N60508.AR.000673
NAS WHITING FIELD
5090.3a

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT NAS WHITING FIELD FL
7/1/1993
ABB ENVIRONMENTAL

01.04.00.0002

ID-00018

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

CONTRACT TASK ORDER NO. 084
NAVY CLEAN - DISTRICT I
CONTRACT NO. N62467-89-D-0317

JULY 1993

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29419-9010

PRINTED ON RECYCLED PAPER

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAVAL AIR STATION, WHITING FIELD
MILTON, FLORIDA

CTO No. 084

Contract No. N62467-89-D-0317

Prepared by:

ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Kim Queen, Code 1859, Engineer-in-Charge

July 1993

ACKNOWLEDGMENTS

In preparing this report, ABB Environmental Services, Inc. commend the support, assistance, and cooperation provided by the personnel at NAS Whiting Field and SOUTHNAVFACENGCOM. In particular, we acknowledge the outstanding effort, dedication, and professionalism provided by the following people in the preparation of this report

Name	Position	Location
Kim Queen	Remedial Project Manager	SOUTHNAVFACENGCOM
James Malone	IR Branch Manager	SOUTHNAVFACENGCOM
Pat Durbin	Environmental Coordinator	NAS Whiting Field
Jim Holland	Environmental Coordinator	NAS Whiting Field
Capt. Eckart	Commanding Officer	NAS Whiting Field

TABLE OF CONTENTS

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

Section	Title	Page No.
1.0	INTRODUCTION	1-1
2.0	SITE BACKGROUND	2-1
2.1	SITE DESCRIPTION	2-1
2.2	ECOLOGICAL CHARACTERIZATION	2-1
2.3	BACKGROUND	2-4
3.0	FIELD PROGRAM SUMMARY	3-1
3.1	GEOPHYSICAL SURVEY	3-1
3.2	TOTAL PETROLEUM HYDROCARBON (TPH) SCREENING SAMPLES	3-1
3.3	TPH ANALYSIS	3-1
3.4	SEDIMENT SAMPLE COLLECTION FOR LABORATORY ANALYSIS	3-4
3.5	DRUM REMOVAL	3-4
3.6	QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)	3-5
3.6.1	Sample Handling, Delivery, and Chain of Custody	3-5
3.6.2	Field Quality Control Sample Assessment	3-5
3.6.3	Chemical Analysis Data Quality Assessment	3-5
3.6.4	Data Quality Objectives (DQOs) Assessment	3-5
4.0	RESULTS AND CONCLUSIONS	4-1
4.1	GEOPHYSICAL SURVEY RESULTS	4-1
4.2	SEDIMENT SAMPLE TPH FIELD SCREENING RESULTS	4-1
4.3	SEDIMENT SAMPLE LABORATORY ANALYTICAL RESULTS	4-5
4.4	SEDIMENT APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENT (ARAR) EVALUATION	4-16
4.5	SEDIMENT SUMMARY AND CONCLUSIONS	4-20

REFERENCES

APPENDICES

Appendix A: TPH Field Screening
Appendix B: Sediment Sample Analytical Results

LIST OF FIGURES

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

Figure	Title	Page No.
2-1	Site Location Map	2-2
2-2	Site Layout	2-3
3-1	Magnetic Data Collection Locations	3-2
3-2	Sediment Sample Locations for TPH Screening	3-3
4-1	Vertical Gradient Isopleth Map	4-2
4-2	Total Magnetic Field Isopleth Map	4-3
4-3	TPH Screening Concentration Contours	4-4
4-4	Sediment Sample Locations for Laboratory Analysis	4-6

LIST OF TABLES

Tables	Title	Page No.
3-1	Field Quality Control (QC) Sample Analysis Results	3-6
4-1	Sediment Analytical Results, Volatile Organic Compounds	4-7
4-2	Sediment Analytical Results, Semivolatile Organic Compounds	4-9
4-3	Sediment Analytical Results, Pesticides and Polychlorinated Biphenyl (PCB) Compounds	4-11
4-4	Sediment Analytical Results, Inorganic Analytes	4-13
4-5	Sediment Analytical Results	4-17
4-6	Chemical-Specific Guidance for Sediments	4-18

GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ARARs	Applicable or Relevant and Appropriate Requirements
AWQC	ambient water quality criteria
CCFI	Clear Creek Floodplain Investigation
COC	chain of custody
CRDL	Contract Required Detection Limits
CTO	Contract Task Order
DCE	dichloroethene
DQOs	data quality objectives
EM	electromagnetic
ER-L	Effects Range Low
FGFWFC	Florida Game and Freshwater Fish Commission
IR	Installation Restoration
MEK	methyl ethyl ketone
MS/MSD	matrix spike/matrix spike duplicate
μg/kg	micrograms per kilograms
μm	micrometer
mg/ℓ	milligrams per liter
mg/kg	milligrams per kilograms
ml	milliliter
mm	millimeter
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NOAA	National Oceanic and Atmospheric Administration
PCBs	polychlorinated biphenyls
QC	quality control
RI	Remedial Investigation
SOPs	Standard Operating Procedures
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command
SVOCs	semivolatile organic compounds
TAL	target analyte list
TCL	target compound list
TFH	total fuel hydrocarbons
TIC	tentatively identified compound
TOC	total organic carbon
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
VOCs	volatile organic compounds

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), was contracted by the Department of the Navy, Southern Division, Naval Facilities Engineering Command (SOUTHNAVFAC-ENGCOM), to conduct the Floodplain Investigation of Clear Creek at Naval Air Station (NAS) Whiting Field located in Milton, Florida. The investigation was conducted under contract number N62467-89-D-0317 and Contract Task Order (CTO) No. 84.

The Clear Creek floodplain sediment contamination (adjacent to Site 16) was detected and observed during the Phase I Remedial Investigation (RI) surface water and sediment sampling and the Phase II-A ecological survey that were conducted at NAS Whiting Field. Rusted 55-gallon drums with unknown contents were also found in Clear Creek and its floodplain. The Navy initiated the Clear Creek Floodplain Investigation (CCFI) in response to regulatory requests for drum removal and the assessment of the Clear Creek floodplain sediment contamination.

The CCFI is not part of the RI/FS program at NAS Whiting Field, but will follow CERCLA guidance. The Clear Creek floodplain did not become an RI/FS site so that the contamination assessment and potential remediation of the floodplain could be expedited.

The objectives of the NAS Whiting Field CCFI was to identify and characterize the nature and extent of contamination in the Clear Creek floodplain sediments in the vicinity of Site 16 and also attempt to determine the source of the contamination. To achieve this objective, field explorations including geophysical surveys and the sampling, screening, and analysis of sediment samples were conducted. The following sections of the report present the background information, field explorations, results, conclusions, and recommendations of the CCFI.

2.0 SITE BACKGROUND

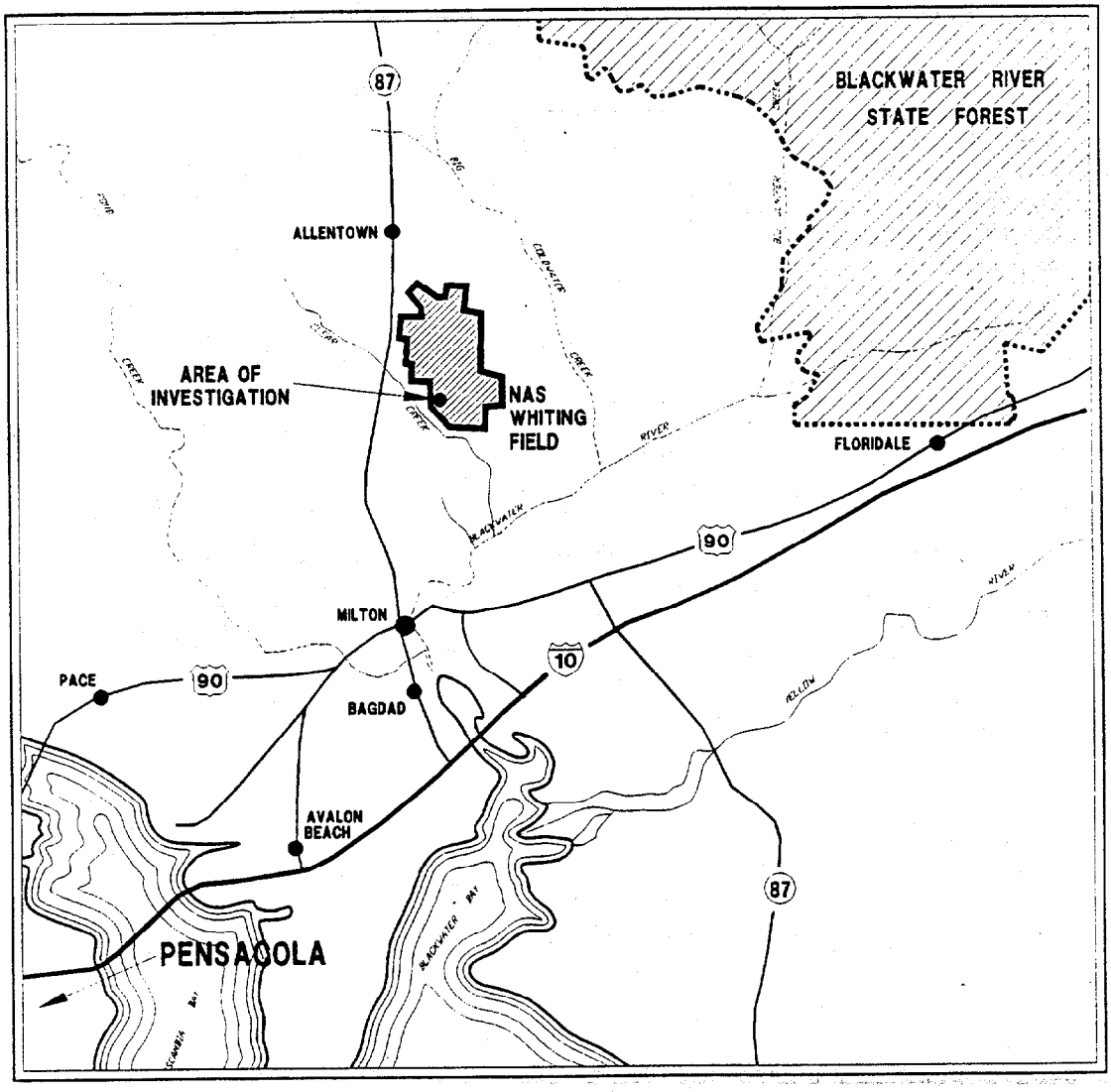
2.1 SITE DESCRIPTION. The NAS Whiting Field Clear Creek floodplain site is located in Florida's northwest coastal area approximately 7 miles north of Milton and 20 miles northeast of Pensacola (Figure 2-1). The Clear Creek floodplain lies within the Western Highlands physiographic division of Santa Rosa County in the Coastal Plain Province. The Western Highlands are characterized by a well drained, southward sloping plateau with numerous streams. Clear Creek is located to the west and south of the installation and is a tributary to the Blackwater River, which discharges into the estuarine waters of the East Bay and Escambia Bay coastal systems.

The actual Clear Creek floodplain investigative area lies in the southwestern portion of NAS Whiting Field, to the northwest of the Navy Installation Restoration Program (IRP) Site 16 (Figures 2-1 and 2-2). As a potential source of floodplain contamination, Site 16, a former Open Disposal and Burning Area, received the majority of the wastes generated at NAS Whiting Field between 1943 and 1965. The wastes were burned for volume reduction using waste diesel fuel. The floodplain site presently consists of approximately 3.5 acres of densely vegetated wetlands characterized by standing and flowing water, beaver ponds, and a bog. Figure 2-2 presents the site layout. Much of the surface water within the study area comes from a concrete drainage ditch in the northeast part of the study area. The concrete drainage ditch originates at the west end of the South Field runway No. 13. This ditch is responsible for draining rainwater from the western end of the South Field runways. Groundwater discharge may also contribute to the abundance of surface water in the floodplain.

