-5265	3	4.5	- -	BNA	Normal	1
WRS-15	Site 46	LH-WRS15-01_2	D93-8981-2	4	4.5	03-Aug-93	BNA	Normal	1
WRS-5	Site 46	LH-WRS-5_2	D93-8006-2	3	4.5	12-Jul-93	BNA	Normal	1
WRS-6	Site 46	LH-WRS-6_2	D93-7880-38	2.5	4.5	10-Jul-93	BNA	Normal	1
16	Site 46	LH-S16-01_2	D93-7882-19	4.2	4.8	08-Jul-93	BNA	Normal	1
46SB01	Site 46	46SB01(3-5)	4784.039	3	5	27-Jul-98	BNA	Normal	3
46SB02	Site 46	46SB02(3-5)	4784.065	3	5	27-Jul-98	BNA	Normal	3
46SB03	Site 46	46SB03(3-5)	4784.036	3	5	27-Jul-98	BNA	Normal	3
5	Site 46	LH-S05-01_2	D93-7882-6	3	5	09-Jul-93	BNA	Normal	1
5	Site 46	LH-S05-02_2	D93-7882-8	3	5	09-Jul-93	BNA	Normal	1
6	Site 46	LH-S06-02_2	D93-7882-15	3	5	09-Jul-93	BNA	Normal	1
110	Site 46	LH-S110-01_2	D93-9046-12	3	5	04-Aug-93	BNA	Normal	1

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
27	Site 46	LH-S27-01_2	D93-7358-11	2	5	24-Jun-93	BNA	Normal	1
27	Site 46	LH-S27-02_2	D93-7358-13	2	5	24-Jun-93	BNA	Normal	1
32	Site 46	LH-S32-01_2	9306433-21A	3	5	25-Jun-93	BNA	Normal	1
35	Site 46	LH-S35-01_2	D93-7358-16	3.5	5.2	25-Jun-93	BNA	Normal	1
25	Site 46	LH-S025-01_2	D93-9105-18	5	5.5	06-Aug-93	BNA	Normal	1
9	Site 46	LH-S09-01_2	3-5376	5	5.5	- -	BNA	Normal	1
19	Site 46	LH-S19-01_2	D93-9105-7	5	5.5	06-Aug-93	BNA	Normal	1
19	Site 46	LH-S19-02_2	D93-9105-9	5	5.5	06-Aug-93	BNA	Normal	1
9	Site 46	LH-S09-02_2	3-5380	5	5.6	- -	BNA	Normal	1
1	Site 46	LH-S01-02_2	D93-7395-5	5	5.8	26-Jun-93	BNA	Normal	1
15	Site 46	LH-S15-02_2	D93-7789-8	5	5.8	08-Jul-93	BNA	Normal	1
18	Site 46	LH-S018-01_3	D93-9141-19	5	6	08-Aug-93	BNA	Normal	1
2	Site 46	LH-S02-01_2	D93-7395-8	4	6	26-Jun-93	BNA	Normal	1
2	Site 46	LH-S02-02_2	D93-7395-10	4	6	26-Jun-93	BNA	Normal	1
3	Site 46	LH-S03-01_2	D93-7880-2	4	6	10-Jul-93	BNA	Normal	1
3	Site 46	LH-S03-02_2	D93-7880-4	4	6	10-Jul-93	BNA	Normal	1
4	Site 46	LH-S04-01_2	D93-7882-2	4	6	09-Jul-93	BNA	Normal	1
4	Site 46	LH-S04-02_2	D93-7882-4	4	6	09-Jul-93	BNA	Normal	1
6	Site 46	LH-S06-01_2	D93-7882-11	4	6	09-Jul-93	BNA	Normal	1
8	Site 46	LH-S08-01_2	D93-8006-4	4	6	12-Jul-93	BNA	Normal	1
8	Site 46	LH-S08-02_2	D93-8006-6	4	6	12-Jul-93	BNA	Normal	1
15	Site 46	LH-S15-01_2	D93-7789-6	5.2	6	08-Jul-93	BNA	Normal	1
20	Site 46	LH-S20-02_2	9306433-04A	5	6	25-Jun-93	BNA	Normal	1
1	Site 46	LH-S01-01_2	D93-7395-2	5.7	6.5	26-Jun-93	BNA	Normal	1
WRS-7	Site 46	LH-WRS07-01_3	D93-8425-22	6.1	6.5	22-Jul-93	BNA	Normal	1
22	Site 46	LH-S22-01_2	9306433-06A	5	7	25-Jun-93	BNA	Normal	1
22	Site 46	LH-S22-02_2	9306433-08A	5	7	25-Jun-93	BNA	Normal	1
46SB01	Site 46	46SB01(0.0.5)	4784 037	0	0.5	27-Jul-98	Explosive	Normal	3
46SB02	Site 46	46SB02(0.0.5)	4784 063	0	0.5	27-Jul-98	Explosive	Normal	3
46SB03	Site 46	46SB03(0.0.5)	4784 033	0	0.5	27-Jul-98	Explosive	Normal	3
46SB03	Site 46	46SB03(0.0.5) X	4784 034	0	0.5	27-Jul-98	Explosive	Duplicate	3
46SD01	Site 46	46SD01-1	4987 027	0	0.5	09-Nov-98	Explosive	Normal	3
46SD02	Site 46	46SD02-1	4987 028	0	0.5	09-Nov-98	Explosive	Normal	3
46SD03	Site 46	46SD03-1	4988 006	0	0.5	10-Nov-98	Explosive	Normal	3
46SD04	Site 46	46SD04-1	4988 007	0	0.5	10-Nov-98	Explosive	Normal	3
46SD05	Site 46	46SD05-1	4988 008	0	0.5	10-Nov-98	Explosive	Normal	3
46SD05	Site 46	46SD05-1QC	4988 009	0	0.5	10-Nov-98	Explosive	Duplicate	3
46SD06	Site 46	46SD06-1	4988 010	0	0.5	10-Nov-98	Explosive	Normal	3
46SD07	Site 46	46SD07-1	4988 013	0	0.5	10-Nov-98	Explosive	Normal	3
46SD08	Site 46	46SD08-1	4988 014	0	0.5	10-Nov-98	Explosive	Normal	3
2-01	Site 46	LHS-2-01	9501L609-001	0	0.5	09-Jan-95	Explosive	Normal	2
2-02	Site 46	LHS-2-02	9501L609-002	0	0.5	09-Jan-95	Explosive	Normal	2
2-03	Site 46	LHS-2-03	9501L609-003	0	0.5	09-Jan-95	Explosive	Normal	2
2-04	Site 46	LHS-2-04	9501L609-004	0	0.5	10-Jan-95	Explosive	Normal	2
2-05	Site 46	LHS-2-05	9501L624-014	0	0.5	10-Jan-95	Explosive	Normal	2
2-06	Site 46	LHS-2-06	9501L624-015	0	0.5	10-Jan-95	Explosive	Normal	2
2-07	Site 46	LHS-2-07	9501L624-016	0	0.5	10-Jan-95	Explosive	Normal	2
2-08	Site 46	LHS-2-08	9501L624-017	0	0.5	10-Jan-95	Explosive	Normal	2
2-09	Site 46	LHS-2-09	9501L624-018	0	0.5	10-Jan-95	Explosive	Normal	2
2-10	Site 46	LHS-2-10	9501L624-019	0	0.5	10-Jan-95	Explosive	Normal	2
2-11	Site 46	LHS-2-11	9501L631-001	0	0.5	11-Jan-95	Explosive	Normal	2
2-12	Site 46	LHS-2-12	9501L631-002	0	0.5	11-Jan-95	Explosive	Normal	2
2-13	Site 46	LHS-2-13	9501L631-003	0	0.5	11-Jan-95	Explosive	Normal	2
2-14	Site 46	LHS-2-14	9501L631-004	0	0.5	11-Jan-95	Explosive	Normal	2
2-14	Site 46	LHS-2-14 QC	9501L631-010	0	0.5	11-Jan-95	Explosive	Duplicate	2

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
2-15	Site 46	LHS-2-15	9501L631-005	0	0.5	11-Jan-95	Explosive	Normal	2
2-16	Site 46	LHS-2-16	9501L631-006	0	0.5	11-Jan-95	Explosive	Normal	2
2-17	Site 46	LHS-2-17	9501L631-007	0	0.5	11-Jan-95	Explosive	Normal	2
2-18	Site 46	LHS-2-18	9501L631-008	0	0.5	11-Jan-95	Explosive	Normal	2
2-19	Site 46	LHS-2-19	9501L631-009	0	0.5	11-Jan-95	Explosive	Normal	2
LHSMW10	Site 46	LHS-MW10	9410G669-010	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW11	Site 46	LHS-MW11	9410G669-011	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW11	Site 46	LHS-MW11 QC	9410G669-020	0	0.5	30-Sep-94	Explosive	Duplicate	2
LHSMW12	Site 46	LHS-MW12	9410G669-012	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW13	Site 46	LHS-MW13	9410G669-013	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW14	Site 46	LHS-MW14	9410G669-014	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW15	Site 46	LHS-MW15	9410G669-015	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW16	Site 46	LHS-MW16	9410G669-016	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW17	Site 46	LHS-MW17	9410G669-017	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW18	Site 46	LHS-MW18	9410G669-018	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW19	Site 46	LHS-MW19	9410G669-019	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW20	Site 46	LHS-MW20	9410G681-001	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW20	Site 46	LHS-MW20 QC	9410G681-013	0	0.5	03-Oct-94	Explosive	Duplicate	2
LHSMW21	Site 46	LHS-MW21	9410G681-002	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW22	Site 46	LHS-MW22	9410G681-003	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW23	Site 46	LHS-MW23	9410G681-004	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW24	Site 46	LHS-MW24	9410G681-005	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW25	Site 46	LHS-MW25	9410G681-006	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW26	Site 46	LHS-MW26	9410G681-007	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW27	Site 46	LHS-MW27	9410G681-008	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW08	Site 46	LHS-MW8	9410G669-008	0	0.5	30-Sep-94	Explosive	Normal	2
LHSMW09	Site 46	LHS-MW9	9410G669-009	0	0.5	30-Sep-94	Explosive	Normal	2
46SB01	Site 46	46SB01(1-3)	4784.038	1	3	27-Jul-98	Explosive	Normal	3
46SB02	Site 46	46SB02(1-3)	4784.064	1	3	27-Jul-98	Explosive	Normal	3
46SB03	Site 46	46SB03(1-3)	4784.035	1	3	27-Jul-98	Explosive	Normal	3
46SB01	Site 46	46SB01(3-5)	4784.039	3	5	27-Jul-98	Explosive	Normal	3
46SB02	Site 46	46SB02(3-5)	4784.065	3	5	27-Jul-98	Explosive	Normal	3
46SB03	Site 46	46SB03(3-5)	4784.036	3	5	27-Jul-98	Explosive	Normal	3
46SB01	Site 46	46SB01(0-0.5)	4784.037	0	0.5	27-Jul-98	Metal	Normal	3
46SB02	Site 46	46SB02(0-0.5)	4784.063	0	0.5	27-Jul-98	Metal	Normal	3
46SB03	Site 46	46SB03(0-0.5)	4784.033	0	0.5	27-Jul-98	Metal	Normal	3
46SB03	Site 46	46SB03(0-0.5)QC	4784.034	0	0.5	27-Jul-98	Metal	Duplicate	3
46SD01	Site 46	46SD01-1	4987.027	0	0.5	09-Nov-98	Metal	Normal	3
46SD02	Site 46	46SD02-1	4987.028	0	0.5	09-Nov-98	Metal	Normal	3
46SD03	Site 46	46SD03-1	4988.006	0	0.5	10-Nov-98	Metal	Normal	3
46SD04	Site 46	46SD04-1	4988.007	0	0.5	10-Nov-98	Metal	Normal	3
46SD05	Site 46	46SD05-1	4988.008	0	0.5	10-Nov-98	Metal	Normal	3
46SD05	Site 46	46SD05-1QC	4988.009	0	0.5	10-Nov-98	Metal	Duplicate	3
46SD06	Site 46	46SD06-1	4988.010	0	0.5	10-Nov-98	Metal	Normal	3
46SD07	Site 46	46SD07-1	4988.013	0	0.5	10-Nov-98	Metal	Normal	3
46SD08	Site 46	46SD08-1	4988.014	0	0.5	10-Nov-98	Metal	Normal	3
2-01	Site 46	LHS-2-01	9501G551-001	0	0.5	09-Jan-95	Metal	Normal	2
2-02	Site 46	LHS-2-02	9501G551-002	0	0.5	09-Jan-95	Metal	Normal	2
2-03	Site 46	LHS-2-03	9501G551-003	0	0.5	09-Jan-95	Metal	Normal	2
2-04	Site 46	LHS-2-04	9501G551-004	0	0.5	10-Jan-95	Metal	Normal	2
2-05	Site 46	LHS-2-05	9501G638-011	0	0.5	10-Jan-95	Metal	Normal	2
2-06	Site 46	LHS-2-06	9501G638-012	0	0.5	10-Jan-95	Metal	Normal	2
2-07	Site 46	LHS-2-07	9501G638-013	0	0.5	10-Jan-95	Metal	Normal	2
2-08	Site 46	LHS-2-08	9501G638-014	0	0.5	10-Jan-95	Metal	Normal	2
2-09	Site 46	LHS-2-09	9501G638-015	0	0.5	10-Jan-95	Metal	Normal	2

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
2-10	Site 46	LHS-2-10	9501G638-016	0	0.5	10-Jan-95	Metal	Normal	2
2-11	Site 46	LHS-2-11	9501G638-017	0	0.5	11-Jan-95	Metal	Normal	2
2-12	Site 46	LHS-2-12	9501G638-018	0	0.5	11-Jan-95	Metal	Normal	2
2-13	Site 46	LHS-2-13	9501G638-019	0	0.5	11-Jan-95	Metal	Normal	2
2-14	Site 46	LHS-2-14	9501G638-020	0	0.5	11-Jan-95	Metal	Normal	2
2-14	Site 46	LHS-2-14 QC	9501G639-001	0	0.5	11-Jan-95	Metal	Duplicate	2
2-15	Site 46	LHS-2-15	9501G640-005	0	0.5	11-Jan-95	Metal	Normal	2
2-16	Site 46	LHS-2-16	9501G640-006	0	0.5	11-Jan-95	Metal	Normal	2
2-17	Site 46	LHS-2-17	9501G640-007	0	0.5	11-Jan-95	Metal	Normal	2
2-18	Site 46	LHS-2-18	9501G640-008	0	0.5	11-Jan-95	Metal	Normal	2
2-19	Site 46	LHS-2-19	9501G640-009	0	0.5	11-Jan-95	Metal	Normal	2
LHSMW10	Site 46	LHS-MW10	9410G668-010	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW11	Site 46	LHS-MW11	9410G668-011	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW11	Site 46	LHS-MW11 QC	9410G668-021	0	0.5	30-Sep-94	Metal	Duplicate	2
LHSMW12	Site 46	LHS-MW12	9410G668-012	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW13	Site 46	LHS-MW13	9410G668-013	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW14	Site 46	LHS-MW14	9410G668-014	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW15	Site 46	LHS-MW15	9410G668-015	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW16	Site 46	LHS-MW16	9410G668-016	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW17	Site 46	LHS-MW17	9410G668-017	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW18	Site 46	LHS-MW18	9410G668-018	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW19	Site 46	LHS-MW19	9410G668-019	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW20	Site 46	LHS-MW20	9410G680-001	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW20	Site 46	LHS-MW20 QC	9410G680-014	0	0.5	03-Oct-94	Metal	Duplicate	2
LHSMW21	Site 46	LHS-MW21	9410G680-002	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW22	Site 46	LHS-MW22	9410G680-003	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW23	Site 46	LHS-MW23	9410G680-004	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW24	Site 46	LHS-MW24	9410G680-005	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW25	Site 46	LHS-MW25	9410G680-006	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW26	Site 46	LHS-MW26	9410G680-007	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW27	Site 46	LHS-MW27	9410G680-008	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW08	Site 46	LHS-MW8	9410G668-008	0	0.5	30-Sep-94	Metal	Normal	2
LHSMW09	Site 46	LHS-MW9	9410G668-009	0	0.5	30-Sep-94	Metal	Normal	2
SUMP001	Site 46	SUMP001(0-0.5)	4788.004	0	0.5	29-Jul-98	Metal	Normal	3
SUMP002	Site 46	SUMP002(0-0.5)	4927.001	0	0.5	22-Sep-98	Metal	Normal	3
SUMP003	Site 46	SUMP003(0-0.5)	4927.003	0	0.5	22-Sep-98	Metal	Normal	3
SUMP004	Site 46	SUMP004(0-0.5)	4788.001	0	0.5	29-Jul-98	Metal	Normal	3
SUMP005	Site 46	SUMP005(0-0.5)	4927.005	0	0.5	22-Sep-98	Metal	Normal	3
SUMP006	Site 46	SUMP006(0-0.5)	4788.006	0	0.5	29-Jul-98	Metal	Normal	3
SUMP007	Site 46	SUMP007(0-0.5)	4927.007	0	0.5	23-Sep-98	Metal	Normal	3
SUMP008	Site 46	SUMP008(0-0.5)	4927.009	0	0.5	23-Sep-98	Metal	Normal	3
SUMP009	Site 46	SUMP009(0-0.5)	4927.011	0	0.5	23-Sep-98	Metal	Normal	3
SUMP001	Site 46	SUMP01(0-0.5)QC	4788.005	0	0.5	29-Jul-98	Metal	Normal	3
SUMP010	Site 46	SUMP010(0-0.5)	4788.024	0	0.5	29-Jul-98	Metal	Normal	3
SUMP011	Site 46	SUMP011(0-0.5)	4927.013	0	0.5	23-Sep-98	Metal	Normal	3
SUMP012	Site 46	SUMP012(0-0.5)	4936.042	0	0.5	24-Sep-98	Metal	Normal	3
SUMP013	Site 46	SUMP013(0-0.5)	4927.015	0	0.5	23-Sep-98	Metal	Normal	3
SUMP014	Site 46	SUMP014(0-0.5)	4927.017	0	0.5	22-Sep-98	Metal	Normal	3
SUMP015	Site 46	SUMP015(0-0.5)	4927.019	0	0.5	22-Sep-98	Metal	Normal	3
SUMP016	Site 46	SUMP016(0-0.5)	4803.022	0	0.5	06-Aug-98	Metal	Normal	3
SUMP017	Site 46	SUMP017(0-0.5)	4927.021	0	0.5	22-Sep-98	Metal	Normal	3
SUMP018	Site 46	SUMP018(0-0.5)	4927.023	0	0.5	11-Aug-98	Metal	Normal	3
SUMP019	Site 46	SUMP019(0-0.5)	4788.026	0	0.5	29-Jul-98	Metal	Normal	3
SUMP020	Site 46	SUMP020(0-0.5)	4788.028	0	0.5	29-Jul-98	Metal	Normal	3
SUMP021	Site 46	SUMP021(0-0.5)	4927.025	0	0.5	23-Sep-98	Metal	Normal	3

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
SUMP022	Site 46	SUMP022(0-0.5)	4927.027	0	0.5	23-Sep-98	Metal	Normal	3
SUMP022	Site 46	SUMP022(0-0.5)QC	4927.029	0	0.5	23-Sep-98	Metal	Duplicate	3
SUMP023	Site 46	SUMP023(0-0.5)	4803.019	0	0.5	06-Aug-98	Metal	Normal	3
SUMP024	Site 46	SUMP024(0-0.5)	4808.023	0	0.5	08-Aug-98	Metal	Normal	3
SUMP024	Site 46	SUMP024(0-0.5)QC	4808.024	0	0.5	08-Aug-98	Metal	Duplicate	3
SUMP025	Site 46	SUMP025(0-0.5)	4927.031	0	0.5	23-Sep-98	Metal	Normal	3
SUMP026	Site 46	SUMP026(0-0.5)	4808.021	0	0.5	08-Aug-98	Metal	Normal	3
SUMP027	Site 46	SUMP027(0-0.5)	4790.017	0	0.5	30-Jul-98	Metal	Normal	3
SUMP028	Site 46	SUMP028(0-0.5)	4927.033	0	0.5	23-Sep-98	Metal	Normal	3
SUMP028	Site 46	SUMP028(0-0.5)QC	4927.035	0	0.5	23-Sep-98	Metal	Duplicate	3
SUMP029	Site 46	SUMP029(0-0.5)	4790.013	0	0.5	30-Jul-98	Metal	Normal	3
SUMP030	Site 46	SUMP030(0-0.5)	4808.012	0	0.5	08-Aug-98	Metal	Normal	3
SUMP031	Site 46	SUMP031(0-0.5)	4936.044	0	0.5	24-Sep-98	Metal	Normal	3
SUMP032	Site 46	SUMP032(0-0.5)	4936.046	0	0.5	24-Sep-98	Metal	Normal	3
SUMP033	Site 46	SUMP033(0-0.5)	4936.048	0	0.5	24-Sep-98	Metal	Normal	3
SUMP034	Site 46	SUMP034(0-0.5)	4808.010	0	0.5	07-Aug-98	Metal	Normal	3
SUMP035	Site 46	SUMP035(0-0.5)	4936.050	0	0.5	24-Sep-98	Metal	Normal	3
SUMP036	Site 46	SUMP036(0-0.5)	4790.015	0	0.5	30-Jul-98	Metal	Normal	3
SUMP037	Site 46	SUMP037(0-0.5)	4808.015	0	0.5	08-Aug-98	Metal	Normal	3
SUMP038	Site 46	SUMP038(0-0.5)	4936.052	0	0.5	28-Sep-98	Metal	Normal	3
SUMP038	Site 46	SUMP038(0-0.5)QC	4936.053	0	0.5	28-Sep-98	Metal	Duplicate	3
SUMP039	Site 46	SUMP039(0-0.5)	4936.055	0	0.5	28-Sep-98	Metal	Normal	3
SUMP040	Site 46	SUMP040(0-0.5)	4808.017	0	0.5	08-Aug-98	Metal	Normal	3
SUMP041	Site 46	SUMP041(0-0.5)	4936.058	0	0.5	24-Sep-98	Metal	Normal	3
SUMP042	Site 46	SUMP042(0-0.5)	4936.060	0	0.5	24-Sep-98	Metal	Normal	3
SUMP043	Site 46	SUMP043(0-0.5)	4808.019	0	0.5	08-Aug-98	Metal	Normal	3
SUMP107	Site 46	SUMP107(0-0.5)	4936.116	0	0.5	28-Sep-98	Metal	Normal	3
SUMP107	Site 46	SUMP107(0-0.5)QC	4936.117	0	0.5	28-Sep-98	Metal	Duplicate	3
SUMP108	Site 46	SUMP108(0-0.5)	4819.009	0	0.5	11-Aug-98	Metal	Normal	3
SUMP108	Site 46	SUMP108(0-0.5)QC	4819.010	0	0.5	11-Aug-98	Metal	Duplicate	3
SUMP109	Site 46	SUMP109(0-0.5)	4936.119	0	0.5	25-Sep-98	Metal	Normal	3
SUMP110	Site 46	SUMP110(0-0.5)	4819.023	0	0.5	12-Aug-98	Metal	Normal	3
WRSUMP007	Site 46	WRSUMP007(0-0.5)QC	4788.022	0	0.5	29-Jul-98	Metal	Normal	3
WRSUMP004	Site 46	WRSUMP004(0-0.5)	4936.003	0	0.5	27-Sep-98	Metal	Normal	3
WRSUMP005	Site 46	WRSUMP005(0-0.5)	4936.005	0	0.5	27-Sep-98	Metal	Normal	3
WRSUMP006	Site 46	WRSUMP006(0-0.5)	4936.008	0	0.5	24-Sep-98	Metal	Normal	3
WRSUMP007	Site 46	WRSUMP007(0-0.5)	4788.021	0	0.5	29-Jul-98	Metal	Normal	3
WRSUMP008	Site 46	WRSUMP008(0-0.5)	4790.020	0	0.5	30-Jul-98	Metal	Normal	3
WRSUMP009	Site 46	WRSUMP009(0-0.5)	4936.010	0	0.5	24-Sep-98	Metal	Normal	3
WRSUMP010	Site 46	WRSUMP010(0-0.5)	4803.014	0	0.5	05-Aug-98	Metal	Normal	3
WRSUMP011	Site 46	WRSUMP011(0-0.5)	4936.012	0	0.5	24-Sep-98	Metal	Normal	3
WRSUMP012	Site 46	WRSUMP012(0-0.5)	4936.014	0	0.5	27-Sep-98	Metal	Normal	3
WRSUMP013	Site 46	WRSUMP013(0-0.5)	4936.016	0	0.5	27-Sep-98	Metal	Normal	3
WRSUMP015	Site 46	WRSUMP015(0-0.5)	4819.007	0	0.5	11-Aug-98	Metal	Normal	3
WRSUMP016	Site 46	WRSUMP016(0-0.5)	4819.012	0	0.5	11-Aug-98	Metal	Normal	3
WRSUMP019	Site 46	WRSUMP019(0-0.5)	4819.030	0	0.5	13-Aug-98	Metal	Normal	3
WRSUMP021	Site 46	WRSUMP021(0-0.5)	4790.005	0	0.5	30-Jul-98	Metal	Normal	3
17	Site 46	LH-S017-02_1	D93-9141-14	0.5	1	08-Aug-93	Metal	Normal	1
21	Site 46	LH-S021-02_1	3-4784	0.5	1	06-Aug-93	Metal	Normal	1
25	Site 46	LH-S025-01 QC	3-4788	0.5	1	06-Aug-93	Metal	Duplicate	1
25	Site 46	LH-S025-01_1	3-4787	0.5	1	06-Aug-93	Metal	Normal	1
25	Site 46	LH-S025-02_1	3-4791	0.5	1	06-Aug-93	Metal	Normal	1
26	Site 46	LH-S026-01 QC	D93-9141-24	0.5	1	08-Aug-93	Metal	Duplicate	1
26	Site 46	LH-S026-01_1	D93-9141-22	0.5	1	08-Aug-93	Metal	Normal	1
26	Site 46	LH-S026-02_1	D93-9141-25	0.5	1	08-Aug-93	Metal	Normal	1

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
107	Site 46	LH-S107-01 QC	3-5443	0.5	1	- -	Metal	Duplicate	1
23	Site 46	LH-S23-01 QC	3-4155	0.5	1	25-Jul-93	Metal	Duplicate	1
23	Site 46	LH-S23-01_1	3-4153	0.5	1	25-Jul-93	Metal	Normal	1
28	Site 46	LH-S28-01_1	3-4065	0.5	1	22-Jul-93	Metal	Normal	1
31	Site 46	LH-S31-01_1	3-4039	0.5	1	21-Jul-93	Metal	Normal	1
33	Site 46	LH-S33-01_1	3-4041	0.5	1	21-Jul-93	Metal	Normal	1
37	Site 46	LH-S37-01_1	3-4159	0.5	1	25-Jul-93	Metal	Normal	1
43	Site 46	LH-S43-01_1	3-5425	0.5	1	- -	Metal	Normal	1
WRS-7	Site 46	LH-WRS07-01 QC	3-4088	0.5	1	22-Jul-93	Metal	Duplicate	1
WRS-7	Site 46	LH-WRS07-01_1	3-4085	0.5	1	22-Jul-93	Metal	Normal	1
WRS-10	Site 46	LH-WRS10-01_1	D93-9141-1	0.5	1	08-Aug-93	Metal	Normal	1
12	Site 46	LH-WRS12-01_1	D93-9141-7	0.5	1	08-Aug-93	Metal	Normal	1
WRS-15	Site 46	LH-WRS15-01_1	3-4630	0.5	1	03-Aug-93	Metal	Normal	1
WRS-21	Site 46	LH-WRS21-01_1	D93-9141-20	0.5	1	08-Aug-93	Metal	Normal	1
WRS-8	Site 46	LH-WRS8-01_1	3-4771	0.5	1	06-Aug-93	Metal	Normal	1
WRS-9	Site 46	LH-WRS9-01_1	3-4773	0.5	1	06-Aug-93	Metal	Normal	1
18	Site 46	LH-S018-01_1	D93-9141-17	0.5	1.1	08-Aug-93	Metal	Normal	1
WRS-11	Site 46	LH-WRS11-01 QC	D93-9141-4	0.5	1.2	08-Aug-93	Metal	Duplicate	1
WRS-11	Site 46	LH-WRS11-01_1	D93-9141-3	0.5	1.2	08-Aug-93	Metal	Normal	1
1	Site 46	LH-S01-01_1	3-3421	0.5	1.5	26-Jun-93	Metal	Normal	1
1	Site 46	LH-S01-02_1	3-3424	0.5	1.5	26-Jun-93	Metal	Normal	1
17	Site 46	LH-S017-01 QC	D93-9141-13	0.5	1.5	08-Aug-93	Metal	Duplicate	1
17	Site 46	LH-S017-01_1	D93-9141-11	0.5	1.5	08-Aug-93	Metal	Normal	1
21	Site 46	LH-S021-01 QC	3-4781	1	1.5	06-Aug-93	Metal	Duplicate	1
21	Site 46	LH-S021-01_1	3-4780	1	1.5	06-Aug-93	Metal	Normal	1
26	Site 46	LH-S026-02_2	D93-9141-26	1	1.5	08-Aug-93	Metal	Normal	1
9	Site 46	LH-S09-01 QC	3-5377	0.5	1.5	- -	Metal	Duplicate	1
9	Site 46	LH-S09-01_1	3-5374	0.5	1.5	- -	Metal	Normal	1
9	Site 46	LH-S09-02_1	3-5379	0.5	1.5	- -	Metal	Normal	1
107	Site 46	LH-S107-01_1	3-5440	0.5	1.5	- -	Metal	Normal	1
107	Site 46	LH-S107-01_2	3-5441	1	1.5	- -	Metal	Normal	1
108	Site 46	LH-S108-01_1	3-5445	0.5	1.5	- -	Metal	Normal	1
109	Site 46	LH-S109-01_1	3-5448	0.5	1.5	- -	Metal	Normal	1
11	Site 46	LH-S11-02_1	3-3433	0.5	1.5	26-Jun-93	Metal	Normal	1
14	Site 46	LH-S14-01_1	3-3725	0.5	1.5	08-Jul-93	Metal	Normal	1
14	Site 46	LH-S14-02_1	3-3727	0.5	1.5	08-Jul-93	Metal	Normal	1
15	Site 46	LH-S15-01_1	3-3729	0.5	1.5	08-Jul-93	Metal	Normal	1
15	Site 46	LH-S15-02_1	3-3731	0.5	1.5	08-Jul-93	Metal	Normal	1
16	Site 46	LH-S16-01_1	3-3768	0.5	1.5	08-Jul-93	Metal	Normal	1
19	Site 46	LH-S19-01	3-4775	1	1.5	06-Aug-93	Metal	Normal	1
19	Site 46	LH-S19-02_1	3-4778	1	1.5	06-Aug-93	Metal	Normal	1
23	Site 46	LH-S23-02_1	3-4157	1	1.5	25-Jul-93	Metal	Normal	1
27	Site 46	LH-S27-02_1	3-3381	0.5	1.5	24-Jun-93	Metal	Normal	1
34	Site 46	LH-S34-01_2	3-3798	0.5	1.5	10-Jul-93	Metal	Normal	1
38	Site 46	LH-S38-01_1	3-3434	0.5	1.5	26-Jun-93	Metal	Normal	1
39	Site 46	LH-S39-01 QC	3-5423	0.5	1.5	- -	Metal	Duplicate	1
39	Site 46	LH-S39-01_1	3-5421	0.5	1.5	- -	Metal	Normal	1
40	Site 46	LH-S40-01_1	3-3436	0.5	1.5	26-Jun-93	Metal	Normal	1
41	Site 46	LH-S41-01_1	3-3386	0.5	1.5	25-Jun-93	Metal	Normal	1
42	Site 46	LH-S42-01 QC	3-3390	0.5	1.5	25-Jun-93	Metal	Duplicate	1
42	Site 46	LH-S42-01_1	3-3388	0.5	1.5	25-Jun-93	Metal	Normal	1
WRS-13	Site 46	LH-WRS13-01_1	3-5264	0.5	1.5	- -	Metal	Normal	1
WRS-16	Site 46	LH-WRS16-01_1	3-5450	0.5	1.5	- -	Metal	Normal	1
WRS-19	Site 46	LH-WRS19-01_1	3-5452	0.5	1.5	- -	Metal	Normal	1
WRS-4	Site 46	LH-WRS4-01_1	3-3823	0.5	1.5	10-Jul-93	Metal	Normal	1

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
18	Site 46	LH-S018-01_2	D93-9141-18	1.1	1.6	08-Aug-93	Metal	Normal	1
WRS-11	Site 46	LH-WRS11-01_2	D93-9141-5	1.2	1.7	08-Aug-93	Metal	Normal	1
25	Site 46	LH-S025-02_2	3-4792	1.5	2	06-Aug-93	Metal	Normal	1
3	Site 46	LH-S03-01_1	3-3782	0	2	10-Jul-93	Metal	Normal	1
3	Site 46	LH-S03-02_1	3-3784	0	2	10-Jul-93	Metal	Normal	1
4	Site 46	LH-S04-01_1	3-3750	0	2	09-Jul-93	Metal	Normal	1
4	Site 46	LH-S04-02_1	3-3752	0	2	09-Jul-93	Metal	Normal	1
5	Site 46	LH-S05-01_1	3-3754	0	2	09-Jul-93	Metal	Normal	1
5	Site 46	LH-S05-02_1	3-3756	0	2	09-Jul-93	Metal	Normal	1
6	Site 46	LH-S06-01 QC	3-3762	0	2	09-Jul-93	Metal	Duplicate	1
6	Site 46	LH-S06-01_1	3-3759	0	2	09-Jul-93	Metal	Normal	1
6	Site 46	LH-S06-02_1	3-3764	0	2	09-Jul-93	Metal	Normal	1
7	Site 46	LH-S07-02_1	3-3375	0	2	25-Jun-93	Metal	Normal	1
8	Site 46	LH-S08-01_1	3-3900	0	2	12-Jul-93	Metal	Normal	1
8	Site 46	LH-S08-02_1	3-3902	0	2	12-Jul-93	Metal	Normal	1
10	Site 46	LH-S10-02_1	3-3786	0	2	11-Jul-93	Metal	Normal	1
110	Site 46	LH-S110-01_1	3-4676	0.5	2	04-Aug-93	Metal	Normal	1
11	Site 46	LH-S11-01_1	3-3377	0	2	25-Jun-93	Metal	Normal	1
12	Site 46	LH-S12-01_1	3-3788	0	2	11-Jul-93	Metal	Normal	1
12	Site 46	LH-S12-02_1	3-3790	0	2	11-Jul-93	Metal	Normal	1
13	Site 46	LH-S13-01 QC	3-3794	0	2	10-Jul-93	Metal	Duplicate	1
13	Site 46	LH-S13-01_1	3-3792	0	2	10-Jul-93	Metal	Normal	1
13	Site 46	LH-S13-02_1	3-3796	0	2	10-Jul-93	Metal	Normal	1
19	Site 46	LH-S19-01_1	3-4776	1.5	2	06-Aug-93	Metal	Normal	1
20	Site 46	LH-S20-01_1	3-3327	0.5	2	25-Jun-93	Metal	Normal	1
20	Site 46	LH-S20-02_1	3-3329	0.5	2	25-Jun-93	Metal	Normal	1
24	Site 46	LH-S24-01_1	3-3335	0.5	2	25-Jun-93	Metal	Normal	1
27	Site 46	LH-S27-01_1	3-3379	0.5	2	24-Jun-93	Metal	Normal	1
29	Site 46	LH-S29-02_1	3-3342	0	2	25-Jun-93	Metal	Normal	1
35	Site 46	LH-S35-01_1	3-3384	0.5	2	25-Jun-93	Metal	Normal	1
43	Site 46	LH-S43-01_2	3-5426	1.5	2	-	Metal	Normal	1
WRS-5	Site 46	LH-WRS-5_1	3-3898	0	2	12-Jul-93	Metal	Normal	1
WRS-6	Site 46	LH-WRS-6_1	3-3821	0	2	10-Jul-93	Metal	Normal	1
400ASS01	Site 46	400ASS01(0-0.5)	4784.080	0	0.5	26-Jul-98	PAH	Normal	3
400ASS01	Site 46	400ASS01(0-0.5)QC	4784.081	0	0.5	26-Jul-98	PAH	Duplicate	3
400ASS02	Site 46	400ASS02(0-0.5)	4784.076	0	0.5	26-Jul-98	PAH	Normal	3
400ASS03	Site 46	400ASS03(0-0.5)	4784.077	0	0.5	26-Jul-98	PAH	Normal	3
400ASS04	Site 46	400ASS04(0-0.5)	4784.078	0	0.5	26-Jul-98	PAH	Normal	3
400ASS05	Site 46	400ASS05(0-0.5)	4784.079	0	0.5	26-Jul-98	PAH	Normal	3
400ASS06	Site 46	400ASS06(0-0.5)	4784.082	0	0.5	26-Jul-98	PAH	Normal	3
MW21SS01	Site 46	MW21SS01(0-0.5)	4784.056	0	0.5	26-Jul-98	PAH	Normal	3
MW21SS01	Site 46	MW21SS01(0-0.5)QC	4784.057	0	0.5	26-Jul-98	PAH	Duplicate	3
MW21SS02	Site 46	MW21SS02(0-0.5)	4784.058	0	0.5	26-Jul-98	PAH	Normal	3
MW21SS03	Site 46	MW21SS03(0-0.5)	4784.059	0	0.5	26-Jul-98	PAH	Normal	3
MW21SS04	Site 46	MW21SS04(0-0.5)	4784.060	0	0.5	26-Jul-98	PAH	Normal	3
MW21SS05	Site 46	MW21SS05(0-0.5)	4784.061	0	0.5	26-Jul-98	PAH	Normal	3
MW21SS06	Site 46	MW21SS06(0-0.5)	4784.062	0	0.5	26-Jul-98	PAH	Normal	3
46SB01	Site 46	46SB01(0-0.5)	4784.037	0	0.5	27-Jul-98	PCB	Normal	3
46SB02	Site 46	46SB02(0-0.5)	4784.063	0	0.5	27-Jul-98	PCB	Normal	3
46SB03	Site 46	46SB03(0-0.5)	4784.033	0	0.5	27-Jul-98	PCB	Normal	3
46SB03	Site 46	46SB03(0-0.5)QC	4784.034	0	0.5	27-Jul-98	PCB	Duplicate	3
46SD01	Site 46	46SD01-2	5017.037	0	0.5	03-Dec-98	PCB	Normal	3
46SD02	Site 46	46SD02-1	4987.028	0	0.5	09-Nov-98	PCB	Normal	3
46SD03	Site 46	46SD03-2	5017.038	0	0.5	03-Dec-98	PCB	Normal	3
46SD04	Site 46	46SD04-2	5021.003	0	0.5	07-Dec-98	PCB	Normal	3

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
46SD05	Site 46	46SD05-1	4988.008	0	0.5	10-Nov-98	PCB	Normal	3
46SD05	Site 46	46SD05-1QC	4988.009	0	0.5	10-Nov-98	PCB	Duplicate	3
46SD06	Site 46	46SD06-1	4988.010	0	0.5	10-Nov-98	PCB	Normal	3
46SD06	Site 46	46SD06-2	5017.041	0	0.5	03-Dec-98	PCB	Normal	3
46SD07	Site 46	46SD07-2	5017.018	0	0.5	03-Dec-98	PCB	Normal	3
46SD08	Site 46	46SD08-2	5017.019	0	0.5	03-Dec-98	PCB	Normal	3
SUMP001	Site 46	SUMP001(0-0.5)	4788.004	0	0.5	29-Jul-98	PCB	Normal	3
SUMP004	Site 46	SUMP004(0-0.5)	4788.001	0	0.5	29-Jul-98	PCB	Normal	3
SUMP006	Site 46	SUMP006(0-0.5)	4788.006	0	0.5	29-Jul-98	PCB	Normal	3
SUMP001	Site 46	SUMP01(0-0.5)QC	4788.005	0	0.5	29-Jul-98	PCB	Normal	3
SUMP010	Site 46	SUMP010(0-0.5)	4788.024	0	0.5	29-Jul-98	PCB	Normal	3
SUMP016	Site 46	SUMP016(0-0.5)	4803.022	0	0.5	06-Aug-98	PCB	Normal	3
SUMP019	Site 46	SUMP019(0-0.5)	4788.026	0	0.5	29-Jul-98	PCB	Normal	3
SUMP020	Site 46	SUMP020(0-0.5)	4788.028	0	0.5	29-Jul-98	PCB	Normal	3
SUMP023	Site 46	SUMP023(0-0.5)	4803.019	0	0.5	06-Aug-98	PCB	Normal	3
SUMP024	Site 46	SUMP024(0-0.5)	4808.023	0	0.5	08-Aug-98	PCB	Normal	3
SUMP024	Site 46	SUMP024(0-0.5)QC	4808.024	0	0.5	08-Aug-98	PCB	Duplicate	3
SUMP026	Site 46	SUMP026(0-0.5)	4808.021	0	0.5	08-Aug-98	PCB	Normal	3
SUMP027	Site 46	SUMP027(0-0.5)	4790.017	0	0.5	30-Jul-98	PCB	Normal	3
SUMP029	Site 46	SUMP029(0-0.5)	4790.013	0	0.5	30-Jul-98	PCB	Normal	3
SUMP030	Site 46	SUMP030(0-0.5)	4808.012	0	0.5	08-Aug-98	PCB	Normal	3
SUMP034	Site 46	SUMP034(0-0.5)	4808.010	0	0.5	07-Aug-98	PCB	Normal	3
SUMP036	Site 46	SUMP036(0-0.5)	4790.015	0	0.5	30-Jul-98	PCB	Normal	3
SUMP037	Site 46	SUMP037(0-0.5)	4808.015	0	0.5	08-Aug-98	PCB	Normal	3
SUMP040	Site 46	SUMP040(0-0.5)	4808.017	0	0.5	08-Aug-98	PCB	Normal	3
SUMP043	Site 46	SUMP043(0-0.5)	4808.019	0	0.5	08-Aug-98	PCB	Normal	3
SUMP108	Site 46	SUMP108(0-0.5)	4819.009	0	0.5	11-Aug-98	PCB	Normal	3
SUMP108	Site 46	SUMP108(0-0.5)QC	4819.010	0	0.5	11-Aug-98	PCB	Duplicate	3
SUMP110	Site 46	SUMP110(0-0.5)	4819.023	0	0.5	12-Aug-98	PCB	Normal	3
WRSUMP007	Site 46	WRSUMP7(0-0.5)QC	4788.022	0	0.5	29-Jul-98	PCB	Normal	3
WRSUMP007	Site 46	WRSUMP07(0-0.5)	4788.021	0	0.5	29-Jul-98	PCB	Normal	3
WRSUMP008	Site 46	WRSUMP08(0-0.5)	4790.020	0	0.5	30-Jul-98	PCB	Normal	3
WRSUMP010	Site 46	WRSUMP10(0-0.5)	4803.014	0	0.5	05-Aug-98	PCB	Normal	3
WRSUMP015	Site 46	WRSUMP15(0-0.5)	4819.007	0	0.5	11-Aug-98	PCB	Normal	3
WRSUMP016	Site 46	WRSUMP16(0-0.5)	4819.012	0	0.5	11-Aug-98	PCB	Normal	3
WRSUMP019	Site 46	WRSUMP19(0-0.5)	4819.030	0	0.5	13-Aug-98	PCB	Normal	3
WRSUMP021	Site 46	WRSUMP21(0-0.5)	4790.005	0	0.5	30-Jul-98	PCB	Normal	3
46SB01	Site 46	46SB01(0-0.5)	35002.08	0	0.5	27-Jul-98	PCDD/PCDF	Normal	3
46SB02	Site 46	46SB02(0-0.5)	35002.05	0	0.5	27-Jul-98	PCDD/PCDF	Normal	3
46SB03	Site 46	46SB03(0-0.5)	35002.01	0	0.5	27-Jul-98	PCDD/PCDF	Normal	3
46SB03	Site 46	46SB03(0-0.5)QC	35002.02	0	0.5	27-Jul-98	PCDD/PCDF	Duplicate	3
46SD02	Site 46	46SD02-1	36354.07	0	0.5	09-Nov-98	PCDD/PCDF	Normal	3
46SD05	Site 46	46SD05-1	36354.10	0	0.5	10-Nov-98	PCDD/PCDF	Normal	3
46SD05	Site 46	46SD05-1QC	36354.11	0	0.5	10-Nov-98	PCDD/PCDF	Duplicate	3
SUMP001	Site 46	SUMP001(0-0.5)	35037.01	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP001	Site 46	SUMP001(0-0.5)QC	35037.02	0	0.5	29-Jul-98	PCDD/PCDF	Duplicate	3
SUMP004	Site 46	SUMP004(0-0.5)	35037.04	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP006	Site 46	SUMP006(0-0.5)	35037.08	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP010	Site 46	SUMP010(0-0.5)	35037.13	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP016	Site 46	SUMP016(0-0.5)	35134.01	0	0.5	06-Aug-98	PCDD/PCDF	Normal	3
SUMP018	Site 46	SUMP018(0-0.5)	35264.01	0	0.5	11-Aug-98	PCDD/PCDF	Normal	3
SUMP018	Site 46	SUMP018(0-0.5)QC	35264.02	0	0.5	11-Aug-98	PCDD/PCDF	Duplicate	3
SUMP019	Site 46	SUMP019(0-0.5)	35037.15	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP020	Site 46	SUMP020(0-0.5)	35037.17	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP023	Site 46	SUMP023(0-0.5)	35134.03	0	0.5	06-Aug-98	PCDD/PCDF	Normal	3

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
SUMP024	Site 46	SUMP024(0-0.5)	35190.01	0	0.5	08-Aug-98	PCDD/PCDF	Normal	3
SUMP024	Site 46	SUMP024(0-0.5)QC	35190.02	0	0.5	08-Aug-98	PCDD/PCDF	Duplicate	3
SUMP026	Site 46	SUMP026(0-0.5)	35189.01	0	0.5	08-Aug-98	PCDD/PCDF	Normal	3
SUMP027	Site 46	SUMP027(0-0.5)	35057.01	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP029	Site 46	SUMP029(0-0.5)	35057.04	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP030	Site 46	SUMP030(0-0.5)	35189.05	0	0.5	08-Aug-98	PCDD/PCDF	Normal	3
SUMP030	Site 46	SUMP030(0-0.5)QC	35189.06	0	0.5	08-Aug-98	PCDD/PCDF	Duplicate	3
SUMP034	Site 46	SUMP034(0-0.5)	35189.08	0	0.5	07-Aug-98	PCDD/PCDF	Normal	3
SUMP036	Site 46	SUMP036(0-0.5)	35057.06	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP037	Site 46	SUMP037(0-0.5)	35189.10	0	0.5	08-Aug-98	PCDD/PCDF	Normal	3
SUMP040	Site 46	SUMP040(0-0.5)	35189.12	0	0.5	08-Aug-98	PCDD/PCDF	Normal	3
SUMP043	Site 46	SUMP043(0-0.5)	35189.14	0	0.5	08-Aug-98	PCDD/PCDF	Normal	3
SUMP110	Site 46	SUMP110(0-0.5)	35264.12	0	0.5	12-Aug-98	PCDD/PCDF	Normal	3
WRSUMP007	Site 46	WRSUMP007(0-0.5)	35037.10	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
WRSUMP007	Site 46	WRSUMP007(0-0.5)QC	35037.11	0	0.5	29-Jul-98	PCDD/PCDF	Duplicate	3
WRSUMP008	Site 46	WRSUMP008(0-0.5)	35057.22	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
WRSUMP010	Site 46	WRSUMP010(0-0.5)	35134.27	0	0.5	05-Aug-98	PCDD/PCDF	Normal	3
WRSUMP015	Site 46	WRSUMP015(0-0.5)	35265.10	0	0.5	11-Aug-98	PCDD/PCDF	Normal	3
WRSUMP016	Site 46	WRSUMP016(0-0.5)	35265.12	0	0.5	11-Aug-98	PCDD/PCDF	Normal	3
WRSUMP019	Site 46	WRSUMP019(0-0.5)	35265.14	0	0.5	12-Aug-98	PCDD/PCDF	Normal	3
WRSUMP021	Site 46	WRSUMP021(0-0.5)	35057.24	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
46SB01	Site 46	46SB01(0-0.5)	4784.037	0	0.5	27-Jul-98	Pesticide	Normal	3
46SB02	Site 46	46SB02(0-0.5)	4784.063	0	0.5	27-Jul-98	Pesticide	Normal	3
46SB03	Site 46	46SB03(0-0.5)	4784.033	0	0.5	27-Jul-98	Pesticide	Normal	3
46SB03	Site 46	46SB03(0-0.5)QC	4784.034	0	0.5	27-Jul-98	Pesticide	Duplicate	3
46SD01	Site 46	46SD01-2	5017.037	0	0.5	03-Dec-98	Pesticide	Normal	3
46SD02	Site 46	46SD02-1	4987.028	0	0.5	09-Nov-98	Pesticide	Normal	3
46SD03	Site 46	46SD03-2	5017.038	0	0.5	03-Dec-98	Pesticide	Normal	3
46SD04	Site 46	46SD04-2	5021.003	0	0.5	07-Dec-98	Pesticide	Normal	3
46SD05	Site 46	46SD05-1	4988.008	0	0.5	10-Nov-98	Pesticide	Normal	3
46SD05	Site 46	46SD05-1QC	4988.009	0	0.5	10-Nov-98	Pesticide	Duplicate	3
46SD06	Site 46	46SD06-1	4988.010	0	0.5	10-Nov-98	Pesticide	Normal	3
46SD06	Site 46	46SD06-2	5017.041	0	0.5	03-Dec-98	Pesticide	Normal	3
46SD07	Site 46	46SD07-2	5017.018	0	0.5	03-Dec-98	Pesticide	Normal	3
46SD08	Site 46	46SD08-2	5017.019	0	0.5	03-Dec-98	Pesticide	Normal	3
SUMP001	Site 46	SUMP001(0-0.5)	4788.004	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP004	Site 46	SUMP004(0-0.5)	4788.001	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP006	Site 46	SUMP006(0-0.5)	4788.006	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP001	Site 46	SUMP01(0-0.5)QC	4788.005	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP010	Site 46	SUMP010(0-0.5)	4788.024	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP016	Site 46	SUMP016(0-0.5)	4803.022	0	0.5	06-Aug-98	Pesticide	Normal	3
SUMP019	Site 46	SUMP019(0-0.5)	4788.026	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP020	Site 46	SUMP020(0-0.5)	4788.028	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP023	Site 46	SUMP023(0-0.5)	4803.019	0	0.5	06-Aug-98	Pesticide	Normal	3
SUMP024	Site 46	SUMP024(0-0.5)	4808.023	0	0.5	08-Aug-98	Pesticide	Normal	3
SUMP024	Site 46	SUMP024(0-0.5)QC	4808.024	0	0.5	08-Aug-98	Pesticide	Duplicate	3
SUMP026	Site 46	SUMP026(0-0.5)	4808.021	0	0.5	08-Aug-98	Pesticide	Normal	3
SUMP027	Site 46	SUMP027(0-0.5)	4790.017	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP029	Site 46	SUMP029(0-0.5)	4790.013	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP030	Site 46	SUMP030(0-0.5)	4808.012	0	0.5	08-Aug-98	Pesticide	Normal	3
SUMP034	Site 46	SUMP034(0-0.5)	4808.010	0	0.5	07-Aug-98	Pesticide	Normal	3
SUMP036	Site 46	SUMP036(0-0.5)	4790.015	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP037	Site 46	SUMP037(0-0.5)	4808.015	0	0.5	08-Aug-98	Pesticide	Normal	3
SUMP040	Site 46	SUMP040(0-0.5)	4808.017	0	0.5	08-Aug-98	Pesticide	Normal	3
SUMP043	Site 46	SUMP043(0-0.5)	4808.019	0	0.5	08-Aug-98	Pesticide	Normal	3

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
SUMP108	Site 46	SUMP108(0-0.5)	4819.009	0	0.5	11-Aug-98	Pesticide	Normal	3
SUMP108	Site 46	SUMP108(0-0.5)QC	4819.010	0	0.5	11-Aug-98	Pesticide	Duplicate	3
SUMP110	Site 46	SUMP110(0-0.5)	4819.023	0	0.5	12-Aug-98	Pesticide	Normal	3
WRSUMP007	Site 46	WRSUMP7(0-0.5)QC	4788.022	0	0.5	29-Jul-98	Pesticide	Normal	3
WRSUMP007	Site 46	WRSUMP07(0-0.5)	4788.021	0	0.5	29-Jul-98	Pesticide	Normal	3
WRSUMP008	Site 46	WRSUMP08(0-0.5)	4790.020	0	0.5	30-Jul-98	Pesticide	Normal	3
WRSUMP010	Site 46	WRSUMP10(0-0.5)	4803.014	0	0.5	05-Aug-98	Pesticide	Normal	3
WRSUMP015	Site 46	WRSUMP15(0-0.5)	4819.007	0	0.5	11-Aug-98	Pesticide	Normal	3
WRSUMP016	Site 46	WRSUMP16(0-0.5)	4819.012	0	0.5	11-Aug-98	Pesticide	Normal	3
WRSUMP019	Site 46	WRSUMP19(0-0.5)	4819.030	0	0.5	13-Aug-98	Pesticide	Normal	3
WRSUMP021	Site 46	WRSUMP21(0-0.5)	4790.005	0	0.5	30-Jul-98	Pesticide	Normal	3
29	Site 46	LH-S29-01 QA_2	9306433-13A	0	0	25-Jun-93	Volatile	Duplicate	1
46SB01	Site 46	46SB01(0-0.5)	4784.037	0	0.5	27-Jul-98	Volatile	Normal	3
46SB02	Site 46	46SB02(0-0.5)	4784.063	0	0.5	27-Jul-98	Volatile	Normal	3
46SB03	Site 46	46SB03(0-0.5)	4784.033	0	0.5	27-Jul-98	Volatile	Normal	3
46SB03	Site 46	46SB03(0-0.5)QC	4784.034	0	0.5	27-Jul-98	Volatile	Duplicate	3
46SD01	Site 46	46SD01-1	4987.027	0	0.5	09-Nov-98	Volatile	Normal	3
46SD02	Site 46	46SD02-1	4987.028	0	0.5	09-Nov-98	Volatile	Normal	3
46SD03	Site 46	46SD03-1	4988.006	0	0.5	10-Nov-98	Volatile	Normal	3
46SD04	Site 46	46SD04-1	4988.007	0	0.5	10-Nov-98	Volatile	Normal	3
46SD05	Site 46	46SD05-1	4988.008	0	0.5	10-Nov-98	Volatile	Normal	3
46SD05	Site 46	46SD05-1QC	4988.009	0	0.5	10-Nov-98	Volatile	Duplicate	3
46SD06	Site 46	46SD06-1	4988.010	0	0.5	10-Nov-98	Volatile	Normal	3
46SD07	Site 46	46SD07-1	4988.013	0	0.5	10-Nov-98	Volatile	Normal	3
46SD08	Site 46	46SD08-1	4988.014	0	0.5	10-Nov-98	Volatile	Normal	3
2-01	Site 46	LHS-2-01	9501G551-001	0	0.5	09-Jan-95	Volatile	Normal	2
2-02	Site 46	LHS-2-02	9501G551-002	0	0.5	09-Jan-95	Volatile	Normal	2
2-03	Site 46	LHS-2-03	9501G551-003	0	0.5	09-Jan-95	Volatile	Normal	2
2-04	Site 46	LHS-2-04	9501G551-004	0	0.5	10-Jan-95	Volatile	Normal	2
2-05	Site 46	LHS-2-05	9501G638-011	0	0.5	10-Jan-95	Volatile	Normal	2
2-06	Site 46	LHS-2-06	9501G638-012	0	0.5	10-Jan-95	Volatile	Normal	2
2-07	Site 46	LHS-2-07	9501G638-013	0	0.5	10-Jan-95	Volatile	Normal	2
2-08	Site 46	LHS-2-08	9501G638-014	0	0.5	10-Jan-95	Volatile	Normal	2
2-09	Site 46	LHS-2-09	9501G638-015	0	0.5	10-Jan-95	Volatile	Normal	2
2-10	Site 46	LHS-2-10	9501G638-016	0	0.5	10-Jan-95	Volatile	Normal	2
2-11	Site 46	LHS-2-11	9501G638-017	0	0.5	11-Jan-95	Volatile	Normal	2
2-12	Site 46	LHS-2-12	9501G638-018	0	0.5	11-Jan-95	Volatile	Normal	2
2-13	Site 46	LHS-2-13	9501G638-019	0	0.5	11-Jan-95	Volatile	Normal	2
2-14	Site 46	LHS-2-14	9501G638-020	0	0.5	11-Jan-95	Volatile	Normal	2
2-14	Site 46	LHS-2-14 QC	9501G639-001	0	0.5	11-Jan-95	Volatile	Duplicate	2
2-15	Site 46	LHS-2-15	9501G640-005	0	0.5	11-Jan-95	Volatile	Normal	2
2-16	Site 46	LHS-2-16	9501G640-006	0	0.5	11-Jan-95	Volatile	Normal	2
2-17	Site 46	LHS-2-17	9501G640-007	0	0.5	11-Jan-95	Volatile	Normal	2
2-18	Site 46	LHS-2-18	9501G640-008	0	0.5	11-Jan-95	Volatile	Normal	2
2-19	Site 46	LHS-2-19	9501G640-009	0	0.5	11-Jan-95	Volatile	Normal	2
LHSMW10	Site 46	LHS-MW10	9410G668-010	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW11	Site 46	LHS-MW11	9410G668-011	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW11	Site 46	LHS-MW11 QC	9410G668-021	0	0.5	30-Sep-94	Volatile	Duplicate	2
LHSMW12	Site 46	LHS-MW12	9410G668-012	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW13	Site 46	LHS-MW13	9410G668-013	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW14	Site 46	LHS-MW14	9410G668-014	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW15	Site 46	LHS-MW15	9410G668-015	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW16	Site 46	LHS-MW16	9410G668-016	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW17	Site 46	LHS-MW17	9410G668-017	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW18	Site 46	LHS-MW18	9410G668-018	0	0.5	30-Sep-94	Volatile	Normal	2

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
LHSMW19	Site 46	LHS-MW19	9410G668-019	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW20	Site 46	LHS-MW20	9410G680-001	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW20	Site 46	LHS-MW20 QC	9410G680-014	0	0.5	03-Oct-94	Volatile	Duplicate	2
LHSMW21	Site 46	LHS-MW21	9410G680-002	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW22	Site 46	LHS-MW22	9410G680-003	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW23	Site 46	LHS-MW23	9410G680-004	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW24	Site 46	LHS-MW24	9410G680-005	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW25	Site 46	LHS-MW25	9410G680-006	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW26	Site 46	LHS-MW26	9410G680-007	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW27	Site 46	LHS-MW27	9410G680-008	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW08	Site 46	LHS-MW8	9410G668-008	0	0.5	30-Sep-94	Volatile	Normal	2
LHSMW09	Site 46	LHS-MW9	9410G668-009	0	0.5	30-Sep-94	Volatile	Normal	2
17	Site 46	LH-S017-02_1	D93-9141-14	0.5	1	08-Aug-93	Volatile	Normal	1
21	Site 46	LH-S021-02_1	D93-9105-13	0.5	1	06-Aug-93	Volatile	Normal	1
25	Site 46	LH-S025-01 QC	D93-9105-17	0.5	1	06-Aug-93	Volatile	Duplicate	1
25	Site 46	LH-S025-01_1	D93-9105-16	0.5	1	06-Aug-93	Volatile	Normal	1
25	Site 46	LH-S025-02_1	D93-9105-19	0.5	1	06-Aug-93	Volatile	Normal	1
26	Site 46	LH-S026-01 QC	D93-9141-24	0.5	1	08-Aug-93	Volatile	Duplicate	1
26	Site 46	LH-S026-01_1	D93-9141-22	0.5	1	08-Aug-93	Volatile	Normal	1
26	Site 46	LH-S026-02_1	D93-9141-25	0.5	1	08-Aug-93	Volatile	Normal	1
107	Site 46	LH-S107-01 QC	3-5443	0.5	1	- -	Volatile	Duplicate	1
23	Site 46	LH-S23-01 QC	D93-8552-3	0.5	1	25-Jul-93	Volatile	Duplicate	1
23	Site 46	LH-S23-01_1	D93-8552-1	0.5	1	25-Jul-93	Volatile	Normal	1
28	Site 46	LH-S28-01_1	D93-8425-1	0.5	1	22-Jul-93	Volatile	Normal	1
31	Site 46	LH-S31-01_1	D93-8379-12	0.5	1	21-Jul-93	Volatile	Normal	1
33	Site 46	LH-S33-01_1	D93-8379-14	0.5	1	21-Jul-93	Volatile	Normal	1
37	Site 46	LH-S37-01_1	D93-8552-6	0.5	1	25-Jul-93	Volatile	Normal	1
43	Site 46	LH-S43-01_1	3-5425	0.5	1	- -	Volatile	Normal	1
WRS-7	Site 46	LH-WRS07-01 QC	D93-8425-23	0.5	1	22-Jul-93	Volatile	Duplicate	1
WRS-7	Site 46	LH-WRS07-01_1	D93-8425-20	0.5	1	22-Jul-93	Volatile	Normal	1
WRS-10	Site 46	LH-WRS10-01_1	D93-9141-1	0.5	1	08-Aug-93	Volatile	Normal	1
12	Site 46	LH-WRS12-01_1	D93-9141-7	0.5	1	08-Aug-93	Volatile	Normal	1
WRS-15	Site 46	LH-WRS15-01_1	D93-8981-1	0.5	1	03-Aug-93	Volatile	Normal	1
WRS-21	Site 46	LH-WRS21-01_1	D93-9141-20	0.5	1	08-Aug-93	Volatile	Normal	1
WRS-8	Site 46	LH-WRS8-01_1	D93-9105-1	0.5	1	06-Aug-93	Volatile	Normal	1
WRS-9	Site 46	LH-WRS9-01_1	D93-9105-3	0.5	1	06-Aug-93	Volatile	Normal	1
18	Site 46	LH-S018-01_1	D93-9141-17	0.5	1.1	08-Aug-93	Volatile	Normal	1
WRS-11	Site 46	LH-WRS11-01 QC	D93-9141-4	0.5	1.2	08-Aug-93	Volatile	Duplicate	1
WRS-11	Site 46	LH-WRS11-01_1	D93-9141-3	0.5	1.2	08-Aug-93	Volatile	Normal	1
1	Site 46	LH-S01-01_1	D93-7395-1	0.5	1.5	26-Jun-93	Volatile	Normal	1
1	Site 46	LH-S01-02_1	D93-7395-4	0.5	1.5	26-Jun-93	Volatile	Normal	1
17	Site 46	LH-S017-01 QC	D93-9141-13	0.5	1.5	08-Aug-93	Volatile	Duplicate	1
17	Site 46	LH-S017-01_1	D93-9141-11	0.5	1.5	08-Aug-93	Volatile	Normal	1
21	Site 46	LH-S021-01 QC	D93-9105-11	1	1.5	06-Aug-93	Volatile	Duplicate	1
21	Site 46	LH-S021-01_1	D93-9105-10	1	1.5	06-Aug-93	Volatile	Normal	1
26	Site 46	LH-S026-02_2	D93-9141-26	1	1.5	08-Aug-93	Volatile	Normal	1
9	Site 46	LH-S09-01 QC	3-5377	0.5	1.5	- -	Volatile	Duplicate	1
9	Site 46	LH-S09-01_1	3-5374	0.5	1.5	- -	Volatile	Normal	1
9	Site 46	LH-S09-02_1	3-5379	0.5	1.5	- -	Volatile	Normal	1
107	Site 46	LH-S107-01_1	3-5440	0.5	1.5	- -	Volatile	Normal	1
107	Site 46	LH-S107-01_2	3-5441	1	1.5	- -	Volatile	Normal	1
108	Site 46	LH-S108-01_1	3-5445	0.5	1.5	- -	Volatile	Normal	1
109	Site 46	LH-S109-01_1	3-5448	0.5	1.5	- -	Volatile	Normal	1
11	Site 46	LH-S11-02_1	D93-7395-13	0.5	1.5	26-Jun-93	Volatile	Normal	1
14	Site 46	LH-S14-01_1	D93-7789-1	0.5	1.5	08-Jul-93	Volatile	Normal	1

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
14	Site 46	LH-S14-02_1	D93-7789-3	0.5	1.5	08-Jul-93	Volatile	Normal	1
15	Site 46	LH-S15-01_1	D93-7789-5	0.5	1.5	08-Jul-93	Volatile	Normal	1
15	Site 46	LH-S15-02_1	D93-7789-7	0.5	1.5	08-Jul-93	Volatile	Normal	1
16	Site 46	LH-S16-01_1	D93-7882-18	0.5	1.5	08-Jul-93	Volatile	Normal	1
19	Site 46	LH-S19-01	D93-9105-5	1	1.5	06-Aug-93	Volatile	Normal	1
19	Site 46	LH-S19-02_1	D93-9105-8	1	1.5	06-Aug-93	Volatile	Normal	1
23	Site 46	LH-S23-02_1	D93-8552-4	1	1.5	25-Jul-93	Volatile	Normal	1
27	Site 46	LH-S27-02_1	D93-7358-12	0.5	1.5	24-Jun-93	Volatile	Normal	1
34	Site 46	LH-S34-01_2	D93-7880-16	0.5	1.5	10-Jul-93	Volatile	Normal	1
38	Site 46	LH-S38-01_1	D93-7395-14	0.5	1.5	26-Jun-93	Volatile	Normal	1
39	Site 46	LH-S39-01 QC	3-5423	0.5	1.5	- -	Volatile	Duplicate	1
39	Site 46	LH-S39-01_1	3-5421	0.5	1.5	- -	Volatile	Normal	1
40	Site 46	LH-S40-01_1	D93-7395-16	0.5	1.5	26-Jun-93	Volatile	Normal	1
41	Site 46	LH-S41-01_1	D93-7358-17	0.5	1.5	25-Jun-93	Volatile	Normal	1
42	Site 46	LH-S42-01 QC	D93-7358-21	0.5	1.5	25-Jun-93	Volatile	Duplicate	1
42	Site 46	LH-S42-01_1	D93-7358-19	0.5	1.5	25-Jun-93	Volatile	Normal	1
WRS-13	Site 46	LH-WRS13-01_1	3-5264	0.5	1.5	- -	Volatile	Normal	1
WRS-16	Site 46	LH-WRS16-01_1	3-5450	0.5	1.5	- -	Volatile	Normal	1
WRS-19	Site 46	LH-WRS19-01_1	3-5452	0.5	1.5	- -	Volatile	Normal	1
WRS-4	Site 46	LH-WRS4-01_1	D93-7880-39	0.5	1.5	10-Jul-93	Volatile	Normal	1
18	Site 46	LH-S018-01_2	D93-9141-18	1.1	1.6	08-Aug-93	Volatile	Normal	1
WRS-11	Site 46	LH-WRS11-01_2	D93-9141-5	1.2	1.7	08-Aug-93	Volatile	Normal	1
25	Site 46	LH-S025-02_2	D93-9105-20	1.5	2	06-Aug-93	Volatile	Normal	1
3	Site 46	LH-S03-01_1	D93-7880-1	0	2	10-Jul-93	Volatile	Normal	1
3	Site 46	LH-S03-02_1	D93-7880-3	0	2	10-Jul-93	Volatile	Normal	1
4	Site 46	LH-S04-01_1	D93-7882-1	0	2	09-Jul-93	Volatile	Normal	1
4	Site 46	LH-S04-02_1	D93-7882-3	0	2	09-Jul-93	Volatile	Normal	1
5	Site 46	LH-S05-01_1	D93-7882-5	0	2	09-Jul-93	Volatile	Normal	1
5	Site 46	LH-S05-02_1	D93-7882-7	0	2	09-Jul-93	Volatile	Normal	1
6	Site 46	LH-S06-01 QC	D93-7882-13	0	2	09-Jul-93	Volatile	Duplicate	1
6	Site 46	LH-S06-01_1	D93-7882-10	0	2	09-Jul-93	Volatile	Normal	1
6	Site 46	LH-S06-02_1	D93-7882-14	0	2	09-Jul-93	Volatile	Normal	1
7	Site 46	LH-S07-02_1	D93-7358-6	0	2	25-Jun-93	Volatile	Normal	1
8	Site 46	LH-S08-01_1	D93-8006-3	0	2	12-Jul-93	Volatile	Normal	1
8	Site 46	LH-S08-02_1	D93-8006-5	0	2	12-Jul-93	Volatile	Normal	1
10	Site 46	LH-S10-02_1	D93-7880-5	0	2	11-Jul-93	Volatile	Normal	1
110	Site 46	LH-S110-01_1	D93-9046-11	0.5	2	04-Aug-93	Volatile	Normal	1
11	Site 46	LH-S11-01_1	D93-7358-8	0	2	25-Jun-93	Volatile	Normal	1
12	Site 46	LH-S12-01_1	D93-7880-7	0	2	11-Jul-93	Volatile	Normal	1
12	Site 46	LH-S12-02_1	D93-7880-9	0	2	11-Jul-93	Volatile	Normal	1
13	Site 46	LH-S13-01 QC	D93-7880-13	0	2	10-Jul-93	Volatile	Duplicate	1
13	Site 46	LH-S13-01_1	D93-7880-11	0	2	10-Jul-93	Volatile	Normal	1
13	Site 46	LH-S13-02_1	D93-7880-14	0	2	10-Jul-93	Volatile	Normal	1
19	Site 46	LH-S19-01_1	D93-9105-6	1.5	2	06-Aug-93	Volatile	Normal	1
20	Site 46	LH-S20-01_1	9306433-01A	0.5	2	25-Jun-93	Volatile	Normal	1
20	Site 46	LH-S20-02_1	9306433-03A	0.5	2	25-Jun-93	Volatile	Normal	1
24	Site 46	LH-S24-01_1	9306433-09A	0.5	2	25-Jun-93	Volatile	Normal	1
27	Site 46	LH-S27-01_1	D93-7358-10	0.5	2	24-Jun-93	Volatile	Normal	1
29	Site 46	LH-S29-02_1	9306433-15A	0	2	25-Jun-93	Volatile	Normal	1
35	Site 46	LH-S35-01_1	D93-7358-15	0.5	2	25-Jun-93	Volatile	Normal	1
43	Site 46	LH-S43-01_2	3-5426	1.5	2	- -	Volatile	Normal	1
WRS-5	Site 46	LH-WRS-5_1	D93-8006-1	0	2	12-Jul-93	Volatile	Normal	1
WRS-6	Site 46	LH-WRS-6_1	D93-7880-37	0	2	10-Jul-93	Volatile	Normal	1
27	Site 46	LH-DL27-01	D93-7358-1	1.5	2.5	24-Jun-93	Volatile	Normal	1
2	Site 46	LH-S02-01_1	D93-7395-7	0.5	2.5	26-Jun-93	Volatile	Normal	1

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
2	Site 46	LH-S02-02_1	D93-7395-9	0.5	2.5	26-Jun-93	Volatile	Normal	1
21	Site 46	LH-S021-02_2	D93-9105-14	2	2.5	06-Aug-93	Volatile	Normal	1
7	Site 46	LH-S07-01_1	D93-7358-3	0.5	2.5	25-Jun-93	Volatile	Normal	1
10	Site 46	LH-S10-01_1	D93-7395-11	0.5	2.5	26-Jun-93	Volatile	Normal	1
107	Site 46	LH-S107-01_3	3-5442	2	2.5	- -	Volatile	Normal	1
108	Site 46	LH-S108-01_2	3-5446	2	2.5	- -	Volatile	Normal	1
109	Site 46	LH-S109-01_2	3-5449	2	2.5	- -	Volatile	Normal	1
22	Site 46	LH-S22-01_1	9306433-05A	0.5	2.5	25-Jun-93	Volatile	Normal	1
22	Site 46	LH-S22-02_1	9306433-07A	0.5	2.5	25-Jun-93	Volatile	Normal	1
29	Site 46	LH-S29-01_1	9306433-11A	0.5	2.5	25-Jun-93	Volatile	Normal	1
30	Site 46	LH-S30-01_1	9306433-18A	0.5	2.5	25-Jun-93	Volatile	Normal	1
32	Site 46	LH-S32-01_1	9306433-20A	0.5	2.5	25-Jun-93	Volatile	Normal	1
46SB01	Site 46	46SB01(1-3)	4784.038	1	3	27-Jul-98	Volatile	Normal	3
46SB02	Site 46	46SB02(1-3)	4784.064	1	3	27-Jul-98	Volatile	Normal	3
46SB03	Site 46	46SB03(1-3)	4784.035	1	3	27-Jul-98	Volatile	Normal	3
29	Site 46	LH-DL29-01	D93-7358-2	2	3	25-Jun-93	Volatile	Normal	1
17	Site 46	LH-S017-01_2	D93-9141-12	2.5	3	08-Aug-93	Volatile	Normal	1
17	Site 46	LH-S017-02_2	D93-9141-15	2.5	3	08-Aug-93	Volatile	Normal	1
42	Site 46	LH-S42-01_2	D93-7358-20	2.5	3.3	25-Jun-93	Volatile	Normal	1
33	Site 46	LH-S33-01_2	D93-8379-15	3	3.4	21-Jul-93	Volatile	Normal	1
28	Site 46	LH-S28-01_2	D93-8425-2	3	3.5	22-Jul-93	Volatile	Normal	1
31	Site 46	LH-S31-01_2	D93-8379-13	3	3.5	21-Jul-93	Volatile	Normal	1
12	Site 46	LH-WRS12-01_2	D93-9141-8	3	3.5	08-Aug-93	Volatile	Normal	1
WRS-19	Site 46	LH-WRS19-01_2	3-5453	3	3.5	- -	Volatile	Normal	1
21	Site 46	LH-S021-02_3	D93-9105-15	3.4	3.9	06-Aug-93	Volatile	Normal	1
21	Site 46	LH-S021-01_2	D93-9105-12	3.5	4	06-Aug-93	Volatile	Normal	1
25	Site 46	LH-S025-02_3	D93-9105-21	3.5	4	06-Aug-93	Volatile	Normal	1
26	Site 46	LH-S026-01_2	D93-9141-23	3.5	4	08-Aug-93	Volatile	Normal	1
26	Site 46	LH-S026-02_3	D93-9141-27	3.5	4	08-Aug-93	Volatile	Normal	1
7	Site 46	LH-S07-02_2	D93-7358-7	2	4	25-Jun-93	Volatile	Normal	1
20	Site 46	LH-S20-01_2	9306433-02A	2	4	25-Jun-93	Volatile	Normal	1
23	Site 46	LH-S23-02_2	D93-8552-5	3.5	4	25-Jul-93	Volatile	Normal	1
24	Site 46	LH-S24-01_2	9306433-10A	2	4	25-Jun-93	Volatile	Normal	1
29	Site 46	LH-S29-01_2	9306433-12A	2.5	4	25-Jun-93	Volatile	Normal	1
29	Site 46	LH-S29-02_2	9306433-16A	2	4	25-Jun-93	Volatile	Normal	1
39	Site 46	LH-S39-01_2	3-5422	3	4	- -	Volatile	Normal	1
WRS-7	Site 46	LH-WRS07-01_2	D93-8425-21	3.5	4	22-Jul-93	Volatile	Normal	1
WRS-10	Site 46	LH-WRS10-01_2	D93-9141-2	3.5	4	08-Aug-93	Volatile	Normal	1
WRS-11	Site 46	LH-WRS11-01_3	D93-9141-6	3.5	4	08-Aug-93	Volatile	Normal	1
12	Site 46	LH-WRS12-01_3	D93-9141-9	3.5	4	08-Aug-93	Volatile	Normal	1
WRS-16	Site 46	LH-WRS16-01_2	3-5451	3.5	4	- -	Volatile	Normal	1
WRS-21	Site 46	LH-WRS21-01_2	D93-9141-21	3.5	4	08-Aug-93	Volatile	Normal	1
WRS-8	Site 46	LH-WRS8-01_2	D93-9105-2	3.5	4	06-Aug-93	Volatile	Normal	1
WRS-9	Site 46	LH-WRS9-01_2	D93-9105-4	3.5	4	06-Aug-93	Volatile	Normal	1
38	Site 46	LH-S38-01_2	D93-7395-15	3.2	4.1	26-Jun-93	Volatile	Normal	1
41	Site 46	LH-S41-01_2	D93-7358-18	3.2	4.1	25-Jun-93	Volatile	Normal	1
14	Site 46	LH-S14-01_2	D93-7789-2	3.2	4.2	08-Jul-93	Volatile	Normal	1
40	Site 46	LH-S40-01_2	D93-7395-17	3.3	4.2	26-Jun-93	Volatile	Normal	1
WRS-4	Site 46	LH-WRS4-01_2	D93-7880-40	3.5	4.3	10-Jul-93	Volatile	Normal	1
7	Site 46	LH-S07-01_2	D93-7358-4	2.5	4.5	25-Jun-93	Volatile	Normal	1
108	Site 46	LH-S108-01_3	3-5447	4	4.5	- -	Volatile	Normal	1
14	Site 46	LH-S14-02_2	D93-7789-4	3.5	4.5	08-Jul-93	Volatile	Normal	1
23	Site 46	LH-S23-01_2	D93-8552-2	3	4.5	25-Jul-93	Volatile	Normal	1
30	Site 46	LH-S30-01_2	9306433-19A	2.5	4.5	25-Jun-93	Volatile	Normal	1
34	Site 46	LH-S34-01_1	D93-7358-14	3.5	4.5	25-Jun-93	Volatile	Normal	1

Table 3-9
Selection of Samples for Soil Scenarios - Site 46, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
37	Site 46	LH-S37-01_2	D93-8552-7	3	4.5	25-Jul-93	Volatile	Normal	1
WRS-13	Site 46	LH-WRS13-01_2	3-5265	3	4.5	- -	Volatile	Normal	1
WRS-15	Site 46	LH-WRS15-01_2	D93-8981-2	4	4.5	03-Aug-93	Volatile	Normal	1
WRS-5	Site 46	LH-WRS-5_2	D93-8006-2	3	4.5	12-Jul-93	Volatile	Normal	1
WRS-6	Site 46	LH-WRS-6_2	D93-7880-38	2.5	4.5	10-Jul-93	Volatile	Normal	1
16	Site 46	LH-S16-01_2	D93-7882-19	4.2	4.8	08-Jul-93	Volatile	Normal	1
46SB01	Site 46	46SB01(3-5)	4784.039	3	5	27-Jul-98	Volatile	Normal	3
46SB02	Site 46	46SB02(3-5)	4784.065	3	5	27-Jul-98	Volatile	Normal	3
46SB03	Site 46	46SB03(3-5)	4784.036	3	5	27-Jul-98	Volatile	Normal	3
5	Site 46	LH-S05-01_2	D93-7882-6	3	5	09-Jul-93	Volatile	Normal	1
5	Site 46	LH-S05-02_2	D93-7882-8	3	5	09-Jul-93	Volatile	Normal	1
6	Site 46	LH-S06-02_2	D93-7882-15	3	5	09-Jul-93	Volatile	Normal	1
110	Site 46	LH-S110-01_2	D93-9046-12	3	5	04-Aug-93	Volatile	Normal	1
27	Site 46	LH-S27-01_2	D93-7358-11	2	5	24-Jun-93	Volatile	Normal	1
27	Site 46	LH-S27-02_2	D93-7358-13	2	5	24-Jun-93	Volatile	Normal	1
32	Site 46	LH-S32-01_2	9306433-21A	3	5	25-Jun-93	Volatile	Normal	1
35	Site 46	LH-S35-01_2	D93-7358-16	3.5	5.2	25-Jun-93	Volatile	Normal	1
25	Site 46	LH-S025-01_2	D93-9105-18	5	5.5	06-Aug-93	Volatile	Normal	1
9	Site 46	LH-S09-01_2	3-5376	5	5.5	- -	Volatile	Normal	1
19	Site 46	LH-S19-01_2	D93-9105-7	5	5.5	06-Aug-93	Volatile	Normal	1
19	Site 46	LH-S19-02_2	D93-9105-9	5	5.5	06-Aug-93	Volatile	Normal	1
9	Site 46	LH-S09-02_2	3-5380	5	5.6	- -	Volatile	Normal	1
1	Site 46	LH-S01-02_2	D93-7395-5	5	5.8	26-Jun-93	Volatile	Normal	1
15	Site 46	LH-S15-02_2	D93-7789-8	5	5.8	08-Jul-93	Volatile	Normal	1
18	Site 46	LH-S018-01_3	D93-9141-19	5	6	08-Aug-93	Volatile	Normal	1
2	Site 46	LH-S02-01_2	D93-7395-8	4	6	26-Jun-93	Volatile	Normal	1
2	Site 46	LH-S02-02_2	D93-7395-10	4	6	26-Jun-93	Volatile	Normal	1
3	Site 46	LH-S03-01_2	D93-7880-2	4	6	10-Jul-93	Volatile	Normal	1
3	Site 46	LH-S03-02_2	D93-7880-4	4	6	10-Jul-93	Volatile	Normal	1
4	Site 46	LH-S04-01_2	D93-7882-2	4	6	09-Jul-93	Volatile	Normal	1
4	Site 46	LH-S04-02_2	D93-7882-4	4	6	09-Jul-93	Volatile	Normal	1
6	Site 46	LH-S06-01_2	D93-7882-11	4	6	09-Jul-93	Volatile	Normal	1
8	Site 46	LH-S08-01_2	D93-8006-4	4	6	12-Jul-93	Volatile	Normal	1
8	Site 46	LH-S08-02_2	D93-8006-6	4	6	12-Jul-93	Volatile	Normal	1
15	Site 46	LH-S15-01_2	D93-7789-6	5.2	6	08-Jul-93	Volatile	Normal	1
20	Site 46	LH-S20-02_2	9306433-04A	5	6	25-Jun-93	Volatile	Normal	1
1	Site 46	LH-S01-01_2	D93-7395-2	5.7	6.5	26-Jun-93	Volatile	Normal	1
WRS-7	Site 46	LH-WRS07-01_3	D93-8425-22	6.1	6.5	22-Jul-93	Volatile	Normal	1
22	Site 46	LH-S22-01_2	9306433-06A	5	7	25-Jun-93	Volatile	Normal	1
22	Site 46	LH-S22-02_2	9306433-08A	5	7	25-Jun-93	Volatile	Normal	1

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
53	Site 47	LH-DL53-01	D93-8057-11	0	0	13-Jul-93	BNA	Normal	1
82	Site 47	LH-S82-02_3	D93-8552-48	0	0	24-Jul-93	BNA	Normal	1
47SB01	Site 47	47SB01(0-0.5)-1	4784.066	0	0.5	27-Jul-98	BNA	Normal	3
47SB02	Site 47	47SB02(0-0.5)-1	4784.069	0	0.5	27-Jul-98	BNA	Normal	3
47SB03	Site 47	47SB03(0-0.5)-1	4784.072	0	0.5	27-Jul-98	BNA	Normal	3
3-01	Site 47	LHS-3-01	9501G551-005	0	0.5	09-Jan-95	BNA	Normal	2
3-02	Site 47	LHS-3-02	9501G551-006	0	0.5	09-Jan-95	BNA	Normal	2
3-03	Site 47	LHS-3-03	9501G551-007	0	0.5	09-Jan-95	BNA	Normal	2
3-04	Site 47	LHS-3-04	9501G551-008	0	0.5	09-Jan-95	BNA	Normal	2
3-05	Site 47	LHS-3-05	9501G551-009	0	0.5	09-Jan-95	BNA	Normal	2
3-06	Site 47	LHS-3-06	9501G551-011	0	0.5	09-Jan-95	BNA	Normal	2
3-07	Site 47	LHS-3-07	9501G551-012	0	0.5	10-Jan-95	BNA	Normal	2
3-08	Site 47	LHS-3-08	9501G551-013	0	0.5	10-Jan-95	BNA	Normal	2
3-09	Site 47	LHS-3-09	9501G551-014	0	0.5	10-Jan-95	BNA	Normal	2
3-09	Site 47	LHS-3-09 QC	9501G551-015	0	0.5	10-Jan-95	BNA	Duplicate	2
3-10	Site 47	LHS-3-10	9501G551-016	0	0.5	10-Jan-95	BNA	Normal	2
3-11	Site 47	LHS-3-11	9501G551-017	0	0.5	10-Jan-95	BNA	Normal	2
3-12	Site 47	LHS-3-12	9501G551-018	0	0.5	10-Jan-95	BNA	Normal	2
3-13	Site 47	LHS-3-13	9501G551-019	0	0.5	10-Jan-95	BNA	Normal	2
3-14	Site 47	LHS-3-14	9501G551-020	0	0.5	10-Jan-95	BNA	Normal	2
3-15	Site 47	LHS-3-15	9501G551-021	0	0.5	10-Jan-95	BNA	Normal	2
3-16	Site 47	LHS-3-16	9501G551-022	0	0.5	10-Jan-95	BNA	Normal	2
3-17	Site 47	LHS-3-17	9501G551-023	0	0.5	10-Jan-95	BNA	Normal	2
3-18	Site 47	LHS-3-18	9501G551-024	0	0.5	10-Jan-95	BNA	Normal	2
3-19	Site 47	LHS-3-19	9501G639-002	0	0.5	10-Jan-95	BNA	Normal	2
3-20	Site 47	LHS-3-20	9501G639-003	0	0.5	10-Jan-95	BNA	Normal	2
3-20	Site 47	LHS-3-20 QC	9501G639-004	0	0.5	10-Jan-95	BNA	Duplicate	2
3-21	Site 47	LHS-3-21	9501G639-005	0	0.5	10-Jan-95	BNA	Normal	2
3-22	Site 47	LHS-3-22	9501G639-006	0	0.5	10-Jan-95	BNA	Normal	2
3-23	Site 47	LHS-3-23	9501G639-007	0	0.5	10-Jan-95	BNA	Normal	2
3-24	Site 47	LHS-3-24	9501G639-008	0	0.5	10-Jan-95	BNA	Normal	2
3-25	Site 47	LHS-3-25	9501G639-009	0	0.5	10-Jan-95	BNA	Normal	2
3-26	Site 47	LHS-3-26	9501G639-010	0	0.5	11-Jan-95	BNA	Normal	2
3-27	Site 47	LHS-3-27	9501G639-011	0	0.5	11-Jan-95	BNA	Normal	2
3-28	Site 47	LHS-3-28	9501G639-012	0	0.5	11-Jan-95	BNA	Normal	2
3-29	Site 47	LHS-3-29	9501G639-013	0	0.5	11-Jan-95	BNA	Normal	2
LHSMW28	Site 47	LHS-MW28	9410G680-009	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW29	Site 47	LHS-MW29	9410G680-010	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW30	Site 47	LHS-MW30	9410G680-011	0	0.5	03-Oct-94	BNA	Normal	2
LHSMW30	Site 47	LHS-MW30 QC	9410G680-015	0	0.5	03-Oct-94	BNA	Duplicate	2
LHSMW31	Site 47	LHS-MW31	9410G714-001	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW32	Site 47	LHS-MW32	9410G714-002	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW33	Site 47	LHS-MW33	9410G714-003	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW34	Site 47	LHS-MW34	9410G714-004	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW35	Site 47	LHS-MW35	9410G714-005	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW36	Site 47	LHS-MW36	9410G714-006	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW37	Site 47	LHS-MW37	9410G714-007	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW38	Site 47	LHS-MW38	9410G714-008	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW39	Site 47	LHS-MW39	9410G714-009	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW40	Site 47	LHS-MW40	9410G714-010	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW40	Site 47	LHS-MW40 QC	9410G714-014	0	0.5	04-Oct-94	BNA	Duplicate	2
LHSMW41	Site 47	LHS-MW41	9410G714-011	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW42	Site 47	LHS-MW42	9410G714-012	0	0.5	04-Oct-94	BNA	Normal	2
LHSMW43	Site 47	LHS-MW43	9410G761-001	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW44	Site 47	LHS-MW44	9410G761-002	0	0.5	05-Oct-94	BNA	Normal	2

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
LHSMW45	Site 47	LHS-MW45	9410G761-003	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW46	Site 47	LHS-MW46	9410G761-004	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW47	Site 47	LHS-MW47	9410G761-005	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW48	Site 47	LHS-MW48	9410G761-006	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW49	Site 47	LHS-MW49	9410G761-007	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW50	Site 47	LHS-MW50	9410G761-008	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW50	Site 47	LHS-MW50 QC	9410G761-019	0	0.5	05-Oct-94	BNA	Duplicate	2
LHSMW51	Site 47	LHS-MW51	9410G761-009	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW52	Site 47	LHS-MW52	9410G761-010	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW53	Site 47	LHS-MW53	9410G761-011	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW54	Site 47	LHS-MW54	9410G761-012	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW55	Site 47	LHS-MW55	9410G761-013	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW56	Site 47	LHS-MW56	9410G761-014	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW57	Site 47	LHS-MW57	9410G761-015	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW60	Site 47	LHS-MW60	9410G761-018	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW60	Site 47	LHS-MW60 QC	9410G761-020	0	0.5	05-Oct-94	BNA	Duplicate	2
LHSMW61	Site 47	LHS-MW61	9410G762-001	0	0.5	05-Oct-94	BNA	Normal	2
64	Site 47	LH-S064-01_3	D93-9051-11	0.5	1	05-Aug-93	BNA	Normal	1
65	Site 47	LH-S065-01_1	D93-9048-8	0.5	1	05-Aug-93	BNA	Normal	1
65	Site 47	LH-S065-02_1	D93-9051-13	0.5	1	05-Aug-93	BNA	Normal	1
72	Site 47	LH-S072-01_1	D93-9046-1	0.5	1	04-Aug-93	BNA	Normal	1
72	Site 47	LH-S072-02_1	D93-9046-4	0.5	1	04-Aug-93	BNA	Normal	1
48	Site 47	LH-S48-01_1	D93-8628-3	0.5	1	27-Jul-93	BNA	Normal	1
48	Site 47	LH-S48-02	D93-8628-6	0.5	1	27-Jul-93	BNA	Normal	1
52	Site 47	LH-S52-01_1	D93-8981-3	0.5	1	03-Aug-93	BNA	Normal	1
57	Site 47	LH-S57-01_1	D93-8493-1	0.5	1	22-Jul-93	BNA	Normal	1
57	Site 47	LH-S57-02_1	D93-8493-4	0.5	1	22-Jul-93	BNA	Normal	1
59	Site 47	LH-S59-01_1	D93-8379-4	0.5	1	21-Jul-93	BNA	Normal	1
59	Site 47	LH-S59-02_1	D93-8379-8	0.5	1	21-Jul-93	BNA	Normal	1
60	Site 47	LH-S60-01_1	D93-8425-3	0.5	1	22-Jul-93	BNA	Normal	1
60	Site 47	LH-S60-02_2	D93-8425-6	0.5	1	22-Jul-93	BNA	Normal	1
91	Site 47	LH-S91-01_1	D93-8493-19	0.5	1	23-Jul-93	BNA	Normal	1
91	Site 47	LH-S91-02 QC	D93-8552-33	0.5	1	24-Jul-93	BNA	Duplicate	1
91	Site 47	LH-S91-02_1	D93-8552-30	0.5	1	24-Jul-93	BNA	Normal	1
92	Site 47	LH-S92-01 QC	D93-8493-25	0.5	1	23-Jul-93	BNA	Duplicate	1
92	Site 47	LH-S92-01_1	D93-8493-22	0.5	1	23-Jul-93	BNA	Normal	1
92	Site 47	LH-S92-02_1	D93-8493-27	0.5	1	23-Jul-93	BNA	Normal	1
93	Site 47	LH-S93-01_1	D93-8552-34	0.5	1	24-Jul-93	BNA	Normal	1
93	Site 47	LH-S93-02_1	D93-8552-37	0.5	1	24-Jul-93	BNA	Normal	1
62	Site 47	LH-S062-01 QC	D93-9051-4	0.5	1.2	05-Aug-93	BNA	Duplicate	1
62	Site 47	LH-S062-01_1	D93-9051-1	0.5	1.2	05-Aug-93	BNA	Normal	1
62	Site 47	LH-S062-02_1	D93-9051-5	0.5	1.2	05-Aug-93	BNA	Normal	1
63	Site 47	LH-DL063-01	D93-9051-10	1	1.5	05-Aug-93	BNA	Normal	1
47	Site 47	LH-DL47-01	D93-7882-26	0.5	1.5	09-Jul-93	BNA	Normal	1
63	Site 47	LH-S063-01_1	D93-9051-7	1	1.5	05-Aug-93	BNA	Normal	1
64	Site 47	LH-S064-02_1	D93-9048-4	1	1.5	05-Aug-93	BNA	Normal	1
121	Site 47	LH-S121-01_1	D93-9106-12	0.5	1.5	04-Aug-93	BNA	Normal	1
121	Site 47	LH-S121-02_1	D93-9106-14	0.5	1.5	04-Aug-93	BNA	Normal	1
44	Site 47	LH-S44-01_1	D93-7880-17	0.5	1.5	10-Jul-93	BNA	Normal	1
44	Site 47	LH-S44-02_1	D93-7880-21	0.5	1.5	11-Jul-93	BNA	Normal	1
45	Site 47	LH-S45-01_1	D93-7880-24	0.5	1.5	10-Jul-93	BNA	Normal	1
45	Site 47	LH-S45-02 QC	D93-7880-29	0.5	1.5	10-Jul-93	BNA	Duplicate	1
45	Site 47	LH-S45-02_1	D93-7880-27	0.5	1.5	10-Jul-93	BNA	Normal	1
47	Site 47	LH-S47-01_1	D93-7882-21	0.5	1.5	09-Jul-93	BNA	Normal	1
47	Site 47	LH-S47-02_1	D93-7882-24	0.5	1.5	09-Jul-93	BNA	Normal	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
49	Site 47	LH-S49-01 QC	D93-7882-30	0.5	1.5	09-Jul-93	BNA	Duplicate	1
49	Site 47	LH-S49-01_1	D93-7882-28	0.5	1.5	09-Jul-93	BNA	Normal	1
50	Site 47	LH-S50-01_1	D93-8628-10	0.5	1.5	28-Jul-93	BNA	Normal	1
50	Site 47	LH-S50-01_2	D93-8628-7	0.5	1.5	27-Jul-93	BNA	Normal	1
51	Site 47	LH-S51-01 QC	D93-7880-36	0.5	1.5	11-Jul-93	BNA	Duplicate	1
51	Site 47	LH-S51-01_1	D93-7880-33	0.5	1.5	11-Jul-93	BNA	Normal	1
53	Site 47	LH-S53-01_1	D93-8057-7	0.5	1.5	13-Jul-93	BNA	Normal	1
53	Site 47	LH-S53-02_1	D93-8057-9	0.5	1.5	13-Jul-93	BNA	Normal	1
58	Site 47	LH-S58-01_1	3-5270	0.5	1.5	- -	BNA	Normal	1
68	Site 47	LH-S68-02	D93-9105-33	0.5	1.5	06-Aug-93	BNA	Normal	1
68	Site 47	LH-S68-02 QC	D93-9105-34	0.5	1.5	06-Aug-93	BNA	Duplicate	1
69	Site 47	LH-S69-01 QC	3-5431	0.5	1.5	- -	BNA	Duplicate	1
69	Site 47	LH-S69-01_1	3-5428	0.5	1.5	- -	BNA	Normal	1
69	Site 47	LH-S69-02_1	3-5434	0.5	1.5	- -	BNA	Normal	1
71	Site 47	LH-S71-01_1	D93-8552-12	1	1.5	24-Jul-93	BNA	Normal	1
71	Site 47	LH-S71-02_1	D93-8552-15	1	1.5	24-Jul-93	BNA	Normal	1
73	Site 47	LH-S73-01_1	3-5381	0.5	1.5	- -	BNA	Normal	1
75	Site 47	LH-S75-01_1	3-5383	0.5	1.5	- -	BNA	Normal	1
75	Site 47	LH-S75-02_1	3-5385	0.5	1.5	- -	BNA	Normal	1
76	Site 47	LH-S76-01_1	3-5388	5	1.5	- -	BNA	Normal	1
76	Site 47	LH-S76-02_1	3-5392	0.5	1.5	- -	BNA	Normal	1
77	Site 47	LH-S77-01 QC	3-5398	0.5	1.5	- -	BNA	Duplicate	1
77	Site 47	LH-S77-01_1	3-5395	0.5	1.5	- -	BNA	Normal	1
77	Site 47	LH-S77-02_1	3-5401	0.5	1.5	- -	BNA	Normal	1
84	Site 47	LH-S84-01 QC	D93-8379-1	0.5	1.5	21-Jul-93	BNA	Duplicate	1
84	Site 47	LH-S84-01_1	D93-8379-2	0.5	1.5	21-Jul-93	BNA	Normal	1
90	Site 47	LH-S90-01_1	D93-8379-20	0.5	1.5	21-Jul-93	BNA	Normal	1
WRS-18	Site 47	LH-WRS18-01_1	3-5404	0.5	1.5	- -	BNA	Normal	1
52	Site 47	LH-DL52-01	D93-8981-5	1.3	1.7	03-Aug-93	BNA	Normal	1
65	Site 47	LH-DL065-01	D93-9051-16	1.5	2	05-Aug-93	BNA	Normal	1
65	Site 47	LH-DL065-01 QC	D93-9051-17	1.5	2	05-Aug-93	BNA	Duplicate	1
64	Site 47	LH-S064-01_1	D93-9048-2	1.5	2	05-Aug-93	BNA	Normal	1
52	Site 47	LH-S52-01_2	D93-8981-4	1.5	2	03-Aug-93	BNA	Normal	1
54	Site 47	LH-S54-01_1	D93-8006-7	0	2	12-Jul-93	BNA	Normal	1
55	Site 47	LH-S55-01 QC	D93-8006-12	0	2	12-Jul-93	BNA	Duplicate	1
55	Site 47	LH-S55-01_1	D93-8006-10	0	2	12-Jul-93	BNA	Normal	1
56	Site 47	LH-S56-01_1	D93-9106-1	0.5	2	05-Aug-93	BNA	Normal	1
66	Site 47	LH-S66-01 QC	D93-9106-5	0.5	2	05-Aug-93	BNA	Duplicate	1
66	Site 47	LH-S66-01_1	D93-9106-3	0.5	2	05-Aug-93	BNA	Normal	1
66	Site 47	LH-S66-02_1	D93-9106-6	0.5	2	05-Aug-93	BNA	Normal	1
67	Site 47	LH-S67-01_1	D93-9105-28	0.5	2	06-Aug-93	BNA	Normal	1
68	Site 47	LH-S68-01 QC	D93-9105-32	0.5	2	06-Aug-93	BNA	Duplicate	1
68	Site 47	LH-S68-01_1	D93-9105-30	0.5	2	06-Aug-93	BNA	Normal	1
70	Site 47	LH-S70-01_1	D93-8552-8	0.5	2	24-Jul-93	BNA	Normal	1
70	Site 47	LH-S70-02_1	D93-8552-10	0.5	2	24-Jul-93	BNA	Normal	1
78	Site 47	LH-S78-01_1	D93-8552-18	0.5	2	24-Jul-93	BNA	Normal	1
79	Site 47	LH-S79-01_1	D93-8552-21	0.5	2	24-Jul-93	BNA	Normal	1
80	Site 47	LH-S80-01 QC	D93-8552-25	0.5	2	24-Jul-93	BNA	Duplicate	1
80	Site 47	LH-S80-01_1	D93-8552-23	0.5	2	24-Jul-93	BNA	Normal	1
81	Site 47	LH-S81-01_1	D93-8493-7	0.5	2	23-Jul-93	BNA	Normal	1
81	Site 47	LH-S81-02_1	D93-8552-27	0.5	2	23-Jul-93	BNA	Normal	1
82	Site 47	LH-S82-01_1	D93-8493-9	0.5	2	23-Jul-93	BNA	Normal	1
83	Site 47	LH-S83-01_1	D93-8493-14	0.5	2	23-Jul-93	BNA	Normal	1
83	Site 47	LH-S83-02 QC	D93-8493-18	0.5	2	23-Jul-93	BNA	Duplicate	1
83	Site 47	LH-S83-02_1	D93-8493-16	0.5	2	23-Jul-93	BNA	Normal	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
86	Site 47	LH-S86-01 QC	D93-8687-7	0.5	2	27-Jul-93	BNA	Duplicate	1
86	Site 47	LH-S86-01_1	D93-8687-5	0.5	2	27-Jul-93	BNA	Normal	1
86	Site 47	LH-S86-02_1	D93-8687-2	0.5	2	27-Jul-93	BNA	Normal	1
87	Site 47	LH-S87-01_1	D93-8425-9	0.5	2	22-Jul-93	BNA	Normal	1
88	Site 47	LH-S88-01 QC	D93-8425-14	0.5	2	22-Jul-93	BNA	Duplicate	1
88	Site 47	LH-S88-01_1	D93-8425-11	0.5	2	22-Jul-93	BNA	Normal	1
88	Site 47	LH-S88-02_1	D93-8425-15	0.5	2	22-Jul-93	BNA	Normal	1
89	Site 47	LH-S89-01_1	D93-8379-16	0.5	2	21-Jul-93	BNA	Normal	1
89	Site 47	LH-S89-02_1	D93-8379-18	0.5	2	21-Jul-93	BNA	Normal	1
90	Site 47	LH-S90-02_1	D93-8379-22	0.5	2	21-Jul-93	BNA	Normal	1
WRS-17	Site 47	LH-WRS17-01_1	D93-8425-18	0.5	2	22-Jul-93	BNA	Normal	1
64	Site 47	LH-DL064-01	D93-9048-7	2	2.5	05-Aug-93	BNA	Normal	1
72	Site 47	LH-DL072-01	D93-9046-7	2	2.5	04-Aug-93	BNA	Normal	1
75	Site 47	LH-DL75-01	3-5387	2	2.5	- -	BNA	Normal	1
76	Site 47	LH-DL76-01	3-5391	2	2.5	- -	BNA	Normal	1
77	Site 47	LH-DL77-01	3-5400	2	2.5	- -	BNA	Normal	1
63	Site 47	LH-S063-01_2	D93-9051-8	2	2.5	05-Aug-93	BNA	Normal	1
65	Site 47	LH-S065-01_2	D93-9048-9	2	2.5	05-Aug-93	BNA	Normal	1
76	Site 47	LH-S76-01_2	3-5389	2	2.5	- -	BNA	Normal	1
73	Site 47	LH-DL73-01	3-5272	2	2.7	- -	BNA	Normal	1
74	Site 47	LH-DL74-01	3-5275	2	2.7	- -	BNA	Normal	1
44	Site 47	LH-DL44-01	D93-7880-20	2.1	2.8	10-Jul-93	BNA	Normal	1
50	Site 47	LH-DL50-01	D93-7880-32	2	2.9	11-Jul-93	BNA	Normal	1
58	Site 47	LH-DL58-01	3-5317	2.1	2.9	- -	BNA	Normal	1
47SB01	Site 47	47SB01(1-3)	4784.067	1	3	27-Jul-98	BNA	Normal	3
47SB02	Site 47	47SB02(1-3)	4784.070	1	3	27-Jul-98	BNA	Normal	3
47SB03	Site 47	47SB03(1-3)	4784.073	1	3	27-Jul-98	BNA	Normal	3
47SB03	Site 47	47SB03(1-3)QC	4784.074	1	3	27-Jul-98	BNA	Duplicate	3
45	Site 47	LH-DL45-01	D93-7880-30	2.3	3	10-Jul-93	BNA	Normal	1
61	Site 47	LH-DL61-01	D93-9105-27	2	3	06-Aug-93	BNA	Normal	1
69	Site 47	LH-DL69-01	3-5433	2.5	3	- -	BNA	Normal	1
71	Site 47	LH-DL71-01	D93-8552-46	2	3	24-Jul-93	BNA	Normal	1
85	Site 47	LH-DL85-01	3-5437	2.5	3	- -	BNA	Normal	1
91	Site 47	LH-DL91	D93-8493-33	2.5	3	23-Jul-93	BNA	Normal	1
92	Site 47	LH-DL92-01	D93-8493-34	2.5	3	23-Jul-93	BNA	Normal	1
93	Site 47	LH-DL93-01	D93-8628-2	2.5	3	27-Jul-93	BNA	Normal	1
62	Site 47	LH-S062-01_2	D93-9051-2	2.5	3	05-Aug-93	BNA	Normal	1
62	Site 47	LH-S062-02_2	D93-9051-6	2.5	3	05-Aug-93	BNA	Normal	1
63	Site 47	LH-S063-01_3	D93-9051-9	2.5	3	05-Aug-93	BNA	Normal	1
64	Site 47	LH-S064-02_2	D93-9048-5	2.5	3	05-Aug-93	BNA	Normal	1
57	Site 47	LH-S57-01_2	D93-8493-2	2	3	22-Jul-93	BNA	Normal	1
57	Site 47	LH-S57-02_2	D93-8493-5	2	3	22-Jul-93	BNA	Normal	1
60	Site 47	LH-S60-02_3	D93-8425-7	2.5	3	22-Jul-93	BNA	Normal	1
61	Site 47	LH-S61-01_1	D93-9105-23	0.5	3	06-Aug-93	BNA	Normal	1
61	Site 47	LH-S61-02_1	D93-9105-25	1	3	06-Aug-93	BNA	Normal	1
77	Site 47	LH-S77-01_2	3-5396	1.5	3	- -	BNA	Normal	1
77	Site 47	LH-S77-02_2	3-5402	2.5	3	- -	BNA	Normal	1
87	Site 47	LH-S87-01_2	3-5439	2.5	3	- -	BNA	Normal	1
47	Site 47	LH-S47-01_2	D93-7882-22	2.2	3.2	09-Jul-93	BNA	Normal	1
48	Site 47	LH-DL48-01	D93-7880-31	2.7	3.4	11-Jul-93	BNA	Normal	1
60	Site 47	LH-S60-01_2	D93-8425-4	3	3.4	22-Jul-93	BNA	Normal	1
54	Site 47	LH-DL54-01	D93-8006-9	2.5	3.5	12-Jul-93	BNA	Normal	1
55	Site 47	LH-DL55-01	D93-8006-13	2.5	3.5	12-Jul-93	BNA	Normal	1
55	Site 47	LH-DL55-02	D93-8006-15	2.5	3.5	12-Jul-93	BNA	Normal	1
65	Site 47	LH-S065-02_2	D93-9051-14	3	3.5	05-Aug-93	BNA	Normal	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
72	Site 47	LH-S072-01_2	D93-9046-2	3	3.5	04-Aug-93	BNA	Normal	1
71	Site 47	LH-S71-01_2	D93-8552-13	3	3.5	24-Jul-93	BNA	Normal	1
71	Site 47	LH-S71-02_2	D93-8552-16	3	3.5	24-Jul-93	BNA	Normal	1
73	Site 47	LH-S73-01_2	3-5382	2.5	3.5	- -	BNA	Normal	1
74	Site 47	LH-S74-01	3-5274	2.5	3.5	- -	BNA	Normal	1
93	Site 47	LH-S93-02_2	D93-8552-38	3	3.5	24-Jul-93	BNA	Normal	1
WRS-18	Site 47	LH-WRS18-01_2	3-5405	3	3.5	- -	BNA	Normal	1
47	Site 47	LH-S47-02_2	D93-7882-25	2.5	3.6	09-Jul-93	BNA	Normal	1
47	Site 47	LH-DL47-02	D93-7882-27	2.7	3.8	09-Jul-93	BNA	Normal	1
81	Site 47	LH-DL81-01	D93-8493-30	2	4	23-Jul-93	BNA	Normal	1
82	Site 47	LH-DL82-01	D93-8493-31	2	4	23-Jul-93	BNA	Normal	1
83	Site 47	LH-DL83-01	D93-8493-32	2	4	23-Jul-93	BNA	Normal	1
84	Site 47	LH-DL84-01	D93-8379-24	2	4	21-Jul-93	BNA	Normal	1
88	Site 47	LH-DL88-01	D93-8425-10	2	4	22-Jul-93	BNA	Normal	1
89	Site 47	LH-DL89-01	D93-8379-25	2	4	21-Jul-93	BNA	Normal	1
90	Site 47	LH-DL90-01	D93-8379-26	2	4	21-Jul-93	BNA	Normal	1
90	Site 47	LH-DL90-02	D93-8379-27	2	4	21-Jul-93	BNA	Normal	1
62	Site 47	LH-S062-01_3	D93-9051-3	3.5	4	05-Aug-93	BNA	Normal	1
72	Site 47	LH-S072-02_2	D93-9046-5	3.5	4	04-Aug-93	BNA	Normal	1
75	Site 47	LH-S75-01_2	3-5384	3.5	4	- -	BNA	Normal	1
75	Site 47	LH-S75-02_2	3-5386	3.5	4	- -	BNA	Normal	1
64	Site 47	LH-S064-01_2	D93-9048-3	4	4.5	05-Aug-93	BNA	Normal	1
64	Site 47	LH-S064-02_3	D93-9048-6	4	4.5	05-Aug-93	BNA	Normal	1
65	Site 47	LH-S065-01_3	D93-9051-12	4	4.5	05-Aug-93	BNA	Normal	1
65	Site 47	LH-S065-02_3	D93-9051-15	4	4.5	05-Aug-93	BNA	Normal	1
50	Site 47	LH-S50-01_3	D93-8628-8	4	4.5	27-Jul-93	BNA	Normal	1
58	Site 47	LH-S58-01_2	3-5271	3	4.5	- -	BNA	Normal	1
59	Site 47	LH-S59-01_2	D93-8379-5	4	4.5	21-Jul-93	BNA	Normal	1
59	Site 47	LH-S59-02_2	D93-8379-9	4	4.5	21-Jul-93	BNA	Normal	1
69	Site 47	LH-S69-01_2	3-5429	4	4.5	- -	BNA	Normal	1
82	Site 47	LH-S82-02_1	D93-8493-12	2.5	4.5	23-Jul-93	BNA	Normal	1
85	Site 47	LH-S85-01_1	3-5436	3.5	4.5	- -	BNA	Normal	1
85	Site 47	LH-S85-02_1	3-5438	3.5	4.5	- -	BNA	Normal	1
44	Site 47	LH-S44-01_2	D93-7880-18	4	4.7	10-Jul-93	BNA	Normal	1
44	Site 47	LH-S44-02_2	D93-7880-22	4	4.7	11-Jul-93	BNA	Normal	1
49	Site 47	LH-S49-01_2	D93-7882-29	4	4.8	09-Jul-93	BNA	Normal	1
47SB01	Site 47	47SB01(3-5)	4784.068	3	5	27-Jul-98	BNA	Normal	3
47SB02	Site 47	47SB02(3-5)	4784.071	3	5	27-Jul-98	BNA	Normal	3
47SB03	Site 47	47SB03(3-5)	4784.075	3	5	27-Jul-98	BNA	Normal	3
67	Site 47	LH-S67-01_2	D93-9105-29	3	5	06-Aug-93	BNA	Normal	1
78	Site 47	LH-S78-01_2	D93-8552-19	3	5	24-Jul-93	BNA	Normal	1
79	Site 47	LH-S79-01_2	D93-8552-22	3	5	24-Jul-93	BNA	Normal	1
84	Site 47	LH-S84-01_2	D93-8379-3	3	5	21-Jul-93	BNA	Normal	1
48	Site 47	LH-S48-01_2	D93-8628-4	5	5.5	27-Jul-93	BNA	Normal	1
55	Site 47	LH-S55-01_2	D93-8006-11	3.5	5.5	12-Jul-93	BNA	Normal	1
56	Site 47	LH-S56-01_2	D93-9106-2	3.5	5.5	09-Aug-93	BNA	Normal	1
60	Site 47	LH-S60-02 QC	D93-8425-8	5	5.5	22-Jul-93	BNA	Duplicate	1
60	Site 47	LH-S60-02_1	D93-8425-5	5	5.5	22-Jul-93	BNA	Normal	1
93	Site 47	LH-S93-01_2	D93-8552-35	4.5	5.5	24-Jul-93	BNA	Normal	1
121	Site 47	LH-S121-01_2	D93-9106-13	5	6	04-Aug-93	BNA	Normal	1
121	Site 47	LH-S121-02_2	D93-9106-15	5	6	04-Aug-93	BNA	Normal	1
54	Site 47	LH-S54-01_2	D93-8006-8	4	6	12-Jul-93	BNA	Normal	1
66	Site 47	LH-S66-01_2	D93-9106-4	4	6	05-Aug-93	BNA	Normal	1
66	Site 47	LH-S66-02_2	D93-9106-7	4	6	05-Aug-93	BNA	Normal	1
69	Site 47	LH-S69-01_3	3-5430	5.5	6	- -	BNA	Normal	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
69	Site 47	LH-S69-02_2	3-5435	4.5	6	- -	BNA	Normal	1
71	Site 47	LH-S71-01_3	D93-8552-14	4.5	6	24-Jul-93	BNA	Normal	1
76	Site 47	LH-S76-02_2	3-5393	5.5	6	- -	BNA	Normal	1
86	Site 47	LH-S86-02_2	D93-8687-3	4	6	27-Jul-93	BNA	Normal	1
88	Site 47	LH-S88-01_2	D93-8425-12	4	6	22-Jul-93	BNA	Normal	1
88	Site 47	LH-S88-02_2	D93-8425-16	4	6	22-Jul-93	BNA	Normal	1
WRS-17	Site 47	LH-WRS17-01_2	D93-8425-19	4	6	22-Jul-93	BNA	Normal	1
72	Site 47	LH-S072-01_3	D93-9046-3	6	6.5	04-Aug-93	BNA	Normal	1
72	Site 47	LH-S072-02_3	D93-9046-6	6	6.5	04-Aug-93	BNA	Normal	1
71	Site 47	LH-S71-02_3	D93-8552-17	5	6.5	24-Jul-93	BNA	Normal	1
91	Site 47	LH-S91-01_2	D93-8493-20	5	6.5	23-Jul-93	BNA	Normal	1
51	Site 47	LH-S51-01_2	D93-7880-34	6	6.7	11-Jul-93	BNA	Normal	1
48	Site 47	LH-S48-01_3	D93-8628-5	6.5	7	27-Jul-93	BNA	Normal	1
59	Site 47	LH-S59-01_3	D93-8379-6	6.5	7	21-Jul-93	BNA	Normal	1
68	Site 47	LH-S68-01_2	D93-9105-31	5	7	06-Aug-93	BNA	Normal	1
76	Site 47	LH-S76-01_3	3-5390	5.5	7	- -	BNA	Normal	1
77	Site 47	LH-S77-01_3	3-5397	5.5	7	- -	BNA	Normal	1
77	Site 47	LH-S77-02_3	3-5403	5.5	7	- -	BNA	Normal	1
81	Site 47	LH-S81-01_2	D93-8493-8	5	7	23-Jul-93	BNA	Normal	1
81	Site 47	LH-S81-02_2	D93-8552-28	5	7	23-Jul-93	BNA	Normal	1
47SB01	Site 47	47SB01(0-0.5)-1	4784.066	0	0.5	27-Jul-98	Explosive	Normal	3
47SB02	Site 47	47SB02(0-0.5)-1	4784.069	0	0.5	27-Jul-98	Explosive	Normal	3
47SB03	Site 47	47SB03(0-0.5)-1	4784.072	0	0.5	27-Jul-98	Explosive	Normal	3
3-01	Site 47	LHS-3-01	9501L609-005	0	0.5	09-Jan-95	Explosive	Normal	2
3-02	Site 47	LHS-3-02	9501L609-006	0	0.5	09-Jan-95	Explosive	Normal	2
3-03	Site 47	LHS-3-03	9501L609-007	0	0.5	09-Jan-95	Explosive	Normal	2
3-04	Site 47	LHS-3-04	9501L609-008	0	0.5	09-Jan-95	Explosive	Normal	2
3-05	Site 47	LHS-3-05	9501L609-009	0	0.5	09-Jan-95	Explosive	Normal	2
3-06	Site 47	LHS-3-06	9501L609-011	0	0.5	09-Jan-95	Explosive	Normal	2
3-07	Site 47	LHS-3-07	9501L609-012	0	0.5	10-Jan-95	Explosive	Normal	2
3-08	Site 47	LHS-3-08	9501L609-013	0	0.5	10-Jan-95	Explosive	Normal	2
3-09	Site 47	LHS-3-09	9501L609-014	0	0.5	10-Jan-95	Explosive	Normal	2
3-09	Site 47	LHS-3-09 QC	9501L609-021	0	0.5	10-Jan-95	Explosive	Duplicate	2
3-10	Site 47	LHS-3-10	9501L609-015	0	0.5	10-Jan-95	Explosive	Normal	2
3-11	Site 47	LHS-3-11	9501L609-016	0	0.5	10-Jan-95	Explosive	Normal	2
3-12	Site 47	LHS-3-12	9501L609-017	0	0.5	10-Jan-95	Explosive	Normal	2
3-13	Site 47	LHS-3-13	9501L609-018	0	0.5	10-Jan-95	Explosive	Normal	2
3-14	Site 47	LHS-3-14	9501L609-019	0	0.5	10-Jan-95	Explosive	Normal	2
3-15	Site 47	LHS-3-15	9501L609-020	0	0.5	10-Jan-95	Explosive	Normal	2
3-16	Site 47	LHS-3-16	9501L609-022	0	0.5	10-Jan-95	Explosive	Normal	2
3-17	Site 47	LHS-3-17	9501L609-023	0	0.5	10-Jan-95	Explosive	Normal	2
3-18	Site 47	LHS-3-18	9501L609-024	0	0.5	10-Jan-95	Explosive	Normal	2
3-19	Site 47	LHS-3-19	9501L624-001	0	0.5	10-Jan-95	Explosive	Normal	2
3-20	Site 47	LHS-3-20	9501L624-002	0	0.5	10-Jan-95	Explosive	Normal	2
3-20	Site 47	LHS-3-20 QC	9501L624-003	0	0.5	10-Jan-95	Explosive	Duplicate	2
3-21	Site 47	LHS-3-21	9501L624-004	0	0.5	10-Jan-95	Explosive	Normal	2
3-22	Site 47	LHS-3-22	9501L624-005	0	0.5	10-Jan-95	Explosive	Normal	2
3-23	Site 47	LHS-3-23	9501L624-006	0	0.5	10-Jan-95	Explosive	Normal	2
3-24	Site 47	LHS-3-24	9501L624-007	0	0.5	10-Jan-95	Explosive	Normal	2
3-25	Site 47	LHS-3-25	9501L624-008	0	0.5	10-Jan-95	Explosive	Normal	2
3-26	Site 47	LHS-3-26	9501L624-009	0	0.5	11-Jan-95	Explosive	Normal	2
3-27	Site 47	LHS-3-27	9501L624-010	0	0.5	11-Jan-95	Explosive	Normal	2
3-28	Site 47	LHS-3-28	9501L624-011	0	0.5	11-Jan-95	Explosive	Normal	2
3-29	Site 47	LHS-3-29	9501L624-012	0	0.5	11-Jan-95	Explosive	Normal	2
LHSMW28	Site 47	LHS-MW28	9410G681-009	0	0.5	03-Oct-94	Explosive	Normal	2

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
LHSMW29	Site 47	LHS-MW29	9410G681-010	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW30	Site 47	LHS-MW30	9410G681-011	0	0.5	03-Oct-94	Explosive	Normal	2
LHSMW30	Site 47	LHS-MW30 QC	9410G681-014	0	0.5	03-Oct-94	Explosive	Duplicate	2
LHSMW31	Site 47	LHS-MW31	9410G715-001	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW32	Site 47	LHS-MW32	9410G715-002	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW33	Site 47	LHS-MW33	9410G715-003	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW34	Site 47	LHS-MW34	9410G715-004	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW35	Site 47	LHS-MW35	9410G715-005	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW36	Site 47	LHS-MW36	9410G715-006	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW37	Site 47	LHS-MW37	9410G715-007	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW38	Site 47	LHS-MW38	9410G715-008	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW39	Site 47	LHS-MW39	9410G715-009	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW40	Site 47	LHS-MW40	9410G715-010	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW40	Site 47	LHS-MW40 QC	9410G715-013	0	0.5	04-Oct-94	Explosive	Duplicate	2
LHSMW41	Site 47	LHS-MW41	9410G715-011	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW42	Site 47	LHS-MW42	9410G715-012	0	0.5	04-Oct-94	Explosive	Normal	2
LHSMW43	Site 47	LHS-MW43	9410G763-001	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW44	Site 47	LHS-MW44	9410G763-002	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW45	Site 47	LHS-MW45	9410G763-003	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW46	Site 47	LHS-MW46	9410G763-004	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW47	Site 47	LHS-MW47	9410G763-005	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW48	Site 47	LHS-MW48	9410G763-006	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW49	Site 47	LHS-MW49	9410G763-007	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW50	Site 47	LHS-MW50	9410G763-008	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW50	Site 47	LHS-MW50 QC	9410G763-019	0	0.5	05-Oct-94	Explosive	Duplicate	2
LHSMW51	Site 47	LHS-MW51	9410G763-009	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW52	Site 47	LHS-MW52	9410G763-010	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW53	Site 47	LHS-MW53	9410G763-011	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW54	Site 47	LHS-MW54	9410G763-012	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW55	Site 47	LHS-MW55	9410G763-013	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW56	Site 47	LHS-MW56	9410G763-014	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW57	Site 47	LHS-MW57	9410G763-015	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW60	Site 47	LHS-MW60	9410G763-018	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW60	Site 47	LHS-MW60 QC	9410G763-020	0	0.5	05-Oct-94	Explosive	Duplicate	2
LHSMW61	Site 47	LHS-MW61	9410G764-001	0	0.5	05-Oct-94	Explosive	Normal	2
64	Site 47	LH-S064-01_3	D93-9051-11	0.5	1	05-Aug-93	Explosive	Normal	1
65	Site 47	LH-S065-01_1	D93-9048-8	0.5	1	05-Aug-93	Explosive	Normal	1
65	Site 47	LH-S065-02_1	D93-9051-13	0.5	1	05-Aug-93	Explosive	Normal	1
62	Site 47	LH-S062-01 QC	D93-9051-4	0.5	1.2	05-Aug-93	Explosive	Duplicate	1
62	Site 47	LH-S062-01_1	D93-9051-1	0.5	1.2	05-Aug-93	Explosive	Normal	1
62	Site 47	LH-S062-02_1	D93-9051-5	0.5	1.2	05-Aug-93	Explosive	Normal	1
63	Site 47	LH-DL063-01	D93-9051-10	1	1.5	05-Aug-93	Explosive	Normal	1
63	Site 47	LH-S063-01_1	D93-9051-7	1	1.5	05-Aug-93	Explosive	Normal	1
64	Site 47	LH-S064-02_1	D93-9048-4	1	1.5	05-Aug-93	Explosive	Normal	1
65	Site 47	LH-DL065-01	D93-9051-16	1.5	2	05-Aug-93	Explosive	Normal	1
65	Site 47	LH-DL065-01 QC	D93-9051-17	1.5	2	05-Aug-93	Explosive	Duplicate	1
64	Site 47	LH-S064-01_1	D93-9048-2	1.5	2	05-Aug-93	Explosive	Normal	1
66	Site 47	LH-S66-01 QC	D93-9106-5	0.5	2	05-Aug-93	Explosive	Duplicate	1
66	Site 47	LH-S66-01_1	D93-9106-3	0.5	2	05-Aug-93	Explosive	Normal	1
66	Site 47	LH-S66-02_1	D93-9106-6	0.5	2	05-Aug-93	Explosive	Normal	1
67	Site 47	LH-S67-01_1	D93-9105-28	0.5	2	06-Aug-93	Explosive	Normal	1
64	Site 47	LH-DL064-01	D93-9048-7	2	2.5	05-Aug-93	Explosive	Normal	1
63	Site 47	LH-S063-01_2	D93-9051-8	2	2.5	05-Aug-93	Explosive	Normal	1
65	Site 47	LH-S065-01_2	D93-9048-9	2	2.5	05-Aug-93	Explosive	Normal	1
47SB01	Site 47	47SB01(1-3)	4784.067	1	3	27-Jul-98	Explosive	Normal	3

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
47SB02	Site 47	47SB02(1-3)	4784.070	1	3	27-Jul-98	Explosive	Normal	3
47SB03	Site 47	47SB03(1-3)	4784.073	1	3	27-Jul-98	Explosive	Normal	3
47SB03	Site 47	47SB03(1-3)QC	4784.074	1	3	27-Jul-98	Explosive	Duplicate	3
62	Site 47	LH-S062-01_2	D93-9051-2	2.5	3	05-Aug-93	Explosive	Normal	1
62	Site 47	LH-S062-02_2	D93-9051-6	2.5	3	05-Aug-93	Explosive	Normal	1
63	Site 47	LH-S063-01_3	D93-9051-9	2.5	3	05-Aug-93	Explosive	Normal	1
64	Site 47	LH-S064-02_2	D93-9048-5	2.5	3	05-Aug-93	Explosive	Normal	1
65	Site 47	LH-S065-02_2	D93-9051-14	3	3.5	05-Aug-93	Explosive	Normal	1
62	Site 47	LH-S062-01_3	D93-9051-3	3.5	4	05-Aug-93	Explosive	Normal	1
64	Site 47	LH-S064-01_2	D93-9048-3	4	4.5	05-Aug-93	Explosive	Normal	1
64	Site 47	LH-S064-02_3	D93-9048-6	4	4.5	05-Aug-93	Explosive	Normal	1
65	Site 47	LH-S065-01_3	D93-9051-12	4	4.5	05-Aug-93	Explosive	Normal	1
65	Site 47	LH-S065-02_3	D93-9051-15	4	4.5	05-Aug-93	Explosive	Normal	1
47SB01	Site 47	47SB01(3-5)	4784.068	3	5	27-Jul-98	Explosive	Normal	3
47SB02	Site 47	47SB02(3-5)	4784.071	3	5	27-Jul-98	Explosive	Normal	3
47SB03	Site 47	47SB03(3-5)	4784.075	3	5	27-Jul-98	Explosive	Normal	3
67	Site 47	LH-S67-01_2	D93-9105-29	3	5	06-Aug-93	Explosive	Normal	1
66	Site 47	LH-S66-01_2	D93-9106-4	4	6	05-Aug-93	Explosive	Normal	1
66	Site 47	LH-S66-02_2	D93-9106-7	4	6	05-Aug-93	Explosive	Normal	1
53	Site 47	LH-DL53-01	3-3942	0	0	13-Jul-93	Metal	Normal	1
82	Site 47	LH-S82-02_3	3-4203	0	0	24-Jul-93	Metal	Normal	1
47SB01	Site 47	47SB01(0-0.5)-1	4784.066	0	0.5	27-Jul-98	Metal	Normal	3
47SB02	Site 47	47SB02(0-0.5)-1	4784.069	0	0.5	27-Jul-98	Metal	Normal	3
47SB03	Site 47	47SB03(0-0.5)-1	4784.072	0	0.5	27-Jul-98	Metal	Normal	3
3-01	Site 47	LHS-3-01	9501G551-005	0	0.5	09-Jan-95	Metal	Normal	2
3-02	Site 47	LHS-3-02	9501G551-006	0	0.5	09-Jan-95	Metal	Normal	2
3-03	Site 47	LHS-3-03	9501G551-007	0	0.5	09-Jan-95	Metal	Normal	2
3-04	Site 47	LHS-3-04	9501G551-008	0	0.5	09-Jan-95	Metal	Normal	2
3-05	Site 47	LHS-3-05	9501G551-009	0	0.5	09-Jan-95	Metal	Normal	2
3-06	Site 47	LHS-3-06	9501G551-011	0	0.5	09-Jan-95	Metal	Normal	2
3-07	Site 47	LHS-3-07	9501G551-012	0	0.5	10-Jan-95	Metal	Normal	2
3-08	Site 47	LHS-3-08	9501G551-013	0	0.5	10-Jan-95	Metal	Normal	2
3-09	Site 47	LHS-3-09	9501G551-014	0	0.5	10-Jan-95	Metal	Normal	2
3-09	Site 47	LHS-3-09 QC	9501G551-015	0	0.5	10-Jan-95	Metal	Duplicate	2
3-10	Site 47	LHS-3-10	9501G551-016	0	0.5	10-Jan-95	Metal	Normal	2
3-11	Site 47	LHS-3-11	9501G551-017	0	0.5	10-Jan-95	Metal	Normal	2
3-12	Site 47	LHS-3-12	9501G551-018	0	0.5	10-Jan-95	Metal	Normal	2
3-13	Site 47	LHS-3-13	9501G551-019	0	0.5	10-Jan-95	Metal	Normal	2
3-14	Site 47	LHS-3-14	9501G551-020	0	0.5	10-Jan-95	Metal	Normal	2
3-15	Site 47	LHS-3-15	9501G551-021	0	0.5	10-Jan-95	Metal	Normal	2
3-16	Site 47	LHS-3-16	9501G551-022	0	0.5	10-Jan-95	Metal	Normal	2
3-17	Site 47	LHS-3-17	9501G551-023	0	0.5	10-Jan-95	Metal	Normal	2
3-18	Site 47	LHS-3-18	9501G551-024	0	0.5	10-Jan-95	Metal	Normal	2
3-19	Site 47	LHS-3-19	9501G639-002	0	0.5	10-Jan-95	Metal	Normal	2
3-20	Site 47	LHS-3-20	9501G639-003	0	0.5	10-Jan-95	Metal	Normal	2
3-20	Site 47	LHS-3-20 QC	9501G639-004	0	0.5	10-Jan-95	Metal	Duplicate	2
3-21	Site 47	LHS-3-21	9501G639-005	0	0.5	10-Jan-95	Metal	Normal	2
3-22	Site 47	LHS-3-22	9501G639-006	0	0.5	10-Jan-95	Metal	Normal	2
3-23	Site 47	LHS-3-23	9501G639-007	0	0.5	10-Jan-95	Metal	Normal	2
3-24	Site 47	LHS-3-24	9501G639-008	0	0.5	10-Jan-95	Metal	Normal	2
3-25	Site 47	LHS-3-25	9501G639-009	0	0.5	10-Jan-95	Metal	Normal	2
3-26	Site 47	LHS-3-26	9501G639-010	0	0.5	11-Jan-95	Metal	Normal	2
3-27	Site 47	LHS-3-27	9501G639-011	0	0.5	11-Jan-95	Metal	Normal	2
3-28	Site 47	LHS-3-28	9501G639-012	0	0.5	11-Jan-95	Metal	Normal	2
3-29	Site 47	LHS-3-29	9501G639-013	0	0.5	11-Jan-95	Metal	Normal	2

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
LHSMW28	Site 47	LHS-MW28	9410G680-009	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW29	Site 47	LHS-MW29	9410G680-010	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW30	Site 47	LHS-MW30	9410G680-011	0	0.5	03-Oct-94	Metal	Normal	2
LHSMW30	Site 47	LHS-MW30 QC	9410G680-015	0	0.5	03-Oct-94	Metal	Duplicate	2
LHSMW31	Site 47	LHS-MW31	9410G714-001	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW32	Site 47	LHS-MW32	9410G714-002	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW33	Site 47	LHS-MW33	9410G714-003	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW34	Site 47	LHS-MW34	9410G714-004	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW35	Site 47	LHS-MW35	9410G714-005	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW36	Site 47	LHS-MW36	9410G714-006	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW37	Site 47	LHS-MW37	9410G714-007	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW38	Site 47	LHS-MW38	9410G714-008	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW39	Site 47	LHS-MW39	9410G714-009	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW40	Site 47	LHS-MW40	9410G714-010	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW40	Site 47	LHS-MW40 QC	9410G714-014	0	0.5	04-Oct-94	Metal	Duplicate	2
LHSMW41	Site 47	LHS-MW41	9410G714-011	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW42	Site 47	LHS-MW42	9410G714-012	0	0.5	04-Oct-94	Metal	Normal	2
LHSMW43	Site 47	LHS-MW43	9410G761-001	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW44	Site 47	LHS-MW44	9410G761-002	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW45	Site 47	LHS-MW45	9410G761-003	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW46	Site 47	LHS-MW46	9410G761-004	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW47	Site 47	LHS-MW47	9410G761-005	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW48	Site 47	LHS-MW48	9410G761-006	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW49	Site 47	LHS-MW49	9410G761-007	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW50	Site 47	LHS-MW50	9410G761-008	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW51	Site 47	LHS-MW51	9410G761-009	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW52	Site 47	LHS-MW52	9410G761-010	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW53	Site 47	LHS-MW53	9410G761-011	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW54	Site 47	LHS-MW54	9410G761-012	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW55	Site 47	LHS-MW55	9410G761-013	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW56	Site 47	LHS-MW56	9410G761-014	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW57	Site 47	LHS-MW57	9410G761-015	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW60	Site 47	LHS-MW60	9410G761-018	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW61	Site 47	LHS-MW61	9410G762-001	0	0.5	05-Oct-94	Metal	Normal	2
SUMP044	Site 47	SUMP044(0-0.5)	4936.062	0	0.5	27-Sep-98	Metal	Normal	3
SUMP045	Site 47	SUMP045(0-0.5)	4790.001	0	0.5	30-Jul-98	Metal	Normal	3
SUMP047	Site 47	SUMP047(0-0.5)	4808.026	0	0.5	09-Aug-98	Metal	Normal	3
SUMP048	Site 47	SUMP048(0-0.5)	4936.065	0	0.5	27-Sep-98	Metal	Normal	3
SUMP049	Site 47	SUMP049(0-0.5)121998	4808.028	0	0.5	01-Dec-98	Metal	Normal	3
SUMP050	Site 47	SUMP050(0-0.5)	4936.067	0	0.5	27-Sep-98	Metal	Normal	3
SUMP051	Site 47	SUMP051(0-0.5)	4936.069	0	0.5	27-Sep-98	Metal	Normal	3
SUMP051	Site 47	SUMP051(0-0.5)QC	4936.070	0	0.5	27-Sep-98	Metal	Duplicate	3
SUMP052	Site 47	SUMP052(0-0.5)	4808.030	0	0.5	09-Aug-98	Metal	Normal	3
SUMP053	Site 47	SUMP053(0-0.5)	4790.003	0	0.5	30-Jul-98	Metal	Normal	3
SUMP054	Site 47	SUMP054(0-0.5)	4936.072	0	0.5	27-Sep-98	Metal	Normal	3
SUMP055	Site 47	SUMP055(0-0.5)	4808.032	0	0.5	09-Aug-98	Metal	Normal	3
SUMP056	Site 47	SUMP056(0-0.5)	4808.034	0	0.5	10-Aug-98	Metal	Normal	3
SUMP057	Site 47	SUMP057(0-0.5)	4788.017	0	0.5	29-Jul-98	Metal	Normal	3
SUMP058	Site 47	SUMP058(0-0.5)	4788.019	0	0.5	29-Jul-98	Metal	Normal	3
SUMP059	Site 47	SUMP059(0-0.5)	4808.036	0	0.5	10-Aug-98	Metal	Normal	3
SUMP059	Site 47	SUMP059(0-0.5)QC	4808.037	0	0.5	10-Aug-98	Metal	Duplicate	3
SUMP060	Site 47	SUMP060(0-0.5)	4936.074	0	0.5	27-Sep-98	Metal	Normal	3
SUMP061	Site 47	SUMP061(0-0.5)	4788.013	0	0.5	29-Jul-98	Metal	Normal	3
SUMP062	Site 47	SUMP062(0-0.5)	4936.076	0	0.5	27-Sep-98	Metal	Normal	3
SUMP063	Site 47	SUMP063(0-0.5)	4936.078	0	0.5	27-Sep-98	Metal	Normal	3

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
SUMP064	Site 47	SUMP064(0-0.5)	4936.080	0	0.5	27-Sep-98	Metal	Normal	3
SUMP065	Site 47	SUMP065(0-0.5)	4808.039	0	0.5	10-Aug-98	Metal	Normal	3
SUMP066	Site 47	SUMP066(0-0.5)	4936.025	0	0.5	27-Sep-98	Metal	Normal	3
SUMP067	Site 47	SUMP067(0-0.5)	4819.014	0	0.5	11-Aug-98	Metal	Normal	3
SUMP068	Site 47	SUMP068(0-0.5)	4788.015	0	0.5	29-Jul-98	Metal	Normal	3
SUMP069	Site 47	SUMP069(0-0.5)	4788.011	0	0.5	29-Jul-98	Metal	Normal	3
SUMP070	Site 47	SUMP070(0-0.5)	4788.009	0	0.5	29-Jul-98	Metal	Normal	3
SUMP070	Site 47	SUMP070(0-0.5)QC	4788.008	0	0.5	29-Jul-98	Metal	Duplicate	3
SUMP071	Site 47	SUMP071(0-0.5)	4790.009	0	0.5	30-Jul-98	Metal	Normal	3
SUMP072	Site 47	SUMP072(0-0.5)	4790.007	0	0.5	30-Jul-98	Metal	Normal	3
SUMP072	Site 47	SUMP072(0-0.5)091998	4936.027	0	0.5	26-Sep-98	Metal	Normal	3
SUMP073	Site 47	SUMP073(0-0.5)	4936.029	0	0.5	26-Sep-98	Metal	Normal	3
SUMP074	Site 47	SUMP074(0-0.5)	4936.031	0	0.5	26-Sep-98	Metal	Normal	3
SUMP074	Site 47	SUMP074(0-0.5)QC	4936.032	0	0.5	26-Sep-98	Metal	Duplicate	3
SUMP075	Site 47	SUMP075(0-0.5)	4819.001	0	0.5	11-Aug-98	Metal	Normal	3
SUMP076	Site 47	SUMP076(0-0.5)	4790.011	0	0.5	30-Jul-98	Metal	Normal	3
SUMP076	Site 47	SUMP076(0-0.5)091998	4936.034	0	0.5	26-Sep-98	Metal	Normal	3
SUMP077	Site 47	SUMP077(0-0.5)	4790.022	0	0.5	30-Jul-98	Metal	Normal	3
SUMP078	Site 47	SUMP078(0-0.5)	4819.003	0	0.5	11-Aug-98	Metal	Normal	3
SUMP079	Site 47	SUMP079(0-0.5)	4936.036	0	0.5	26-Sep-98	Metal	Normal	3
SUMP080	Site 47	SUMP080(0-0.5)	4936.038	0	0.5	26-Sep-98	Metal	Normal	3
SUMP081	Site 47	SUMP081(0-0.5)	4936.083	0	0.5	26-Sep-98	Metal	Normal	3
SUMP082	Site 47	SUMP082(0-0.5)	4803.001	0	0.5	04-Aug-98	Metal	Normal	3
SUMP083	Site 47	SUMP083(0-0.5)	4936.040	0	0.5	26-Sep-98	Metal	Normal	3
SUMP084	Site 47	SUMP084(0-0.5)	4936.086	0	0.5	26-Sep-98	Metal	Normal	3
SUMP085	Site 47	SUMP085(0-0.5)	4936.088	0	0.5	26-Sep-98	Metal	Normal	3
SUMP086	Site 47	SUMP086(0-0.5)	4936.090	0	0.5	26-Sep-98	Metal	Normal	3
SUMP087	Site 47	SUMP087(0-0.5)	4936.092	0	0.5	26-Sep-98	Metal	Normal	3
SUMP088	Site 47	SUMP088(0-0.5)	4803.003	0	0.5	04-Aug-98	Metal	Normal	3
SUMP089	Site 47	SUMP089(0-0.5)	4936.094	0	0.5	26-Sep-98	Metal	Normal	3
SUMP090	Site 47	SUMP090(0-0.5)	4803.005	0	0.5	04-Aug-98	Metal	Normal	3
SUMP091	Site 47	SUMP091(0-0.5)	4936.096	0	0.5	26-Sep-98	Metal	Normal	3
SUMP092	Site 47	SUMP092(0-0.5)	4803.007	0	0.5	04-Aug-98	Metal	Normal	3
SUMP093	Site 47	SUMP093(0-0.5)	4936.098	0	0.5	26-Sep-98	Metal	Normal	3
SUMP121	Site 47	SUMP121(0-0.5)	4936.127	0	0.5	27-Sep-98	Metal	Normal	3
WRSUMP017	Site 47	WRSUMP17(0-0.5)	4803.012	0	0.5	04-Aug-98	Metal	Normal	3
WRSUMP018	Site 47	WRSUMP18(0-0.5)	4936.018	0	0.5	26-Sep-98	Metal	Normal	3
64	Site 47	LH-S064-01_3	3-4723	0.5	1	05-Aug-93	Metal	Normal	1
65	Site 47	LH-S065-01_1	3-4750	0.5	1	05-Aug-93	Metal	Normal	1
65	Site 47	LH-S065-02_1	3-4725	0.5	1	05-Aug-93	Metal	Normal	1
72	Site 47	LH-S072-01_1	3-4666	0.5	1	04-Aug-93	Metal	Normal	1
72	Site 47	LH-S072-02_1	3-4669	0.5	1	04-Aug-93	Metal	Normal	1
48	Site 47	LH-S48-01_1	3-4225	0.5	1	27-Jul-93	Metal	Normal	1
48	Site 47	LH-S48-02	3-4228	0.5	1	27-Jul-93	Metal	Normal	1
52	Site 47	LH-S52-01_1	3-4632	0.5	1	03-Aug-93	Metal	Normal	1
57	Site 47	LH-S57-01_1	3-4106	0.5	1	22-Jul-93	Metal	Normal	1
57	Site 47	LH-S57-02_1	3-4109	0.5	1	22-Jul-93	Metal	Normal	1
59	Site 47	LH-S59-01_1	3-4031	0.5	1	21-Jul-93	Metal	Normal	1
59	Site 47	LH-S59-02_1	3-4035	0.5	1	21-Jul-93	Metal	Normal	1
60	Site 47	LH-S60-01_1	3-4067	0.5	1	22-Jul-93	Metal	Normal	1
60	Site 47	LH-S60-02_2	3-4070	0.5	1	22-Jul-93	Metal	Normal	1
91	Site 47	LH-S91-01_1	3-4125	0.5	1	23-Jul-93	Metal	Normal	1
91	Site 47	LH-S91-02 QC	3-4187	0.5	1	24-Jul-93	Metal	Duplicate	1
91	Site 47	LH-S91-02_1	3-4184	0.5	1	24-Jul-93	Metal	Normal	1
92	Site 47	LH-S92-01 QC	3-4131	0.5	1	23-Jul-93	Metal	Duplicate	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
92	Site 47	LH-S92-01_1	3-4128	0.5	1	23-Jul-93	Metal	Normal	1
92	Site 47	LH-S92-02_1	3-4134	0.5	1	23-Jul-93	Metal	Normal	1
93	Site 47	LH-S93-01_1	3-4189	0.5	1	24-Jul-93	Metal	Normal	1
93	Site 47	LH-S93-02_1	3-4192	0.5	1	24-Jul-93	Metal	Normal	1
62	Site 47	LH-S062-01 QC	3-4715	0.5	1.2	05-Aug-93	Metal	Duplicate	1
62	Site 47	LH-S062-01_1	3-4712	0.5	1.2	05-Aug-93	Metal	Normal	1
62	Site 47	LH-S062-02_1	3-4717	0.5	1.2	05-Aug-93	Metal	Normal	1
63	Site 47	LH-DL063-01	3-4722	1	1.5	05-Aug-93	Metal	Normal	1
47	Site 47	LH-DL47-01	3-3776	0.5	1.5	09-Jul-93	Metal	Normal	1
63	Site 47	LH-S063-01_1	3-4719	1	1.5	05-Aug-93	Metal	Normal	1
64	Site 47	LH-S064-02_1	3-4746	1	1.5	05-Aug-93	Metal	Normal	1
121	Site 47	LH-S121-01_1	3-4767	0.5	1.5	04-Aug-93	Metal	Normal	1
121	Site 47	LH-S121-02_1	3-4769	0.5	1.5	04-Aug-93	Metal	Normal	1
44	Site 47	LH-S44-01_1	3-3799	0.5	1.5	10-Jul-93	Metal	Normal	1
44	Site 47	LH-S44-02_1	3-3803	0.5	1.5	11-Jul-93	Metal	Normal	1
45	Site 47	LH-S45-01_1	3-3806	0.5	1.5	10-Jul-93	Metal	Normal	1
45	Site 47	LH-S45-02 QC	3-3811	0.5	1.5	10-Jul-93	Metal	Duplicate	1
45	Site 47	LH-S45-02_1	3-3809	0.5	1.5	10-Jul-93	Metal	Normal	1
47	Site 47	LH-S47-01_1	3-3771	0.5	1.5	09-Jul-93	Metal	Normal	1
47	Site 47	LH-S47-02_1	3-3774	0.5	1.5	09-Jul-93	Metal	Normal	1
49	Site 47	LH-S49-01 QC	3-3780	0.5	1.5	09-Jul-93	Metal	Duplicate	1
49	Site 47	LH-S49-01_1	3-3778	0.5	1.5	09-Jul-93	Metal	Normal	1
50	Site 47	LH-S50-01_1	3-4232	0.5	1.5	28-Jul-93	Metal	Normal	1
50	Site 47	LH-S50-01_2	3-4229	0.5	1.5	27-Jul-93	Metal	Normal	1
51	Site 47	LH-S51-01 QC	3-3819	0.5	1.5	11-Jul-93	Metal	Duplicate	1
51	Site 47	LH-S51-01_1	3-3816	0.5	1.5	11-Jul-93	Metal	Normal	1
53	Site 47	LH-S53-01_1	3-3938	0.5	1.5	13-Jul-93	Metal	Normal	1
53	Site 47	LH-S53-02_1	3-3940	0.5	1.5	13-Jul-93	Metal	Normal	1
58	Site 47	LH-S58-01_1	3-5270	0.5	1.5	- -	Metal	Normal	1
68	Site 47	LH-S68-02	3-4806	0.5	1.5	06-Aug-93	Metal	Normal	1
68	Site 47	LH-S68-02 QC	3-4807	0.5	1.5	06-Aug-93	Metal	Duplicate	1
69	Site 47	LH-S69-01 QC	3-5431	0.5	1.5	- -	Metal	Duplicate	1
69	Site 47	LH-S69-01_1	3-5428	0.5	1.5	- -	Metal	Normal	1
69	Site 47	LH-S69-02_1	3-5434	0.5	1.5	- -	Metal	Normal	1
71	Site 47	LH-S71-01_1	3-4165	1	1.5	24-Jul-93	Metal	Normal	1
71	Site 47	LH-S71-02_1	3-4168	1	1.5	24-Jul-93	Metal	Normal	1
73	Site 47	LH-S73-01_1	3-5381	0.5	1.5	- -	Metal	Normal	1
75	Site 47	LH-S75-01_1	3-5383	0.5	1.5	- -	Metal	Normal	1
75	Site 47	LH-S75-02_1	3-5385	0.5	1.5	- -	Metal	Normal	1
76	Site 47	LH-S76-01_1	3-5388	5	1.5	- -	Metal	Normal	1
76	Site 47	LH-S76-02_1	3-5392	0.5	1.5	- -	Metal	Normal	1
77	Site 47	LH-S77-01 QC	3-5398	0.5	1.5	- -	Metal	Duplicate	1
77	Site 47	LH-S77-01_1	3-5395	0.5	1.5	- -	Metal	Normal	1
77	Site 47	LH-S77-02_1	3-5401	0.5	1.5	- -	Metal	Normal	1
84	Site 47	LH-S84-01 QC	3-4028	0.5	1.5	21-Jul-93	Metal	Duplicate	1
84	Site 47	LH-S84-01_1	3-4029	0.5	1.5	21-Jul-93	Metal	Normal	1
90	Site 47	LH-S90-01_1	3-4047	0.5	1.5	21-Jul-93	Metal	Normal	1
WRS-18	Site 47	LH-WRS18-01_1	3-5404	0.5	1.5	- -	Metal	Normal	1
52	Site 47	LH-DL52-01	3-4634	1.3	1.7	03-Aug-93	Metal	Normal	1
65	Site 47	LH-DL065-01	3-4728	1.5	2	05-Aug-93	Metal	Normal	1
65	Site 47	LH-DL065-01 QC	3-4729	1.5	2	05-Aug-93	Metal	Duplicate	1
64	Site 47	LH-S064-01_1	3-4744	1.5	2	05-Aug-93	Metal	Normal	1
52	Site 47	LH-S52-01_2	3-4633	1.5	2	03-Aug-93	Metal	Normal	1
54	Site 47	LH-S54-01_1	3-3904	0	2	12-Jul-93	Metal	Normal	1
55	Site 47	LH-S55-01 QC	3-3909	0	2	12-Jul-93	Metal	Duplicate	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
55	Site 47	LH-S55-01_1	3-3907	0	2	12-Jul-93	Metal	Normal	1
56	Site 47	LH-S56-01_1	3-4755	0.5	2	05-Aug-93	Metal	Normal	1
66	Site 47	LH-S66-01 QC	3-4759	0.5	2	05-Aug-93	Metal	Duplicate	1
66	Site 47	LH-S66-01_1	3-4757	0.5	2	05-Aug-93	Metal	Normal	1
66	Site 47	LH-S66-02_1	3-4761	0.5	2	05-Aug-93	Metal	Normal	1
67	Site 47	LH-S67-01_1	3-4800	0.5	2	06-Aug-93	Metal	Normal	1
68	Site 47	LH-S68-01 QC	3-4804	0.5	2	06-Aug-93	Metal	Duplicate	1
68	Site 47	LH-S68-01_1	3-4802	0.5	2	06-Aug-93	Metal	Normal	1
70	Site 47	LH-S70-01_1	3-4161	0.5	2	24-Jul-93	Metal	Normal	1
70	Site 47	LH-S70-02_1	3-4163	0.5	2	24-Jul-93	Metal	Normal	1
78	Site 47	LH-S78-01_1	3-4171	0.5	2	24-Jul-93	Metal	Normal	1
79	Site 47	LH-S79-01_1	3-4174	0.5	2	24-Jul-93	Metal	Normal	1
80	Site 47	LH-S80-01 QC	3-4178	0.5	2	24-Jul-93	Metal	Duplicate	1
80	Site 47	LH-S80-01_1	3-4176	0.5	2	24-Jul-93	Metal	Normal	1
81	Site 47	LH-S81-01_1	3-4112	0.5	2	23-Jul-93	Metal	Normal	1
81	Site 47	LH-S81-02_1	3-4181	0.5	2	23-Jul-93	Metal	Normal	1
82	Site 47	LH-S82-01_1	3-4114	0.5	2	23-Jul-93	Metal	Normal	1
83	Site 47	LH-S83-01_1	3-4119	0.5	2	23-Jul-93	Metal	Normal	1
83	Site 47	LH-S83-02 QC	3-4123	0.5	2	23-Jul-93	Metal	Duplicate	1
83	Site 47	LH-S83-02_1	3-4121	0.5	2	23-Jul-93	Metal	Normal	1
86	Site 47	LH-S86-01 QC	3-4250	0.5	2	27-Jul-93	Metal	Duplicate	1
86	Site 47	LH-S86-01_1	3-4248	0.5	2	27-Jul-93	Metal	Normal	1
86	Site 47	LH-S86-02_1	3-4245	0.5	2	27-Jul-93	Metal	Normal	1
87	Site 47	LH-S87-01_1	3-4073	0.5	2	22-Jul-93	Metal	Normal	1
88	Site 47	LH-S88-01 QC	3-4078	0.5	2	22-Jul-93	Metal	Duplicate	1
88	Site 47	LH-S88-01_1	3-4075	0.5	2	22-Jul-93	Metal	Normal	1
88	Site 47	LH-S88-02_1	3-4080	0.5	2	22-Jul-93	Metal	Normal	1
89	Site 47	LH-S89-01_1	3-4043	0.5	2	21-Jul-93	Metal	Normal	1
89	Site 47	LH-S89-02_1	3-4045	0.5	2	21-Jul-93	Metal	Normal	1
90	Site 47	LH-S90-02_1	3-4049	0.5	2	21-Jul-93	Metal	Normal	1
WRS-17	Site 47	LH-WRS17-01_1	3-4083	0.5	2	22-Jul-93	Metal	Normal	1
47SB01	Site 47	47SB01(0-0.5)-1	4784.066	0	0.5	27-Jul-98	PCB	Normal	3
47SB02	Site 47	47SB02(0-0.5)-1	4784.069	0	0.5	27-Jul-98	PCB	Normal	3
47SB03	Site 47	47SB03(0-0.5)-1	4784.072	0	0.5	27-Jul-98	PCB	Normal	3
SUMP045	Site 47	SUMP045(0-0.5)	4790.001	0	0.5	30-Jul-98	PCB	Normal	3
SUMP047	Site 47	SUMP047(0-0.5)	4808.026	0	0.5	09-Aug-98	PCB	Normal	3
SUMP049	Site 47	SUMP049(0-0.5)121998	4808.028	0	0.5	01-Dec-98	PCB	Normal	3
SUMP052	Site 47	SUMP052(0-0.5)	4808.030	0	0.5	09-Aug-98	PCB	Normal	3
SUMP053	Site 47	SUMP053(0-0.5)	4790.003	0	0.5	30-Jul-98	PCB	Normal	3
SUMP055	Site 47	SUMP055(0-0.5)	4808.032	0	0.5	09-Aug-98	PCB	Normal	3
SUMP056	Site 47	SUMP056(0-0.5)	4808.034	0	0.5	10-Aug-98	PCB	Normal	3
SUMP057	Site 47	SUMP057(0-0.5)	4788.017	0	0.5	29-Jul-98	PCB	Normal	3
SUMP058	Site 47	SUMP058(0-0.5)	4788.019	0	0.5	29-Jul-98	PCB	Normal	3
SUMP059	Site 47	SUMP059(0-0.5)	4808.036	0	0.5	10-Aug-98	PCB	Normal	3
SUMP059	Site 47	SUMP059(0-0.5)QC	4808.037	0	0.5	10-Aug-98	PCB	Duplicate	3
SUMP061	Site 47	SUMP061(0-0.5)	4788.013	0	0.5	29-Jul-98	PCB	Normal	3
SUMP065	Site 47	SUMP065(0-0.5)	4808.039	0	0.5	10-Aug-98	PCB	Normal	3
SUMP067	Site 47	SUMP067(0-0.5)	4819.014	0	0.5	11-Aug-98	PCB	Normal	3
SUMP068	Site 47	SUMP068(0-0.5)	4788.015	0	0.5	29-Jul-98	PCB	Normal	3
SUMP069	Site 47	SUMP069(0-0.5)	4788.011	0	0.5	29-Jul-98	PCB	Normal	3
SUMP070	Site 47	SUMP070(0-0.5)	4788.009	0	0.5	29-Jul-98	PCB	Normal	3
SUMP070	Site 47	SUMP070(0-0.5)QC	4788.008	0	0.5	29-Jul-98	PCB	Duplicate	3
SUMP071	Site 47	SUMP071(0-0.5)	4790.009	0	0.5	30-Jul-98	PCB	Normal	3
SUMP072	Site 47	SUMP072(0-0.5)	4790.007	0	0.5	30-Jul-98	PCB	Normal	3
SUMP075	Site 47	SUMP075(0-0.5)	4819.001	0	0.5	11-Aug-98	PCB	Normal	3

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
SUMP076	Site 47	SUMP076(0-0.5)	4790.011	0	0.5	30-Jul-98	PCB	Normal	3
SUMP077	Site 47	SUMP077(0-0.5)	4790.022	0	0.5	30-Jul-98	PCB	Normal	3
SUMP078	Site 47	SUMP078(0-0.5)	4819.003	0	0.5	11-Aug-98	PCB	Normal	3
SUMP082	Site 47	SUMP082(0-0.5)	4803.001	0	0.5	04-Aug-98	PCB	Normal	3
SUMP088	Site 47	SUMP088(0-0.5)	4803.003	0	0.5	04-Aug-98	PCB	Normal	3
SUMP090	Site 47	SUMP090(0-0.5)	4803.005	0	0.5	04-Aug-98	PCB	Normal	3
SUMP092	Site 47	SUMP092(0-0.5)	4803.007	0	0.5	04-Aug-98	PCB	Normal	3
WRSUMP017	Site 47	WRSUMP17(0-0.5)	4803.012	0	0.5	04-Aug-98	PCB	Normal	3
47SB01	Site 47	47SB01(0-0.5)-2	36652.12	0	0.5	01-Dec-98	PCDD/PCDF	Normal	3
47SB02	Site 47	47SB02(0-0.5)-2	36652.13	0	0.5	01-Dec-98	PCDD/PCDF	Normal	3
47SB03	Site 47	47SB03(0-0.5)-2	36652.11	0	0.5	01-Dec-98	PCDD/PCDF	Normal	3
SUMP045	Site 47	SUMP045(0-0.5)	35057.08	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP047	Site 47	SUMP047(0-0.5)	35190.04	0	0.5	09-Aug-98	PCDD/PCDF	Normal	3
SUMP049	Site 47	SUMP049(0-0.5)	36652.10	0	0.5	09-Aug-98	PCDD/PCDF	Normal	3
SUMP052	Site 47	SUMP052(0-0.5)	35190.08	0	0.5	09-Aug-98	PCDD/PCDF	Normal	3
SUMP053	Site 47	SUMP053(0-0.5)	35057.12	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP055	Site 47	SUMP055(0-0.5)	35190.10	0	0.5	09-Aug-98	PCDD/PCDF	Normal	3
SUMP056	Site 47	SUMP056(0-0.5)	35190.14	0	0.5	10-Aug-98	PCDD/PCDF	Normal	3
SUMP057	Site 47	SUMP057(0-0.5)	35037.19	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP058	Site 47	SUMP058(0-0.5)	35037.21	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP059	Site 47	SUMP059(0-0.5)	35190.16	0	0.5	10-Aug-98	PCDD/PCDF	Normal	3
SUMP059	Site 47	SUMP059(0-0.5)QC	35190.17	0	0.5	10-Aug-98	PCDD/PCDF	Duplicate	3
SUMP061	Site 47	SUMP061(0-0.5)	35037.23	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP065	Site 47	SUMP065(0-0.5)	35190.19	0	0.5	10-Aug-98	PCDD/PCDF	Normal	3
SUMP067	Site 47	SUMP067(0-0.5)	35264.06	0	0.5	11-Aug-98	PCDD/PCDF	Normal	3
SUMP068	Site 47	SUMP068(0-0.5)	35037.25	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP069	Site 47	SUMP069(0-0.5)	35037.27	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP070	Site 47	SUMP070(0-0.5)	35037.29	0	0.5	29-Jul-98	PCDD/PCDF	Normal	3
SUMP070	Site 47	SUMP070(0-0.5)QC	35037.30	0	0.5	29-Jul-98	PCDD/PCDF	Duplicate	3
SUMP071	Site 47	SUMP071(0-0.5)	35057.14	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP072	Site 47	SUMP072(0-0.5)	35057.16	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP075	Site 47	SUMP075(0-0.5)	35264.08	0	0.5	11-Aug-98	PCDD/PCDF	Normal	3
SUMP076	Site 47	SUMP076(0-0.5)	35057.18	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP077	Site 47	SUMP077(0-0.5)	35057.20	0	0.5	30-Jul-98	PCDD/PCDF	Normal	3
SUMP078	Site 47	SUMP078(0-0.5)	35264.10	0	0.5	11-Aug-98	PCDD/PCDF	Normal	3
SUMP082	Site 47	SUMP082(0-0.5)	35134.06	0	0.5	04-Aug-98	PCDD/PCDF	Normal	3
SUMP088	Site 47	SUMP088(0-0.5)	35134.08	0	0.5	04-Aug-98	PCDD/PCDF	Normal	3
SUMP090	Site 47	SUMP090(0-0.5)	35134.10	0	0.5	04-Aug-98	PCDD/PCDF	Normal	3
SUMP092	Site 47	SUMP092(0-0.5)	35134.12	0	0.5	04-Aug-98	PCDD/PCDF	Normal	3
WRSUMP017	Site 47	WRSUMP017(0-0.5)	35134.32	0	0.5	04-Aug-98	PCDD/PCDF	Normal	3
47SB01	Site 47	47SB01(0-0.5)-1	4784.066	0	0.5	27-Jul-98	Pesticide	Normal	3
47SB02	Site 47	47SB02(0-0.5)-1	4784.069	0	0.5	27-Jul-98	Pesticide	Normal	3
47SB03	Site 47	47SB03(0-0.5)-1	4784.072	0	0.5	27-Jul-98	Pesticide	Normal	3
SUMP045	Site 47	SUMP045(0-0.5)	4790.001	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP047	Site 47	SUMP047(0-0.5)	4808.026	0	0.5	09-Aug-98	Pesticide	Normal	3
SUMP049	Site 47	SUMP049(0-0.5)121998	4808.028	0	0.5	01-Dec-98	Pesticide	Normal	3
SUMP052	Site 47	SUMP052(0-0.5)	4808.030	0	0.5	09-Aug-98	Pesticide	Normal	3
SUMP053	Site 47	SUMP053(0-0.5)	4790.003	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP055	Site 47	SUMP055(0-0.5)	4808.032	0	0.5	09-Aug-98	Pesticide	Normal	3
SUMP056	Site 47	SUMP056(0-0.5)	4808.034	0	0.5	10-Aug-98	Pesticide	Normal	3
SUMP057	Site 47	SUMP057(0-0.5)	4788.017	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP058	Site 47	SUMP058(0-0.5)	4788.019	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP059	Site 47	SUMP059(0-0.5)	4808.036	0	0.5	10-Aug-98	Pesticide	Normal	3
SUMP059	Site 47	SUMP059(0-0.5)QC	4808.037	0	0.5	10-Aug-98	Pesticide	Duplicate	3
SUMP061	Site 47	SUMP061(0-0.5)	4788.013	0	0.5	29-Jul-98	Pesticide	Normal	3