2.2 ECOLOGICAL CHARACTERIZATION. Wetland habitats in the vicinity of the Clear Creek floodplain include titi swamps, bay swamps, and bottomland forest hardwoods (habitat types of Wolfe and others, 1988). In general, titi and bay swamps occur in the upper regions of the Clear Creek floodplain, and bottomland hardwood swamp occurs in the lower Clear Creek floodplain.

The upper shrub swamps in the vicinity of the Clear Creek floodplain site are dominated by swamp titi (*Cyrilla racemiflora*). Other species observed in the site's titi and bay swamps include red maple (*Acer rubrum*), splash pine (*Pinus elliotii*), longleaf pine (*Pinus palustris*), sweetbay magnolia (*Magnolia virginiana*), fetterbush (*Lyonia lucida*), several holly species (*Ilex* spp.), royal fern (*Osmunda regalis*), and chain fern (*Woodwardia areolata*).

Between Clear Creek and the upper swamp communities, a bottomland hardwood forest occurs. This habitat is dominated by black gum (*Nyssa sylvatica*), also known as swamp tupelo. Other species observed in the site's bottomland swamp include red maple, fetterbush, several holly species, royal fern, chain fern, rush (*Juncus* sp.), and sphagnum moss (*Sphagnum* spp.). Several specimens of the white-topped pitcher plant (*Sarracenia leucophylla*) were observed at and in the vicinity of the Clear Creek floodplain site. This carnivorous plant is a State-listed endangered species in Florida, and is a candidate for listing under the Federal Endangered Species Act (Florida Game and Freshwater Fish Commission [FGFWFC], 1991). The white-topped pitcher plant has been previously observed elsewhere at NAS Whiting Field within the Clear Creek floodplain (Environmental Protection Systems, Inc., 1991).



SITE MAP

N

MAP LOCATION

0 2.5 5 MILES

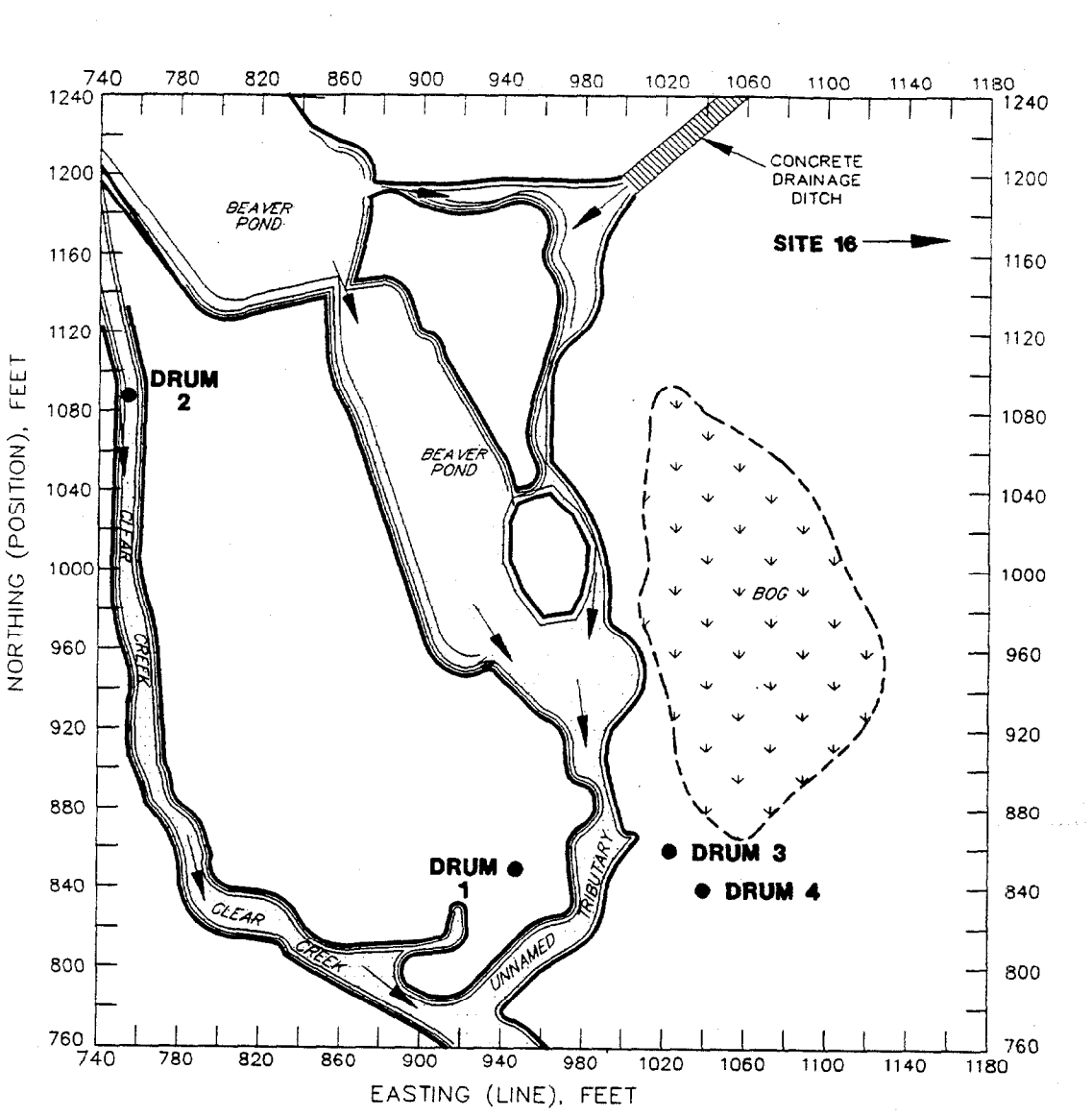
SCALE: 1" = 5 MILES

Source: ABB Environmental Services Inc., 1992

FIGURE 2-1
SITE LOCATION MAP

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAS WHITING FIELD
MILTON, FLORIDA



LEGEND

● **DRUM LOCATIONS**

0 10 20

SCALE: 1" = 20'

FIGURE 2-2
SITE LAYOUT

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAS WHITING FIELD
MILTON, FLORIDA

2.3 BACKGROUND. In 1990 during the Phase I RI, 12 surface water and sediment samples were collected from Clear Creek and its floodplain to evaluate whether evidence of contamination existed as a result of NAS Whiting Field operations. Based on the results of the Phase I RI surface water and sediment sampling episode, further exploration of the floodplain sediments was recommended in the vicinity of Site 16 (ABB-ES, 1992). In the summer of 1992, additional sediment samples were collected from Clear Creek and its floodplain during the Phase II-A RI to confirm the results of the Phase I RI.

During the Phase II-A RI sample collection, a strong petroleum odor emanated from the sediments next to a rusted drum (Drum 1, Figure 2-2) in the Clear Creek floodplain and a sheen was apparent on the ponded water in the same area. A sediment and a surface water sample were collected from this location to confirm the Phase I RI detections of volatile organic compounds (VOCs) and metals. The Phase II-A sample was analyzed and showed VOC and metal concentrations above estimated background concentrations. Upon confirmation of the Phase I results, further exploration of the floodplain sediments was recommended (ABB-ES, 1993).

As part of the RI at NAS Whiting Field, a qualitative ecological study of the Clear Creek floodplain was conducted during the first week of December 1992. The ABB-ES ecologists verified the extensive sediment contamination in the vicinity of the Phase I (Station 2) and Phase II-A (Station 4) sampling stations in the vicinity of Site 16 and noted evidence of contamination further upstream in the sediments of the unnamed tributary. Further reconnaissance indicated that organic-rich sediments from an area of approximately 2 acres (halfway between the concrete drainage ditch outfall and Clear Creek) produced a petroleum odor and sheen when agitated (see Figure 2-2).

On December 6, 1992, additional investigation was extended north into the Clear Creek floodplain in an attempt to identify the source of contamination. During this investigation a 55-gallon drum (Drum 2; Figure 2-2) was found in the middle of Clear Creek, in approximately 3 feet of water and approximately 150 yards upstream from the confluence of the unnamed tributary and Clear Creek. The drum was rusted but appeared intact and had no apparent labeling.

In an effort to characterize the contaminants in the organic-rich sediments of the unnamed tributary, a sediment sample was collected in December 1992 for full scan target compound list and target analyte list (TCL/TAL) analysis and oil and grease, total fuel hydrocarbons (TFH) gas, and TFH diesel analyses in accordance with Naval Energy and Environmental Support Activity (NEESA) Level E Data Quality Objectives (DQOs). The results of these analyses indicated the presence of the following contaminants of concern detected above the CRDL.

Volatile organic compounds. 1,2-Dichloroethene (DCE) (380 micrograms per kilogram [μg/kg]), toluene (23 J [estimated concentration] μg/kg), and xylene (11 J μg/kg)

Pesticides. 4,4-DDD (28 μg/kg)

Inorganics. lead (777 milligrams per kilogram [mg/kg]), chromium (52.4 mg/kg), copper (27.5 mg/kg), mercury (0.57 mg/kg), vanadium (57.9 mg/kg), and zinc (121 mg/kg).

Oil and Grease. 205,000 mg/kg

TFH gas. 38 mg/kg

TFH diesel. 5,300 mg/kg

Based on the above findings, the Clear Creek Floodplain Investigation was initiated by the Navy to remove any drums from the study area, define the extent of contamination, and determine the source of contamination. The following sections present the procedures, methodologies, analytical results, conclusions, and recommendations of the CCFI.

3.0 FIELD PROGRAM SUMMARY

The CCFI was conducted from March 17 to March 26, 1993, with the drum removal taking place on April 8 and April 20, 1993. The CCFI included floodplain reconnaissance, geophysical surveys, hand auger sediment borings, total petroleum hydrocarbon (TPH) field screening, collection and laboratory analysis of sediment samples, and drum removal. Details of these exploration activities and analytical results are presented in the following subsections.

3.1 GEOPHYSICAL SURVEY. Magnetometer and electromagnetic (EM) surveys were conducted in the floodplain of Clear Creek between March 17 and March 19, 1993. The purpose of these surveys was to determine the presence or absence of buried ferrous objects (i.e., buried drums) and highly conductive materials in the floodplain area immediately adjacent to Clear Creek and downgradient of Site 16.