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
SUMP065	Site 47	SUMP065(0-0.5)	4808.039	0	0.5	10-Aug-98	Pesticide	Normal	3
SUMP067	Site 47	SUMP067(0-0.5)	4819.014	0	0.5	11-Aug-98	Pesticide	Normal	3
SUMP068	Site 47	SUMP068(0-0.5)	4788.015	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP069	Site 47	SUMP069(0-0.5)	4788.011	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP070	Site 47	SUMP070(0-0.5)	4788.009	0	0.5	29-Jul-98	Pesticide	Normal	3
SUMP070	Site 47	SUMP070(0-0.5)QC	4788.008	0	0.5	29-Jul-98	Pesticide	Duplicate	3
SUMP071	Site 47	SUMP071(0-0.5)	4790.009	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP072	Site 47	SUMP072(0-0.5)	4790.007	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP075	Site 47	SUMP075(0-0.5)	4819.001	0	0.5	11-Aug-98	Pesticide	Normal	3
SUMP076	Site 47	SUMP076(0-0.5)	4790.011	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP077	Site 47	SUMP077(0-0.5)	4790.022	0	0.5	30-Jul-98	Pesticide	Normal	3
SUMP078	Site 47	SUMP078(0-0.5)	4819.003	0	0.5	11-Aug-98	Pesticide	Normal	3
SUMP082	Site 47	SUMP082(0-0.5)	4803.001	0	0.5	04-Aug-98	Pesticide	Normal	3
SUMP088	Site 47	SUMP088(0-0.5)	4803.003	0	0.5	04-Aug-98	Pesticide	Normal	3
SUMP090	Site 47	SUMP090(0-0.5)	4803.005	0	0.5	04-Aug-98	Pesticide	Normal	3
SUMP092	Site 47	SUMP092(0-0.5)	4803.007	0	0.5	04-Aug-98	Pesticide	Normal	3
WRSUMP017	Site 47	WRSUMP17(0-0.5)	4803.012	0	0.5	04-Aug-98	Pesticide	Normal	3
53	Site 47	LH-DL53-01	D93-8057-11	0	0	13-Jul-93	Volatile	Normal	1
82	Site 47	LH-S82-02_3	D93-8552-48	0	0	24-Jul-93	Volatile	Normal	1
47SB01	Site 47	47SB01(0-0.5)-1	4784.066	0	0.5	27-Jul-98	Volatile	Normal	3
47SB02	Site 47	47SB02(0-0.5)-1	4784.069	0	0.5	27-Jul-98	Volatile	Normal	3
47SB03	Site 47	47SB03(0-0.5)-1	4784.072	0	0.5	27-Jul-98	Volatile	Normal	3
3-01	Site 47	LHS-3-01	9501G551-005	0	0.5	09-Jan-95	Volatile	Normal	2
3-02	Site 47	LHS-3-02	9501G551-006	0	0.5	09-Jan-95	Volatile	Normal	2
3-03	Site 47	LHS-3-03	9501G551-007	0	0.5	09-Jan-95	Volatile	Normal	2
3-04	Site 47	LHS-3-04	9501G551-008	0	0.5	09-Jan-95	Volatile	Normal	2
3-05	Site 47	LHS-3-05	9501G551-009	0	0.5	09-Jan-95	Volatile	Normal	2
3-06	Site 47	LHS-3-06	9501G551-011	0	0.5	09-Jan-95	Volatile	Normal	2
3-07	Site 47	LHS-3-07	9501G551-012	0	0.5	10-Jan-95	Volatile	Normal	2
3-08	Site 47	LHS-3-08	9501G551-013	0	0.5	10-Jan-95	Volatile	Normal	2
3-09	Site 47	LHS-3-09	9501G551-014	0	0.5	10-Jan-95	Volatile	Normal	2
3-09	Site 47	LHS-3-09 QC	9501G551-015	0	0.5	10-Jan-95	Volatile	Duplicate	2
3-10	Site 47	LHS-3-10	9501G551-016	0	0.5	10-Jan-95	Volatile	Normal	2
3-11	Site 47	LHS-3-11	9501G551-017	0	0.5	10-Jan-95	Volatile	Normal	2
3-12	Site 47	LHS-3-12	9501G551-018	0	0.5	10-Jan-95	Volatile	Normal	2
3-13	Site 47	LHS-3-13	9501G551-019	0	0.5	10-Jan-95	Volatile	Normal	2
3-14	Site 47	LHS-3-14	9501G551-020	0	0.5	10-Jan-95	Volatile	Normal	2
3-15	Site 47	LHS-3-15	9501G551-021	0	0.5	10-Jan-95	Volatile	Normal	2
3-16	Site 47	LHS-3-16	9501G551-022	0	0.5	10-Jan-95	Volatile	Normal	2
3-17	Site 47	LHS-3-17	9501G551-023	0	0.5	10-Jan-95	Volatile	Normal	2
3-18	Site 47	LHS-3-18	9501G551-024	0	0.5	10-Jan-95	Volatile	Normal	2
3-19	Site 47	LHS-3-19	9501G639-002	0	0.5	10-Jan-95	Volatile	Normal	2
3-20	Site 47	LHS-3-20	9501G639-003	0	0.5	10-Jan-95	Volatile	Normal	2
3-20	Site 47	LHS-3-20 QC	9501G639-004	0	0.5	10-Jan-95	Volatile	Duplicate	2
3-21	Site 47	LHS-3-21	9501G639-005	0	0.5	10-Jan-95	Volatile	Normal	2
3-22	Site 47	LHS-3-22	9501G639-006	0	0.5	10-Jan-95	Volatile	Normal	2
3-23	Site 47	LHS-3-23	9501G639-007	0	0.5	10-Jan-95	Volatile	Normal	2
3-24	Site 47	LHS-3-24	9501G639-008	0	0.5	10-Jan-95	Volatile	Normal	2
3-25	Site 47	LHS-3-25	9501G639-009	0	0.5	10-Jan-95	Volatile	Normal	2
3-26	Site 47	LHS-3-26	9501G639-010	0	0.5	11-Jan-95	Volatile	Normal	2
3-27	Site 47	LHS-3-27	9501G639-011	0	0.5	11-Jan-95	Volatile	Normal	2
3-28	Site 47	LHS-3-28	9501G639-012	0	0.5	11-Jan-95	Volatile	Normal	2
3-29	Site 47	LHS-3-29	9501G639-013	0	0.5	11-Jan-95	Volatile	Normal	2
LHSMW28	Site 47	LHS-MW28	9410G680-009	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW29	Site 47	LHS-MW29	9410G680-010	0	0.5	03-Oct-94	Volatile	Normal	2

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
LHSMW30	Site 47	LHS-MW30	9410G680-011	0	0.5	03-Oct-94	Volatile	Normal	2
LHSMW30	Site 47	LHS-MW30 QC	9410G680-015	0	0.5	03-Oct-94	Volatile	Duplicate	2
LHSMW31	Site 47	LHS-MW31	9410G714-001	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW32	Site 47	LHS-MW32	9410G714-002	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW33	Site 47	LHS-MW33	9410G714-003	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW34	Site 47	LHS-MW34	9410G714-004	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW35	Site 47	LHS-MW35	9410G714-005	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW36	Site 47	LHS-MW36	9410G714-006	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW37	Site 47	LHS-MW37	9410G714-007	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW38	Site 47	LHS-MW38	9410G714-008	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW39	Site 47	LHS-MW39	9410G714-009	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW40	Site 47	LHS-MW40	9410G714-010	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW40	Site 47	LHS-MW40 QC	9410G714-014	0	0.5	04-Oct-94	Volatile	Duplicate	2
LHSMW41	Site 47	LHS-MW41	9410G714-011	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW42	Site 47	LHS-MW42	9410G714-012	0	0.5	04-Oct-94	Volatile	Normal	2
LHSMW43	Site 47	LHS-MW43	9410G761-001	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW44	Site 47	LHS-MW44	9410G761-002	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW45	Site 47	LHS-MW45	9410G761-003	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW46	Site 47	LHS-MW46	9410G761-004	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW47	Site 47	LHS-MW47	9410G761-005	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW48	Site 47	LHS-MW48	9410G761-006	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW49	Site 47	LHS-MW49	9410G761-007	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW50	Site 47	LHS-MW50	9410G761-008	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW50	Site 47	LHS-MW50 QC	9410G761-019	0	0.5	05-Oct-94	Volatile	Duplicate	2
LHSMW51	Site 47	LHS-MW51	9410G761-009	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW52	Site 47	LHS-MW52	9410G761-010	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW53	Site 47	LHS-MW53	9410G761-011	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW54	Site 47	LHS-MW54	9410G761-012	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW55	Site 47	LHS-MW55	9410G761-013	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW56	Site 47	LHS-MW56	9410G761-014	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW57	Site 47	LHS-MW57	9410G761-015	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW60	Site 47	LHS-MW60	9410G761-018	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW60	Site 47	LHS-MW60 QC	9410G761-020	0	0.5	05-Oct-94	Volatile	Duplicate	2
LHSMW61	Site 47	LHS-MW61	9410G762-001	0	0.5	05-Oct-94	Volatile	Normal	2
64	Site 47	LH-S064-01_3	D93-9051-11	0.5	1	05-Aug-93	Volatile	Normal	1
65	Site 47	LH-S065-01_1	D93-9048-8	0.5	1	05-Aug-93	Volatile	Normal	1
65	Site 47	LH-S065-02_1	D93-9051-13	0.5	1	05-Aug-93	Volatile	Normal	1
72	Site 47	LH-S072-01_1	D93-9046-1	0.5	1	04-Aug-93	Volatile	Normal	1
72	Site 47	LH-S072-02_1	D93-9046-4	0.5	1	04-Aug-93	Volatile	Normal	1
48	Site 47	LH-S48-01_1	D93-8628-3	0.5	1	27-Jul-93	Volatile	Normal	1
48	Site 47	LH-S48-02	D93-8628-6	0.5	1	27-Jul-93	Volatile	Normal	1
52	Site 47	LH-S52-01_1	D93-8981-3	0.5	1	03-Aug-93	Volatile	Normal	1
57	Site 47	LH-S57-01_1	D93-8493-1	0.5	1	22-Jul-93	Volatile	Normal	1
57	Site 47	LH-S57-02_1	D93-8493-4	0.5	1	22-Jul-93	Volatile	Normal	1
59	Site 47	LH-S59-01_1	D93-8379-4	0.5	1	21-Jul-93	Volatile	Normal	1
59	Site 47	LH-S59-02_1	D93-8379-8	0.5	1	21-Jul-93	Volatile	Normal	1
60	Site 47	LH-S60-01_1	D93-8425-3	0.5	1	22-Jul-93	Volatile	Normal	1
60	Site 47	LH-S60-02_2	D93-8425-6	0.5	1	22-Jul-93	Volatile	Normal	1
91	Site 47	LH-S91-01_1	D93-8493-19	0.5	1	23-Jul-93	Volatile	Normal	1
91	Site 47	LH-S91-02 QC	D93-8552-33	0.5	1	24-Jul-93	Volatile	Duplicate	1
91	Site 47	LH-S91-02_1	D93-8552-30	0.5	1	24-Jul-93	Volatile	Normal	1
92	Site 47	LH-S92-01 QC	D93-8493-25	0.5	1	23-Jul-93	Volatile	Duplicate	1
92	Site 47	LH-S92-01_1	D93-8493-22	0.5	1	23-Jul-93	Volatile	Normal	1
92	Site 47	LH-S92-02_1	D93-8493-27	0.5	1	23-Jul-93	Volatile	Normal	1
93	Site 47	LH-S93-01_1	D93-8552-34	0.5	1	24-Jul-93	Volatile	Normal	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
93	Site 47	LH-S93-02_1	D93-8552-37	0.5	1	24-Jul-93	Volatile	Normal	1
62	Site 47	LH-S062-01 QC	D93-9051-4	0.5	1.2	05-Aug-93	Volatile	Duplicate	1
62	Site 47	LH-S062-01_1	D93-9051-1	0.5	1.2	05-Aug-93	Volatile	Normal	1
62	Site 47	LH-S062-02_1	D93-9051-5	0.5	1.2	05-Aug-93	Volatile	Normal	1
63	Site 47	LH-DL063-01	D93-9051-10	1	1.5	05-Aug-93	Volatile	Normal	1
47	Site 47	LH-DL47-01	D93-7882-26	0.5	1.5	09-Jul-93	Volatile	Normal	1
63	Site 47	LH-S063-01_1	D93-9051-7	1	1.5	05-Aug-93	Volatile	Normal	1
64	Site 47	LH-S064-02_1	D93-9048-4	1	1.5	05-Aug-93	Volatile	Normal	1
121	Site 47	LH-S121-01_1	D93-9106-12	0.5	1.5	04-Aug-93	Volatile	Normal	1
121	Site 47	LH-S121-02_1	D93-9106-14	0.5	1.5	04-Aug-93	Volatile	Normal	1
44	Site 47	LH-S44-01_1	D93-7880-17	0.5	1.5	10-Jul-93	Volatile	Normal	1
44	Site 47	LH-S44-02_1	D93-7880-21	0.5	1.5	11-Jul-93	Volatile	Normal	1
45	Site 47	LH-S45-01_1	D93-7880-24	0.5	1.5	10-Jul-93	Volatile	Normal	1
45	Site 47	LH-S45-02 QC	D93-7880-29	0.5	1.5	10-Jul-93	Volatile	Duplicate	1
45	Site 47	LH-S45-02_1	D93-7880-27	0.5	1.5	10-Jul-93	Volatile	Normal	1
47	Site 47	LH-S47-01_1	D93-7882-21	0.5	1.5	09-Jul-93	Volatile	Normal	1
47	Site 47	LH-S47-02_1	D93-7882-24	0.5	1.5	09-Jul-93	Volatile	Normal	1
49	Site 47	LH-S49-01 QC	D93-7882-30	0.5	1.5	09-Jul-93	Volatile	Duplicate	1
49	Site 47	LH-S49-01_1	D93-7882-28	0.5	1.5	09-Jul-93	Volatile	Normal	1
50	Site 47	LH-S50-01_1	D93-8628-10	0.5	1.5	28-Jul-93	Volatile	Normal	1
50	Site 47	LH-S50-01_2	D93-8628-7	0.5	1.5	27-Jul-93	Volatile	Normal	1
51	Site 47	LH-S51-01 QC	D93-7880-36	0.5	1.5	11-Jul-93	Volatile	Duplicate	1
51	Site 47	LH-S51-01_1	D93-7880-33	0.5	1.5	11-Jul-93	Volatile	Normal	1
53	Site 47	LH-S53-01_1	D93-8057-7	0.5	1.5	13-Jul-93	Volatile	Normal	1
53	Site 47	LH-S53-02_1	D93-8057-9	0.5	1.5	13-Jul-93	Volatile	Normal	1
58	Site 47	LH-S58-01_1	3-5270	0.5	1.5	- -	Volatile	Normal	1
68	Site 47	LH-S68-02	D93-9105-33	0.5	1.5	06-Aug-93	Volatile	Normal	1
68	Site 47	LH-S68-02 QC	D93-9105-34	0.5	1.5	06-Aug-93	Volatile	Duplicate	1
69	Site 47	LH-S69-01 QC	3-5431	0.5	1.5	- -	Volatile	Duplicate	1
69	Site 47	LH-S69-01_1	3-5428	0.5	1.5	- -	Volatile	Normal	1
69	Site 47	LH-S69-02_1	3-5434	0.5	1.5	- -	Volatile	Normal	1
71	Site 47	LH-S71-01_1	D93-8552-12	1	1.5	24-Jul-93	Volatile	Normal	1
71	Site 47	LH-S71-02_1	D93-8552-15	1	1.5	24-Jul-93	Volatile	Normal	1
73	Site 47	LH-S73-01_1	3-5381	0.5	1.5	- -	Volatile	Normal	1
75	Site 47	LH-S75-01_1	3-5383	0.5	1.5	- -	Volatile	Normal	1
75	Site 47	LH-S75-02_1	3-5385	0.5	1.5	- -	Volatile	Normal	1
76	Site 47	LH-S76-02_1	3-5392	0.5	1.5	- -	Volatile	Normal	1
77	Site 47	LH-S77-01 QC	3-5398	0.5	1.5	- -	Volatile	Duplicate	1
77	Site 47	LH-S77-01_1	3-5395	0.5	1.5	- -	Volatile	Normal	1
77	Site 47	LH-S77-02_1	3-5401	0.5	1.5	- -	Volatile	Normal	1
84	Site 47	LH-S84-01 QC	D93-8379-1	0.5	1.5	21-Jul-93	Volatile	Duplicate	1
84	Site 47	LH-S84-01_1	D93-8379-2	0.5	1.5	21-Jul-93	Volatile	Normal	1
90	Site 47	LH-S90-01_1	D93-8379-20	0.5	1.5	21-Jul-93	Volatile	Normal	1
WRS-18	Site 47	LH-WRS18-01_1	3-5404	0.5	1.5	- -	Volatile	Normal	1
52	Site 47	LH-DL52-01	D93-8981-5	1.3	1.7	03-Aug-93	Volatile	Normal	1
65	Site 47	LH-DL065-01	D93-9051-16	1.5	2	05-Aug-93	Volatile	Normal	1
65	Site 47	LH-DL065-01 QC	D93-9051-17	1.5	2	05-Aug-93	Volatile	Duplicate	1
64	Site 47	LH-S064-01_1	D93-9048-2	1.5	2	05-Aug-93	Volatile	Normal	1
52	Site 47	LH-S52-01_2	D93-8981-4	1.5	2	03-Aug-93	Volatile	Normal	1
54	Site 47	LH-S54-01_1	D93-8006-7	0	2	12-Jul-93	Volatile	Normal	1
55	Site 47	LH-S55-01 QC	D93-8006-12	0	2	12-Jul-93	Volatile	Duplicate	1
55	Site 47	LH-S55-01_1	D93-8006-10	0	2	12-Jul-93	Volatile	Normal	1
56	Site 47	LH-S56-01_1	D93-9106-1	0.5	2	05-Aug-93	Volatile	Normal	1
66	Site 47	LH-S66-01 QC	D93-9106-5	0.5	2	05-Aug-93	Volatile	Duplicate	1
66	Site 47	LH-S66-01_1	D93-9106-3	0.5	2	05-Aug-93	Volatile	Normal	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
66	Site 47	LH-S66-02_1	D93-9106-6	0.5	2	05-Aug-93	Volatile	Normal	1
67	Site 47	LH-S67-01_1	D93-9105-28	0.5	2	06-Aug-93	Volatile	Normal	1
68	Site 47	LH-S68-01 QC	D93-9105-32	0.5	2	06-Aug-93	Volatile	Duplicate	1
68	Site 47	LH-S68-01_1	D93-9105-30	0.5	2	06-Aug-93	Volatile	Normal	1
70	Site 47	LH-S70-01_1	D93-8552-8	0.5	2	24-Jul-93	Volatile	Normal	1
70	Site 47	LH-S70-02_1	D93-8552-10	0.5	2	24-Jul-93	Volatile	Normal	1
78	Site 47	LH-S78-01_1	D93-8552-18	0.5	2	24-Jul-93	Volatile	Normal	1
79	Site 47	LH-S79-01_1	D93-8552-21	0.5	2	24-Jul-93	Volatile	Normal	1
80	Site 47	LH-S80-01 QC	D93-8552-25	0.5	2	24-Jul-93	Volatile	Duplicate	1
80	Site 47	LH-S80-01_1	D93-8552-23	0.5	2	24-Jul-93	Volatile	Normal	1
81	Site 47	LH-S81-01_1	D93-8493-7	0.5	2	23-Jul-93	Volatile	Normal	1
81	Site 47	LH-S81-02_1	D93-8552-27	0.5	2	23-Jul-93	Volatile	Normal	1
82	Site 47	LH-S82-01_1	D93-8493-9	0.5	2	23-Jul-93	Volatile	Normal	1
83	Site 47	LH-S83-01_1	D93-8493-14	0.5	2	23-Jul-93	Volatile	Normal	1
83	Site 47	LH-S83-02 QC	D93-8493-18	0.5	2	23-Jul-93	Volatile	Duplicate	1
83	Site 47	LH-S83-02_1	D93-8493-16	0.5	2	23-Jul-93	Volatile	Normal	1
86	Site 47	LH-S86-01 QC	D93-8687-7	0.5	2	27-Jul-93	Volatile	Duplicate	1
86	Site 47	LH-S86-01_1	D93-8687-5	0.5	2	27-Jul-93	Volatile	Normal	1
86	Site 47	LH-S86-02_1	D93-8687-2	0.5	2	27-Jul-93	Volatile	Normal	1
87	Site 47	LH-S87-01_1	D93-8425-9	0.5	2	22-Jul-93	Volatile	Normal	1
88	Site 47	LH-S88-01 QC	D93-8425-14	0.5	2	22-Jul-93	Volatile	Duplicate	1
88	Site 47	LH-S88-01_1	D93-8425-11	0.5	2	22-Jul-93	Volatile	Normal	1
88	Site 47	LH-S88-02_1	D93-8425-15	0.5	2	22-Jul-93	Volatile	Normal	1
89	Site 47	LH-S89-01_1	D93-8379-16	0.5	2	21-Jul-93	Volatile	Normal	1
89	Site 47	LH-S89-02_1	D93-8379-18	0.5	2	21-Jul-93	Volatile	Normal	1
90	Site 47	LH-S90-02_1	D93-8379-22	0.5	2	21-Jul-93	Volatile	Normal	1
WRS-17	Site 47	LH-WRS17-01_1	D93-8425-18	0.5	2	22-Jul-93	Volatile	Normal	1
64	Site 47	LH-DL064-01	D93-9048-7	2	2.5	05-Aug-93	Volatile	Normal	1
72	Site 47	LH-DL072-01	D93-9046-7	2	2.5	04-Aug-93	Volatile	Normal	1
76	Site 47	LH-DL76-01	3-5391	2	2.5	- -	Volatile	Normal	1
77	Site 47	LH-DL77-01	3-5400	2	2.5	- -	Volatile	Normal	1
63	Site 47	LH-S063-01_2	D93-9051-8	2	2.5	05-Aug-93	Volatile	Normal	1
65	Site 47	LH-S065-01_2	D93-9048-9	2	2.5	05-Aug-93	Volatile	Normal	1
73	Site 47	LH-DL73-01	3-5272	2	2.7	- -	Volatile	Normal	1
74	Site 47	LH-DL74-01	3-5275	2	2.7	- -	Volatile	Normal	1
44	Site 47	LH-DL44-01	D93-7880-20	2.1	2.8	10-Jul-93	Volatile	Normal	1
50	Site 47	LH-DL50-01	D93-7880-32	2	2.9	11-Jul-93	Volatile	Normal	1
58	Site 47	LH-DL58-01	3-5317	2.1	2.9	- -	Volatile	Normal	1
47SB01	Site 47	47SB01(1-3)	4784.067	1	3	27-Jul-98	Volatile	Normal	3
47SB02	Site 47	47SB02(1-3)	4784.070	1	3	27-Jul-98	Volatile	Normal	3
47SB03	Site 47	47SB03(1-3)	4784.073	1	3	27-Jul-98	Volatile	Normal	3
47SB03	Site 47	47SB03(1-3)QC	4784.074	1	3	27-Jul-98	Volatile	Duplicate	3
45	Site 47	LH-DL45-01	D93-7880-30	2.3	3	10-Jul-93	Volatile	Normal	1
61	Site 47	LH-DL61-01	D93-9105-27	2	3	06-Aug-93	Volatile	Normal	1
69	Site 47	LH-DL69-01	3-5433	2.5	3	- -	Volatile	Normal	1
71	Site 47	LH-DL71-01	D93-8552-46	2	3	24-Jul-93	Volatile	Normal	1
85	Site 47	LH-DL85-01	3-5437	2.5	3	- -	Volatile	Normal	1
91	Site 47	LH-DL91	D93-8493-33	2.5	3	23-Jul-93	Volatile	Normal	1
92	Site 47	LH-DL92-01	D93-8493-34	2.5	3	23-Jul-93	Volatile	Normal	1
93	Site 47	LH-DL93-01	D93-8628-2	2.5	3	27-Jul-93	Volatile	Normal	1
62	Site 47	LH-S062-01_2	D93-9051-2	2.5	3	05-Aug-93	Volatile	Normal	1
62	Site 47	LH-S062-02_2	D93-9051-6	2.5	3	05-Aug-93	Volatile	Normal	1
63	Site 47	LH-S063-01_3	D93-9051-9	2.5	3	05-Aug-93	Volatile	Normal	1
64	Site 47	LH-S064-02_2	D93-9048-5	2.5	3	05-Aug-93	Volatile	Normal	1
57	Site 47	LH-S57-01_2	D93-8493-2	2	3	22-Jul-93	Volatile	Normal	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
57	Site 47	LH-S57-02_2	D93-8493-5	2	3	22-Jul-93	Volatile	Normal	1
60	Site 47	LH-S60-02_3	D93-8425-7	2.5	3	22-Jul-93	Volatile	Normal	1
61	Site 47	LH-S61-01_1	D93-9105-23	0.5	3	06-Aug-93	Volatile	Normal	1
61	Site 47	LH-S61-02_1	D93-9105-25	1	3	06-Aug-93	Volatile	Normal	1
77	Site 47	LH-S77-01_2	3-5396	1.5	3	- -	Volatile	Normal	1
77	Site 47	LH-S77-02_2	3-5402	2.5	3	- -	Volatile	Normal	1
87	Site 47	LH-S87-01_2	3-5439	2.5	3	- -	Volatile	Normal	1
47	Site 47	LH-S47-01_2	D93-7882-22	2.2	3.2	09-Jul-93	Volatile	Normal	1
48	Site 47	LH-DL48-01	D93-7880-31	2.7	3.4	11-Jul-93	Volatile	Normal	1
60	Site 47	LH-S60-01_2	D93-8425-4	3	3.4	22-Jul-93	Volatile	Normal	1
54	Site 47	LH-DL54-01	D93-8006-9	2.5	3.5	12-Jul-93	Volatile	Normal	1
55	Site 47	LH-DL55-01	D93-8006-13	2.5	3.5	12-Jul-93	Volatile	Normal	1
55	Site 47	LH-DL55-02	D93-8006-15	2.5	3.5	12-Jul-93	Volatile	Normal	1
65	Site 47	LH-S065-02_2	D93-9051-14	3	3.5	05-Aug-93	Volatile	Normal	1
72	Site 47	LH-S072-01_2	D93-9046-2	3	3.5	04-Aug-93	Volatile	Normal	1
71	Site 47	LH-S71-01_2	D93-8552-13	3	3.5	24-Jul-93	Volatile	Normal	1
71	Site 47	LH-S71-02_2	D93-8552-16	3	3.5	24-Jul-93	Volatile	Normal	1
73	Site 47	LH-S73-01_2	3-5382	2.5	3.5	- -	Volatile	Normal	1
74	Site 47	LH-S74-01	3-5274	2.5	3.5	- -	Volatile	Normal	1
93	Site 47	LH-S93-02_2	D93-8552-38	3	3.5	24-Jul-93	Volatile	Normal	1
WRS-18	Site 47	LH-WRS18-01_2	3-5405	3	3.5	- -	Volatile	Normal	1
47	Site 47	LH-S47-02_2	D93-7882-25	2.5	3.6	09-Jul-93	Volatile	Normal	1
47	Site 47	LH-DL47-02	D93-7882-27	2.7	3.8	09-Jul-93	Volatile	Normal	1
81	Site 47	LH-DL81-01	D93-8493-30	2	4	23-Jul-93	Volatile	Normal	1
82	Site 47	LH-DL82-01	D93-8493-31	2	4	23-Jul-93	Volatile	Normal	1
83	Site 47	LH-DL83-01	D93-8493-32	2	4	23-Jul-93	Volatile	Normal	1
84	Site 47	LH-DL84-01	D93-8379-24	2	4	21-Jul-93	Volatile	Normal	1
88	Site 47	LH-DL88-01	D93-8425-10	2	4	22-Jul-93	Volatile	Normal	1
89	Site 47	LH-DL89-01	D93-8379-25	2	4	21-Jul-93	Volatile	Normal	1
90	Site 47	LH-DL90-01	D93-8379-26	2	4	21-Jul-93	Volatile	Normal	1
90	Site 47	LH-DL90-02	D93-8379-27	2	4	21-Jul-93	Volatile	Normal	1
62	Site 47	LH-S062-01_3	D93-9051-3	3.5	4	05-Aug-93	Volatile	Normal	1
72	Site 47	LH-S072-02_2	D93-9046-5	3.5	4	04-Aug-93	Volatile	Normal	1
75	Site 47	LH-S75-01_2	3-5384	3.5	4	- -	Volatile	Normal	1
64	Site 47	LH-S064-01_2	D93-9048-3	4	4.5	05-Aug-93	Volatile	Normal	1
64	Site 47	LH-S064-02_3	D93-9048-6	4	4.5	05-Aug-93	Volatile	Normal	1
65	Site 47	LH-S065-01_3	D93-9051-12	4	4.5	05-Aug-93	Volatile	Normal	1
65	Site 47	LH-S065-02_3	D93-9051-15	4	4.5	05-Aug-93	Volatile	Normal	1
50	Site 47	LH-S50-01_3	D93-8628-8	4	4.5	27-Jul-93	Volatile	Normal	1
58	Site 47	LH-S58-01_2	3-5271	3	4.5	- -	Volatile	Normal	1
59	Site 47	LH-S59-01_2	D93-8379-5	4	4.5	21-Jul-93	Volatile	Normal	1
59	Site 47	LH-S59-02_2	D93-8379-9	4	4.5	21-Jul-93	Volatile	Normal	1
69	Site 47	LH-S69-01_2	3-5429	4	4.5	- -	Volatile	Normal	1
82	Site 47	LH-S82-02_1	D93-8493-12	2.5	4.5	23-Jul-93	Volatile	Normal	1
85	Site 47	LH-S85-01_1	3-5436	3.5	4.5	- -	Volatile	Normal	1
85	Site 47	LH-S85-02_1	3-5438	3.5	4.5	- -	Volatile	Normal	1
44	Site 47	LH-S44-01_2	D93-7880-18	4	4.7	10-Jul-93	Volatile	Normal	1
44	Site 47	LH-S44-02_2	D93-7880-22	4	4.7	11-Jul-93	Volatile	Normal	1
49	Site 47	LH-S49-01_2	D93-7882-29	4	4.8	09-Jul-93	Volatile	Normal	1
47SB01	Site 47	47SB01(3-5)	4784.068	3	5	27-Jul-98	Volatile	Normal	3
47SB02	Site 47	47SB02(3-5)	4784.071	3	5	27-Jul-98	Volatile	Normal	3
47SB03	Site 47	47SB03(3-5)	4784.075	3	5	27-Jul-98	Volatile	Normal	3
67	Site 47	LH-S67-01_2	D93-9105-29	3	5	06-Aug-93	Volatile	Normal	1
78	Site 47	LH-S78-01_2	D93-8552-19	3	5	24-Jul-93	Volatile	Normal	1
79	Site 47	LH-S79-01_2	D93-8552-22	3	5	24-Jul-93	Volatile	Normal	1

Table 3-10
Selection of Samples for Soil Scenarios - Site 47, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
84	Site 47	LH-S84-01_2	D93-8379-3	3	5	21-Jul-93	Volatile	Normal	1
48	Site 47	LH-S48-01_2	D93-8628-4	5	5.5	27-Jul-93	Volatile	Normal	1
55	Site 47	LH-S55-01_2	D93-8006-11	3.5	5.5	12-Jul-93	Volatile	Normal	1
56	Site 47	LH-S56-01_2	D93-9106-2	3.5	5.5	09-Aug-93	Volatile	Normal	1
60	Site 47	LH-S60-02 QC	D93-8425-8	5	5.5	22-Jul-93	Volatile	Duplicate	1
60	Site 47	LH-S60-02_1	D93-8425-5	5	5.5	22-Jul-93	Volatile	Normal	1
93	Site 47	LH-S93-01_2	D93-8552-35	4.5	5.5	24-Jul-93	Volatile	Normal	1
121	Site 47	LH-S121-01_2	D93-9106-13	5	6	04-Aug-93	Volatile	Normal	1
121	Site 47	LH-S121-02_2	D93-9106-15	5	6	04-Aug-93	Volatile	Normal	1
54	Site 47	LH-S54-01_2	D93-8006-8	4	6	12-Jul-93	Volatile	Normal	1
66	Site 47	LH-S66-01_2	D93-9106-4	4	6	05-Aug-93	Volatile	Normal	1
66	Site 47	LH-S66-02_2	D93-9106-7	4	6	05-Aug-93	Volatile	Normal	1
69	Site 47	LH-S69-01_3	3-5430	5.5	6	- -	Volatile	Normal	1
69	Site 47	LH-S69-02_2	3-5435	4.5	6	- -	Volatile	Normal	1
71	Site 47	LH-S71-01_3	D93-8552-14	4.5	6	24-Jul-93	Volatile	Normal	1
76	Site 47	LH-S76-02_2	3-5393	5.5	6	- -	Volatile	Normal	1
86	Site 47	LH-S86-02_2	D93-8687-3	4	6	27-Jul-93	Volatile	Normal	1
88	Site 47	LH-S88-01_2	D93-8425-12	4	6	22-Jul-93	Volatile	Normal	1
88	Site 47	LH-S88-02_2	D93-8425-16	4	6	22-Jul-93	Volatile	Normal	1
WRS-17	Site 47	LH-WRS17-01_2	D93-8425-19	4	6	22-Jul-93	Volatile	Normal	1
72	Site 47	LH-S072-01_3	D93-9046-3	6	6.5	04-Aug-93	Volatile	Normal	1
72	Site 47	LH-S072-02_3	D93-9046-6	6	6.5	04-Aug-93	Volatile	Normal	1
71	Site 47	LH-S71-02_3	D93-8552-17	5	6.5	24-Jul-93	Volatile	Normal	1
91	Site 47	LH-S91-01_2	D93-8493-20	5	6.5	23-Jul-93	Volatile	Normal	1
51	Site 47	LH-S51-01_2	D93-7880-34	6	6.7	11-Jul-93	Volatile	Normal	1
48	Site 47	LH-S48-01_3	D93-8628-5	6.5	7	27-Jul-93	Volatile	Normal	1
59	Site 47	LH-S59-01_3	D93-8379-6	6.5	7	21-Jul-93	Volatile	Normal	1
68	Site 47	LH-S68-01_2	D93-9105-31	5	7	06-Aug-93	Volatile	Normal	1
77	Site 47	LH-S77-01_3	3-5397	5.5	7	- -	Volatile	Normal	1
77	Site 47	LH-S77-02_3	3-5403	5.5	7	- -	Volatile	Normal	1
81	Site 47	LH-S81-01_2	D93-8493-8	5	7	23-Jul-93	Volatile	Normal	1
81	Site 47	LH-S81-02_2	D93-8552-28	5	7	23-Jul-93	Volatile	Normal	1

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-11
Selection of Samples for Soil Scenarios - Site 48, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
48SB01	Site 48	48SB01(0-0.5)	4786.001	0	0.5	28-Jul-98	BNA	Normal	3
LHSMW62	Site 48	LHS-MW62	9410G762-002	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW63	Site 48	LHS-MW63	9410G762-003	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW64	Site 48	LHS-MW64	9410G762-004	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW65	Site 48	LHS-MW65	9410G762-005	0	0.5	05-Oct-94	BNA	Normal	2
LHSMW66	Site 48	LHS-MW66	9410G762-006	0	0.5	05-Oct-94	BNA	Normal	2
Y-01	Site 48	LHS-Y-01	9501G639-015	0	0.5	11-Jan-95	BNA	Normal	2
Y-01	Site 48	LHS-Y-01QC	9501G639-016	0	0.5	11-Jan-95	BNA	Duplicate	2
Y-02	Site 48	LHS-Y-02	9501G639-017	0	0.5	11-Jan-95	BNA	Normal	2
Y-03	Site 48	LHS-Y-03	9501G639-018	0	0.5	11-Jan-95	BNA	Normal	2
Y-04	Site 48	LHS-Y-04	9501G639-019	0	0.5	11-Jan-95	BNA	Normal	2
Y-05	Site 48	LHS-Y-05	9501G639-020	0	0.5	11-Jan-95	BNA	Normal	2
Y-06	Site 48	LHS-Y-06	9501G640-001	0	0.5	11-Jan-95	BNA	Normal	2
100	Site 48	LH-S100-01 QC	3-5301	0.5	1.5	- -	BNA	Duplicate	1
100	Site 48	LH-S100-01_1	3-5299	0.5	1.5	- -	BNA	Normal	1
101	Site 48	LH-S101-01_1	3-5303	0.5	1.5	- -	BNA	Normal	1
123	Site 48	LH-S123-01_1	3-5247	0.5	1.5	- -	BNA	Normal	1
94	Site 48	LH-S94-01 QC	3-5245	0.5	1.5	- -	BNA	Duplicate	1
94	Site 48	LH-S94-01_1	3-5243	0.5	1.5	20-Aug-93	BNA	Normal	1
95	Site 48	LH-S95-01 QC	3-5279	0.5	1.5	- -	BNA	Duplicate	1
95	Site 48	LH-S95-01_1	3-5276	0.5	1.5	- -	BNA	Normal	1
95	Site 48	LH-S95-02_1	3-5281	0.5	1.5	- -	BNA	Normal	1
96	Site 48	LH-S96-01_1	3-5286	0.5	1.5	- -	BNA	Normal	1
97	Site 48	LH-S97-01_1	3-5289	0.5	1.5	- -	BNA	Normal	1
98	Site 48	LH-S98-01_1	3-5292	0.5	1.5	- -	BNA	Normal	1
99	Site 48	LH-S99-01 QC	3-5297	0.5	1.5	- -	BNA	Duplicate	1
99	Site 48	LH-S99-01_1	3-5294	0.5	1.5	- -	BNA	Normal	1
WRS-1	Site 48	LH-WRS1-01 QC	3-5259	0.5	1.5	- -	BNA	Duplicate	1
WRS-1	Site 48	LH-WRS1-01_1	3-5256	0.5	1.5	- -	BNA	Normal	1
WRS-2	Site 48	LH-WRS2-01_1	3-5261	0.5	1.5	- -	BNA	Normal	1
WRS-3	Site 48	LH-WRS3-01_1	3-5249	0.5	1.5	- -	BNA	Normal	1
95	Site 48	LH-DL95-01	3-5284	2	2.5	- -	BNA	Normal	1
96	Site 48	LH-S96-01_2	3-5287	2	2.8	- -	BNA	Normal	1
99	Site 48	LH-S99-01_2	3-5295	2	2.8	- -	BNA	Normal	1
48SB01	Site 48	48SB01(1-3)	4786.003	1	3	28-Jul-98	BNA	Normal	3
48SB01	Site 48	48SB01(1-3)QC	4786.002	1	3	28-Jul-98	BNA	Duplicate	3
100	Site 48	LH-S100-01_2	3-5300	1.5	3	- -	BNA	Normal	1
98	Site 48	LH-S98-01_2	3-5293	1.5	3	- -	BNA	Normal	1
94	Site 48	LH-S94-01_2	3-5244	2.9	3.5	20-Aug-93	BNA	Normal	1
WRS-2	Site 48	LH-WRS2-01_2	3-5262	3	3.7	- -	BNA	Normal	1
101	Site 48	LH-S101-01_2	3-5304	3.8	4.2	- -	BNA	Normal	1
WRS-3	Site 48	LH-WRS3-01_2	3-5250	3.5	4.3	- -	BNA	Normal	1
95	Site 48	LH-S95-02_2	3-5282	4	4.5	- -	BNA	Normal	1
97	Site 48	LH-S97-01_2	3-5290	3.9	4.7	- -	BNA	Normal	1
48SB01	Site 48	48SB01(3-5)	4786.004	3	5	28-Jul-98	BNA	Normal	3
WRS-1	Site 48	LH-WRS1-01_2	3-5257	3.5	5	- -	BNA	Normal	1
95	Site 48	LH-S95-02_3	3-5283	5.5	6	- -	BNA	Normal	1
95	Site 48	LH-S95-01_2	3-5277	5.5	6.2	- -	BNA	Normal	1
48SB01	Site 48	48SB01(0-0.5)	4786.001	0	0.5	28-Jul-98	Explosive	Normal	3
LHSMW62	Site 48	LHS-MW62	9410G764-002	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW63	Site 48	LHS-MW63	9410G764-003	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW64	Site 48	LHS-MW64	9410G764-004	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW65	Site 48	LHS-MW65	9410G764-005	0	0.5	05-Oct-94	Explosive	Normal	2
LHSMW66	Site 48	LHS-MW66	9410G764-006	0	0.5	05-Oct-94	Explosive	Normal	2
Y-01	Site 48	LHS-Y-01	9501L631-021	0	0.5	11-Jan-95	Explosive	Normal	2
Y-01	Site 48	LHS-Y-01QC	9501L631-022	0	0.5	11-Jan-95	Explosive	Duplicate	2
Y-02	Site 48	LHS-Y-02	9501L631-023	0	0.5	11-Jan-95	Explosive	Normal	2

Table 3-11
Selection of Samples for Soil Scenarios - Site 48, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
Y-03	Site 48	LHS-Y-03	9501L631-024	0	0.5	11-Jan-95	Explosive	Normal	2
Y-04	Site 48	LHS-Y-04	9501L631-025	0	0.5	11-Jan-95	Explosive	Normal	2
Y-05	Site 48	LHS-Y-05	9501L631-026	0	0.5	11-Jan-95	Explosive	Normal	2
Y-06	Site 48	LHS-Y-06	9501L631-027	0	0.5	11-Jan-95	Explosive	Normal	2
48SB01	Site 48	48SB01(1-3)	4786.003	1	3	28-Jul-98	Explosive	Normal	3
48SB01	Site 48	48SB01(1-3)QC	4786.002	1	3	28-Jul-98	Explosive	Duplicate	3
48SB01	Site 48	48SB01(3-5)	4786.004	3	5	28-Jul-98	Explosive	Normal	3
48SB01	Site 48	48SB01(0-0.5)	4786.001	0	0.5	28-Jul-98	Metal	Normal	3
LHSMW62	Site 48	LHS-MW62	9410G762-002	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW63	Site 48	LHS-MW63	9410G762-003	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW64	Site 48	LHS-MW64	9410G762-004	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW65	Site 48	LHS-MW65	9410G762-005	0	0.5	05-Oct-94	Metal	Normal	2
LHSMW66	Site 48	LHS-MW66	9410G762-006	0	0.5	05-Oct-94	Metal	Normal	2
Y-01	Site 48	LHS-Y-01	9501G639-015	0	0.5	11-Jan-95	Metal	Normal	2
Y-01	Site 48	LHS-Y-01QC	9501G639-016	0	0.5	11-Jan-95	Metal	Duplicate	2
Y-02	Site 48	LHS-Y-02	9501G639-017	0	0.5	11-Jan-95	Metal	Normal	2
Y-03	Site 48	LHS-Y-03	9501G639-018	0	0.5	11-Jan-95	Metal	Normal	2
Y-04	Site 48	LHS-Y-04	9501G639-019	0	0.5	11-Jan-95	Metal	Normal	2
Y-05	Site 48	LHS-Y-05	9501G639-020	0	0.5	11-Jan-95	Metal	Normal	2
Y-06	Site 48	LHS-Y-06	9501G640-001	0	0.5	11-Jan-95	Metal	Normal	2
SUMP094	Site 48	SUMP094(0-0.5)	4808.006	0	0.5	07-Aug-98	Metal	Normal	3
SUMP095	Site 48	SUMP095(0-0.5)	4803.010	0	0.5	04-Aug-98	Metal	Normal	3
SUMP096	Site 48	SUMP096(0-0.5)	4936.100	0	0.5	25-Sep-98	Metal	Normal	3
SUMP097	Site 48	SUMP097(0-0.5)	4936.102	0	0.5	25-Sep-98	Metal	Normal	3
SUMP098	Site 48	SUMP098(0-0.5)-2	4803.026	0	0.5	06-Aug-98	Metal	Normal	3
SUMP099	Site 48	SUMP099(0-0.5)	4936.104	0	0.5	25-Sep-98	Metal	Normal	3
SUMP100	Site 48	SUMP100(0-0.5)	4808.004	0	0.5	07-Aug-98	Metal	Normal	3
SUMP101	Site 48	SUMP101(0-0.5)	4936.106	0	0.5	25-Sep-98	Metal	Normal	3
SUMP123	Site 48	SUMP123(0-0.5)	4936.129	0	0.5	25-Sep-98	Metal	Normal	3
WRSUMP01	Site 48	WRSUMP01(0-0.5)	4803.024	0	0.5	06-Aug-98	Metal	Normal	3
WRSUMP002	Site 48	WRSUMP02(0-0.5)	4936.001	0	0.5	25-Sep-98	Metal	Normal	3
WRSUMP003	Site 48	WRSUMP03(0-0.5)	4803.028	0	0.5	06-Aug-98	Metal	Normal	3
100	Site 48	LH-S100-01 QC	3-5301	0.5	1.5	- -	Metal	Duplicate	1
100	Site 48	LH-S100-01_1	3-5299	0.5	1.5	- -	Metal	Normal	1
101	Site 48	LH-S101-01_1	3-5303	0.5	1.5	- -	Metal	Normal	1
123	Site 48	LH-S123-01_1	3-5247	0.5	1.5	- -	Metal	Normal	1
94	Site 48	LH-S94-01 QC	3-5245	0.5	1.5	- -	Metal	Duplicate	1
94	Site 48	LH-S94-01_1	3-5243	0.5	1.5	20-Aug-93	Metal	Normal	1
95	Site 48	LH-S95-01 QC	3-5279	0.5	1.5	- -	Metal	Duplicate	1
95	Site 48	LH-S95-01_1	3-5276	0.5	1.5	- -	Metal	Normal	1
95	Site 48	LH-S95-02_1	3-5281	0.5	1.5	- -	Metal	Normal	1
96	Site 48	LH-S96-01_1	3-5286	0.5	1.5	- -	Metal	Normal	1
97	Site 48	LH-S97-01_1	3-5289	0.5	1.5	- -	Metal	Normal	1
98	Site 48	LH-S98-01_1	3-5292	0.5	1.5	- -	Metal	Normal	1
99	Site 48	LH-S99-01 QC	3-5297	0.5	1.5	- -	Metal	Duplicate	1
99	Site 48	LH-S99-01_1	3-5294	0.5	1.5	- -	Metal	Normal	1
WRS-1	Site 48	LH-WRS1-01 QC	3-5259	0.5	1.5	- -	Metal	Duplicate	1
WRS-1	Site 48	LH-WRS1-01_1	3-5256	0.5	1.5	- -	Metal	Normal	1
WRS-2	Site 48	LH-WRS2-01_1	3-5261	0.5	1.5	- -	Metal	Normal	1
WRS-3	Site 48	LH-WRS3-01_1	3-5249	0.5	1.5	- -	Metal	Normal	1
48SB01	Site 48	48SB01(0-0.5)	4786.001	0	0.5	28-Jul-98	PCB	Normal	3
SUMP094	Site 48	SUMP094(0-0.5)	4808.006	0	0.5	07-Aug-98	PCB	Normal	3
SUMP095	Site 48	SUMP095(0-0.5)	4803.010	0	0.5	04-Aug-98	PCB	Normal	3
SUMP098	Site 48	SUMP098(0-0.5)-2	4803.026	0	0.5	06-Aug-98	PCB	Normal	3
SUMP100	Site 48	SUMP100(0-0.5)	4808.004	0	0.5	07-Aug-98	PCB	Normal	3
WRSUMP01	Site 48	WRSUMP01(0-0.5)	4803.024	0	0.5	06-Aug-98	PCB	Normal	3
WRSUMP003	Site 48	WRSUMP03(0-0.5)	4803.028	0	0.5	06-Aug-98	PCB	Normal	3

Table 3-11
Selection of Samples for Soil Scenarios - Site 48, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
48SB01	Site 48	48SB01(0-0.5)	35017.01	0	0.5	28-Jul-98	PCDD/PCDF	Normal	3
SUMP094	Site 48	SUMP094(0-0.5)	35189.16	0	0.5	07-Aug-98	PCDD/PCDF	Normal	3
SUMP095	Site 48	SUMP095(0-0.5)	35134.15	0	0.5	04-Aug-98	PCDD/PCDF	Normal	3
SUMP098	Site 48	SUMP098(0-0.5)-1	35134.17	0	0.5	04-Aug-98	PCDD/PCDF	Normal	3
SUMP100	Site 48	SUMP100(0-0.5)	35189.18	0	0.5	07-Aug-98	PCDD/PCDF	Normal	3
WRSUMP001	Site 48	WRSUMP001(0-0.5)	35134.23	0	0.5	06-Aug-98	PCDD/PCDF	Normal	3
WRSUMP003	Site 48	WRSUMP003(0-0.5)	35134.25	0	0.5	06-Aug-98	PCDD/PCDF	Normal	3
48SB01	Site 48	48SB01(0-0.5)	4786.001	0	0.5	28-Jul-98	Pesticide	Normal	3
SUMP094	Site 48	SUMP094(0-0.5)	4808.006	0	0.5	07-Aug-98	Pesticide	Normal	3
SUMP095	Site 48	SUMP095(0-0.5)	4803.010	0	0.5	04-Aug-98	Pesticide	Normal	3
SUMP098	Site 48	SUMP098(0-0.5)-2	4803.026	0	0.5	06-Aug-98	Pesticide	Normal	3
SUMP100	Site 48	SUMP100(0-0.5)	4808.004	0	0.5	07-Aug-98	Pesticide	Normal	3
WRSUMP001	Site 48	WRSUMP001(0-0.5)	4803.024	0	0.5	06-Aug-98	Pesticide	Normal	3
WRSUMP003	Site 48	WRSUMP003(0-0.5)	4803.028	0	0.5	06-Aug-98	Pesticide	Normal	3
48SB01	Site 48	48SB01(0-0.5)	4786.001	0	0.5	28-Jul-98	Volatile	Normal	3
LHSMW62	Site 48	LHS-MW62	9410G762-002	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW63	Site 48	LHS-MW63	9410G762-003	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW64	Site 48	LHS-MW64	9410G762-004	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW65	Site 48	LHS-MW65	9410G762-005	0	0.5	05-Oct-94	Volatile	Normal	2
LHSMW66	Site 48	LHS-MW66	9410G762-006	0	0.5	05-Oct-94	Volatile	Normal	2
Y-01	Site 48	LHS-Y-01	9501G639-015	0	0.5	11-Jan-95	Volatile	Normal	2
Y-01	Site 48	LHS-Y-01QC	9501G639-016	0	0.5	11-Jan-95	Volatile	Duplicate	2
Y-02	Site 48	LHS-Y-02	9501G639-017	0	0.5	11-Jan-95	Volatile	Normal	2
Y-03	Site 48	LHS-Y-03	9501G639-018	0	0.5	11-Jan-95	Volatile	Normal	2
Y-04	Site 48	LHS-Y-04	9501G639-019	0	0.5	11-Jan-95	Volatile	Normal	2
Y-05	Site 48	LHS-Y-05	9501G639-020	0	0.5	11-Jan-95	Volatile	Normal	2
Y-06	Site 48	LHS-Y-06	9501G640-001	0	0.5	11-Jan-95	Volatile	Normal	2
100	Site 48	LH-S100-01 QC	3-5301	0.5	1.5	- -	Volatile	Duplicate	1
100	Site 48	LH-S100-01_1	3-5299	0.5	1.5	- -	Volatile	Normal	1
101	Site 48	LH-S101-01_1	3-5303	0.5	1.5	- -	Volatile	Normal	1
123	Site 48	LH-S123-01_1	3-5247	0.5	1.5	- -	Volatile	Normal	1
94	Site 48	LH-S94-01 QC	3-5245	0.5	1.5	- -	Volatile	Duplicate	1
94	Site 48	LH-S94-01_1	3-5243	0.5	1.5	20-Aug-93	Volatile	Normal	1
95	Site 48	LH-S95-01 QC	3-5279	0.5	1.5	- -	Volatile	Duplicate	1
95	Site 48	LH-S95-01_1	3-5276	0.5	1.5	- -	Volatile	Normal	1
95	Site 48	LH-S95-02_1	3-5281	0.5	1.5	- -	Volatile	Normal	1
96	Site 48	LH-S96-01_1	3-5286	0.5	1.5	- -	Volatile	Normal	1
97	Site 48	LH-S97-01_1	3-5289	0.5	1.5	- -	Volatile	Normal	1
98	Site 48	LH-S98-01_1	3-5292	0.5	1.5	- -	Volatile	Normal	1
99	Site 48	LH-S99-01 QC	3-5297	0.5	1.5	- -	Volatile	Duplicate	1
99	Site 48	LH-S99-01_1	3-5294	0.5	1.5	- -	Volatile	Normal	1
WRS-1	Site 48	LH-WRS1-01 QC	3-5259	0.5	1.5	- -	Volatile	Duplicate	1
WRS-1	Site 48	LH-WRS1-01_1	3-5256	0.5	1.5	- -	Volatile	Normal	1
WRS-2	Site 48	LH-WRS2-01_1	3-5261	0.5	1.5	- -	Volatile	Normal	1
WRS-3	Site 48	LH-WRS3-01_1	3-5249	0.5	1.5	- -	Volatile	Normal	1
95	Site 48	LH-DL95-01	3-5284	2	2.5	- -	Volatile	Normal	1
96	Site 48	LH-S96-01_2	3-5287	2	2.8	- -	Volatile	Normal	1
99	Site 48	LH-S99-01_2	3-5295	2	2.8	- -	Volatile	Normal	1
48SB01	Site 48	48SB01(1-3)	4786.003	1	3	28-Jul-98	Volatile	Normal	3
48SB01	Site 48	48SB01(1-3)QC	4786.002	1	3	28-Jul-98	Volatile	Duplicate	3
100	Site 48	LH-S100-01_2	3-5300	1.5	3	- -	Volatile	Normal	1
98	Site 48	LH-S98-01_2	3-5293	1.5	3	- -	Volatile	Normal	1
94	Site 48	LH-S94-01_2	3-5244	2.9	3.5	20-Aug-93	Volatile	Normal	1
WRS-2	Site 48	LH-WRS2-01_2	3-5262	3	3.7	- -	Volatile	Normal	1
101	Site 48	LH-S101-01_2	3-5304	3.8	4.2	- -	Volatile	Normal	1
WRS-3	Site 48	LH-WRS3-01_2	3-5250	3.5	4.3	- -	Volatile	Normal	1
95	Site 48	LH-S95-02_2	3-5282	4	4.5	- -	Volatile	Normal	1

Table 3-11
Selection of Samples for Soil Scenarios - Site 48, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
97	Site 48	LH-S97-01_2	3-5290	3.9	4.7	- -	Volatile	Normal	1
48SB01	Site 48	48SB01(3-5)	4786.004	3	5	28-Jul-98	Volatile	Normal	3
WRS-1	Site 48	LH-WRS1-01_2	3-5257	3.5	5	- -	Volatile	Normal	1
95	Site 48	LH-S95-02_3	3-5283	5.5	6	- -	Volatile	Normal	1
95	Site 48	LH-S95-01_2	3-5277	5.5	6.2	- -	Volatile	Normal	1

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-12
Selection of Samples for Soil Scenarios - Site 50, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
50SB06	Site 50	50SB06(0-0.5)	4786.005	0	0.5	28-Jul-98	BNA	Normal	3
50SB06	Site 50	50SB06(0-0.5)QC	4786.006	0	0.5	28-Jul-98	BNA	Duplicate	3
50SD03	Site 50	50SD03	4991.002	0	0.5	12-Nov-98	BNA	Normal	3
50SD04	Site 50	50SD04	4989.008	0	0.5	11-Nov-98	BNA	Normal	3
50SD08	Site 50	50SD08	4989.002	0	0.5	11-Nov-98	BNA	Normal	3
50SS07	Site 50	50SS07(0-0.5)	4786.009	0	0.5	28-Jul-98	BNA	Normal	3
LH50SS01	Site 50	LH50SS01(000.0)-1995	3110.15	0	0.5	13-Oct-95	BNA	Normal	Group 5 SI
LH50SS02	Site 50	LH50SS02(000.0)-1995	3110.04	0	0.5	13-Oct-95	BNA	Normal	Group 5 SI
LH50SS03	Site 50	LH50SS03(000.0)-1995	3110.19	0	0.5	13-Oct-95	BNA	Normal	Group 5 SI
LH50SS03	Site 50	LH50SS03(000.0)QC	3110.20	0	0.5	13-Oct-95	BNA	Duplicate	Group 5 SI
LH50SS04	Site 50	LH50SS04(000.0)-1995	3110.11	0	0.5	13-Oct-95	BNA	Normal	Group 5 SI
LH50SS05	Site 50	LH50SS05(000.0)-1995	3110.09	0	0.5	13-Oct-95	BNA	Normal	Group 5 SI
LH50SS05	Site 50	LH50SS05(000.0)QC	3110.10	0	0.5	13-Oct-95	BNA	Duplicate	Group 5 SI
50SB06	Site 50	50SB06(1-3)	4786.007	1	3	28-Jul-98	BNA	Normal	3
50SB06	Site 50	50SB06(3-5)	4786.008	3	5	28-Jul-98	BNA	Normal	3
LH50SB01	Site 50	LH50SB01(5-7)	3110.16	5	7	13-Oct-95	BNA	Normal	Group 5 SI
LH50SB02	Site 50	LH50SB02(5-7)	3110.05	5	7	13-Oct-95	BNA	Normal	Group 5 SI
LH50SB03	Site 50	LH50SB03(5-7)	3110.01	5	7	13-Oct-95	BNA	Normal	Group 5 SI
LH50SB04	Site 50	LH50SB04(5-7)	3110.12	5	7	13-Oct-95	BNA	Normal	Group 5 SI
50SB06	Site 50	50SB06(0-0.5)	4786.005	0	0.5	28-Jul-98	Explosive	Normal	3
50SB06	Site 50	50SB06(0-0.5)QC	4786.006	0	0.5	28-Jul-98	Explosive	Duplicate	3
50SD03	Site 50	50SD03	4991.002	0	0.5	12-Nov-98	Explosive	Normal	3
50SD04	Site 50	50SD04	4989.008	0	0.5	11-Nov-98	Explosive	Normal	3
50SD08	Site 50	50SD08	4989.002	0	0.5	11-Nov-98	Explosive	Normal	3
50SS07	Site 50	50SS07(0-0.5)	4786.009	0	0.5	28-Jul-98	Explosive	Normal	3
LH50SS01	Site 50	LH50SS01(000.0)	PDPS2*14	0	0.5	20-Feb-96	Explosive	Normal	USACE 1996
LH50SS01	Site 50	LH50SS01(000.0)-1995	3110.15	0	0.5	13-Oct-95	Explosive	Normal	Group 5 SI
LH50SS02	Site 50	LH50SS02(000.0)	PDPS2*15	0	0.5	20-Feb-96	Explosive	Normal	USACE 1996
LH50SS02	Site 50	LH50SS02(000.0)-1995	3110.04	0	0.5	13-Oct-95	Explosive	Normal	Group 5 SI
LH50SS03	Site 50	LH50SS03(000.0)	PDPS2*16	0	0.5	20-Feb-96	Explosive	Normal	USACE 1996
LH50SS03	Site 50	LH50SS03(000.0)-1995	3110.19	0	0.5	13-Oct-95	Explosive	Normal	Group 5 SI
LH50SS03	Site 50	LH50SS03(000.0)QC	3110.20	0	0.5	13-Oct-95	Explosive	Duplicate	Group 5 SI
LH50SS04	Site 50	LH50SS04(000.0)	PDPS2*17	0	0.5	20-Feb-96	Explosive	Normal	USACE 1996
LH50SS04	Site 50	LH50SS04(000.0)-1995	3110.11	0	0.5	13-Oct-95	Explosive	Normal	Group 5 SI
LH50SS05	Site 50	LH50SS05(000.0)	PDPS2*18	0	0.5	20-Feb-96	Explosive	Normal	USACE 1996
LH50SS05	Site 50	LH50SS05(000.0)-1995	3110.09	0	0.5	13-Oct-95	Explosive	Normal	Group 5 SI
LH50SS05	Site 50	LH50SS05(000.0)QC	3110.10	0	0.5	13-Oct-95	Explosive	Duplicate	Group 5 SI
50SB06	Site 50	50SB06(1-3)	4786.007	1	3	28-Jul-98	Explosive	Normal	3
50SB06	Site 50	50SB06(3-5)	4786.008	3	5	28-Jul-98	Explosive	Normal	3
LH50SB01	Site 50	LH50SB01(5-7)	3110.16	5	7	13-Oct-95	Explosive	Normal	Group 5 SI
LH50SB02	Site 50	LH50SB02(5-7)	3110.05	5	7	13-Oct-95	Explosive	Normal	Group 5 SI
LH50SB03	Site 50	LH50SB03(5-7)	3110.01	5	7	13-Oct-95	Explosive	Normal	Group 5 SI
LH50SB04	Site 50	LH50SB04(5-7)	3110.12	5	7	13-Oct-95	Explosive	Normal	Group 5 SI
50SB06	Site 50	50SB06(0-0.5)	4786.005	0	0.5	28-Jul-98	Metal	Normal	3
50SB06	Site 50	50SB06(0-0.5)QC	4786.006	0	0.5	28-Jul-98	Metal	Duplicate	3
50SD03	Site 50	50SD03	4991.002	0	0.5	12-Nov-98	Metal	Normal	3
50SD04	Site 50	50SD04	4989.008	0	0.5	11-Nov-98	Metal	Normal	3
50SD08	Site 50	50SD08	4989.002	0	0.5	11-Nov-98	Metal	Normal	3
50SS07	Site 50	50SS07(0-0.5)	4786.009	0	0.5	28-Jul-98	Metal	Normal	3
LH50SS01	Site 50	LH50SS01(000.0)-1995	3110.15	0	0.5	13-Oct-95	Metal	Normal	Group 5 SI
LH50SS02	Site 50	LH50SS02(000.0)-1995	3110.04	0	0.5	13-Oct-95	Metal	Normal	Group 5 SI
LH50SS03	Site 50	LH50SS03(000.0)-1995	3110.19	0	0.5	13-Oct-95	Metal	Normal	Group 5 SI
LH50SS03	Site 50	LH50SS03(000.0)QC	3110.20	0	0.5	13-Oct-95	Metal	Duplicate	Group 5 SI
LH50SS04	Site 50	LH50SS04(000.0)-1995	3110.11	0	0.5	13-Oct-95	Metal	Normal	Group 5 SI
LH50SS05	Site 50	LH50SS05(000.0)-1995	3110.09	0	0.5	13-Oct-95	Metal	Normal	Group 5 SI

Table 3-12
Selection of Samples for Soil Scenarios - Site 50, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
LH50SS05	Site 50	LH50SS05(000.0)QC	3110.10	0	0.5	13-Oct-95	Metal	Duplicate	Group 5 SI
50SB06	Site 50	50SB06(0-0.5)	4786.005	0	0.5	28-Jul-98	PCB	Normal	3
50SB06	Site 50	50SB06(0-0.5)QC	4786.006	0	0.5	28-Jul-98	PCB	Duplicate	3
50SD08	Site 50	50SD08	4989.002	0	0.5	11-Nov-98	PCB	Normal	3
50SS07	Site 50	50SS07(0-0.5)	4786.009	0	0.5	28-Jul-98	PCB	Normal	3
50SB06	Site 50	50SB06(0-0.5)	35017.07	0	0.5	28-Jul-98	PCDD/PCDF	Normal	3
50SB06	Site 50	50SB06(0-0.5)QC	35017.08	0	0.5	28-Jul-98	PCDD/PCDF	Duplicate	3
50SD08	Site 50	50SD08	36371.09	0	0.5	11-Nov-98	PCDD/PCDF	Normal	3
50SS07	Site 50	50SS07(0-0.5)	35017.17	0	0.5	28-Jul-98	PCDD/PCDF	Normal	3
50SB06	Site 50	50SB06(0-0.5)	4786.005	0	0.5	28-Jul-98	Pesticide	Normal	3
50SB06	Site 50	50SB06(0-0.5)QC	4786.006	0	0.5	28-Jul-98	Pesticide	Duplicate	3
50SD08	Site 50	50SD08	4989.002	0	0.5	11-Nov-98	Pesticide	Normal	3
50SS07	Site 50	50SS07(0-0.5)	4786.009	0	0.5	28-Jul-98	Pesticide	Normal	3
50SB06	Site 50	50SB06(0-0.5)	4786.005	0	0.5	28-Jul-98	Volatile	Normal	3
50SB06	Site 50	50SB06(0-0.5)QC	4786.006	0	0.5	28-Jul-98	Volatile	Duplicate	3
50SD03	Site 50	50SD03	4991.002	0	0.5	12-Nov-98	Volatile	Normal	3
50SD04	Site 50	50SD04	4989.008	0	0.5	11-Nov-98	Volatile	Normal	3
50SD08	Site 50	50SD08	4989.002	0	0.5	11-Nov-98	Volatile	Normal	3
50SS07	Site 50	50SS07(0-0.5)	4786.009	0	0.5	28-Jul-98	Volatile	Normal	3
LH50SS01	Site 50	LH50SS01(000.0)-1995	3110.15	0	0.5	13-Oct-95	Volatile	Normal	Group 5 SI
LH50SS02	Site 50	LH50SS02(000.0)-1995	3110.04	0	0.5	13-Oct-95	Volatile	Normal	Group 5 SI
LH50SS03	Site 50	LH50SS03(000.0)-1995	3110.19	0	0.5	13-Oct-95	Volatile	Normal	Group 5 SI
LH50SS03	Site 50	LH50SS03(000.0)QC	3110.20	0	0.5	13-Oct-95	Volatile	Duplicate	Group 5 SI
LH50SS04	Site 50	LH50SS04(000.0)-1995	3110.11	0	0.5	13-Oct-95	Volatile	Normal	Group 5 SI
LH50SS05	Site 50	LH50SS05(000.0)-1995	3110.09	0	0.5	13-Oct-95	Volatile	Normal	Group 5 SI
LH50SS05	Site 50	LH50SS05(000.0)QC	3110.10	0	0.5	13-Oct-95	Volatile	Duplicate	Group 5 SI
50SB06	Site 50	50SB06(1.5)	4786.007	1	3	28-Jul-98	Volatile	Normal	3
50SB06	Site 50	50SB06(3.5)	4786.008	3	5	28-Jul-98	Volatile	Normal	3
LH50SB01	Site 50	LH50SB01(5.7)	3110.16	5	7	13-Oct-95	Volatile	Normal	Group 5 SI
LH50SB02	Site 50	LH50SB02(5.7)	3110.05	5	7	13-Oct-95	Volatile	Normal	Group 5 SI
LH50SB03	Site 50	LH50SB03(5.7)	3110.01	5	7	13-Oct-95	Volatile	Normal	Group 5 SI
LH50SB04	Site 50	LH50SB04(5.7)	3110.12	5	7	13-Oct-95	Volatile	Normal	Group 5 SI

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

SI = site investigation

USACE = U.S. Army Corps of Engineers

Table 3-13
Selection of Samples for Soil Scenarios - Site 60, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
60SB22	Site 60	60SB22(0-0.5)	4786.022	0	0.5	28-Jul-98	BNA	Normal	3
60SB22	Site 60	60SB22(0-0.5)QC	4786.023	0	0.5	28-Jul-98	BNA	Duplicate	3
122	Site 60	LH-S122-02_1	D93-8981-22	0.5	1	03-Aug-93	BNA	Normal	1
122	Site 60	LH-S122-01 QC	D93-8981-27	0.5	1.2	03-Aug-93	BNA	Duplicate	1
122	Site 60	LH-S122-01_1	D93-8981-25	0.5	1.2	03-Aug-93	BNA	Normal	1
60SB22	Site 60	60SB22(1-3)	4786.024	1	3	28-Jul-98	BNA	Normal	3
122	Site 60	LH-S122-01_2	D93-8981-26	4	4.5	03-Aug-93	BNA	Normal	1
122	Site 60	LH-S122-02_2	D93-8981-23	4	4.5	03-Aug-93	BNA	Normal	1
60SB22	Site 60	60SB22(3-5)	4786.025	3	5	28-Jul-98	BNA	Normal	3
122	Site 60	LH-S122-02_3	D93-8981-24	5.4	5.9	03-Aug-93	BNA	Normal	1
60SB22	Site 60	60SB22(0-0.5)	4786.022	0	0.5	28-Jul-98	Explosive	Normal	3
60SB22	Site 60	60SB22(0-0.5)QC	4786.023	0	0.5	28-Jul-98	Explosive	Duplicate	3
60SB22	Site 60	60SB22(1-3)	4786.024	1	3	28-Jul-98	Explosive	Normal	3
60SB22	Site 60	60SB22(3-5)	4786.025	3	5	28-Jul-98	Explosive	Normal	3
60SS12	Site 60	60SS12(0-0.5)QC	4786.012	0	0	28-Jul-98	Herbicide	Duplicate	3
60SB22	Site 60	60SB22(0-0.5)	4786.022	0	0.5	28-Jul-98	Herbicide	Normal	3
60SB22	Site 60	60SB22(0-0.5)QC	4786.023	0	0.5	28-Jul-98	Herbicide	Duplicate	3
60SD01	Site 60	60SD01	4988.025	0	0.5	10-Nov-98	Herbicide	Normal	3
60SD02	Site 60	60SD02	4988.020	0	0.5	10-Nov-98	Herbicide	Normal	3
60SD02	Site 60	60SD02QC	4988.021	0	0.5	10-Nov-98	Herbicide	Duplicate	3
60SS11	Site 60	60SS11(0-0.5)	4786.010	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS12	Site 60	60SS12(0-0.5)	4786.011	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS13	Site 60	60SS13(0-0.5)	4786.013	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS14	Site 60	60SS14(0-0.5)	4786.014	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS15	Site 60	60SS15(0-0.5)	4786.015	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS16	Site 60	60SS16(0-0.5)	4786.016	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS17	Site 60	60SS17(0-0.5)	4786.017	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS18	Site 60	60SS18(0-0.5)	4786.018	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS19	Site 60	60SS19(0-0.5)	4786.019	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS20	Site 60	60SS20(0-0.5)	4786.020	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS21	Site 60	60SS21(0-0.5)	4786.021	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS23	Site 60	60SS23(0-0.5)	4786.026	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS24	Site 60	60SS24(0-0.5)	4786.027	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS25	Site 60	60SS25(0-0.5)	4786.028	0	0.5	28-Jul-98	Herbicide	Normal	3
60SS26	Site 60	60SS26(0-0.5)	4786.029	0	0.5	28-Jul-98	Herbicide	Normal	3
60SB22	Site 60	60SB22(0-0.5)	4786.022	0	0.5	28-Jul-98	Metal	Normal	3
60SB22	Site 60	60SB22(0-0.5)QC	4786.023	0	0.5	28-Jul-98	Metal	Duplicate	3
SUMP122	Site 60	SUMP122(0-0.5)	4819.027	0	0.5	12-Aug-98	Metal	Normal	3
122	Site 60	LH-S122-02_1	3-4653	0.5	1	03-Aug-93	Metal	Normal	1
122	Site 60	LH-S122-01 QC	3-4658	0.5	1.2	03-Aug-93	Metal	Duplicate	1
122	Site 60	LH-S122-01_1	3-4656	0.5	1.2	03-Aug-93	Metal	Normal	1
60SB22	Site 60	60SB22(0-0.5)	4786.022	0	0.5	28-Jul-98	PCB	Normal	3
60SB22	Site 60	60SB22(0-0.5)QC	4786.023	0	0.5	28-Jul-98	PCB	Duplicate	3
SUMP122	Site 60	SUMP122(0-0.5)	4819.027	0	0.5	12-Aug-98	PCB	Normal	3
60SB22	Site 60	60SB22(0-0.5)	35017.11	0	0.5	28-Jul-98	PCDD/PCDF	Normal	3
60SB22	Site 60	60SB22(0-0.5)QC	35017.12	0	0.5	28-Jul-98	PCDD/PCDF	Duplicate	3
SUMP122	Site 60	SUMP122(0-0.5)	35265.07	0	0.5	12-Aug-98	PCDD/PCDF	Normal	3
60SS12	Site 60	60SS12(0-0.5)QC	4786.012	0	0	28-Jul-98	Pesticide	Duplicate	3
60SB22	Site 60	60SB22(0-0.5)	4786.022	0	0.5	28-Jul-98	Pesticide	Normal	3
60SB22	Site 60	60SB22(0-0.5)QC	4786.023	0	0.5	28-Jul-98	Pesticide	Duplicate	3
60SD01	Site 60	60SD01	4988.025	0	0.5	10-Nov-98	Pesticide	Normal	3
60SD02	Site 60	60SD02	4988.020	0	0.5	10-Nov-98	Pesticide	Normal	3
60SD02	Site 60	60SD02QC	4988.021	0	0.5	10-Nov-98	Pesticide	Duplicate	3

Table 3-13
Selection of Samples for Soil Scenarios - Site 60, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
60SS11	Site 60	60SS11(0-0.5)	4786.010	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS12	Site 60	60SS12(0-0.5)	4786.011	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS13	Site 60	60SS13(0-0.5)	4786.013	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS14	Site 60	60SS14(0-0.5)	4786.014	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS15	Site 60	60SS15(0-0.5)	4786.015	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS16	Site 60	60SS16(0-0.5)	4786.016	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS17	Site 60	60SS17(0-0.5)	4786.017	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS18	Site 60	60SS18(0-0.5)	4786.018	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS19	Site 60	60SS19(0-0.5)	4786.019	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS20	Site 60	60SS20(0-0.5)	4786.020	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS21	Site 60	60SS21(0-0.5)	4786.021	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS23	Site 60	60SS23(0-0.5)	4786.026	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS24	Site 60	60SS24(0-0.5)	4786.027	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS25	Site 60	60SS25(0-0.5)	4786.028	0	0.5	28-Jul-98	Pesticide	Normal	3
60SS26	Site 60	60SS26(0-0.5)	4786.029	0	0.5	28-Jul-98	Pesticide	Normal	3
SUMP122	Site 60	SUMP122(0-0.5)	4819.027	0	0.5	12-Aug-98	Pesticide	Normal	3
60SB22	Site 60	60SB22(0-0.5)	4786.022	0	0.5	28-Jul-98	Volatile	Normal	3
60SB22	Site 60	60SB22(0-0.5)QC	4786.023	0	0.5	28-Jul-98	Volatile	Duplicate	3
122	Site 60	LH-S122-02_1	D93-8981-22	0.5	1	03-Aug-93	Volatile	Normal	1
122	Site 60	LH-S122-01 QC	D93-8981-27	0.5	1.2	03-Aug-93	Volatile	Duplicate	1
122	Site 60	LH-S122-01_1	D93-8981-25	0.5	1.2	03-Aug-93	Volatile	Normal	1
60SB22	Site 60	60SB22(1-3)	4786.024	1	3	28-Jul-98	Volatile	Normal	3
122	Site 60	LH-S122-01_2	D93-8981-26	4	4.5	03-Aug-93	Volatile	Normal	1
122	Site 60	LH-S122-02_2	D93-8981-23	4	4.5	03-Aug-93	Volatile	Normal	1
60SB22	Site 60	60SB22(3-5)	4786.025	3	5	28-Jul-98	Volatile	Normal	3
122	Site 60	LH-S122-02_3	D93-8981-24	5.4	5.9	03-Aug-93	Volatile	Normal	1

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCB = polychlorinated biphenyl

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-14
Selection of Samples for Soil Scenarios - Site 67, Group 4 RA, LHAAP, Karnack, Texas

Station	Group 4 Site	Sample ID	Lab ID	Begin Depth (ft)	End Depth (ft)	Date Collected	Data Group	Data Type	RI Phase
67SB01	Site 67	67SB01(0-0.5)	0012062-03C	0	0.5	14-Dec-00	BNA	Normal	Supplemental RI
67SB02	Site 67	67SB02(0-0.5)	0012062-04C	0	0.5	14-Dec-00	BNA	Normal	Supplemental RI
67SB03	Site 67	67SB03(0-0.5)	0012040-01D	0	0.5	07-Dec-00	BNA	Normal	Supplemental RI
67SB02	Site 67	67SB02(1-2)	0012040-11D	1	2	06-Dec-00	BNA	Normal	Supplemental RI
67SB01	Site 67	67SB01(1-3)	0012040-09D	1	3	06-Dec-00	BNA	Normal	Supplemental RI
67SB03	Site 67	67SB03(1-3)	0012040-02D	1	3	07-Dec-00	BNA	Normal	Supplemental RI
67SB01	Site 67	67SB01(3-5)	0012040-10D	3	5	06-Dec-00	BNA	Normal	Supplemental RI
67SB02	Site 67	67SB02(3-5)	0012040-12D	3	5	06-Dec-00	BNA	Normal	Supplemental RI
67SB03	Site 67	67SB03(3-5)	0012040-03D	3	5	07-Dec-00	BNA	Normal	Supplemental RI
67SB03	Site 67	67SB03(3-5)QC	0012040-04D	3	5	07-Dec-00	BNA	Duplicate	Supplemental RI
67SB01	Site 67	67SB01(0-0.5)	0012062-03D	0	0.5	14-Dec-00	Explosive	Normal	Supplemental RI
67SB02	Site 67	67SB02(0-0.5)	0012062-04D	0	0.5	14-Dec-00	Explosive	Normal	Supplemental RI
67SB03	Site 67	67SB03(0-0.5)	0012040-01C	0	0.5	07-Dec-00	Explosive	Normal	Supplemental RI
67SB02	Site 67	67SB02(1-2)	0012040-11C	1	2	06-Dec-00	Explosive	Normal	Supplemental RI
67SB01	Site 67	67SB01(1-3)	0012040-09C	1	3	06-Dec-00	Explosive	Normal	Supplemental RI
67SB03	Site 67	67SB03(1-3)	0012040-02C	1	3	07-Dec-00	Explosive	Normal	Supplemental RI
67SB01	Site 67	67SB01(3-5)	0012040-10C	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
67SB02	Site 67	67SB02(3-5)	0012040-12C	3	5	06-Dec-00	Explosive	Normal	Supplemental RI
67SB03	Site 67	67SB03(3-5)	0012040-03C	3	5	07-Dec-00	Explosive	Normal	Supplemental RI
67SB03	Site 67	67SB03(3-5)QC	0012040-04C	3	5	07-Dec-00	Explosive	Duplicate	Supplemental RI
67SB01	Site 67	67SB01(0-0.5)	0012062-03D	0	0.5	14-Dec-00	Metal	Normal	Supplemental RI
67SB02	Site 67	67SB02(0-0.5)	0012062-04D	0	0.5	14-Dec-00	Metal	Normal	Supplemental RI
67SB03	Site 67	67SB03(0-0.5)	0012040-01D	0	0.5	07-Dec-00	Metal	Normal	Supplemental RI
67SB02	Site 67	67SB02(1-2)	0012040-11D	1	2	06-Dec-00	Metal	Normal	Supplemental RI
67SB01	Site 67	67SB01(0-0.5)	0012062-03B	0	0.5	14-Dec-00	PCDD/PCDF	Normal	Supplemental RI
67SB02	Site 67	67SB02(0-0.5)	0012062-04B	0	0.5	14-Dec-00	PCDD/PCDF	Normal	Supplemental RI
67SB01	Site 67	67SB01(0-0.5)	0012062-03A	0	0.5	14-Dec-00	Volatile	Normal	Supplemental RI
67SB02	Site 67	67SB02(0-0.5)	0012062-04A	0	0.5	14-Dec-00	Volatile	Normal	Supplemental RI
67SB03	Site 67	67SB03(0-0.5)	0012040-01A	0	0.5	07-Dec-00	Volatile	Normal	Supplemental RI
67SB01	Site 67	67SB01(1-3)	0012040-09A	1	3	06-Dec-00	Volatile	Normal	Supplemental RI
67SB02	Site 67	67SB02(1-3)	0012040-11A	1	3	06-Dec-00	Volatile	Normal	Supplemental RI
67SB03	Site 67	67SB03(1-3)	0012040-02A	1	3	07-Dec-00	Volatile	Normal	Supplemental RI
67SB01	Site 67	67SB01(3-5)	0012040-10A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI
67SB02	Site 67	67SB02(3-5)	0012040-12A	3	5	06-Dec-00	Volatile	Normal	Supplemental RI
67SB03	Site 67	67SB03(3-5)	0012040-03A	3	5	07-Dec-00	Volatile	Normal	Supplemental RI
67SB03	Site 67	67SB03(3-5)QC	0012040-04A	3	5	07-Dec-00	Volatile	Duplicate	Supplemental RI

BNA = base neutral acid

ID = identification

LHAAP = Longhorn Army Ammunition Plant

PCDD = polychlorinated dibenzo-p-dioxin

PCDF = polychlorinated dibenzo-p-furan

QC = quality control

RA = risk assessment

RI = remedial investigation

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL_RL	Flag
Dioxin/Furans													
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L		0.876	
	CCSWO1	Central Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L		1.749	
	CCSWO2	Central Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L	2.66		
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L		1.859	
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L		1.23	
	CCSWO1	Central Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L		2.784	
	CCSWO2	Central Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L		2.3	
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	29.819		
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L		0.873	
	CCSWO1	Central Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L		1.604	
	CCSWO2	Central Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L		1.12	
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L	3.363		
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L		1.23	
	CCSWO1	Central Creek	N	12/4/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L		2.784	
	CCSWO2	Central Creek	N	9/16/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L		2.3	
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	57.344		
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L		1.32	
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L		1.5	
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L		2.01	
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L		1.59	
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	14.3		
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L		1.977	
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L		2.93	
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	11.133		
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	34.3		U
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	40.245		U
	CCSWO1	Central Creek	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	14.7		U
	CCSWO2	Central Creek	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	313.995		U
Acetone													
	12SW10	Central Creek	N	3/15/95	Water	Volatile			Acetone	ug/L		10	U
	12SW11	Central Creek	N	3/15/95	Water	Volatile			Acetone	ug/L		10	U
	12SW12	Central Creek	N	3/15/95	Water	Volatile			Acetone	ug/L	10		
	12SW14	Central Creek	N	3/2/95	Water	Volatile			Acetone	ug/L		10	U
Aluminum													
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Aluminum	mg/L	0.78		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Aluminum	mg/L		0.2	U
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Aluminum	mg/L		0.2	U
	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Aluminum	mg/L	2.8		
Antimony													
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Antimony	mg/L	0.009		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Antimony	mg/L	0.012		
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Antimony	mg/L	0.027		
	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Antimony	mg/L	0.009		

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
Arsenic	12SW10	Central Creek	N	3/15/95	Water	Metals			Antimony	mg/L		0.01	R
	12SW11	Central Creek	N	3/15/95	Water	Metals			Antimony	mg/L		0.01	R
	12SW12	Central Creek	N	3/15/95	Water	Metals			Antimony	mg/L		0.01	R
Arsenic	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Arsenic	mg/L		0.01	U
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Arsenic	mg/L	0.012		U
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Arsenic	mg/L		0.01	U
	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Arsenic	mg/L		0.01	U
	12SW10	Central Creek	N	3/15/95	Water	Metals			Arsenic	mg/L		0.005	U
	12SW11	Central Creek	N	3/15/95	Water	Metals			Arsenic	mg/L		0.005	U
	12SW12	Central Creek	N	3/15/95	Water	Metals			Arsenic	mg/L		0.005	U
	12SW14	Central Creek	N	3/2/95	Water	Metals			Arsenic	mg/L		0.005	U
Barium	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Barium	mg/L		0.2	U
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Barium	mg/L		0.2	U
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Barium	mg/L		0.2	U
	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Barium	mg/L		0.2	U
	12SW10	Central Creek	N	3/15/95	Water	Metals			Barium	mg/L	0.074		U
	12SW11	Central Creek	N	3/15/95	Water	Metals			Barium	mg/L	0.075		U
Calcium	12SW12	Central Creek	N	3/15/95	Water	Metals			Barium	mg/L	0.074		U
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Calcium	mg/L	8.6		U
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Calcium	mg/L	25		U
Chloride	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Calcium	mg/L	6.4		U
	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Calcium	mg/L	9.7		U
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Chloride	mg/L	7.38		U
Copper	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Chloride	mg/L	31.8		U
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Chloride	mg/L	2.48		U
	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Chloride	mg/L	6.4		U
Iron	12SW14	Central Creek	N	3/2/95	Water	Metals			Copper	mg/L	0.009		U
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Iron	mg/L	1.4		U
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Iron	mg/L	1.7		U
Lead	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Iron	mg/L	0.4		U
	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Iron	mg/L	8.4		U
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Lead	mg/L		0.003	U
Lead	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Lead	mg/L	0.004		U
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Lead	mg/L		0.003	U
	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Lead	mg/L	0.01		U
Lead	12SW10	Central Creek	N	3/15/95	Water	Metals			Lead	mg/L	0.003		U
	12SW11	Central Creek	N	3/15/95	Water	Metals			Lead	mg/L		0.002	U
	12SW12	Central Creek	N	3/15/95	Water	Metals			Lead	mg/L			U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Sauder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL, RL	Flag
Magnesium	12SW12	Central Creek	N	3/15/95	Water	Metals			Lead	mg/L	0.004		
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Magnesium	mg/L	5.3		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Magnesium	mg/L	19		
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Magnesium	mg/L		5	U
Manganese	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Magnesium	mg/L		5	U
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Manganese	mg/L	0.134		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Manganese	mg/L	0.267		
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Manganese	mg/L	0.062		
Methylene Chloride	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Manganese	mg/L	2.39		
	12SW10	Central Creek	N	3/15/95	Water	Volatile			Methylene Chloride	ug/L		10	U
	12SW11	Central Creek	N	3/15/95	Water	Volatile			Methylene Chloride	ug/L	17		
	12SW12	Central Creek	N	3/15/95	Water	Volatile			Methylene Chloride	ug/L	10		
Nitrate (N)	12SW14	Central Creek	N	3/2/95	Water	Volatile			Methylene Chloride	ug/L		10	U
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Nitrate (N)	mg/L	0.205		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Nitrate (N)	mg/L	0.159		
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Nitrate (N)	mg/L	0.175		
Sodium	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Nitrate (N)	mg/L		0.1	U
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Sodium	mg/L	6.7		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Sodium	mg/L	24		
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Sodium	mg/L		5	U
Strontium	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Sodium	mg/L		5	U
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Strontium	mg/L	0.1		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Strontium	mg/L	0.44		
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Strontium	mg/L		0.05	U
Sulfate	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Strontium	mg/L	0.06		
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Sulfate	mg/L	38		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Sulfate	mg/L	110		
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Sulfate	mg/L	6.2		
Zinc	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Sulfate	mg/L	5.6		
	CCSWO1	Central Creek	N	9/16/98	Water	Metals			Zinc	mg/L	0.04		
	CCSWO1	Central Creek	N	12/4/98	Water	Metals			Zinc	mg/L	0.04		
	CCSWO2	Central Creek	N	9/16/98	Water	Metals			Zinc	mg/L	0.03		
1,2,4-Trichlorobenzene	CCSWO2	Central Creek	N	12/4/98	Water	Metals			Zinc	mg/L	0.04		
	GPW-1	Goose Prairie Creek	EB	8/7/1996	Water	Semivolatile	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67	U
	23022-003	Goose Prairie Creek	EB	8/7/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L	0.55	0.32	
	23022-003	Goose Prairie Creek	EB	8/7/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L			

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67	U
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L	0.38	0.32	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32	U
23022-001	GPW-1	Goose Prairie Creek	TB	8/7/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32	U
26287-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-1572-1	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-2717-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-4201-4	GPW-1	Goose Prairie Creek	TB	8/8/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-2717-9	GPW-12	Goose Prairie Creek	TB	4/21/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L	1.7	0.32	U
25134-005	GPW-2	Goose Prairie Creek	EB	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25134-004	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25519-002	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
990967102	GPW-2	Goose Prairie Creek	QA	9/23/1999	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
990967101	GPW-2	Goose Prairie Creek	QA TB	9/23/1999	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
217903	GPW-2	Goose Prairie Creek	QA	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
217903	GPW-2	Goose Prairie Creek	QA TB	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		1,2,4-Trichlorobenzene	ug/L		1		U
1215101	GPW-2	Goose Prairie Creek	QA	12/5/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B		1,2,4-Trichlorobenzene	ug/L		1		U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67		U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32		U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32		U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67		U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32		U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
26287-003	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		1,2,4-Trichlorobenzene	ug/L		1		U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67		U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32		U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67		U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32		U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		1,2,4-Trichlorobenzene	ug/L		1		U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67		U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32		U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67		U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32		U
23028-001	GPW-5	Goose Prairie Creek	TB	8/8/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32		U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
26287-005	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	120-82-1	1,2,4-Trichlorobenzene	ug/L		1		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Sauder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
99-6038-3	GPW-5	Goose Prairie Creek	TB	9/24/1999	Water	Volatiles	8260	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32	U
25528-006	GPW-6	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
23038-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L	0.41	0.67	U
23038-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25134-009	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatiles	8270	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.67	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		0.32	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
458001	GPW-7	Goose Prairie Creek	QA	4/20/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1.5	U
458002	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
00-6051-6	GPW-9	Goose Prairie Creek	TB	12/5/2000	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	120-82-1	1,2,4-Trichlorobenzene	ug/L		1	U
2,4,6-Trinitrotoluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.13	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.13	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4,6-Trinitrotoluene	ug/L		0.5	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L	41.2	0.25	
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L	7	0.25	
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L	6.1	0.5	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4,6-Trinitrotoluene	ug/L		0.5	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L	27.4	0.25	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.05	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4,6-Trinitrotoluene	ug/L		0.5	U
25528-002	GPW-2AR	Goose Prairie Creek	QC	12/5/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.05	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4,6-Trinitrotoluene	ug/L		0.5	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.65	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No.	Compound	Units	Results	DL RL	Flag
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4,6-Trinitrotoluene	ug/L		0.5	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.65	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.65	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-010	GPW-7	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L	0.3	0.5	J
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L	1.6	0.25	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.5	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	118-96-7	2,4,6-Trinitrotoluene	ug/L		0.25	U
2,4-Dinitrotoluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.13	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.13	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L	1	0.5	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25134-011	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L	1.7	0.25	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L	3.9	0.5	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L	0.8	0.5	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L	3.1	0.25	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25134-004	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-003	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
99-6004-2	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-1572-10	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6050-6	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
23038-007	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25528-003	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.65	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL RL	Flag
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4-Dinitrotoluene	ug/L		0.5	U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.65	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4-Dinitrotoluene	ug/L		0.5	U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
25528-005	GPW-5	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.65	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4-Dinitrotoluene	ug/L		0.5	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.65	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4-Dinitrotoluene	ug/L		0.5	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	121-14-2	2,4-Dinitrotoluene	ug/L		1.1	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.35	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
26287-010	GPW-7	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,4-Dinitrotoluene	ug/L		0.5	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.58	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL, RL	Flag
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.5	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-14-2	2,4-Dinitrotoluene	ug/L		0.25	U
2,6-Dinitrotoluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.13	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Semivolatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.13	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-010	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25134-013	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L	1.3	0.25	U
25519-011	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-1572-9	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2717-8	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L	3.2	0.25	U
25528-010	GPW-12AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
25038-005	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25528-001	GPW-1AR	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.65	U
23022-005	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25134-003	GPW-2	Goose Prairie Creek	QC	2/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25134-004	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,6-Dinitrotoluene	ug/L		0.5	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Explosives	8330		2,6-Dinitrotoluene	ug/L		0.5	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.65	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	8/2/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,6-Dinitrotoluene	ug/L		0.5	U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.65	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,6-Dinitrotoluene	ug/L		0.5	U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.65	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-005	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,6-Dinitrotoluene	ug/L		0.5	U
23028-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.65	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-006	GPW-6	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,6-Dinitrotoluene	ug/L		0.5	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Semi-volatile	8270	606-20-2	2,6-Dinitrotoluene	ug/L		1.1	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25134-011	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-010	GPW-7	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,6-Dinitrotoluene	ug/L		0.5	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L	0.42	0.25	
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.25	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L		0.5	U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2,6-Dinitrotoluene	ug/L		0.5	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	606-20-2	2,6-Dinitrotoluene	ug/L	1.1	0.25	U
	50SW05	Goose Prairie Creek	N	11/1/98	Water	Volatiles			2,6-Dinitrotoluene	ug/L			
	50SW06	Goose Prairie Creek	N	11/10/98	Water	Volatiles			2,6-Dinitrotoluene	ug/L		10	U
	50SW06	Goose Prairie Creek	QC	11/10/98	Water	Volatiles			2,6-Dinitrotoluene	ug/L		10	U
	50SW07	Goose Prairie Creek	N	11/1/98	Water	Volatiles			2,6-Dinitrotoluene	ug/L		10	U
2-Amino-4,6-dinitrotoluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.13	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.13	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	0.37	0.25	
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	1.2	0.5	
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	7.1	0.25	
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	7.5	0.25	
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	4.6	0.5	
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	3.5	0.5	
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	3.5	0.25	
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL _{RL}	Flag
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.65	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25528-003	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
23022-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.65	U
25134-006	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25519-004	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
99-6038-1	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-1572-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-2717-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-4201-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25528-004	GPW-3AR	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.65	U
23022-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25134-007	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.65	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.65	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	2.1	0.25	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	1.6	0.25	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-010	GPW-7	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	1.4	0.5	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	2.3	0.5	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L	0.66	0.25	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.5	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	355-72-782	2-Amino-4,6-dinitrotoluene	ug/L		0.25	U
2-Nitrotoluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.26	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.26	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L	0.3	0.25	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL, RL	Flag
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		1.3	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		2-Nitrotoluene	ug/L		0.5	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Explosives	8330		2-Nitrotoluene	ug/L		0.5	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		1.3	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		1.3	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		1.3	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		1.3	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
26287-006	GPW-6	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-010	GPW-7	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
26287-007	GPW-9	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.53	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.5	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	88-72-2	2-Nitrotoluene	ug/L		0.25	U
4-Amino-2,6-dinitrotoluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.13	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.13	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L	0.68	0.25	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
26287-001	GPW-1	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L	1.8	0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L	12.9	0.25	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L	14.7	0.25	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L	7.4	0.5	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L	5.3	0.5	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L	7.3	0.25	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.65	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L	0.27	0.25	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Explosives	8330		4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.65	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
25528-004	GPW-3AR	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
23022-007	GPW-4	Goose Prairie Creek	N	2/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.65	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.65	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
25528-006	GPW-5AR	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
23028-003	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.65	U
25134-009	GPW-6	Goose Prairie Creek	N	2/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	
26287-010	GPW-7	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		2.9	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		2.3	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Amino-2,6-dinitrotoluene	ug/L		3.1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		1.4	
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Amino-2,6-dinitrotoluene	ug/L		0.5	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	1946-51-0	4-Amino-2,6-dinitrotoluene	ug/L		0.25	U
4-Isopropyltoluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25134-004	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
26287-004	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
23022-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25134-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L	0.22	0.2	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		0.2	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L		1	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/L	1.2	1	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	99-87-6	4-Isopropyltoluene	ug/L		1	U
4-Nitrotoluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.26	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.26	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Nitrotoluene	ug/L		0.5	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Nitrotoluene	ug/L		0.5	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L	1.7	0.25	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		1.3	
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Nitrotoluene	ug/L		0.5	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Explosives	8330		4-Nitrotoluene	ug/L		0.5	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		1.3	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Nitrotoluene	ug/L		0.5	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		1.3	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		4-Nitrotoluene	ug/L		0.5	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		1.3		U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53		U
00-2717-2	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		1.3		U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53		U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
26287-010	GPW-7	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53		U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.25		U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.53		U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	99-99-0	4-Nitrotoluene	ug/L		0.5		U
Acetone														
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	23	20		U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	21	20		U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	25	20		U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260	67-64-1	Acetone	ug/L		20		U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260	67-64-1	Acetone	ug/L	36	20		U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	21	20		
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	8	20		J
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	7	20		J
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Acetone	ug/L		20		U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B		Acetone	ug/L		20		U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-64-1	Acetone	ug/L	4810			TIC
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	67-64-1	Acetone	ug/L	5340			TIC
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	67-64-1	Acetone	ug/L		20		U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	26	20		U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Acetone	ug/L	9	20		J
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-64-1	Acetone	ug/L	2370			TIC
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	26	20		U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Acetone	ug/L		20		U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-64-1	Acetone	ug/L	1170			TIC
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	10.8			TIC
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	67-64-1	Acetone	ug/L		20		U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	26	20		U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Acetone	ug/L		20		U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-64-1	Acetone	ug/L	680			TIC
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	24	20		U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Acetone	ug/L		20		U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-64-1	Acetone	ug/L	375			TIC
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Acetone	ug/L		20		U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L		20		U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-64-1	Acetone	ug/L	32	20		U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Acetone	ug/L		20		U
Aluminum														
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Aluminum	ug/L	746	200		
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Aluminum	ug/L	620	200		
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Aluminum	ug/L	2,120	200		
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Aluminum	ug/L		200		U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Aluminum	ug/L		200		U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Aluminum	ug/L	541	200		
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Aluminum	ug/L	310	200		
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Aluminum	ug/L	760			

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Aluminum	ug/L	5400		J
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Aluminum	ug/L	340		
	GPSW03	Goose Prairie Creek	N	12/4/98	Water	Metals			Aluminum	ug/L	390		
	GPSW04	Goose Prairie Creek	N	11/1/98	Water	Metals			Aluminum	ug/L	1800		
	GPSW05	Goose Prairie Creek	N	11/10/98	Water	Metals			Aluminum	ug/L	4600		
	GPSW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Aluminum	ug/L	4400		
	GPSW07	Goose Prairie Creek	N	11/11/98	Water	Metals			Aluminum	ug/L	1700		
	LHSGPC01	Goose Prairie Creek	N	11/1/95	Water	Metals			Aluminum	ug/L	850		
	LHSGPC03	Goose Prairie Creek	N	11/2/95	Water	Metals			Aluminum	ug/L	970		
	LHSGPC05	Goose Prairie Creek	N	11/2/95	Water	Metals			Aluminum	ug/L	820		
	LHSGPC07	Goose Prairie Creek	N	11/2/95	Water	Metals			Aluminum	ug/L	800		
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Metals			Aluminum	ug/L	890		
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Metals			Aluminum	ug/L	830		
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Aluminum	ug/L	980		
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Aluminum	ug/L	830		
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Aluminum	ug/L	770		
	GPCSW07	Goose Prairie Creek	QC	11/16/98	Water	Metals			Aluminum	ug/L	910		
	GPCSW08	Goose Prairie Creek	N	11/16/98	Water	Metals			Aluminum	ug/L	560		
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Metals			Aluminum	ug/L	820		
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Metals			Aluminum	ug/L	1300		
	Antimony								Antimony	ug/L	2300		
	S60623-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Antimony	ug/L	1600		
	S60623-4	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Antimony	ug/L	60		U
	S60623-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Antimony	ug/L	60		U
	S60623-7	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Antimony	ug/L	60		U
	S60623-8	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Antimony	ug/L	60		U
	S60627-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Antimony	ug/L	63		
	S60627-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Antimony	ug/L	69		
	GPSW01	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Antimony	ug/L	60		U
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Antimony	ug/L	5		U
	GPSW03	Goose Prairie Creek	N	12/4/98	Water	Metals			Antimony	ug/L	10		
	GPSW04	Goose Prairie Creek	N	9/16/98	Water	Metals			Antimony	ug/L	30		
	GPSW05	Goose Prairie Creek	N	12/4/98	Water	Metals			Antimony	ug/L	17		
	GPSW06	Goose Prairie Creek	N	11/1/98	Water	Metals			Antimony	ug/L	5		
	GPSW07	Goose Prairie Creek	QC	11/10/98	Water	Metals			Antimony	ug/L	9		
	LHSGPC01	Goose Prairie Creek	N	11/11/98	Water	Metals			Antimony	ug/L	5		U
	LHSGPC03	Goose Prairie Creek	N	11/1/95	Water	Metals			Antimony	ug/L	29		
	LHSGPC05	Goose Prairie Creek	N	11/2/95	Water	Metals			Antimony	ug/L	100.0		U
	LHSGPC07	Goose Prairie Creek	N	11/2/95	Water	Metals			Antimony	ug/L	100.0		U
	GPCSW01	Goose Prairie Creek	N	11/2/95	Water	Metals			Antimony	ug/L	100.0		U
	GPCSW02	Goose Prairie Creek	N	11/18/98	Water	Metals			Antimony	ug/L	12		
									Antimony	ug/L	10		

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	GPCSW03	Goose Prairie Creek	N	11/1/98	Water	Metals			Antimony	ug/L	16		J
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Antimony	ug/L	18		
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Antimony	ug/L	31		
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Antimony	ug/L	22		
	GPCSW06	Goose Prairie Creek	QC	11/16/98	Water	Metals			Antimony	ug/L	10		
	GPCSW07	Goose Prairie Creek	N	11/16/98	Water	Metals			Antimony	ug/L	42		
	GPCSW08	Goose Prairie Creek	N	11/1/98	Water	Metals			Antimony	ug/L	6		
	GPCSW09	Goose Prairie Creek	N	11/1/98	Water	Metals			Antimony	ug/L		5	U
	GPCSW10	Goose Prairie Creek	N	11/1/98	Water	Metals			Antimony	ug/L	8		
Arsenic													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	7060		Arsenic	ug/L		2.00	U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	7060		Arsenic	ug/L		2.00	U
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	7060		Arsenic	ug/L	2.4	2.0	J
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	7060		Arsenic	ug/L		2.00	U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	7060		Arsenic	ug/L	2.1	2.0	J
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	7060		Arsenic	ug/L	2	2.0	J
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	7060		Arsenic	ug/L	2	2.0	J
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Arsenic	ug/L		10.0	U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Arsenic	ug/L	10		
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Arsenic	ug/L		10.0	U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Arsenic	ug/L		10.0	U
	S0SW05	Goose Prairie Creek	N	11/1/98	Water	Metals			Arsenic	ug/L		10.0	U
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Arsenic	ug/L		10.0	U
	S0SW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Arsenic	ug/L		10.0	U
	S0SW07	Goose Prairie Creek	N	11/1/98	Water	Metals			Arsenic	ug/L		10.0	U
Barium													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Barium	ug/L	76	5	
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Barium	ug/L	62	5	
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Barium	ug/L	154	5	
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Barium	ug/L	50	5	
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Barium	ug/L	51	5	
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Barium	ug/L	60	5	
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Barium	ug/L	58	5	
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Barium	ug/L		200	U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Barium	ug/L	210		
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Barium	ug/L		200	U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Barium	ug/L		200	U
	S0SW05	Goose Prairie Creek	N	11/1/98	Water	Metals			Barium	ug/L		200	U
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Barium	ug/L		200	U
	S0SW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Barium	ug/L		200	U
	S0SW07	Goose Prairie Creek	N	11/1/98	Water	Metals			Barium	ug/L		200	U
	LHSGPC01	Goose Prairie Creek	N	1/11/95	Water	Metals			Barium	ug/L	82		
	LHSGPC03	Goose Prairie Creek	N	1/12/95	Water	Metals			Barium	ug/L	90		
	LHSGPC05	Goose Prairie Creek	N	1/12/95	Water	Metals			Barium	ug/L	89		

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	LHSGPC07	Goose Prairie Creek	N	1/12/95	Water	Metals			Barium	ug/L	76		
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Metals			Barium	ug/L		20	U
	GPCSW02	Goose Prairie Creek	N	11/18/98	Water	Metals			Barium	ug/L		20	U
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Metals			Barium	ug/L		20	U
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Barium	ug/L		20	U
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Barium	ug/L		20	U
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Barium	ug/L		20	U
	GPCSW07	Goose Prairie Creek	QC	11/16/98	Water	Metals			Barium	ug/L		20	U
	GPCSW08	Goose Prairie Creek	N	11/16/98	Water	Metals			Barium	ug/L		20	U
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Metals			Barium	ug/L		20	U
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Metals			Barium	ug/L		20	U
Beryllium													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Beryllium	ug/L		10	U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Beryllium	ug/L		10	U
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Beryllium	ug/L		10	U
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Beryllium	ug/L		10	U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Beryllium	ug/L		10	U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Beryllium	ug/L		10	U
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Beryllium	ug/L		10	U
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Beryllium	ug/L	0.5		
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Beryllium	ug/L	0.7		
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Beryllium	ug/L		0.5	U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Beryllium	ug/L		0.5	U
	S0SW05	Goose Prairie Creek	N	11/11/98	Water	Metals			Beryllium	ug/L		0.5	U
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Beryllium	ug/L		0.5	U
	S0SW07	Goose Prairie Creek	QC	11/10/98	Water	Metals			Beryllium	ug/L		0.5	U
	S0SW07	Goose Prairie Creek	N	11/11/98	Water	Metals			Beryllium	ug/L		0.5	U
bis(2-Ethylhexyl)phthalate													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23022-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23038-008	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23022-007	GPW-4	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	117-81-7	bis(2-Ethylhexyl)phthalate	ug/L		0.92	U
	LHSGPC01	Goose Prairie Creek	N	1/11/95	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L	1		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
LHSGPC03	GPW-1	Goose Prairie Creek	N	1/12/95	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L	530			
LHSGPC05	GPW-1	Goose Prairie Creek	N	1/12/95	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
LHSGPC07	GPW-1	Goose Prairie Creek	N	1/12/95	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW01	GPW-1	Goose Prairie Creek	N	1/18/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW02	GPW-1	Goose Prairie Creek	N	1/18/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW03	GPW-1	Goose Prairie Creek	N	1/17/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW04	GPW-1	Goose Prairie Creek	N	1/16/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW05	GPW-1	Goose Prairie Creek	N	1/16/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW06	GPW-1	Goose Prairie Creek	N	1/16/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW07	GPW-1	Goose Prairie Creek	QC	1/16/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW08	GPW-1	Goose Prairie Creek	N	1/16/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW09	GPW-1	Goose Prairie Creek	N	1/11/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
GPCSW10	GPW-1	Goose Prairie Creek	N	1/11/98	Water	Semivolatile			bis(2-Ethylhexyl)phthalate	ug/L		10		U
Bromodichloromethane														
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			0.2	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			0.2	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			1	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	4.8		1	U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L	2.4		1	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
26287-008	GPW-12	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			1	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			1	U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			1	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			0.2	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	2.1		0.2	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			1	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L			1	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L			1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, IHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260	75-27-4	Bromodichloromethane	ug/L		1	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260	75-27-4	Bromodichloromethane	ug/L		1	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	2.5	0.2	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L	2.8	0.2	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	2	0.2	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
26287-003	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L	1.3		U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	75-27-4	Bromodichloromethane	ug/L		1	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	1.2	0.2	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		0.2	U
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-6051-1	GPW-4	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
23038-009	GPW-4AR	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25528-005	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	0.45	0.2	U
23028-002	GPW-5	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25134-008	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	0.2		U
25519-006	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
26287-005	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
99-6038-2	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-1572-5	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-2717-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-6051-2	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
23038-010	GPW-5AR	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25528-006	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	0.43	0.2	U
23028-003	GPW-6	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
				8/8/1996	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		0.2	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL RL	Flag
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1998	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L	0.44	0.2	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-6050-4	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25134-011	GPW-8	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
25519-009	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-27-4	Bromodichloromethane	ug/L		1	U
26287-007	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-1572-8	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-2717-7	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
00-6051-4	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25528-009	GPW-9AR	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-27-4	Bromodichloromethane	ug/L		1	U
Calcium													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Calcium	ug/L	8,880	200	
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Calcium	ug/L	8,120	200	
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Calcium	ug/L	10,200	200	
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Calcium	ug/L	8,040	200	
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Calcium	ug/L	8,310	200	
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Calcium	ug/L	8,820	200	
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Calcium	ug/L	8,910	200	
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Calcium	ug/L	7,500		
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Calcium	ug/L	16,000		
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Calcium	ug/L	5,900		
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Calcium	ug/L	7,900		
	S0SW05	Goose Prairie Creek	N	11/1/98	Water	Metals			Calcium	ug/L	11,000		
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Calcium	ug/L	9,400		
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Calcium	ug/L	9,000		
	S0SW07	Goose Prairie Creek	N	11/1/98	Water	Metals			Calcium	ug/L	11,000		
	LHSGPC01	Goose Prairie Creek	QC	11/10/98	Water	Metals			Calcium	ug/L	11,000		
	LHSGPC03	Goose Prairie Creek	N	11/1/95	Water	Metals			Calcium	ug/L	11,400		
	LHSGPC03	Goose Prairie Creek	N	11/2/95	Water	Metals			Calcium	ug/L	11,200		
	LHSGPC05	Goose Prairie Creek	N	11/2/95	Water	Metals			Calcium	ug/L	11,900		
	LHSGPC07	Goose Prairie Creek	N	11/2/95	Water	Metals			Calcium	ug/L	10,600		

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Metals			Calcium	ug/L	8,800			
	GPCSW02	Goose Prairie Creek	N	11/18/98	Water	Metals			Calcium	ug/L	8,600			
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Metals			Calcium	ug/L	7,500			
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Calcium	ug/L	7,400			
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Calcium	ug/L	7,300			
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Calcium	ug/L	7,700			
	GPCSW07	Goose Prairie Creek	QC	11/16/98	Water	Metals			Calcium	ug/L	7,600			
	GPCSW08	Goose Prairie Creek	N	11/16/98	Water	Metals			Calcium	ug/L	6,800			
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Metals			Calcium	ug/L	11,000			
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Metals			Calcium	ug/L	7,500			
Chloroform														
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	0.31		0.2	
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	0.3		0.2	
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L				U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L				U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L	16.4			
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L	4.6			
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L				U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
25528-002	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L				U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L				U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L				U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L			0.2	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L				U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	5.6		0.2	
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	3.3			
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L	3.3			
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L	2.6			
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L	2.9			
26287-009	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L				U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL, RL	Flag
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Chloroform	ug/L		1	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B		Chloroform	ug/L		1	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	12.6	0.2	U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	14.6	0.2	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	5.3	0.2	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	2.7	1	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L	3.3	1	U
26287-003	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	67-66-3	Chloroform	ug/L		1	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	4.1	0.2	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	0.44	0.2	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	1.7	1	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L	1.3	1	U
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	1.3	0.2	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	0.23	0.2	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	1.5	1	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
26287-005	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	67-66-3	Chloroform	ug/L		1	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	1.1	0.2	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	0.23	0.2	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	1.3	1	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
26287-006	GPW-6	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Chloroform	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L	1.1	0.2	
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L		1	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Chloroform	ug/L		1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	67-66-3	Chloroform	ug/L		1	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
26287-007	GPW-9	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Chloroform	ug/L		1	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	67-66-3	Chloroform	ug/L		1	U
Chromium													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Chromium	ug/L		10	U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Chromium	ug/L	12	10	
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Chromium	ug/L	12	10	
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Chromium	ug/L		10	U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Chromium	ug/L		10	U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Chromium	ug/L		10	U
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Chromium	ug/L		10	U
	S0SW05	Goose Prairie Creek	N	11/1/98	Water	Metals			Chromium	ug/L		10	U
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Chromium	ug/L		10	U
	S0SW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Chromium	ug/L		10	U
	S0SW07	Goose Prairie Creek	N	11/1/98	Water	Metals			Chromium	ug/L		10	U
cis-1,2-Dichloroethene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L	1.1	0.2	
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L	0.52	0.2	
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
26287-001	GPW-1	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	12	1	
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	6.4	1	
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	3.7	1	
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L	1	1	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L	0.42	0.2	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L	0.88	0.2	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	1.1	1	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	1.5	1	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	1.7	1	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	0.6	1	J
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	0.5	1	J
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	2	1	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	0.4	1	J
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	0.3	1	J
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	1.1	0.2	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L	1.2	0.2	U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L	0.82	0.2	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L	1	1	U
26287-003	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L	0.38	0.2	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		0.2	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		cis-1,2-Dichloroethene	ug/L		1	U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		0.2	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		0.2	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
26287-005	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		0.2	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		0.2	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
26287-006	GPW-6	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		0.2	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
26287-007	GPW-9	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	156-59-2	cis-1,2-Dichloroethene	ug/L		1	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260		cis-1,2-Dichloroethene	ug/L		1	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260		cis-1,2-Dichloroethene	ug/L		1	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260		cis-1,2-Dichloroethene	ug/L		1	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260		cis-1,2-Dichloroethene	ug/L		1	U
	50SW05	Goose Prairie Creek	N	11/11/98	Water	Volatiles			cis-1,2-Dichloroethene	ug/L	3.3		

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	50SW06	Goose Prairie Creek	N	11/10/98	Water	Volatiles			cis-1,2-Dichloroethene	ug/L		1	U
	50SW06	Goose Prairie Creek	QC	11/10/98	Water	Volatiles			cis-1,2-Dichloroethene	ug/L	1.9		
	50SW07	Goose Prairie Creek	N	11/11/98	Water	Volatiles			cis-1,2-Dichloroethene	ug/L		1	U
Copper													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Copper	ug/L		10	U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Copper	ug/L		10	U
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Copper	ug/L		10	U
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Copper	ug/L		10	U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Copper	ug/L		10	U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Copper	ug/L		10	U
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Copper	ug/L		10	U
50SW05		Goose Prairie Creek	N	11/11/98	Water	Metals			Copper	ug/L		25	U
50SW06		Goose Prairie Creek	N	11/10/98	Water	Metals			Copper	ug/L		25	U
50SW07		Goose Prairie Creek	QC	11/10/98	Water	Metals			Copper	ug/L		25	U
50SW07		Goose Prairie Creek	N	11/11/98	Water	Metals			Copper	ug/L	29		
Dibromochloromethane													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		0.35	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		0.35	U
25134-001	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		0.35	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
23022-003	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L	0.91	0.35	
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag
26287-009	GPW-2	Goose Prairie Creek	QC	6/21/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260	124-48-1	Dibromochloromethane	ug/L		1		U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260	124-48-1	Dibromochloromethane	ug/L		1		U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Dibromochloromethane	ug/L		1		U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B		Dibromochloromethane	ug/L		1		U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L	0.54	0.35		
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L	0.62	0.35		
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L	0.96	0.35		
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1		U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
26287-003	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	124-48-1	Dibromochloromethane	ug/L		1		U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Dibromochloromethane	ug/L		1		U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L	0.41	0.35		
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		0.35		U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1		U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Dibromochloromethane	ug/L		1		U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		0.35		U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		0.35		U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1		U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
26287-005	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	124-48-1	Dibromochloromethane	ug/L		1		U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Dibromochloromethane	ug/L		1		U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		0.35		U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		0.35	U
25134-007	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/2/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		0.35	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	124-48-1	Dibromochloromethane	ug/L		1	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	124-48-1	Dibromochloromethane	ug/L		1	U
Diethylphthalate													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L	4.7		U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Semivolatile	8270	84-66-2	Diethylphthalate	ug/L		1	U
HMX													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.26	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.26	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	2691-41-0	HMX	ug/L	7.6	1.3	
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	2691-41-0	HMX	ug/L	13.2	1.3	
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	2691-41-0	HMX	ug/L	11.1	1.3	

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Sauder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
21028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	2691-41-0	HMX	ug/L	9.8	1.3	
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	2691-41-0	HMX	ug/L	9.6	1.3	
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-010	GPW-7	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.5	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	2691-41-0	HMX	ug/L		0.25	U
Iron													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Iron	ug/L	1,790	70	
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Iron	ug/L	1,460	70	
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Iron	ug/L	4,530	70	

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Iron	ug/L	713	70	
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Iron	ug/L	732	70	
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Iron	ug/L	1,220	70	
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Iron	ug/L	1,150	70	
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Iron	ug/L	4,200		
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Iron	ug/L	29,000		
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Iron	ug/L	1,400		
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Iron	ug/L	8,800		
	S0SW05	Goose Prairie Creek	N	11/11/98	Water	Metals			Iron	ug/L	2,700		
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Iron	ug/L	4,900		
	S0SW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Iron	ug/L	4,000		
	S0SW07	Goose Prairie Creek	N	11/11/98	Water	Metals			Iron	ug/L	2,800		
	LHSGPC01	Goose Prairie Creek	N	1/11/95	Water	Metals			Iron	ug/L	2,000		
	LHSGPC03	Goose Prairie Creek	N	1/12/95	Water	Metals			Iron	ug/L	2,400		
	LHSGPC05	Goose Prairie Creek	N	1/12/95	Water	Metals			Iron	ug/L	2,200		
	LHSGPC07	Goose Prairie Creek	N	1/12/95	Water	Metals			Iron	ug/L	1,700		
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Metals			Iron	ug/L	2,100		
	GPCSW02	Goose Prairie Creek	N	11/18/98	Water	Metals			Iron	ug/L	1,900		
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Metals			Iron	ug/L	2,000		
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Iron	ug/L	1,600		
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Iron	ug/L	2,200		
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Iron	ug/L	1,600		
	GPCSW06	Goose Prairie Creek	QC	11/16/98	Water	Metals			Iron	ug/L	1,300		
	GPCSW07	Goose Prairie Creek	N	11/16/98	Water	Metals			Iron	ug/L	1,700		
	GPCSW08	Goose Prairie Creek	N	11/11/98	Water	Metals			Iron	ug/L	2,700		
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Metals			Iron	ug/L	3,200		
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Metals			Iron	ug/L	2,700		
Lead													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Lead	ug/L		90	U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Lead	ug/L		90	U
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Lead	ug/L		90	U
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Lead	ug/L		90	U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Lead	ug/L		90	U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Lead	ug/L		90	U
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Lead	ug/L		90	U
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Lead	ug/L		3	U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Lead	ug/L	52		
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Lead	ug/L		3	U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Lead	ug/L	5		
	S0SW05	Goose Prairie Creek	N	11/11/98	Water	Metals			Lead	ug/L	5		
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Lead	ug/L	3		
	S0SW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Lead	ug/L	5		
	S0SW07	Goose Prairie Creek	N	11/11/98	Water	Metals			Lead	ug/L	6		
	LHSGPC01	Goose Prairie Creek	N	1/11/95	Water	Metals			Lead	ug/L		2	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	LHSGPC03	Goose Prairie Creek	N	1/12/95	Water	Metals			Lead	ug/L		2		U
	LHSGPC05	Goose Prairie Creek	N	1/12/95	Water	Metals			Lead	ug/L		2		U
	LHSGPC07	Goose Prairie Creek	N	1/12/95	Water	Metals			Lead	ug/L	2.6			
	GPCSW01	Goose Prairie Creek	N	1/18/98	Water	Metals			Lead	ug/L	4			
	GPCSW02	Goose Prairie Creek	N	1/18/98	Water	Metals			Lead	ug/L	5			
	GPCSW03	Goose Prairie Creek	N	1/17/98	Water	Metals			Lead	ug/L	5			J
	GPCSW04	Goose Prairie Creek	N	1/16/98	Water	Metals			Lead	ug/L	3			
	GPCSW05	Goose Prairie Creek	N	1/16/98	Water	Metals			Lead	ug/L	5			
	GPCSW06	Goose Prairie Creek	N	1/16/98	Water	Metals			Lead	ug/L	4			
	GPCSW07	Goose Prairie Creek	QC	1/16/98	Water	Metals			Lead	ug/L	5			
	GPCSW08	Goose Prairie Creek	N	1/16/98	Water	Metals			Lead	ug/L	6			
	GPCSW09	Goose Prairie Creek	N	1/11/98	Water	Metals			Lead	ug/L	5			
	GPCSW10	Goose Prairie Creek	N	1/11/98	Water	Metals			Lead	ug/L	7			
			N	1/11/98	Water	Metals			Lead	ug/L		3		U
Magnesium														
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Magnesium	ug/L	3,760		100	
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Magnesium	ug/L	3,320		100	
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Magnesium	ug/L	3,640		100	
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Magnesium	ug/L	2,880		100	
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Magnesium	ug/L	2,960		100	
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Magnesium	ug/L	3,140		100	
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Magnesium	ug/L	3,130		100	
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Magnesium	ug/L			5000	U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Magnesium	ug/L			5000	U
	LHSGPC01	Goose Prairie Creek	N	1/11/95	Water	Metals			Magnesium	ug/L			5000	U
	LHSGPC03	Goose Prairie Creek	N	1/12/95	Water	Metals			Magnesium	ug/L			5000	U
	LHSGPC05	Goose Prairie Creek	N	1/12/95	Water	Metals			Magnesium	ug/L	5,100			
	LHSGPC07	Goose Prairie Creek	N	1/18/98	Water	Metals			Magnesium	ug/L	5,300			
	GPCSW01	Goose Prairie Creek	N	1/18/98	Water	Metals			Magnesium	ug/L	5,600			
	GPCSW02	Goose Prairie Creek	N	1/17/98	Water	Metals			Magnesium	ug/L	4,400			
	GPCSW03	Goose Prairie Creek	N	1/16/98	Water	Metals			Magnesium	ug/L			5000	U
	GPCSW04	Goose Prairie Creek	N	1/16/98	Water	Metals			Magnesium	ug/L			5000	U
	GPCSW05	Goose Prairie Creek	N	1/16/98	Water	Metals			Magnesium	ug/L			5000	U
	GPCSW06	Goose Prairie Creek	N	1/16/98	Water	Metals			Magnesium	ug/L			5000	U
	GPCSW07	Goose Prairie Creek	QC	1/16/98	Water	Metals			Magnesium	ug/L			5000	U
	GPCSW08	Goose Prairie Creek	N	1/16/98	Water	Metals			Magnesium	ug/L			5000	U
	GPCSW09	Goose Prairie Creek	N	1/11/98	Water	Metals			Magnesium	ug/L			5000	U
	GPCSW10	Goose Prairie Creek	N	1/11/98	Water	Metals			Magnesium	ug/L			5000	U
Manganese														
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Manganese	ug/L	702		10	
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Manganese	ug/L	513		10	

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Manganese	ug/L	2,180	10		
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Manganese	ug/L	114	10		
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Manganese	ug/L	38	10		
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Manganese	ug/L	177	10		
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Manganese	ug/L	189	10		
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Manganese	ug/L	478			
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Manganese	ug/L	639			
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Manganese	ug/L	94			
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Manganese	ug/L	898			
	SOSW05	Goose Prairie Creek	N	11/11/98	Water	Metals			Manganese	ug/L	35			
	SOSW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Manganese	ug/L	100			
	SOSW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Manganese	ug/L	91			
	SOSW07	Goose Prairie Creek	N	11/11/98	Water	Metals			Manganese	ug/L	44			
	LHSGPC01	Goose Prairie Creek	N	1/11/95	Water	Metals			Manganese	ug/L	190			
	LHSGPC03	Goose Prairie Creek	N	1/12/95	Water	Metals			Manganese	ug/L	220			
	LHSGPC05	Goose Prairie Creek	N	1/12/95	Water	Metals			Manganese	ug/L	230			
	LHSGPC07	Goose Prairie Creek	N	1/12/95	Water	Metals			Manganese	ug/L	160			
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Metals			Manganese	ug/L	309			
	GPCSW02	Goose Prairie Creek	N	11/18/98	Water	Metals			Manganese	ug/L	230			
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Metals			Manganese	ug/L	183			
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Manganese	ug/L	164			
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Manganese	ug/L	262			
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Manganese	ug/L	47			
	GPCSW06	Goose Prairie Creek	QC	11/16/98	Water	Metals			Manganese	ug/L	60			
	GPCSW07	Goose Prairie Creek	N	11/16/98	Water	Metals			Manganese	ug/L	48			
	GPCSW08	Goose Prairie Creek	N	11/11/98	Water	Metals			Manganese	ug/L	79			
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Metals			Manganese	ug/L	73			
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Metals			Manganese	ug/L	60			
Methylene Chloride														
23022-003	GPW-1	Goose Prairie Creek	EB	8/7/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L	0.24	0.22		
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
23022-001	GPW-1	Goose Prairie Creek	TB	8/7/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L	0.33	0.22		
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-001	GPW-1	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-4201-4	GPW-1	Goose Prairie Creek	TB	8/8/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Methylene Chloride	ug/L	0.4J	10		
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-008	GPW-10	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2717-9	GPW-12	Goose Prairie Creek	TB	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L	11	10		U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
23038-003	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25134-005	GPW-2	Goose Prairie Creek	EB	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25134-004	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-002	GPW-2	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-009	GPW-2	Goose Prairie Creek	QC	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260	75-09-2	Methylene Chloride	ug/L		10		U
990967102	GPW-2	Goose Prairie Creek	QA	9/23/1999	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		5		U
990967101	GPW-2	Goose Prairie Creek	QA TB	9/23/1999	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		5		U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260	75-09-2	Methylene Chloride	ug/L	0.7	10		U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
217902	GPW-2	Goose Prairie Creek	QA	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		5		U
217903	GPW-2	Goose Prairie Creek	QA TB	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		5		U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-4201-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-4201-5	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6050-2	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
1215101	GPW-2	Goose Prairie Creek	QA	12/5/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L	11	10		U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-003	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	75-09-2	Methylene Chloride	ug/L		10		U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Methylene Chloride	ug/L		10		U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L				U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		10		U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		0.22		U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
23028-001	GPW-5	Goose Prairie Creek	TB	8/8/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-005	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	75-09-2	Methylene Chloride	ug/L		10		U
99-6038-3	GPW-5	Goose Prairie Creek	TB	9/24/1999	Water	Volatiles	8260	75-09-2	Methylene Chloride	ug/L		10		U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-006	GPW-6	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		0.22		U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
458001	GPW-7	Goose Prairie Creek	QA	4/20/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		5		U
458002	GPW-7	Goose Prairie Creek	QA TB	4/20/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		5		U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		0.3J		U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-09-2	Methylene Chloride	ug/L		1		U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
26287-007	GPW-9	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		10		U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Methylene Chloride	ug/L		10		U
00-6051-6	GPW-9	Goose Prairie Creek	TB	12/5/2000	Water	Volatiles	8260B		Methylene Chloride	ug/L	11	10		U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-09-2	Methylene Chloride	ug/L		1		U
Perchlorate														
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	4	4		J
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-2717-8	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	17	4		U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	17	4		U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	7	4		U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	17	4		U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	8	4		U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-1572-4	GPW-4	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	11	4		U
00-2717-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	23	4		U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4		U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		8		U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	11	4		U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4		U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	12	4		U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	10	4		U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4		U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L		4		U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	11	4		U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	M300.0	14797-73-0	Perchlorate	ug/L	7	4		U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4		U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4		U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saumder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Anions	300		Perchlorate	ug/L		4	U
p-Isopropyltoluene													
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260	99-87-6	p-Isopropyltoluene	ug/L		1	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2649-1	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	99-87-6	p-Isopropyltoluene	ug/L		1	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		p-Isopropyltoluene	ug/L		1	U
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Volatiles			p-Isopropyltoluene	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Volatiles			p-Isopropyltoluene	ug/L		1	U
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Volatiles			p-Isopropyltoluene	ug/L		1	U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Volatiles			p-Isopropyltoluene	ug/L	1.4		
Potassium													
S06023-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Potassium	ug/L	3,870	200	
S06023-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Potassium	ug/L	3,960	200	
S06023-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Potassium	ug/L	4,830	200	
S06023-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Potassium	ug/L	3,630	200	
S06023-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Potassium	ug/L	3,710	200	
S06027-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Potassium	ug/L	3,860	200	
S06027-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Potassium	ug/L	3,810	200	
RDX													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	121-82-4	RDX	ug/L		0.26	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Explosives	8330	121-82-4	RDX	ug/L		0.26	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-001	GPW-1	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-008	GPW-10	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	121-82-4	RDX	ug/L	10.6	1.3	
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-002	GPW-2	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2717-2	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		RDX	ug/L		0.5	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Explosives	8330		RDX	ug/L		0.5	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	121-82-4	RDX	ug/L	10.6	1.3	
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-003	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		RDX	ug/L		0.5	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L	12.1	1.3	
23028-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-6174-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		RDX	ug/L		0.5	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	121-82-4	RDX	ug/L	10.9	1.3	
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-005	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-6174-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		RDX	ug/L		0.5	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Explosives	8330	121-82-4	RDX	ug/L	10	1.3	
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-006	GPW-6	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-6174-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		RDX	ug/L		0.5	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-010	GPW-7	Goose Prairie Creek	N	6/21/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		RDX	ug/L		0.5	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Explosives	8330	121-82-4	RDX	ug/L		0.5	U
00-6174-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Explosives	8330		RDX	ug/L		0.5	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Explosives	8330	121-82-4	RDX	ug/L		0.25	U
Selenium													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	7740		Selenium	ug/L		2.00	U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	7740		Selenium	ug/L		2.00	U
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	7740		Selenium	ug/L		2.00	U
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	7740		Selenium	ug/L		2.00	U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	7740		Selenium	ug/L		2.00	U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	7740		Selenium	ug/L		2.00	U
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	7740		Selenium	ug/L		2.00	U
	LHSGPC01	Goose Prairie Creek	N	1/1/1995	Water	Metals			Selenium	ug/L		2.00	U
	LHSGPC03	Goose Prairie Creek	N	1/12/95	Water	Metals			Selenium	ug/L	2.3	2.00	U
	LHSGPC05	Goose Prairie Creek	N	1/12/95	Water	Metals			Selenium	ug/L		2.00	U
	LHSGPC07	Goose Prairie Creek	N	1/12/95	Water	Metals			Selenium	ug/L		2.00	U
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Metals			Selenium	ug/L	6	5.00	U
	GPCSW02	Goose Prairie Creek	N	11/18/98	Water	Metals			Selenium	ug/L		5.00	U
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Metals			Selenium	ug/L		5.00	U
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Selenium	ug/L		5.00	U
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Selenium	ug/L		5.00	U
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Selenium	ug/L		5.00	U
	GPCSW07	Goose Prairie Creek	QC	11/16/98	Water	Metals			Selenium	ug/L		5.00	U
	GPCSW08	Goose Prairie Creek	N	11/11/98	Water	Metals			Selenium	ug/L		5.00	U
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Metals			Selenium	ug/L		5.00	U
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Metals			Selenium	ug/L		5.00	U
Silver													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Silver	ug/L		10	U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Silver	ug/L		10	U
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Silver	ug/L	10	10	U
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Silver	ug/L		10	U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Silver	ug/L	10	10	U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Silver	ug/L		10	U
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Silver	ug/L		10	U
Strontium													
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Strontium	ug/L	131	10	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Strontium	ug/L	117	10		
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Strontium	ug/L	129	10		
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Strontium	ug/L	102	10		
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Strontium	ug/L	105	10		
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Strontium	ug/L	110	10		
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Strontium	ug/L	110	10		
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Strontium	ug/L	70			
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Strontium	ug/L	530			
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Strontium	ug/L		60		U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Strontium	ug/L	70			
	S0SW05	Goose Prairie Creek	N	11/11/98	Water	Metals			Strontium	ug/L	80			
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Strontium	ug/L	60			
	S0SW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Strontium	ug/L	60			
	S0SW07	Goose Prairie Creek	N	11/11/98	Water	Metals			Strontium	ug/L	80			
	LHSGPC01	Goose Prairie Creek	N	1/11/95	Water	Metals			Strontium	ug/L	150			
	LHSGPC03	Goose Prairie Creek	N	1/12/95	Water	Metals			Strontium	ug/L	160			
	LHSGPC05	Goose Prairie Creek	N	1/12/95	Water	Metals			Strontium	ug/L	170			
	LHSGPC07	Goose Prairie Creek	N	1/12/95	Water	Metals			Strontium	ug/L	140			
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Metals			Strontium	ug/L	50			
	GPCSW02	Goose Prairie Creek	N	11/18/98	Water	Metals			Strontium	ug/L		50		U
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Metals			Strontium	ug/L		50		U
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Strontium	ug/L		50		U
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Strontium	ug/L		50		U
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Strontium	ug/L		50		U
	GPCSW06	Goose Prairie Creek	QC	11/16/98	Water	Metals			Strontium	ug/L		50		U
	GPCSW07	Goose Prairie Creek	N	11/16/98	Water	Metals			Strontium	ug/L		50		U
	GPCSW08	Goose Prairie Creek	N	11/11/98	Water	Metals			Strontium	ug/L	100			
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Metals			Strontium	ug/L	70			
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Metals			Strontium	ug/L	80			
Tetrachloroethene														
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Sauder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
26287-002	GPW-2	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
99-6004-1	GPW-2	Goose Prairie Creek	QC	6/2/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
99-6004-2	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-10	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2717-2	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L	0.32	0.25		U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
26287-003	GPW-3	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
26287-004	GPW-4	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U

033256

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
26287-003	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		0.25		U
23038-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
26287-006	GPW-6	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		0.25		U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	127-18-4	Tetrachloroethene	ug/L		1		U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
26287-007	GPW-9	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	127-18-4	Tetrachloroethene	ug/L		1		U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Tetrachloroethene	ug/L		1		U
Thallium														
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Thallium	ug/L		90		U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Thallium	ug/L		90		U
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Thallium	ug/L		90		U
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Thallium	ug/L		90		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Sauder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Thallium	ug/L		90	U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Thallium	ug/L		90	U
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Thallium	ug/L		90	U
	S05W05	Goose Prairie Creek	N	11/11/98	Water	Metals			Thallium	ug/L		1	U
	S05W06	Goose Prairie Creek	N	11/10/98	Water	Metals			Thallium	ug/L	1.6		
	S05W06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Thallium	ug/L	1.4		
	S05W07	Goose Prairie Creek	N	11/11/98	Water	Metals			Thallium	ug/L		1	U
	LHSGPC01	Goose Prairie Creek	N	11/11/95	Water	Metals			Thallium	ug/L		500	
	LHSGPC03	Goose Prairie Creek	N	11/2/95	Water	Metals			Thallium	ug/L		500	
	LHSGPC05	Goose Prairie Creek	N	11/2/95	Water	Metals			Thallium	ug/L		500	
	LHSGPC07	Goose Prairie Creek	N	11/2/95	Water	Metals			Thallium	ug/L		500	
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Metals			Thallium	ug/L	3.1		J
	GPCSW02	Goose Prairie Creek	N	11/18/98	Water	Metals			Thallium	ug/L	2.9		J
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Metals			Thallium	ug/L		1	UJ
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Metals			Thallium	ug/L		1	UJ
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Metals			Thallium	ug/L		1	UJ
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Metals			Thallium	ug/L	1.4		J
	GPCSW06	Goose Prairie Creek	QC	11/16/98	Water	Metals			Thallium	ug/L	1.1		J
	GPCSW07	Goose Prairie Creek	N	11/16/98	Water	Metals			Thallium	ug/L		1	UJ
	GPCSW08	Goose Prairie Creek	N	11/11/98	Water	Metals			Thallium	ug/L	1.7		U
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Metals			Thallium	ug/L		1	U
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Metals			Thallium	ug/L	1.1		
Toluene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L	1.9		
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-1572-9	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
25528-010	GPW-12AR	Goose Prairie Creek	N	12/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1		U
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1		U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
26287-002	GPW-2	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
26287-009	GPW-2	Goose Prairie Creek	QC	6/21/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260B	108-88-3	Toluene	ug/L	2			U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1		U
25519-004	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
26287-003	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
99-6038-1	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-1572-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-2717-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-4201-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-6050-3	GPW-3	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
23038-008	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
25528-004	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
23022-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
25134-007	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1		U
25519-005	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
26287-004	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-1572-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-2717-4	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
00-6051-1	GPW-4	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
23038-009	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
25528-005	GPW-4AR	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5		U
23028-002	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1		U
25134-008	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1		U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260	108-88-3	Toluene	ug/L		1	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Toluene	ug/L		1	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5	U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L	1	1	
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Toluene	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		0.5	U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Toluene	ug/L		1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	108-88-3	Toluene	ug/L		1	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L	2.2	1	
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B		Toluene	ug/L		1	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	108-88-3	Toluene	ug/L		1	U
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Volatiles			Toluene	ug/L		1	U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Volatiles			Toluene	ug/L		1	U
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Volatiles			Toluene	ug/L		1	U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Volatiles			Toluene	ug/L	1.6		
Trichloroethene													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		0.25	U
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		0.25	U
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
25519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	2.7	1	
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-2717-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	3.3	1	

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	2.4	1	
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
25519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
26287-008	GPW-10	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
25519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	4.4	1	
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		0.25	U
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	4.7	0.25	
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	3.6	1	
25519-002	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	3.7	1	
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	12.1	1	
26287-002	GPW-2	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	12.1	1	
26287-009	GPW-2	Goose Prairie Creek	QC	6/21/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	5	1	
00-1572-2	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	4.9	1	
00-1572-10	GPW-2	Goose Prairie Creek	QC	4/21/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	2.3	1	
00-2717-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	4.9	1	
00-4201-2	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	5	0.25	
23038-007	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	5.6	0.25	
25528-002	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	1.2	1	
25528-003	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	1.1	1	
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	4.3	0.25	
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	2.4	1	
26287-003	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	11.7	1	
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	3.9	1	
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	2	1	
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	2.1	1	
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	2	0.25	
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	0.31	0.25	
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	1.4	1	
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	3.9	1	
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	0.9	0.25	
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		0.25	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	1.1	1	
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	3	1	
26287-005	GPW-5	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	0.78	0.25	
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		0.25	U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	2.6	1	
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L	0.8	0.25	
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	79-01-6	Trichloroethene	ug/L		1	U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	4	1	
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L	3.2	1	
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260B	79-01-6	Trichloroethene	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL _{RL}	Flag
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260		Trichloroethene	ug/L		1	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260		Trichloroethene	ug/L		1	U
	50SW05	Goose Prairie Creek	N	11/1/98	Water	Volatiles			Trichloroethene	ug/L	12		
	50SW06	Goose Prairie Creek	N	11/10/98	Water	Volatiles			Trichloroethene	ug/L		1	U
	50SW06	Goose Prairie Creek	QC	11/10/98	Water	Volatiles			Trichloroethene	ug/L	4.2		J
	50SW07	Goose Prairie Creek	N	11/1/98	Water	Volatiles			Trichloroethene	ug/L		1	U
	GPCSW01	Goose Prairie Creek	N	11/18/98	Water	Volatiles			Trichloroethene	ug/L		1	U
	GPCSW02	Goose Prairie Creek	N	11/17/98	Water	Volatiles			Trichloroethene	ug/L	1.5		
	GPCSW03	Goose Prairie Creek	N	11/17/98	Water	Volatiles			Trichloroethene	ug/L	1.2		U
	GPCSW04	Goose Prairie Creek	N	11/16/98	Water	Volatiles			Trichloroethene	ug/L	2.3		
	GPCSW05	Goose Prairie Creek	N	11/16/98	Water	Volatiles			Trichloroethene	ug/L	2.6		
	GPCSW06	Goose Prairie Creek	QC	11/16/98	Water	Volatiles			Trichloroethene	ug/L	2.8		
	GPCSW07	Goose Prairie Creek	N	11/16/98	Water	Volatiles			Trichloroethene	ug/L	2.6		
	GPCSW08	Goose Prairie Creek	N	11/11/98	Water	Volatiles			Trichloroethene	ug/L		1	U
	GPCSW09	Goose Prairie Creek	N	11/11/98	Water	Volatiles			Trichloroethene	ug/L		1	U
	GPCSW10	Goose Prairie Creek	N	11/11/98	Water	Volatiles			Trichloroethene	ug/L		1	U
Vinyl Chloride													
23022-002	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L	0.66	0.24	
23022-004	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L	0.36	0.24	
25134-002	GPW-1	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
2519-001	GPW-1	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
26287-001	GPW-1	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L	5		
00-1572-1	GPW-1	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-2171-1	GPW-1	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L	1		J
00-4201-1	GPW-1	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L	1		
00-6050-1	GPW-1	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
25142-001	GPW-10	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
2519-010	GPW-10	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
26287-008	GPW-10	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
25134-013	GPW-12	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
2519-011	GPW-12	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-1572-9	GPW-12	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-2717-8	GPW-12	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-6050-5	GPW-12	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
25528-010	GPW-12AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
25142-002	GPW-13	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
25142-003	GPW-14	Goose Prairie Creek	N	12/10/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
23038-005	GPW-1AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L	0.3		
25528-001	GPW-1AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		0.24	
23022-005	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
25134-003	GPW-2	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24	
25134-004	GPW-2	Goose Prairie Creek	QC	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
25519-002	GPW-2	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saundser's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL _{RL}	Flag
25519-003	GPW-2	Goose Prairie Creek	QC	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
26287-002	GPW-2	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
26287-009	GPW-2	Goose Prairie Creek	QC	6/21/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
99-6004-1	GPW-2	Goose Prairie Creek	N	9/23/1999	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
99-6004-2	GPW-2	Goose Prairie Creek	QC	9/23/1999	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-1572-2	GPW-2	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-1572-10	GPW-2	Goose Prairie Creek	QC	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-2717-2	GPW-2	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-4201-2	GPW-2	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-4201-5	GPW-2	Goose Prairie Creek	QC	8/8/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-6050-2	GPW-2	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-6050-6	GPW-2	Goose Prairie Creek	QC	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
23038-006	GPW-2AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24	U
23038-007	GPW-2AR	Goose Prairie Creek	QC	8/10/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24	U
25528-002	GPW-2AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
25528-003	GPW-2AR	Goose Prairie Creek	QC	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
23022-006	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24	U
25134-006	GPW-3	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
25519-004	GPW-3	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
26287-003	GPW-3	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
99-6038-1	GPW-3	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-1572-3	GPW-3	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-2717-3	GPW-3	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-4201-3	GPW-3	Goose Prairie Creek	N	8/8/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-6050-3	GPW-3	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
23038-008	GPW-3AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24	U
25528-004	GPW-3AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
23022-007	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24	U
25134-007	GPW-4	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
25519-005	GPW-4	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
26287-004	GPW-4	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-1572-4	GPW-4	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-2717-4	GPW-4	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-6051-1	GPW-4	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
23038-009	GPW-4AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24	U
25528-005	GPW-4AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
23028-002	GPW-5	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24	U
25134-008	GPW-5	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1	U
25519-006	GPW-5	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
26287-005	GPW-5	Goose Prairie Creek	N	6/21/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
99-6038-2	GPW-5	Goose Prairie Creek	N	9/24/1999	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-1572-5	GPW-5	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-2717-5	GPW-5	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U
00-6051-2	GPW-5	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
23038-010	GPW-5AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24		U
25528-006	GPW-5AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
23028-003	GPW-6	Goose Prairie Creek	N	8/8/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		0.24		U
25134-009	GPW-6	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1		U
25519-007	GPW-6	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
26287-006	GPW-6	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-1572-6	GPW-6	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-2717-6	GPW-6	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-6051-3	GPW-6	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
23038-011	GPW-6AR	Goose Prairie Creek	N	8/10/1996	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1		U
25528-007	GPW-6AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		0.24		U
25134-010	GPW-7	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1		U
25519-008	GPW-7	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-1572-7	GPW-7	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-2649-1	GPW-7	Goose Prairie Creek	N	4/20/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-2649-2	GPW-7	Goose Prairie Creek	QC	4/20/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-6050-4	GPW-7	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
25528-008	GPW-7AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
25134-011	GPW-8	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1		U
25134-012	GPW-9	Goose Prairie Creek	N	12/9/1997	Water	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/L		1		U
25519-009	GPW-9	Goose Prairie Creek	N	2/10/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
26287-007	GPW-9	Goose Prairie Creek	N	6/2/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-1572-8	GPW-9	Goose Prairie Creek	N	2/4/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-2717-7	GPW-9	Goose Prairie Creek	N	4/21/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
00-6051-4	GPW-9	Goose Prairie Creek	N	12/5/2000	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
25528-009	GPW-9AR	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
25528-011	GPW-9TB	Goose Prairie Creek	N	2/11/1998	Water	Volatiles	8260B	75-01-4	Vinyl Chloride	ug/L		1		U
Zinc														
S60623-2	GPW-1	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Zinc	ug/L		20		U
S60623-4	GPW-1	Goose Prairie Creek	QC	8/7/1996	Water	Metals	6010		Zinc	ug/L		20		U
S60623-6	GPW-2	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Zinc	ug/L	45	20		U
S60623-7	GPW-3	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Zinc	ug/L		20		U
S60623-8	GPW-4	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Zinc	ug/L		20		U
S60627-2	GPW-5	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Zinc	ug/L		20		U
S60627-3	GPW-6	Goose Prairie Creek	N	8/7/1996	Water	Metals	6010		Zinc	ug/L		20		U
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Zinc	ug/L	60			
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Zinc	ug/L	100			
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Zinc	ug/L	550			
		Goose Prairie Creek	N	12/4/98	Water	Metals			Zinc	ug/L	30			
	S05W05	Goose Prairie Creek	N	11/11/98	Water	Metals			Zinc	ug/L	20			
	S05W06	Goose Prairie Creek	N	11/10/98	Water	Metals			Zinc	ug/L	30			
	S05W07	Goose Prairie Creek	QC	11/10/98	Water	Metals			Zinc	ug/L	20			
		Goose Prairie Creek	N	11/11/98	Water	Metals			Zinc	ug/L	30			
	LHSGPC01	Goose Prairie Creek	N	1/11/95	Water	Metals			Zinc	ug/L	12			

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	LHSGPC03	Goose Prairie Creek	N	1/12/95	Water	Metals			Zinc	ug/L	30		
	LHSGPC05	Goose Prairie Creek	N	1/12/95	Water	Metals			Zinc	ug/L	12		
	LHSGPC07	Goose Prairie Creek	N	1/12/95	Water	Metals			Zinc	ug/L	25		
	GPCSW01	Goose Prairie Creek	N	1/18/98	Water	Metals			Zinc	ug/L	20		
	GPCSW02	Goose Prairie Creek	N	1/18/98	Water	Metals			Zinc	ug/L	20		
	GPCSW03	Goose Prairie Creek	N	1/17/98	Water	Metals			Zinc	ug/L	30		
	GPCSW04	Goose Prairie Creek	N	1/16/98	Water	Metals			Zinc	ug/L	20		
	GPCSW05	Goose Prairie Creek	N	1/16/98	Water	Metals			Zinc	ug/L	20		U
	GPCSW06	Goose Prairie Creek	N	1/16/98	Water	Metals			Zinc	ug/L	20		U
	GPCSW07	Goose Prairie Creek	QC	1/16/98	Water	Metals			Zinc	ug/L	20		U
	GPCSW08	Goose Prairie Creek	N	1/16/98	Water	Metals			Zinc	ug/L	20		U
	GPCSW09	Goose Prairie Creek	N	1/11/98	Water	Metals			Zinc	ug/L	20		U
	GPCSW10	Goose Prairie Creek	N	1/11/98	Water	Metals			Zinc	ug/L	20		U
Sodium													
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Sodium	mg/L	5.8		
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Sodium	mg/L	6.3		
	GPSW03	Goose Prairie Creek	N	12/4/98	Water	Metals			Sodium	mg/L	5.9		
	GPSW04	Goose Prairie Creek	N	12/4/98	Water	Metals			Sodium	mg/L	6.4		
	GPSW05	Goose Prairie Creek	N	11/1/98	Water	Metals			Sodium	mg/L	8.4		
	GPSW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Sodium	mg/L	7.6		
	GPSW07	Goose Prairie Creek	QC	11/10/98	Water	Metals			Sodium	mg/L	7.3		
	GPSW08	Goose Prairie Creek	N	11/11/98	Water	Metals			Sodium	mg/L	9		
	GPSW09	Goose Prairie Creek	N	11/18/98	Water	Metals			Sodium	mg/L	8.8		
	GPSW10	Goose Prairie Creek	N	11/18/98	Water	Metals			Sodium	mg/L	7.7		
	GPSW11	Goose Prairie Creek	N	11/17/98	Water	Metals			Sodium	mg/L	5.7		
	GPSW12	Goose Prairie Creek	N	11/16/98	Water	Metals			Sodium	mg/L	5.7		
	GPSW13	Goose Prairie Creek	N	11/16/98	Water	Metals			Sodium	mg/L	6.2		
	GPSW14	Goose Prairie Creek	N	11/16/98	Water	Metals			Sodium	mg/L	5.3		
	GPSW15	Goose Prairie Creek	QC	11/16/98	Water	Metals			Sodium	mg/L	5.4		
	GPSW16	Goose Prairie Creek	N	11/16/98	Water	Metals			Sodium	mg/L	5.1		
	GPSW17	Goose Prairie Creek	N	11/11/98	Water	Metals			Sodium	mg/L	9.8		
	GPSW18	Goose Prairie Creek	N	11/11/98	Water	Metals			Sodium	mg/L	7.6		
	GPSW19	Goose Prairie Creek	N	11/11/98	Water	Metals			Sodium	mg/L	8.3		
Chloride													
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Chloride	mg/L	6.76		
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Chloride	mg/L	10.3		
	GPSW03	Goose Prairie Creek	N	9/16/98	Water	Metals			Chloride	mg/L	5.1		
	GPSW04	Goose Prairie Creek	N	12/4/98	Water	Metals			Chloride	mg/L	9.45		
Nitrate (N)													
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Nitrate (N)	mg/L	0.174		
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Nitrate (N)	mg/L	0.181		J
	GPSW03	Goose Prairie Creek	N	9/16/98	Water	Metals			Nitrate (N)	mg/L	0.208		
	GPSW04	Goose Prairie Creek	N	12/4/98	Water	Metals			Nitrate (N)	mg/L	0.1		UJ

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Sulfate	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Metals			Sulfate	mg/L	32			
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Metals			Sulfate	mg/L	5.8			
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Metals			Sulfate	mg/L	14			
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Metals			Sulfate	mg/L	9.7			
Dioxin/Furans	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L	6.27			U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L	5.578			
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L	1.406			U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L	1.905			U
Dioxin/Furans	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	10.69			U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	45.062			
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	1.679			U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	4.146			
Dioxin/Furans	GPSW06	Goose Prairie Creek	N	11/11/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	9.8			
	GPSW06	Goose Prairie Creek	QC	11/11/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	10.903			
	GPSW03	Goose Prairie Creek	N	11/17/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	3.162			U
	GPSW03	Goose Prairie Creek	N	11/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	2.758			U
Dioxin/Furans	GPSW06	Goose Prairie Creek	QC	11/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	3.229			U
	GPSW06	Goose Prairie Creek	N	11/11/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	5.063			
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L	7.69			U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L	2.716			U
Dioxin/Furans	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L	1.268			U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L	3.121			U
	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	10.7			U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	42.746			
Dioxin/Furans	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	1.679			U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	2.505			U
	GPSW06	Goose Prairie Creek	N	11/11/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	17.74			I
	GPSW06	Goose Prairie Creek	QC	11/11/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	2.474			UJ
Dioxin/Furans	GPSW03	Goose Prairie Creek	N	11/17/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	3.162			U
	GPSW03	Goose Prairie Creek	N	11/16/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	2.758			U
	GPSW06	Goose Prairie Creek	QC	11/16/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	3.229			U
	GPSW06	Goose Prairie Creek	N	11/11/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	5.683			
Dioxin/Furans	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L	8.49			U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L	2.589			
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L	2.327			U
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L	2.159			U
Dioxin/Furans	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzofuran	pg/L	10.5			U
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzofuran	pg/L	26.338			
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzofuran	pg/L	22.15			
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzofuran	pg/L	3.184			U
Dioxin/Furans	GPSW01	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	49.1			
	GPSW01	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	858.408			

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	GPSW02	Goose Prairie Creek	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	17.605			
	GPSW02	Goose Prairie Creek	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	303.143			U
	S0SW06	Goose Prairie Creek	N	11/1/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	369.214			
	S0SW06	Goose Prairie Creek	QC	11/1/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	572.748			
	GPCSW03	Goose Prairie Creek	N	11/1/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	181.271			
	GPCSW06	Goose Prairie Creek	N	11/1/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	114.202			
	GPCSW06	Goose Prairie Creek	QC	11/16/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	116.267			
	GPCSW08	Goose Prairie Creek	N	11/1/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	239.835			
	GPCSW03	Goose Prairie Creek	N	11/1/98	Water	Dioxins/Furans			TCDF	pg/L	3.73			U
	GPCSW06	Goose Prairie Creek	N	11/16/98	Water	Dioxins/Furans			TCDF	pg/L	2.965			U
	GPCSW06	Goose Prairie Creek	QC	11/1/98	Water	Dioxins/Furans			TCDF	pg/L	3.15			
	GPCSW08	Goose Prairie Creek	N	11/1/98	Water	Dioxins/Furans			TCDF	pg/L	1.553			U
Cyanide														
	S0SW05	Goose Prairie Creek	N	11/1/98	Water	Metals			Cyanide	ug/L	11			
	S0SW06	Goose Prairie Creek	N	11/10/98	Water	Metals			Cyanide	ug/L	10			UJ
	S0SW06	Goose Prairie Creek	QC	11/10/98	Water	Metals			Cyanide	ug/L	10			UJ
	S0SW07	Goose Prairie Creek	N	11/1/98	Water	Metals			Cyanide	ug/L	10			UJ
Dioxin/Furans														
	GPWSW01	Goose Prairie Wetland	N	11/1/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	13.095			
	GPWSW01	Goose Prairie Wetland	QC	11/1/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	14.008			U
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L	3.477			
	GPWSW01	Goose Prairie Wetland	N	11/1/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	26.25			
	GPWSW04	Goose Prairie Wetland	QC	11/1/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	14.008			U
	GPWSW01	Goose Prairie Wetland	N	11/20/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L	3.477			
	GPWSW01	Goose Prairie Wetland	N	11/1/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	600.311			
	GPWSW01	Goose Prairie Wetland	QC	11/1/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	663.365			
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	162.116			
Aluminum														
	GPWSW01	Goose Prairie Wetland	N	11/1/98	Water	Metals			Aluminum	mg/L	1.4			J
	GPWSW01	Goose Prairie Wetland	QC	11/1/98	Water	Metals			Aluminum	mg/L	2.5			J
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Aluminum	mg/L	1.2			
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Aluminum	mg/L	1.6			
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Aluminum	mg/L	0.95			J
Antimony														
	GPWSW01	Goose Prairie Wetland	N	11/1/98	Water	Metals			Antimony	mg/L	0.025			
	GPWSW01	Goose Prairie Wetland	QC	11/1/98	Water	Metals			Antimony	mg/L	0.037			
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Antimony	mg/L	0.01			
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Antimony	mg/L	0.012			
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Antimony	mg/L	0.068			
Arsenic														
	GPWSW01	Goose Prairie Wetland	N	11/1/98	Water	Metals			Arsenic	mg/L	0.01			U
	GPWSW01	Goose Prairie Wetland	QC	11/1/98	Water	Metals			Arsenic	mg/L	0.01			U
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Arsenic	mg/L	0.01			U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Arsenic	mg/L		0.01	U
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Arsenic	mg/L	0.017		
Calcium													
	GPWSW01	Goose Prairie Wetland	N	11/19/98	Water	Metals			Calcium	mg/L	5.6		
	GPWSW01	Goose Prairie Wetland	QC	11/19/98	Water	Metals			Calcium	mg/L	6.2		
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Calcium	mg/L	9.6		
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Calcium	mg/L	9.7		
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Calcium	mg/L	8.1		
Iron													
	GPWSW01	Goose Prairie Wetland	N	11/19/98	Water	Metals			Iron	mg/L	2.2		J
	GPWSW01	Goose Prairie Wetland	QC	11/19/98	Water	Metals			Iron	mg/L	3.2		J
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Iron	mg/L	2.9		
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Iron	mg/L	3.6		
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Iron	mg/L	1.9		J
Lead													
	GPWSW01	Goose Prairie Wetland	N	11/19/98	Water	Metals			Lead	mg/L	0.005		
	GPWSW01	Goose Prairie Wetland	QC	11/19/98	Water	Metals			Lead	mg/L	0.009		
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Lead	mg/L	0.004		
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Lead	mg/L	0.007		U
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Lead	mg/L	0.003		U
Manganese													
	GPWSW01	Goose Prairie Wetland	N	11/19/98	Water	Metals			Manganese	mg/L	0.136		
	GPWSW01	Goose Prairie Wetland	QC	11/19/98	Water	Metals			Manganese	mg/L	0.171		
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Manganese	mg/L	0.849		
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Manganese	mg/L	0.254		
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Manganese	mg/L	0.981		
Sodium													
	GPWSW01	Goose Prairie Wetland	N	11/19/98	Water	Metals			Sodium	mg/L	5.6		
	GPWSW01	Goose Prairie Wetland	QC	11/19/98	Water	Metals			Sodium	mg/L	6.7		
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Sodium	mg/L	12		
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Sodium	mg/L	8.7		
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Sodium	mg/L	10		
Strontium													
	GPWSW01	Goose Prairie Wetland	N	11/19/98	Water	Metals			Strontium	mg/L		0.05	U
	GPWSW01	Goose Prairie Wetland	QC	11/19/98	Water	Metals			Strontium	mg/L		0.05	U
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Strontium	mg/L	0.07		
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Strontium	mg/L	0.07		
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Strontium	mg/L	0.05		
Thallium													
	GPWSW01	Goose Prairie Wetland	N	11/19/98	Water	Metals			Thallium	mg/L		0.001	U
	GPWSW01	Goose Prairie Wetland	QC	11/19/98	Water	Metals			Thallium	mg/L	0.0013		
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Thallium	mg/L		0.001	U
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Thallium	mg/L	0.0015		
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Thallium	mg/L		0.001	U

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Sauder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No.	Compound	Units	Results	DL RL	Flag
Zinc													
	GPWSW01	Goose Prairie Wetland	N	11/19/98	Water	Metals			Zinc	mg/L	0.04		
	GPWSW01	Goose Prairie Wetland	QC	11/19/98	Water	Metals			Zinc	mg/L	0.06		
	GPWSW02	Goose Prairie Wetland	N	12/1/98	Water	Metals			Zinc	mg/L	0.11		
	GPWSW03	Goose Prairie Wetland	N	12/1/98	Water	Metals			Zinc	mg/L	0.03		
	GPWSW04	Goose Prairie Wetland	N	11/20/98	Water	Metals			Zinc	mg/L	0.07		
Dioxin/Furans													
	SBSW01	Sauders Branch	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L		0.953	
	SBSW01	Sauders Branch	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L		1.436	
	SBSW01	Sauders Branch	QC	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L		1.915	
	SBSW01	Sauders Branch	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L		1.75	
	SBSW01	Sauders Branch	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L		3.393	
	SBSW01	Sauders Branch	QC	12/4/98	Water	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	pg/L		4.204	
	SBSW01	Sauders Branch	N	9/16/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L		1.08	
	SBSW01	Sauders Branch	N	12/4/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L		2.062	
	SBSW01	Sauders Branch	QC	12/4/98	Water	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L		3.47	
	SBSW01	Sauders Branch	N	9/16/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L		1.75	
	SBSW01	Sauders Branch	N	12/4/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L		3.393	
	SBSW01	Sauders Branch	QC	12/4/98	Water	Dioxin/Furans			Heptachlorodibenzo-p-dioxin	pg/L		4.204	
	SBSW01	Sauders Branch	N	9/16/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L		1.61	
	SBSW01	Sauders Branch	N	12/4/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L		2.361	
	SBSW01	Sauders Branch	QC	12/4/98	Water	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	pg/L		2.415	
	SBSW01	Sauders Branch	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzofuran	pg/L		2.32	
	SBSW01	Sauders Branch	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzofuran	pg/L		3.815	
	SBSW01	Sauders Branch	QC	12/4/98	Water	Dioxin/Furans			Octachlorodibenzofuran	pg/L		4.661	
	SBSW01	Sauders Branch	N	9/16/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	25.8		U
	SBSW01	Sauders Branch	N	12/4/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	29.724		U
	SBSW01	Sauders Branch	QC	12/4/98	Water	Dioxin/Furans			Octachlorodibenzo-p-dioxin	pg/L	26.371		U
Acetone													
	18SW17	Sauders Branch	N	3/5/95	Water	Volatiles			Acetone	ug/L		10	U
	18SW18	Sauders Branch	N	3/5/95	Water	Volatiles			Acetone	ug/L		10	U
	18SW19	Sauders Branch	N	3/5/95	Water	Volatiles			Acetone	ug/L	11		
Aluminum													
	SBSW01	Sauders Branch	N	9/16/98	Water	Metals			Aluminum	mg/L	1.6		
	SBSW01	Sauders Branch	N	12/4/98	Water	Metals			Aluminum	mg/L	0.46		
	SBSW01	Sauders Branch	QC	12/4/98	Water	Metals			Aluminum	mg/L	0.47		
Antimony													
	SBSW01	Sauders Branch	N	9/16/98	Water	Metals			Antimony	mg/L	0.017		
	SBSW01	Sauders Branch	N	12/4/98	Water	Metals			Antimony	mg/L	0.017		
	SBSW01	Sauders Branch	QC	12/4/98	Water	Metals			Antimony	mg/L	0.018		
	18SW17	Sauders Branch	N	3/5/95	Water	Metals			Antimony	mg/L		0.01	UJ
	18SW18	Sauders Branch	N	3/5/95	Water	Metals			Antimony	mg/L		0.01	UJ
	18SW19	Sauders Branch	N	3/5/95	Water	Metals			Antimony	mg/L		0.01	UJ