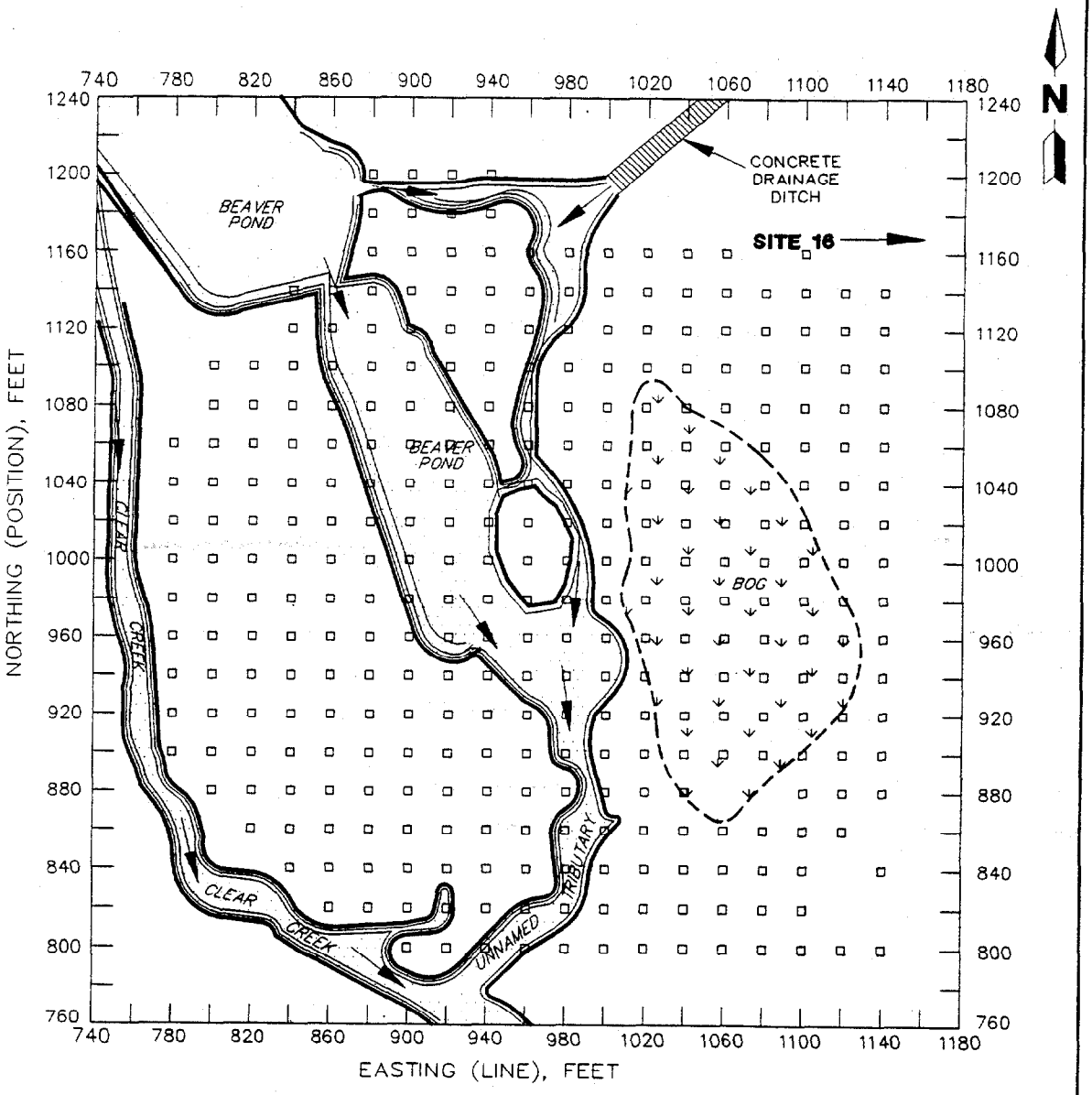
Instrumentation consisted of an Omni-IV gradiometer used for collecting magnetic data and a Geonics EM-31 used for electrical profiling. Data were downloaded to a field computer at the completion of each work day.

A 50 foot by 50 foot survey grid was established with wooden stakes and orange surveyor's flagging prior to data gathering. The reference grid was tied to the northernmost corner of the concrete drainage ditch. Survey lines were oriented to magnetic north (bearing 0 degrees north). Magnetic data were collected every 20 feet within an approximate 3.5-acre survey area (Figure 3-1).

An EM-31 survey of the Clear Creek floodplain study area was originally planned to complement the magnetic survey. However, due to the presence of standing water over a majority of the site, only a limited EM-31 survey was conducted. The standing water, which is highly conductive, would skew the electromagnetic readings and compromise the geophysical data. The geophysical survey results are presented in Section 4.1.

3.2 TOTAL PETROLEUM HYDROCARBON (TPH) SCREENING SAMPLES. A total of 72 sediment samples were collected from the Clear Creek floodplain (see Figure 3-2) between March 22 to March 24, 1993, using stainless-steel hand augers. The collection of sediment samples was targeted for the organic-rich sediments where the contaminants appear to have been adsorbed. Samples were collected at the intersection of the 50-foot geophysical grid lines and from selected areas between the grid lines that visually appeared to be contaminated. The locations for the collection of sediment samples included the surface water and sediment interface, organic-rich sediments at the land surface, and the water table interface. Sediment samples were placed in coolers with bagged ice in the field and transferred to a sample refrigerator in the field trailer to await field TPH analysis.

3.3 TPH ANALYSIS. TPH field analysis was conducted from March 22 to March 25, 1993. TPH analysis was performed in the field trailer using a General Analysis Corporation (GAC) Mega-TPH Analyzer. The Mega-TPH analyzer is a wavelength specific, dual channel, portable infrared filtometer capable of reading both low and high range petroleum hydrocarbons. The analyzer, based on infrared



LEGEND

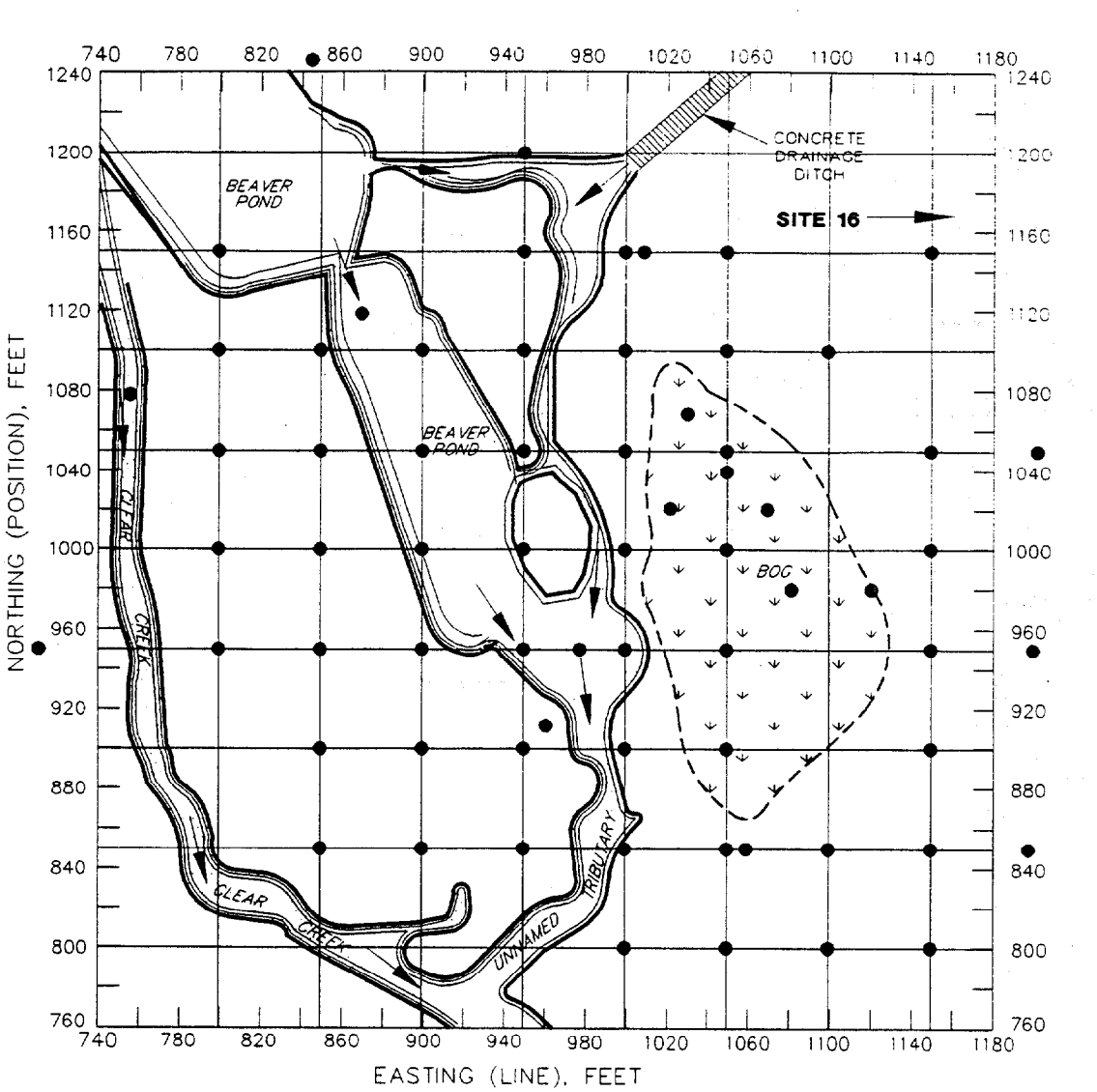
▫ - **MAGNETIC DATA COLLECTION POINT**

0 10 20
SCALE: 1" = 20'

FIGURE 3-1
MAGNETIC DATA COLLECTION LOCATIONS

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAS WHITING FIELD
MILTON, FLORIDA



LEGEND

- **TPH SCREENING SAMPLE LOCATION**

0 10 20

SCALE: 1" = 20'

FIGURE 3-2
SEDIMENT SAMPLE LOCATIONS FOR TPH SCREENING

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAS WHITING FIELD
MILTON, FLORIDA

FLOODP/NP/7-19-93

absorption theory, uses a 3.4 micrometer (μm) analytical wavelength to quantify TPHs as specified in U.S. Environmental Protection Agency (USEPA) Method 418.1. The analyzer is factory calibrated with USEPA Method 418.1 Reference Oil. The low range is calibrated for 0 to 1,000 milligrams per liter (mg/ℓ) (ppm); the high range is calibrated for 0 to 10,000 mg/kg (ppm) TPH. Prepared sample extracts were filtered into a standard quartz transmission cuvette with a 10 millimeter (mm) pathlength for low range TPH concentrations, and 1 mm pathlength for high range TPH concentrations.

Results of the TPH analysis are presented in Section 4.2.

3.4 SEDIMENT SAMPLE COLLECTION FOR LABORATORY ANALYSIS. Twelve sediment samples plus QC samples were collected for laboratory analysis from March 25 to March 26, 1993. Sediment samples were collected using conventional stainless-steel hand augers. Samples to be analyzed for TCL VOCs were collected with a stainless-steel spoon directly from the auger bucket to keep the volatilization of the compounds in the sample to a minimum. The remainder of the sample was homogenized in a glass bowl by mixing with a stainless-steel spoon. Sediment samples were then collected for TCL semivolatile organic compounds (SVOCs), TCL pesticides and polychlorinated biphenyls (PCBs), TAL metals, and total cyanide analyses. Select samples also received total organic carbon (TOC) and TPH analyses. The samples were shipped to CH2MHill Laboratories, Redding, California, for analysis following NEESA Level C DQOs. Sample locations and results of the sediment sample analyses are presented in Section 4.3.

3.5 DRUM REMOVAL. In a letter dated December 21, 1992, the Florida Department of Environmental Regulation (FDER), Pensacola, Florida, requested that NAS Whiting Field remove the drum (Drum 2; Figure 2-2) found in Clear Creek to eliminate any environmental threat to the creek. On April 8, 1993, a subcontractor, Southern Services, from Panama City, Florida, conducted the drum removal from Clear Creek under the supervision of ABB-ES personnel.

During initial inspection of the drum, a hole was detected (approximately 1 inch in diameter) in the end of the submerged drum. The inside of the drum was probed and found to be full of creek water. The drum was dug out of the sand, drained of water, placed into the overpack, and pulled out onto the bank. There was no evidence of petroleum products (i.e., sheen) coming from the drum during the removal. After the drum was on the bank, the lid was bent open and the contents were inspected. Very little sediment was observed to be inside the drum. Due to the lack of sediment and no evidence of contamination, a sediment sample was not collected from the drum. The drum was left on the bank of the creek to await disposal.

On April 20, 1993, the drum found in Clear Creek along with one full drum (Drum 3; Figure 2-2) and one half rusted drum (Drum 1; Figure 2-2) were removed from the floodplain and given to the facility (NAS Whiting Field) for disposal. A fourth drum (Drum 4; Figure 2-2) (the remains of the drum were completely buried in the sediments) was heavily corroded and crumbled into small pieces during the excavation of the drum.

3.6 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC).

3.6.1 Sample Handling, Delivery, and Chain of Custody Collection of the Clear Creek floodplain sediment samples was performed in accordance with the procedures outlined in USEPA *Region IV Standard Operation Procedures and Quality Assurance Manual* (USEPA, 1991).