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Sauder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Arsenic	SBSWO1	Sauders Branch	N	9/16/98	Water	Metals			Arsenic	mg/L		0.01		
	SBSWO1	Sauders Branch	N	12/4/98	Water	Metals			Arsenic	mg/L		0.01		
	SBSWO1	Sauders Branch	QC	12/4/98	Water	Metals			Arsenic	mg/L		0.01		
	18SW17	Sauders Branch	N	3/5/95	Water	Metals			Arsenic	mg/L		0.005		U
	18SW18	Sauders Branch	N	3/5/95	Water	Metals			Arsenic	mg/L		0.005		U
Barium	18SW19	Sauders Branch	N	3/5/95	Water	Metals			Arsenic	mg/L		0.005		U
	SBSWO1	Sauders Branch	N	9/16/98	Water	Metals			Barium	mg/L		0.2		
	SBSWO1	Sauders Branch	N	12/4/98	Water	Metals			Barium	mg/L		0.2		
	SBSWO1	Sauders Branch	QC	12/4/98	Water	Metals			Barium	mg/L		0.2		
	18SW17	Sauders Branch	N	3/5/95	Water	Metals			Barium	mg/L	0.061			
Beryllium	18SW18	Sauders Branch	N	3/5/95	Water	Metals			Barium	mg/L	0.05			
	18SW19	Sauders Branch	N	3/5/95	Water	Metals			Barium	mg/L	0.42			
	SBSWO1	Sauders Branch	N	9/16/98	Water	Metals			Beryllium	mg/L		0.0005		
	SBSWO1	Sauders Branch	N	12/4/98	Water	Metals			Beryllium	mg/L		0.0005		
	SBSWO1	Sauders Branch	QC	12/4/98	Water	Metals			Beryllium	mg/L		0.0005		
Calcium	SBSWO1	Sauders Branch	N	9/16/98	Water	Metals			Calcium	mg/L		5		
	SBSWO1	Sauders Branch	N	12/4/98	Water	Metals			Calcium	mg/L	5.5			
	SBSWO1	Sauders Branch	QC	12/4/98	Water	Metals			Calcium	mg/L	5.3			
	SBSWO1	Sauders Branch	N	9/16/98	Water	Metals			Chloride	mg/L	6.19			
	SBSWO1	Sauders Branch	N	12/4/98	Water	Metals			Chloride	mg/L	12.2			
Chloride	SBSWO1	Sauders Branch	QC	12/4/98	Water	Metals			Chloride	mg/L	11.7			
	18SW17	Sauders Branch	N	3/5/95	Water	Metals			Chromium	mg/L		0.01		U
	18SW18	Sauders Branch	N	3/5/95	Water	Metals			Chromium	mg/L		0.01		U
	18SW19	Sauders Branch	N	3/5/95	Water	Metals			Chromium	mg/L		0.01		U
	SBSWO1	Sauders Branch	N	9/16/98	Water	Metals			Iron	mg/L	2.9			
Iron	SBSWO1	Sauders Branch	N	12/4/98	Water	Metals			Iron	mg/L	3.4			
	SBSWO1	Sauders Branch	QC	12/4/98	Water	Metals			Iron	mg/L	3.3			
	SBSWO1	Sauders Branch	N	9/16/98	Water	Metals			Lead	mg/L	0.004			
	SBSWO1	Sauders Branch	N	12/4/98	Water	Metals			Lead	mg/L	0.005			
	SBSWO1	Sauders Branch	QC	12/4/98	Water	Metals			Lead	mg/L	0.007			
Lead	18SW17	Sauders Branch	N	3/5/95	Water	Metals			Lead	mg/L		0.002		U
	18SW18	Sauders Branch	N	3/5/95	Water	Metals			Lead	mg/L	0.003			
	18SW19	Sauders Branch	N	3/5/95	Water	Metals			Lead	mg/L		0.01		U
	SBSWO1	Sauders Branch	N	9/16/98	Water	Metals			Magnesium	mg/L		5		
	SBSWO1	Sauders Branch	N	12/4/98	Water	Metals			Magnesium	mg/L		5		

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
Manganese	SBSWO1	Saunders Branch	QC	12/4/98	Water	Metals			Magnesium	mg/L		5	
	SBSWO1	Saunders Branch	N	9/16/98	Water	Metals			Manganese	mg/L	0.13		
	SBSWO1	Saunders Branch	QC	12/4/98	Water	Metals			Manganese	mg/L	0.259		
Nickel	SBSWO1	Saunders Branch	QC	12/4/98	Water	Metals			Manganese	mg/L	0.248		
	18SW17	Saunders Branch	N	3/5/95	Water	Metals			Nickel	mg/L		0.04	U
	18SW18	Saunders Branch	N	3/5/95	Water	Metals			Nickel	mg/L		0.04	U
Nitrate (N)	18SW19	Saunders Branch	N	3/5/95	Water	Metals			Nickel	mg/L		0.04	U
	SBSWO1	Saunders Branch	N	9/16/98	Water	Metals			Nitrate (N)	mg/L	0.203		J
	SBSWO1	Saunders Branch	N	12/4/98	Water	Metals			Nitrate (N)	mg/L		0.1	UJ
Selenium	SBSWO1	Saunders Branch	QC	12/4/98	Water	Metals			Nitrate (N)	mg/L		0.1	UJ
	18SW17	Saunders Branch	N	3/5/95	Water	Metals			Selenium	mg/L		0.005	U
	18SW18	Saunders Branch	N	3/5/95	Water	Metals			Selenium	mg/L		0.005	U
Sodium	18SW19	Saunders Branch	N	3/5/95	Water	Metals			Selenium	mg/L		0.01	U
	SBSWO1	Saunders Branch	N	9/16/98	Water	Metals			Sodium	mg/L	6.7		
	SBSWO1	Saunders Branch	N	12/4/98	Water	Metals			Sodium	mg/L	9.6		
Strontium	SBSWO1	Saunders Branch	QC	12/4/98	Water	Metals			Sodium	mg/L	9.3		
	SBSWO1	Saunders Branch	N	9/16/98	Water	Metals			Strontium	mg/L		0.05	
	SBSWO1	Saunders Branch	N	12/4/98	Water	Metals			Strontium	mg/L	0.06		
Sulfate	SBSWO1	Saunders Branch	QC	12/4/98	Water	Metals			Strontium	mg/L	0.06		
	SBSWO1	Saunders Branch	N	9/16/98	Water	Metals			Sulfate	mg/L	8.9		
	SBSWO1	Saunders Branch	N	12/4/98	Water	Metals			Sulfate	mg/L	6.1		
Thallium	SBSWO1	Saunders Branch	QC	12/4/98	Water	Metals			Sulfate	mg/L	6.1		
	18SW17	Saunders Branch	N	3/5/95	Water	Metals			Thallium	mg/L		0.01	U
	18SW18	Saunders Branch	N	3/5/95	Water	Metals			Thallium	mg/L		0.005	U
Trichloroethene	18SW19	Saunders Branch	N	3/5/95	Water	Metals			Thallium	mg/L		0.025	U
	18SW17	Saunders Branch	N	3/5/95	Water	Volatiles			Trichloroethene	ug/L		5	U
	18SW18	Saunders Branch	N	3/5/95	Water	Volatiles			Trichloroethene	ug/L		5	U
Zinc	18SW19	Saunders Branch	N	3/5/95	Water	Volatiles			Trichloroethene	ug/L		5	U
	SBSWO1	Saunders Branch	N	9/16/98	Water	Metals			Zinc	mg/L	0.02		
	SBSWO1	Saunders Branch	N	12/4/98	Water	Metals			Zinc	mg/L	0.02		
	SBSWO1	Saunders Branch	QC	12/4/98	Water	Metals			Zinc	mg/L	0.02		

Table 3-15
Surface Water Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL, RL	Flag
Perchlorate													
00-3229-1	CL-HB-1	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
00-3229-12	CL-HB-1	Caddo Lake	QC	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L	9.6	4	U
01-1629-1	CL-HB-1	Caddo Lake	N	2/1/2001	Water	Anions	300	14797-73-0	Perchlorate	ug/L		4	U
00-3229-10	CL-HB-10	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
00-3229-11	CL-HB-11	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
00-3229-2	CL-HB-2	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
01-1629-2	CL-HB-2	Caddo Lake	N	2/1/2001	Water	Anions	300	14797-73-0	Perchlorate	ug/L		4	U
00-3229-3	CL-HB-3	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
01-1629-3	CL-HB-3	Caddo Lake	N	2/1/2001	Water	Anions	300	14797-73-0	Perchlorate	ug/L		4	U
00-3229-4	CL-HB-4	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
00-3229-5	CL-HB-5	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
00-3229-6	CL-HB-6	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
00-3229-7	CL-HB-7	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
00-3229-8	CL-HB-8	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U
00-3229-9	CL-HB-9	Caddo Lake	N	6/1/2000	Water	Anions	M300.0	14797-73-0	Perchlorate	ug/L		4	U

DL = detection limit

ID = identification

J = estimated

LHAAP = Longhorn Army Ammunition Plant

N = normal

R = rejected

RA = risk assessment

RL = reporting limit

QC = quality control

U = not detected

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Dioxins/Furans														
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	2.111			
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg			0.724	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8,9-Heptachlorodibenzofuran	ng/kg			0.758	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg			0.697	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,6,7,8-Hexachlorodibenzofuran	ng/kg			0.465	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,7,8,9-Hexachlorodibenzofuran	ng/kg			0.493	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,7,8-Pentachlorodibenzofuran	ng/kg			0.378	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			2,3,4,6,7,8-Hexachlorodibenzofuran	ng/kg			0.681	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			2,3,4,7,8-Pentachlorodibenzofuran	ng/kg			0.378	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			2,3,7,8-Tetrachlorodibenzofuran	ng/kg			0.609	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	2.111			
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg			0.724	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg			0.465	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	22.095			
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	28.628			
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans			Pentachlorodibenzofuran	ng/kg			0.378	U
	CCSD01	Central Creek	N	9/17/98	Soil	Dioxins/Furans		55722-27-5		ng/kg			0.609	U
Acetone														
	12SD10	Central Creek	N	3/15/95	Soil	Volatiles			Acetone	ug/kg	22			U
	12SD11	Central Creek	N	3/15/95	Soil	Volatiles			Acetone	ug/kg			13	U
	12SD12	Central Creek	N	3/15/95	Soil	Volatiles			Acetone	ug/kg			12	U
	12SD14	Central Creek	N	3/2/95	Soil	Volatiles			Acetone	ug/kg			13	U
	CCSD01	Central Creek	N	9/17/98	Soil	Volatiles			Acetone	ug/kg			26	U
Aluminum														
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Aluminum	mg/kg	5200			
Antimony														
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Antimony	mg/kg			1.27	R
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Antimony	mg/kg			1.3	R
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Antimony	mg/kg			1.23	R
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Antimony	mg/kg			1.27	R
Arsenic														
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Arsenic	mg/kg	1.01			J
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Arsenic	mg/kg	1.04			J
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Arsenic	mg/kg	1.35			J
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Arsenic	mg/kg	1.53			
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Arsenic	mg/kg	3.3			
Barium														
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Barium	mg/kg	20			
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Barium	mg/kg	18.6			
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Barium	mg/kg	73.5			
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Barium	mg/kg	44.8			
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Barium	mg/kg	90			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Beryllium														
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Beryllium	mg/kg	1.02			
Cadmium														
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Cadmium	mg/kg	6.27			J
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Cadmium	mg/kg		0.65		UJ
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Cadmium	mg/kg		0.62		UJ
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Cadmium	mg/kg		0.64		U
Calcium														
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Calcium	mg/kg	1500			
Chromium														
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Chromium	mg/kg	3.8			
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Chromium	mg/kg	3.47			
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Chromium	mg/kg	8.22			
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Chromium	mg/kg	5.22			
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Chromium	mg/kg	24			
Cobalt														
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Cobalt	mg/kg	15			
Copper														
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Copper	mg/kg	1.6			
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Copper	mg/kg	1.3			
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Copper	mg/kg	4.1			
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Copper	mg/kg	3.6			
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Copper	mg/kg	10.3			
Iron														
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Iron	mg/kg	20000			
Lead														
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Lead	mg/kg	4.69			J
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Lead	mg/kg	4.42			J
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Lead	mg/kg	8.36			J
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Lead	mg/kg	10.4			
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Lead	mg/kg	13.6			
Magnesium														
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Magnesium	mg/kg	2200			
Manganese														
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Manganese	mg/kg	423			
Nickel														
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Nickel	mg/kg	3.16			
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Nickel	mg/kg	3			
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Nickel	mg/kg	7.2			
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Nickel	mg/kg	3.96			
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Nickel	mg/kg	25			
Potassium														
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Potassium	mg/kg	960			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
Selenium													
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Selenium	mg/kg		0.63	U
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Selenium	mg/kg		0.65	U
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Selenium	mg/kg	0.62		
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Selenium	mg/kg		1.27	U
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Selenium	mg/kg	1.9		
Strontium													
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Strontium	mg/kg	27		
Thallium													
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Thallium	mg/kg		0.63	U
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Thallium	mg/kg		0.65	U
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Thallium	mg/kg		0.62	U
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Thallium	mg/kg		0.64	U
Vanadium													
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Vanadium	mg/kg	27		
Zinc													
	12SD10	Central Creek	N	3/15/95	Soil	Metals			Zinc	mg/kg	11.4		
	12SD11	Central Creek	N	3/15/95	Soil	Metals			Zinc	mg/kg	9.1		
	12SD12	Central Creek	N	3/15/95	Soil	Metals			Zinc	mg/kg	15		
	12SD14	Central Creek	N	3/2/95	Soil	Metals			Zinc	mg/kg	13.9		
	CCSD01	Central Creek	N	9/17/98	Soil	Metals			Zinc	mg/kg	49		
1,1-Dichloroethene													
23025-01	GPS-1	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	75-35-4	1,1-Dichloroethene	ug/kg	1.2	1.1	U
23025-02	GPS-2	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	75-35-4	1,1-Dichloroethene	ug/kg		1.4	U
23025-03	GPS-3	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	75-35-4	1,1-Dichloroethene	ug/kg		1.8	U
23025-04	GPS-4	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	75-35-4	1,1-Dichloroethene	ug/kg		1.3	U
23028-01	GPS-5	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	75-35-4	1,1-Dichloroethene	ug/kg		1.3	U
23028-02	GPS-6	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	75-35-4	1,1-Dichloroethene	ug/kg		1.2	U
4-Isopropyltoluene													
23025-01	GPS-1	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/kg		1.1	U
23025-02	GPS-2	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/kg		1.4	U
23025-03	GPS-3	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/kg		1.8	U
23025-04	GPS-4	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/kg		1.3	U
23028-01	GPS-5	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/kg	41.2	1.2	U
23028-02	GPS-6	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	99-87-6	4-Isopropyltoluene	ug/kg		6	U
50SD01		Goose Prairie Creek	N	11/29/95	Soil	Volatiles			4-Isopropyltoluene	ug/kg		7	U
50SD02		Goose Prairie Creek	N	11/29/95	Soil	Volatiles			4-Isopropyltoluene	ug/kg	14		
50SD05		Goose Prairie Creek	N	11/11/98	Soil	Volatiles			4-Isopropyltoluene	ug/kg		6.9	U
50SD06		Goose Prairie Creek	N	11/10/98	Soil	Volatiles			4-Isopropyltoluene	ug/kg		6.7	U
50SD07		Goose Prairie Creek	QC	11/10/98	Soil	Volatiles			4-Isopropyltoluene	ug/kg		7.3	U
50SD08		Goose Prairie Creek	N	11/11/98	Soil	Volatiles			4-Isopropyltoluene	ug/kg			
cis-1,2-Dichloroethene													
23025-01	GPS-1	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/kg	90.7	1.1	U
23025-02	GPS-2	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/kg		1.4	U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
23025-0	GPS-3	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/kg		1.8		U
23025-0	GPS-4	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/kg		1.3		U
23028-0	GPS-5	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/kg		1.3		U
23028-0	GPS-6	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	156-59-2	cis-1,2-Dichloroethene	ug/kg		1.2		U
	50SD01	Goose Prairie Creek	N	11/29/95	Soil	Volatiles			cis-1,2-Dichloroethene	ug/kg		6		U
	50SD02	Goose Prairie Creek	N	11/29/95	Soil	Volatiles			cis-1,2-Dichloroethene	ug/kg	115			U
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Volatiles			cis-1,2-Dichloroethene	ug/kg		6.8		U
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Volatiles			cis-1,2-Dichloroethene	ug/kg		6.9		U
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Volatiles			cis-1,2-Dichloroethene	ug/kg		6.7		U
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Volatiles			cis-1,2-Dichloroethene	ug/kg		7.3		U
Naphthalene														
23025-0	GPS-1	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	91-20-3	Naphthalene	ug/kg	8.5	2.2		
23025-0	GPS-2	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	91-20-3	Naphthalene	ug/kg		2.8		U
23025-0	GPS-3	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	91-20-3	Naphthalene	ug/kg		3.6		U
23025-0	GPS-4	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	91-20-3	Naphthalene	ug/kg		2.6		U
23028-0	GPS-5	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	91-20-3	Naphthalene	ug/kg		2.5		U
23028-0	GPS-6	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	91-20-3	Naphthalene	ug/kg		2.4		U
Toluene														
23025-0	GPS-1	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	108-88-3	Toluene	ug/kg		1.1		U
23025-0	GPS-2	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	108-88-3	Toluene	ug/kg		1.4		U
23025-0	GPS-3	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	108-88-3	Toluene	ug/kg		1.8		U
23025-0	GPS-4	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	108-88-3	Toluene	ug/kg		1.3		U
23028-0	GPS-5	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	108-88-3	Toluene	ug/kg		1.3		U
23028-0	GPS-6	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	108-88-3	Toluene	ug/kg	3.6	1.2		
Trichloroethene														
23025-0	GPS-1	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	79-01-6	Trichloroethene	ug/kg	37.9	2.2		
23025-0	GPS-2	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	79-01-6	Trichloroethene	ug/kg		2.8		U
23025-0	GPS-3	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	79-01-6	Trichloroethene	ug/kg		3.6		U
23025-0	GPS-4	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	79-01-6	Trichloroethene	ug/kg		2.6		U
23028-0	GPS-5	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	79-01-6	Trichloroethene	ug/kg		2.5		U
23028-0	GPS-6	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	79-01-6	Trichloroethene	ug/kg		2.4		U
	50SD01	Goose Prairie Creek	N	11/29/95	Soil	Volatiles			Trichloroethene	ug/kg		6		U
	50SD02	Goose Prairie Creek	N	11/29/95	Soil	Volatiles			Trichloroethene	ug/kg	33			U
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Volatiles			Trichloroethene	ug/kg		14		U
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Volatiles			Trichloroethene	ug/kg		14		U
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Volatiles			Trichloroethene	ug/kg		13		U
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Volatiles			Trichloroethene	ug/kg		15		U
Vinyl Chloride														
23025-0	GPS-1	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/kg	66.8	1.1		
23025-0	GPS-2	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/kg		1.4		U
23025-0	GPS-3	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/kg		1.8		U
23025-0	GPS-4	Goose Prairie Creek	N	8/7/1996	Soil	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/kg		1.3		U
23028-0	GPS-5	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/kg		1.3		U
23028-0	GPS-6	Goose Prairie Creek	N	8/8/1996	Soil	Volatiles	8260A	75-01-4	Vinyl Chloride	ug/kg		1.2		U

Table 3-16
 Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
 Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Dioxins/Furans	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	84.4			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	4.53			J
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	0.31			
	50SD06	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	0.326			
	GPSD03	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	0.339			
	GPSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	0.976			
	GPSD06	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	1.164			
	GPSD08	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	3.303			
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	5.89			
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	6.59			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	2.141			
	50SD06	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	2.325			
	GPSD03	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	3.029			
	GPSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	7.716			
	GPSD06	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	7.883			
	GPSD08	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	16.519			J
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8,9-Heptachlorodibenzofuran	ng/kg	24.3			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8,9-Heptachlorodibenzofuran	ng/kg	1			UJ
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	26.3			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	0.828			UJ
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	0.53			
	50SD06	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	0.495			
	GPSD03	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	0.506			
	GPSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	1.498			
	GPSD06	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	0.614			
	GPSD08	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	0.357			U
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	11.9			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	0.552			UJ
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,7,8,9-Hexachlorodibenzofuran	ng/kg	4.18			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			1,2,3,7,8,9-Hexachlorodibenzofuran	ng/kg	0.9			UJ
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			1,2,3,7,8-Pentachlorodibenzofuran	ng/kg	4.18			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			1,2,3,7,8-Pentachlorodibenzofuran	ng/kg	0.39			UJ
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			2,3,4,6,7,8-Hexachlorodibenzofuran	ng/kg	7.52			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			2,3,4,6,7,8-Hexachlorodibenzofuran	ng/kg	0.808			UJ
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			2,3,4,6,7,8-Hexachlorodibenzofuran	ng/kg	2.47			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			2,3,4,7,8-Pentachlorodibenzofuran	ng/kg	0.407			UJ
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			2,3,4,7,8-Pentachlorodibenzofuran	ng/kg	3.73			J
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			2,3,7,8-Tetrachlorodibenzofuran	ng/kg	0.704			UJ
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			2,3,7,8-Tetrachlorodibenzofuran	ng/kg	0.128			U
	50SD06	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			2,3,7,8-Tetrachlorodibenzofuran	ng/kg	0.108			U
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	153			
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	8.94			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	0.75			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	50SD06	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	0.735			
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	0.657			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	2.818			
	GPCSD08	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	4.047			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	3.403			
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	5.89			
	50SD06	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	15.2			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	4.568			
	GPCSD03	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	4.922			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	6.919			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	16.57			
	GPCSD08	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	15.442			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	92.209			
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg	65			
	50SD06	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg	1.06			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg	0.74			
	GPCSD03	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg	0.685			
	GPCSD06	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg	0.6			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg	0.969			
	GPCSD08	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg	0.613			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg	1.918			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	0.118			UJ
	GPCSD03	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	0.401			J
	GPCSD06	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	1.379			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	1.067			
	GPCSD08	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	0.634			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	1.587			
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	936			J
	50SD06	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	45.4			J
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	0.752			
	GPCSD03	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	0.795			
	GPCSD06	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	0.608			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	1.119			
	GPCSD08	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	1.265			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	10.993			
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	289			
	50SD06	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	402			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	114.239			
	GPCSD03	Goose Prairie Creek	QC	11/11/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	135.462			
	GPCSD06	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	90.22			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	235.638			
	GPCSD08	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	210.397			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	324.705			J
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans			Pentachlorodibenzofuran	ng/kg	15.6			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans			Pentachlorodibenzofuran	ng/kg		0.407	U
	GPSD03	Goose Prairie Creek	N	11/17/98	Soil	Dioxins/Furans			Pentachlorodibenzofuran	ng/kg		0.106	U
	GPSD06	Goose Prairie Creek	N	11/16/98	Soil	Dioxins/Furans			Pentachlorodibenzofuran	ng/kg	1.02		
	GPSD06	Goose Prairie Creek	QC	11/16/98	Soil	Dioxins/Furans			Pentachlorodibenzofuran	ng/kg	0.487		
	GPSD08	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			Pentachlorodibenzofuran	ng/kg		0.282	U
	S0SD06	Goose Prairie Creek	N	11/11/98	Soil	Dioxins/Furans			JCDF	ng/kg		0.128	U
	S0SD06	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans		55722-27-5	TCDF	ng/kg	0.368		
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Dioxins/Furans		55722-27-5		ng/kg	12.8		
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Dioxins/Furans		55722-27-5		ng/kg		0.704	U
Aluminum													
	GPSD01	Goose Prairie Creek	N	9/17/98	Soil	Metals			Aluminum	mg/kg	800		
	GPSD01	Goose Prairie Creek	QC	9/17/98	Soil	Metals			Aluminum	mg/kg	740		
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Aluminum	mg/kg	5040		
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Aluminum	mg/kg	2600		
	S0SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Aluminum	mg/kg	7700		
	S0SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Aluminum	mg/kg	7100		
	S0SD07	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Aluminum	mg/kg	8800		
	GPSD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Aluminum	mg/kg	8600		
	GPSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Aluminum	mg/kg	4500		
	GPSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Aluminum	mg/kg	4000		
	GPSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Aluminum	mg/kg	4500		
	GPSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Aluminum	mg/kg	1800		
	GPSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Aluminum	mg/kg	2200		
	GPSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Aluminum	mg/kg	3600		
	GPSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Aluminum	mg/kg	3400		
	GPSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Aluminum	mg/kg	4100		
	GPSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Aluminum	mg/kg	11000		
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Aluminum	mg/kg	4800		
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Aluminum	mg/kg	750	19.1	
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Aluminum	mg/kg	840	16.2	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Aluminum	mg/kg	1530	17.8	
	Aroclor 1254	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Aluminum	mg/kg	2060	22.1	
Aroclor 1254													
	GPSD01	Goose Prairie Creek	N	12/2/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		56	U
	GPSD02	Goose Prairie Creek	N	12/2/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		38	U
	GPSD03	Goose Prairie Creek	N	11/17/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		42	U
	GPSD04	Goose Prairie Creek	N	12/2/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg	39		
	GPSD05	Goose Prairie Creek	N	12/2/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		45	U
	GPSD06	Goose Prairie Creek	N	11/16/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		46	U
	GPSD07	Goose Prairie Creek	QC	11/16/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		47	U
	GPSD08	Goose Prairie Creek	N	11/11/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		46	U
	GPSD08	Goose Prairie Creek	N	11/11/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		44	U

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Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Arsenic	GPCSD09	Goose Prairie Creek	N	12/3/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		41		U
	GPCSD10	Goose Prairie Creek	N	12/3/98	Soil	Pesticides/PCBs			Aroclor 1254	ug/kg		42		U
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Metals			Arsenic	mg/kg		1.28		U
	GPCSD01	Goose Prairie Creek	QC	9/17/98	Soil	Metals			Arsenic	mg/kg	1.38			
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Arsenic	mg/kg	1.2			
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Arsenic	mg/kg	2.9			
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Arsenic	mg/kg	5.63			
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Arsenic	mg/kg	2.64			
	50SD07	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Arsenic	mg/kg	2.59			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Arsenic	mg/kg	2.25			
Barium	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Arsenic	mg/kg	2.21			
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Arsenic	mg/kg	5.86			
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Arsenic	mg/kg	2.18			
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Arsenic	mg/kg		1.31		U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Arsenic	mg/kg		1.37		U
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Arsenic	mg/kg	5.25			
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Arsenic	mg/kg	4.07			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Arsenic	mg/kg	1.88			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Arsenic	mg/kg	3.94			
	LHS-GPC-02	Goose Prairie Creek	N	11/11/98	Soil	Metals			Arsenic	mg/kg	2.13			
Barium	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Arsenic	mg/kg	4.04			
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Arsenic	mg/kg	0.52		0.20	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Arsenic	mg/kg	0.36		0.19	
	LH50SD01	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Arsenic	mg/kg	4.3		0.20	
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Arsenic	mg/kg	1.0		0.21	
	LH50SD05	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Barium	mg/kg	88			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg	19.8			
	50SD07	Goose Prairie Creek	N	11/10/98	Soil	Metals			Barium	mg/kg	310			
	50SD08	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Barium	mg/kg	78			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg	79			
Barium	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Barium	mg/kg	270			
	GPCSD03	Goose Prairie Creek	N	11/18/98	Soil	Metals			Barium	mg/kg	88			
	GPCSD04	Goose Prairie Creek	N	11/17/98	Soil	Metals			Barium	mg/kg	95			
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Barium	mg/kg	62			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Barium	mg/kg	39			
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Barium	mg/kg	44			
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Barium	mg/kg	46			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg	47			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg	82			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg	240			
Barium	LH50SD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg	58			
	LH50SD02	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg	52			
	50SD05	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Barium	mg/kg				
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg				
	50SD07	Goose Prairie Creek	N	11/10/98	Soil	Metals			Barium	mg/kg				
	50SD08	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Barium	mg/kg				
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg				
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Barium	mg/kg				
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Barium	mg/kg				
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Barium	mg/kg				
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Barium	mg/kg				
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Barium	mg/kg				
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Barium	mg/kg				
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Barium	mg/kg				
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg				
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Barium	mg/kg				

Table 3.16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
Beryllium	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Barium	mg/kg	21.5	4.8	
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Barium	mg/kg	14.7	4.1	
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Barium	mg/kg	20.1	4.4	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Barium	mg/kg	35.3	5.5	
	LHS0SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Beryllium	mg/kg	1.9		
	LHS0SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Beryllium	mg/kg		0.66	U
	S0SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Beryllium	mg/kg	1.53		
	S0SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Beryllium	mg/kg		0.692	U
	S0SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Beryllium	mg/kg		0.669	U
	S0SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Beryllium	mg/kg	0.985		
Calcium	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Beryllium	mg/kg		0.951	U
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Beryllium	mg/kg	1.15		
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Beryllium	mg/kg	0.815		
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Beryllium	mg/kg			
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Beryllium	mg/kg	0.876		U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Beryllium	mg/kg	0.832		
	GPCSD07	Goose Prairie Creek	N	11/16/98	Soil	Metals			Beryllium	mg/kg		0.666	U
	GPCSD08	Goose Prairie Creek	N	11/11/98	Soil	Metals			Beryllium	mg/kg	1.59		
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Beryllium	mg/kg		0.715	U
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Beryllium	mg/kg	0.694		
Calcium	LHS0SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Calcium	mg/kg	1750		
	LHS0SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Calcium	mg/kg	480		
	S0SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Calcium	mg/kg	2300		
	S0SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Calcium	mg/kg	870		
	S0SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Calcium	mg/kg	790		
	S0SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Calcium	mg/kg	5500		
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Calcium	mg/kg	1100		
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Calcium	mg/kg	1200		
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Calcium	mg/kg	740		
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Calcium	mg/kg		650	U
Calcium	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Calcium	mg/kg		680	U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Calcium	mg/kg	840		
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Calcium	mg/kg	870		
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Calcium	mg/kg	1200		
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Calcium	mg/kg	6300		
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Calcium	mg/kg	1000		
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Calcium	mg/kg	1700		
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Calcium	mg/kg	180	9.5	
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Calcium	mg/kg	162	8.1	
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Calcium	mg/kg	369	8.9	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Calcium	mg/kg	556	11.0	

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Chromium	GPSPD01	Goose Prairie Creek	N	9/17/98	Soil	Metals			Chromium	mg/kg	2.8			
	GPSPD01	Goose Prairie Creek	QC	9/17/98	Soil	Metals			Chromium	mg/kg	3.3			
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Chromium	mg/kg	8.2			
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Chromium	mg/kg	17.6			
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Chromium	mg/kg	59			
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Chromium	mg/kg	11			
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Chromium	mg/kg	12			
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Chromium	mg/kg	18			
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Chromium	mg/kg	12			
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Chromium	mg/kg	39			
	GPCSD03	Goose Prairie Creek	N	11/16/98	Soil	Metals			Chromium	mg/kg	45			
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Chromium	mg/kg	5.7			
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Chromium	mg/kg	5.7			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Chromium	mg/kg	29			
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Chromium	mg/kg	25			
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Chromium	mg/kg	8.7			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Chromium	mg/kg	34			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Chromium	mg/kg	6.6			
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Chromium	mg/kg	19			
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Chromium	mg/kg	2.8	1.9		
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Chromium	mg/kg	3.2	1.6		
Cobalt	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Chromium	mg/kg	13.0	1.8		
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Cobalt	mg/kg	5.8	2.2		
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Cobalt	mg/kg	7.7			
	50SD05	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Cobalt	mg/kg	4.1			
	50SD06	Goose Prairie Creek	N	11/11/98	Soil	Metals			Cobalt	mg/kg	31			
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Cobalt	mg/kg		6.9		U
	50SD07	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Cobalt	mg/kg		6.7		U
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Cobalt	mg/kg	16			
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Cobalt	mg/kg		9.6		U
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Cobalt	mg/kg	11			
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Cobalt	mg/kg	8.3			
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Cobalt	mg/kg		6.6		U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Cobalt	mg/kg		6.8		U
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Cobalt	mg/kg	8.7			
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Cobalt	mg/kg	8.9			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Cobalt	mg/kg	18			U
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Cobalt	mg/kg		7.1		U
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Cobalt	mg/kg	8.7			
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Cobalt	mg/kg		1.9		U
			N	12-Jan-95	Soil	Metals			Cobalt	mg/kg		1.6		U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Cobalt	mg/kg	4.4	1.8	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Cobalt	mg/kg	3.2	2.2	
Copper													
	LH5SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Copper	mg/kg	14		
	LH5SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Copper	mg/kg	3.8		
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Copper	mg/kg	10.2		
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Copper	mg/kg	5.66		
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Copper	mg/kg	4.83		
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Copper	mg/kg	17.6		
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Copper	mg/kg	7.6		
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Copper	mg/kg	6.51		
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Copper	mg/kg	5.34		
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Copper	mg/kg	4.31		
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Copper	mg/kg		3.42	U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Copper	mg/kg	5.82		
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Copper	mg/kg	6.64		
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Copper	mg/kg	5.5		
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Copper	mg/kg	17.8		U
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Copper	mg/kg	7.63		
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Copper	mg/kg		1.9	U
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Copper	mg/kg		1.6	U
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Copper	mg/kg	3.2	1.8	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Copper	mg/kg	3.2	2.2	
Cyanide													
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Cyanide	mg/kg	0.9479		
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Cyanide	mg/kg		0.6915	U
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Cyanide	mg/kg		0.6692	U
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Cyanide	mg/kg		0.7314	U
Di-n-butyl phthalate													
	50SD01	Goose Prairie Creek	N	11/29/95	Soil	Semi-Volatile			Di-n-butyl phthalate	ug/kg		440	U
	50SD02	Goose Prairie Creek	N	11/29/95	Soil	Semi-Volatile			Di-n-butyl phthalate	ug/kg	1545		
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Semi-Volatile			Di-n-butyl phthalate	ug/kg		450	U
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Semi-Volatile			Di-n-butyl phthalate	ug/kg		460	U
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Semi-Volatile			Di-n-butyl phthalate	ug/kg		450	U
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Semi-Volatile			Di-n-butyl phthalate	ug/kg		490	U
Iron													
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Metals			Iron	mg/kg	2400		
	GPCSD01	Goose Prairie Creek	QC	9/17/98	Soil	Metals			Iron	mg/kg	3800		
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Iron	mg/kg	1950	2.9	
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Iron	mg/kg	2120	2.4	
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Iron	mg/kg	9800	2.7	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Iron	mg/kg	4240	3.3	
	LH5SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Iron	mg/kg	15500		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag
Lead	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Iron	mg/kg	13000			
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Iron	mg/kg	40000			
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Iron	mg/kg	10000			
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Iron	mg/kg	9800			
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Iron	mg/kg	15000			
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Iron	mg/kg	6500			
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Iron	mg/kg	24000			
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Iron	mg/kg	19000			
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Iron	mg/kg	4700			
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Iron	mg/kg	4700			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Iron	mg/kg	26000			
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Iron	mg/kg	23000			
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Iron	mg/kg	8100			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Iron	mg/kg	37000			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Iron	mg/kg	5900			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Iron	mg/kg	18000			
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Metals			Lead	mg/kg	5.5			
	GPCSD01	Goose Prairie Creek	QC	9/17/98	Soil	Metals			Lead	mg/kg	5.67			
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Lead	mg/kg	8.02			
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Lead	mg/kg	7.74			
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Lead	mg/kg	71.7			
Magnesium	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Lead	mg/kg	10.4			
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Lead	mg/kg	9.01			
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Lead	mg/kg	12.6			
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Lead	mg/kg	18.6			
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Lead	mg/kg	20.1			
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Lead	mg/kg	13.9			
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Lead	mg/kg	6.1			
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Lead	mg/kg	6.19			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Lead	mg/kg	17.2			
	GPCSD06	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Lead	mg/kg	28.6			
	GPCSD07	Goose Prairie Creek	N	11/16/98	Soil	Metals			Lead	mg/kg	9.3			
	GPCSD08	Goose Prairie Creek	N	11/11/98	Soil	Metals			Lead	mg/kg	20.7			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Lead	mg/kg	8.76			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Lead	mg/kg	14.4			
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Lead	mg/kg	4.1	0.20		
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Lead	mg/kg	2.7	0.39		
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Lead	mg/kg	7.8	1.0		
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Lead	mg/kg	7.3	1.0		
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Magnesium	mg/kg	1660			
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Magnesium	mg/kg	450			
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Magnesium	mg/kg	1800			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Magnesium	mg/kg	1100			
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Magnesium	mg/kg	1200			
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Magnesium	mg/kg	5000			
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Magnesium	mg/kg		950		U
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Magnesium	mg/kg		770		U
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Magnesium	mg/kg		630		U
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Magnesium	mg/kg		650		U
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Magnesium	mg/kg		680		U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Magnesium	mg/kg		690		U
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Magnesium	mg/kg		700		U
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Magnesium	mg/kg	940			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Magnesium	mg/kg	6400			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Magnesium	mg/kg		720		U
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Magnesium	mg/kg	1600			
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Magnesium	mg/kg	111		19.1	
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Magnesium	mg/kg	125		16.2	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Magnesium	mg/kg	212		17.8	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Magnesium	mg/kg	319		22.1	
Manganese														
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Metals			Manganese	mg/kg	24.6			
	GPCSD01	Goose Prairie Creek	QC	9/17/98	Soil	Metals			Manganese	mg/kg	26.1			
	LHS0SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Manganese	mg/kg	131			
	LHS0SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Manganese	mg/kg	72.8			
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Manganese	mg/kg	1120			J
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Manganese	mg/kg	95			J
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Manganese	mg/kg	76.8			
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Manganese	mg/kg	336			
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Manganese	mg/kg	85.4			J
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Manganese	mg/kg	285			J
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Manganese	mg/kg	183			J
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Manganese	mg/kg	72.1			J
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Manganese	mg/kg	109			J
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Manganese	mg/kg	200			J
	GPCSD06	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Manganese	mg/kg	193			J
	GPCSD07	Goose Prairie Creek	N	11/16/98	Soil	Metals			Manganese	mg/kg	162			J
	GPCSD08	Goose Prairie Creek	N	11/11/98	Soil	Metals			Manganese	mg/kg	694			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Manganese	mg/kg	140			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Manganese	mg/kg	205			
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Manganese	mg/kg	22.2		0.95	
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Manganese	mg/kg	44.7		0.81	
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Manganese	mg/kg	103		0.89	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Manganese	mg/kg	115		1.1	
Mercury														
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Mercury	mg/kg		0.19		U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No.	Compound	Units	Results	DL _{RL}	Flag
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Mercury	mg/kg		0.15	U
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Mercury	mg/kg	0.13		U
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Mercury	mg/kg		0.13	U
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Mercury	mg/kg		0.14	U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Mercury	mg/kg		0.14	U
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Mercury	mg/kg		0.14	U
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Mercury	mg/kg		0.13	U
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Mercury	mg/kg		0.13	U
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Mercury	mg/kg		0.14	U
Nickel													
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Nickel	mg/kg	24		
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Nickel	mg/kg	6.4		
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Nickel	mg/kg	24		
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Nickel	mg/kg			
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Nickel	mg/kg		5.6	U
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Nickel	mg/kg		5.3	U
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Nickel	mg/kg	37		
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Nickel	mg/kg		7.6	U
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Nickel	mg/kg		6.1	U
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Nickel	mg/kg		5	U
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Nickel	mg/kg		5.2	U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Nickel	mg/kg		5.5	U
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Nickel	mg/kg	6		
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Nickel	mg/kg	6.9		
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Nickel	mg/kg	8.4		
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Nickel	mg/kg	49		
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Nickel	mg/kg		5.7	U
Potassium													
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Potassium	mg/kg		647	U
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Potassium	mg/kg		656	U
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Potassium	mg/kg	2900		
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Potassium	mg/kg	1100		J
	50SD07	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Potassium	mg/kg	1300		J
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Potassium	mg/kg	2300		
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Potassium	mg/kg		950	UJ
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Potassium	mg/kg	870		J
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Potassium	mg/kg		630	UJ
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Potassium	mg/kg		650	UJ
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Potassium	mg/kg		680	UJ
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Potassium	mg/kg		690	UJ
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Potassium	mg/kg		700	UJ
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Potassium	mg/kg	750		J
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Potassium	mg/kg	1400		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL _{RL}	Flag
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Potassium	mg/kg		720	U
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Potassium	mg/kg	840		
Selenium													
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Selenium	mg/kg		0.6	U
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Selenium	mg/kg		0.6	U
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Selenium	mg/kg	1.5		
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Selenium	mg/kg		1.38	U
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Selenium	mg/kg	2.47		
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Selenium	mg/kg		1.46	U
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Selenium	mg/kg		1.9	U
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Selenium	mg/kg	4.09		
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Selenium	mg/kg	3.09		
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Selenium	mg/kg		1.31	U
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Selenium	mg/kg		1.37	U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Selenium	mg/kg	4.97		
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Selenium	mg/kg	5.08		
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Selenium	mg/kg	1.57		
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Selenium	mg/kg	2.62		
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Selenium	mg/kg		1.43	U
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Selenium	mg/kg		1.36	U
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Selenium	mg/kg		0.20	U
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Selenium	mg/kg		0.19	U
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Selenium	mg/kg	0.28	0.20	
			N	12-Jan-95	Soil	Metals			Selenium	mg/kg		0.21	U
Silver													
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Silver	mg/kg	2.4		
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Silver	mg/kg		1.6	U
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Silver	mg/kg	1.6		
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Silver	mg/kg	1.3		
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Silver	mg/kg		1.4	U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Silver	mg/kg		1.4	U
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Silver	mg/kg		1.4	U
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Silver	mg/kg		1.3	U
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Silver	mg/kg		1.3	U
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Silver	mg/kg		1.4	U
Sodium													
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Sodium	mg/kg	230		
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Sodium	mg/kg		131	U
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Sodium	mg/kg	780		
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Sodium	mg/kg		690	U
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Sodium	mg/kg		670	U
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Sodium	mg/kg		730	U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Strontium														
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Strontium	mg/kg	31			
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Strontium	mg/kg			6.9	U
	50SD06	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Strontium	mg/kg			6.7	U
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Strontium	mg/kg	82			
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Strontium	mg/kg			9.6	U
	GPCSD02	Goose Prairie Creek	N	11/17/98	Soil	Metals			Strontium	mg/kg			7.7	U
	GPCSD03	Goose Prairie Creek	N	11/16/98	Soil	Metals			Strontium	mg/kg			6.2	U
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Strontium	mg/kg			6.6	U
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Strontium	mg/kg			6.8	U
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Strontium	mg/kg			6.9	U
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Strontium	mg/kg			7	U
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Strontium	mg/kg	8.2			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Strontium	mg/kg	73			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Strontium	mg/kg	7.6			
Vanadium														
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Vanadium	mg/kg	22			
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Vanadium	mg/kg	21.4			
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Vanadium	mg/kg	54			
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Vanadium	mg/kg	19			
	50SD07	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Vanadium	mg/kg	20			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Vanadium	mg/kg	23			
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Vanadium	mg/kg	17			
	GPCSD03	Goose Prairie Creek	N	11/18/98	Soil	Metals			Vanadium	mg/kg	43			
	GPCSD04	Goose Prairie Creek	N	11/17/98	Soil	Metals			Vanadium	mg/kg	34			
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Vanadium	mg/kg	8.1			
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Vanadium	mg/kg	9.9			
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Vanadium	mg/kg	42			
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Vanadium	mg/kg	37			
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Vanadium	mg/kg	14			
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Vanadium	mg/kg	35			
Zinc														
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Vanadium	mg/kg	11			
	GPCSD01	Goose Prairie Creek	N	11/11/98	Soil	Metals			Vanadium	mg/kg	27			
	GPCSD01	Goose Prairie Creek	N	9/17/98	Soil	Metals			Zinc	mg/kg	8.8			
	GPCSD01	Goose Prairie Creek	QC	9/17/98	Soil	Metals			Zinc	mg/kg	8.2			
	LH50SD01	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Zinc	mg/kg	40			
	LH50SD02	Goose Prairie Creek	N	11/29/1995	Soil	Metals			Zinc	mg/kg	32			
	50SD05	Goose Prairie Creek	N	11/11/98	Soil	Metals			Zinc	mg/kg	63			
	50SD06	Goose Prairie Creek	N	11/10/98	Soil	Metals			Zinc	mg/kg	30			
	50SD07	Goose Prairie Creek	QC	11/10/98	Soil	Metals			Zinc	mg/kg	29			
	50SD07	Goose Prairie Creek	N	11/11/98	Soil	Metals			Zinc	mg/kg	80			
	GPCSD01	Goose Prairie Creek	N	11/18/98	Soil	Metals			Zinc	mg/kg	70			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag	
	GPCSD02	Goose Prairie Creek	N	11/18/98	Soil	Metals			Zinc	mg/kg	91				
	GPCSD03	Goose Prairie Creek	N	11/17/98	Soil	Metals			Zinc	mg/kg	50				
	GPCSD04	Goose Prairie Creek	N	11/16/98	Soil	Metals			Zinc	mg/kg	19				
	GPCSD05	Goose Prairie Creek	N	11/16/98	Soil	Metals			Zinc	mg/kg	22				
	GPCSD06	Goose Prairie Creek	N	11/16/98	Soil	Metals			Zinc	mg/kg	42				
	GPCSD07	Goose Prairie Creek	QC	11/16/98	Soil	Metals			Zinc	mg/kg	42				
	GPCSD08	Goose Prairie Creek	N	11/16/98	Soil	Metals			Zinc	mg/kg	28				
	GPCSD09	Goose Prairie Creek	N	11/11/98	Soil	Metals			Zinc	mg/kg	93				
	GPCSD10	Goose Prairie Creek	N	11/11/98	Soil	Metals			Zinc	mg/kg	16				
	LHS-GPC-02	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Zinc	mg/kg	39				
	LHS-GPC-04	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Zinc	mg/kg	9.6			0.95	
	LHS-GPC-06	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Zinc	mg/kg	5.6			0.81	
	LHS-GPC-08	Goose Prairie Creek	N	12-Jan-95	Soil	Metals			Zinc	mg/kg	16.6			0.89	
Dioxin/Furans															
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	1,644			0.359	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	1,590			0.278	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	2,318			0.381	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	33,300			0.952	
	GPWSD04	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	33,725			0.740	
	GPWSD01	Goose Prairie Wetland	QC	20-Nov-98	Soil	Dioxin/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	36,454			0.460	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	3,618			0.151	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	2,812			0.149	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	5,636			0.234	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	ng/kg	0.813			0.304	
	GPWSD04	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	ng/kg	0.693			0.315	
	GPWSD01	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	ng/kg	1.157			0.297	
	GPWSD04	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	ng/kg	1.146			0.291	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	ng/kg	1.290			0.301	
	GPWSD04	Goose Prairie Wetland	QC	20-Nov-98	Soil	Dioxin/Furans			1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	ng/kg	1.390			0.284	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	ng/kg	0.382			0.152	
	GPWSD04	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			1,2,3,7,8-Pentachlorodibenzofuran	ng/kg	0.332			U	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			1,2,3,7,8-Pentachlorodibenzofuran	ng/kg	0.913			0.173	
	GPWSD04	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			2,3,7,8-Tetrachlorodibenzofuran	ng/kg	0.744			0.176	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			2,3,7,8-Tetrachlorodibenzofuran	ng/kg	0.643			0.301	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			2,3,7,8-Tetrachlorodibenzofuran	ng/kg	0.722			0.131	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			Heptachlorodibenzofuran	ng/kg				0.359	U
	GPWSD04	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			Heptachlorodibenzofuran	ng/kg				0.278	U
	GPWSD01	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			Heptachlorodibenzofuran	ng/kg	2.318			0.381	
	GPWSD04	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	84.281			0.952	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	90.846			0.740	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	87.107			0.460	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			Hexachlorodibenzofuran	ng/kg	3.214			0.146	
	GPWSD04	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			Hexachlorodibenzofuran	ng/kg	2.882			0.144	

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Samlder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			Hexachlorodibenzofuran	ng/kg	6.614		0.226	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	23.743		0.304	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	26.634		0.315	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			Hexachlorodibenzo-p-dioxin	ng/kg	9.316		0.297	
	GPWSD04	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			Octachlorodibenzofuran	ng/kg	8.039		0.329	
	GPWSD01	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			Octachlorodibenzofuran	ng/kg	6.514		0.398	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			Octachlorodibenzofuran	ng/kg	4.598		0.233	
	GPWSD04	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			Octachlorodibenzo-p-dioxin	ng/kg	1073.643		0.331	
	GPWSD01	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			Octachlorodibenzo-p-dioxin	ng/kg	1339.652		0.406	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			Octachlorodibenzo-p-dioxin	ng/kg	1237.604		0.200	
	GPWSD04	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			Pentachlorodibenzofuran	ng/kg	3.604		0.154	
	GPWSD01	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			Pentachlorodibenzofuran	ng/kg			0.205	U
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Dioxin/Furans			Pentachlorodibenzofuran	ng/kg	4.436		0.176	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Dioxin/Furans			Tetrachlorodibenzofuran	ng/kg	2.513		0.176	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Dioxin/Furans			Tetrachlorodibenzofuran	ng/kg	1.107		0.301	
Acetone			N	20-Nov-98	Soil	Dioxin/Furans			Tetrachlorodibenzofuran	ng/kg	2.104		0.131	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Volatiles			Acetone	ug/kg	72		34	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Volatiles			Acetone	ug/kg			34	U
Aluminum			N	20-Nov-98	Soil	Volatiles			Acetone	ug/kg			24	U
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Aluminum	mg/kg	4500		34	
	GPWSD02	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Aluminum	mg/kg	3800		34	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Aluminum	mg/kg	8100		38	
	GPWSD04	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Aluminum	mg/kg	6600		33	
Arsenic			N	20-Nov-98	Soil	Metals			Aluminum	mg/kg	6400		28	
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Arsenic	mg/kg	3.52		1.71	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Arsenic	mg/kg	3.39		1.71	
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Arsenic	mg/kg	4.09		1.9	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Arsenic	mg/kg	3.44		1.66	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Arsenic	mg/kg	3.00		1.39	
Barium			QC	19-Nov-98	Soil	Metals			Barium	mg/kg	100		34	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Barium	mg/kg	94		34	
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Barium	mg/kg	170		38	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Barium	mg/kg	120		33	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Barium	mg/kg	230		28	
Beryllium			QC	19-Nov-98	Soil	Metals			Beryllium	mg/kg			0.856	U
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Beryllium	mg/kg			0.856	U
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Beryllium	mg/kg	1.10		0.949	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Beryllium	mg/kg			0.831	U
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Beryllium	mg/kg	1.15		0.693	

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Calcium														
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Calcium	mg/kg	1200		860	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Calcium	mg/kg	960		860	
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Calcium	mg/kg	3000		950	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Calcium	mg/kg	2800		830	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Calcium	mg/kg	950		690	
Chromium														
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Chromium	mg/kg	11		1.7	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Chromium	mg/kg	10		1.7	
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Chromium	mg/kg	23		1.9	J
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Chromium	mg/kg	71		1.7	J
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Chromium	mg/kg	12		1.4	
Cobalt														
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Cobalt	mg/kg	11		8.6	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Cobalt	mg/kg			8.6	U
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Cobalt	mg/kg	11		9.5	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Cobalt	mg/kg	19		8.3	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Cobalt	mg/kg	20		6.9	
Copper														
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Copper	mg/kg	9.17		4.28	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Copper	mg/kg	9.91		4.28	
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Copper	mg/kg	22.3		4.74	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Copper	mg/kg	18.1		4.15	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Copper	mg/kg	8.86		3.46	
Iron														
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Iron	mg/kg	8000		17	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Iron	mg/kg	6500		17	
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Iron	mg/kg	13000		19	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Iron	mg/kg	9200		17	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Iron	mg/kg	6200		14	
Lead														
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Lead	mg/kg	18.6		0.514	
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Lead	mg/kg	16.7		0.514	
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Lead	mg/kg	97.2		0.569	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Lead	mg/kg	60.0		0.498	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Lead	mg/kg	41.8		0.416	
Magnesium														
	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Magnesium	mg/kg			860	U
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Magnesium	mg/kg			860	U
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Magnesium	mg/kg	1300		950	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Magnesium	mg/kg	1300		830	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Magnesium	mg/kg			690	U

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Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saude's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Manganese	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Manganese	mg/kg	128		2.57	
	GPWSD02	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Manganese	mg/kg	104		2.57	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Manganese	mg/kg	175		2.85	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Manganese	mg/kg	583		2.49	
Mercury	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Mercury	mg/kg	641		2.08	
	GPWSD02	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Mercury	mg/kg	0.22		0.17	U
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Mercury	mg/kg	0.27		0.19	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Mercury	mg/kg	0.55		0.17	
Nickel	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Nickel	mg/kg	7.4		6.8	
	GPWSD02	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Nickel	mg/kg	12		7.6	U
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Nickel	mg/kg	8.6		6.6	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Nickel	mg/kg	7.9		5.6	
Potassium	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Potassium	mg/kg	1100		860	
	GPWSD02	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Potassium	mg/kg	970		860	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Potassium	mg/kg	1200		950	J
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Potassium	mg/kg	890		830	J
Silver	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Silver	mg/kg	2.7		1.7	
	GPWSD02	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Silver	mg/kg	3.5		1.7	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Silver	mg/kg	7.0		1.9	J
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Silver	mg/kg	15		1.7	J
Strontium	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Strontium	mg/kg	3.7		1.4	
	GPWSD02	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Strontium	mg/kg	8.6		8.6	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Strontium	mg/kg	20		9.5	U
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Strontium	mg/kg	20		8.3	
Vanadium	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Vanadium	mg/kg	11		6.9	
	GPWSD02	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Vanadium	mg/kg	17		8.6	
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Vanadium	mg/kg	27		9.5	
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Vanadium	mg/kg	19		8.3	
Zinc	GPWSD01	Goose Prairie Wetland	QC	19-Nov-98	Soil	Metals			Zinc	mg/kg	110		3.4	

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunders's Branch and Caddo Lake
Group 4 RA, DHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL	RL	Flag
	GPWSD01	Goose Prairie Wetland	N	19-Nov-98	Soil	Metals			Zinc	mg/kg	100	3.4		
	GPWSD02	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Zinc	mg/kg	140	3.8		
	GPWSD03	Goose Prairie Wetland	N	01-Dec-98	Soil	Metals			Zinc	mg/kg	73	3.3		
	GPWSD04	Goose Prairie Wetland	N	20-Nov-98	Soil	Metals			Zinc	mg/kg	31	2.8		
Dioxins/Furans														
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	2,114			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	ng/kg	6,997			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8,9-Heptachlorodibenzofuran	ng/kg		0.661		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg		0.597		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			1,2,3,6,7,8-Hexachlorodibenzofuran	ng/kg		0.398		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			1,2,3,7,8,9-Hexachlorodibenzofuran	ng/kg		0.649		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			1,2,3,7,8-Pentachlorodibenzofuran	ng/kg		0.407		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			2,3,4,6,7,8-Hexachlorodibenzofuran	ng/kg		0.583		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			2,3,4,7,8-Pentachlorodibenzofuran	ng/kg		0.425		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			2,3,7,8-Tetrachlorodibenzofuran	ng/kg		0.577		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			Heptachlorodibenzofuran	ng/kg	3,319			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			Heptachlorodibenzo-p-dioxins	ng/kg	6,997			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			Hexachlorodibenzofuran	ng/kg		0.398		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			Octachlorodibenzofuran	ng/kg	31,954			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			Octachlorodibenzo-p-dioxin	ng/kg	333,444			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans			Pentachlorodibenzofuran	ng/kg		0.425		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Dioxins/Furans		55722-27-5		ng/kg		0.577		U
1,2-Dichloroethane														
	18SD17	Saunders Branch	N	3/5/95	Soil	Volatiles			1,2-Dichloroethane	ug/kg		7		U
	18SD18	Saunders Branch	N	3/5/95	Soil	Volatiles			1,2-Dichloroethane	ug/kg		9		U
	18SD19	Saunders Branch	N	3/5/95	Soil	Volatiles			1,2-Dichloroethane	ug/kg		10		U
Acetone														
	18SD17	Saunders Branch	N	3/5/95	Soil	Volatiles			Acetone	ug/kg	31			
	18SD18	Saunders Branch	N	3/5/95	Soil	Volatiles			Acetone	ug/kg		18		U
	18SD19	Saunders Branch	N	3/5/95	Soil	Volatiles			Acetone	ug/kg	55			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Volatiles			Acetone	ug/kg		26		U
Aluminum														
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Aluminum	mg/kg	3500			
Arsenic														
	18SD17	Saunders Branch	N	3/5/95	Soil	Metals			Arsenic	mg/kg	10.2			
	18SD18	Saunders Branch	N	3/5/95	Soil	Metals			Arsenic	mg/kg	6.22			
	18SD19	Saunders Branch	N	3/5/95	Soil	Metals			Arsenic	mg/kg	2.2			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Arsenic	mg/kg	3.06			
Barium														
	18SD17	Saunders Branch	N	3/5/95	Soil	Metals			Barium	mg/kg	54			
	18SD18	Saunders Branch	N	3/5/95	Soil	Metals			Barium	mg/kg	147.6			
	18SD19	Saunders Branch	N	3/5/95	Soil	Metals			Barium	mg/kg	146.6			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Barium	mg/kg	81			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunders Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Beryllium	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Beryllium	mg/kg	1.19			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Calcium	mg/kg		640		U
Calcium	18SD17	Saunders Branch	N	3/5/95	Soil	Metals			Chromium	mg/kg	40.2			
	18SD18	Saunders Branch	N	3/5/95	Soil	Metals			Chromium	mg/kg	14.1			
	18SD19	Saunders Branch	N	3/5/95	Soil	Metals			Chromium	mg/kg	9.26			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Chromium	mg/kg	32			
Cobalt	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Cobalt	mg/kg		6.4		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Copper	mg/kg	3.56			
Iron	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Iron	mg/kg	16000			
	18SD17	Saunders Branch	N	3/5/95	Soil	Metals			Lead	mg/kg	12.5			
Lead	18SD18	Saunders Branch	N	3/5/95	Soil	Metals			Lead	mg/kg	13.5			
	18SD19	Saunders Branch	N	3/5/95	Soil	Metals			Lead	mg/kg	1			U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Lead	mg/kg	29.6			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Magnesium	mg/kg		640		U
Magnesium	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Manganese	mg/kg	146			
	18SD17	Saunders Branch	N	3/5/95	Soil	Metals			Nickel	mg/kg	4.53			
Nickel	18SD18	Saunders Branch	N	3/5/95	Soil	Metals			Nickel	mg/kg	11.3			
	18SD19	Saunders Branch	N	3/5/95	Soil	Metals			Nickel	mg/kg	13.8			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Nickel	mg/kg	8.2			
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Potassium	mg/kg	670			
Potassium	18SD17	Saunders Branch	N	3/5/95	Soil	Metals			Selenium	mg/kg	1.31			U
	18SD18	Saunders Branch	N	3/5/95	Soil	Metals			Selenium	mg/kg	1.78			U
Selenium	18SD19	Saunders Branch	N	3/5/95	Soil	Metals			Selenium	mg/kg	2			U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Selenium	mg/kg	1.28			U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Strontium	mg/kg		6.4		U
	18SD17	Saunders Branch	N	3/5/95	Soil	Metals			Thallium	mg/kg	0.66			U
Strontium	18SD18	Saunders Branch	N	3/5/95	Soil	Metals			Thallium	mg/kg	0.89			U
	18SD19	Saunders Branch	N	3/5/95	Soil	Metals			Thallium	mg/kg	1			U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Toluene	ug/kg		7		U
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals								

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL, RL	Flag
	18SD18	Saunders Branch	N	3/5/95	Soil	Volatiles			Toluene	ug/kg		9	U
	18SD19	Saunders Branch	N	3/5/95	Soil	Volatiles			Toluene	ug/kg	29		U
Trichloroethene													
	18SD17	Saunders Branch	N	3/5/95	Soil	Volatiles			Trichloroethene	ug/kg		7	U
	18SD18	Saunders Branch	N	3/5/95	Soil	Volatiles			Trichloroethene	ug/kg		9	U
	18SD19	Saunders Branch	N	3/5/95	Soil	Volatiles			Trichloroethene	ug/kg		10	U
Vanadium													
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Vanadium	mg/kg	23		
Zinc													
	SBSD01	Saunders Branch	N	9/17/98	Soil	Metals			Zinc	mg/kg	15		
Dioxins/Furans													
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	pg/g	310		
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDF	pg/g	14		J
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,4,7,8,9-HpCDF	pg/g		1.4	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,4,7,8-HxCDD	pg/g		3.3	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,4,7,8-HxCDF	pg/g		0.91	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,6,7,8-HxCDD	pg/g		7.7	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,6,7,8-HxCDF	pg/g		1.9	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDD	pg/g	13		J
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDF	pg/g		1.1	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,7,8-PeCDD	pg/g		1.6	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			1,2,3,7,8-PeCDF	pg/g		0.82	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			2,3,4,6,7,8-HxCDF	pg/g		1	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			2,3,4,7,8-PeCDF	pg/g		0.82	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			2,3,7,8-TCDD	pg/g		0.68	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			2,3,7,8-TCDF	pg/g		1.5	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			OCDD	pg/g	12000		
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			OCDF	pg/g	37		J
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			Total HpCDD	pg/g	760		
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			Total HpCDF	pg/g	38		
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			Total HxCDD	pg/g	150		
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			Total HxCDF	pg/g		9.9	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			Total PeCDD	pg/g		7.6	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			Total PeCDF	pg/g		6.3	U
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			Total TCDD	pg/g	5.2		
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Dioxins/Furans			Total TCDF	pg/g		5.1	U
Acetone													
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Acetone	ug/kg	1240		
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Acetone	ug/kg	397		
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Acetone	ug/kg	81		
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Acetone	ug/kg	618		
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Acetone	ug/kg	282		
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Acetone	ug/kg	97.5		J

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Aluminum														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Aluminum	mg/kg	17500			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Aluminum	mg/kg	12000			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Aluminum	mg/kg	10400			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Aluminum	mg/kg	19600			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Aluminum	mg/kg	6880			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Aluminum	mg/kg	11500			
Arsenic														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Arsenic	mg/kg	7.52			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Arsenic	mg/kg	3.68			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Arsenic	mg/kg	1.99			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Arsenic	mg/kg	6.75			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Arsenic	mg/kg	2.21			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Arsenic	mg/kg	2.08			
Barium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Barium	mg/kg	204			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Barium	mg/kg	177			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Barium	mg/kg	150			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Barium	mg/kg	201			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Barium	mg/kg	150			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Barium	mg/kg	263			
Beryllium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Beryllium	mg/kg	1.02			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Beryllium	mg/kg	1.5			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Beryllium	mg/kg	0.843			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Beryllium	mg/kg	1.08			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Beryllium	mg/kg	1.03			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Beryllium	mg/kg	2.01			
Cadmium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cadmium	mg/kg	0.148			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cadmium	mg/kg	0.072			J
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cadmium	mg/kg	0.1			U
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cadmium	mg/kg	0.058			J
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cadmium	mg/kg	0.075			J
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cadmium	mg/kg	0.027			J
Calcium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Calcium	mg/kg	2210			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Calcium	mg/kg	1150			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Calcium	mg/kg	802			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Calcium	mg/kg	1830			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Calcium	mg/kg	950			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Calcium	mg/kg	1090			

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Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Carbon Disulfide														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	35.5			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	9.82			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg		3.16		U
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	25.4			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	5.08			J
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	8.58			
Chromium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Chromium	mg/kg	18.7			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Chromium	mg/kg	13.6			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Chromium	mg/kg	11.6			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Chromium	mg/kg	19.9			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Chromium	mg/kg	8.32			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Chromium	mg/kg	11.2			
Cobalt														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cobalt	mg/kg	16.9			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cobalt	mg/kg	17.1			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cobalt	mg/kg	6.69			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cobalt	mg/kg	13.1			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cobalt	mg/kg	9.53			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Cobalt	mg/kg	5.27			
Copper														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Copper	mg/kg	16.7			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Copper	mg/kg	9.89			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Copper	mg/kg	7.12			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Copper	mg/kg	15.4			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Copper	mg/kg	7.64			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Copper	mg/kg	8.25			
Iron														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Iron	mg/kg	19700			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Iron	mg/kg	13000			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Iron	mg/kg	9490			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Iron	mg/kg	19600			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Iron	mg/kg	9660			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Iron	mg/kg	13300			
Lead														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Lead	mg/kg	31.6			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Lead	mg/kg	19.8			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Lead	mg/kg	11.9			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Lead	mg/kg	21.4			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Lead	mg/kg	16.1			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Lead	mg/kg	14.9			
Magnesium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Magnesium	mg/kg	1390			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Magnesium	mg/kg	1100			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Magnesium	mg/kg	810			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Magnesium	mg/kg	1420			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Magnesium	mg/kg	691			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Magnesium	mg/kg	770			
Manganese														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Manganese	mg/kg	313			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Manganese	mg/kg	178			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Manganese	mg/kg	125			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Manganese	mg/kg	267			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Manganese	mg/kg	146			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Manganese	mg/kg	164			
Mercury														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Mercury	mg/kg	0.185			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Mercury	mg/kg	0.129			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Mercury	mg/kg	0.048			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Mercury	mg/kg	0.113			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Mercury	mg/kg	0.113			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Mercury	mg/kg	0.091			
Nickel														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Nickel	mg/kg	23.1			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Nickel	mg/kg	20.3			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Nickel	mg/kg	8.95			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Nickel	mg/kg	20.7			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Nickel	mg/kg	11			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Nickel	mg/kg	8.3			
Potassium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Potassium	mg/kg	1400			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Potassium	mg/kg	1050			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Potassium	mg/kg	876			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Potassium	mg/kg	1550			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Potassium	mg/kg	678			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Potassium	mg/kg	834			
Selenium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Selenium	mg/kg	2.31			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Selenium	mg/kg	0.668			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Selenium	mg/kg	0.757			
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Selenium	mg/kg	1.43			
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Selenium	mg/kg	0.596			
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Selenium	mg/kg	0.925			
Strontium														
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Strontium	mg/kg	40.5			
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Strontium	mg/kg	26			
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Strontium	mg/kg	20			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saundler's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL _{RL}	Flag
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Strontium	mg/kg	37.8		
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Strontium	mg/kg	20		
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Strontium	mg/kg	26.1		
Vanadium													
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Vanadium	mg/kg	31.6		
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Vanadium	mg/kg	22.7		
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Vanadium	mg/kg	17.5		
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Vanadium	mg/kg	34		
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Vanadium	mg/kg	17.3		
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Vanadium	mg/kg	18.9		
Zinc													
	CL-CCS-1(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Zinc	mg/kg	81.4		
	CL-CCS-1(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Zinc	mg/kg	74.7		
	CL-CCS-1(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Zinc	mg/kg	32.2		
	CL-CCS-2(1)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Zinc	mg/kg	78		
	CL-CCS-2(2)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Zinc	mg/kg	40.7		
	CL-CCS-2(3)	Caddo Lake at Central Creek	N	Unk	Soil	Metals			Zinc	mg/kg	28.8		
Dioxins/Furans													
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	pg/g	240		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	pg/g	210		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDF	pg/g	17		J
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDF	pg/g	9.4		J
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,4,7,8,9-HpCDF	pg/g		2	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,4,7,8,9-HpCDF	pg/g		1.8	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,4,7,8-HxCDD	pg/g		2.4	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,4,7,8-HxCDD	pg/g		2	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,4,7,8-HxCDF	pg/g		2.9	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,4,7,8-HxCDF	pg/g		2.5	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,6,7,8-HxCDD	pg/g		7	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,6,7,8-HxCDD	pg/g		6.9	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,6,7,8-HxCDF	pg/g		2.6	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,6,7,8-HxCDF	pg/g		2.2	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDD	pg/g		7.5	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDD	pg/g	8.4		J
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDF	pg/g		0.43	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDF	pg/g		0.94	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDF	pg/g		1.3	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,7,8-PeCDD	pg/g		1.9	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,7,8-PeCDD	pg/g		1.1	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			1,2,3,7,8-PeCDF	pg/g		1	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			1,2,3,7,8-PeCDF	pg/g		1.6	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			2,3,4,6,7,8-HxCDF	pg/g		2.3	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			2,3,4,6,7,8-HxCDF	pg/g		2.1	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			2,3,4,7,8-PeCDF	pg/g		1.4	U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			2,3,7,8-TCDD	pg/g		0.55	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			2,3,7,8-TCDD	pg/g		0.53	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			2,3,7,8-TCDF	pg/g	4.2		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			2,3,7,8-TCDF	pg/g		1.4	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			OCDD	pg/g	6900		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			OCDD	pg/g	5600		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			OCDF	pg/g	46		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			OCDF	pg/g	26		J
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			Total HpCDD	pg/g	500		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			Total HpCDD	pg/g	590		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			Total HpCDF	pg/g	48		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			Total HpCDF	pg/g	28		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			Total HxCDD	pg/g	53		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			Total HxCDD	pg/g	95		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			Total HxCDF	pg/g	26		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			Total HxCDF	pg/g	22		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			Total PeCDD	pg/g	5		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			Total PeCDD	pg/g	6.7		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			Total PeCDF	pg/g	33		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			Total PeCDF	pg/g	27		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			Total TCDD	pg/g	1.8		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			Total TCDD	pg/g	6.7		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Dioxins/Furans			Total TCDF	pg/g	62		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Dioxins/Furans			Total TCDF	pg/g	22		
3-Methylphenol													
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		547	U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		170	U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		170	U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		459	U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		340	U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		170	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		326	U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		258	U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		170	U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg	83.2		J
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		170	U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			3-Methylphenol	ug/kg		170	U
4-Methylphenol													
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		547	U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		170	U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		170	U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		459	U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		340	U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		170	U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		326		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		258		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		170		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg	83.2			J
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		170		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			4-Methylphenol	ug/kg		170		U
Acenaphthylene														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		67		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		181		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		134		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		67		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		129		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		102		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		67		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg	94.3			J
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		67		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Acenaphthylene	ug/kg		67		U
Acetone														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	500			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	276			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	50			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	739			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	253			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg		114		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	582			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	242			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	109			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	1350			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	218			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Acetone	ug/kg	76.7			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	175			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	132			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg		40		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	459			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	314			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	77.9			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	214			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	71			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	53.8			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	377			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg	54.2			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Acetone	ug/kg		40		U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
Aluminum													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	20900		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	14000		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	4440		
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	30400		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	16900		
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	9020		
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	23300		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	21000		
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	11400		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	26200		
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	8310		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Aluminum	mg/kg	5700		
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	23900		
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	11100		
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	4860		
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	12900		
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	13600		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	8460		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	7680		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	9180		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	2130		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	11200		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	6440		
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Aluminum	mg/kg	13900		
Anthracene													
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	67		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	181		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	134		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	67		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	129		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	102		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	67		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	1440		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	67		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Anthracene	ug/kg	67		U
Arsenic													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	6.85		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	3.51		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	1.19		
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	6.88		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	4.45		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	2.7		
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	6.8		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	6.88		
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	2.25		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	9.15		
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	2.38		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Arsenic	mg/kg	1.41		
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	4.43		
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	2.12		
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	1.22		
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	4		
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	4.06		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	1.67		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	1.84		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	2.14		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	1.02		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	2.64		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	1.56		
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Arsenic	mg/kg	1.95		
Barium													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	342		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	168		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	56.5		
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	285		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	226		
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	246		
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	342		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	232		
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	148		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	451		
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	151		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Barium	mg/kg	79.4		
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	230		
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	96.8		
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	47		
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	124		
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	172		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	123		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	82.1		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	97.4		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	37.8		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	104		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	43.6		
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Barium	mg/kg	38.9		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Benzo(a)anthracene														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		67		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		181		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		134		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		67		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		129		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		102		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		67		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg	2980			U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		67		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)anthracene	ug/kg		67		U
Benzo(a)pyrene														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		67		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		181		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		134		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		67		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		129		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		102		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		67		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg	2590			U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		67		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(a)pyrene	ug/kg		67		U
Benzo(b)fluoranthene														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		67		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		181		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		134		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		67		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		129		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		102		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		67		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg	3020			U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		67		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(b)fluoranthene	ug/kg		67		U
Benzo(g,h,i)perylene														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(g,h,i)perylene	ug/kg		216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(g,h,i)perylene	ug/kg		67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(g,h,i)perylene	ug/kg		67		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzo(g,h,i)perylene	ug/kg		181		U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL_RL	Flag
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(g,h,i)perylene	ug/kg		134	U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(g,h,i)perylene	ug/kg		67	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(g,h,i)perylene	ug/kg		129	U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(g,h,i)perylene	ug/kg		102	U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(g,h,i)perylene	ug/kg		67	U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(g,h,i)perylene	ug/kg	2720		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(g,h,i)perylene	ug/kg		67	U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(g,h,i)perylene	ug/kg		67	U
Benzol(k)fluoranthene													
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		216	U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		67	U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		67	U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		181	U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		134	U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		67	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		129	U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		102	U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		67	U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg	1090		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		67	U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Benzol(k)fluoranthene	ug/kg		67	U
Beryllium													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	1.09		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	0.781		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	0.415		
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	0.994		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	0.882		
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	1.47		
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	1		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	1		
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	0.977		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	1.45		
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	0.723		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Beryllium	mg/kg	0.495		
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	1.14		
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.596		
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.324		
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.573		
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.911		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.765		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.399		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.607		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.252		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.605		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.282			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Beryllium	mg/kg	0.311			
Cadmium														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.882			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.49			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.041			J
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.76			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.739			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.156			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.712			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.948			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.101			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.989			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.18			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cadmium	mg/kg	0.1			U
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.568			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.242			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.1			U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.318			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.392			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.116			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.066			J
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.128			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.1			U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.295			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.114			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cadmium	mg/kg	0.419			
Calcium														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	2990			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	1650			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	523			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	2910			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	1940			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	1840			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	2600			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	2340			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	1020			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	3400			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	982			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Calcium	mg/kg	555			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	2460			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	829			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	411			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	1370			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	1520		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	863		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	780		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	779		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	775		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	1350		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	517		
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Calcium	mg/kg	711		
Carbon Disulfide													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	36.6		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	40.8		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	1.88		J
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	13.2		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	3.71		J
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	3.48		J
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	18.4		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	2.92		J
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	8.91		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	47.9		
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	7.39		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Carbon Disulfide	ug/kg	59.9	2	U
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	15.7		
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	1.12		J
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	9.32		
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	10.2		
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	2.44		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	7.33		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	8.82		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	3		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	29.7		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	2.11		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	2.11		
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Carbon Disulfide	ug/kg	2	2	U
Chromium													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	56.6		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	20.3		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	7.21		
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	59.1		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	38.7		
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	15.6		
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	46.3		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	30.9		
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	14.1		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	44.8		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	12.4			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Chromium	mg/kg	9.11			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	34.4			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	15.1			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	7.68			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	19.8			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	19.8			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	10.8			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	11.1			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	13.4			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	3.09			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	14.6			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	10.7			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Chromium	mg/kg	14.2			
Chrysene														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	216			U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	67			U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	67			U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	181			U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	134			U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	67			U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	129			U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	102			U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	67			U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	2870			U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	67			U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Chrysene	ug/kg	67			U
Cobalt														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	10.1			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	6.12			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	2.6			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	9.85			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	7.32			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	6.85			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	11.3			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	11.6			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	6.4			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	17.9			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	6.51			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Cobalt	mg/kg	2.75			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	7.83			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	3.53			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	1.55			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	4.71			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunders's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	9.66		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	4.33		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	3.16		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	4.22		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	1.64		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	6.25		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	2.5		
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Cobalt	mg/kg	2.65		
Copper													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	30.9		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	11.3		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	3.59		
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	35		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	18.4		
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	10.6		
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	25.6		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	16.7		
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	6.88		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	35.8		
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	7.29		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Copper	mg/kg	3.61		
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	38.7		
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	8.97		
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	3.19		
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	13.6		
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	13.2		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	5.63		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	7.14		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	6.92		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	2.89		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	8.19		
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	2.9		
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Copper	mg/kg	3.77		
Dibenzo(a,h)anthracene													
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	67		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	181		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	134		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	67		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	129		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	102		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	67		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg	885		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg		67		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzo(a,h)anthracene	ug/kg		67		U
Dibenzofuran														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		547		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		170		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		170		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		459		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		340		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		170		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		326		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		258		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		170		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg	78.1			J
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		170		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Dibenzofuran	ug/kg		170		U
Ethylbenzene														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg	3.53			J
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		3.34		U
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		2		U
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		7.4		U
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		4.88		U
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		5.72		U
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		6.66		U
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		5.12		U
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		2.9		U
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		1.1		U
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Ethylbenzene	ug/kg		3.12		U
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		2		U
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		6.46		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		2		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		2		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		5.4		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		4		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		2		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		3.84		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		3.04		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		2		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		4.16		U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		2		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Ethylbenzene	ug/kg		2		U
Fluoranthene														
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		67		U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		181	U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		134	U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		67	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		129	U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		102	U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		67	U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg	5930		U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		67	U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluoranthene	ug/kg		67	U
Fluorene													
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		216	U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		67	U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		67	U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		181	U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		134	U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		67	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		129	U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		102	U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		67	U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg	453		U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		67	U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Fluorene	ug/kg		67	U
Iron													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	18200		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	15200		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	3540		
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	19500		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	17300		
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	11800		
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	18500		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	26300		
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	8100		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	31400		
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	8400		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Iron	mg/kg	4590		
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	16800		
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	7510		
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	3950		
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	10400		
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	12600		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	6890		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	5270		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	7070		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	2720		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saundser's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	9560			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	5590			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Iron	mg/kg	13100			
Lead														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	542			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	167			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	8.77			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	165			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	229			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	57.4			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	528			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	466			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	14.8			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	198			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	111			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Lead	mg/kg	21.8			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	145			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	29.7			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	6.86			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	53.4			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	108			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	11			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	25			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	24.6			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	6.94			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	19.6			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	9.57			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Lead	mg/kg	9.81			
Magnesium														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	1610			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	1110			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	266			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	1790			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	1240			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	826			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	1430			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	1550			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	640			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	1670			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	556			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Magnesium	mg/kg	318			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	1750			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	688			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	263			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	872			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	1070			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	565			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	541			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	583			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	212			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	700			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	359			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Magnesium	mg/kg	660			
Manganese														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	286			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	155			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	49.6			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	295			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	197			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	172			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	322			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	280			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	114			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	611			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	160			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Manganese	mg/kg	79.4			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	233			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	81.9			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	39.8			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	133			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	163			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	92.1			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	77.3			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	77.5			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	39.3			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	154			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	53.5			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Manganese	mg/kg	55.5			
Mercury														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	1.08			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	0.434			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	0.031			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	1.02			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	0.978			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	0.241			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	0.918			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	1.34			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	0.061			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
Nickel	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	1.66			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	0.138			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Mercury	mg/kg	0.039			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.279			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.061			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.014			J
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.351			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.459			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.043			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.251			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.056			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.016			J
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.132			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.028			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Mercury	mg/kg	0.031			
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	22.7			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	14.3			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	3.22			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	23.8			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	18.2			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	11			
Phenanthrene	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	22			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	22.2			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	9.68			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	25.3			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Nickel	mg/kg	7.66			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	3.93			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	20.3			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	7.67			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	2.51			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	10.7			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	13.6			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	6.39			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	6.34			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	6.79			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	2.21			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	9.14			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	3.63			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Nickel	mg/kg	3.85			
Phenanthrene	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		209		U
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		112		U
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		67		U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Sauder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		248		U
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		163		U
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		192		U
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		223		U
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg	38.7			J
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		97.2		U
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		373		U
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		105		U
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		67		U
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		216		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		67		U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		67		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		181		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		134		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		67		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		129		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		102		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		67		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg	4670			U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		67		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenanthrene	ug/kg		67		U
Phenol														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		530		U
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		284		U
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		170		U
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		629		U
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg	66.2			J
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg	66.8			J
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		566		U
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		435		U
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		247		U
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		945		U
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg		265		U
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Semi-Volatiles			Phenol	ug/kg	41.5			J
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		547		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg	42.6			J
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg	31			J
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		459		U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		340		U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		170		U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		326		U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		258		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		170		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		354		U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		170		U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Semi-Volatiles			Phenol	ug/kg		170		U
Potassium														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	1290			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	931			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	259			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	2100			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	1180			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	730			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	1480			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	1560			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	742			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	1790			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	610			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Potassium	mg/kg	363			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	1790			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	805			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	298			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	929			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	1000			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	569			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	562			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	631			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	151			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	774			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	360			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Potassium	mg/kg	435			
Selenium														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	1.1			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg		0.5		U
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg		0.5		U
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	0.842			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	0.617			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	0.53			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	1.45			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	0.651			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	0.372			J
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	1.53			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	0.277			J
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Selenium	mg/kg	0.263			J
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg		0.5		U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.291			J
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.285			J
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.505			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunder's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.599			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.306			J
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.323			J
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.493			J
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg		0.5		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.78			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.417			J
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Selenium	mg/kg	0.482			J
Silver														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg	12			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg		0.5		U
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg		0.5		U
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg	17.6			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg	9.26			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg	0.865			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg	12.3			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg	0.196			J
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg		0.5		U
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg	13.2			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Silver	mg/kg	0.738			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg	1.26			U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg	0.192			J
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg		0.5		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg	3.09			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg	0.444			J
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg		0.5		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg	0.944			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg	0.057			J
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg		0.5		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg	1.34			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg	0.609			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Silver	mg/kg		0.5		U
Strontium														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	47.7			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	26.9			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	8.67			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	43.2			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	35.4			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	28.2			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	41			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	38.9			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	18.5			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	54.2			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunders Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	16.8			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Strontium	mg/kg	10.8			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	43.4			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	17.3			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	9.77			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	22.5			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	27.9			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	17.2			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	13.8			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	16.3			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	10.3			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	18			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	9.55			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Strontium	mg/kg	16.8			
Thallium														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	1.29			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	1.07			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg		1		U
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	1.51			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	1.41			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	0.899			J
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg		1		U
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	1.96			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	0.529			J
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	2.69			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg	0.602			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Thallium	mg/kg		1		U
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg	1.03			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg	0.557			J
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg		1		U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg	0.9			J
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg	0.967			J
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg	0.53			J
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg	0.541			J
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg		1		U
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg		1		U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg		1		U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg	0.572			J
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Thallium	mg/kg	0.87			J
Trichlorofluoromethane														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		6.24		U
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		3.34		U
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		2		U
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		7.4		U

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL_RL	Flag
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		4.88	U
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		5.72	U
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		6.66	U
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		5.12	U
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		2.9	U
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		11.1	U
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg	10.7		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg	6.81		
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		6.46	U
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		2	U
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		2	U
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		5.4	U
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		4	U
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		2	U
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		3.84	U
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg	3.21		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		2	U
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		4.16	U
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		2	U
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Volatiles			Trichlorofluoromethane	ug/kg		2	U
Vanadium													
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	35.7		
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	22		
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	10.6		
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	43.1		
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	25.7		
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	21		
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	36.4		
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	33.3		
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	17.9		
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	38.2		
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	14.3		
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Vanadium	mg/kg	10.7		
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	35.5		
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	16		
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	10.8		
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	21.5		
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	23.3		
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	13.4		
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	13.2		
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	16.7		
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	8.14		
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	17.6		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunders Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	16.6			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Vanadium	mg/kg	16.5			
Zinc														
	CL-GPSN-1(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	178			
	CL-GPSN-1(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	62.8			
	CL-GPSN-1(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	15.5			
	CL-GPSN-2(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	128			
	CL-GPSN-2(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	126			
	CL-GPSN-2(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	66.5			
	CL-GPSN-3(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	121			
	CL-GPSN-3(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	108			
	CL-GPSN-3(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	41.4			
	CL-GPSN-4(1)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	201			
	CL-GPSN-4(2)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	53.6			
	CL-GPSN-4(3)	Caddo Lake at Goose Prairie Creek	N	8/10/00	Soil	Metals			Zinc	mg/kg	22.3			
	CL-GPSS-1(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	80			
	CL-GPSS-1(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	44.4			
	CL-GPSS-1(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	12.5			
	CL-GPSS-2(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	63.3			
	CL-GPSS-2(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	73.6			
	CL-GPSS-2(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	36.2			
	CL-GPSS-3(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	31.7			
	CL-GPSS-3(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	35.1			
	CL-GPSS-3(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	10.1			
	CL-GPSS-4(1)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	71.7			
	CL-GPSS-4(2)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	19.1			
	CL-GPSS-4(3)	Caddo Lake at Goose Prairie Creek	N	8/09/00	Soil	Metals			Zinc	mg/kg	19.3			
Dioxins/Furans														
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	pg/g	260			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,4,6,7,8-HpCDD	pg/g	13			J
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,4,7,8,9-HpCDD	pg/g	1.4			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,4,7,8-HxCDD	pg/g	1.7			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,4,7,8-HxCDD	pg/g	1.9			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,6,7,8-HxCDD	pg/g	5.8			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,6,7,8-HxCDD	pg/g	1.3			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDD	pg/g	8.2			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,7,8,9-HxCDD	pg/g	0.68			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,7,8-PeCDD	pg/g	1.1			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			1,2,3,7,8-PeCDD	pg/g	0.72			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			2,3,4,6,7,8-HxCDF	pg/g	0.64			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			2,3,4,7,8-PeCDF	pg/g	0.68			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			2,3,7,8-TCDD	pg/g	0.64			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			2,3,7,8-TCDD	pg/g	1.4			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			OCDD	pg/g	9400			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunders Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			OCDF	pg/g	25			J
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			Total HpCDD	pg/g	640			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			Total HpCDF	pg/g	31			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			Total HxCDD	pg/g	110			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			Total HxCDF	pg/g		7.5		
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			Total PeCDD	pg/g		7.6		
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			Total PeCDF	pg/g		3.8		
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			Total TCDD	pg/g	5.7			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans			Total TCDF	pg/g		1.6		
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Dioxins/Furans								
Acetone	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Acetone	ug/kg	588			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Acetone	ug/kg	187			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Acetone	ug/kg		40		U
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Acetone	ug/kg	1080			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Acetone	ug/kg	389			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Acetone	ug/kg	126			
Aluminum	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Aluminum	mg/kg	9330			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Aluminum	mg/kg	12200			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Aluminum	mg/kg	10300			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Aluminum	mg/kg	9450			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Aluminum	mg/kg	16300			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Aluminum	mg/kg	5670			
Arsenic	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Arsenic	mg/kg	3.79			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Arsenic	mg/kg	2.7			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Arsenic	mg/kg	2.22			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Arsenic	mg/kg	3.99			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Arsenic	mg/kg	3.27			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Arsenic	mg/kg	1.37			
Barium	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Barium	mg/kg	261			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Barium	mg/kg	145			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Barium	mg/kg	165			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Barium	mg/kg	221			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Barium	mg/kg	265			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Barium	mg/kg	163			
Beryllium	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Beryllium	mg/kg	1.21			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Beryllium	mg/kg	1.04			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Beryllium	mg/kg	0.857			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Beryllium	mg/kg	0.993			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Beryllium	mg/kg	1.33			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Beryllium	mg/kg	1.08			

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunderson's Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL, RL	Flag
Cadmium													
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cadmium	mg/kg	0.151		J
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cadmium	mg/kg		0.1	U
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cadmium	mg/kg	0.059		J
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cadmium	mg/kg	0.246		
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cadmium	mg/kg	0.191		
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cadmium	mg/kg	0.036		J
Calcium													
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Calcium	mg/kg	2340		
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Calcium	mg/kg	855		
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Calcium	mg/kg	707		
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Calcium	mg/kg	2120		
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Calcium	mg/kg	1680		
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Calcium	mg/kg	1040		
Carbon Disulfide													
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	177		
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	4.73		
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg		2	U
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	20		
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg	6.36		
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Volatiles			Carbon Disulfide	ug/kg		4.46	U
Chromium													
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Chromium	mg/kg	11.6		
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Chromium	mg/kg	14.1		
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Chromium	mg/kg	13.2		
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Chromium	mg/kg	10.8		
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Chromium	mg/kg	17.5		
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Chromium	mg/kg	7.25		
Cobalt													
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cobalt	mg/kg	12.3		
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cobalt	mg/kg	8.87		
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cobalt	mg/kg	6.67		
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cobalt	mg/kg	13.7		
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cobalt	mg/kg	11.3		
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Cobalt	mg/kg	5.22		
Copper													
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Copper	mg/kg	16.2		
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Copper	mg/kg	6.87		
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Copper	mg/kg	6.87		
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Copper	mg/kg	13		
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Copper	mg/kg	11.5		
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Copper	mg/kg	7.52		
Iron													
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Iron	mg/kg	12400		

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunders Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Iron	mg/kg	8640			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Iron	mg/kg	7310			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Iron	mg/kg	12700			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Iron	mg/kg	14900			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Iron	mg/kg	9110			
Lead														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Lead	mg/kg	27.6			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Lead	mg/kg	17.1			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Lead	mg/kg	12.1			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Lead	mg/kg	20.5			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Lead	mg/kg	21.2			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Lead	mg/kg	14.4			
Magnesium														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Magnesium	mg/kg	986			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Magnesium	mg/kg	872			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Magnesium	mg/kg	731			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Magnesium	mg/kg	890			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Magnesium	mg/kg	1220			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Magnesium	mg/kg	605			
Manganese														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Manganese	mg/kg	450			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Manganese	mg/kg	155			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Manganese	mg/kg	122			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Manganese	mg/kg	488			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Manganese	mg/kg	292			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Manganese	mg/kg	180			
Mercury														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Mercury	mg/kg	0.13			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Mercury	mg/kg	0.07			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Mercury	mg/kg	0.068			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Mercury	mg/kg	0.149			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Mercury	mg/kg	0.107			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Mercury	mg/kg	0.094			
Nickel														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Nickel	mg/kg	14.8			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Nickel	mg/kg	12.2			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Nickel	mg/kg	9.25			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Nickel	mg/kg	14.9			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Nickel	mg/kg	15.1			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Nickel	mg/kg	5.4			
Potassium														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Potassium	mg/kg	841			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Potassium	mg/kg	996			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Potassium	mg/kg	837			

033324

Table 3-16
Sediment Analytical Data for Central Creek, Goose Prairie Creek, Saunders Branch and Caddo Lake
Group 4 RA, LHAAP, Karnack, Texas

Lab ID	Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL	RL	Flag
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Potassium	mg/kg	803			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Potassium	mg/kg	1330			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Potassium	mg/kg	571			
Selenium														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Selenium	mg/kg	1.73			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Selenium	mg/kg	0.768			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Selenium	mg/kg	0.567			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Selenium	mg/kg	1.72			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Selenium	mg/kg	1.17			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Selenium	mg/kg	0.781			
Strontium														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Strontium	mg/kg	42.5			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Strontium	mg/kg	19.5			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Strontium	mg/kg	18.4			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Strontium	mg/kg	39.5			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Strontium	mg/kg	34.6			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Strontium	mg/kg	19.9			
Thallium														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Thallium	mg/kg		1		U
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Thallium	mg/kg		1		U
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Thallium	mg/kg	0.45			J
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Thallium	mg/kg		1		U
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Thallium	mg/kg		1		U
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Thallium	mg/kg		1		U
Vanadium														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Vanadium	mg/kg	30.8			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Vanadium	mg/kg	20.4			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Vanadium	mg/kg	19.2			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Vanadium	mg/kg	24.5			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Vanadium	mg/kg	28.2			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Vanadium	mg/kg	15.6			
Zinc														
	CL-SBS-1(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Zinc	mg/kg	49.4			
	CL-SBS-1(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Zinc	mg/kg	42.1			
	CL-SBS-1(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Zinc	mg/kg	40.3			
	CL-SBS-2(1)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Zinc	mg/kg	60.4			
	CL-SBS-2(2)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Zinc	mg/kg	60.2			
	CL-SBS-2(3)	Caddo Lake at Saunders Branch	N	Unk	Soil	Metals			Zinc	mg/kg	20.3			

DL = detection limit

ID = identification

J = estimated

LHAAP = Loughorn Army Ammunition Plant

N = normal

RA = risk assessment

RL = reporting limit

QC = quality control

U = not detected

Table 3-17
Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL_RL	Flag
04WW01	Site 04	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
04WW02	Site 04	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
04WW02	Site 04	QC	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
04WW03	Site 04	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
08WW01	Site 08	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
08WW01	Site 08	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
08WW01	Site 08	QC	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
08WW02	Site 08	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	10		
08WW02	Site 08	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
LHSMW01	Site 35A	N	5/24/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	36.9		
LHSMW01	Site 35A	N	10/3/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		16	U
LHSMW01	Site 35A	N	2/8/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	81		
35BW02	Site 35B	N	10/22/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW58	Site 35B	N	5/18/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW58	Site 35B	N	10/3/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW58	Site 35B	QC	10/3/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW67	Site 35C	N	5/18/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	2.8		
LHSMW67	Site 35C	N	10/3/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW67	Site 35C	N	2/9/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW68	Site 35C	N	5/18/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW68	Site 35C	N	10/3/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
46WW01	Site 46	N	5/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
46WW01	Site 46	N	10/3/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
46WW04	Site 46	N	9/12/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	23		
46WW04	Site 46	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	30		
LHSMW17	Site 46	N	5/24/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW17	Site 46	N	9/12/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW18	Site 46	N	5/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW18	Site 46	N	9/12/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW18	Site 46	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW22	Site 46	N	5/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW01	Site 47	N	11/07/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW01	Site 47	QC	11/07/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL_RL	Flag
47WW02	Site 47	N	11/04/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW03	Site 47	N	11/05/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW04	Site 47	N	11/05/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW05	Site 47	N	11/09/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW06	Site 47	N	11/06/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW07	Site 47	N	11/06/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW08	Site 47	N	11/04/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW09	Site 47	N	11/04/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW11	Site 47	N	11/07/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	2400	1	U
47WW11	Site 47	N	5/24/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	146		J
47WW11	Site 47	N	9/12/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	100		
47WW12	Site 47	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	394		
47WW13	Site 47	N	11/04/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW14	Site 47	N	11/04/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW15	Site 47	N	11/04/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW16	Site 47	N	11/04/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW17	Site 47	N	11/09/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW18	Site 47	N	11/06/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW18	Site 47	QC	11/06/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW19	Site 47	N	11/06/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW20	Site 47	N	11/05/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW21	Site 47	N	11/05/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW22	Site 47	N	11/05/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW23	Site 47	N	11/05/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW23	Site 47	N	11/05/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
47WW24	Site 47	N	12/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
47WW25	Site 47	N	12/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
47WW26	Site 47	N	12/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L			
47WW27	Site 47	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	871		
47WW27	Site 47	QC	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	2460		
LHSMW29	Site 47	N	5/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	2790		
LHSMW29	Site 47	N	9/30/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
											8	U

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL_RL	Flag
LHSMW29	Site 47	QC	9/30/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		8	U
LHSMW31	Site 47	N	5/21/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW31	Site 47	N	10/02/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW31	Site 47	QC	10/02/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW32	Site 47	N	5/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	51	1	U
LHSMW32	Site 47	N	9/12/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW32	Site 47	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	25		
LHSMW42	Site 47	N	5/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		8	U
LHSMW42	Site 47	N	9/30/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	85		
LHSMW42	Site 47	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	3.6		
LHSMW43	Site 47	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW43	Site 47	N	10/01/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		8	U
LHSMW43	Site 47	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW46	Site 47	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW46	Site 47	N	10/02/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW47	Site 47	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW47	Site 47	N	10/02/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW48	Site 47	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW48	Site 47	QC	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW48	Site 47	N	10/02/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW49	Site 47	N	10/02/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	42.9		
LHSMW53	Site 47	N	10/22/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	0.97		J
LHSMW53	Site 47	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW53	Site 47	N	9/14/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW53	Site 47	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW54	Site 47	N	5/21/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW57	Site 47	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW60	Site 47	N	10/22/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	82900		
LHSMW60	Site 47	N	5/23/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	23500		
LHSMW60	Site 47	N	10/03/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	72000		
LHSMW60	Site 47	N	2/10/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	71000		
LHSMW60	Site 47	QC	2/01/02	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	67000		
LHSMW62	Site 48	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	160		

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL_RL	Flag
LHSMW62	Site 48	N	10/01/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW62	Site 48	QC	10/01/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW62	Site 48	N	2/13/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW63	Site 48	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW63	Site 48	N	10/01/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW63	Site 48	N	2/13/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW64	Site 48	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW64	Site 48	N	10/01/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW64	Site 48	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW64	Site 48	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	100		U
LHSMW65	Site 48	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW65	Site 48	N	10/01/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW65	Site 48	N	2/12/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
LHSMW66	Site 48	N	5/20/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
LHSMW66	Site 48	N	2/13/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
50WW01	Site 50	N	10/22/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
50WW01	Site 50	QC	10/22/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
50WW01	Site 50	N	5/22/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	1.6		U
50WW01	Site 50	N	5/22/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	2.6		U
50WW01	Site 50	N	10/2/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
50WW01	Site 50	N	2/10/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
50WW02	Site 50	N	10/22/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	18000		U
50WW02	Site 50	N	5/24/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	3210		J
50WW02	Site 50	N	10/03/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	9950		U
50WW02	Site 50	N	2/09/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	10000		U
50WW03	Site 50	N	5/22/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L	810		U
50WW03	Site 50	N	10/2/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		8	U
50WW03	Site 50	QC	10/2/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		4	U
50WW03	Site 50	N	2/09/01	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		8	U
50WW04	Site 50	N	10/22/98	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
50WW04	Site 50	N	5/22/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		1	U
50WW04	Site 50	N	10/02/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		16	U
67WW04	Site 67	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL_RL	Flag
67WW05	Site 67	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
67WW06	Site 67	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
67WW06	Site 67	QC	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
67WW07	Site 67	N	12/19/00	Water	Anion	300.1	14797-73-0	Perchlorate	ug/L		0.3	U
04SB01(0-0.5)	Site 04	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	36.2		
04SB01(0-0.5)	Site 04	QC	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	22		
04SB01(1-2)	Site 04	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	144		
04SB02(0-0.5)	Site 04	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	45.4		
04SB02(1-2)	Site 04	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	33.6		
04SB03(0-0.5)	Site 04	N	12/14/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0245		
04SB03(0-0.5)	Site 04	QC	12/14/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.026		
04SB03(1-3)	Site 04	N	12/07/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.516		
04SB03(3-5)	Site 04	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0767		
04SB04(0-0.5)	Site 04	N	12/14/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0059	U
04SB04(0-0.5)	Site 04	QC	12/14/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0059	U
04SB04(1-3)	Site 04	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0928		
04SB04(3-5)	Site 04	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	1.44		
04SB05(0-0.5)	Site 04	N	12/14/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	1.22		
04SB05(1-3)	Site 04	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	76.4		
04SB05(3-5)	Site 04	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	49.9		
04SB06(0-0.5)	Site 04	N	12/14/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0059	U
04SB06(1-3)	Site 04	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0058	U
04SB06(3-5)	Site 04	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0233		
08SB01(0-0.5)	Site 08	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00579	U
08SB01(1-2)	Site 08	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00607	U
08SB01(1-3)	Site 08	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0058	U
08SB01(3-5)	Site 08	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0057	U
08SB02(0-0.5)	Site 08	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00552	U
08SB02(1-2)	Site 08	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0323		
08SB03(0-0.5)	Site 08	N	12/14/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0059	U
08SB03(1-3)	Site 08	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0059	U
08SB03(3-5)	Site 08	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0056	U
08SB04(0-0.5)	Site 08	N	12/14/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0061	U

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL RL	Flag
08SB04(1-3)	Site 08	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0063	U
08SB04(3-5)	Site 08	N	12/06/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0061	U
35CSB02(0-0.5)	Site 35C	N	06/01/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00596	U
35CSB02(1-2)	Site 35C	N	06/01/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00684	U
35CSB03(0-0.5)	Site 35C	N	06/01/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0609		U
35CSB03(1-2)	Site 35C	N	06/01/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00611	U
47SB04(0-0.5)	Site 47	N	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0486		U
47SB04(1-2)	Site 47	N	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg			U
47SB05(0-0.5)	Site 47	N	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0997		U
47SB05(1-2)	Site 47	N	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	1.45		U
47SB06(0-0.5)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00608	U
47SB06(1-2)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0714		U
47SB07(0-0.5)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0058	U
47SB07(1-2)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00702	U
47SB08 (0-0.5)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0196		U
47SB08 (1-2)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg			U
47SB09(0-0.5)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00599	U
47SB09(1-2)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00635	U
47SB10(0-0.5)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00596	U
47SB10(1-2)	Site 47	N	05/31/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.104		U
47SB11(0-0.5)	Site 47	N	06/01/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.158		U
47SB11(0-0.5)	Site 47	N	06/01/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0519		J
47SB11(1-2)	Site 47	QC	06/01/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00601	UJ
47SB12(0-0.5)	Site 47	N	06/01/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.006	U
47SB12(0-0.5)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00548	UJ
47SB13(0-0.5)	Site 47	QC	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0651		J
47SB13(1-2)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00557	U
47SB14(0-0.5)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0058	U
47SB14(1-2)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00563	U
47SB15(0-0.5)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00663	U
47SB15(1-2)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.189		U
47SB16(0-0.5)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0738		U
47SB16(1-2)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00576	U
											0.00602	U

Table 3-17
Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL_RL	Flag
47SB17(0-0.5)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0395		J
47SB17(0-0.5)	Site 47	QC	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00528	UJ
47SB18(0-0.5)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00552	U
47SB19(0-0.5)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.136		
47SB19(1-2)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00591	U
47SB20(0-0.5)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00587	U
47SB20(1-2)	Site 47	N	06/02/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.222		
47SB21(0-0.5)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0056	U
47SB21(1-2)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00566	U
47SB22(0-0.5)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00531	U
47SB22(1-2)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00531	U
47SB23(0-0.5)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00583	U
47SB23(1-2)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0196		
47SB24(0-0.5)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00642	U
47SB24(1-2)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.0056	U
47SB25(0-0.5)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00601	U
47SB25(1-2)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00552	U
47SB26(0-0.5)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00644	U
47SB26(1-2)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00637	U
47SB27(0-0.5)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00592	U
47SB27(1-2)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00564	U
47SB28(0-0.5)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00608	U
47SB28(1-2)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00621	U
47SB29(0-0.5)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0354		
47SB29(1-2)	Site 47	N	06/04/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00574	U
47SB30(0-0.5)	Site 47	N	06/05/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00588	U
47SB30(1-2)	Site 47	N	06/05/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00586	U
47SB31(0-0.5)	Site 47	N	06/05/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0309		J
47SB31(1-2)	Site 47	N	06/05/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00635	UJ
47SB32(0-0.5)	Site 47	N	06/05/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00598	U
47SB32(1-2)	Site 47	N	06/05/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00592	U
47SB33(0-0.5)	Site 47	N	06/05/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00576	U
47SB33(1-2)	Site 47	N	06/05/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00525	U

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	Sample Date	Matrix	Analysis	Method	CAS No	Compound	Units	Results	DL RL	Flag
47SB33(0-0.5)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00611	U
47SB33(1-2)	Site 47	N	06/03/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00601	U
25C-01 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	30		
25C-01 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	29		
25C-01 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	12		
25C-02 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	95		
25C-02 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.4		
25C-02 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	6.8		
25C-03 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	2.1		
25C-03 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.026		
25C-03 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	15		
25C-04 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	1.6		
25C-04 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	42		
25C-04 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	4.1		
25C-05 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	3.4		
25C-05 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	57		
25C-05 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	18		
25C-06 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	7		
25C-06 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	190		
25C-06 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	140		
25C-07 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	150		
25C-07 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	4.4		
25C-07 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	2.7		
25C-08 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	1.7		
25C-08 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	26		
25C-08 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	17		
25C-09 (0-0.5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	93		
25C-09 (4-5)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	96		
25C-09 (9-10)	Site 47	N	8/18/1998	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	11		
25C-10 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-10 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-11 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-11 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U

Table 3-17
Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL RL	Flag
25C-12 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-12 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-13 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-13 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-14 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-14 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-15 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-15 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-16 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-16 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-17 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-17 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-18 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-18 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-19 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-19 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-20 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-20 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-21 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	2.39		
25C-21 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	180		
25C-22 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-22 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-23 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-23 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-24 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0211		
25C-24 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-25 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-25 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-26 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-26 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-27 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-27 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.1		
25C-28 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	4.86		

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL_RL	Flag
25C-28 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	3.29		
25C-29 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-29 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-30 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-30 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	76.6		
25C-31 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-31 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-32 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg			
25C-32 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0523		
25C-33 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	42.1		
25C-33 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-34 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-34 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-35 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-35 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0728		
25C-36 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.259		
25C-36 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-37 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-37 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg			
25C-38 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0224		
25C-38 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-39 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0544		
25C-39 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0203		
25C-40 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg			
25C-40 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-41 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg			
25C-41 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-42 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-42 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-43 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-43 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-44 (0-0.5)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U
25C-44 (1.5-2)	Site 47	N	3/23/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.02	U

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL_RL	Flag
25C-45 (0.75-1.15)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.065	U
25C-45 (1.15-1.67)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	10		
25C-46 (0.3-0.75)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.024	U
25C-46 (0.75-1.25)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	2.49		
25C-47 (0.3-0.8)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.023	U
25C-47 (0.8-1.8)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	2.5		
25C-48 (0.2-0.7)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.023	U
25C-48 (1.1-1.66)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.021	U
25C-49 (0-0.5)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.023	U
25C-49 (1.1-1.64)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.021	U
25C-50 (0-0.5)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.022	U
25C-50 (1.1-1.66)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.022	U
25C-51 (0.2-0.7)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.023	U
25C-51 (1.2-1.68)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.022	U
25C-52 (0-0.5)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.023	U
25C-52 (1.1-1.64)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.023	U
25C-53 (0.2-0.7)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.022	U
25C-53 (1.2-1.69)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	1.47		
25C-54 (0.25-0.75)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.962		
25C-54 (1.2-1.79)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	1.48		
25C-55 (0-0.5)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	6.5		
25C-55 (1-1.8)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	1.8		
25C-56 (0-0.5)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	39		
25C-56 (1.1-1.67)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.047		
25C-57 (0.25-0.75)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.1		
25C-57 (1.1-1.63)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg			
25C-58 (0-0.5)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.06	U
25C-58 (1-1.53)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.21		
25C-59 (0-0.5)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.1		
25C-59 (0.8-1.73)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.38		
25C-60 (0.6-1.1)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.024	U
25C-60 (1.1-1.57)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.059		
25C-61 (0.6-1.1)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.059	U

Table 3-17
 Perchlorate Analytical Data, Group 4 RA, LHAAP, Karnack, Texas

Sample ID	Location	Type	SampleDate	Matrix	Analysis	Method	CASNo	Compound	Units	Results	DL _{RL}	Flag
25C-61 (1.1-1.74)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.13		
25C-62 (0.95-1.5)	Site 47	N	11/17/1999	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.058	U
50SB08(0-0.5)	Site 50	N	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00556	U
50SB08(0-0.5)QC	Site 50	QC	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg		0.00546	U
50SB08(1-2)	Site 50	N	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.033		
50SB09(0-0.5)	Site 50	N	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.03		
50SB09(1-2)	Site 50	N	05/30/00	Soil	Anion	300.1	14797-73-0	Perchlorate	mg/kg	0.0361		

Jacobs, 2000. *First Quarter Data Summary for the Perchlorate Investigation at the Longhorn Army Ammunition Plant, Karnack, Texas.*
 Jacobs, 2001a. *Second Quarter Data Summary for the Perchlorate Investigation at the Longhorn Army Ammunition Plant, Karnack, Texas.*
 Jacobs, 2001b. *Third Quarter Data Summary for the Perchlorate Investigation at the Longhorn Army Ammunition Plant, Karnack, Texas.*

DL = detection limit

ID = identification

J = estimated

LHAAP = Longhorn Army Ammunition Plant

N = normal

RA = risk assessment

RL = reporting limit

QC = quality control

U = not detected

Table 3-18
2,3,7,8 - TCDD Toxicity Equivalents Results For Groundwater Samples¹,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Sample Type	2,3,7,8-TCDD Results mg/L	Maximum ² Concentration mg/L
04WW01	Site 04	04WW01	Normal	5.92E-09	9.33E-09
04WW02	Site 04	04WW02	Normal	7.09E-09	
04WW02	Site 04	04WW02QC	Duplicate	9.33E-09	
04WW03	Site 04	04WW03	Normal	4.52E-09	
08WW01	Site 08	08WW01	Normal	1.49E-08	1.49E-08
08WW01	Site 08	08WW01QC	Duplicate	1.16E-08	
08WW02	Site 08	08WW02	Normal	5.79E-09	
LHSMW05	Site 35A	LHS-MW-05-2	Normal	6.46E-09	6.96E-09
LHSMW07	Site 35A	LHS-MW-07-2	Normal	6.96E-09	
LHSMW59	Site 35B	LHS-MW-59-2	Normal	3.78E-09	4.95E-09
LHSMW59	Site 35B	LHS-MW-59-2QC	Duplicate	4.95E-09	
LHSMW67	Site 35C	LHS-MW-67-2	Normal	1.42E-08	1.42E-08
46WW01	Site 46	46WW01-1	Normal	6.35E-09	6.35E-09
46WW01	Site 46	46WW01-2	Normal	2.04E-09	
46WW01	Site 46	46WW01-2QC	Duplicate	1.98E-09	
LHSMW19	Site 46	LHS-MW-19-2	Normal	5.30E-09	
47WW01	Site 47	47WW01-1	Normal	2.88E-09	2.88E-09
47WW01	Site 47	47WW01-2QC	Duplicate	2.49E-09	
47WW06	Site 47	47WW06	Normal	2.41E-09	
47WW20	Site 47	47WW20	Normal	1.93E-09	
LHSMW62	Site 48	LHS-MW-62-2	Normal	2.47E-08	2.47E-08
50WW01	Site 50	50WW01-1	Normal	7.31E-09	7.31E-09
50WW01	Site 50	50WW01-1QC	Duplicate	2.93E-09	

¹2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

²The maximum concentrations represents the maximum calculated 2,3,7,8-TCDD equivalent in groundwater for each site.

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control

RA = risk assessment

Table 3-19
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 04 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
04SB03	Site 04	04SB03(0-0.5)	0	0.5	Normal	1.36E-05	mg/kg
04SB03	Site 04	04SB03(0-0.5)QC	0	0.5	Duplicate	1.59E-05	mg/kg
04SB04	Site 04	04SB04(0-0.5)	0	0.5	Normal	3.03E-06	mg/kg
04SB05	Site 04	04SB05(0-0.5)	0	0.5	Normal	1.72E-06	mg/kg
04SB06	Site 04	04SB06(0-0.5)	0	0.5	Normal	8.58E-07	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples	n :	5	
x = mean of the log transformed data	x :	-12.4414	mg/kg
s = standard deviation of the transformed data	s :	1.280689	mg/kg
H = Land's H-statistic, based upon n and s	H :	6.138366	
95 UCL = 95 Percent Upper Confidence Limit	95 UCL:	4.57E-04	mg/kg

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control

RA = risk assessment

Table 3-20
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 08 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
08SB03	Site 08	08SB03(0-0.5)	0	0.5	Normal	1.27E-06	mg/kg
08SB04	Site 08	08SB04(0-0.5)	0	0.5	Normal	2.37E-06	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

Table 3-21
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 35A Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
35ASB03	Site 35A	35ASB03(0-0.5)	0	0.5	Normal	2.53E-05	mg/kg
35ASB03	Site 35A	35ASB03(0-0.5)QC	0	0.5	Duplicate	1.15E-05	mg/kg
35ASB05	Site 35A	35ASB05(0-0.5)	0	0.5	Normal	7.63E-06	mg/kg
35ASD01	Site 35A	35ASD01-1	0	0.5	Normal	1.83E-06	mg/kg
SUMP112	Site 35A	SUMP112(0-0.5)	0	0.5	Normal	2.65E-06	mg/kg
SUMP113	Site 35A	SUMP113(0-0.5)	0	0.5	Normal	1.93E-05	mg/kg
SUMP117	Site 35A	SUMP117(0-0.5)	0	0.5	Normal	1.70E-06	mg/kg
SUMP120	Site 35A	SUMP120(0-0.5)	0	0.5	Normal	1.17E-06	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples	n :	8
x = mean of the log transformed data	x :	-12.19921 mg/kg
s = standard deviation of the transformed data	s :	1.196074 mg/kg
H = Land's H-statistic, based upon n and s	H :	4.020438
95 UCL = 95 Percent Upper Confidence Limit	95 UCL:	6.34E-05 mg/kg

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control (field duplicate)

RA = risk assessment

Table 3-22
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 35B Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
35BSB01	Site 35B	35BSB01(0-0.5)	0	0.5	Normal	2.56E-06	mg/kg
35BSB01	Site 35B	35BSB01(0-0.5)QC	0	0.5	Duplicate	1.82E-06	mg/kg
WRSUMP014	Site 35B	WRSUMP014(0-.5)	0	0.5	Normal	7.86E-07	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples	n :	3	
x = mean of the log transformed data	x :	-13.3826	mg/kg
s = standard deviation of the transformed data	s :	0.607521	mg/kg
H = Land's H-statistic, based upon n and s	H :	7.905755	
95 UCL = 95 Percent Upper Confidence Limit	95 UCL:	5.53E-05	mg/kg

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control (field duplicate)

RA = risk assessment

Table 3-23
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 35C Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
35CSB01	Site 35C	35CSB01(0-0.5)	0	0.5	Normal	5.84E-07	mg/kg
35CSB01	Site 35C	35CSB01(0-0.5)QC	0	0.5	Duplicate	1.57E-04	mg/kg
SUMP105	Site 35C	SUMP105(0-0.5)	0	0.5	Normal	2.91E-06	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples	n :	3	
x = mean of the log transformed data	x :	-11.95363156	mg/kg
s = standard deviation of the transformed data	s :	2.879356358	mg/kg
H = Land's H-statistic, based upon n and s	H :	37.65198117	
95 UCL = 95 Percent Upper Confidence Limit	95 UCL:	7.98E+29	mg/kg

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control (field duplicate)

RA = risk assessment

Table 3-24
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 46 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
46SB01	Site 46	46SB01(0-0.5)	0	0.5	Normal	1.92E-06	mg/kg
46SB02	Site 46	46SB02(0-0.5)	0	0.5	Normal	1.95E-06	mg/kg
46SB03	Site 46	46SB03(0-0.5)	0	0.5	Normal	1.76E-06	mg/kg
46SB03	Site 46	46SB03(0-0.5)QC	0	0.5	Duplicate	1.93E-06	mg/kg
46SD02	Site 46	46SD02-1	0	0.5	Normal	1.81E-06	mg/kg
46SD05	Site 46	46SD05-1	0	0.5	Normal	4.08E-07	mg/kg
46SD05	Site 46	46SD05-1QC	0	0.5	Duplicate	2.86E-07	mg/kg
SUMP001	Site 46	SUMP001(0-0.5)	0	0.5	Normal	1.56E-06	mg/kg
SUMP001	Site 46	SUMP001(0-0.5)QC	0	0.5	Duplicate	1.66E-06	mg/kg
SUMP004	Site 46	SUMP004(0-0.5)	0	0.5	Normal	4.19E-06	mg/kg
SUMP006	Site 46	SUMP006(0-0.5)	0	0.5	Normal	1.06E-06	mg/kg
SUMP010	Site 46	SUMP010(0-0.5)	0	0.5	Normal	1.16E-06	mg/kg
SUMP016	Site 46	SUMP016(0-0.5)	0	0.5	Normal	6.90E-06	mg/kg
SUMP018	Site 46	SUMP018(0-0.5)	0	0.5	Normal	7.68E-06	mg/kg
SUMP018	Site 46	SUMP018(0-0.5)QC	0	0.5	Duplicate	2.38E-06	mg/kg
SUMP019	Site 46	SUMP019(0-0.5)	0	0.5	Normal	1.00E-06	mg/kg
SUMP020	Site 46	SUMP020(0-0.5)	0	0.5	Normal	3.23E-05	mg/kg
SUMP023	Site 46	SUMP023(0-0.5)	0	0.5	Normal	1.27E-06	mg/kg
SUMP024	Site 46	SUMP024(0-0.5)	0	0.5	Normal	3.80E-06	mg/kg
SUMP024	Site 46	SUMP024(0-0.5)QC	0	0.5	Duplicate	3.20E-06	mg/kg
SUMP026	Site 46	SUMP026(0-0.5)	0	0.5	Normal	6.80E-07	mg/kg
SUMP027	Site 46	SUMP027(0-0.5)	0	0.5	Normal	8.79E-07	mg/kg
SUMP029	Site 46	SUMP029(0-0.5)	0	0.5	Normal	1.91E-06	mg/kg
SUMP030	Site 46	SUMP030(0-0.5)	0	0.5	Normal	9.98E-07	mg/kg
SUMP030	Site 46	SUMP030(0-0.5)QC	0	0.5	Duplicate	8.14E-07	mg/kg
SUMP034	Site 46	SUMP034(0-0.5)	0	0.5	Normal	1.34E-06	mg/kg
SUMP036	Site 46	SUMP036(0-0.5)	0	0.5	Normal	1.02E-06	mg/kg
SUMP037	Site 46	SUMP037(0-0.5)	0	0.5	Normal	1.45E-06	mg/kg
SUMP040	Site 46	SUMP040(0-0.5)	0	0.5	Normal	8.71E-07	mg/kg
SUMP043	Site 46	SUMP043(0-0.5)	0	0.5	Normal	3.30E-05	mg/kg
SUMP110	Site 46	SUMP110(0-0.5)	0	0.5	Normal	1.99E-06	mg/kg
WRSUMP007	Site 46	WRSUMP007(0-.5)	0	0.5	Normal	1.09E-06	mg/kg
WRSUMP007	Site 46	WRSUMP007(0-0.5)QC	0	0.5	Duplicate	1.25E-06	mg/kg
WRSUMP008	Site 46	WRSUMP008(0-.5)	0	0.5	Normal	4.98E-06	mg/kg
WRSUMP010	Site 46	WRSUMP010(0-.5)	0	0.5	Normal	3.62E-06	mg/kg
WRSUMP015	Site 46	WRSUMP015(0-.5)	0	0.5	Normal	1.77E-06	mg/kg
WRSUMP016	Site 46	WRSUMP016(0-.5)	0	0.5	Normal	2.21E-06	mg/kg
WRSUMP019	Site 46	WRSUMP019(0-.5)	0	0.5	Normal	9.20E-07	mg/kg
WRSUMP021	Site 46	WRSUMP021(0-.5)	0	0.5	Normal	5.44E-07	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Table 3-24
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 46 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
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Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples

x = mean of the log transformed data

s = standard deviation of the transformed data

H = Land's H-statistic, based upon n and s

95 UCL = 95 Percent Upper Confidence Limit

n : 39

x : -13.22157 mg/kg

s : 0.976579 mg/kg

H : 2.350952

95 UCL: 4.23E-06 mg/kg

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control (field duplicate)

RA = risk assessment

Table 3-25
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 47 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
47SB01	Site 47	47SB01(0-0.5)-2	0	0.5	Normal	1.51E-06	mg/kg
47SB02	Site 47	47SB02(0-0.5)-2	0	0.5	Normal	1.38E-06	mg/kg
47SB03	Site 47	47SB03(0-0.5)-2	0	0.5	Normal	2.29E-07	mg/kg
SUMP045	Site 47	SUMP045(0-0.5)	0	0.5	Normal	6.84E-07	mg/kg
SUMP047	Site 47	SUMP047(0-0.5)	0	0.5	Normal	9.09E-07	mg/kg
SUMP049	Site 47	SUMP049(0-0.5)	0	0.5	Normal	1.39E-06	mg/kg
SUMP052	Site 47	SUMP052(0-0.5)	0	0.5	Normal	1.09E-06	mg/kg
SUMP053	Site 47	SUMP053(0-0.5)	0	0.5	Normal	2.73E-06	mg/kg
SUMP055	Site 47	SUMP055(0-0.5)	0	0.5	Normal	7.48E-07	mg/kg
SUMP056	Site 47	SUMP056(0-0.5)	0	0.5	Normal	3.17E-06	mg/kg
SUMP057	Site 47	SUMP057(0-0.5)	0	0.5	Normal	1.63E-06	mg/kg
SUMP058	Site 47	SUMP058(0-0.5)	0	0.5	Normal	7.93E-07	mg/kg
SUMP059	Site 47	SUMP059(0-0.5)	0	0.5	Normal	6.33E-06	mg/kg
SUMP059	Site 47	SUMP059(0-0.5)QC	0	0.5	Duplicate	7.14E-06	mg/kg
SUMP061	Site 47	SUMP061(0-0.5)	0	0.5	Normal	2.11E-07	mg/kg
SUMP065	Site 47	SUMP065(0-0.5)	0	0.5	Normal	5.39E-07	mg/kg
SUMP067	Site 47	SUMP067(0-0.5)	0	0.5	Normal	6.63E-06	mg/kg
SUMP068	Site 47	SUMP068(0-0.5)	0	0.5	Normal	4.33E-07	mg/kg
SUMP069	Site 47	SUMP069(0-0.5)	0	0.5	Normal	4.76E-07	mg/kg
SUMP070	Site 47	SUMP070(0-0.5)	0	0.5	Normal	5.68E-07	mg/kg
SUMP070	Site 47	SUMP070(0-0.5)QC	0	0.5	Duplicate	6.23E-07	mg/kg
SUMP071	Site 47	SUMP071(0-0.5)	0	0.5	Normal	1.31E-06	mg/kg
SUMP072	Site 47	SUMP072(0-0.5)	0	0.5	Normal	5.13E-07	mg/kg
SUMP075	Site 47	SUMP075(0-0.5)	0	0.5	Normal	1.83E-06	mg/kg
SUMP076	Site 47	SUMP076(0-0.5)	0	0.5	Normal	2.77E-06	mg/kg
SUMP077	Site 47	SUMP077(0-0.5)	0	0.5	Normal	1.18E-06	mg/kg
SUMP078	Site 47	SUMP078(0-0.5)	0	0.5	Normal	3.29E-06	mg/kg
SUMP082	Site 47	SUMP082(0-0.5)	0	0.5	Normal	1.53E-06	mg/kg
SUMP088	Site 47	SUMP088(0-0.5)	0	0.5	Normal	5.16E-07	mg/kg
SUMP090	Site 47	SUMP090(0-0.5)	0	0.5	Normal	2.76E-06	mg/kg
SUMP092	Site 47	SUMP092(0-0.5)	0	0.5	Normal	3.85E-07	mg/kg
WRSUMP01	Site 47	WRSUMP017(0-.5)	0	0.5	Normal	7.53E-07	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples	n :	32
x = mean of the log transformed data	x :	-13.6793 mg/kg
s = standard deviation of the transformed data	s :	0.921184 mg/kg
H = Land's H-statistic, based upon n and s	H :	2.328601
95 UCL = 95 Percent Upper Confidence Limit	95 UCL:	2.57E-06 mg/kg

Table 3-25
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 47 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
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2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control (field duplicate)

RA = risk assessment

Table 3-26
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 48 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
48SB01	Site 48	48SB01(0-0.5)	0	0.5	Normal	1.05E-05	mg/kg
SUMP094	Site 48	SUMP094(0-0.5)	0	0.5	Normal	1.58E-05	mg/kg
SUMP095	Site 48	SUMP095(0-0.5)	0	0.5	Normal	1.11E-05	mg/kg
SUMP098	Site 48	SUMP098(0-0.5)-1	0	0.5	Normal	6.20E-06	mg/kg
SUMP100	Site 48	SUMP100(0-0.5)	0	0.5	Normal	4.00E-06	mg/kg
WRSUMP001	Site 48	WRSUMP001(0-.5)	0	0.5	Normal	1.71E-06	mg/kg
WRSUMP003	Site 48	WRSUMP003(0-.5)	0	0.5	Normal	1.22E-06	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples	n :	7
x = mean of the log transformed data	x :	-12.1777 mg/kg
s = standard deviation of the transformed data	s :	0.97928 mg/kg
H = Land's H-statistic, based upon n and s	H :	3.63667
95 UCL = 95 Percent Upper Confidence Limit	95 UCL:	3.56E-05 mg/kg

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

Table 3-27
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 50 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
50SB06	Site 50	50SB06(0-0.5)	0	0.5	Normal	7.96E-06	mg/kg
50SB06	Site 50	50SB06(0-0.5)QC	0	0.5	Duplicate	7.14E-06	mg/kg
50SD08	Site 50	50SD08	0	0.5	Normal	2.64E-07	mg/kg
50SS07	Site 50	50SS07(0-0.5)	0	0.5	Normal	1.62E-06	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples

x = mean of the log transformed data

s = standard deviation of the transformed data

H = Land's H-statistic, based upon n and s

95 UCL = 95 Percent Upper Confidence Limit

n :	4
x :	-13.01747 mg/kg
s :	1.593873 mg/kg
H :	14.18608
95 UCL:	3.70E+00 mg/kg

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control (field duplicate)

RA = risk assessment

Table 3-28
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 60 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
60SB22	Site 60	60SB22(0-0.5)	0	0.5	Normal	9.77E-07	mg/kg
60SB22	Site 60	60SB22(0-0.5)QC	0	0.5	Duplicate	9.31E-07	mg/kg
SUMP122	Site 60	SUMP122(0-0.5)	0	0.5	Normal	4.04E-06	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

Upper Confidence Limit Calculation Variables (Logtransformed Data Set)

n = number of samples	n :	3
x = mean of the log transformed data	x :	-13.381502 mg/kg
s = standard deviation of the transformed data	s :	0.83471759 mg/kg
H = Land's H-statistic, based upon n and s	H :	10.8848004
95 UCL = 95 Percent Upper Confidence Limit	95 UCL:	1.35E-03 mg/kg

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

QC = quality control (field duplicate)

RA = risk assessment

Table 3-29
2,3,7,8 - TCDD Toxicity Equivalents Results For Site 67 Soil Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Group 4 Site	Sample ID	Begin Depth (Feet)	End Depth (Feet)	Sample Type	2,3,7,8-TCDD Results	Units
67SB01	Site 67	67SB01(0-0.5)	0	0.5	Normal	3.98E-06	mg/kg
67SB02	Site 67	67SB02(0-0.5)	0	0.5	Normal	3.48E-06	mg/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom. et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792. Unable to calculate the 95% UCL due to the small sample set (2 samples).

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

Table 3-30
2,3,7,8 - TCDD Toxicity Equivalents Results For Central Creek, Goose Prairie Creek,
Saunders Branch, And Caddo Lake Surface Water and Sediment Samples*,
Group 4 RA, LHAAP, Karnack, Texas

Station ID	Sample ID	Sample Type	Matrix	2,3,7,8-TCDD Results	Units
CCSW01 - Central Creek	CCSW01 - 9/16/98	N	Water	1.29E-01	pg/L
CCSW01 - Central Creek	CCSW01 - 12/4/98	N	Water	1.94E-01	pg/L
CCSW02 - Central Creek	CCSW02 - 9/16/98	N	Water	2.08E-01	pg/L
CCSW02 - Central Creek	CCSW02 - 12/4/98	N	Water	1.31E+00	pg/L
CCSD01 - Central Creek	CCSD01 - 9/17/98	N	Sediment	3.42E-01	ng/kg
50SW06 - Goose Prairie Creek	50SW06 - 11/11/98	N/QC	Water	3.28E-01	pg/L
GPCSW03 - Goose Prairie Creek	GPCSW03 - 11/17/98	N	Water	2.36E-01	pg/L
GPCSW06 - Goose Prairie Creek	GPCSW06 - 11/16/98	N/QC	Water	3.56E-01	pg/L
GPCSW08 - Goose Prairie Creek	GPCSW08 - 11/11/98	N	Water	2.09E-01	pg/L
GPSW01 - Goose Prairie Creek	GPSW01 - 12/4/98	N	Water	1.42E+00	pg/L
GPSW01 - Goose Prairie Creek	GPSW01 - 9/16/98	N	Water	9.53E-01	pg/L
GPSW02 - Goose Prairie Creek	GPSW02 - 12/4/98	N	Water	3.58E-01	pg/L
GPSW02 - Goose Prairie Creek	GPSW02 - 9/16/98	N	Water	2.08E-01	pg/L
50SD06 - Goose Prairie Creek	50SD06 - 11/11/98	N/QC	Sediment	2.98E-01	ng/kg
GPCSD03 - Goose Prairie Creek	GPCSD03 - 11/17/98	N	Sediment	3.70E-01	ng/kg
GPCSD06 - Goose Prairie Creek	GPCSD06 - 11/16/98	N/QC	Sediment	6.13E-01	ng/kg
GPCSD08 - Goose Prairie Creek	GPCSD08 - 11/11/98	N	Sediment	1.56E+00	ng/kg
GPSD01 - Goose Prairie Creek	GPSD01 - 9/17/98	N/QC	Sediment	1.26E+01	ng/kg
GPWSW01 - Goose Prairie Wetland	GPWSW01 - 11/19/98	N/QC	Water	4.00E-01	pg/L
GPWSW04 - Goose Prairie Wetland	GPWSW04 - 11/20/98	N	Water	5.10E-02	pg/L
GPWSD01 - Goose Prairie Wetland	GPWSD01 - 11/19/98	N/QC	Sediment	5.14E+00	ng/kg
GPWSD04 - Goose Prairie Wetland	GPWSD04 - 11/20/98	N	Sediment	4.37E+00	ng/kg
SBSD01 - Saunders Branch	SBSD01 - 9/17/98	N	Sediment	3.57E-01	ng/kg
CL-CCS-1(1) - Caddo Lake	CL-CCS-1(1)	N	Sediment	7.99E+00	ng/kg
CL-GPSN-3(1) - Caddo Lake	CL-GPSN-3(1)	N	Sediment	6.39E+00	ng/kg
CL-GPSS-3(1) - Caddo Lake	CL-GPSS-3(1)	N	Sediment	6.11E+00	ng/kg
CL-SBS-2(1) - Caddo Lake	CL-SBS-2(1)	N	Sediment	5.82E+00	ng/kg

*2,3,7,8 TCDD toxicity equivalents calculated based on methods recommended by Van den Berg, M., L. Birnbaum, A. Bosveld, B. Brunstrom, et al., 1998. "Toxic Equivalency Factors (TEFs) for Dioxins, PCDDs, PCDFs for Humans and Wildlife," Env. Health Perspectives 106:775-792.

2,3,7,8 - TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

ID = identification

LHAAP = Longhorn Army Ammunition Plant

N = normal

QC = quality control (field duplicate)

RA = risk assessment

Table 3-31
Summary of COPCs Selected for On-Site Groundwater, Group 4 RA, LHAAP, Karnack, Texas

COPC	Site 04	Site 08	Site 35A	Site 35B	Site 35C	Site 46	Site 47	Site 48	Site 50	Site 67
	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC
Dioxin/Furan										
2,3,7,8-TCDD	●	●	ND	●	●	●	●	●	●	ND
Explosive										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	ND	●	ND	ND	ND
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	●	ND	●	●	ND	ND
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	ND	ND	●	●	ND	ND
m-Dinitrobenzene	ND	ND	ND	●	ND	ND	ND	ND	ND	ND
RDX	ND	ND	●	ND	●	●	●	ND	ND	ND
Metals										
Aluminum	ND	ND	●	●	●	●	●	●	●	●
Antimony	ND	ND	●	●	ND	●	●	●	●	ND
Barium	ND	ND	ND	ND	ND	●	ND	ND	ND	●
Beryllium	ND	ND	●	ND	●	●	●	●	ND	ND
Cadmium	ND	ND	●	●	ND	●	●	●	ND	ND
Chromium	ND	ND	●	ND	●	●	●	●	ND	ND
Cobalt	ND	ND	●	ND	ND	ND	●	●	●	ND
Lead	ND	ND	●	●	●	●	●	ND	ND	ND
Manganese	●	●	●	●	●	●	●	●	ND	ND
Nickel	ND	ND	●	ND	●	●	●	●	●	●
Selenium	ND	ND	●	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	●	●	●	●	ND	ND
Strontium	●	ND	●	ND	ND	●	●	●	ND	ND
Thallium	ND	ND	●	●	●	●	●	●	ND	●
Tin	ND	ND	ND	ND	ND	ND	●	ND	ND	ND
Vanadium	ND	ND	●	●	●	●	●	●	ND	ND
Zinc	ND	ND	ND	ND	ND		ND	ND	ND	ND
Non-Metallic Anion										
Perchlorate	ND	●	●	ND	●	●	●	●	●	ND
Pesticides										
Aldrin	ND	ND	●	ND	●	●	●	●	ND	ND
alpha-BHC	ND	ND	●	ND	●	●	●	●	ND	ND
beta-BHC	ND	ND	●	ND	●	●	●	●	ND	ND
delta-BHC	ND	ND	●	ND	●	●	●	●	ND	ND
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	●	●	●	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	●	ND	●	●	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	●	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	●	●	●	●	●	●	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	●	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	●	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	●	ND
Volatile Organics										
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	●
1,1,2-Trichloroethane	ND	ND	●	ND	ND	ND	●	ND	●	●
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	ND	●	ND	ND	ND
1,2,4-trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	●	ND
1,1-Dichloroethene	ND	ND	●	●	ND	ND	●	ND	●	●

Table 3-31
Summary of COPCs Selected for On-Site Groundwater, Group 4 RA, LHAAP, Karnack, Texas

	Site 04	Site 08	Site 35A	Site 35B	Site 35C	Site 46	Site 47	Site 48	Site 50	Site 67
COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC	GW COPC
1,2-Dichloroethane	ND	ND	●	ND	●	ND	●	ND	●	●
1,2-Dichloroethene (total) *	ND	ND	ND	ND	ND	ND	●	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	●	ND	ND	ND
Acetone	ND	ND	ND	ND	ND	ND	●	ND	●	ND
Benzene	ND	ND	●	●	ND	ND	●	ND	●	ND
Chloroform	ND	ND	ND	ND	ND	ND	●	ND	●	ND
cis-1,2-Dichloroethene *	ND	ND	ND	ND	ND	ND	●	ND	●	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	●	ND
Methylene chloride	ND	ND	●	ND	ND	●	●	ND	ND	●
Tetrachloroethene	ND	ND	●	●	ND	●	●	●	●	ND
Trichloroethene	ND	ND	●	●	●	ND	●	●	●	●
Trichlorofluoromethane	ND	ND	ND	ND	ND	●	ND	ND	ND	ND
Vinyl Chloride	ND	ND	●	ND	ND	●	●	ND	●	ND

*Total and cis-1,2-dichloroethene were both identified as COPCs at Site 47. Risks were calculated based only on cis-1,2-dichloroethene. The highest EPC between total and cis-1,2 dichloroethene was used. Note, toxicity values for cis-1,2-dichloroethene are more conservative than those for trans-1,2-dichloroethene

● = COPC

COPC = chemical of potential concern

EPC = exposure point concentration

GW = groundwater

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a groundwater COPC

RA = risk assessment

Table 3-32
Summary of COPCs Selected for Soil - Sites 04, 08, 35A, 35B, 35C, 46, Group 4 RA, LHAAP, Karnack, Texas

COPC	Site 04 Soil COPCs				Site 08 Soil COPCs				Site 35A Soil COPCs				Site 35B Soil COPCs				Site 35C Soil COPCs				Site 46 Soil COPCs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2		0 to 0.5		0 to 2			

● = COPC

GS = below ground surface

COPC = chemical of potential concern

HAAP = Longhorn Army Ammunition Plant

D = not selected as a soil COPC

E = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

A = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-33
Summary of COPCs Selected for Soil - Sites 47, 48, 50, 60, 67, Group 4 RA, LHAAP, Karnack, Texas

COPC	Site 47 Soil COPCs			Site 48 Soil COPCs			Site 50 Soil COPCs			Site 60 Soil COPCs			Site 67 Soil COPCs		
	0 to 0.5 Feet BGS	0 to 2 Feet BGS	0 to 7 Feet BGS	0 to 0.5 Feet BGS	0 to 2 Feet BGS	0 to 7 Feet BGS	0 to 0.5 Feet BGS	0 to 2 Feet BGS	0 to 7 Feet BGS	0 to 0.5 Feet BGS	0 to 2 Feet BGS	0 to 7 Feet BGS	0 to 0.5 Feet BGS	0 to 2 Feet BGS	0 to 7 Feet BGS
	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC
<i>Dioxin/Furan</i>	●	●	NE	●	●	NE	●	●	ND	●	●	NE	●	●	ND
2,3,7,8-TCDD															
<i>Metal</i>															
Aluminum	●	●	NE	●	●	NE	ND	ND	ND	ND	●	NE	ND	●	ND
Antimony	●	●	NE	ND	●	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	●	●	NE	ND	ND	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	●	●	NE	●	●	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	ND	●	NE	ND	●	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	●	●	NE	ND	ND	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	●	●	NE	ND	ND	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	●	●	NE	●	●	NE	●	●	ND	ND	ND	ND	ND	ND	ND
<i>Non-Metallic Anion</i>															
Perchlorate	●	●	NE	ND	ND	ND	●	●	ND	ND	ND	ND	ND	ND	ND
<i>Semi-Volatile Organic</i>															
2,6-Dinitrotoluene	●	●	NE	ND	ND	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	●	●	NE	●	●	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	●	●	NE	●	●	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	●	●	NE	●	●	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	●	●	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	●	●	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
<i>Volatile Organics</i>															
Vinyl chloride	ND	ND	ND	ND	ND	●	ND	ND	ND	ND	ND	ND	ND	ND	ND

● = COPC

BGS = below ground surface

COPC = chemical of potential concern

Table 3-33
Summary of COPCs Selected for Soil - Sites 47, 48, 50, 60, 67, Group 4 RA, LHAAP, Karnack, Texas

COPC	Site 47 Soil COPCs			Site 48 Soil COPCs			Site 50 Soil COPCs			Site 60 Soil COPCs			Site 67 Soil COPCs		
	0 to 0.5 Feet	0 to 2 Feet	0 to 7 Feet	0 to 0.5 Feet	0 to 2 Feet	0 to 7 Feet	0 to 0.5 Feet	0 to 0.5 Feet	0 to 7 Feet	0 to 0.5 Feet	0 to 2 Feet	0 to 7 Feet	0 to 0.5 Feet	0 to 2 Feet	0 to 7 Feet
	BGS	BGS	BGS	BGS	BGS	BGS	BGS	BGS	BGS	BGS	BGS	BGS	BGS	BGS	BGS
	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC	Soil COPC

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law $< 1 \times 10^{-5}$ and/or Molecular Weight > 200 g/mole) Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-34
Summary of COPCs Selected for Sediment and Surface Water in On-Site Waterways,
Group 4 RA, LHAAP, Karnack, Texas

COPC	Central Creek		Saunders's Branch		Goose Prairie Creek	
	Sediment COPC	Surface Water COPC	Sediment COPC	Surface Water COPC	Sediment COPC	Surface Water COPC
<i>Dioxin/Furan</i>	●	●	●	ND	●	●
2,3,7,8-TCDD						
<i>Explosive</i>						
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	●
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	ND	●
RDX	ND	ND	ND	ND	ND	●
<i>Metal</i>						
Aluminum	●	ND	●	ND	●	●
Antimony	ND	●	ND	●	ND	●
Arsenic	●	ND	●	ND	●	ND
Barium	●	ND	●	ND	●	ND
Beryllium	●	ND	●	ND	●	ND
Cadmium	●	ND	ND	ND	ND	ND
Chromium	●	ND	●	ND	●	ND
Cobalt	●	ND	ND	ND	●	ND
Copper	●	ND	●	ND	●	ND
Cyanide	ND	ND	ND	ND	●	●
Lead	●	ND	●	●	●	●
Manganese	●	●	●	●	●	ND
Mercury	ND	ND	ND	ND	●	ND
Nickel	●	ND	●	ND	●	ND
Selenium	●	ND	ND	ND	●	ND
Silver	ND	ND	ND	ND	●	●
Strontium	●	●	ND	●	●	●
Thallium	ND	ND	ND	ND	ND	ND
Vanadium	●	ND	●	ND	●	ND
Zinc	●	ND	●	ND	●	ND

Table 3-34
Summary of COPCs Selected for Sediment and Surface Water in On-Site Waterways,
Group 4 RA, LHAAP, Karnack, Texas

COPC	Central Creek		Saunders Branch		Goose Prairie Creek	
	Sediment COPC	Surface Water COPC	Sediment COPC	Surface Water COPC	Sediment COPC	Surface Water COPC
<i>Non-Metallic Anion</i>						
Perchlorate	ND	ND	ND	ND	ND	●
<i>PCBs</i>						
Aroclor 1254	ND	ND	ND	ND	●	ND
<i>Semi-Volatile Organic</i>						
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	●
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	●
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND	●
Di-n-butyl phthalate	ND	ND	ND	ND	ND	●
Naphthalene	ND	ND	ND	ND	●	ND
<i>Volatile Organic</i>						
1,1-Dichloroethene	ND	ND	ND	ND	●	ND
p-Cymene	ND	ND	ND	ND	●	ND
Acetone	ND	ND	●	ND	●	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	●	ND
Methylene chloride	ND	●	ND	ND	ND	ND
Toluene	ND	ND	●	ND	●	ND
Trichloroethene	ND	ND	ND	ND	●	ND
Vinyl chloride	ND	ND	ND	ND	●	●

● = COPC

COPC = chemical of potential concern

ND = not selected as a COPC

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-35
Summary of COPCs Selected for Sediment and Surface Water in Caddo Lake, Group
4 RA, LHAAP, Karnack, Texas

COPC	Sediment COPC	Surface Water COPC
<i>Dioxin/Furan</i>		
2,3,7,8-TCDD	●	NA
<i>Metal</i>		
Aluminum	●	NA
Arsenic	●	NA
Barium	●	NA
Beryllium	●	NA
Cadmium	●	NA
Chromium	●	NA
Cobalt	●	NA
Copper	●	NA
Lead	●	NA
Manganese	●	NA
Mercury	●	NA
Nickel	●	NA
Selenium	●	NA
Silver	●	NA
Strontium	●	NA
Thallium	●	NA
Vanadium	●	NA
Zinc	●	NA
<i>Semi-Volatile Organic</i>		
3-Methylphenol	●	NA
4-Methylphenol	●	NA
Acenaphthylene	●	NA
Anthracene	●	NA
Benzo(a)anthracene	●	NA
Benzo(a)pyrene	●	NA
Benzo(b)fluoranthene	●	NA
Benzo(g,h,i)perylene	●	NA
Benzo(k)fluoranthene	●	NA
Chrysene	●	NA
Dibenzo(a,h)anthracene	●	NA
Dibenzofuran	●	NA
Ethylbenzene	●	NA
Fluoranthene	●	NA
Fluorene	●	NA
Phenanthrene	●	NA
Phenol	●	NA
<i>Volatile Organic</i>		
Acetone	●	NA
Carbon disulfide	●	NA
Trichlorofluoromethane	●	NA

Table 3-35
Summary of COPCs Selected for Sediment and Surface Water in Caddo Lake, Group
4 RA, LHAAP, Karnack, Texas

COPC	Sediment COPC	Surface Water COPC
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● = COPC

COPC = chemical of potential concern

NA = not applicable - surface water data not available for Caddo Lake

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-36
Summary of COPCs Selected for Fish Tissue in On-Site Waterways and Caddo Lake,
Group 4 RA, LHAAP, Karnack, Texas

COPC	Central Creek Fish COPC	Saunders Branch Fish COPC	Goose Prairie Creek Fish COPC	Caddo Lake Fish COPC
Dioxin/Furan				
2,3,7,8-TCDD	●	●	●	●
Explosive				
2,4,6-Trinitrotoluene	ND	ND	●	ND
2-Amino-4,6-dinitrotoluene	ND	ND	●	ND
RDX	ND	ND	●	ND
Metal				
Aluminum	●	●	●	●
Antimony	●	●	●	ND
Arsenic	●	●	●	●
Barium	●	●	●	●
Beryllium	●	●	●	●
Cadmium	●	ND	ND	●
Chromium	●	●	●	●
Cobalt	●	ND	●	●
Copper	●	●	●	●
Cyanide	ND	ND	●	ND
Lead	●	●	●	●
Manganese	●	●	●	●
Mercury	ND	ND	●	●
Nickel	●	●	●	●
Selenium	●	ND	●	●
Silver	ND	ND	●	●
Strontium	●	●	●	●
Thallium	ND	ND	●	●
Vanadium	●	●	●	●
Zinc	●	●	●	●
Non-Metallic Anion				
Perchlorate	ND	ND	●	ND
PCB				
Aroclor 1254	ND	ND	●	ND
Semi-Volatile Organic				
2,4-Dinitrotoluene	ND	ND	●	ND
2,6-Dinitrotoluene	ND	ND	●	ND
3-Methylphenol	ND	ND	ND	●
4-Methylphenol	ND	ND	ND	●
Acenaphthylene	ND	ND	ND	●
Anthracene	ND	ND	ND	●
Benzo(a)anthracene	ND	ND	ND	●
Benzo(a)pyrene	ND	ND	ND	●
Benzo(b)fluoranthene	ND	ND	ND	●
Benzo(g,h,i)perylene	ND	ND	ND	●

Table 3-36
Summary of COPCs Selected for Fish Tissue in On-Site Waterways and Caddo Lake,
Group 4 RA, LHAAP, Karnack, Texas

COPC	Central Creek Fish COPC	Saunders Branch Fish COPC	Goose Prairie Creek Fish COPC	Caddo Lake Fish COPC
Benzo(k)fluoranthene	ND	ND	ND	●
bis(2-Ethylhexyl)phthalate	ND	ND	●	ND
Chrysene	ND	ND	ND	●
Dibenzo(a,h)anthracene	ND	ND	ND	●
Dibenzofuran	ND	ND	ND	●
Di-n-butyl phthalate	ND	ND	●	ND
Ethylbenzene	ND	ND	ND	●
Fluoranthene	ND	ND	ND	●
Fluorene	ND	ND	ND	●
Naphthalene	ND	ND	●	ND
Phenanthrene	ND	ND	ND	●
Phenol	ND	ND	ND	●
Volatile Organic				
1,1-Dichloroethene	ND	ND	●	ND
Acetone	ND	●	●	●
Carbon Disulfide	ND	ND	ND	●
cis-1,2-Dichloroethene	ND	ND	●	ND
Methylene chloride	●	ND	ND	ND
p-Cymene	ND	ND	●	ND
Toluene	ND	●	●	ND
Trichloroethene	ND	ND	●	ND
Trichlorofluoromethane	ND	ND	ND	●
Vinyl chloride	ND	ND	●	ND

● = COPC

COPC = chemical of potential concern

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a COPC

PCB = polychlorinated biphenyl

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-37
Scenarios to be Evaluated in the Group 4 BHHRA,
Group 4 RA, LHAAP, Karnack, Texas^{1,2,3}

Receptor	Location	Exposure Routes
Current On-Site Trespasser	Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, and 67.	<ul style="list-style-type: none"> - Incidental soil ingestion - Dermal contact with soil - Inhalation of particulates generated from soil - Inhalation of volatile emissions from soil
Current On-Site Trespasser	Central Creek, Saunder's Branch, and Goose Prairie Creek	<ul style="list-style-type: none"> - Dermal contact with surface water - Incidental sediment ingestion - Dermal contact with sediment - Ingestion of recreationally caught fish
Future On-Site Maintenance Worker	Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50, 60, and 67.	<ul style="list-style-type: none"> - Incidental soil ingestion - Dermal contact with soil - Inhalation of particulates generated from soil - Inhalation of volatile emissions from soil - Groundwater (drinking water) ingestion - Noningestion groundwater use (inhalation of volatiles and dermal contact)
Future Off-Site Child and Adult Residents	Off-Site Caddo Lake ⁴	<ul style="list-style-type: none"> - Surface water (drinking water) ingestion - NE - Noningestion surface water use (inhalation of volatiles and dermal contact) - NE - Incidental surface water ingestion while swimming-NE - Dermal contact with surface water while swimming-NE - Incidental sediment ingestion - Dermal contact with sediment - Ingestion of recreationally caught fish

¹ RME exposure was evaluated for each exposure pathway scenario.

² Except for chemicals identified as volatile, a 0 to 0.5 foot depth interval was used to evaluate current on-site trespasser and future on-site maintenance worker exposure to soil. The depth interval was extended to 7 feet (0 to 7 feet) for the evaluation of chemicals identified as volatile. In addition, the future on-site maintenance worker was also evaluated based on a 0 to 2 foot depth interval.

³ Sediment from on-site drainage ditches were combined with on-site soil samples in the evaluation of exposure to current on-site trespassers and future on-site maintenance workers.

⁴ It was assumed that Caddo Lake would be used as a future source of potable water.

BHHRA = baseline human health risk assessment

LHAAP = Longhorn Army Ammunition Plant

NE = Not evaluated in this report; these exposure routes were evaluated as part of the Group 2 BHHRA.

RA = risk assessment

RME = reasonable maximum exposure

Table 3-38
Exposure Point Concentrations (EPCs) for Site 04 Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
<i>Dioxin/Furan</i>									
2,3,7,8-TCDD	1.59E-05	Max.		1.59E-05	Max.		NE		
<i>Metal</i>									
Manganese	2.43E+03	Max.		2.43E+03	Max.		NE		
<i>Non-Metallic Anion</i>									
Perchlorate	4.54E+01	Max.		1.44E+02	Max.		NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

Max. = maximum

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-39

Exposure Point Concentrations (EPCs) for Site 08 Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
<i>Dioxin/Furan</i>									
2,3,7,8-TCDD	2.37E-06	Max.		2.37E-06	Max.		NE		
<i>Metal</i>									
Mercury	5.21E+00	Max.		5.21E+00	Max.		NE		
<i>Non-Metallic Anion</i>									
Perchlorate	ND			3.23E-02	Max.		NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-40
Exposure Point Concentrations (EPCs) for Site 35A Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
Dioxin/Furan									
2,3,7,8-TCDD	2.53E-05	Max.		2.53E-05	Max.		NE		
Metals									
Aluminum	ND			9.23E+03	95 UCL		NE		
Antimony	ND			8.50E+00	Max	9.25E+00	NE		
Cadmium	ND			1.85E+01	Max		NE		
Mercury	4.37E+01	Max.		4.37E+01	Max		NE		
Silver	ND			1.09E+02	Max		NE		
Vanadium	5.12E+01	95 UCL		5.12E+01	95 UCL		NE		
Semi-Volatile Organic									
Benzo(a)anthracene	6.43E-01	95 UCL	9.50E-01	1.60E+00	Max		NE		
Benzo(a)pyrene	2.00E+00	Max		2.00E+00	Max		NE		
Benzo(b)fluoranthene	3.10E+00	Max		3.10E+00	Max		NE		
bis(2-Ethylhexyl)phthalate	2.00E+02	Max.		2.00E+02	Max		NE		
Dibenz(a,h)anthracene	3.00E-01	Max.	9.50E-01	3.00E-01	Max	2.70E+00	NE		
Indeno(1,2,3-cd)pyrene	2.10E+00	Max.		2.10E+00	Max		NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-41
Exposure Point Concentrations (EPCs) for Site 35B Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
Dioxin/Furan									
2,3,7,8-TCDD	2.56E-06	Max.		2.56E-06	Max.		NE		
Metal									
Aluminum	ND			1.86E+04	Max		NE		
Cadmium	7.50E+00	Max		7.50E+00	Max		NE		
Manganese	1.86E+03	Max		1.86E+03	Max		NE		
Pesticide									
Aldrin	1.70E-01	Max		1.70E-01	Max		NE		
Semi-Volatile Organic									
Benzo(a)anthracene	4.40E-01	Max	2.00E+00	4.40E-01	Max	2.00E+00	NE		
Benzo(a)pyrene	4.10E-01	Max	2.00E+00	4.10E-01	Max	2.00E+00	NE		
Benzo(b)fluoranthene	5.80E-01	Max	2.00E+00	5.80E-01	Max	2.00E+00	NE		
Indeno(1,2,3-cd)pyrene	3.70E-01	Max	2.00E+00	3.70E-01	Max	2.00E+00	NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-42
Exposure Point Concentrations (EPCs) for Site 35C Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
<i>Dioxin/Furan</i>									
2,3,7,8-TCDD	1.57E-04	Max.		1.57E-04	Max.		NE		
<i>Metal</i>									
Aluminum	1.22E+04	95 UCL		1.60E+04	95 UCL		NE		
Cadmium	ND			1.60E+00	Max.	5.00E+00	NE		
Vanadium	5.10E+01	Max.		5.10E+01	Max.		NE		
<i>Non-Metallic Anion</i>									
Perchlorate	6.09E-02	Max.		6.09E-02	Max.		NE		
<i>Semi-Volatile Organic</i>									
Benzo(a)pyrene	1.10E-01	Max.	2.60E-01	1.10E-01	Max.	2.60E-01	NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

Max. = maximum

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-43
Exposure Point Concentrations (EPCs) for Site 46 Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
Dioxin/Furan									
2,3,7,8-TCDD	4.23E-06	95 UCL		4.23E-06	95 UCL		NE		
Metal									
Aluminum	9.42E+03	95 UCL		8.07E+03	95 UCL	1.75E+04	NE		
Antimony	ND			4.17E+00	95 UCL	1.25E+01	NE		
Barium	2.39E+02	95 UCL		2.06E+03	Max		NE		
Cadmium	ND			7.18E+00	Max	1.88E+01	NE		
Lead	ND			9.50E+02	Max		NE		
Manganese	3.62E+02	95 UCL		2.53E+02	95 UCL	3.38E+02	NE		
Mercury	ND			5.60E-01	Max		NE		
Vanadium	2.89E+01	95 UCL		2.89E+01	95 UCL		NE		
Semi-Volatile Organic									
Benzo(a)anthracene	5.96E-01	95 UCL	3.90E+00	2.30E+00	Max.	3.90E+00	NE		
Benzo(a)pyrene	2.10E+00	Max.		2.10E+00	Max.		NE		
Benzo(b)fluoranthene	4.50E+00	Max.		4.50E+00	Max.		NE		
Benzo(k)fluoranthene	5.89E-01	95 UCL	3.90E+00	3.78E-01	95 UCL	3.90E+00	NE		
Dibenz(a,h)anthracene	3.80E-01	Max.	3.90E+00	3.80E-01	Max.	3.90E+00	NE		
Indeno(1,2,3-cd)pyrene	1.60E+00	Max.	3.90E+00	1.60E+00	Max.	3.90E+00	NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-44
Exposure Point Concentrations (EPCs) for Site 47 Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
Dioxin/Furan									
2,3,7,8-TCDD	2.57E-06	95 UCL		2.57E-06	95 UCL		NE		
Metals									
Aluminum	1.08E+04	95 UCL		8.82E+03	95 UCL	1.95E+04	NE		
Antimony	7.59E+00	Max.	3.00E+01	7.59E+00	Max.	3.00E+01	NE		
Arsenic	5.51E+00	95 UCL		4.70E+00	95 UCL	1.16E+01	NE		
Barium	4.17E+03	Max.		4.17E+03	Max.		NE		
Cadmium	ND			8.88E+00	Max.		NE		
Manganese	5.69E+02	95 UCL		3.60E+02	95 UCL	4.41E+02	NE		
Mercury	7.90E-01	Max.		5.78E+00	Max.		NE		
Vanadium	3.40E+01	95 UCL		3.40E+01	95 UCL		NE		
Non-Metallic Anion									
Perchlorate	1.50E+02	Max.		1.80E+02	Max.		NE		
Semi-Volatile Organics									
2,6-Dinitrotoluene	6.60E-01	Max.		6.60E-01	Max.		NE		
Benzo(a)anthracene	2.40E+00	Max.		2.40E+00	Max.		NE		
Benzo(a)pyrene	2.30E+00	Max.		2.30E+00	Max.		NE		
Benzo(b)fluoranthene	3.50E+00	Max.		3.50E+00	Max.		NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-45
Exposure Point Concentrations (EPCs) for Site 48 Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
Dioxin/Furan									
2,3,7,8-TCDD	1.58E-05	Max.		1.58E-05	Max.		NE		
Metal									
Aluminum	1.40E+04	95 UCL		1.09E+04	95 UCL		NE		
Antimony	ND			7.96E+00	Max.	9.50E+00	NE		
Barium	6.89E+02	95 UCL		4.52E+02	95 UCL		NE		
Cadmium	ND			4.76E+00	95 UCL		NE		
Vanadium	4.24E+01	95 UCL		4.24E+01	95 UCL		NE		
Semi-Volatile Organic									
Benzo(a)anthracene	1.90E+00	Max.		1.90E+00	Max.		NE		
Benzo(a)pyrene	1.60E+00	Max.		1.60E+00	Max.		NE		
Benzo(b)fluoranthene	2.90E+00	Max.		2.90E+00	Max.		NE		
Dibenz(a,h)anthracene	2.30E-01	Max.	3.60E-01	2.30E-01	Max.	1.32E+00	NE		
Indeno(1,2,3-cd)pyrene	7.50E-01	Max.		7.50E-01	Max.		NE		
Volatile Organic									
Vinyl chloride	ND			ND			4.97E-01	Max.	

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-46
Exposure Point Concentrations (EPCs) for Site 50 Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS ³			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
Dioxin/Furan									
2,3,7,8-TCDD	7.96E-06	Max.							
Vanadium	7.10E+01	Max.					NE		
Non-Metallic Anion									
Perchlorate	3.61E-02	Max.					NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

³With the exception of perchlorate samples, samples greater than 0.5 feet but less than or equal to 2 feet bgs were not available. EPCs for perchlorate for the 0 to 0.5 foot interval (0.03 mg/kg) and the 0 to 2 foot interval (0.0361 mg/kg) were essentially the same. Therefore, only one depth interval was evaluated (0 to 0.5 feet bgs) using the maximum perchlorate concentration as the EPC.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-47

Exposure Point Concentrations (EPCs) for Site 60 Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
<i>Dioxin/Furan</i>									
2,3,7,8-TCDD	4.04E-06	Max.		4.04E-06	Max.		NE		
<i>Metal</i>									
Aluminum	ND			1.78E+04	Max.		NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-48
Exposure Point Concentrations (EPCs) for Site 67 Soil, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	0 to 0.5 Feet BGS			0 to 2 Feet BGS			0 to 7 Feet BGS		
	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg	Soil EPC mg/kg	Basis	1/2 DL mg/kg
<i>Dioxin/Furan</i>									
2,3,7,8-TCDD	3.98E-06	Max		3.98E-06	Max		NE		
<i>Metals</i>									
Aluminum	ND			1.56E+04	Max		NE		

¹95 percent UCL values were used to estimate exposure concentrations in soil if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in soil.

95 UCL = 95 percent upper confidant limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

NE = Not evaluated as a volatile chemical (Henry's Law <1E-05 and/or Molecular Weight >200 g/mole). Note, only chemicals identified as volatile were evaluated for the 0 to 7 foot depth interval.

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-49
Exposure Point Concentrations (EPCs) for On-Site Groundwater, Sites 04, 08, 35A, 35B, 35C, and 46, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	Site 04		Site 08		Site 35A		Site 35B		Site 35C		Site 46	
	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L
<i>Dioxin/Furan</i>												
2,3,7,8-TCDD	9.33E-09		1.49E-08		ND		4.95E-09		1.42E-08		6.35E-09	
<i>Explosive</i>												
2-Amino-4,6-dinitrotoluene	ND		ND		ND		ND		9.50E-04	1.30E-03	ND	
m-Dinitrobenzene	ND		ND		ND		1.00E-04	6.50E-04	ND		ND	
RDX	ND		ND		8.81E-02		ND		4.90E-04	6.50E-04	3.20E-04	6.50E-04
<i>Metal</i>												
Aluminum	ND		ND		9.82E+01		5.80E+00		1.08E+02		8.00E+01	
Antimony	ND		ND		1.10E-02	5.00E-02	8.00E-02		ND		6.30E-02	1.50E-01
Barium	ND		ND		ND		ND		ND		3.73E+00	
Beryllium	ND		ND		1.70E-03	5.00E-03	ND		1.60E-03	5.00E-03	7.60E-02	
Cadmium	ND		ND		2.00E-03	5.00E-02	8.00E-04	5.00E-03	ND		2.00E-02	2.50E-02
Chromium	ND		ND		2.80E+00		ND		4.30E+01		4.70E+00	
Cobalt	ND		ND		2.50E-01		ND		ND		ND	
Lead	ND		ND		9.00E-02		3.90E-03	4.50E-02	2.98E-01		6.73E-01	
Manganese	4.93E-01		4.82E-01		5.80E+00		3.80E-01		1.40E+00		6.50E+00	
Nickel	ND		ND		1.10E+00		ND		2.50E+00		1.19E+00	
Selenium	ND		ND		6.58E-02		ND		ND		ND	
Silver	ND		ND		ND		ND		1.20E+00		1.20E-01	
Strontium	5.08E+00		ND		2.30E+01		ND		ND		1.20E+01	
Thallium	ND		ND		3.60E-03	4.50E-01	9.80E-02	2.50E-01	1.34E-01	2.50E-01	2.00E-01	2.50E-01
Vanadium	ND		ND		5.60E-02		3.20E-03	2.50E-02	2.70E-02		1.40E-01	
Zinc	ND		ND		ND		ND		ND		ND	
<i>Non-Metallic Anion</i>												
Perchlorate	ND		1.00E-02		8.10E-02		ND		2.80E-03		3.00E-02	
<i>Pesticide</i>												
Aldrin	ND		ND		6.30E-06	2.50E-05	ND		6.30E-06	2.50E-05	6.30E-06	2.50E-05
alpha-BHC	ND		ND		7.60E-06	2.50E-05	ND		7.60E-06	2.50E-05	7.60E-06	2.50E-05
beta-BHC	ND		ND		5.40E-06	2.50E-05	ND		5.40E-06	2.50E-05	5.40E-06	2.50E-05
delta-BHC	ND		ND		4.60E-06	2.50E-05	ND		4.60E-06	2.50E-05	4.60E-06	2.50E-05
<i>Semi-Volatile Organic</i>												
2,4-Dinitrotoluene	ND		ND		ND		ND		ND		7.30E-05	6.50E-04
2,6-Dinitrotoluene	ND		ND		ND		ND		6.20E-04	1.30E-03	ND	
bis(2-Ethylhexyl)phthalate	ND		ND		8.80E-02		1.40E-03	5.00E-03	8.70E-03		2.70E-02	
<i>Volatile Organic</i>												
1,1,2-Trichloroethane	ND		ND		8.00E-03	2.00E-02	ND		ND		ND	
1,1-Dichloroethane	ND		ND		1.34E+00		5.80E-02		ND		ND	

Table 3-49
Exposure Point Concentrations (EPCs) for On-Site Groundwater, Sites 04, 08, 35A, 35B, 35C, and 46, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	Site 04		Site 08		Site 35A		Site 35B		Site 35C		Site 46	
	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L
1,2-Dichloroethane	ND		ND		3.00E-03	2.00E-02	ND		3.00E-03		ND	
Benzene	ND		ND		8.00E-04	2.00E-02	3.00E-03		ND		ND	
Methylene chloride	ND		ND		9.70E-04	2.00E-02	ND		ND		ND	
Tetrachloroethene	ND		ND		5.40E+00		3.40E-02		ND		1.40E-03	2.50E-03
Trichloroethene	ND		ND		1.60E-01		3.27E-01		7.00E-03		2.40E-03	2.50E-03
Trichlorofluoromethane	ND		ND		ND		ND		ND		ND	
Vinyl chloride	ND		ND		1.00E-02	2.00E-02	ND		ND		2.10E-03	5.00E-03
							ND		ND		7.10E-04	5.00E-03

¹Maximum detected concentrations in groundwater were used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the maximum detected concentration.