All samples were properly preserved, placed in coolers, and packed with bagged ice immediately after their collection. Samples remained in the custody of the field operations leader until shipment to the laboratory. All samples were shipped, complete with chain-of-custody (COC) forms, to CH2MHill Laboratories in Redding, California, for analysis. Upon arrival at CH2MHill, the COCs and preservation were checked with the contents of each cooler by CH2MHill personnel. After verification, the COCs were signed by CH2MHill personnel and the samples were accepted for analysis.

Review of the field notebooks and COCs did not indicate any nonconformances relative to sampling procedure or sample handling.

3.6.2 Field Quality Control Sample Assessment Table 3-1 tabulates the field quality control samples collected for analysis. These include field duplicates, equipment rinsate blanks, field blanks, and VOC trip blanks (for each VOC sample shipment). All field QC samples were collected in conformance with the requirements of the USEPA *Region IV Standard Operating Procedures and Quality Assurance Manual* of February 1991. Review of the field duplicate results showed adequate agreement for all analyses. Compounds detected in trip blanks, rinsate blanks, and field blanks included methylene chloride (trip blank at 1 J mg/ℓ), di-n-butylphthalate (rinsate blank at 9 J μg/ℓ), aluminum (field blank, 84.9 μg/ℓ); antimony (field blank, 9.4 J μg/ℓ); copper (field blank, 3.8 J μg/ℓ and rinsate blank, 0.8 J μg/ℓ); manganese (field blank, 1.1 J μg/ℓ and rinsate blank, 0.44 J μg/ℓ); nickel (rinsate blank, 8.0 J μg/ℓ); silver (rinsate blank, 1.3 J μg/ℓ), and sodium (field blank, 38.6 J μg/ℓ and rinsate blank, 50 J μg/ℓ).

3.6.3 Chemical Analysis Data Quality Assessment Analytical results (see Appendix B) were validated by Heartland Environmental Services, Inc., St. Peters, Missouri, following USEPA functional guidelines for inorganics and organics analysis (USEPA, 1988a; 1988b) and requirements found in Section 7.3 of the NEESA *Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program* (NEESA 20.2-047B, 1988).

3.6.4 Data Quality Objectives (DQOs) Assessment The quality and completeness of the field sampling data generated during the field program met the established field QC criteria and were traceable to sample location. The data generated, therefore, meets Level C DQOs established for this investigation and is adequate for use in site characterization and evaluation.

Table 3-1
Field Quality Control (QC) Sample Analysis Results

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

Analyte	Field Duplicates		Trip Blanks		Rinsate Blanks		Field Blanks
	WHF-CCF-SD-09	WHF-CCF-SD-09A	WHF-CCF-SD-( )		WHF-CCF-SD-( )		WHF-CCF-SD-FB-01
			TB-01	TB-02	RB-01	RB-02	
Analysis/Matrix	SD	SD	W	W	W	W	W
TCL VOCs							
Methylene chloride	--	--	1 J	1 J	--	--	--
Dichloroethene	35	54	--	--	--	--	--
Toluene	3 J	3 J	--	--	--	--	--
TCL SVOCs							
Di-n-butyl phthalate	--	--	NA	NA	--	9 J	--
bis(2-Ethylhexyl) phthalate	8,000 J	6,500 J	NA	NA	--	--	--
Pesticides and PCBs							
Dieldrin	57	60	NA	NA	--	--	--
4,4'-DDE	76	73	NA	NA	--	--	--
4,4'-DDD	16 P	14 P	NA	NA	--	--	--
alpha-Chlordane	16 P	14 P	NA	NA	--	--	--
gamma-Chlordane	18	16	NA	NA	--	--	--
Aroclor-1260	240	180	NA	NA	--	--	--
TAL Metals and Cyanides							
Aluminum	9,560	9,910	NA	NA	12.7 J	--	84.9
Antimony	--	--	NA	NA	--	--	9.4 J
Arsenic	3.0 J	2.6 J	NA	NA	--	--	--
Barium	27.1 J	29.3 J	NA	NA	--	--	--
Cadmium	3.5	2.8	NA	NA	--	--	--
Calcium	489 J	635 J	NA	NA	--	--	--
Cobalt	36.2	36.6	NA	NA	--	--	--
Copper	27.4	29.4	NA	NA	--	0.80	3.8 J
Iron	4,760	4,820	NA	NA	--	--	--
Lead	370	252	NA	NA	--	--	--
Manganese	13.4	14.9	NA	NA	--	0.44 J	1.1 J
Magnesium	168 J	229 J	NA	NA	--	--	--
Mercury	0.22	0.20	NA	NA	--	--	--
Nickel	4.0 J	--	NA	NA	--	8.0 J	--
Potassium	219 J	189 J	NA	NA	--	--	--
Selenium	0.85 J	0.56 J	NA	NA	--	--	--
Silver	3.4 J	2.7 J	NA	NA	--	1.3 J	--
Sodium	446 J	589 J	NA	NA	--	50 J	--
Vanadium	30.8	24.8	NA	NA	--	--	38.6 J
Zinc	61.1	66.4	NA	NA	--	--	--
TPH	13,700	7,940	NA	NA	--	0.33	--
TOC	86,400	60,100	NA	NA	--	--	--

Notes:
- SD = sediment (expressed as milligrams per kilogram for all inorganic analytical parameters and micrograms per kilogram for the organic analytical parameters).
- W = source water for the equipment decontamination (expressed as micrograms per liter).
- -- = not detected.
- NA = not applicable.
- TCL VOCs = target compound list volatile organic compounds.
- SVOCs = semivolatile organic compounds.
- PCBs = polychlorinated biphenyls.
- TAL = target analyte list.
- J = identifies contaminants which are reported between the IDL and CRDL and/or contaminants identified at estimated concentrations based on the data validation functional guidelines.
- P = denotes a greater than 25 percent difference for detected concentrations between gas chromatograph columns. The lower of the two values is reported.
- TPH = total petroleum hydrocarbons (mg/ℓ).
- TOC = total organic carbon (mg/kg)

4.0 RESULTS AND CONCLUSIONS

4.1 GEOPHYSICAL SURVEY RESULTS.

Magnetic Survey Results. Magnetic survey results are presented in the form of vertical gradient contours and total magnetic field contours in Figures 4-1 and 4-2, respectively. Each of these figures show corresponding magnetically anomalous zones in the southeastern part of the study area. The anomalies in Figure 4-1 are represented by the blue areas which correspond to vertical gradient readings less than negative 5 gammas. The anomalies in Figure 4-2 are also represented by the blue areas with readings of less than 50,420 gammas. The anomalies in this zone are due in part to the presence of the three rusted 55-gallon drums observed on the ground surface in the vicinity. However, this anomalous zone continues to the northeast (see Figures 4-1 and 4-2) away from the area of observed drums and a portion of this zone may contain buried ferrous objects. Based on the peak to peak amplitude of these anomalies and the presence of the drums, these data do not suggest the presence of large concentrations of buried ferrous debris in the southeastern portion of the survey area (i.e., a drum repository).

The anomaly in the northern portion of the survey area (950 E and 1100 E in Figures 4-1 and 4-2) is due to the concrete drainage outfall serving a portion of the runway area. This structure most likely contains steel reinforcement rod. Areas outside of the anomalous areas previously mentioned are within normal magnetic variations (usually less than or equal to 20 gammas).

EM Induction Results. Due to standing water covering much of the area of interest, a terrain conductivity survey was not conducted in conjunction with the magnetic survey. However, two EM-31 profiles were conducted along the eastern portion of the site where conditions were favorable. Elevated conductivity values and in-phase values appear to correspond to areas where old barbed wire fencing was observed on the ground and attached to trees. These anomalous portions of the profiles are likely attributed to observed surface features and do not indicate the presence of buried objects.

4.2 SEDIMENT SAMPLE TPH FIELD SCREENING RESULTS.

A total of 71 sediment samples were collected for TPH field screening. Results of the TPH field screening are tabulated in Appendix A. TPH concentrations were determined using the GAC Mega-TPH analyzer described in Section 3.3. The TPH concentrations were plotted on the geophysical survey grid to depict the extent of hydrocarbon contamination and identify areas of high TPH concentrations in the floodplain study area (Figure 4-3).

Three areas of high (> 5,000 mg/ℓ) TPH concentrations, based on the TPH screening data, were identified within the geophysical survey grid. The south beaver pond, the bog, and the northern part of the unnamed tributary all have high TPH concentrations with respect to the rest of the study area. This also appears to be a contaminant trend because the three areas of highest TPH concentration are the three major surface water features of the study area. Relatively dry floodplain areas typically had TPH screening concentrations of less than 1,000 mg/ℓ.

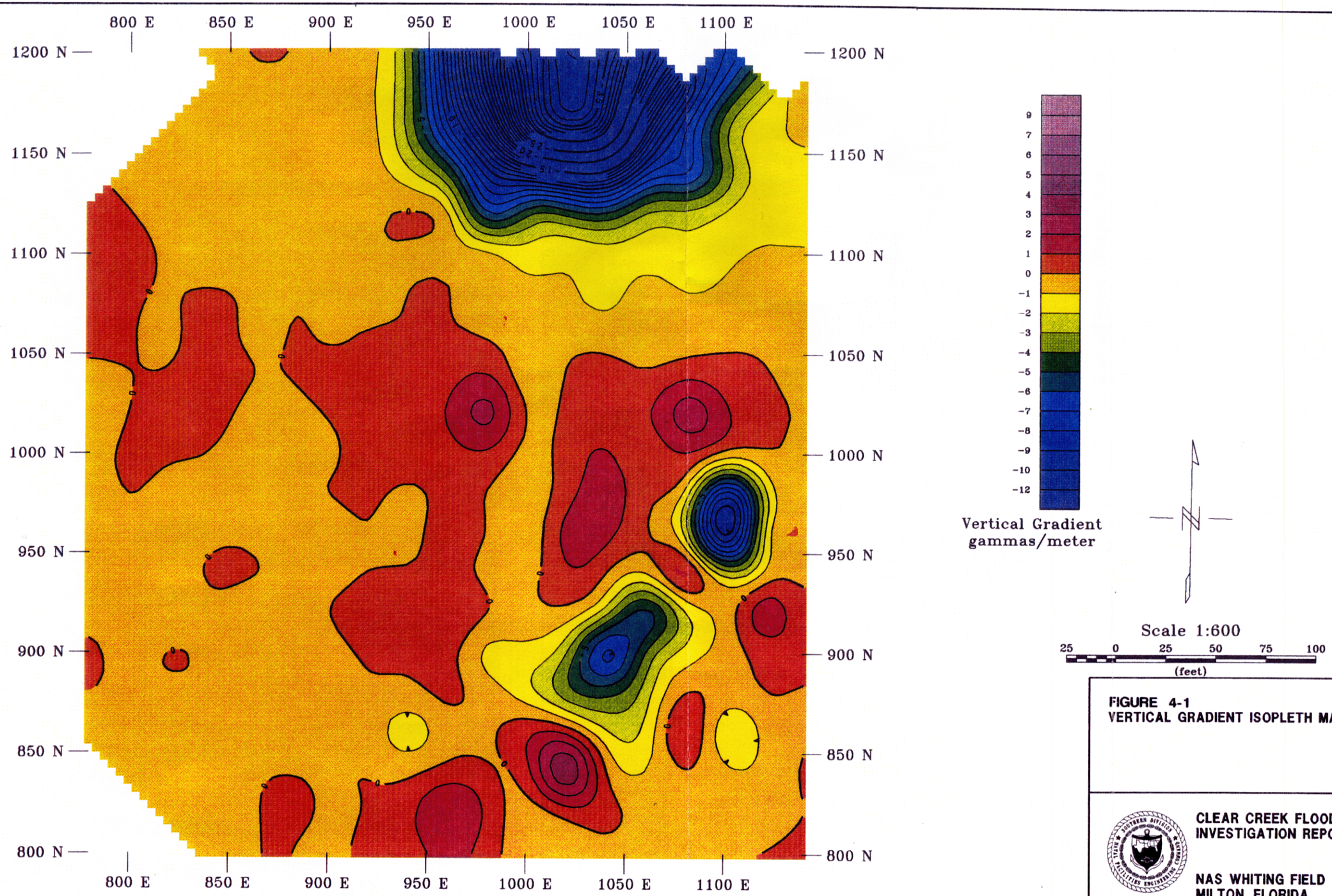


FIGURE 4-1
VERTICAL GRADIENT ISOPLETH MAP

CLEAR CREEK FLOODPLAIN
INVESTIGATION REPORT

NAS WHITING FIELD
MILTON, FLORIDA

00018ABIY

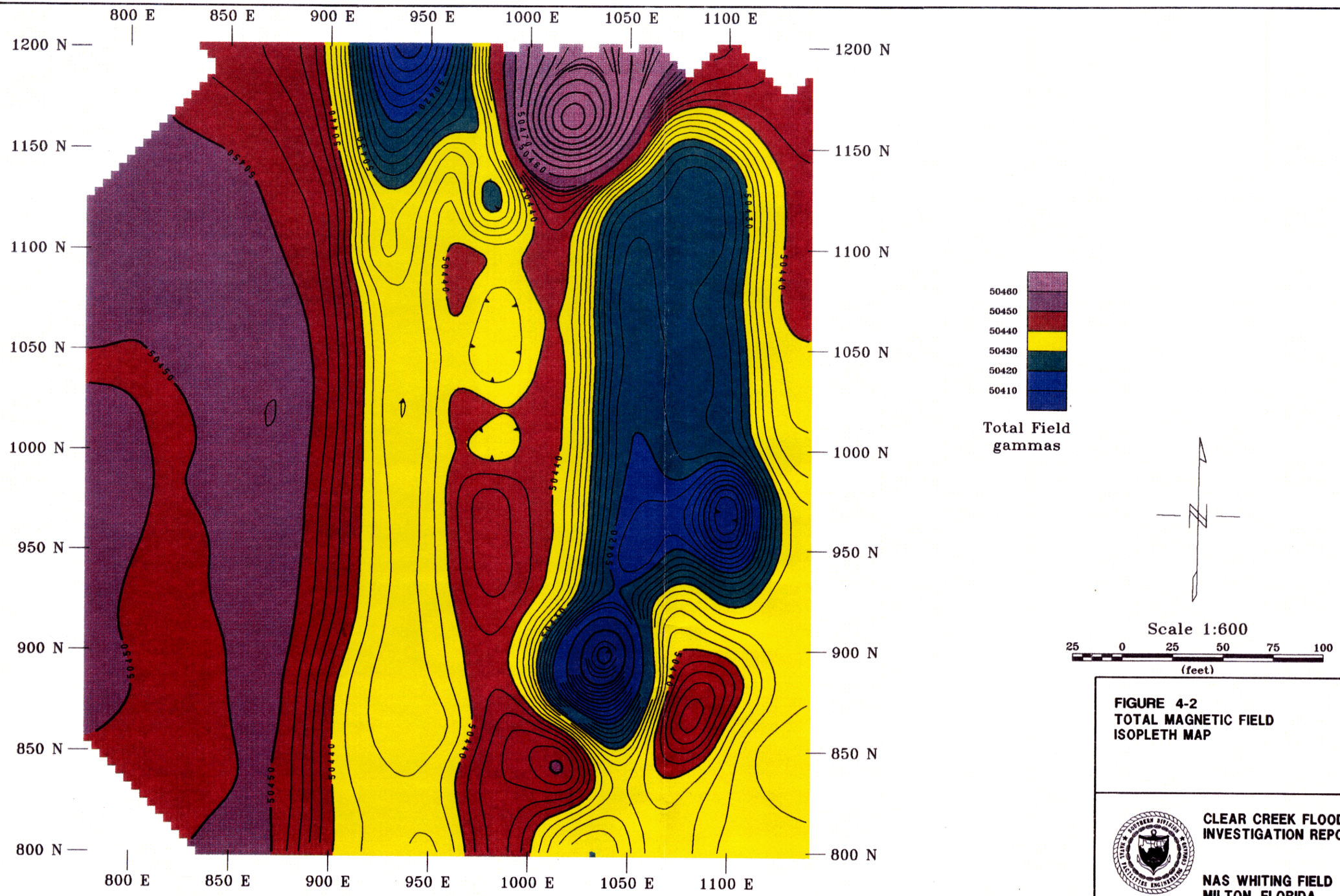
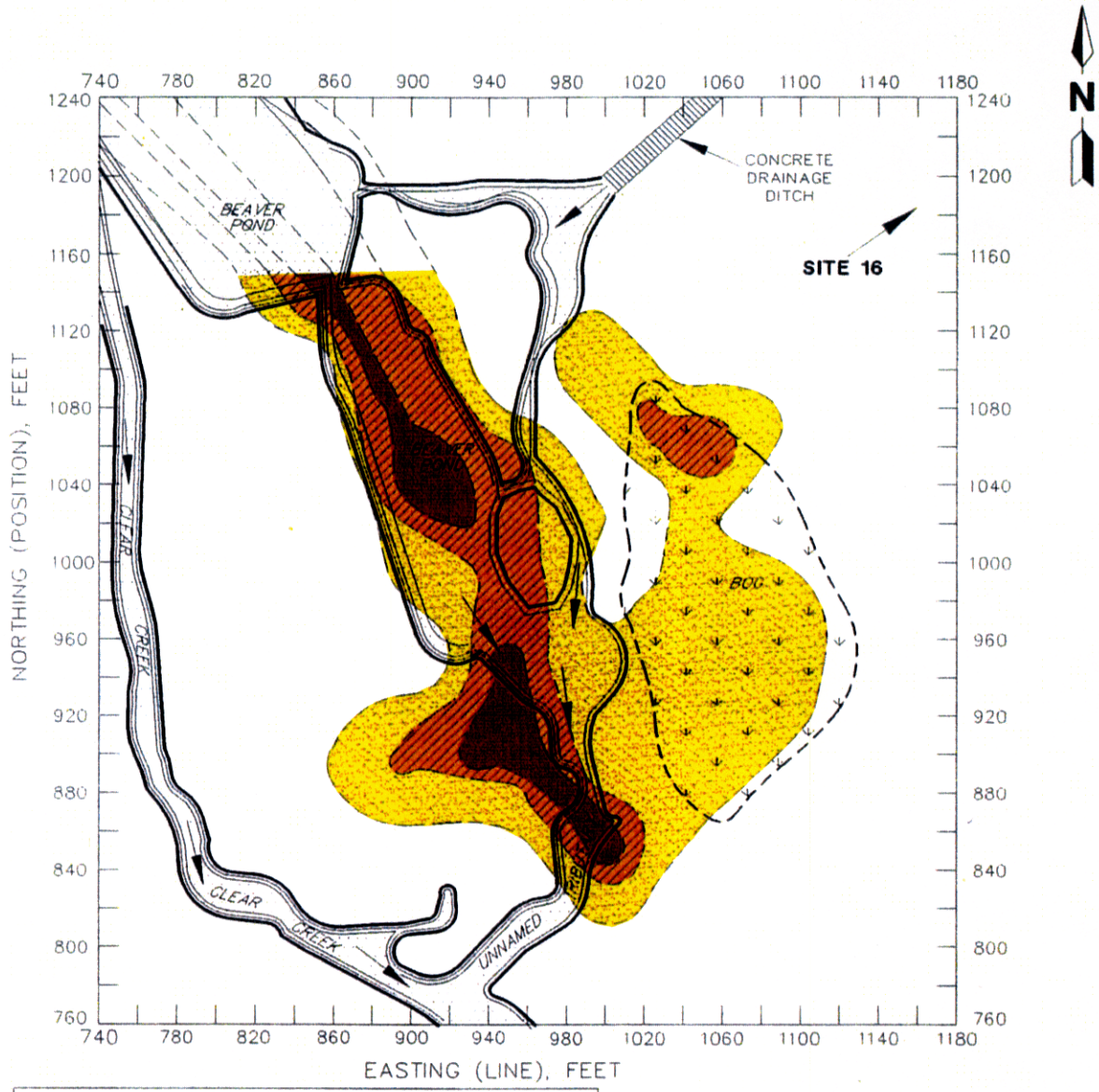


FIGURE 4-2
TOTAL MAGNETIC FIELD ISOPLETH MAP

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAS WHITING FIELD
MILTON, FLORIDA



LEGEND

- ● TPH SCREENING SAMPLE LOCATION WITH CONCENTRATIONS (mg/l)
- >10,000 mg/l
- 5000-10,000 mg/l
- 1000-5000 mg/l
- CONCENTRATION CONTOURS

0 10 20
SCALE: 1" = 20'

FIGURE 4-3
TPH SCREENING CONCENTRATION CONTOURS

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAS WHITING FIELD
MILTON, FLORIDA

The high TPH concentrations of the south beaver pond seem to be fairly well distributed between the central and outlying areas of the pond. The high TPH concentrations of the unnamed tributary, on the other hand, mostly occur along the banks of the tributary, as opposed to the sandy substrate. There is also an area of high TPH concentration at the confluence of the south beaver pond and the unnamed tributary along the central as well as the bank areas. The bog has high TPH concentrations generally ranging from 1,000 to 5,000 mg/ℓ, with an apparent decrease in concentrations closer to the bank areas.

Further reconnaissance was conducted on March 24, 1993, north of the study area into the north beaver pond to locate an area for the collection of a background sample. The reconnaissance found that this area had high TPH readings and, therefore, was not representative of background conditions. Due to the depth of the water in the north beaver pond, the extent of the contamination could not be determined in the northwest corner of the study area. Further investigation of this area may be required.