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

GW = groundwater

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a groundwater COPC for a particular Group 4 site

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-50
Exposure Point Concentrations (EPCs) for On-Site Groundwater, Sites 47, 48, 50, and 67, Group 4 RA, LHAAAP, Karnack, Texas^{1,2}

COPC	Site 47		Site 48		Site 50		Site 67	
	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L
<i>Dioxin/Furan</i>								
2,3,7,8-TCDD	2.88E-09		2.47E-08		7.31E-09		ND	
<i>Explosive</i>								
2,4,6-Trinitrotoluene	6.80E-03		ND		ND		ND	
2-Amino-4,6-dinitrotoluene	8.60E-04	1.30E-03	6.40E-04	1.30E-03	ND		ND	
4-Amino-2,6-dinitrotoluene	9.40E-04	1.30E-03	1.30E-04	1.30E-03	ND		ND	
RDX	6.20E-04	6.50E-04	ND		ND		ND	
<i>Metal</i>								
Aluminum	8.60E+01		1.61E+02		9.90E+00		6.00E+00	
Antimony	7.60E-02		5.10E-02		1.40E-02		ND	
Barium	ND		ND		ND		3.31E+00	
Beryllium	3.90E-03	5.00E-03	2.10E-04	5.00E-03	ND		ND	
Cadmium	2.00E-01		4.00E-04	5.00E-03	ND		ND	
Chromium	4.30E+01		6.80E+01		2.00E-01		ND	
Cobalt	3.11E-01		ND		ND		ND	
Lead	2.48E-01		2.67E-01		ND		ND	
Manganese	7.75E+00		1.90E+00		1.11E+00		3.48E+00	
Nickel	8.00E+00		4.00E+00		6.90E-01		1.82E-01	
Silver	1.00E+00		1.80E+00		ND		ND	
Strontium	1.90E+01		ND		3.40E+00		7.60E+00	
Thallium	9.30E-02	2.50E-01	2.05E-01	2.50E-01	ND		2.10E-03	2.50E-03
Tin	1.20E+02		ND		ND		ND	
Vanadium	1.30E-01		2.50E-02	2.50E-02	ND		ND	
<i>Non-Metallic Anion</i>								
Perchlorate	8.29E+01		1.60E-01		1.80E+01		ND	
<i>Pesticide</i>								
Aldrin	6.30E-06	2.50E-05	6.30E-06	2.50E-05	ND		ND	
alpha-BHC	7.60E-06	2.50E-05	7.60E-06	2.50E-05	ND		ND	
beta-BHC	5.40E-06	2.50E-05	5.40E-06	2.50E-05	ND		ND	

Table 3-50

Exposure Point Concentrations (EPCs) for On-Site Groundwater, Sites 47, 48, 50, and 67, Group 4 RA, LHAAAP, Karnack, Texas^{1,2}

COPC	Site 47		Site 48		Site 50		Site 67	
	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L
delta-BHC	4.60E-06	2.50E-05	4.60E-06	2.50E-05	ND		ND	
<i>Semi-Volatile Organic</i>								
2,4-Dinitrotoluene	1.40E-03		9.40E-05	6.50E-04	ND		ND	
2,6-Dinitrotoluene	1.40E-03		2.60E-04	1.30E-03	ND		ND	
4-Chloroaniline	1.80E-02		ND		ND		ND	
bis(2-Ethylhexyl)phthalate	2.10E-02		7.70E-03		ND		ND	
Dibenzofuran	1.10E-02		ND		ND		ND	
Naphthalene	ND		ND		ND		ND	
Pentachlorophenol	7.90E-03	2.50E-02	ND		1.30E-03	1.75E-01	ND	
<i>Volatile Organic</i>								
1,1,1-Trichloroethane	ND		ND		ND		1.80E+00	
1,1,2-Trichloroethane	4.90E-03	2.00E-02	ND		3.60E-03	1.75E-01	3.30E-02	
1,2,3-Trichlorobenzene	5.60E-04	2.00E-02	ND		ND		ND	
1,2,4-trimethylbenzene	ND		ND		3.90E-03	1.75E-01	ND	
1,1-Dichloroethene	3.22E-02		ND		5.00E-02	1.75E-01	3.80E-01	
1,2-Dichloroethane	5.70E-03	2.00E-02	ND		9.80E-02	1.75E-01	2.70E-02	
1,2-Dichloropropane	4.60E-04	2.00E-02	ND		ND		ND	
Acetone	2.10E+01		ND		6.70E-02	9.00E-01	ND	
Benzene	2.00E-03	2.00E-02	ND		2.20E-03	1.75E-01	ND	
Chloroform	1.20E-01		ND		2.50E-02	1.75E-01	ND	
cis-1,2-Dichloroethene	2.09E+00		ND		4.40E+00		ND	
trans-1,2-Dichloroethene	ND		ND		1.50E-02	1.75E-01	ND	
Methylene chloride	5.00E-03	2.00E-02	ND		ND		1.43E-03	1.00E-02
Tetrachloroethene	1.68E-01		2.00E-03	2.50E-03	3.50E-02	1.75E-01	ND	
Trichloroethene	2.94E+01		9.00E-03		2.20E+01		6.30E-03	1.00E-02
Vinyl chloride	1.27E-01		ND		1.00E-01	1.75E-01	ND	

¹Maximum detected concentrations in groundwater were used to estimate the exposure point concentration.²1/2 the maximum detection limit was reported for cases where it exceeded the maximum detected concentration.

Table 3-50
Exposure Point Concentrations (EPCs) for On-Site Groundwater, Sites 47, 48, 50, and 67, Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	Site 47		Site 48		Site 50		Site 67	
	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L	GW EPC mg/L	1/2 DL mg/L

COPC = chemical of potential concern

DL = detection limit

GW = groundwater

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a groundwater COPC for a particular Group 4 site

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-51
Exposure Point Concentrations (EPCs) for Sediment In Central Creek, Saunder's Branch, and Goose Prairie Creek,
Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	Central Creek			Saunder's Branch			Goose Prairie Creek		
	Sediment EPC mg/kg	Basis	1/2 DL mg/kg	Sediment EPC mg/kg	Basis	1/2 DL mg/kg	Sediment EPC mg/kg	Basis	1/2 DL mg/kg
Dioxin/Furan									
2,3,7,8-TCDD	3.42E-07	Max		3.57E-07	Max		1.26E-05	Max	
Explosive									
2,4,6-Trinitrotoluene	ND			ND			ND		
2-Amino-4,6-dinitrotoluene	ND			ND			ND		
RDX	ND			ND			ND		
Metal									
Aluminum	5.20E+03	Max		3.50E+03	Max		6.48E+03	95 UCL	
Antimony	ND			ND			ND		
Arsenic	3.25E+00	95 UCL		1.02E+01	Max		4.18E+00	95 UCL	
Barium	9.00E+01	Max		1.48E+02	Max		1.45E+02	95 UCL	
Beryllium	1.02E+00	Max		1.19E+00	Max		1.20E+00	95 UCL	
Cadmium	6.27E+00	Max		ND			ND		
Chromium	2.40E+01	Max		4.02E+01	Max		3.00E+01	95 UCL	
Cobalt	1.50E+01	Max		ND			1.37E+01	95 UCL	
Copper	1.03E+01	Max		3.56E+00	Max		1.16E+01	95 UCL	
Cyanide	ND			ND			9.48E-01	Max	
Lead	1.36E+01	Max		2.96E+01	Max		1.95E+01	95 UCL	
Manganese	4.23E+02	Max		1.46E+02	Max		3.63E+02	95 UCL	
Mercury	ND			ND			1.30E-01	Max	
Nickel	2.50E+01	Max		1.38E+01	Max		2.89E+01	95 UCL	
Selenium	1.90E+00	Max		ND			5.08E+00	Max	
Silver	ND			ND			2.40E+00	Max	
Strontium	2.70E+01	Max		ND			8.20E+01	Max	
Thallium	ND			ND			ND		
Vanadium	2.70E+01	Max		2.30E+01	Max		3.55E+01	95 UCL	
Zinc	4.90E+01	Max		1.50E+01	Max		6.28E+01	95 UCL	
Non-Metallic Anion									
Perchlorate	ND			ND			ND		
PCBs									
Aroclor 1254	ND			ND			3.90E-02	Max	
Semi-Volatile Organic									
2,4-Dinitrotoluene	ND			ND			ND		
2,6-Dinitrotoluene	ND			ND			ND		
bis(2-Ethylhexyl)phthalate	ND			ND			ND		
Di-n-butyl phthalate	ND			ND			ND		
Naphthalene	ND			ND			1.55E+00	Max	
Volatile Organic									
1,1-Dichloroethene	ND			ND			8.50E-03	Max	
Acetone	ND			5.50E-02	Max		1.20E-03	Max	
cis-1,2-Dichloroethene	ND			ND			4.65E-02	Max	
Methylene chloride	ND			ND			1.15E-01	Max	
p-Cymene	ND			ND			ND		
Toluene	ND			ND			4.12E-02	Max	
Trichloroethene	ND			2.90E-02	Max		3.60E-03	Max	
Vinyl chloride	ND			ND			3.79E-02	Max	
							6.68E-02	Max	

¹95 percent UCL values were used to estimate exposure concentrations in sediment if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in sediment. No occurrences were noted.

95 UCL = 95 percent upper confident limit. Sediment data were assumed to be lognormally distributed.

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a sediment COPC

PCB = polychlorinated biphenyl

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-52
Exposure Point Concentrations (EPCs) for Surface Water in Central Creek, Saunder's Branch, and Goose Prairie Creek,
Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	Central Creek			Saunder's Branch			Goose Prairie Creek		
	Surface Water EPC mg/L	Basis	1/2 DL mg/L	Surface Water EPC mg/L	Basis	1/2 DL mg/L	Surface Water EPC mg/L	Basis	1/2 DL mg/L
Dioxin/Furan									
2,3,7,8-TCDD	1.31E-09	Max		ND			1.08E-09	95 UCL	
Explosive									
2,4,6-Trinitrotoluene	ND			ND			4.12E-02	Max	
2-Amino-4,6-dinitrotoluene	ND			ND			7.50E-03	Max	
RDX	ND			ND			1.21E-02	Max	
Metals									
Aluminum	ND			ND			1.97E+00	95 UCL	
Antimony	2.70E-02	Max		1.80E-02	Max		4.55E-02	95 UCL	
Arsenic	ND			ND			ND		
Barium	ND			ND			ND		
Beryllium	ND			ND			ND		
Cadmium	ND			ND			ND		
Chromium	ND			ND			ND		
Cobalt	ND			ND			ND		
Copper	ND			ND			ND		
Cyanide	ND			ND			3.27E-02	95 UCL	
Lead	ND			ND			4.56E-01	95 UCL	
Manganese	2.39E+00	Max		2.59E-01	Max		ND		
Mercury	ND			ND			ND		
Nickel	ND			ND			ND		
Selenium	ND			ND			ND		
Silver	ND			ND			1.38E-01	95 UCL	
Strontium	4.40E-01	Max		6.00E-02	Max		3.10E-03	Max	
Thallium	ND			ND			ND		
Vanadium	ND			ND			ND		
Zinc	ND			ND			ND		
Non-Metallic Anion									
Perchlorate	ND			ND			2.30E-02	Max	
PCBs									
Aroclor 1254	ND			ND			ND		
Semi-Volatile Organics									
2,4-Dinitrotoluene	ND			ND			3.90E-03	Max	
2,6-Dinitrotoluene	ND			ND			1.10E-02	Max	
bis(2-Ethylhexyl)phthalate	ND			ND			5.30E-01	Max	
Di-n-butyl phthalate	ND			ND			ND		
Naphthalene	ND			ND			ND		
Volatile Organics									
1,1-Dichloroethene	ND			ND			ND		
Acetone	ND			ND			5.34E+00	Max	
cis-1,2-Dichloroethene	ND			ND			ND		
Methylene chloride	1.70E-02	Max		ND			ND		
p-Cymene	ND			ND			ND		
Toluene	ND			ND			1.21E-02	Max	
Trichloroethene	ND			ND			5.00E-03	Max	
Vinyl chloride	ND			ND					

¹95 percent UCL values were used to estimate exposure concentrations in surface water if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in surface water. No occurrences were noted.

Table 3-52
Exposure Point Concentrations (EPCs) for Surface Water in Central Creek, Saunder's Branch, and Goose Prairie Creek,
Group 4 RA, LHAAP, Karnack, Texas^{1,2}

COPC	Central Creek			Saunder's Branch			Goose Prairie Creek		
	Surface Water EPC mg/L	Basis	1/2 DL mg/L	Surface Water EPC mg/L	Basis	1/2 DL mg/L	Surface Water EPC mg/L	Basis	1/2 DL mg/L

95 UCL = 95 percent upper confident limit. Surface water data were assumed to be lognormally distributed.

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a surface water COPC

PCB = polychlorinated biphenyl

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-53
Exposure Point Concentrations (EPCs) for Sediment and Surface Water in Caddo Lake,
Group 4 RA, LHAAP, Karnack, Texas^{1,2,3}

COPC	Sediment		
	Sediment EPC mg/kg	Basis	1/2 DL mg/L
Dioxin/Furan			
2,3,7,8-TCDD	7.99E-06	Max	
Metal			
Aluminum	1.96E+04	Max	
Arsenic	7.52E+00	Max	
Barium	2.64E+02	95 UCL	
Beryllium	1.74E+00	95 UCL	
Cadmium	7.24E-01	95 UCL	
Chromium	3.13E+01	95 UCL	
Cobalt	1.71E+01	Max	
Copper	2.05E+01	95 UCL	
Lead	3.71E+02	95 UCL	
Manganese	4.88E+02	Max	
Mercury	1.45E+00	95 UCL	
Nickel	2.31E+01	Max	
Selenium	2.14E+00	95 UCL	
Silver	1.07E+01	95 UCL	
Strontium	4.25E+01	Max	
Thallium	1.09E+00	95 UCL	
Vanadium	3.22E+01	95 UCL	
Zinc	1.06E+02	95 UCL	
Semi-Volatile Organic			
3-Methylphenol	8.32E-02	Max	
4-Methylphenol	8.32E-02	Max	
Acenaphthylene	9.43E-02	Max	
Anthracene	1.44E+00	Max	
Benzo(a)anthracene	2.98E+00	Max	
Benzo(a)pyrene	2.59E+00	Max	
Benzo(b)fluoranthene	3.02E+00	Max	
Benzo(g,h,i)perylene	2.72E+00	Max	
Benzo(k)fluoranthene	1.09E+00	Max	
Chrysene	2.87E+00	Max	
Dibenzo(a,h)anthracene	8.85E-01	Max	
Dibenzofuran	7.81E-02	Max	
Ethylbenzene	3.53E-03	Max	
Fluoranthene	5.93E+00	Max	
Fluorene	4.53E-01	Max	
Phenanthrene	4.67E+00	Max	
Phenol -	6.68E-02	Max	
Volatile Organic			
Acetone	1.24E+00	Max	
Carbon disulfide	1.77E-01	Max	
Trichlorofluoromethane	1.07E-02	Max	

Table 3-53
Exposure Point Concentrations (EPCs) for Sediment and Surface Water in Caddo Lake,
Group 4 RA, LHAAP, Karnack, Texas^{1,2,3}

COPC	Sediment		
	Sediment EPC mg/kg	Basis	1/2 DL mg/L

¹95 percent UCL values were used to estimate exposure concentrations in sediment if the concentration exceeded the average and was below the maximum detected. Otherwise, the maximum detected concentration was used to estimate the exposure point concentration.

²1/2 the maximum detection limit was reported for cases where it exceeded the selected exposure point concentration in sediment and surface water. No occurrences were noted.

³Surface water for Caddo Lake was evaluated as part of the Group 2 BHHRA.

95 UCL = 95 percent upper confident limit. Soil data were assumed to be lognormally distributed.

BGS = below ground surface

COPC = chemical of potential concern

DL = detection limit

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a soil COPC

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-54
Exposure Point Concentrations (EPCs) for Fish Tissue in Central Creek and Saunder's Branch,
Group 4 RA, LHAAP, Karnack, Texas¹

COPC	Central Creek			Saunder's Branch		
	Surface Water --> C_{fish} (mg/kg)	Sediment --> C_{fish} (mg/kg)	Selected Fish EPC ² (mg/kg)	Surface Water --> C_{fish} (mg/kg)	Sediment --> C_{fish} (mg/kg)	Selected Fish EPC ² (mg/kg)
Dioxin/Furan						
2,3,7,8-TCDD	1.84E-06	7.18E-08	1.84E-06	ND	7.50E-08	7.50E-08
Explosive						
2,4,6-Trinitrotoluene	ND	ND	ND	ND	ND	ND
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	ND	ND
RDX	ND	ND	ND	ND	ND	ND
Metals						
Aluminum	ND	4.68E+03	4.68E+03	ND	3.15E+03	3.15E+03
Antimony	1.08E+00	ND	1.08E+00	7.20E-01	ND	7.20E-01
Arsenic	ND	2.93E+00	2.93E+00	ND	9.18E+00	9.18E+00
Barium	ND	8.10E+01	8.10E+01	ND	1.33E+02	1.33E+02
Beryllium	ND	9.18E-01	9.18E-01	ND	1.07E+00	1.07E+00
Cadmium	ND	2.13E+01	2.13E+01	ND	ND	ND
Chromium	ND	9.36E+00	9.36E+00	ND	1.57E+01	1.57E+01
Cobalt	ND	1.35E+01	1.35E+01	ND	ND	ND
Copper	ND	3.09E+00	3.09E+00	ND	1.07E+00	1.07E+00
Cyanide	ND	ND	ND	ND	ND	ND
Lead	ND	8.57E+00	8.57E+00	ND	1.86E+01	1.86E+01
Manganese	9.55E+02	3.81E+02	9.55E+02	1.04E+02	1.31E+02	1.31E+02
Mercury	ND	ND	ND	ND	ND	ND
Nickel	ND	2.25E+01	2.25E+01	ND	1.24E+01	1.24E+01
Selenium	ND	1.71E+00	1.71E+00	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND
Strontium	2.64E+01	2.43E+01	2.64E+01	3.60E+00	ND	3.60E+00
Thallium	ND	ND	ND	ND	ND	ND
Vanadium	ND	2.43E+01	2.43E+01	ND	2.07E+01	2.07E+01
Zinc	ND	2.79E+01	2.79E+01	ND	8.55E+00	8.55E+00
Non-Metallic Anion						
Perchlorate	ND	ND	ND	ND	ND	ND
PCBs						
Aroclor 1254	ND	ND	ND	ND	ND	ND
Semi-Volatile Organics						
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND
Volatile Organics						
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND
Acetone	ND	ND	ND	ND	2.75E-03	2.75E-03
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND
Methylene chloride	9.01E-02	ND	9.01E-02	ND	ND	ND
p-Cymene	ND	ND	ND	ND	3.31E-01	3.31E-01
Toluene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND

¹Appendix B contains methodology and results for the estimation of fish tissue concentrations.

²The higher of the predicted fish tissue concentration from sediment and surface water was selected as the EPC.

C_{fish} = predicted fish tissue concentration

COPC = chemical of potential concern

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a surface water or sediment COPC

PCB = polychlorinated biphenyl

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-55
Exposure Point Concentrations (EPCs) for Fish Tissue in Goose Prairie Creek and Caddo Lake,
Group 4 RA, LHAAP, Karnack, Texas¹

COPC	Goose Prairie Creek			Caddo Lake ³	
	Surface Water --> C _{fish} (mg/kg)	Sediment --> C _{fish} (mg/kg)	Selected Fish EPC ² (mg/kg)	Sediment --> C _{fish} (mg/kg)	Selected Fish EPC ² (mg/kg)
Dioxin/Furan					
2,3,7,8-TCDD	1.51E-06	2.65E-06	2.65E-06	1.68E-06	1.68E-06
Explosive					
2,4,6-Trinitrotoluene	3.99E-01	ND	3.99E-01	ND	ND
2-Amino-4,6-dinitrotoluene	5.93E-01	ND	5.93E-01	ND	ND
RDX	1.17E-01	ND	1.17E-01	ND	ND
Metals					
Aluminum	5.24E+00	5.83E+03	5.83E+03	1.76E+04	1.76E+04
Antimony	1.82E+00	ND	1.82E+00	ND	ND
Arsenic	ND	3.76E+00	3.76E+00	6.77E+00	6.77E+00
Barium	ND	1.31E+02	1.31E+02	2.38E+02	2.38E+02
Beryllium	ND	1.08E+00	1.08E+00	1.57E+00	1.57E+00
Cadmium	ND	ND	ND	2.46E+00	2.46E+00
Chromium	ND	1.17E+01	1.17E+01	1.22E+01	1.22E+01
Cobalt	ND	1.23E+01	1.23E+01	1.54E+01	1.54E+01
Copper	ND	3.48E+00	3.48E+00	6.15E+00	6.15E+00
Cyanide	ND	8.53E-01	8.53E-01	ND	ND
Lead	2.59E-01	1.23E+01	1.23E+01	2.34E+02	2.34E+02
Manganese	1.82E+02	3.27E+02	3.27E+02	4.39E+02	4.39E+02
Mercury	ND	6.24E-02	6.24E-02	6.96E-01	6.96E-01
Nickel	ND	2.60E+01	2.60E+01	2.08E+01	2.08E+01
Selenium	ND	4.57E+00	4.57E+00	1.93E+00	1.93E+00
Silver	ND	2.16E+00	2.16E+00	9.63E+00	9.63E+00
Strontium	8.28E+00	7.38E+01	7.38E+01	3.83E+01	3.83E+01
Thallium	3.10E-01	ND	3.10E-01	9.81E-01	9.81E-01
Vanadium	ND	3.20E+01	3.20E+01	2.90E+01	2.90E+01
Zinc	ND	3.58E+01	3.58E+01	6.04E+01	6.04E+01
Non-Metallic Anion					
Perchlorate	1.35E-02	ND	1.35E-02	ND	ND
PCBs					
Aroclor 1254	ND	8.19E-03	8.19E-03	ND	ND
Semi-Volatile Organics					
2,4-Dinitrotoluene	2.31E-02	ND	2.31E-02	ND	ND
2,6-Dinitrotoluene	6.51E-02	ND	6.51E-02	ND	ND
3-Methylphenol	ND	ND	ND	3.70E-02	3.70E-02
4-Methylphenol	ND	ND	ND	2.31E-01	2.31E-01
Acenaphthylene	ND	ND	ND	1.50E-01	1.50E-01
Anthracene	ND	ND	ND	2.29E+00	2.29E+00
Benzo(a)anthracene	ND	ND	ND	4.32E+00	4.32E+00
Benzo(a)pyrene	ND	ND	ND	4.12E+00	4.12E+00
Benzo(b)fluoranthene	ND	ND	ND	4.80E+00	4.80E+00
Benzo(g,h,i)perylene	ND	ND	ND	4.32E+00	4.32E+00
Benzo(k)fluoranthene	ND	ND	ND	1.73E+00	1.73E+00
bis(2-Ethylhexyl)phthalate	1.91E+02	ND	1.91E+02	ND	ND
Chrysene	ND	ND	ND	3.96E+00	3.96E+00
Dibenzo(a,h)anthracene	ND	ND	ND	1.41E+00	1.41E+00
Dibenzofuran	ND	ND	ND	1.24E-01	1.24E-01
Di-n-butyl phthalate	ND	2.00E+03	2.00E+03	ND	ND
Ethylbenzene	ND	ND	ND	9.59E-02	9.59E-02
Fluoranthene	ND	ND	ND	9.43E+00	9.43E+00
Fluorene	ND	ND	ND	7.20E-01	7.20E-01

Table 3-55
Exposure Point Concentrations (EPCs) for Fish Tissue in Goose Prairie Creek and Caddo Lake,
Group 4 RA, LHAAP, Karnack, Texas¹

COPC	Goose Prairie Creek			Caddo Lake ³	
	Surface Water --> C _{fish} (mg/kg)	Sediment --> C _{fish} (mg/kg)	Selected Fish EPC ² (mg/kg)	Sediment --> C _{fish} (mg/kg)	Selected Fish EPC ² (mg/kg)
Naphthalene	ND	1.37E-02	1.37E-02	ND	ND
Phenanthrene	ND	ND	ND	7.43E+00	7.43E+00
Phenol	ND	ND	ND	7.49E-02	7.49E-02
Volatile Organics					
1,1-Dichloroethene	ND	4.68E-03	4.68E-03	ND	ND
Acetone	2.14E+00	2.33E-03	2.14E+00	6.20E-02	6.20E-02
Carbon disulfide	ND	ND	ND	7.43E-01	7.43E-01
cis-1,2-Dichloroethene	ND	5.21E-01	5.21E-01	ND	ND
Methylene chloride	ND	ND	ND	ND	ND
p-Cymene	ND	7.24E+00	7.24E+00	ND	ND
Toluene	ND	4.11E-02	4.11E-02	ND	ND
Trichloroethene	5.03E-01	2.03E-01	5.03E-01	ND	ND
Trichlorofluoromethane	ND	ND	ND	9.03E-02	9.03E-02
Vinyl Chloride	2.18E-02	4.14E-02	4.14E-02	ND	ND

¹Appendix B contains methodology and results for the estimation of fish tissue concentrations.

²The higher of the predicted fish tissue concentration from sediment and surface water was selected as the EPC.

³Only sediment data was available for Caddo Lake. Surface water for Caddo Lake was evaluated as part of the Group 2 BHHRA.

C_{fish} = predicted fish tissue concentration

COPC = chemical of potential concern

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

ND = not selected as a surface water or sediment COPC

PCB = polychlorinated biphenyl

RA = risk assessment

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-56
Model for Calculating Intakes from Incidental Soil Ingestion,
Group 4 RA, LHAAP, Karnack, Texas

$$\text{Intake from Soil Ingestion (mg/kg-day)} = \frac{\text{CS} \times \text{IR} \times \text{CF} \times \text{FI} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Where:

- CS = Chemical concentration in soil (mg/kg)
- IR = Soil ingestion rate (mg/day)
- CF = Conversion factor (10^{-6} kg/mg)
- FI = Fraction of soil ingested from contaminated source
- EF = Exposure frequency (days/year)
- ED = Exposure duration (years)
- BW = Body weight (kg)
- AT = Averaging time (days)

Scenario Exposure Assumptions		
Parameter	Current On-Site Trespasser (RME)	Future On-Site Maintenance Worker (RME)
CS	EPC in soil	EPC in soil
IR	100 mg/day (TCEQ, 1998)	100 mg/day (estimated)
FI	1.0 (estimated)	1.0 (estimated)
EF	50 days/year (TCEQ, 1998)	250 days/year (EPA, 1991b)
ED	12 years (TCEQ, 1998)	25 years (EPA, 1991b)
BW	70 kg (TCEQ, 1998)	70 kg (EPA, 1991b)
AT (noncancer risk)	12 years x 365 days/year (EPA, 1989)	25 years x 365 days/year (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

RME = reasonable maximum exposure

TCEQ = Texas Commission on Environmental Quality

Table 3-57
Model for Calculating Doses from Dermal Contact with Soil,
Group 4 RA, LHAAP, Karnack, Texas

Dermal Absorption Dose From Soil (mg/kg-day) = $\frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$		
Where:		
CS = Chemical concentration in soil (mg/kg) CF = Conversion factor (10^{-6} kg/mg) SA = Skin surface area available for contact with soil (cm ² /day) AF = Soil-to-skin adherence factor (mg/cm ²) ABS = Dermal absorption factor (unitless) EF = Exposure frequency (days/year) ED = Exposure duration (years) BW = Body weight (kg) AT = Averaging time (days)		
Scenario Exposure Assumptions		
Parameter	Current On-Site Trespasser (RME)	Future On-Site Maintenance Worker (RME)
CS	EPC in soil	EPC in soil
SA	3,500 cm ² (TCEQ, 1998)	3,200 cm ² (estimated, EPA, 1997a)
AF	0.1 mg/cm ² (TCEQ, 1998)	0.2 mg/cm ² (TCEQ, 1998)
ABS	Chemical-specific (TCEQ, 1998) Defaults: 0.0-VOCs 0.1 - SVOCs 0.01-metals	Chemical-specific (TCEQ, 1998) Defaults: 0.0-VOCs 0.1 - SVOCs 0.01-metals
EF	50 days/year (TCEQ, 1998)	250 days/year (EPA, 1991b)
ED	12 years (TCEQ, 1998)	25 years (EPA, 1991b)
BW	70 kg (TCEQ, 1998)	70 kg (EPA, 1991b)
AT (noncancer risk)	12 years x 365 days/year (EPA, 1989)	25 years x 365 days/year (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

EPA = U.S. Environmental Protection Agency
 EPC = exposure point concentration
 LHAAP = Longhorn Army Ammunition Plant
 RA = risk assessment
 RME = reasonable maximum exposure
 TCEQ = Texas Commission on Environmental Quality

Table 3-58
Model for Calculating Intakes from the Inhalation of Particulates,
Group 4 RA, LHAAP, Karnack, Texas

<p align="center">Intake from the Inhalation of Particulates (mg/m³) = $\frac{CS \times (1/PEF) \times EF \times ED}{AT}$</p>		
Where:		
CS	=	Chemical concentration in soil (mg/kg)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
PEF	=	Particulate emission factor (m ³ /kg)
AT	=	Averaging time (days)
Scenario Exposure Assumptions		
Parameter	Current On-Site Trespasser (RME)	Future On-Site Maintenance Worker (RME)
CS	EPC in soil	EPC in soil
EF	50 days/year (TCEQ, 1998)	250 days/year (EPA, 1991b)
ED	12 years (TCEQ, 1998)	25 years (EPA, 1991b)
PEF	4.63 x 10 ⁹ m ³ /kg (TCEQ, 1998)	4.63 x 10 ⁹ m ³ /kg (TCEQ, 1998)
AT (noncancer risk)	12 years x 365 days/year (EPA, 1989)	25 years x 365 days/year (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

EPA = U.S. Environmental Protection Agency
 EPC = exposure point concentration
 LHAAP = Longhorn Army Ammunition Plant
 RA = risk assessment
 RME = reasonable maximum exposure
 TCEQ = Texas Commission on Environmental Quality

Table 3-59
Model for Calculating Intakes from the Inhalation of Volatile Emissions from Soil,
Group 4 RA, LHAAP, Karnack, Texas

$\text{Intake from the Inhalation of Volatile Emissions (mg/m}^3\text{)} = \frac{\text{CS} \times (1/\text{VF}) \times \text{EF} \times \text{ED}}{\text{AT}}$		
Where:		
CS	=	Chemical concentration in soil (mg/kg)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
VF	=	Volatization factor (m ³ /kg)
AT	=	Averaging time (days)
Scenario Exposure Assumptions		
Parameter	Current On-Site Trespasser (RME)	Future On-Site Maintenance Worker (RME)
CS	EPC in soil	EPC in soil
EF	50 days/year (TCEQ, 1998)	250 days/year (EPA, 1991b)
ED	12 years (TCEQ, 1998)	25 years (EPA, 1991b)
VF	Chemical-specific (estimated: EPA, 1996a)	Chemical-specific (estimated: EPA, 1996a)
AT (noncancer risk)	12 years x 365 days/year (EPA, 1989)	25 years x 365 days/year (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

EPA = U.S. Environmental Protection Agency
EPC = exposure point concentration
LHAAP = Longhorn Army Ammunition Plant
RA = risk assessment
RME = reasonable maximum exposure
TCEQ = Texas Commission on Environmental Quality

Table 3-60
Model for Calculating Intakes from Drinking Water Ingestion,
Group 4 RA, LHAAP, Karnack, Texas

Intake from Drinking Water Ingestion (mg/kg-day) = $\frac{CW \times IR \times EF \times ED}{BW \times AT}$		
Where:		
CW	=	Chemical concentration in groundwater or surface water (mg/L)
IR	=	Ingestion rate (L/day)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
BW	=	Body weight (kg)
AT	=	Averaging time (days)
Exposure Assumptions		
Parameter	Future On-Site Maintenance Worker (RME)	Future Off-Site Resident* (RME)
CW	EPC in Groundwater	EPC in Surface Water
IR	1 L/day (EPA, 1991b)	1 L/day-child (EPA, 1995) 2 L/day-adult (EPA, 1991b)
EF	250 days/year (EPA, 1991b)	350 days/year (EPA, 1991b)
ED	25 years (EPA, 1991b)	6 years-child 24 years-adult (EPA, 1991b)
BW	70 kg (EPA, 1991b)	15 kg-child 70 kg-adult (EPA, 1991b)
AT (noncancer risk)	25 years x 365 days/year (EPA, 1989)	6 years x 365 days/year-child 24 years x 365 days/year-adult (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

* Exposure to Caddo Lake surface water was evaluated as part of the Group 2 BHHRA.

BHHRA = baseline human health risk assessment

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

RME = reasonable maximum exposure

TCEQ = Texas Commission on Environmental Quality

Table 3-61
Model for Calculating Intakes from Inhalation
of Volatiles Through Noningestion Water Use,
Group 4 RA, LHAAP, Karnack, Texas

Intake from Inhalation of Volatiles through Noningestion Water Use (mg/m ³) = $\frac{CW \times AF \times K \times EF \times ED}{AT}$		
Where:		
CW	=	Chemical concentration in groundwater or surface water (mg/L)
AF ¹	=	Adjustment Factor
K	=	Volatilization factor (L/m ³)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
AT	=	Averaging time (days)
Scenario Exposure Assumptions		
Parameter	Future On-Site Maintenance Worker (RME)	Future Off-Site Resident ² (RME)
CW	EPC in Groundwater	EPC in Surface Water
AF ¹	0.5 (estimated)	1 (no adjustment)
K	0.5 (EPA, 1991a)	0.5 (EPA, 1991a)
EF	250 days/year (EPA, 1991b)	350 days/year (EPA, 1991b)
ED	25 years (EPA, 1991b)	6 years-child 24 years-adult (EPA, 1991b)
AT (noncancer risk)	25 years x 365 days/year (EPA, 1989)	6 years x 365 days/year-child 24 years x 365 days/year-adult (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

¹To adjust for the lesser exposure by a maintenance worker, an adjustment factor 50 percent was applied which accounts for a lower indoor inhalation rate for the worker.

²Exposure to Caddo Lake surface water was evaluated as part of the Group 2 BHHRA.

BHHRA = baseline human health risk assessment
 EPA = U.S. Environmental Protection Agency
 EPC = exposure point concentration
 LHAAP = Longhorn Army Ammunition Plant
 RA = risk assessment
 RME = reasonable maximum exposure
 TCEQ = Texas Commission on Environmental Quality

Table 3-62
Model for Calculating Doses from Dermal Contact with Water,
Group 4 RA, LHAAP, Karnack, Texas

Dermal Absorption Dose from Water (mg/kg-day) = $\frac{CW \times CF \times SA \times Kp \times ET \times EF \times ED}{BW \times AT}$		
Where:		
CW	=	Chemical concentration in groundwater or surface water (mg/L)
CF	=	Conversion factor (10^{-3} L/cm ³)
SA	=	Skin surface area available for contact (cm ²)
Kp	=	Dermal permeability coefficient (cm/hr)
ET	=	Exposure time (hrs/day)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
BW	=	Body weight (kg)
AT	=	Averaging time (days)
Scenario Exposure Assumptions		
Parameter	Current On-Site Trespasser ¹ (RME)	Future Off-Site Resident ² (RME)
CW	EPC in surface water	EPC in surface water
SA	4,100 cm ² (estimated; EPA, 1997a)	8,600 cm ² -child (estimated; EPA, 1997a) 23,000 cm ² -adult (EPA, 1997a)
Kp	Chemical-specific (EPA, 2000a)	Chemical-specific (EPA, 2000a)
ET	2.6 hours/day-wading (EPA, 1995)	0.20 hour/day-showering (EPA, 1989) 1 hour/day-swimming (EPA, 1992a)
EF	50 days/year (TCEQ, 1998)	350 days/year-showering (EPA, 1991b) 150 days/year-swimming (EPA, 1992a)
ED	12 years (TCEQ, 1998)	6 years-child 24 years-adult (EPA, 1991b)
BW	70 kg (EPA, 1991b)	15 kg-child 70 kg-adult (EPA, 1991b)
AT (noncancer risk)	12 years x 365 days/year (EPA, 1989)	6 years x 365 days/year-child 24 years x 365 days/year-adult (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

Table 3-62 (continued)

$\text{Dermal Absorption Dose from Water (mg/kg-day)} = \frac{\text{CW} \times \text{CF} \times \text{SA} \times \text{Kp} \times \text{ET} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$	
Where:	
CW	= Chemical concentration in groundwater or surface water (mg/L)
CF	= Conversion factor (10^{-3} L/cm^3)
SA	= Skin surface area available for contact (cm^2)
Kp	= Dermal permeability coefficient (cm/hr)
ET	= Exposure time (hrs/day)
EF	= Exposure frequency (days/year)
ED	= Exposure duration (years)
BW	= Body weight (kg)
AT	= Averaging time (days)
Scenario Exposure Assumptions	
Parameter	Future On-Site Maintenance Worker ³ (RME)
CW	EPC In Groundwater
SA	23,000 cm^2 -adult (EPA, 1997a)
Kp	Chemical-specific (EPA, 2000a)
ET	0.20 hour/day-showering (EPA, 1989)
EF	250 days/year-showering (EPA, 1991b)
ED	25 years (EPA, 1991b)
BW	70 kg (EPA, 1991b)
AT (noncancer risk)	25 years x 365 days/year (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)

¹Dermal contact with water for the trespasser is based on potential exposure to surface water (i.e., wading) associated with Central Creek, Saunders Branch, and Goose Prairie Creek.

²Exposure to Caddo Lake surface water was evaluated as part of the Group 2 BHHRA.

³Dermal contact with water for the on-site maintenance worker is based on potential exposure to groundwater (i.e., showering and hand-washing) from non-ingestion groundwater use.

BHHRA = baseline human health risk assessment
 EPA = U.S. Environmental Protection Agency
 EPC = exposure point concentration
 LHAAP = Longhorn Army Ammunition Plant
 RA = risk assessment
 RME = reasonable maximum exposure
 TCEQ = Texas Commission on Environmental Quality

Table 3-63
Model for Calculating Intakes from
Incidental Surface Water Ingestion While Swimming,
Group 4 RA, LHAAP, Karnack, Texas

Intake from Incidental Surface Water Ingestion (mg/kg-day) $= \frac{CW \times IR \times ET \times EF \times ED}{BW \times AT}$	
Where:	
CW	= Chemical concentration in surface water (mg/L)
IR	= Ingestion rate (L/hour)
ET	= Exposure time (hours/day)
EF	= Exposure frequency (days/year)
ED	= Exposure duration (years)
BW	= Body weight (kg)
AT	= Averaging time (days)
Exposure Assumptions	
Parameter	Future Off-Site Resident* (RME)
CW	EPC In Surface Water
IR	0.05 L/hour (EPA, 1989)
ET	1 hour/day (EPA, 1992a)
EF	150 days/year (EPA, 1992a)
ED	6 years-child 24 years-adult (EPA, 1991b)
BW	15 kg-child 70 kg-adult (EPA, 1991b)
AT (noncancer risk)	6 years x 365 days/year-child 24 years x 365 days/year-adult (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)

* Exposure to Caddo Lake surface water was evaluated as part of the Group 2 BHHRA.

BHHRA = baseline human health risk assessment

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

RME = reasonable maximum exposure

Table 3-64
Model for Calculating Intakes from Incidental Sediment Ingestion,
Group 4 RA, LHAAP, Karnack, Texas

$\text{Intake from Sediment Ingestion (mg/kg-day)} = \frac{\text{CSD} \times \text{IR} \times \text{CF} \times \text{FI} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$		
Where:		
CSD	=	Chemical concentration in sediment (mg/kg)
IR	=	Sediment ingestion rate (mg/day)
CF	=	Conversion factor (10^{-6} kg/mg)
FI	=	Fraction of sediment ingested from contaminated source
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
BW	=	Body weight (kg)
AT	=	Averaging time (days)
Scenario Exposure Assumptions		
Parameter	Current On-Site Trespasser ¹ (RME)	Future Off-Site Resident ² (RME)
CSD	EPC In Sediment	EPC In Sediment
IR	100 mg/day (EPA, 1995)	200 mg/day - child (EPA, 1995) 100 mg/day - adult (EPA, 1995)
FI	1.0 (estimated)	1.0 (estimated)
EF	50 days/year (TCEQ, 1998)	150 days/year (EPA, 1992a)
ED	12 years (TCEQ, 1998)	6 years-child 24 years-adult (EPA, 1991b)
BW	70 kg (EPA, 1991b)	15 kg-child 70 kg-adult (EPA, 1991b)
AT (noncancer risk)	12 years x 365 days/year (EPA, 1989)	6 years x 365 days/year-child 24 years x 365 days/year-adult (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

¹Ingestion of sediment for the trespasser is based on potential exposure to sediments (i.e., during wading activities) associated with Central Creek, Saunder's Branch, and Goose Prairie Creek.

²Ingestion of sediment for the off-site resident is based on potential exposure to sediments (i.e., during swimming activities) in Caddo Lake.

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

RME = reasonable maximum exposure

TCEQ = Texas Commission on Environmental Quality

Table 3-65
Model for Calculating Doses from Dermal Contact with Sediment,
Group 4 RA, LHAAP, Karnack, Texas

Dermal Absorption Doses from Sediment (mg/kg-day) = $\frac{\text{CSD} \times \text{CF} \times \text{SA} \times \text{AF} \times \text{ABS} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$		
Where:		
CSD	=	Chemical concentration in sediment (mg/kg)
CF	=	Conversion factor (10^{-6} kg/mg)
SA	=	Skin surface area available for contact with sediment (cm^2/day)
AF	=	Sediment-to-skin adherence factor (mg/cm^2)
ABS	=	Dermal absorption factor (unitless)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
BW	=	Body weight (kg)
AT	=	Averaging time (days)
Scenario Exposure Assumptions		
Parameter	Current On-Site Trespasser (RME)	Future Off-Site Resident (RME)
CSD	EPC In Sediment	EPC In Sediment
SA	4,100 cm^2 (estimated; EPA, 1997a)	1,800 cm^2 -child (EPA, 1995) 5,800 cm^2 -adult (estimated; EPA 1997a)
AF	0.1 mg/cm^2 (based on soil) (TCEQ, 1998)	0.2 mg/cm^2 (based on soil) (TCEQ, 1998)
ABS	Chemical-specific (TCEQ, 1998) Defaults: 0.0-VOCs 0.1-SVOCs 0.01-metals	Chemical-specific (TCEQ, 1998) Defaults: 0.0-VOCs 0.1-SVOCs 0.01-metals
EF	50 days/year (TCEQ, 1998)	150 days/year (EPA, 1992a)
ED	12 years (TCEQ, 1998)	6 years-child 24 years-adult (EPA, 1991b)
BW	70 kg (TCEQ, 1998)	15 kg-child 70 kg-adult (EPA, 1991b)
AT (noncancer risk)	12 years x 365 days/year (EPA, 1989)	6 years x 365 days/year-child 24 years x 365 days/year-adult (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

EPA = U.S. Environmental Protection Agency
 EPC = exposure point concentration
 LHAAP = Longhorn Army Ammunition Plant
 RA = risk assessment
 RME = reasonable maximum exposure
 TCEQ = Texas Commission on Environmental Quality

Table 3-66
Model for Calculating Intakes from the Ingestion of Recreationally-Caught Fish,
Group 4 RA, LHAAP, Karnack, Texas

$\text{Intake from Fish Ingestion (mg/kg-day)} = \frac{\text{CF} \times \text{IR} \times \text{CF} \times \text{FI} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$		
Where:		
CF*	=	Chemical concentration in fish tissue (mg/kg)
IR	=	Fish ingestion rate (g/day)
CF	=	Conversion factor (10^{-3} kg/g)
FI	=	Fraction of fish ingested from contaminated source
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
BW	=	Body weight (kg)
AT	=	Averaging time (days)
Scenario Exposure Assumptions		
Parameter	Current On-Site Trespasser (RME)	Future Off-Site Resident (RME)
CF	EPC In Fish Tissue	EPC In Fish Tissue
IR	54 g/day (EPA, 1991b)	27 g/day-child (estimated) 54 g/day-adult (EPA, 1991b)
FI	0.25 (estimated)	0.50 (estimated)
EF	365 days/year	365 days/year
ED	12 years (TCEQ, 1998)	6 years-child 24 years-adult (EPA, 1991b)
BW	70 kg (EPA, 1995)	15 kg-child 70 kg-adult (EPA, 1991b)
AT (noncancer risk)	12 years x 365 days/year (EPA, 1989)	6 years x 365 days/year-child 24 years x 365 days/year-adult (EPA, 1989)
AT (cancer risk)	70 years x 365 days/year (EPA, 1989)	70 years x 365 days/year (EPA, 1989)

*Chemical concentration in fish tissue were determined based on surface water and/or sediment concentrations in Central Creek, Saunder's Branch, Goose Prairie Creek, and Caddo Lake (see Appendix B).

EPA = U.S. Environmental Protection Agency
 EPC = exposure point concentration
 LHAAP = Longhorn Army Ammunition Plant
 RA = risk assessment
 RME = reasonable maximum exposure
 TCEQ = Texas Commission on Environmental Quality

Table 3-67
Listing of Chemical Specific Values Used in the BHHRA, Group 4 RA, LHAAP, Karnack, Texas

COPC	MW (g/mol)	Henry's Law (atm-m ³ /mol)	Henry's Law (Dimensionless)	Chemical Evaluated As Volatile?	Log Kow*	Kp (cm ² /hour)	Evaluated Through Dermal Absorption Through Showering?	ABS Dermal
<i>Dioxin/Furan</i>								
2,3,7,8-TCDD	3.22E+02 a	3.55E-05 a	1.47E-03 c	No d		9.00E-01 e	Yes g	3.00E-02 h
<i>Explosive</i>								
2,4,6-Trinitrotoluene	2.27E+02 a	4.57E-07 a	1.90E-05 c	No d	1.99E+00 a	1.83E-03 e (calc)	No g	1.00E-01 h
2-Amino-4,6-dinitrotoluene	1.97E+02 a	2.86E-09 a	1.19E-07 c	No d	2.80E+00 a	9.37E-03 e (calc)	No g	1.00E-01 h
4-Amino-2,6-dinitrotoluene	1.97E+02 a	4.19E-09 a	1.74E-07 c	No d	2.62E+00 a	7.10E-03 e (calc)	No g	1.00E-01 h
m-Dinitrobenzene	1.68E+02 a	1.10E-07 a	4.57E-06 c	No d	1.63E+00 a	2.24E-03 e (calc)	No g	1.00E-01 h
RDX	2.22E+02 a	1.20E-05 a	4.99E-04 c	No d	8.70E-01 a	3.46E-04 e (calc)	No g	1.00E-01 h
<i>Metals</i>								
Aluminum	2.70E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Antimony	1.22E+02 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Arsenic	7.49E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Barium	1.37E+02 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Beryllium	9.01E+00 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Cadmium	1.12E+02 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Chromium	5.20E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Cobalt	5.89E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Copper	6.35E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Cyanide	2.60E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Lead	2.07E+02 a	0.00E+00 a	0.00E+00 c	No d		7.50E-03 i	No g	1.00E-02 h
Manganese	5.49E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-04 e	No g	1.00E-02 h
Mercury	2.01E+02 a	1.14E-02 a	4.74E-01 c	No d		1.00E-03 e	No g	1.00E-02 h
Nickel	5.87E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Selenium	7.90E+01 a	0.00E+00 a	0.00E+00 c	No d		2.00E-04 e	No g	1.00E-02 h
Silver	1.08E+02 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Strontium	NA	NA	NA	No d		6.00E-04 e	No g	1.00E-02 h
Thallium	2.40E+02 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Tin	1.19E+02 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Vanadium	5.09E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-03 e	No g	1.00E-02 h
Zinc	6.54E+01 a	0.00E+00 a	0.00E+00 c	No d		6.00E-04 e	No g	1.00E-02 h
<i>Non-Metallic Anion</i>								
Perchlorate	9.95E+01 a	0.00E+00 a	0.00E+00 c	No d		1.00E-10 f	No g	1.00E-02 h

Table 3-67
Listing of Chemical Specific Values Used in the BHHRA, Group 4 RA, LHAAP, Karnack, Texas

COPC	MW (g/mol)	Henry's Law (atm-m ³ /mol)	Henry's Law (Dimensionless)	Chemical Evaluated As Volatile?	Log Kow*	Kp (cm/hour)	Evaluated Through Dermal Absorption Through Showering?	ABS Dermal
<i>Polychlorinated biphenyl</i>								
Aroclor 1254	2.90E+02 a	4.20E-04 a	1.75E-02 c	No d		4.80E-01 e	Yes g	6.00E-02 h
<i>Pesticides</i>								
Aldrin	3.65E+02 a	1.70E-04 a	7.07E-03 c	No d		1.50E-03 e	No g	1.00E-01 h
alpha-BHC	2.91E+02 a	6.79E-06 a	2.82E-04 c	No d	4.26E+00 a	2.66E-02 e (calc)	Yes g	1.00E-01 h
beta-BHC	2.91E+02 a	3.46E-07 a	1.44E-05 c	No d	4.26E+00 a	2.66E-02 e (calc)	Yes g	1.00E-01 h
delta-BHC	2.91E+02 a	4.26E-06 a	1.77E-04 c	No d	4.00E+00 a	1.78E-02 e (calc)	Yes g	1.00E-01 h
<i>Semi-Volatile Organics</i>								
2,4-Dinitrotoluene	1.82E+02 a	8.67E-07 a	3.60E-05 c	No d		3.20E-03 e	No g	1.00E-01 h
2,6-Dinitrotoluene	1.82E+02 a	7.47E-07 a	3.11E-05 c	No d		2.20E-03 e	No g	1.00E-01 h
3-Methylphenol	1.08E+02 a	8.70E-07 a	3.62E-05 c	No d		8.10E-03 e	No g	1.00E-01 h
4-Methylphenol	1.08E+02 a	9.60E-07 a	3.99E-05 c	No d		7.80E-03 e	No g	1.00E-01 h
4-Chloroaniline	1.28E+02 a	1.17E-06 a	4.86E-05 c	No d	1.72E+00 a	4.35E-03 e (calc)	No g	1.00E-01 h
Acenaphthylene	1.52E+02 a	1.14E-04 a	4.74E-03 c	Yes d	3.94E+00 a	9.66E-02 e (calc)	Yes g	1.30E-01 h
Anthracene	1.78E+02 a	1.11E-04 a	4.61E-03 c	Yes d	4.35E+00 a	1.30E-01 e (calc)	Yes g	1.30E-01 h
Benzo(a)anthracene	2.28E+02 a	3.35E-06 a	1.39E-04 c	No d		5.20E-01 e	Yes g	1.30E-01 h
Benzo(a)pyrene	2.52E+02 a	1.13E-06 a	4.70E-05 c	No d		7.70E-01 e	Yes g	1.30E-01 h
Benzo(b)fluoranthene	2.52E+02 a	1.20E-05 a	4.99E-04 c	No d		7.80E-01 e	Yes g	1.30E-01 h
Benzo(g,h,i)perylene	2.76E+02 a	1.40E-07 a	5.82E-06 c	No d	6.70E+00 a	1.38E+00 e (calc)	Yes g	1.30E-01 h
Benzo(k)fluoranthene	2.52E+02 a	1.07E-08 a	4.45E-07 c	No d	6.11E+00 a	7.59E-01 e (calc)	Yes g	1.30E-01 h
bis(2-Ethylhexyl)phthalate	3.91E+02 a	1.10E-05 a	4.57E-04 c	No d		2.70E-02 e	Yes g	1.00E-01 h
Chrysene	2.28E+02 a	1.21E-06 a	5.03E-05 c	No d		5.20E-01 e	Yes g	1.30E-01 h
Dibenzo(a,h)anthracene	2.78E+02 a	1.12E-08 a	4.66E-07 c	No d		1.70E+00 e	Yes g	1.30E-01 h
Dibenzofuran	1.68E+02 a	1.27E-04 a	5.28E-03 c	Yes d	4.00E+00 a	8.63E-02 e (calc)	Yes g	1.00E-01 h
Di-n-butyl phthalate	2.78E+02 a	1.43E-06 a	5.94E-05 c	No d		2.60E-02 e	Yes g	1.00E-01 h
Fluoranthene	2.02E+02 a	9.33E-06 a	3.88E-04 c	No d		2.40E-01 e	Yes g	1.30E-01 h
Fluorene	1.66E+02 a	6.36E-05 a	2.64E-03 c	Yes d	4.02E+00 a	9.11E-02 e (calc)	Yes g	1.30E-01 h
Indeno(1,2,3-cd)pyrene	2.76E+02 a	6.86E-08 a	2.85E-06 c	No d		1.20E+00 e	Yes g	1.30E-01 h
Naphthalene	1.28E+02 a	4.82E-04 a	2.00E-02 c	Yes d		4.90E-02 e	Yes g	1.30E-01 h
Pentachlorophenol	2.66E+02 a	2.80E-07 a	1.16E-05 c	No d		4.30E-01 e	Yes g	2.50E-01 h
Phenanthrene	1.78E+02 a	1.30E-04 a	5.40E-03 c	Yes d		1.50E-01 e	Yes g	1.30E-01 h
Phenol	9.41E+01 a	5.95E-07 a	2.47E-05 c	No d		4.50E-03 e	No g	1.00E-01 h

Table 3-67
Listing of Chemical Specific Values Used in the BHHRA, Group 4 RA, LHAAP, Karnack, Texas

COPC	MW (g/mol)	Henry's Law (atm-m ³ /mol)	Henry's Law (Dimensionless)	Chemical Evaluated As Volatile?	Log Kow ^a	Kp (cm/hour)	Evaluated Through Dermal Absorption Through Showering?	ABS Dermal
<i>Volatiles Organics</i>								
1,1,1-Trichloroethane	1.33E+02 a	1.72E-02 a	7.15E-01 c	Yes d		3.10E-01 e	Yes g	0.00E+00 h
1,1,2-Trichloroethane	1.33E+02 a	9.13E-04 a	3.80E-02 c	Yes d		1.60E-01 e	Yes g	0.00E+00 h
1,2,3-Trichlorobenzene	1.81E+02 a	9.14E-04 a	3.80E-02 c	Yes d	4.02E+00 a	7.54E-02 e (calc)	Yes g	0.00E+00 h
1,2,4-trimethylbenzene	1.20E+02 a	4.43E-03 a	1.84E-01 c	Yes d	3.65E+00 a	9.39E-02 e (calc)	Yes g	0.00E+00 h
1,1-Dichloroethene	9.69E+01 a	2.54E-02 a	1.06E+00 c	Yes d		2.90E-01 e	Yes g	0.00E+00 h
1,2-Dichloroethane	9.90E+01 a	1.28E-03 a	5.32E-02 c	Yes d		1.00E-01 e	Yes g	0.00E+00 h
1,2-Dichloropropane	1.13E+02 a	2.81E-03 a	1.17E-01 c	Yes d		1.90E-01 e	Yes g	0.00E+00 h
Acetone	5.81E+01 a	3.88E-05 a	1.61E-03 c	Yes d	-2.35E-01 a	5.22E-04 e (calc)	Yes g	0.00E+00 h
Benzene	7.81E+01 a	5.47E-03 a	2.27E-01 c	Yes d		1.50E-02 e	No g	0.00E+00 h
Carbon disulfide	7.61E+01 a	1.48E-02 a	6.13E-01 c	Yes d		1.80E-02 e	Yes g	0.00E+00 h
Chloroform	1.19E+02 a	3.67E-03 a	1.53E-01 c	Yes d		1.70E-01 e	Yes g	0.00E+00 h
cis-1,2-Dichloroethene	9.69E+01 a	4.51E-03 a	1.87E-01 c	Yes d	1.86E+00 a	8.00E-03 e (calc)	No g	0.00E+00 h
trans-1,2-Dichloroethene	9.69E+01 a	9.38E-03 a	3.90E-01 c	Yes d		1.11E-02 e (calc)	Yes g	0.00E+00 h
Ethylbenzene	1.06E+02 a	7.88E-03 a	3.28E-01 c	Yes d		5.20E-02 e	Yes g	0.00E+00 h
Methylene chloride	8.49E+01 a	2.19E-03 a	9.10E-02 c	Yes d		3.60E-03 e	No g	0.00E+00 h
p-Cymene	1.34E+02 a	1.12E-02 a	4.66E-01 c	Yes d	4.14E+00 a	1.67E-01 e (calc)	Yes g	0.00E+00 h
Tetrachloroethene	1.66E+02 a	1.84E-02 a	7.65E-01 c	Yes d		8.70E-01 e	Yes g	0.00E+00 h
Toluene	9.21E+01 a	6.64E-03 a	2.76E-01 c	Yes d		3.30E-02 e	Yes g	0.00E+00 h
Trichloroethene	1.31E+02 a	1.03E-02 a	4.28E-01 c	Yes d		2.90E-01 e	Yes g	0.00E+00 h
Trichlorofluoromethane	1.37E+02 a	9.70E-02 a	4.03E+00 c	Yes d		3.20E-01 e	Yes g	0.00E+00 h
Vinyl chloride	6.25E+01 a	8.40E-02 a	3.49E+00 c	Yes d		5.80E-03 e	No g	0.00E+00 h

^a Log Kow values were presented for those chemicals in which Kp values were calculated. Log Kow is a variable in the Kp calculation.

a = TCEQ, 2001 = Chemical/Physical Constants Table, March 15, 2001.

b = Hazardous Substance Data Bank (HSDB), 2001.

c = Dimensionless Henry's Law Constant = Henry's Law (atm-m³/mol) x 41.57 at 20 degrees C.

d = Chemicals having a Henry's law constant (atm-m³/mol) > 1E-05 and a molecular weight < 200 g/mole were evaluated as volatile.

e = EPA, 2000. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. December 2000.

e (calc) = log Kp = -2.80 + 0.67 log Kow - 0.0056 MW (Equation 3.8 from EPA, 2000).

Table 3-67
Listing of Chemical Specific Values Used in the BHHRA, Group 4 RA, LHAAP, Karnack, Texas

COPC	MW (g/mol)	Henry's Law (atm-m ³ /mol)	Henry's Law (Dimensionless)	Chemical Evaluated As Volatile?	Log Kow ^a	Kp (cm/hour)	Evaluated Through Dermal Absorption Through Showering?	ABS Dermal
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f = Health Consultation, 1997. Health Consultation, Perchlorate Contamination in the Citizens Utilities Suburban and Security Park Water Service Areas. Aerojet-General Corporation, Rancho Cordova, Sacramento County, CA. February 1997.

g = According to EPA 6 guidance (EPA, 1995), only COPCs with a Kp > or = to 0.01 were evaluated through dermal contact with water through noningestion use (e.g., showering, bathing, washing).

h = TCEQ, 1998. Consistency Memorandum. Attachment C. Memorandum To: Remediation Division Staff. From: Ronald R. Pedde, P. E., Division Director Remediation Division Office of Waste Management. July 23, 1998.

i = Oak Ridge National Laboratory Online Risk Assessment Information System (RAIS). http://risk.bnl.gov/rap_jhp.shtml

ABS Dermal = dermal absorption factor

BHHRA = baseline human health risk assessment

COPC = chemical of potential concern

Kow = octanol/water partition coefficient

Kp = permeability coefficient

LHAAP = Longhorn Army Ammunition Plant

MW = molecular weight

NA = not available

RA = risk assessment

Table 3-68
Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Oral CSF (mg/kg-day) ¹	Reference	ABSgi (unitless) ²	Reference	Dermal CSF (mg/kg-day) ¹	Weight of Evidence/ Cancer Guideline Description	Reference
<i>Dioxin/Furans</i>							
2,3,7,8-TCDD	1.50E+05	EPA-HEAST, 1997	0.5	TCEQ, 1998	3.00E+05	Not Classified	---
<i>Explosive</i>							
2,4,6-Trinitrotoluene	3.00E-02	EPA-IRIS, 2001	0.6	TCEQ, 1998	5.00E-02	C	EPA-IRIS, 2001
2-Amino-4,6-dinitrotoluene	1.00E-02	TCEQ, 2001	0.5	TCEQ, 1998	2.00E-02	Not Classified	---
4-Amino-2,6-dinitrotoluene	1.00E-02	TCEQ, 2001	0.5	TCEQ, 1998	2.00E-02	Not Classified	---
m-Dinitrobenzene	NC	---	0.65	TCEQ, 1998	NC	D	EPA-IRIS, 2001
RDX	1.10E-01	EPA-IRIS, 2001	1	TCEQ, 1998	1.10E-01	C	EPA-IRIS, 2001
<i>Metals</i>							
Aluminum	NTV	---	0.1	TCEQ, 1998	NTV	Not Classified	---
Antimony	NTV	---	0.15	TCEQ, 1998	NTV	Not Classified	---
Arsenic	1.50E+00	EPA-IRIS, 2001	0.95	TCEQ, 1998	1.58E+00	A	TCEQ, 2001
Barium	NC	---	0.07	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Beryllium	NTV	---	0.007	TCEQ, 1998	NTV	B1	EPA-IRIS, 2001
Cadmium (Food)	NTV	---	0.025	TCEQ, 1998	NTV	B1	EPA-IRIS, 2001
Cadmium (Water)	NTV	---	0.025	TCEQ, 1998	NTV	B1	EPA-IRIS, 2001
Chromium (Total)	NC	---	0.013	TCEQ, 1998	NC	Not Classified	---
Cobalt	NTV	---	0.8	TCEQ, 1998	NTV	Not Classified	---
Copper	NC	---	0.57	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Cyanide	NC	---	0.5	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Lead	NTV	---	0.15	TCEQ, 1998	NTV	Not Classified	---
Manganese (Non-diet)	NC	---	0.06	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Manganese (Food)	NC	---	0.06	TCEQ, 1998	NC	D	TCEQ, 2001
Mercury	NC	---	0.07	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Nickel	NTV	---	0.04	TCEQ, 1998	NTV	A	EPA-IRIS, 2001
Selenium	NC	---	0.5	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Silver	NC	---	0.04	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Strontium	NTV	---	0.2	TCEQ, 1998	NTV	Not Classified	---
Thallium	NC	---	1	TCEQ, 1998	NC	Not Classified	---

Table 3-68
Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAP, Karnack, Texas

Chemical of Potential Concern	Oral CSF (mg/kg-day) ⁻¹	Reference	ABSGI (unitless)	Reference	Dermal CSF (mg/kg-day) ⁻¹	Weight of Evidence/ Cancer Guideline Description	Reference
Tin	NTV	---	0.1	TCEQ, 1998	NTV	Not Classified	---
Vanadium	NTV	---	0.026	TCEQ, 1998	NTV	Not Classified	---
Zinc	NC	---	0.2	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Non-Metallic Anion							
Perchlorate	NTV	---	1	Health Consultation, 1997	NTV	Not Classified	---
PCB							
Aroclor 1254	2.00E+00	EPA-IRIS, 2001	0.9	ATSDR, 1989	2.22E+00	B2	EPA-IRIS, 2001
Pesticides							
Aldrin	1.70E+01	EPA-IRIS, 2001	0.5	TCEQ, 1998	3.40E+01	B2	EPA-IRIS, 2001
alpha-BHC	6.30E+00	EPA-IRIS, 2001	0.97	TCEQ, 1998	6.49E+00	B2	EPA-IRIS, 2001
beta-BHC	1.80E+00	EPA-IRIS, 2001	0.91	TCEQ, 1998	1.98E+00	C	EPA-IRIS, 2001
delta-BHC	1.80E+00	TCEQ, 2001	0.5	TCEQ, 1998	3.60E+00	B2	TCEQ, 2001
Semi-Volatile Organics							
2,4-Dinitrotoluene	6.80E-01	EPA-IRIS, 2001*	0.85	TCEQ, 1998	8.00E-01	B2	EPA-IRIS, 2001
2,6-Dinitrotoluene	6.80E-01	EPA-IRIS, 2001*	0.85	TCEQ, 1998	8.00E-01	B2	EPA-IRIS, 2001
3-Methylphenol	NTV	---	0.5	TCEQ, 1998	NTV	C	EPA-IRIS, 2001
4-Chloroaniline	NTV	---	0.5	TCEQ, 1998	NTV	Not Classified	---
4-Methylphenol	NTV	---	0.65	TCEQ, 1998	NTV	C	EPA-IRIS, 2001
Acenaphthylene	NC	---	0.89	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Anthracene	NC	---	0.89	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Benzo(a)anthracene	7.30E-01	EPA, 1993	0.89	TCEQ, 1998	8.20E-01	B2	EPA-IRIS, 2001
Benzo(a)pyrene	7.30E+00	EPA-IRIS, 2001	0.89	TCEQ, 1998	8.20E+00	B2	EPA-IRIS, 2001
Benzo(b)fluoranthene	7.30E-01	EPA, 1993	0.89	TCEQ, 1998	8.20E-01	B2	EPA-IRIS, 2001
Benzo(g,h,i)perylene	NTV	---	0.89	TCEQ, 1998	NTV	D	EPA-IRIS, 2001
Benzo(k)fluoranthene	7.30E-02	EPA, 1993	0.89	TCEQ, 1998	8.20E-02	B2	EPA-IRIS, 2001
bis(2-Ethylhexyl)phthalate	1.40E-02	EPA-IRIS, 2001	0.19	TCEQ, 1998	7.37E-02	B2	EPA-IRIS, 2001
Chrysene	7.30E-03	EPA, 1993	0.89	TCEQ, 1998	8.20E-03	B2	EPA-IRIS, 2001
Dibenzo(a,h)anthracene	7.30E+00	EPA, 1993	0.89	TCEQ, 1998	8.20E+00	B2	EPA-IRIS, 2001

Table 3-68
Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Oral CSF (mg/kg-day) ⁻¹	Reference	ABSgi (unitless) ^a	Reference	Dermal CSF (mg/kg-day) ⁻¹	Weight of Evidence/ Cancer Guideline Description	Reference
Dibenzofuran	NC	---	0.5	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Di-n-butyl phthalate	NC	---	1	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Ethylbenzene	NC	---	0.97	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Fluoranthene	NC	---	0.89	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Fluorene	NC	---	0.89	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Indeno(1,2,3-cd)pyrene	7.30E-01	EPA, 1993	0.89	TCEQ, 1998	8.20E-01	B2	EPA-IRIS, 2001
Naphthalene	NTV	---	0.89	TCEQ, 1998	NTV	C ^b	EPA-IRIS, 2001
Pentachlorophenol	1.20E-01	EPA-IRIS, 2001	0.76	TCEQ, 1998	1.58E-01	B2	EPA-IRIS, 2001
Phenanthrene	NC	---	0.89	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Phenol	NC	---	0.9	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Volatile Organics							
1,1,1-Trichloroethane	NC	---	0.9	TCEQ, 1998	NC	D	EPA-IRIS, 2001
1,1,2-Trichloroethane	5.70E-02	EPA-IRIS, 2001	0.81	TCEQ, 1998	7.04E-02	C	EPA-IRIS, 2001
1,2,3-Trichlorobenzene	NTV	---	0.8	TCEQ, 1998	NTV	Not Classified	---
1,2,4-trimethylbenzene	NTV	---	0.8	TCEQ, 1998	NTV	Not Classified	---
1,1-Dichloroethene	6.00E-01	EPA-IRIS, 2001	1	TCEQ, 1998	6.00E-01	C	EPA-IRIS, 2001
1,2-Dichloroethane	9.10E-02	EPA-IRIS, 2001	1	TCEQ, 1998	9.10E-02	B2	EPA-IRIS, 2001
1,2-Dichloropropane	6.80E-02	EPA-HEAST, 1997	0.74	TCEQ, 1998	9.19E-02	B2	EPA-HEAST, 1997
Acetone	NC	---	0.83	TCEQ, 1998	NC	D	EPA-IRIS, 2001
Benzene	5.50E-02	EPA-IRIS, 2001	0.97	TCEQ, 1998	5.67E-02	A	EPA-IRIS, 2001
Carbon disulfide	NTV	---	0.63	TCEQ, 1998	NTV	Not Classified	---
Chloroform	6.10E-03	EPA-IRIS, 2001	0.2	TCEQ, 1998	3.05E-02	B2	EPA-IRIS, 2001
cis-1,2-Dichloroethene	NC	---	1	TCEQ, 1998	NC	D	EPA-IRIS, 2001
trans-1,2-Dichloroethene	NTV	---	1	TCEQ, 1998	NTV	Not Classified	---
Methylene chloride	7.50E-03	EPA-IRIS, 2001	0.95	TCEQ, 1998	7.89E-03	B2	EPA-IRIS, 2001
p-Cymene	NTV	---	0.8	TCEQ, 1998	NTV	Not Classified	---
Tetrachloroethene	5.20E-02	EPA-NCEA, 2001	1	TCEQ, 1998	5.20E-02	B2	EPA-IRIS, 2001
Toluene	NC	---	0.8	TCEQ, 1998	NC	D	EPA-IRIS, 2001

Table 3-68
Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Oral CSF (mg/kg-day) ⁻¹	Reference	ABSgi (unitless) [*]	Reference	Dermal CSF (mg/kg-day) ⁻¹	Weight of Evidence/ Cancer Guideline Description	Reference
Trichloroethene	1.10E-02	EPA-NCEA, 2001	1	TCEQ, 1998	1.10E-02	B2	EPA-IRIS, 2001
Trichlorofluoromethane	NTV	---	0.23	TCEQ, 1998	NTV	Not Classified	---
Vinyl chloride	1.50E+00	EPA-IRIS, 2001	1	TCEQ, 1998	1.50E+00	A	EPA-IRIS, 2001

EPA, 1993. *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons*. Office of Research and Development, EPA/600/R-93/089. July 1993.

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TCEQ, 1998. Consistency Memorandum. Attachment C. Memorandum To: Remediation Division Staff, From: Ronald R. Pedde, P. E., Division Director Remediation Division Office of Waste Management. 23 July 1998.

TCEQ, 2001. Update to 1998 Consistency Memorandum. Toxicity Factors Table. 15 March 2001.

^{*}The dermal CSF was derived by dividing the Oral CSF by the ABSgi.

(a) Listed as "Dinitrotoluene mixture, 2,4-/2,6-" in IRIS. The value is based on a study using technical grade dinitrotoluene.

(b) Using criteria of the 1986 Guidelines for Carcinogen Risk Assessment, naphthalene is classified in Group C, a possible human carcinogen.

ABSgi = gastrointestinal absorption factor

CSF = cancer slope factor

EPA = U.S. Environmental Protection Agency

IRIS = Integrated Risk Information System

LHAAP = Longhorn Army Ammunition Plant

NC = chemical not classified as a carcinogen

NTV = no toxicity value available

PCB = polychlorinated biphenyl

RA = risk assessment

TCEQ = Texas Commission on Environmental Quality

TCDD = tetrachlorodibenzo-p-dioxin

Table 3-69
Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation URF (mg/m ³ , ¹)	Reference	Weight of Evidence/ Cancer Guideline Description	Reference
<i>Dioxin/Furans</i>				
2,3,7,8-TCDD	3.30E+04	EPA-HEAST, 1997	Not Classified	---
<i>Explosive</i>				
2,4,6-Trinitrotoluene	NTV	---	C	EPA-IRIS, 2001
2-Amino-4,6-dinitrotoluene	NTV	---	Not Classified	---
4-Amino-2,6-dinitrotoluene	NTV	---	Not Classified	---
m-Dinitrobenzene	NC	---	D	EPA-IRIS, 2001
RDX	NTV	---	C	EPA-IRIS, 2001
<i>Metals</i>				
Aluminum	NTV	---	Not Classified	---
Antimony	NTV	---	Not Classified	---
Arsenic	4.30E+00	EPA-IRIS, 2001	A	TCEQ, 2001
Barium	NC	---	D	EPA-IRIS, 2001
Beryllium	2.40E+00	EPA-IRIS, 2001	B1	EPA-IRIS, 2001
Cadmium (Food)	1.80E+00	EPA-IRIS, 2001	B1	EPA-IRIS, 2001
Cadmium (Water)	1.80E+00	EPA-IRIS, 2001	B1	TCEQ, 2001
Chromium (Total)	NC	---	Not Classified	---
Cobalt	NTV	---	Not Classified	---
Copper	NC	---	D	EPA-IRIS, 2001
Cyanide	NC	---	D	EPA-IRIS, 2001
Lead	NTV	---	Not Classified	---
Manganese (Non-diet)	NC	---	D	EPA-IRIS, 2001
Manganese (Food)	NC	---	D	TCEQ, 2001
Mercury	NC	---	D	EPA-IRIS, 2001
Nickel	4.80E-01	EPA-IRIS, 2001 ^a	A	EPA-IRIS, 2001

Table 3-69
Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation URF (mg/m ³) ¹	Reference	Weight of Evidence/ Cancer Guideline Description	Reference
Selenium	NC	---	D	EPA-IRIS, 2001
Silver	NC	---	D	EPA-IRIS, 2001
Strontium	NTV	---	Not Classified	---
Thallium	NC	---	Not Classified	---
Tin	NTV	---	Not Classified	---
Vanadium	NTV	---	Not Classified	---
Zinc	NC	---	D	EPA-IRIS, 2001
<i>Non-Metallic Anion</i>				
Perchlorate	NTV	---	Not Classified	---
<i>PCB</i>				
Aroclor 1254	2.00E+00	EPA-IRIS, 2001	B2	EPA-IRIS, 2001
<i>Pesticides</i>				
Aldrin	4.90E-03	EPA-IRIS, 2001	B2	EPA-IRIS, 2001
alpha-BHC	1.80E-03	EPA-IRIS, 2001	B2	EPA-IRIS, 2001
beta-BHC	5.30E-04	EPA-IRIS, 2001	C	EPA-IRIS, 2001
delta-BHC	5.10E-04	TCEQ, 2001	B2	TCEQ, 2001
<i>Semi-Volatile Organics</i>				
2,4-Dinitrotoluene	NTV	---	B2	EPA-IRIS, 2001
2,6-Dinitrotoluene	NTV	---	B2	EPA-IRIS, 2001
3-Methylphenol	NTV	---	C	EPA-IRIS, 2001
4-Chloroaniline	NTV	---	Not Classified	---
4-Methylphenol	NTV	---	C	EPA-IRIS, 2001
Acenaphthylene	NC	---	D	EPA-IRIS, 2001
Anthracene	NC	---	D	EPA-IRIS, 2001
Benzo(a)anthracene	8.80E-05	EPA, 1993	B2	EPA-IRIS, 2001

Table 3-69
Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation URF (mg/m ³) ⁻¹	Reference	Weight of Evidence/ Cancer Guideline Description	Reference
Benzo(a)pyrene	8.80E-04	EPA-NCEA, 2001	B2	EPA-IRIS, 2001
Benzo(b)fluoranthene	8.80E-02	EPA, 1993	B2	EPA-IRIS, 2001
Benzo(g,h,i)perylene	NTV	---	D	EPA-IRIS, 2001
Benzo(k)fluoranthene	8.80E-06	EPA, 1993	B2	EPA-IRIS, 2001
bis(2-Ethylhexyl)phthalate	4.00E-03	EPA-NCEA, 2001	B2	EPA-IRIS, 2001
Chrysene	8.80E-07	EPA, 1993	B2	EPA-IRIS, 2001
Dibenzo(a,h)anthracene	8.80E-04	EPA, 1993	B2	EPA-IRIS, 2001
Dibenzofuran	NC	---	D	EPA-IRIS, 2001
Di-n-butyl phthalate	NC	---	D	EPA-IRIS, 2001
Ethylbenzene	NC	---	D	EPA-IRIS, 2001
Fluoranthene	NC	---	D	EPA-IRIS, 2001
Fluorene	NC	---	D	EPA-IRIS, 2001
Indeno(1,2,3-cd)pyrene	8.80E-05	EPA, 1993	B2	EPA-IRIS, 2001
Naphthalene	NC	---	C ^b	EPA-IRIS, 2001
Pentachlorophenol	NTV	---	B2	EPA-IRIS, 2001
Phenanthrene	NC	---	D	EPA-IRIS, 2001
Phenol	NC	---	D	EPA-IRIS, 2001
Volatile Organics				
1,1,1-Trichloroethane	NC	---	D	EPA-IRIS, 2001
1,1,2-Trichloroethane	1.60E-05	EPA-IRIS, 2001	C	EPA-IRIS, 2001
1,2,3-Trichlorobenzene	NTV	---	Not Classified	---
1,2,4-trimethylbenzene	NTV	---	Not Classified	---
1,1-Dichloroethene	5.00E-02	EPA-IRIS, 2001	C	EPA-IRIS, 2001
1,2-Dichloroethane	2.60E-02	EPA-IRIS, 2001	B2	EPA-IRIS, 2001
1,2-Dichloropropane	NTV	---	B2	EPA-HEAST, 1997

Table 3-69

Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation URf (mg/m ³) ¹	Reference	Weight of Evidence/ Cancer Guideline Description	Reference
Acetone	NC	---	D	EPA-IRIS, 2001
Benzene	7.80E-06	EPA-IRIS, 2001	A	EPA-IRIS, 2001
Carbon disulfide	NTV	---	Not Classified	---
Chloroform	2.30E-02	EPA-IRIS, 2001	B2	EPA-IRIS, 2001
cis-1,2-Dichloroethene	NC	---	D	EPA-IRIS, 2001
trans-1,2-Dichloroethene	NTV	---	Not Classified	---
Methylene chloride	4.70E-04	EPA-IRIS, 2001	B2	EPA-IRIS, 2001
p-Cymene	NTV	---	Not Classified	---
Tetrachloroethene	5.80E-07	EPA-NCEA, 2001	B2	EPA-IRIS, 2001
Toluene	NC	---	D	EPA-IRIS, 2001
Trichloroethene	1.70E-03	EPA-NCEA, 2001	B2	EPA-IRIS, 2001
Trichlorofluoromethane	NTV	---	Not Classified	---
Vinyl chloride	8.80E-03	EPA-IRIS, 2001	A	EPA-IRIS, 2001

EPA, 1993. *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons*, Office of Research and Development, EPA/600/R-93/089, July 1993.

EPA-HEAST, 1997. *Health Effects Summary Tables (HEAST)*. FY-1995. Annual. Office of Emergency and Remedial Response. Washington, DC. EPA/540/R-95-036.

EPA-IRIS, 2001. *Integrated Risk Information System (IRIS)*. United States Environmental Protection Agency Online Database for Toxicity Information on Hazardous Chemicals. 2001

EPA-NCEA, 2001. *EPA Region III Risk-Based Concentration Tables (5/8/2001)*. Referenced values from National Center For Environmental Assessment (NCEA).