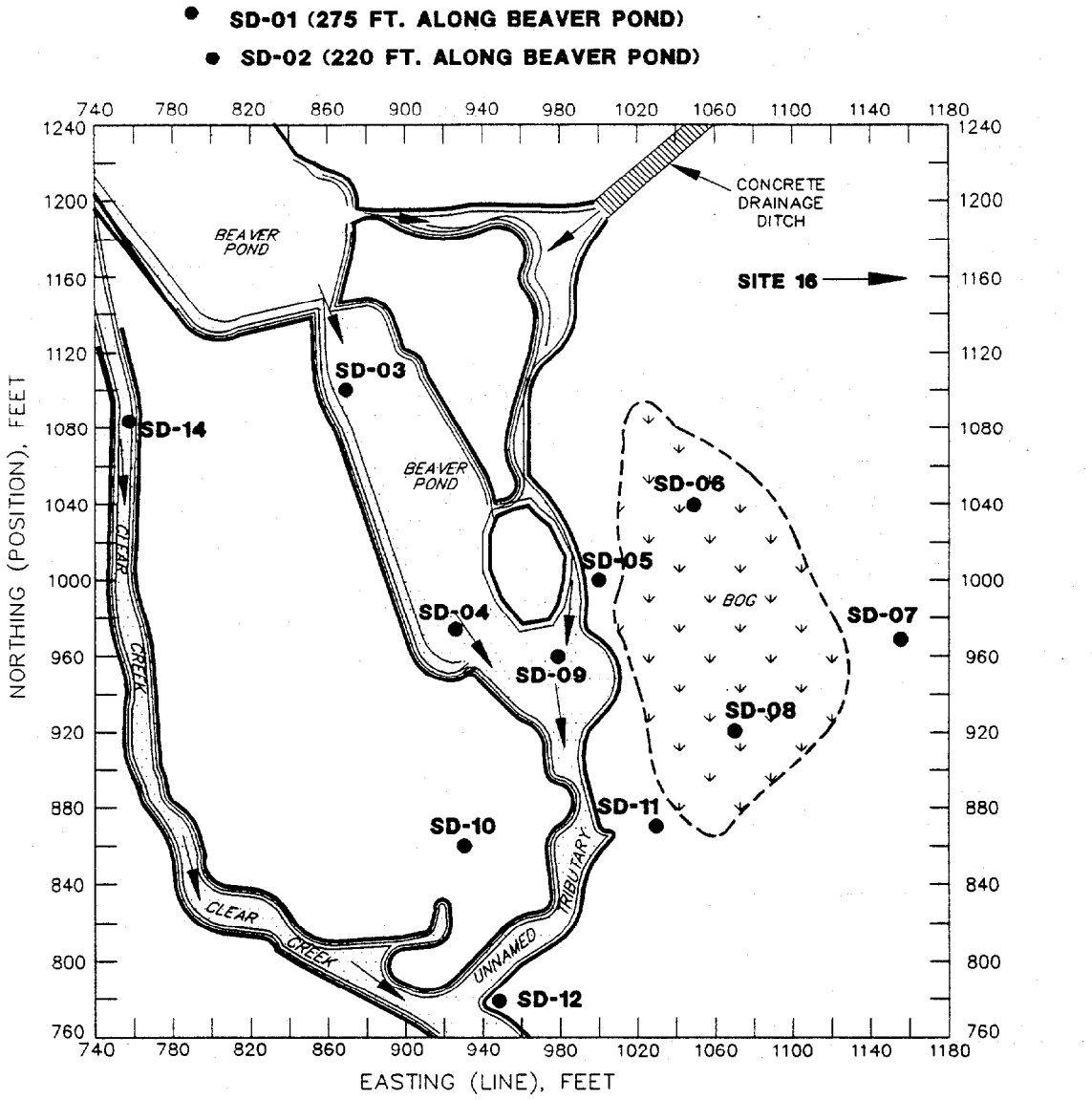
4.3 SEDIMENT SAMPLE LABORATORY ANALYTICAL RESULTS. Based on the TPH screening results of the floodplain sediment samples, 12 sediment samples, WHF-CCF-SD-1 through WHF-CCF-SD-12, were collected for laboratory analysis of full scan TCL-TAL and select samples were also analyzed for TOC and TPH. The samples were collected from 12 locations with the highest TPH screening concentration. The results of this sampling event, as presented in the following paragraphs, characterize the nature and distribution of contaminants in the study area. In addition, a background sample (WHF-CCF-SD-13, 13-MS, 13-MSD) was collected for laboratory analysis. The background sample was obtained from a location approximately 400 feet south of the Highway 87-A bridge along the eastern floodplain of Clear Creek (see Figure 4-4) and was composed of organic-rich sediments so chemical comparisons could be made. The habitat in this region is similar to the 12 source area samples (background location is not shown in Figure 4-4).

After the initial sampling event, one more sediment sample was collected on April 21, 1993. This sample (WHF-CCF-SD-14) was collected from the sediment below the drum that was removed from Clear Creek. The sample was initially not collected during the drum removal because the fine- to medium-grained light orange sand showed no apparent evidence of contamination. However, at the request of FDER, Pensacola, Florida, the sediment at the drum location was sampled. The analytical results of this sample will be presented in a separate letter memorandum upon receipt of the laboratory data.

Clear Creek sediment analytical results are summarized in Tables 4-1 through 4-4 and are discussed in the following paragraphs. Validated chemical analytical results (from the March 1993 sampling episode) with Contract Required Detection Limits (CRDLs) are presented in Appendix B.

TCL VOCs Detected Above the CRDL. A summary of TCL VOC analytical results is presented in Table 4-1. Three VOCs, acetone, 2-butanone (MEK), and DCE were detected above the CRDL in the floodplain sediment samples. No VOCs were detected above the CRDL in the background floodplain sample WHF-CCF-SD-13.

Acetone and methyl ethyl ketone (MEK) are both common laboratory contaminants and do not appear to be site related contaminants. DCE was only detected above the



LEGEND

- ● LABORATORY ANALYTICAL SEDIMENT SAMPLE LOCATION

0 10 20
SCALE: 1" = 20'

FIGURE 4-4
SEDIMENT SAMPLE LOCATIONS FOR LABORATORY ANALYSIS

CLEAR CREEK FLOODPLAIN INVESTIGATION REPORT

NAS WHITING FIELD
MILTON, FLORIDA

Table 4-1
Sediment Analytical Results,
Volatile Organic Compounds

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

ABB-ES Sample No.	WHF-CCF-SD-01	WHF-CCF-SD-02	WHF-CCF-SD-03	WHF-CCF-SD-04	WHF-CCF-SD-05	WHF-CCF-SD-06	WHF-CCF-SD-07	WHF-CCF-SD-08	WHF-CCF-SD-09	WHF-CCF-SD-09A
Lab Sample ID	35476001	35476002	35476003	35476004	35476005	35476006	35476009	35476007	35480001	35480002
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Date Collected	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	26-Mar-93	26-Mar-93
Acetone	36	170	7 J	--	210	18 J	25	830	--	--
Carbon disulfide	--	--	--	--	9 J	--	4 J	29 J	--	--
1,2-Dichloroethene (total)	--	--	--	8 J	--	--	--	--	35	54
2-Butanone	8 J	45 J	--	--	50 J	--	--	240	--	--
Trichloroethene	--	--	--	13 J	--	--	--	--	--	--
4-Methyl-2-pentanone	--	--	--	--	--	--	--	22 J	--	--
Toluene	--	--	--	--	--	--	--	--	3 J	3 J

See notes at end of table.

Table 4-1 (Continued)
Sediment Analytical Results, Volatile Organic Compounds

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

ABB-ES Sample No.	WHF-CCF-SD-10	WHF-CCF-SD-11	WHF-CCF-SD-12	WHF-CCF-SD-13
Lab Sample ID	35480003	35476013	35476014	35476008
Units	µg/kg	µg/kg	µg/kg	µg/kg
Date Collected	26-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93
Methylene chloride	–	–	–	–
Acetone	–	–	14 J	13 J
1,2-Dichloroethene (total)	10 J	–	–	–
2-Butanone	11 J	12 J	–	–
Toluene	12 J	–	–	–

Notes: µg/kg = micrograms per kilogram.
– = below detection limit.
J = identifies contaminants which are reported between the IDL and CRDL and/or contaminants identified at estimated concentrations based on the data validation functional guidelines.

Table 4-2
Sediment Analytical Results, Semivolatile Organic Compounds

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

ABB-ES Sample No.	WHF-CCF-SD-02	WHF-CCF-SD-03	WHF-CCF-SD-04	WHF-CCF-SD-05	WHF-CCF-SD-06	WHF-CCF-SD-07	WHF-CCF-SD-08	WHF-CCF-SD-09	WHF-CCF-SD-09A	WHF-CCF-SD-10
Lab Sample ID	35476002	35476003	35476004	35476005	35476006	35476009	35476007	35480001	35480002	35480003
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Date Collected	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	26-Mar-93	26-Mar-93	26-Mar-93
Diethylphthalate	990 J	--	--	--	160 J	--	--	--	--	--
bis(2-Ethylhexyl) phthalate	1,400 J	2,200 J	3,300 J	3,600 J	400 J	120 J	10,000 J	8,000 J	6,500 J	1,800 J

Table 4-2 (Continued)
Sediment Analytical Results
Semivolatile Organic Compounds

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

ABB-ES Sample No.	WHF-CCF-SD-11	WHF-CCF-SD-12	WHF-CCF-SD-RB	WHF-CCF-SD-02
Lab Sample ID	35476013	35476014	35476K11	35480K04
Units	µg/ℓ	µg/ℓ	µg/ℓ	µg/ℓ
Date Collected	25-Mar-93	25-Mar-93	25-Mar-93	26-Mar-93
Di-n-butylphthalate	–	–	9 J	9 J
bis(2-Ethylhexyl) phthalate	690 J	200 J	–	–
Di-n-octylphthalate	–	140 J	–	–

Notes: µg/kg = micrograms per kilogram.
– = below detection limit.
J = identifies contaminants which are reported between the IDL and CRDL and/or contaminants identified at estimated concentrations based on the data validation functional guidelines.

Table 4-3
Sediment Analytical Results, Pesticides and Polychlorinated Biphenyl (PCB) Compounds

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

ABB-ES Sample No.	WHF-CCF-SD-02	WHF-CCF-SD-03	WHF-CCF-SD-04	WHF-CCF-SD-05	WHF-CCF-SD-06	WHF-CCF-SD-07	WHF-CCF-SD-08	WHF-CCF-SD-08DL	WHF-CCF-SD-09	WHF-CCF-SD-09A
Lab Sample ID	35476007DL	25476003	35476004	35476005	35476006	35476009	35476007	35476007DL	35480001	35480002
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Date Collected	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	26-Mar-93	26-Mar-93
Dieldrin	--	18	55	21	--	6.2 J	260	290	57	60
4,4-DDE	12 J	23	47	27	--	23	--	830	76	73
4,4-DDD	--	6.5	--	8.2	--	47	110	--	16	14
alpha-Chlordane	--	--	3.4 J	16	--	1.9 J	70	--	16	14
gamma-Chlordane	--	2 J	4.7	17	1.9 J	1.9 J	86	--	18	16
Aroclor-1260	--	72	74 J	110	--	--	--	--	240	180

See notes at end of table.

Table 4-3 (Continued)
Sediment Analytical Results,
Pesticides and Polychlorinated Biphenyl (PCB) Compounds

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

ABB-ES Sample No.	WHF-CCF-SD-10	WHF-CCF-SD-11	WHF-CCF-SD-11DL	WHF-CCF-SD-12
Lab Sample ID	35480003	35476013	35476013DL	35476014
Units	µg/kg	µg/kg	µg/kg	µg/kg
Date Collected	26-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93
Dieldrin	--	31	--	--
4,4-DDE	35	--	410	3.4 J
4,4-DDD	15	80	--	--
alpha-Chlordane	10	39	--	2 J
gamma-Chlordane	8.8	34	--	1.9 J
Aroclor-1260	140 J	230	--	--

Notes: µg/kg = micrograms per kilogram.
-- = below detection limit.
J = identifies contaminants which are reported between the IDL and CRDL and/or contaminants identified at estimated concentrations based on the data validation functional guidelines. contaminants based on the data validation functional guidelines.

Table 4-4
Sediment Analytical Results, Inorganic Analytes

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

ABB-ES Sample No.	WHF-CCF-SD-01	WHF-CCF-SD-02	WHF-CCF-SD-03	WHF-CCF-SD-04	WHF-CCF-SD-05	WHF-CCF-SD-06	WHF-CCF-SD-07	WHF-CCF-SD-08	WHF-CCF-SD-09	WHF-CCF-SD-09A
Lab Sample ID	35476001	35476002	35476003	35476004	35476005	35476006	35476009	35476007	35480001	35480002
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Collected	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93	26-Mar-93	26-Mar-93
Aluminum	32,300	66,000	9,330	15,200	12,900	13,500	37,100	36,300	9,560	9,910
Arsenic	4.7 J	20 J	4.1 J	6.4 J	3.2 J	1.5 J	3.9 J	7.7 J	3 J	2.6 J
Barium	49.7 J	68.5 J	15.4 J	34.9 J	24.7 J	26 J	70.4 J	417 J	27.1 J	29.3 J
Beryllium	.36 J	--	--	--	--	.21 J	--	1 J	--	--
Cadmium	--	2.1 J	2.1	4.7	1.9	--	1.5 J	19.8	3.5	2.8
Calcium	478 J	933 J	261 J	379 J	294 J	304 J	1,570 J	2,700 J	489 J	635 J
Chromium	32.4	70.1	29.8	33.6	21.3	16.2	34.5	117	36.2	36.6
Cobalt	5.3 J	11.3 J	--	--	--	--	4.2 J	--	--	--
Copper	27.5	52.1	15.4	26.6	17	7.1 J	25.8	438	27.4	29.4
Iron	31,200	54,800	12,200	8,330	8,960	4,240	15,400	18,000	4,760	4,820
Lead	18.1	339	218	434	113	35.4 J	62.5	825	370	252
Magnesium	338 J	764 J	111 J	210 J	179 J	165 J	522 J	1,130 J	168 J	229 J
Manganese	76.6	83.7	11.6	11.7	14.4	9.8	44.9	63.5	13.4	14.9
Mercury	.36	.84	.19	.23	.14	.06 J	.07 J	6.5	.22	.2
Nickel	6.2 J	18.6 J	--	--	--	4.5 J	8.7 J	23.8 J	4 J	--
Potassium	214 J	613 J	49.4 J	162 J	102 J	56.8 J	321 J	--	219 J	189 J
Selenium	.85 J	1.9 J	.43 J	.77 J	.57 J	.94 J	.95 J	3.6 J	.85 J	.56 J
Silver	.65 J	2.3 J	.99 J	1.9 J	1.8 J	--	1.1 J	105	3.4 J	2.7 J
Sodium	496 J	1,100 J	246 J	362 J	262 J	312 J	370 J	1,430 J	446 J	587 J
Vanadium	89.9	110	30.2	51.8	30.5	35.4	85.6	71.2 J	30.8	24.8
Zinc	30.3	76.3	36.9	69.4	57.5	13.1	74.2	1,270	61.1	66.4
Cyanide	--	--	--	--	--	.11 J	--	--	--	--

Notes: See notes at end of table.

Table 4-4 (Continued)
Sediment Analytical Results, Inorganic Analytes

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

ABB-ES Sample No.	WHF-CCF-SD-10	WHF-CCF-SD-11	WHF-CCF-SD-12	WHF-CCF-SD-13
Lab Sample ID	35480003	35476013	35476014	35476008
Units	mg/kg	mg/kg	mg/kg	mg/kg
Date Collected	26-Mar-93	25-Mar-93	25-Mar-93	25-Mar-93
Aluminum	27,600	16,800	2,890	3,970
Antimony	–	–	–	–
Arsenic	4.6 J	10.1	.73 J	3 J
Barium	37.2 J	65.8 J	16.9 J	8.9 J
Cadmium	3.1 J	6.5	–	–
Calcium	544 J	1,500 J	428 J	213 J
Chromium	48	29.7	6.2	8.4
Copper	40.8	152	9.7	5.4 J
Iron	5,880	8,630	2,740	7,310
Lead	296	190	28.9	12.9
Magnesium	409 J	439 J	125 J	66 J
Manganese	18.5	51.8	11.9	4.6 J
Mercury	.22 J	1.1	–	–
Nickel	14.5 J	10.7 J	–	4.2 J
Potassium	411 J	262 J	63.1 J	87.5 J
Selenium	1.1 J	1.6 J	.44 J	.44 J
Silver	2.9 J	30.6	.76 J	–
Sodium	613 J	619 J	262 J	475 J
Vanadium	56.1	46.9	7.9 J	16.2 J
Zinc	51.3	380	19.4	11.9
Cyanide	–	–	.1 J	–

Notes: mg/kg = milligrams per kilogram.
– = below detection limit.
J = identifies contaminants which are reported between the IDL and CRDL and/or contaminants identified at estimated concentrations based on the data validation functional guidelines.

CRDL (35 μg/kg) at sampling location WHF-CCF-SD-09 and in its duplicate sample WHF-CCF-SD-09A, at 54 μg/kg.

TCL SVOCs Detected Above the CRDL. TCL SVOC summary results are shown in Table 4-2. No SVOCs were detected above the CRDL in any of the 13 sediment samples collected.

TCL Pesticides and PCBs Detected Above the CRDL. TCL pesticide and PCB results are summarized in Table 4-3. Five pesticides; dieldrin, 4,4-DDE, 4,4-DDD, alpha-chlordane, and gamma-chlordane, and one PCB, aroclor-1260, were detected at concentrations above the CRDL in the sediment samples collected from the study area. No pesticides or PCBs were detected in the background floodplain sediment sample WHF-CCF-SD-13.

Dieldrin was detected above the CRDL at six sampling locations ranging in concentrations from 18 μg/kg at WHF-CCF-SD-03 to 260 μg/kg at WHF-CCF-SD-08. 4,4-DDE ranged from 23 μg/kg at WHF-CCF-SD-03 to 830 μg/kg at WHF-CCF-SD-08. Alpha-chlordane and gamma-chlordane were both detected above the CRDL at locations WHF-CCF-SD-08, WHF-CCF-SD-09, WHF-CCF-SD-10, and WHF-CCF-SD-11. The PCB aroclor-1260 was found above the CRDL in four samples ranging in concentration from 110 μg/kg (WHF-CCF-SD-05) to 680 μg/kg (WHF-CCF-SD-08).

TAL Metals Detected Above the CRDL. A summary of TAL metals analytical results is shown in Table 4-4. Analytes of primary concern to human health and the environment that were detected above the CRDL in the sediment samples included arsenic, chromium, cobalt, copper, lead, mercury, selenium, silver, vanadium, zinc, and cyanide.

Chromium was detected in all of the 12 source area sediment samples and the background sample at concentrations ranging from 6.2 mg/kg at WHF-CCF-SD-12 to 117 mg/kg at WHF-CCF-SD-08. Concentrations of chromium at all sampling locations except WHF-CCF-SD-12 exceeded the background concentration of 8.4 mg/kg at WHF-CCF-SD-13.

Copper was detected at all source area sampling locations and concentrations ranged from 7.1 mg/kg (WHF-CCF-SD-06) to 438 mg/kg (WHF-CCF-SD-08). All sediment samples exceeded the background copper concentration of 5.4 mg/kg.

Lead was also detected at all sediment sampling stations. The background concentration of lead at WHF-CCF-SD-13 was 12.9 mg/kg. Concentrations of lead ranged from 18.1 mg/kg at WHF-CCF-SD-01 to 825 mg/kg at WHF-CCF-SD-08. The highest lead concentration (981 mg/kg) was reported at the Phase II-A RI surface water and sediment sampling Station 4, which is located within the CCFI study area.

Mercury was not detected in the background sample but was detected above the CRDL at eight sampling locations ranging from 0.14 mg/kg at WHF-CCF-SD-05 to 6.5 mg/kg at WHF-CCF-SD-08.

Silver was not detected in the background sample but was detected in two samples, WHF-CCF-SD-08 at 105 mg/kg and WHF-CCF-SD-11 at 30.6 mg/kg.

Zinc was detected in the background sample at 11.9 mg/kg. Zinc was also detected in all the other sediment samples ranging in concentration from 13.1 at WHF-CCF-SD-06 to 1,270 mg/kg at WHF-CCF-SD-08.

TPH and Total Organic Carbon (TOC) Results. Results of the TPH and TOC analysis are presented in Table 4-5. TPH samples were collected to compare with the TPH screening values. TOC results will be used in the ecological assessment of the sediments.

Two sediment samples, WHF-CCF-SD-06 and WHF-CCF-SD-09 and its duplicate (WHF-CCF-SD-09A), were collected for laboratory analysis of TPH. The TPH concentrations were 189 mg/kg in WHF-CCF-SD-06, 13,700 mg/kg in WHF-CCF-SD-09, and 7,940 mg/kg in the duplicate sample WHF-CCF-SD-09A.

The corresponding TPH field screening values were 56 mg/kg at WHF-CCF-SD-06 and 3,485 mg/kg at WHF-CCF-SD-09. Both values were at least 2 times less than the laboratory analytical results.

Seven sediment samples were collected for TOC analysis from locations WHF-CCF-SD-02, WHF-CCF-SD-04, WHF-CCF-SD-06, WHF-CCF-SD-07, WHF-CCF-SD-09, WHF-CCF-SD-10, and WHF-CCF-SD-13. TOC concentrations ranged from 3,500 mg/kg at WHF-CCF-SD-07 to 125,000 mg/kg at WHF-CCF-SD-10.

4.4 SEDIMENT APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENT (ARAR) EVALUATION. This section evaluates the Clear Creek floodplain sediment data based on the following ARARs (ARARs values are presented in Table 4-6).

- National Oceanic Atmospheric Administration (NOAA) Effects Range Low (ER-L) for Sediments (NOAA, 1990)
- USEPA Sediment Quality Criteria (SQC) (USEPA, 1988c)

Although the NOAA ARARs are designed primarily for evaluating the toxicity of marine and estuarine sediments, USEPA has suggested that NOAA (1990) criteria may also be used as a primary source of information for the evaluation of freshwater sediments at hazardous waste sites. The Effects Range-Low (ER-L) of NOAA (1990) represents the 10 percentile concentration of contamination in estuarine sediments with observed (or predicted) effects.

No USEPA SQC are available to evaluate the effects of inorganic constituents on aquatic life. The USEPA SQC values for organic analytes are intended to protect benthic organisms that are primarily impacted by contaminants in the interstitial water between sediment particles. USEPA developed SQC using an equilibrium partitioning approach to identify sediment concentrations that could be associated with interstitial water concentrations equal to chronic Ambient Water Quality Criteria (AWQC) values. This approach requires carbon normalization with TOC concentration.

Because TOC was not analyzed for at each sampling station, an average TOC concentration was calculated from the eight TOC samples and used to normalize the USEPA sediment criteria values. The average TOC, 5.3 percent, was multiplied by the USEPA sediment criteria values to obtain the normalized sediment criteria

Table 4-5
Sediment Analytical Results

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

Sample No.	Total Organic Carbon (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)
WHF-CCF-SD-01	–	–
WHF-CCF-SD-02	37,700	–
WHF-CCF-SD-03	–	–
WHF-CCF-SD-04	64,200	–
WHF-CCF-SD-05	–	–
WHF-CCF-SD-06	40,500	189
WHF-CCF-SD-07	3,500	–
WHF-CCF-SD-08	–	–
WHF-CCF-SD-09	86,400	13,700
WHF-CCF-SD-09A	60,100	7,940
WHF-CCF-SD-10	125,000	–
WHF-CCF-SD-11	–	–
WHF-CCF-SD-12	–	–
WHF-CCF-SD-13	13,400	–

Notes: mg/kg = milligrams per kilograms.
– = not analyzed.

Table 4-6
Chemical-Specific Guidance for Sediments

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

Chemical Name	NOAA Sediment ER-L Guidelines[1] (μg/kg)	USEPA Sediment Quality Criteria[2] (μg/gC)	Normalized USEPA Sediment Quality Criteria[3] (μg/kg)
Semivolatile Organics			
Anthracene	85	–	–
Benzo(a)anthracene	230	1,317	69,801
Benzo(a)pyrene	400	1,060	56,180
Chrysene	400	–	–
Dibenzo(a,h)anthracene	60	–	–
Fluoranthene	600	1,883	99,799
Fluorene	35	–	–
2-Methylnaphthalene	65	–	–
Naphthalene	340	–	–
Phenanthrene	225	139	7,367
Pyrene	350	1,311	69,483
Pesticides and PCBs			
4,4-DDD	2	–	–
4,4-DDE	2	–	–
4,4-DDT	1	.828	43.8
Dieldrin	0.02	.13	6.89
Endrin	0.02	.0532	2.82
Heptachlor	–	.11	5.83
Lindane	–	.157	8.32
PCBs	50	19.5	1,034

See notes at end of table.