TCEQ, 2001. Update to 1998 Consistency Memorandum. Toxicity Factors Table. 15 March 2001.

(a) Nickel subsulfide was used as a surrogate as recommend by TCEQ.

(b) Using criteria of the 1986 Guidelines for Carcinogen Risk Assessment, naphthalene is classified in Group C, a possible human carcinogen.

EPA = U.S. Environmental Protection Agency

LHAAP = Longhorn Army Ammunition Plant

NC = chemical not classified as a carcinogen

NTV = no toxicity value available

PCB = polychlorinated biphenyl

RA = risk assessment

TCEQ = Texas Commission on Environmental Quality

TCDD = tetrachlorodibenzo-p-dioxin

URF = unit risk factor

Table 3-70
Non-Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Oral RfD (mg/kg-day)	Reference	ABSgi (unitless)*	Reference	Dermal RfD (mg/kg-day)	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
Dioxin/Furans								
2,3,7,8-TCDD	NTV	---	0.5	TCEQ, 1998	NTV	NA	NA	---
Explosive								
2,4,6-Trinitrotoluene	5.00E-04	EPA-IRIS, 2001	0.6	TCEQ, 1998	3.00E-04	Liver effects	1000/1	EPA-IRIS, 2001
2-Amino-4,6-dinitrotoluene	1.67E-04	TCEQ, 2001	0.5	TCEQ, 1998	8.33E-05	NA	NA	---
4-Amino-2,6-dinitrotoluene	1.67E-04	TCEQ, 2001	0.5	TCEQ, 1998	8.33E-05	NA	NA	---
m-Dinitrobenzene	1.00E-04	EPA-IRIS, 2001	0.65	TCEQ, 1998	6.50E-05	Increased splenic weight	3000/1	EPA-IRIS, 2001
RDX	3.00E-03	EPA-IRIS, 2001	1	TCEQ, 1998	3.00E-03	Inflammation of the prostate	100/1	EPA-IRIS, 2001
Metals								
Aluminum	1.00E+00	EPA-NCEA, 2001	0.1	TCEQ, 1998	1.00E-01	NA	NA	---
Antimony	4.00E-04	EPA-IRIS, 2001	0.15	TCEQ, 1998	6.00E-05	Longevity, blood glucose, and cholesterol	1000/1	EPA-IRIS, 2001
Arsenic	3.00E-04	EPA-IRIS, 2001	0.95	TCEQ, 1998	2.85E-04	Skin effects	3/1	EPA-IRIS, 2001
Barium	7.00E-02	EPA-IRIS, 2001	0.07	TCEQ, 1998	4.90E-03	Increased kidney weight	3/1	EPA-IRIS, 2001
Beryllium	2.00E-03	EPA-IRIS, 2001	0.007	TCEQ, 1998	1.40E-05	Small Intestine	300/1	EPA-IRIS, 2001
Cadmium (Food)	1.00E-03	EPA-IRIS, 2001	0.025	TCEQ, 1998	2.50E-05	Proteinuria	10/1	EPA-IRIS, 2001
Cadmium (Water)	5.00E-04	EPA-IRIS, 2001	0.025	TCEQ, 1998	1.25E-05	Proteinuria	10/1	EPA-IRIS, 2001
Chromium (Total)	1.50E+00	EPA-IRIS, 2001	0.013	TCEQ, 1998	1.95E-02	No effects observed	100/10	EPA-IRIS, 2001
Cobalt	2.00E-02	EPA-NCEA, 2001	0.8	TCEQ, 1998	1.60E-02	NA	NA	---
Copper	4.00E-02	EPA-HEAST, 1997 ^a	0.57	TCEQ, 1998	2.28E-02	Gastrointestinal	NA	^a EPA-HEAST, 1997
Cyanide	2.00E-02	EPA-IRIS, 2001	0.5	TCEQ, 1998	1.00E-02	Weight loss, thyroid effects and myelin degeneration	100/5	EPA-IRIS, 2001
Lead	NTV	---	0.15	TCEQ, 1998	NTV	NA	NA	---
Manganese (Non-diet)	4.70E-02	EPA-IRIS, 2001 ^b	0.06	TCEQ, 1998	2.82E-03	Central nervous system effects	1/1	EPA-IRIS, 2001
Manganese (Food)	1.40E-01	EPA-IRIS, 2001	0.06	TCEQ, 1998	8.40E-03	Central nervous system effects	1/1	EPA-IRIS, 2001
Mercury	3.00E-04	EPA-IRIS, 2001 ^c	0.07	TCEQ, 1998	2.10E-05	Autoimmune effects	1000/1	EPA-IRIS, 2001

Table 3-70
Non-Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Oral RfD (mg/kg-day)	Reference	ABSgi (unitless)*	Reference	Dermal RfD (mg/kg-day)	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
Nickel	2.00E-02	EPA-IRIS, 2001	0.04	TCEQ, 1998	8.00E-04	Decreased Body Weight	300/1	EPA-IRIS, 2001
Selenium	5.00E-03	EPA-IRIS, 2001	0.5	TCEQ, 1998	2.50E-03	Skin	3/1	EPA-IRIS, 2001
Silver	5.00E-03	EPA-IRIS, 2001	0.04	TCEQ, 1998	2.00E-04	Argyria	3/1	EPA-IRIS, 2001
Strontium	6.00E-01	EPA-IRIS, 2001	0.2	TCEQ, 1998	1.20E-01	Rachitic bone	300/1	EPA-IRIS, 2001
Thallium	8.00E-05	EPA-IRIS, 2001	1	TCEQ, 1998	8.00E-05	Blood	3000/1	⁴ EPA-IRIS, 2001
Tin	6.00E-01	EPA-HEAST, 1997	0.1	TCEQ, 1998	6.00E-02	Liver/Kidney	100/1	EPA-HEAST, 1997
Vanadium	7.00E-03	EPA-HEAST, 1997	0.026	TCEQ, 1998	1.82E-04	NA	NA	---
Zinc	3.00E-01	EPA-IRIS, 2001	0.2	TCEQ, 1998	6.00E-02	Decrease in erythrocyte superoxide dismutase	3/1	EPA-IRIS, 2001
Non-Metallic Anion								
Perchlorate	9.00E-04	EPA, 1998	1	Health Consultation, 1997	9.00E-04	NA	NA	---
PCB								
Aroclor 1254	2.00E-05	EPA-IRIS, 2001	0.9	ATSDR, 1989	1.80E-05	Ocular exudate, distorted growth of finger and toe nails; decreased antibody response to sheep erythrocytes	300/1	EPA-IRIS, 2001
Pesticides								
Aldrin	3.00E-05	EPA-IRIS, 2001	0.5	TCEQ, 1998	1.50E-05	Liver	1000/1	EPA-IRIS, 2001
alpha-BHC	8.00E-03	ATSDR MRL	0.97	TCEQ, 1998	7.76E-03	NA	NA	---
beta-BHC	NTV	---	0.91	TCEQ, 1998	NTV	NA	NA	---
delta-BHC	3.00E-04	TCEQ-Derived	0.5	TCEQ, 1998	1.50E-04	NA	NA	---
Semi-Volatile Organics								
2,4-Dinitrotoluene	2.00E-03	EPA-IRIS, 2001	0.85	TCEQ, 1998	1.70E-03	Central nervous system effects	100/1	EPA-IRIS, 2001
2,6-Dinitrotoluene	1.00E-03	EPA-HEAST, 1997	0.85	TCEQ, 1998	8.50E-04	Central nervous system effects	3000/1	EPA-HEAST, 1997
3-Methylphenol	5.00E-02	EPA-IRIS, 2001	0.5	TCEQ, 1998	2.50E-02	Decreased body weight	1000/1	EPA-IRIS, 2001
4-Chloroaniline	4.00E-03	EPA-IRIS, 2001	0.5	TCEQ, 1998	2.00E-03	Proliferative lesions in spleen	3000/1	EPA-IRIS, 2001

Table 3-70
Non-Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Oral RfD (mg/kg-day)	Reference	ABSgi (unitless) *	Reference	Dermal RfD (mg/kg-day)	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
4-Methylphenol	5.00E-03	EPA-HEAST, 1997	0.65	TCEQ, 1998	3.25E-03	NA	NA	---
Acenaphthylene	6.00E-02	TCEQ, 2001	0.89	TCEQ, 1998	5.34E-02	NA	NA	---
Anthracene	3.00E-01	EPA-IRIS, 2001	0.89	TCEQ, 1998	2.67E-01	No effects observed	3000/1	EPA-IRIS, 2001
Benzo(a)anthracene	NTV	---	0.89	TCEQ, 1998	NTV	NA	NA	---
Benzo(a)pyrene	NTV	---	0.89	TCEQ, 1998	NTV	NA	NA	---
Benzo(b)fluoranthene	NTV	---	0.89	TCEQ, 1998	NTV	NA	NA	---
Benzo(g,h,i)perylene	3.00E-02	TCEQ, 2001	0.89	TCEQ, 1998	2.67E-02	NA	NA	---
Benzo(k)fluoranthene	NTV	---	0.89	TCEQ, 1998	NTV	NA	NA	---
bis(2-Ethylhexyl)phthalate	2.00E-02	EPA-IRIS, 2001	0.19	TCEQ, 1998	3.80E-03	Liver effects	1000/1	EPA-IRIS, 2001
Chrysene	NTV	---	0.89	TCEQ, 1998	NTV	NA	NA	---
Dibenzo(a,h)anthracene	NTV	---	0.89	TCEQ, 1998	NTV	NA	NA	---
Dibenzofuran	4.00E-03	EPA-NCEA, 2001	0.5	TCEQ, 1998	2.00E-03	NA	NA	---
Di-n-butyl phthalate	1.00E-01	EPA-IRIS, 2001	1	TCEQ, 1998	1.00E-01	Mortality	1000/1	EPA-IRIS, 2001
Ethylbenzene	1.00E-01	EPA-IRIS, 2001	0.97	TCEQ, 1998	9.70E-02	Liver and kidney effects	1000/1	EPA-IRIS, 2001
Fluoranthene	4.00E-02	EPA-IRIS, 2001	0.89	TCEQ, 1998	3.56E-02	Nephropathy (kidney), liver effects, hematological alterations (blood)	3000/1	EPA-IRIS, 2001
Fluorene	4.00E-02	EPA-IRIS, 2001	0.89	TCEQ, 1998	3.56E-02	Decreased RBC, packed cell volume and hemoglobin	3000/1	EPA-IRIS, 2001
Indeno(1,2,3-cd)pyrene	NTV	---	0.89	TCEQ, 1998	NTV	NA	NA	---
Naphthalene	2.00E-02	EPA-IRIS, 2001	0.89	TCEQ, 1998	1.78E-02	Decreased mean terminal body weight in males	3000/1	EPA-IRIS, 2001
Pentachlorophenol	3.00E-02	EPA-IRIS, 2001	0.76	TCEQ, 1998	2.28E-02	Liver and kidney effects	100/1	EPA-IRIS, 2001
Phenanthrene	3.00E-02	TCEQ, 2001	0.89	TCEQ, 1998	2.67E-02	NA	NA	---
Phenol	6.00E-01	EPA-IRIS, 2001	0.9	TCEQ, 1998	5.40E-01	Reduced fetal body weight	100/1	EPA-IRIS, 2001

Table 3-70
Non-Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Oral RfD (mg/kg-day)	Reference	ABSgi (unitless)	Reference	Dermal RfD (mg/kg-day)	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
<i>Volatile Organics</i>								
1,1,1-Trichloroethane	2.80E-01	EPA-NCEA, 2001	0.9	TCEQ, 1998	2.52E-01	NA	NA	---
1,1,2-Trichloroethane	4.00E-03	EPA-IRIS, 2001	0.81	TCEQ, 1998	3.24E-03	Blood alterations	1000/1	EPA-IRIS, 2001
1,2,3-Trichlorobenzene	3.00E-03	TCEQ, 2001	0.8	TCEQ, 1998	2.40E-03	NA	NA	---
1,2,4-trimethylbenzene	5.00E-02	EPA-NCEA, 2001	0.8	TCEQ, 1998	4.00E-02	NA	NA	---
1,1-Dichloroethene	9.00E-03	EPA-IRIS, 2001	1	TCEQ, 1998	9.00E-03	Hepatic lesions	1000/1	EPA-IRIS, 2001
1,2-Dichloroethane	3.00E-02	EPA-NCEA, 2001	1	TCEQ, 1998	3.00E-02	NA	NA	---
1,2-Dichloropropane	9.00E-02	ATSDR MRL	0.74	TCEQ, 1998	6.66E-02	NA	NA	---
Acetone	1.00E-01	EPA-IRIS, 2001	0.83	TCEQ, 1998	8.30E-02	Liver and kidney effects	1000/1	EPA-IRIS, 2001
Benzene	3.00E-03	EPA-NCEA, 2001	0.97	TCEQ, 1998	2.91E-03	NA	NA	---
Carbon disulfide	1.00E-01	EPA-IRIS, 2001	0.63	TCEQ, 1998	6.30E-02	Fetal toxicity	100/1	EPA-IRIS, 2001
Chloroform	1.00E-02	EPA-IRIS, 2001	0.2	TCEQ, 1998	2.00E-03	Cyst formation in the liver	1000/1	EPA-IRIS, 2001
cis-1,2-Dichloroethene	1.00E-02	EPA-HEAST, 1997	1	TCEQ, 1998	1.00E-02	Decreased hematocrit and hemoglobin in the blood	3000/1	EPA-IRIS, 2001
trans-1,2-Dichloroethene	2.00E-02	EPA-IRIS, 2001	1	TCEQ, 1998	2.00E-02	Blood (Increased alkaline phosphatase in male)	1000/1	EPA-IRIS, 2001
Methylene chloride	6.00E-02	EPA-IRIS, 2001	0.95	TCEQ, 1998	5.70E-02	Liver toxicity	100/1	EPA-IRIS, 2001
p-Cymene	1.00E-01	TCEQ, 2001	0.8	TCEQ, 1998	8.00E-02	NA	NA	---
Tetrachloroethene	1.00E-02	EPA-IRIS, 2001	1	TCEQ, 1998	1.00E-02	Hepatotoxicity, weight gain	1000/1	EPA-IRIS, 2001
Toluene	2.00E-01	EPA-IRIS, 2001	0.8	TCEQ, 1998	1.60E-01	Liver and kidney effects	1000/1	EPA-IRIS, 2001
Trichloroethene	6.00E-03	EPA-NCEA, 2001	1	TCEQ, 1998	6.00E-03	NA	NA	---
Trichlorofluoromethane	3.00E-01	EPA-IRIS, 2001	0.23	TCEQ, 1998	6.90E-02	Whole body (increased mortality)	1000/1	EPA-IRIS, 2001
Vinyl chloride	3.00E-03	EPA-IRIS, 2001	1	TCEQ, 1998	3.00E-03	Liver cell polymorphism	30/1	EPA-IRIS, 2001

EPA-HEAST, 1997. Health Effects Summary Tables (HEAST). FY-1995. Annual. Office of Emergency and Remedial Response. Washington, DC. EPA/540/R-95-036.
EPA, 1998. *Perchlorate Environmental Contamination: Toxicological Review and Risk Characterization Based on Emerging Information*, Review Draft, Office of Research and Development, NCEA-1-0503, 31 December 1998.

Table 3-70
Non-Cancer Toxicity Data -- Oral/Dermal Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Oral RfD (mg/kg-day)	Reference	ABSgi (unitless)*	Reference	Dermal RfD (mg/kg-day)	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
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EPA-IRIS, 2001. Integrated Risk Information System (IRIS). United States Environmental Protection Agency Online Database for Toxicity Information on Hazardous Chemicals. 2001

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*The dermal RfD was derived by multiplying the Oral RfD by the ABSgi.

- (a) Value for copper was derived from drinking water standard of 1.3 mg/L. Converted assuming a drinking water ingestion rate 2 L/day and a body weight of 70 kg.
- (b) IRIS recommends that a modifying factor of 3 be applied for nondietary exposures.
- (c) Mercuric chloride was used as a surrogate as recommended by TCEQ.
- (d) Thallium Chloride was used as a surrogate for thallium.

ABSgi = gastrointestinal absorption factor

ATSDR MRL = Agency for Toxic Substances Disease Registry minimum risk levels

EPA = U.S. Environmental Protection Agency

LHAAP = Longhorn Army Ammunition Plant

NA = Information was Not Available.

NTV = no toxicity value available

RA = risk assessment

RfD = Reference Dose

TCEQ = Texas Commission on Environmental Quality

Table 3-71
Non-Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation RfC (mg/kg-day)	Reference	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
<i>Dioxin/Furans</i>					
2,3,7,8-TCDD	NTV	---	---	---	---
<i>Explosive</i>					
2,4,6-Trinitrotoluene	0.0001	TCEQ, 2001	NA	NA	---
2-Amino-4,6-dinitrotoluene	0.0001	TCEQ, 2001	NA	NA	---
4-Amino-2,6-dinitrotoluene	0.0001	TCEQ, 2001	NA	NA	---
m-Dinitrobenzene	0.001	TCEQ, 2001	NA	NA	---
RDX	0.0005	TCEQ, 2001	NA	NA	---
<i>Metals</i>					
Aluminum	0.0035	EPA-NCEA, 2001	NA	NA	---
Antimony	0.0005	TCEQ, 2001	Pulmonary toxicity, chronic interstitial inflammation	300/1	EPA-IRIS, 2001
Arsenic	NTV	---	---	---	---
Barium	0.00049	EPA-HEAST, 1997	Fetus, developmental effects	1000/1	EPA-HEAST, 1997
Beryllium	0.00002	EPA-IRIS, 2001	Beryllium sensitization and progression to CBD	10/1	EPA-IRIS, 2001
Cadmium (Food)	0.0002	EPA-NCEA, 2001	NA	NA	---
Cadmium (Water)	0.0002	EPA-NCEA, 2001	NA	NA	---
Chromium (Total)	0.0001	TCEQ, 2001	NA	NA	---
Cobalt	0.0000175	EPA-NCEA, 2001	NA	NA	---
Copper	0.001	TCEQ, 2001	NA	NA	---
Cyanide	0.005	TCEQ, 2001	NA	NA	---
Lead	NTV	---	---	---	---
Manganese (Non-diet)	0.00005	EPA-IRIS, 2001	Impairment of neurobehavioral function	1000/1	EPA-IRIS, 2001

Table 3-71
Non-Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation RfC (mg/kg-day)	Reference	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
Manganese (Food)	0.00005	EPA-IRIS, 2001	Impairment of neurobehavioral function	1000/1	EPA-IRIS, 2001
Mercury	0.0003	EPA-IRIS, 2001	Hand tremor, memory loss	30/1	EPA-IRIS, 2001
Nickel	0.0002	ATSDR, 1997	Respiratory effects	NA	ATSDR, 1997
Selenium	0.0002	TCEQ, 2001	NA	NA	---
Silver	0.00001	TCEQ, 2001	NA	NA	---
Strontium	NTV	---	---	---	---
Thallium	0.0001	TCEQ, 2001	NA	NA	---
Tin	0.02	TCEQ, 2001	NA	NA	---
Vanadium	0.00005	TCEQ, 2001	NA	NA	---
Zinc	NTV	---	---	---	---
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	---	---	---	---
<i>PCB</i>					
Aroclor 1254	NTV	---	---	---	---
<i>Pesticides</i>					
Aldrin	NTV	---	---	---	---
alpha-BHC	NTV	---	---	---	---
beta-BHC	NTV	---	---	---	---
delta-BHC	NTV	---	---	---	---
<i>Semi-Volatile Organics</i>					
2,4-Dinitrotoluene	0.00015	TCEQ, 2001	NA	NA	---
2,6-Dinitrotoluene	0.00015	TCEQ, 2001	NA	NA	---
3-Methylphenol	0.01	TCEQ, 2001	NA	NA	---
4-Chloroaniline	0.0053	TCEQ, 2001	NA	NA	---

Table 3-71
Non-Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation RfC (mg/kg-day)	Reference	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
4-Methylphenol	0.01	TCEQ, 2001	NA	NA	---
Acenaphthylene	NTV	---	---	---	---
Anthracene	NTV	---	---	---	---
Benzo(a)anthracene	NTV	---	---	---	---
Benzo(a)pyrene	NTV	---	---	---	---
Benzo(b)fluoranthene	NTV	---	---	---	---
Benzo(g,h,i)perylene	NTV	---	---	---	---
Benzo(k)fluoranthene	NTV	---	---	---	---
bis(2-Ethylhexyl)phthalate	NTV	---	---	---	---
Chrysene	NTV	---	---	---	---
Dibenzo(a,h)anthracene	NTV	---	---	---	---
Dibenzofuran	NTV	---	---	---	---
Di-n-butyl phthalate	0.005	TCEQ, 2001	NA	NA	---
Ethylbenzene	1	EPA-IRIS, 2001	Developmental Toxicity	300/1	EPA-IRIS, 2001
Fluoranthene	NTV	---	---	---	---
Fluorene	NTV	---	---	---	---
Indeno(1,2,3-cd)pyrene	NTV	---	---	---	---
Naphthalene	0.003	EPA-IRIS, 2001	---	---	---
Pentachlorophenol	0.0005	TCEQ, 2001	NA	NA	---
Phenanthrene	NTV	---	---	---	---
Phenol	0.019	TCEQ, 2001	NA	NA	---
Volatile Organics					
1,1,1-Trichloroethane	2.205	EPA-NCEA, 2001	NA	NA	---
1,1,2-Trichloroethane	NTV	---	---	---	---
1,2,3-Trichlorobenzene	0.04	TCEQ, 2001	NA	NA	---

Table 3-71
Non-Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation RfC (mg/kg-day)	Reference	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
1,2,4-trimethylbenzene	0.006	EPA-NCEA, 2001	NA	NA	---
1,1-Dichloroethene	NTV	---	---	---	---
1,2-Dichloroethane	0.005	EPA-NCEA, 2001	NA	NA	---
1,2-Dichloropropane	0.004	EPA-IRIS, 2001	Hyperplasia of the nasal mucosa	300/1	EPA-IRIS, 2001
Acetone	0.59	TCEQ, 2001	NA	NA	---
Benzene	0.006	EPA-NCEA, 2001	NA	NA	---
Carbon disulfide	0.7	EPA-IRIS, 2001	Central nervous system effects	30/1	EPA-IRIS, 2001
Chloroform	0.000301	EPA-NCEA, 2001	NA	NA	---
cis-1,2-Dichloroethene	0.793	TCEQ, 2001	NA	NA	---
trans-1,2-Dichloroethene	0.793	TCEQ, 2001	NA	NA	---
Methylene chloride	3	EPA-HEAST, 1997	Liver toxicity	100/1	EPA-HEAST, 1997
p-Cymene	0.3	TCEQ, 2001	NA	NA	---
Tetrachloroethene	0.49	EPA-NCEA, 2001	NA	NA	---
Toluene	0.4	EPA-IRIS, 2001	Neurological effects	300/1	EPA-IRIS, 2001
Trichloroethene	NTV	---	---	---	---
Trichlorofluoromethane	0.7	EPA-HEAST, 1997	Whole Body	1000/1	---
Vinyl chloride	0.1	EPA-IRIS, 2001	Liver cell polymorphism	30/1	EPA-IRIS, 2001

ATSDR, 1997. Agency for Toxic Substances and Disease Registry. Minimal Risk Levels (MRLs) for Hazardous Substances.

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EPA-NCEA, 2001. EPA Region III Risk-Based Concentration Tables (5/8/2001). Referenced values from National Center For Environmental Assessment (NCEA).

TCEQ, 2001. Update to 1998 Consistency Memorandum. Toxicity Factors Table. 15 March 2001.

Table 3-71
Non-Cancer Toxicity Data -- Inhalation Exposure, Group 4 RA, LHAAP, Karnack, Texas

Chemical of Potential Concern	Inhalation RfC (mg/kg-day)	Reference	Target Endpoint	Combined Uncertainty/Modifying Factors	Reference
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EPA = U.S. Environmental Protection Agency
 LHAAP = Longhorn Army Ammunition Plant
 NA = information was not available
 NTV = no toxicity value available
 RA = risk assessment
 RfC = reference concentration
 TCEQ = Texas Commission on Environmental Quality

Table 3-72
Summary of Hazard Indices and Carcinogenic Risks - Group 4 RA, LHAAP, Karnack, Texas

Scenario	Total Hazard Index	Total Cancer Risk
SITE 04		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.028	9.69E-08
Future Maintenance Worker (0 to 0.5 feet bgs)	0.16	1.15E-06
Future Maintenance Worker (0 to 2 feet bgs)	0.28	1.15E-06
Risks From Groundwater		
Future Maintenance Worker	0.18	4.54E-05
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	0.35	4.65E-05
Future Maintenance Worker (0 to 2 feet bgs)	0.46	4.65E-05
SITE 08		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.005	1.44E-08
Future Maintenance Worker (0 to 0.5 feet bgs)	0.032	1.72E-07
Future Maintenance Worker (0 to 2 feet bgs)	0.032	1.72E-07
Risks From Groundwater		
Future Maintenance Worker	0.21	7.26E-05
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	0.24	7.28E-05
Future Maintenance Worker (0 to 2 feet bgs)	0.24	7.28E-05
SITE 35A		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.052	1.49E-06
Future Maintenance Worker (0 to 0.5 feet bgs)	0.34	2.03E-05
Future Maintenance Worker (0 to 2 feet bgs)	0.46	2.08E-05
Risks From Groundwater		
Future Maintenance Worker	38	1.57E-02
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	38	1.57E-02
Future Maintenance Worker (0 to 2 feet bgs)	38	1.57E-02
SITE 35B		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.017	3.84E-07
Future Maintenance Worker (0 to 0.5 feet bgs)	0.11	5.20E-06
Future Maintenance Worker (0 to 2 feet bgs)	0.14	5.20E-06
Risks From Groundwater		
Future Maintenance Worker	16	5.80E-04
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	16	5.85E-04
Future Maintenance Worker (0 to 2 feet bgs)	16	5.85E-04

Table 3-72
Summary of Hazard Indices and Carcinogenic Risks - Group 4 RA, LHAAP, Karnack, Texas

Scenario	Total Hazard Index	Total Cancer Risk
SITE 35C		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.007	9.95E-07
Future Maintenance Worker (0 to 0.5 feet bgs)	0.045	1.19E-05
Future Maintenance Worker (0 to 2 feet bgs)	0.053	1.19E-05
Risks From Groundwater		
Future Maintenance Worker	21	7.95E-05
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	21	9.14E-05
Future Maintenance Worker (0 to 2 feet bgs)	21	9.14E-05
SITE 46		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.008	1.19E-06
Future Maintenance Worker (0 to 0.5 feet bgs)	0.053	1.59E-05
Future Maintenance Worker (0 to 2 feet bgs)	0.12	1.67E-05
Risks From Groundwater		
Future Maintenance Worker	31	4.04E-05
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	31	5.62E-05
Future Maintenance Worker (0 to 2 feet bgs)	31	5.71E-05
SITE 47		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.071	1.41E-06
Future Maintenance Worker (0 to 0.5 feet bgs)	0.40	1.82E-05
Future Maintenance Worker (0 to 2 feet bgs)	0.46	1.77E-05
Risks From Groundwater		
Future Maintenance Worker	1,120	7.07E-03
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	1,120	7.09E-03
Future Maintenance Worker (0 to 2 feet bgs)	1,120	7.09E-03
SITE 48		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.010	1.08E-06
Future Maintenance Worker (0 to 0.5 feet bgs)	0.066	1.40E-05
Future Maintenance Worker (0 to 2 feet bgs)	0.088	1.40E-05
Risks From Groundwater		
Future Maintenance Worker	36	1.26E-04
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	36	1.40E-04
Future Maintenance Worker (0 to 2 feet bgs)	36	1.40E-04

Table 3-72
Summary of Hazard Indices and Carcinogenic Risks - Group 4 RA, LHAAP, Karnack, Texas

Scenario	Total Hazard Index	Total Cancer Risk
SITE 50¹		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	0.005	4.84E-08
Future Maintenance Worker (0 to 0.5 feet bgs)	0.035	5.77E-07
Risks From Groundwater		
Future Maintenance Worker	305	5.54E-03
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	305	5.55E-03
SITE 60²		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	NE	2.46E-08
Future Maintenance Worker (0 to 0.5 feet bgs)	NE	2.93E-07
Future Maintenance Worker (0 to 2 feet bgs)	0.029	2.93E-07
Risks From Groundwater		
Future Maintenance Worker	NE	NE
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	NE	2.93E-07
Future Maintenance Worker (0 to 2 feet bgs)	0.029	2.93E-07
SITE 67		
Risks From Soil		
Current Trespasser (0 to 0.5 feet bgs)	NE	2.42E-08
Future Maintenance Worker (0 to 0.5 feet bgs)	NE	2.88E-07
Future Maintenance Worker (0 to 2 feet bgs)	0.026	2.88E-07
Risks From Groundwater		
Future Maintenance Worker	4.1	3.09E-03
Combined Risks - Soil and Groundwater		
Future Maintenance Worker (0 to 0.5 feet bgs)	4.1	3.09E-03
Future Maintenance Worker (0 to 2 feet bgs)	4.1	3.09E-03
CENTRAL CREEK		
Risks From Sediment		
Current Trespasser	0.012	1.87E-07
Risks From Surface Water		
Current Trespasser	0.027	1.27E-06
Risks From Fish Ingestion		
Current Trespasser	10	1.54E-04
Combined Risks - Sediment, Surface Water, and Fish Ingestion		
Current Trespasser	10	1.56E-04
SAUNDER'S BRANCH		
Risks From Sediment		
Current Trespasser	0.013	5.82E-07

Table 3-72
Summary of Hazard Indices and Carcinogenic Risks - Group 4 RA, LHAAP, Karnack, Texas

Scenario	Total Hazard Index	Total Cancer Risk
Risks From Surface Water		
Current Trespasser	0.008	0.00E+00
Risks From Fish Ingestion		
Current Trespasser	8.2	4.56E-04
Combined Risks - Sediment, Surface Water, and Fish Ingestion		
Current Trespasser	8.2	4.56E-04
GOOSE PRAIRIE CREEK		
Risks From Sediment		
Current Trespasser	0.013	3.23E-07
Risks From Surface Water		
Current Trespasser	0.14	5.23E-06
Risks From Fish Ingestion		
Current Trespasser	14	2.94E-04
Combined Risks - Sediment, Surface Water, and Fish Ingestion		
Current Trespasser	14	2.99E-04
CADDO LAKE³		
Risks From Sediment (Recreational Swimming)		
Future Child Resident	0.59	2.39E-05
Future Adult Resident	0.12	1.97E-05
Swimming)		
Future Child Resident ³	0.015	ND
Future Adult Resident ³	0.003	ND
Risks From Fish Ingestion		
Future Child Resident	854	4.44E-03
Future Adult Resident	366	7.61E-03
Risks From Surface Water (Future Drinking Water Source)		
Future Child Resident ³	0.68	ND
Future Adult Resident ³	0.29	ND
Combined Risks - Sediment, Surface Water, and Fish Ingestion		
Future Child Resident	855	4.46E-03
Future Adult Resident	366	7.63E-03
Combined Future Child and Adult	NA	1.21E-02

¹With the exception of perchlorate samples, samples greater than 0.5 feet but less than or equal to 2 feet bgs were not available. EPCs for perchlorate for the 0 to 0.5 foot interval (0.03 mg/kg) and the 0 to 2 foot interval (0.0361 mg/kg) were essentially the same. Therefore, only one depth interval was evaluated (0 to 0.5 feet bgs) using the maximum perchlorate concentration as the EPC.

²Groundwater data for Site 60 was evaluated as part of Site 35A.

³Surface water data for Caddo Lake was evaluated as part of the Group 2 BHHRA.

bgs = below ground surface

BHHRA = baseline human health risk assessment

COPC = chemical of potential concern

Table 3-72
Summary of Hazard Indices and Carcinogenic Risks - Group 4 RA, LHAAP, Karnack, Texas

Scenario	Total Hazard Index	Total Cancer Risk
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EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

NA = Child and adult noncancer hazard indices could not be summed. Combined child and adult risks were not calculated using a time-weighted average.

ND = Perchlorate was the only surface water COPC identified for Caddo Lake. Cancer toxicity data were not available for perchlorate.

NE = not evaluated

RA = risk assessment

Table 3-73
Summary of Chemicals and Exposure Routes Exceeding a Carcinogenic Risk of $1E-06$ ¹, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding 1E-06 Carcinogenic Risk and their Percent Contribution			Exposure Routes Exceeding 1E-06 Carcinogenic Risk (Total Risk from all Chemicals) and their Percent Contribution			
		Chemical	Data Group	Carcinogenic Risk	Percent	Exposure Route	Carcinogenic Risk	Percent
SITE 04								
Risks From Soil	Future Maintenance Worker (0 to 0.5 feet bgs)	2,3,7,8-TCDD	Dioxin/Furan	1.2E-06	100.0%			
	Future Maintenance Worker (0 to 2 feet bgs)	2,3,7,8-TCDD	Dioxin/Furan	1.2E-06	100.0%			
Risks from Groundwater	Future Maintenance Worker	2,3,7,8-TCDD	Dioxin/Furan	4.5E-05	100.0%	Dermal Contact (Showering)	4.0E-05	89.2%
						Ingestion	4.9E-06	10.8%
SITE 08								
Risks from Groundwater	Future Maintenance Worker	2,3,7,8-TCDD	Dioxin/Furan	7.3E-05	100.0%	Dermal Contact (Showering)	6.5E-05	89.2%
						Ingestion	7.8E-06	10.8%
SITE 35A								
Risks From Soil	Future Maintenance Worker (0 to 0.5 feet bgs)	Benzo(a)pyrene	SVOC	9.9E-06	48.5%	Dermal Contact	1.1E-05	52.4%
		Bis(2-ethylhexyl)phthalate	SVOC	4.3E-06	21.0%	Ingestion	9.7E-06	47.5%
		2,3,7,8-TCDD	Dioxin/Furan	1.8E-06	9.0%			
		Benzo(b)fluoranthene	SVOC	1.5E-06	7.5%			
		Dibenzo(a,h)anthracene	SVOC	1.5E-06	7.3%			
		Indeno(1,2,3-cd)pyrene	SVOC	1.0E-06	5.1%			
	Future Maintenance Worker (0 to 2 feet bgs)	Benzo(a)pyrene	SVOC	9.9E-06	47.4%	Dermal Contact	1.1E-05	52.4%
		Bis(2-ethylhexyl)phthalate	SVOC	4.3E-06	20.5%	Ingestion	9.9E-06	47.6%
Risks from Groundwater	Future Maintenance Worker (0 to 2 feet bgs)	2,3,7,8-TCDD	Dioxin/Furan	1.8E-06	8.8%			
		Benzo(b)fluoranthene	SVOC	1.5E-06	7.3%			
		Dibenzo(a,h)anthracene	SVOC	1.5E-06	7.1%			
		Indeno(1,2,3-cd)pyrene	SVOC	1.0E-06	5.0%			
		1,1-Dichloroethene	VOC	1.1E-02	67.9%	Dermal Contact (Showering)	7.7E-03	49.0%
		Tetrachloroethene	VOC	4.9E-03	31.2%	Inhalation (Showering)	4.1E-03	26.3%
	Vinyl Chloride	VOC	5.8E-05	0.4%	Ingestion	3.9E-03	24.8%	
		RDX	Explosive	3.4E-05	0.2%			
	Trichloroethene	VOC	3.1E-05	0.2%				

Table 3-73
Summary of Chemicals and Exposure Routes Exceeding a Carcinogenic Risk of $1E-06^1$, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding 1E-06 Carcinogenic Risk and their Percent Contribution				Exposure Routes Exceeding 1E-06 Carcinogenic Risk (Total Risk from all Chemicals) and their Percent Contribution		
		Chemical	Data Group	Carcinogenic Risk	Percent	Exposure Route	Carcinogenic Risk	Percent
		Bis(2-ethylhexyl)phthalate	SVOC	7.1E-06	0.0%			
		1,2-Dichloroethane	VOC	6.2E-06	0.0%			
		1,1,2-Trichloroethane	VOC	3.0E-06	0.02%			
		SITE 35B						
Risks From Soil	Future Maintenance Worker (0 to 0.5 feet bgs)	Aldrin	Pesticides	2.3E-06	44.3%	Dermal Contact	2.7E-06	51.0%
		Benzo(a)pyrene	SVOC	2.0E-06	38.9%	Ingestion	2.5E-06	48.9%
Risks from Groundwater	Future Maintenance Worker (0 to 2 feet bgs)	Aldrin	Pesticides	2.3E-06	44.3%	Dermal Contact	2.7E-06	51.0%
		Benzo(a)pyrene	SVOC	2.0E-06	38.9%	Ingestion	2.5E-06	48.9%
	Future Maintenance Worker	1,1-Dichloroethene	VOC	4.6E-04	79.5%	Dermal Contact (Showering)	2.3E-04	38.8%
		Trichloroethene	VOC	6.3E-05	10.9%	Inhalation (Showering)	2.1E-04	36.4%
		Tetrachloroethene	VOC	3.1E-05	5.3%	Ingestion	1.4E-04	24.7%
SITE 35C								
Risks From Soil	Future Maintenance Worker (0 to 0.5 feet bgs)	2,3,7,8-TCDD	Dioxin/Furan	1.1E-05	95.4%	Ingestion	8.5E-06	71.3%
						Dermal Contact	3.4E-06	28.7%
Risks from Groundwater	Future Maintenance Worker (0 to 2 feet bgs)	2,3,7,8-TCDD	Dioxin/Furan	1.1E-05	95.4%	Ingestion	8.5E-06	71.3%
						Dermal Contact	3.4E-06	28.7%
	Future Maintenance Worker	2,3,7,8-TCDD	Dioxin/Furan	6.9E-05	86.7%	Dermal Contact (Showering)	6.3E-05	78.8%
		1,2-Dichloroethane	VOC	6.2E-06	7.8%	Ingestion	1.1E-05	14.3%
		2,6-Dinitrotoluene	SVOC	1.5E-06	1.9%	Inhalation (Showering)	5.5E-06	6.9%
SITE 46								
Risks From Soil	Future Maintenance Worker (0 to 0.5 feet bgs)	Benzo(a)pyrene	SVOC	1.0E-05	65.3%	Ingestion	8.3E-06	52.1%
		Benzo(b)fluoranthene	SVOC	2.2E-06	14.0%	Dermal Contact	7.6E-06	47.9%
	Future Maintenance Worker (0 to 2 feet bgs)	Dibenzo(a,h)anthracene	SVOC	1.9E-06	11.8%			
		Benzo(a)pyrene	SVOC	1.0E-05	62.0%	Ingestion	8.7E-06	52.1%
		Benzo(b)fluoranthene	SVOC	2.2E-06	13.3%	Dermal Contact	8.0E-06	47.9%

Table 3-73
Summary of Chemicals and Exposure Routes Exceeding a Carcinogenic Risk of 1E-06¹, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding 1E-06 Carcinogenic Risk and their Percent Contribution				Exposure Routes Exceeding 1E-06 Carcinogenic Risk (Total Risk from all Chemicals) and their Percent Contribution			
		Chemical	Data Group	Carcinogenic Risk	Percent	Exposure Route	Carcinogenic Risk	Percent	
Risks from Groundwater	Future Maintenance Worker	Dibenzo(a,h)anthracene	SVOC	1.9E-06	11.2%				
		Benzo(a)anthracene	SVOC	1.1E-06	6.8%				
		2,3,7,8-TCDD	Dioxin/Furan	3.1E-05	76.5%	Dermal Contact (Showering)	3.0E-05	74.8%	
		Vinyl Chloride	VOC	4.1E-06	10.2%	Ingestion	9.7E-06	24.1%	
		Bis(2-ethylhexyl)phthalate	SVOC	2.2E-06	5.4%				
SITE 47									
Risks From Soil	Future Maintenance Worker (0 to 0.5 feet bgs)	Benzo(a)pyrene	SVOC	1.1E-05	62.4%	Ingestion	1.1E-05	58.0%	
		Arsenic ³	Metals	3.5E-06	19.1%	Dermal Contact	7.6E-06	42.0%	
		Benzo(b)fluoranthene	SVOC	1.7E-06	9.5%				
		Benzo(a)anthracene	SVOC	1.2E-06	6.5%				
	Future Maintenance Worker (0 to 2 feet bgs)	Benzo(a)pyrene	SVOC	1.1E-05	64.2%	Ingestion	1.0E-05	57.3%	
		Arsenic ²	Metals	3.0E-06	16.8%	Dermal Contact	7.6E-06	42.7%	
		Benzo(b)fluoranthene	SVOC	1.7E-06	9.8%				
		Benzo(a)anthracene	SVOC	1.2E-06	6.7%				
		Trichloroethene	VOC	5.7E-03	80.6%	Inhalation (Showering)	3.4E-03	48.1%	
		Vinyl Chloride	VOC	7.3E-04	10.4%	Ingestion	1.9E-03	27.1%	
Risks from Groundwater	Future Maintenance Worker	1,1-Dichloroethene	VOC	2.6E-04	3.6%	Dermal Contact (Showering)	1.8E-03	24.8%	
		Chloroform	VOC	1.8E-04	2.6%				
		Tetrachloroethene	VOC	1.5E-04	2.2%				
		2,3,7,8-TCDD	Dioxin/Furan	1.4E-05	0.2%				
		Pentachlorophenol	SVOC	1.2E-05	0.2%				
		1,2-Dichloroethane	VOC	1.2E-05	0.2%				
		2,4-Dinitrotoluene	SVOC	3.3E-06	0.0%				
		2,6-Dinitrotoluene	SVOC	3.3E-06	0.0%				
		1,1,2-Trichloroethane	VOC	1.9E-06	0.0%				
		Bis(2-ethylhexyl)phthalate	SVOC	1.7E-06	0.0%				
SITE 48									
Risks From Soil	Future Maintenance Worker (0 to 0.5 feet bgs)	Benzo(a)pyrene	SVOC	7.9E-06	56.4%	Ingestion	6.9E-06	49.4%	
		Benzo(b)fluoranthene	SVOC	1.4E-06	10.2%	Dermal Contact	6.0E-06	42.9%	

Table 3-73
Summary of Chemicals and Exposure Routes Exceeding a Carcinogenic Risk of 1E-06¹, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding 1E-06 Carcinogenic Risk and their Percent Contribution				Exposure Routes Exceeding 1E-06 Carcinogenic Risk (Total Risk from all Chemicals) and their Percent Contribution			
		Chemical	Data Group	Carcinogenic Risk	Percent	Exposure Route	Carcinogenic Risk	Percent	
Risks from Groundwater	Future Maintenance Worker (0 to 2 feet bgs)	2,3,7,8-TCDD	Dioxin/Furan	1.1E-06	8.2%	Inhalation	1.1E-06	7.6%	
		Dibenzo(a,h)anthracene	SVOC	1.1E-06	8.1%				
		Vinyl Chloride	VOC	1.1E-06	7.6%				
		Benzo(a)pyrene	SVOC	7.9E-06	56.4%	Ingestion	6.9E-06	49.4%	
		Benzo(b)fluoranthene	SVOC	1.4E-06	10.2%				
		2,3,7,8-TCDD	Dioxin/Furan	1.1E-06	8.2%				
		Dibenzo(a,h)anthracene	SVOC	1.1E-06	8.1%	Inhalation	1.1E-06	7.6%	
		Vinyl Chloride	VOC	1.1E-06	7.6%				
		2,3,7,8-TCDD	Dioxin/Furan	1.2E-04	95.5%				Dermal Contact (Showering)
		Tetrachloroethene	VOC	1.8E-06	1.4%				
Trichloroethene	VOC	1.7E-06	1.4%						
SITE 50									
Risks from Groundwater	Future Maintenance Worker	Trichloroethene	VOC	4.3E-03	76.8%	Inhalation (Showering)	2.7E-03	48.4%	
		Vinyl Chloride	VOC	5.8E-04	10.4%				
		1,1-Dichloroethene	VOC	4.0E-04	7.2%	Dermal Contact (Showering)	1.3E-03	24.2%	
		1,2-Dichloroethane	VOC	2.0E-04	3.6%				
		Chloroform	VOC	3.8E-05	0.7%				
		2,3,7,8-TCDD	Dioxin/Furan	3.6E-05	0.6%				
		Tetrachloroethene	VOC	3.2E-05	0.6%				
		1,1,2-Trichloroethane	VOC	1.4E-06	0.02%				
		SITE 67							
		Risks from Groundwater	Future Maintenance Worker	1,1-Dichloroethene	VOC	3.0E-03	97.8%	Inhalation (Showering)	1.2E-03
1,2-Dichloroethane	VOC			5.5E-05	1.8%				
1,1,2-Trichloroethane	VOC			1.3E-05	0.4%	Dermal Contact (Showering)	1.1E-03	34.7%	
Trichloroethene	VOC			1.2E-06	0.04%				
CENTRAL CREEK									
Risks from Surface Water	Current Trespasser	2,3,7,8-TCDD	Dioxin/Furan	1.3E-06	99.9%	Dermal Contact	1.3E-06	100.0%	
Risks from Fish Ingestion	Current Trespasser	Arsenic	Metals	1.5E-04	94.08%	Fish Ingestion	1.5E-04	100.0%	
		2,3,7,8-TCDD	Dioxin/Furan	9.1E-06	5.91%				

Table 3-73
Summary of Chemicals and Exposure Routes Exceeding a Carcinogenic Risk of 1E-06¹, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding 1E-06 Carcinogenic Risk and their Percent Contribution				Exposure Routes Exceeding 1E-06 Carcinogenic Risk (Total Risk from all Chemicals) and their Percent Contribution			
		Chemical	Data Group	Carcinogenic Risk	Percent	Exposure Route	Carcinogenic Risk	Percent	
SAUNDERS BRANCH									
Risks from Fish Ingestion	Current Trespasser	Arsenic	Metals	4.6E-04	99.92%	Fish Ingestion	4.6E-04	100.0%	
		GOOSE PRAIRIE CREEK							
Risks from Surface Water	Current Trespasser	Bis(2-ethylhexyl)phthalate	SVOC	3.8E-06	72.1%	Dermal Contact	5.2E-06	100.0%	
		2,3,7,8-TCDD	Dioxin/Furan	1.0E-06	19.93%				
Risks from Fish Ingestion	Current Trespasser	Arsenic	Metals	1.9E-04	63.49%	Fish Ingestion	2.9E-04	100.0%	
		Bis(2-ethylhexyl)phthalate	SVOC	8.8E-05	30.05%				
		2,3,7,8-TCDD	Dioxin/Furan	1.3E-05	4.47%				
		Vinyl Chloride	VOC	2.1E-06	0.70%				
		2,6-Dinitrotoluene	SVOC	1.5E-06	0.50%				
CADDO LAKE									
Risks From Sediment (Recreational Swimming)	Future Child Resident	Benzo(a)pyrene	SVOC	1.1E-05	46.9%	Ingestion	2.0E-05	83.1%	
		Arsenic	Metals	5.6E-06	23.4%	Dermal Contact	4.0E-06	16.9%	
		Dibenzo(a,h)anthracene	SVOC	3.8E-06	16.0%				
		Benzo(b)fluoranthene	SVOC	1.3E-06	5.5%				
		Benzo(a)anthracene	SVOC	1.3E-06	5.4%				
	Benzo(a)pyrene	SVOC	1.0E-05	52.1%					
	Future Adult Resident	Dibenzo(a,h)anthracene	SVOC	3.5E-06	17.8%	Dermal Contact	1.1E-05	56.8%	
		Arsenic	Metals	3.1E-06	15.7%				
		Benzo(b)fluoranthene	SVOC	1.2E-06	6.1%				
		Benzo(a)anthracene	SVOC	1.2E-06	6.0%				
Risks From Fish Ingestion	Future Child Resident	Benzo(a)pyrene	SVOC	2.3E-03	52.2%	Fish Ingestion	4.4E-03	100.0%	
		Dibenzo(a,h)anthracene	SVOC	7.9E-04	17.8%				
		Arsenic	Metals	7.8E-04	17.6%				
		Benzo(b)fluoranthene	SVOC	2.7E-04	6.1%				
		Benzo(a)anthracene	SVOC	2.4E-04	5.5%				
		2,3,7,8-TCDD	Dioxin/Furan	1.9E-05	0.4%				
		Benzo(k)fluoranthene	SVOC	9.8E-06	0.2%				
		Chrysene	SVOC	2.2E-06	0.1%				
		Future Adult Resident	Benzo(a)pyrene	SVOC	4.0E-03				52.2%
Dibenzo(a,h)anthracene	SVOC		1.4E-03	17.8%					
Arsenic	Metals		1.3E-03	17.6%					

Table 3-73
Summary of Chemicals and Exposure Routes Exceeding a Carcinogenic Risk of 1E-06¹, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding 1E-06 Carcinogenic Risk and their Percent Contribution				Exposure Routes Exceeding 1E-06 Carcinogenic Risk (Total Risk from all Chemicals) and their Percent Contribution			
		Chemical	Data Group	Carcinogenic Risk	Percent	Exposure Route		Carcinogenic Risk	Percent
		Benzo(b)fluoranthene	SVOC	4.6E-04	6.1%				
		Benzo(a)anthracene	SVOC	4.2E-04	5.5%				
		2,3,7,8-TCDD	Dioxin/Furan	3.3E-05	0.4%				
		Benzo(k)fluoranthene	SVOC	1.7E-05	0.2%				
		Chrysene	SVOC	3.8E-06	0.1%				

¹ Chemicals and exposure routes not exceeding a 1E-06 cancer risk have not been presented on this table.

² EPCs for arsenic in the 0 to 0.5 and 0 to 2 foot depth intervals (5.5 and 4.7 mg/kg) are less than the background site-specific UTL of 7 mg/kg.

bgs = below ground surface

COPC = chemical of potential concern

EPC = exposure point concentration

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

SVOC = semi-volatile organic compound

VOC = volatile organic compound

TCDD = tetrachlorodibenzo-p-dioxin

UTL = upper tolerance level

Table 3-74
Summary of Chemicals and Exposure Routes Exceeding a Hazard Index of 1¹, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding a Hazard Index of 1 and their Percent Contribution				Exposure Routes Exceeding a Hazard Index of 1 (Total Hazard Index from all Chemicals) and their Percent Contribution			
		Chemical	Data Group	Hazard Index	Percent	Exposure Route	Hazard Index	Percent	
Risks from Groundwater	Future Maintenance Worker	SITE 35A							
		Tetrachloroethene	VOC	2.8E+01	74.5%	Dermal Contact (Showering)	2.3E+01	61.8%	
		1,1-Dichloroethene	VOC	3.4E+00	8.9%	Ingestion	1.3E+01	32.9%	
		Manganese ²	Metals	1.2E+00	3.2%	Inhalation (Showering)	2.0E+00	5.3%	
		SITE 35B							
Risks from Groundwater	Future Maintenance Worker	Thallium ²	Metals	1.2E+01	76.0%	Ingestion	1.5E+01	93.5%	
		Antimony ²	Metals	2.0E+00	12.4%				
		Trichloroethene	VOC	1.2E+00	7.9%				
Risks from Groundwater	Future Maintenance Worker	SITE 35C							
		Thallium ²	Metals	1.6E+01	74.9%	Ingestion	2.2E+01	99.4%	
		Silver	Metals	2.3E+00	10.7%				
		Nickel	Metals	1.2E+00	5.6%				
		Aluminum	Metals	1.1E+00	4.83%				
Risks from Groundwater	Future Maintenance Worker	SITE 46							
		Thallium	Metals	2.4E+01	78.8%	Ingestion	3.1E+01	99.9%	
		Antimony ²	Metals	1.5E+00	5.0%				
		Manganese ²	Metals	1.4E+00	4.4%				
Risks from Groundwater	Future Maintenance Worker	SITE 47							
		Perchlorate	Non-Metallic	9.0E+02	80.2%	Ingestion	9.8E+02	87.5%	
		Trichloroethene	VOC	1.1E+02	10.0%	Inhalation (Showering)	7.5E+01	6.7%	
		Chloroform	VOC	6.9E+01	6.1%	Dermal Contact (Showering)	6.5E+01	5.8%	
		Thallium ²	Metals	1.1E+01	1.0%				
		Acetone	VOC	8.1E+00	0.7%				
		Cadmium	Metals	3.9E+00	0.3%				
		Nickel	Metals	3.9E+00	0.3%				
		cis-1,2-Dichloroethene	VOC	2.5E+00	0.2%				
		Silver	Metals	2.0E+00	0.2%				
		Tin	Metals	2.0E+00	0.2%				
		Antimony ²	Metals	1.9E+00	0.2%				
		Manganese ²	Metals	1.6E+00	0.1%				

Table 3-74
Summary of Chemicals and Exposure Routes Exceeding a Hazard Index of 1¹, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding a Hazard Index of 1 and their Percent Contribution				Exposure Routes Exceeding a Hazard Index of 1 (Total Hazard Index from all Chemicals) and their Percent Contribution								
		Chemical	Data Group	Hazard Index	Percent	Exposure Route	Hazard Index	Percent						
SITE 48														
Risks from Groundwater	Future Maintenance Worker	Thallium	Metals	2.5E+01	69.5%	Ingestion	3.6E+01	99.9%						
		Silver	Metals	3.5E+00	9.8%									
		Nickel	Metals	2.0E+00	5.4%									
		Perchlorate	Non-Metallic	1.7E+00	4.8%									
		Aluminum	Metals	1.6E+00	4.4%									
		Antimony ²	Metals	1.2E+00	3.5%									
SITE 50														
Risks from Groundwater	Future Maintenance Worker	Perchlorate	Non-Metallic	2.0E+02	64.2%	Ingestion	2.4E+02	77.9%						
		Trichloroethene	VOC	8.4E+01	27.5%				Dermal Contact (Showering)	4.8E+01	15.8%			
		Chloroform	VOC	1.4E+01	4.7%									
		cis-1,2-Dichloroethene	VOC	5.3E+00	1.7%							Inhalation (Showering)	1.9E+01	6.2%
		1,2-Dichloroethane	VOC	3.4E+00	1.1%									
SITE 67														
Risks from Groundwater	Future Maintenance Worker					Ingestion	2.3E+00	55.9%						
									Inhalation (Showering)	1.1E+00	26.0%			
CENTRAL CREEK														
Risks from Fish Ingestion	Current Trespasser	Cadmium	Metals	4.1E+00	40.43%	Fish Ingestion	1.0E+01	100.0%						
		Arsenic	Metals	1.9E+00	18.49%									
		Manganese	Metals	1.3E+00	12.94%									
		SAUNDERS BRANCH												
Risks from Fish Ingestion	Current Trespasser	Arsenic	Metals	5.9E+00	71.88%	Fish Ingestion	8.2E+00	100.0%						
GOOSE PRAIRIE CREEK														
Risks from Fish Ingestion	Current Trespasser	Di-n-butyl phthalate	SVOC	3.9E+00	26.83%	Fish Ingestion	1.4E+01	100.0%						
		Arsenic	Metals	2.4E+00	16.80%									
		bis(2-Ethylhexyl)phthalate	SVOC	1.8E+00	12.78%									
		Aluminum	Metals	1.1E+00	7.81%									
CADDO LAKE														
Risks From Fish Ingestion	Future Child Resident	Manganese	Metals	7.9E+02	92.5%	Fish Ingestion	8.5E+02	100.0%						
		Arsenic	Metals	2.0E+01	2.4%									
		Aluminum	Metals	1.6E+01	1.9%									
		Thallium	Metals	1.1E+01	1.3%									
		Vanadium	Metals	3.7E+00	0.4%									

Table 3-74
Summary of Chemicals and Exposure Routes Exceeding a Hazard Index of 1¹, Group 4 RA, LHAAP, Karnack, Texas

Scenario	Receptor	Chemicals Exceeding a Hazard Index of 1 and their Percent Contribution				Exposure Routes Exceeding a Hazard Index of 1 (Total Hazard Index from all Chemicals) and their Percent Contribution		
		Chemical	Data Group	Hazard Index	Percent	Exposure Route	Hazard Index	Percent
		Barium	Metals	3.1E+00	0.4%			
		Cadmium	Metals	2.2E+00	0.3%			
		Mercury	Metals	2.1E+00	0.2%			
		Silver	Metals	1.7E+00	0.2%			
	Future Adult Resident	Manganese	Metals	3.4E+02	92.5%	Fish Ingestion	3.7E+02	100.0%
		Arsenic	Metals	8.7E+00	2.4%			
		Aluminum	Metals	6.8E+00	1.9%			
		Thallium	Metals	4.7E+00	1.3%			
		Vanadium	Metals	1.6E+00	0.4%			
		Barium	Metals	1.3E+00	0.4%			

¹Chemicals and exposure routes not exceeding a hazard index of 1 have not been presented on this table.

²The EPC for the associated chemical is less than or approximately equal to the site-specific background UTL for groundwater.

bgs = below ground surface

COPC = Chemical of Potential Concern

EPC = Exposure Point Concentration

LHAAP = Longhorn Army Ammunition Plant

RA = risk assessment

SVOC = semi-volatile organic compound

VOC = volatile organic compound

UTL = upper tolerance level

Table 3-75
Summary of Uncertainty Analysis, Group 4 RA, LHAAP, Karnack, Texas

Uncertainty Element	Probable Effect on Total Risk Estimate		
	Overestimation	Underestimation	Over- or Underestimation
<u>Data Evaluation and Reduction</u> <ul style="list-style-type: none"> • Use of J qualified data • Assumption of one-half the SQL for nondetect samples • Not quantitatively evaluating chemicals that were never detected in any sample for a particular media, but had maximum DLs in excess of the TCEQ RBSV • Actual fish tissue data were not available from waterways and Caddo Lake • Surface water data not available for Caddo Lake 	X	X	X X
<u>Exposure Assessment</u> <ul style="list-style-type: none"> • General estimation of exposure point concentrations • Use of ½ of the DL for ND dioxin/furan congeners in application of 2,3,7,8-TCDD TEF methodology for developing EPCs • Not using ½ the maximum DL when it exceeded the EPC • Standard assumptions regarding exposure frequencies and exposure durations • VOC concentrations in environmental media remaining unchanged for a lifetime of exposure • Use of RfCs and URFs in calculating inhalation risks from noningestion groundwater use • Use of default dermal ABS values 	X X M H X	X	X
<u>Toxicity Assessment</u> <ul style="list-style-type: none"> • Cancer slope factors/reference doses • Absence of inhalation RfDs and CSFs for some COPCs • Use of chronic RfDs for the child resident • Use of default GI absorption factors to derive dermal slope factors and RfDs from oral toxicity criteria 	M/H X	X	X
<u>Risk Characterization</u> <ul style="list-style-type: none"> • Additivity of cancer risks and hazard indices 			X

Table 3-75 (continued)
Summary of Uncertainty Analysis, Group 4 RA, LHAAP, Karnack, Texas

ABS = absorption factor
COPC = contaminant of potential concern
CSF = cancer slope factor
DL = detection limit
EPC = exposure point concentration
GI = gastrointestinal
H = high degree
L = low degree
LHAAP = Longhorn Army Ammunition Plant
M = moderate degree
RA = risk assessment
RBSV = risk-based screening value
RfC = reference concentration
RfD = reference dose
SQL = standard quantification limit
TCDD = tetrachlorodibenzo-p-dioxin
TEF = toxicity equivalency factor
TCEQ = Texas Commission on Environmental Quality
URF = unit risk factor
VOC = volatile organic compound
X = measure of degree of over- or underestimation cannot be determined

Table 3-76
RGOs for Soil and Groundwater, Group 4 RA, LHAAP, Karnack, Texas

Analyte Group	Chemical	Carcinogenic RGOs			Noncancer RGOs		BG ^{1,2}	Federal Drinking Water Standard	Group 4 Site EPCs										
		CR = 1E-06	CR = 1E-05	CR = 1E-04	HI = 0.1	HI = 1			95% UTL	On-Site Soil - Maintenance Worker Scenario - mg/kg ^{3,4}									
										04	08	35A	35B	35C	46	47	48	50	67
On-Site Groundwater - Maintenance Worker Scenario - mg/L																			
Dioxin/furan	2,3,7,8-TCDD	1.38E-05	1.38E-04	1.38E-03	---	---	---	---	1.59E-05 *	---	2.53E-05 *	---	1.57E-04 *	---	---	1.58E-05 *	---	---	
Metals	Arsenic	1.59E+00	1.59E+01	1.59E+02	---	---	---	---	---	---	---	---	---	---	---	5.51E+00 ^W	4.7E+00 *	---	
Pesticide	Aldrin	7.38E-02	7.38E-01	7.38E+00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
VOC	Benzo(a)anthracene	2.03E+00	2.03E+01	2.03E+02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
VOC	Benzo(a)pyrene	2.03E-01	2.03E+00	2.03E+01	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
VOC	Benzo(b)fluoranthene	2.03E+00	2.03E+01	2.03E+02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
VOC	bis(2-Ethylhexyl)phthalate	4.68E+01	4.68E+02	4.68E+03	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
VOC	Dibenz(a,h)anthracene	2.03E-01	2.03E+00	2.03E+01	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
VOC	Indeno(1,2,3-cd)pyrene	2.03E+00	2.03E+01	2.03E+02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
VOC	Vinyl chloride ⁵	4.65E-01	4.65E+00	4.65E+01	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
On-Site Groundwater - Maintenance Worker Scenario - mg/L																			
Dioxin/furan	2,3,7,8-TCDD	2.06E-10	2.06E-09	2.06E-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Explosive	2,4,6-Trinitrotoluene	---	---	---	5.11E-03	5.11E-02	---	---	---	---	---	---	---	---	---	---	---	---	
Explosive	RDX	2.60E-03	2.60E-02	2.60E-01	3.07E-02	3.07E-01	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	Aluminum	---	---	---	1.02E+01	1.02E+02	2.84E+01	0.05 to 0.2 b	---	---	---	---	---	---	---	---	---	---	
Metals	Antimony	---	---	---	4.09E-03	4.09E-02	5.00E-02	6.00E-03 a	---	---	---	---	---	---	---	---	---	---	
Metals	Barium	---	---	---	7.15E-01	7.15E+00	3.30E+00	2.00E+00 a	---	---	---	---	---	---	---	---	---	---	
Metals	Beryllium	---	---	---	2.04E-02	2.04E-01	---	4.00E-03 a	---	---	---	---	---	---	---	---	---	---	
Metals	Cadmium	---	---	---	5.11E-03	5.11E-02	9.00E-02	5.00E-03 a	---	---	---	---	---	---	---	---	---	---	
Metals	Chromium	---	---	---	1.53E+01	1.53E+02	1.60E-01	1.00E-01 a	---	---	---	---	---	---	---	---	---	---	
Metals	Cobalt	---	---	---	2.04E-01	2.04E+00	3.90E-01	---	---	---	---	---	---	---	---	---	---	---	
Metals	Manganese	---	---	---	4.80E-01	4.80E+00	1.18E+01	5.00E-02 b	---	---	---	---	---	---	---	---	---	---	
Metals	Nickel	---	---	---	2.04E-01	2.04E+00	9.00E-02	---	---	---	---	---	---	---	---	---	---	---	
Metals	Selenium	---	---	---	5.11E-02	5.11E-01	5.00E-03	5.00E-02 a	---	---	---	---	---	---	---	---	---	---	
Metals	Silver	---	---	---	5.11E-02	5.11E-01	3.00E-02	1.00E-01 b	---	---	---	---	---	---	---	---	---	---	
Metals	Strontium	---	---	---	6.13E+00	6.13E+01	1.00E+01	---	---	---	---	---	---	---	---	---	---	---	
Metals	Thallium	---	---	---	8.18E-04	8.18E-03	1.00E-01	2.00E-03 a	---	---	---	---	---	---	---	---	---	---	
Metals	Tin	---	---	---	6.13E+00	6.13E+01	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	Vanadium	---	---	---	7.15E-02	7.15E-01	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	Antimony	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	Perchlorate	---	---	---	9.20E-03	9.20E-02	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	2,4-Dinitrotoluene	4.21E-04	4.21E-03	4.21E-02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	2,6-Dinitrotoluene	4.21E-04	4.21E-03	4.21E-02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	bis(2-Ethylhexyl)phthalate	1.24E-02	1.24E-01	1.24E+00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	Pentachlorophenol	6.62E-04	6.62E-03	6.62E-02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	1,1,1-Trichloroethane	---	---	---	5.95E-01	5.95E+00	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	1,1,2-Trichloroethane	2.62E-03	2.62E-02	2.62E-01	2.14E-02	2.14E-01	---	---	---	---	---	---	---	---	---	---	---	---	
Metals	1,1-Dichloroethene	1.26E-04	1.26E-03	1.26E-02	3.94E-02	3.94E-01	---	---	---	---	---	---	---	---	---	---	---	---	

Table 3-76
RGOs for Soil and Groundwater, Group 4 RA, LHAAP, Karnack, Texas

Analyte Group	Chemical	Carcinogenic RGOs				Noncancer RGOs		BG ^{1,2} 95% UTL	Federal Drinking Water Standard	Group 4 Site EPCs									
		CR = 1E-06	CR = 1E-05	CR = 1E-04	HI = 0.1	HI = 1	04			08	35A	35B	35C	46	47	48	50	67	
					3.47E-03	3.47E-02													
OC	1,2,4-Trimethylbenzene				3.47E-03	3.47E-02		NA									3.9E-03 *		
OC	1,2-Dichloroethane	4.87E-04	4.87E-03	4.87E-02	2.88E-03	2.88E-02		5.00E-03 a			3.00E-03 *		3.0E-03 *		5.7E-03 *		9.8E-02 *	2.7E-02 *	
OC	Acetone				2.58E-01	2.58E+00			NA						2.1E+01 *				
OC	Chloroform	6.62E-04	6.62E-03	6.62E-02	1.74E-04	1.74E-03			8.00E-02 a						1.2E-01 *		2.5E-02 *		
OC	cis-1,2-Dichloroethene				8.37E-02	8.37E-01			7.00E-02 a						2.09E+00 *		4.4E+00 *		
OC	Tetrachloroethene	1.10E-03	1.10E-02	1.10E-01	1.91E-02	1.91E-01			5.00E-03 a		5.4E+00 *	3.4E-02 *		2.4E-03 *	1.68E-01 *	2.0E-03 *	3.5E-02 *		
OC	Trichloroethene	5.16E-03	5.16E-02	5.16E-01	2.63E-02	2.63E-01			5.00E-03 a		1.60E-01 *	3.27E-01 *	7.0E-03 *		2.94E+01 *	9.0E-03 *	2.2E+01 *	6.3E-03 *	
OC	Vinyl chloride	1.73E-04	1.73E-03	1.73E-02	2.01E-02	2.01E-01			2.00E-03 a		1.00E-02 *			7.1E-04 *	1.27E-01 *		1.0E-01 *		

Background soil concentrations were obtained from the May 1995 Longhorn Army Ammunition Plant Final Summary Report. Soil Background Concentration Report Prepared by USACE, Tulsa District. Background values are specific to surface soil (0 to 0.5 feet bgs).

Background groundwater concentrations were obtained from the June 1995 Longhorn Army Ammunition Plant Final Summary Report, Groundwater Background Concentration Report. Prepared by USACE, Tulsa District.

With the exception of benzo(a)anthracene at Site 46, PRGs calculated for on-site soil are the same for the 0 to 0.5 and 0 to 2 foot intervals. An PRG for benzo(a)anthracene was calculated for the 0 to 2 foot interval at Site 46. Note, no soil PRGs were calculated for the trespasser scenario.

With the exception of benzo(a)anthracene at Site 46 and arsenic at Site 47, EPCs were the same for the 0 to 0.5 and 0 to 2 foot intervals. The EPC for benzo(a)anthracene is based on the 0 to 2 foot interval. Two EPCs have been presented for arsenic. The first is for the 0 to 0.5 foot interval, and the second is for the 0 to 2 foot interval.

Vinyl chloride was selected as a COPC for the 0 to 7 foot interval. It was not identified as a COPC in either the 0 to 0.5 or 0 to 2 foot intervals. The remedial goal only reflects protection through inhalation of volatile chemicals.

* = A PRG was calculated based on carcinogenic risks.

▲ = A PRG was calculated based on noncarcinogenic hazard indices.

— = MCL. (EPA Drinking Water Standards and Health Advisories: EPA 822-B-00-001, Summer 2000.)

1 = SDWR. (EPA Drinking Water Standards and Health Advisories: EPA 822-B-00-001, Summer 2000.)

IG = background

COPC = chemical of potential concern

CR = cancer risk

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

HI = hazard index

LHAAP = Longhorn Army Ammunition Plant

MCL = Maximum contaminant level, defined as the highest level of a contaminant that is allowed in drinking water.

NA = not available

RA = risk assessment

RGO = remedial goal option

SDWR = Secondary drinking water regulation, defined as a non-enforceable federal guideline regarding cosmetic effects (such as tooth or skin discoloration) or aesthetic effects (such as taste, odor, or color) of drinking water.

VOC = semivolatile organic compound

TDD = tetrachlorodibenzo-p-dioxin

JTL = upper tolerance level

VOC = volatile organic compound

Table 3-77
RGOs for Surface Water, Sediment, and Fish, Group 4 RA, LHAAP, Karnack, Texas

Analyte Group	Chemical	Carcinogenic RGOs			Noncancer RGOs		Texas Surface Water Quality Standard	Group 4 Site EPCs		
		CR = 1E-06	CR = 1E-05	CR = 1E-04	HI = 0.1	HI = 1		Central Creek	Saunders Branch	Goose Prairie Creek
Surface Water - Trespasser Scenario - mg/L										
Dioxin/Furan	2,3,7,8-TCDD	1.04E-09	1.04E-08	1.04E-07	---	---	1.34E-10 a	1.31E-09 *		1.08E-09 *
SVOC	bis(2-Ethylhexyl)phthalate	1.41E-01	1.41E+00	1.41E+01	---	---	1.20E-03 b			5.3E-01 *
Sediment - Child Resident Scenario - mg/kg										
Metal	Arsenic	1.34E+00	1.34E+01	1.34E+02	---	---	NA			7.52E+00 *
SVOC	Benzo(a)anthracene	2.31E+00	2.31E+01	2.31E+02	---	---	NA			2.98E+00 *
SVOC	Benzo(a)pyrene	2.31E-01	2.31E+00	2.31E+01	---	---	NA			2.59E+00 *
SVOC	Benzo(b)fluoranthene	2.31E+00	2.31E+01	2.31E+02	---	---	NA			3.02E+00 *
SVOC	Dibenz(a,h)anthracene	2.31E-01	2.31E+00	2.31E+01	---	---	NA			8.85E-01 *
Sediment - Adult Resident Scenario - mg/kg										
Metal	Arsenic	2.42E+00	2.42E+01	2.42E+02	---	---	NA			7.52E+00 *
SVOC	Benzo(a)anthracene	2.53E+00	2.53E+01	2.53E+02	---	---	NA			2.98E+00 *
SVOC	Benzo(a)pyrene	2.53E-01	2.53E+00	2.53E+01	---	---	NA			2.59E+00 *
SVOC	Benzo(b)fluoranthene	2.53E+00	2.53E+01	2.53E+02	---	---	NA			3.02E+00 *
SVOC	Dibenz(a,h)anthracene	2.53E-01	2.53E+00	2.53E+01	---	---	NA			8.85E-01 *
Fish - Trespasser Scenario - mg/kg										
Dioxin/Furan	2,3,7,8-TCDD	2.02E-07	2.02E-06	2.02E-05	---	---	NA	1.84E-06 *		2.65E-06 *
Explosive	2,4,6-Trinitrotoluene	---	---	---	2.59E-01	2.59E+00	NA			3.99E-01 *
Explosive	2-Amino-4,6-dinitrotoluene	---	---	---	8.64E-02	8.64E-01	NA			5.93E-01 *
Metal	Aluminum	---	---	---	5.19E+02	5.19E+03	NA	4.68E+03 *	3.15E+03 *	5.83E+03 *
Metal	Antimony	---	---	---	2.07E-01	2.07E+00	NA	1.08E+00 *	7.2E-01 *	1.82E+00 *
Metal	Arsenic	2.02E-02	2.02E-01	2.02E+00	1.56E-01	1.56E+00	NA	2.93E+00 *	9.18E+00 *	3.76E+00 *
Metal	Barium	---	---	---	3.63E+01	3.63E+02	NA	8.1E+01 *	1.33E+02 *	1.31E+02 *
Metal	Beryllium	---	---	---	1.04E+00	1.04E+01	NA		1.07E+00 *	1.08E+00 *
Metal	Cadmium	---	---	---	5.19E-01	5.19E+00	NA	2.13E+01 *		
Metal	Cobalt	---	---	---	1.04E+01	1.04E+02	NA	1.35E+01 *		1.23E+01 *
Metal	Manganese	---	---	---	7.26E+01	7.26E+02	NA	9.55E+02 *	1.31E+02 *	3.27E+02 *
Metal	Nickel	---	---	---	1.04E+01	1.04E+02	NA	2.25E+01 *	1.24E+01 *	2.6E+01 *
Metal	Selenium	---	---	---	2.59E+00	2.59E+01	NA			4.57E+00 *
Metal	Thallium	---	---	---	4.15E-02	4.15E-01	NA			3.1E-01 *
Metal	Vanadium	---	---	---	3.63E+00	3.63E+01	NA	2.43E+01 *	2.07E+01 *	3.2E+01 *
SVOC	2,6-Dinitrotoluene	4.45E-02	4.45E-01	4.45E+00	---	---	NA			6.51E-02 *

Table 3-77
RGOs for Surface Water, Sediment, and Fish, Group 4 RA, LHAAP, Karnack, Texas

Analyte Group	Chemical	Carcinogenic RGOs			Noncancer RGOs		Texas Surface Water Quality Standard	Group 4 Site EPCs			
		CR = 1E-06	CR = 1E-05	CR = 1E-04	HI = 0.1	HI = 1		Central Creek	Saunders Branch	Goose Prairie Creek	Caddo Lake
SVOC	bis(2-Ethylhexyl)phthalate	2.16E+00	2.16E+01	2.16E+02	1.04E+01	1.04E+02	NA			1.91E+02 • ▲	
SVOC	Di-n-butyl phthalate	---	---	---	5.19E+01	5.19E+02	NA			2.0E+03 •	
VOC	Vinyl chloride	2.02E-02	2.02E-01	2.02E+00	---	---	NA			4.14E-02 •	
Fish - Child Resident Scenario - mg/kg											
Dioxin/Furan	2,3,7,8-TCDD	8.64E-08	8.64E-07	8.64E-06	---	---	NA				1.68E-06 •
Metal	Aluminum	---	---	---	1.11E+02	1.11E+03	NA				1.76E+04 •
Metal	Arsenic	8.64E-03	8.64E-02	8.64E-01	3.33E-02	3.33E-01	NA				6.77E+00 • ▲
Metal	Barium	---	---	---	7.78E+00	7.78E+01	NA				2.38E+02 •
Metal	Beryllium	---	---	---	2.22E-01	2.22E+00	NA				1.57E+00 •
Metal	Cadmium	---	---	---	1.11E-01	1.11E+00	NA				2.46E+00 •
Metal	Cobalt	---	---	---	2.22E+00	2.22E+01	NA				1.54E+01 •
Metal	Copper	---	---	---	4.44E+00	4.44E+01	NA				6.15E+00 •
Metal	Manganese	---	---	---	5.56E-02	5.56E-01	NA				4.39E+02 •
Metal	Mercury	---	---	---	3.33E-02	3.33E-01	NA				6.96E-01 •
Metal	Nickel	---	---	---	2.22E+00	2.22E+01	NA				2.08E+01 •
Metal	Selenium	---	---	---	5.56E-01	5.56E+00	NA				1.93E+00 •
Metal	Silver	---	---	---	5.56E-01	5.56E+00	NA				9.63E+00 •
Metal	Thallium	---	---	---	8.89E-03	8.89E-02	NA				9.81E-01 •
Metal	Vanadium	---	---	---	7.78E-01	7.78E+00	NA				2.9E+01 •
Metal	Zinc	---	---	---	3.33E+01	3.33E+02	NA				6.04E+01 •
SVOC	Benzo(a)anthracene	1.78E-02	1.78E-01	1.78E+00	---	---	NA				4.32E+00 •
SVOC	Benzo(a)pyrene	1.78E-03	1.78E-02	1.78E-01	---	---	NA				4.12E+00 •
SVOC	Benzo(b)fluoranthene	1.78E-02	1.78E-01	1.78E+00	---	---	NA				4.8E+00 •
SVOC	Benzo(g,h,i)perylene	---	---	---	3.33E+00	3.33E+01	NA				4.32E+00 •
SVOC	Benzo(k)fluoranthene	1.78E-01	1.78E+00	1.78E+01	---	---	NA				1.73E+00 •
SVOC	Chrysene	1.78E+00	1.78E+01	1.78E+02	---	---	NA				3.96E+00 •
SVOC	Dibenzo(a,h)anthracene	1.78E-03	1.78E-02	1.78E-01	---	---	NA				1.41E+00 •
SVOC	Fluoranthene	---	---	---	4.44E+00	4.44E+01	NA				9.43E+00 •
SVOC	Phenanthrene	---	---	---	3.33E+00	3.33E+01	NA				7.43E+00 •
Fish - Adult Resident Scenario - mg/kg											
Dioxin/Furan	2,3,7,8-TCDD	5.04E-08	5.04E-07	5.04E-06	---	---	NA				1.68E-06 •
Metal	Aluminum	---	---	---	2.59E+02	2.59E+03	NA				1.76E+04 •
Metal	Arsenic	5.04E-03	5.04E-02	5.04E-01	7.78E-02	7.78E-01	NA				6.77E+00 • ▲
Metal	Barium	---	---	---	1.81E+01	1.81E+02	NA				2.38E+02 •

Table 3-77
RGOs for Surface Water, Sediment, and Fish, Group 4 RA, LHAAP, Karnack, Texas

Analyte Group	Chemical	Carcinogenic RGOs			Noncancer RGOs		Texas Surface Water Quality Standard	Group 4 Site EPCs			
		CR = 1E-06	CR = 1E-05	CR = 1E-04	HI = 0.1	HI = 1		Central Creek	Saunders Branch	Goose Prairie Creek	Caddo Lake
Metal	Beryllium	---	---	---	5.19E-01	5.19E+00	NA				1.57E+00 *
Metal	Cadmium	---	---	---	2.59E-01	2.59E+00	NA				2.46E+00 *
Metal	Cobalt	---	---	---	5.19E+00	5.19E+01	NA				1.54E+01 *
Metal	Manganese	---	---	---	1.30E-01	1.30E+00	NA				4.39E+02 *
Metal	Mercury	---	---	---	7.78E-02	7.78E-01	NA				6.96E-01 *
Metal	Nickel	---	---	---	5.19E+00	5.19E+01	NA				2.08E+01 *
Metal	Selenium	---	---	---	1.30E+00	1.30E+01	NA				1.93E+00 *
Metal	Silver	---	---	---	1.30E+00	1.30E+01	NA				9.63E+00 *
Metal	Thallium	---	---	---	2.07E-02	2.07E-01	NA				9.81E-01 *
Metal	Vanadium	---	---	---	1.81E+00	1.81E+01	NA				2.9E+01 *
SVOC	Benzo(a)anthracene	1.04E-02	1.04E-01	1.04E+00	---	---	NA				4.32E+00 *
SVOC	Benzo(a)pyrene	1.04E-03	1.04E-02	1.04E-01	---	---	NA				4.12E+00 *
SVOC	Benzo(b)fluoranthene	1.04E-02	1.04E-01	1.04E+00	---	---	NA				4.8E+00 *
SVOC	Benzo(k)fluoranthene	1.04E-01	1.04E+00	1.04E+01	---	---	NA				1.73E+00 *
SVOC	Chrysene	1.04E+00	1.04E+01	1.04E+02	---	---	NA				3.96E+00 *
SVOC	Dibenzo(a,h)anthracene	1.04E-03	1.04E-02	1.04E-01	---	---	NA				1.41E+00 *

* = A PRG was calculated based on carcinogenic risks.

▲ = A PRG was calculated based on noncarcinogenic hazard indices.

a = TSWQS Criteria for human health protection for the consumption of water and fish. (Figure 30 TAC 307.6(d)(1), Table 3).

b = A TSWQS was not available. The value is based on federal AWQC criteria for human health protection for the consumption of water and fish. (EPA 2000. National Recommended Water Quality Criteria: 2002. EPA-822-R-02-047. November 2002)

AWQC = Ambient Water Quality Criteria

CR = cancer risk

EPC = exposure point concentration

HI = hazard index

LHAAP = Longhorn Army Ammunition Plant

NA = Not Applicable

RA = risk assessment

RGO = remedial goal option

SVOC = semivolatile organic compound

TCDD = tetrachlorodibenzo-p-dioxin

TSWQS = Texas Surface Water Quality Standard

VOC = volatile organic compound