Table 4-6 (Continued)
Chemical-Specific Guidance for Sediments

Clear Creek Floodplain Investigation
NAS Whiting Field
Milton, Florida

Chemical Name	NOAA Sediment ER-L Guidelines[1] (µg/kg)	USEPA Sediment Quality Criteria[2] (µg/kg)	Normalized USEPA Sediment Quality Criteria[3]
Inorganics			
Antimony	2,000	–	–
Arsenic	33,000	–	–
Cadmium	6,000	–	–
Chromium	80,000	–	–
Copper	70,000	–	–
Lead	35,000	–	–
Mercury	150	–	–
Nickel	30,000	–	–
Silver	1,000	–	–
Zinc	120,000	–	–

[1] NOAA, Technical Memorandum No. 5 OMA 52. "The Potential for Biological Effects of Sediment-Sorbed Contaminants tested in the National Status and Trends Program," March, 1990. Edward R. Long and Lee G. Morgan, Seattle, WA.

[2] USEPA, "Interim Sediment Criteria Values for Nonpolar Hydrophobic Organic Contaminants"; Office of Water Regulations and Standards; SCD No. 17; Washington, DC, 1988.

[3] Normalized for total organic carbon (TOC) concentration of 5.3 percent.

Notes: NOAA = National Oceanic and Atmospheric Administration.
ER-L = Effects Range Low.
µg/gC = micrograms per gram Carbon.
USEPA = U.S. Environmental Protection Agency.
– = not available.
µg/kg = micrograms per kilogram.
DDD = dichlorophenyl dichloroethane.
DDE = dichlorophenyl dichloroethene.
DDT = dichlorophenyl trichloroethane.
PCBs = polychlorinated biphenyls.

value for comparison to the contaminant concentration (USEPA, 1988c). The 5.3 percent USEPA normalized sediment criteria values are presented in Table 4-6.

NOAA and USEPA guidance values are not available for VOCs in sediments.

All reported concentrations of pesticides and PCBs in the floodplain sediment samples exceeded the NOAA and USEPA guidelines. Compounds that exceeded the ARARs included dieldrin (NOAA, 0.02 μg/kg and normalized USEPA, 6.89 μg/kg, 4,4-DDE and 4,4-DDD (NOAA guideline of 2 μg/kg for both compounds), chlordane (NOAA, 0.5 μg/kg), and total PCBs (NOAA, 50 μg/kg).

NOAA guidelines for inorganic analytes in sediments are presented in Table 4-4. There are no USEPA inorganic guidelines for sediments. Chromium (NOAA, 80 mg/kg) was only exceeded at WHF-CCF-SD-08 (117 mg/kg). Copper (NOAA, 70 mg/kg) was exceeded at WHF-CCF-SD-08 (438 mg/kg) and WHF-CCF-SD-11 (152 mg/kg). Sampling locations WHF-CCF-SD-02 (339 mg/kg), WHF-CCF-SD-03 (218 mg/kg), WHF-CCF-SD-04 (434 mg/kg), WHF-CCF-SD-05 (113 mg/kg), WHF-CCF-SD-07 (62.5 mg/kg), WHF-CCF-SD-08 (825 mg/kg), WHF-CCF-SD-09 (370 mg/kg), WHF-CCF-SD-10 (296 mg/kg), and WHF-CCF-SD-11 (190 mg/kg) exceeded the NOAA guideline for lead of 35 mg/kg. The NOAA guideline for mercury, 0.15 mg/kg, was exceeded at locations WHF-CCF-SD-01 (0.36 mg/kg), WHF-CCF-SD-02 (0.84 mg/kg), WHF-CCF-SD-03 (0.19 mg/kg), WHF-CCF-SD-04 (0.23 mg/kg), WHF-CCF-SD-08 (6.5 mg/kg), WHF-CCF-SD-09 (0.22 mg/kg), WHF-CCF-SD-10 (0.22 mg/kg), and WHF-CCF-SD-11 (1.1 mg/kg). Silver (NOAA, 1 mg/kg) was exceeded at sampling locations WHF-CCF-SD-02 (2.3 mg/kg), WHF-CCF-SD-04 (1.9 mg/kg), WHF-CCF-SD-05 (1.8 mg/kg), WHF-CCF-SD-07 (1.1 mg/kg), WHF-CCF-SD-08 (105 mg/kg), WHF-CCF-SD-09 (3.4 mg/kg), WHF-CCF-SD-10 (2.9 mg/kg), and WHF-CCF-SD-11 (30.6 mg/kg). Finally, zinc (NOAA, 120 mg/kg) was exceeded at locations WHF-CCF-SD-08 (1,270 mg/kg) and WHF-CCF-SD-11 (380 mg/kg).

Exceedances of the sediment ARAR values will be interpreted in the Baseline Risk Assessment.

4.5 SEDIMENT SUMMARY AND CONCLUSIONS. Sediments from the Clear Creek Floodplain study area contain VOCs, pesticides, PCBs, and metals in excess of background concentrations and sediment ARARs. Sediments that contain large percentages of organic materials appear to contain the majority of the contaminants due to their adsorptive properties. The thickness of the organic rich contaminated sediments is approximately 1 to 5 feet. The organic rich sediments are located at the land surface, or under 1 to 5 feet of water in the beaver ponds, the tributaries, and the bog.

The only VOC detected above the CRDL, that is not believed to be a laboratory contaminant, is DCE. DCE was detected at one location. No sediment ARARs are available for VOCs.

No SVOCs were detected above the CRDL.

The pesticides and PCBs that exceeded the background and NOAA and USEPA sediment ARARs included dieldrin, 4,4-DDE, 4,4-DDD, alpha-chlordane, gamma-chlordane, and aroclor-1260.

Inorganic analytes of concern, primarily used for the human health and environment risk evaluation, that exceeded background concentrations included

arsenic, cobalt, chromium, copper, cyanide, lead, mercury, selenium, silver, vanadium, and zinc. Analytes that exceeded NOAA ARARs included chromium, copper, lead, mercury, silver, and zinc.

The highest TPH concentration from laboratory analysis was 13,700 mg/ℓ. The TOC ranged from 3,500 to 125,000 mg/kg.

The extent and source of contamination were not determined during the CCFI. Further exploration in the northwest corner (the beaver pond) of the study area is recommended to determine the lateral extent and potentially the source of contamination. This area was not accessible at the time of the investigation due to 4 to 5 feet of water present. The sediment ARAR exceedances will be addressed in the Baseline Risk Assessment.

REFERENCES

ABB Environmental Services, 1992, Technical Memorandum No. 4, Surface Water and Sediments. Naval Air Station Whiting Field, Milton, Florida: prepared for SOUTHNAVFACENGCOM, Charleston, South Carolina.

ABB Environmental Services, 1993, Technical Memorandum No. 1, Final Draft, Surface Water and Sediment Assessment. Naval Air Station Whiting Field, Milton, Florida: prepared for SOUTHNAVFACENGCOM, Charleston, South Carolina.

Environmental Protection Systems, Inc., 1991, Survey of Rare, Threatened, and Endangered Plants at Naval Air Station Whiting Field and Nearby Outlying Landing Fields, Final Report: Environmental Planning Systems, Inc., Pensacola, Florida.

Florida Game and Freshwater Fish Commission (FGFWFC), 1991, Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida: compiled by D.A. Wood, Endangered Species Coordinator.

National Oceanic and Atmospheric Administration (NOAA), 1990, Technical Memorandum No. 5 OMA 52. "The Potential for Biological Effects of Sediment-Sorbed Contaminants tested in the National Status and Trends Program," March, 1990. Edward R. Long and Lee G. Morgan, Seattle, WA.

Naval Energy and Environmental Support Activity (NEESA), 1988, Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, Naval Energy and Environment Support Activity: Port Hueneme, California, NEESA 20.2-047B.

Wolfe, S.H., Reidenauer, J.A., and D.B. Means, 1988, An Ecological Characterization of the Florida Panhandle: Fish and Wildlife Service, Washington, D.C., Biological Report 88(12), October 1988.

U.S. Environmental Protection Agency, 1988a, Laboratory Data Validation: Functional Guidelines for Evaluation of Inorganic Analysis.

U.S. Environmental Protection Agency, 1988b, Laboratory Data Validation: Functional Guidelines for Evaluation of Organic Analysis.

U.S. Environmental Protection Agency, 1988c, Interim Sediment Criteria Values for Nonpolar Hydrophobic Organic Contaminants"; Office of Water Regulations and Standards; SCD No. 17; Washington, DC.

U.S. Environmental Protection Agency, 1991, Environmental Compliance Branch - Standard Operating Procedures and Quality Assurance Manual: Athens, Georgia, USEPA Region IV Environmental Services Division.

APPENDIX A

TPH FIELD SCREENING

Appendix A
TPH Field Screening Results

Date	Time	P-Coord	L-Coord	Sheen	Odor	TPH (mg/ℓ)
3/22/93	1,230	850	850	-	-	10.00
3/22/93	1,235	950	800	N	N	8.91
3/22/93	1,250	1,100	800	N	N	19.90
3/22/93	1,255	1,150	800	N	N	11.76
3/22/93	1,300	1,050	800	N	N	42.72
3/22/93	1,310	1,000	800	N	N	1.01
3/22/93	1,320	1,080	760	N	N	0.00
3/22/93	1,327	850	950	Y	Y	344.00
3/22/93	1,333	915	960	Y	Y	286.87
3/22/93	1,411	900	850	N	N	112.07
3/22/93	1,415	950	850	N	N	44.90
3/22/93	1,420	1,000	850	N	N	5.00
3/22/93	1,425	1,050	850	N	N	52.53
3/22/93	1,430	1,100	850	N	N	2.90
3/22/93	1,440	1,120	870	Y	Y	11,156.86
3/22/93	1,447	1,100	900	Y	Y	7,132.08
3/22/93	1,456	1,050	900	N	N	1,4037.38
3/22/93	1,500	1,000	900	Y	N	1,342.86
3/22/93	1,505	950	900	N	N	69.81
3/22/93	1,510	900	900	Y	Y	5,581.82
3/22/93	1,517	850	900	N	N	54.37
3/22/93	1,528	900	950	Y	Y	21,734.69
3/22/93	1,537	950	950	Y	Y	10,252.43
3/22/93	1,540	1,000 A	950 A	Y	Y	6,000.00
3/22/93	1,550	1,050	950	N	N	6,504.67
3/22/93	1,600	1,100	950	N	N	440.00
3/22/93	1,610	1,150	950	N	N	13.79
3/22/93	1,617	1,200	950	N	N	8.04
3/23/93	950	1,150	1,050	N	N	8.08
3/23/93	1,004	1,100	1,050	N	N	14.00

Appendix A
TPH Field Screening Results

Date	Time	P-Coord	L-Coord	Sheen	Odor	TPH (mg/ℓ)
3/23/93	1,015	1,050	1,050	Y	Y	5,663.16
3/23/93	1,032	1,000	1,050	–	–	2,450.98
?/23/93	1,054	950	1,050	Y	Y	4,613.86
3/23/93	1,120	900	1,050	N	N	1,192.45
3/23/93	1,130	880	1,050	–	–	–
3/23/93	1,135	850	1,040	N	N	–
3/23/93	1,140	850 A	1,050 A	N	N	21.78
3/23/93	1,140	850 B	1,050 B	N	N	252.94
3/23/93	1,200	800	1,050	N	N	618.18
3/23/93	1,435	1,150	1,150	N	N	0.00
3/23/93	1,447	1,100	1,150	N	N	–
3/23/93	1,452	1,050	1,150	N	N	0.00
3/23/93	1,500	1,000	1,150	N	N	38.00
3/23/93	1,510	950	1,100	Y	Y	–
3/23/93	1,522	950	1,150	N	N	46.00
3/23/93	1,530	900	1,150	Y	Y	111.54
3/23/93	1,538	850	1,150	N	N	314.00
3/23/93	1,556	800	1,150	N	N	211.21
3/23/93	1,619	850 A	1,100 A	N	N	91.26
3/23/93	1,619	850 B	11,00 B	N	N	–
3/23/93	1,630	800 A	1,100 A	N	N	86.00
3/23/93	1,630	800 B	1,100 B	N	N	–
3/23/93	1,647	850	1,200	N	N	419.80
3/23/93	1,700	950	1,200	N	N	7.27
3/23/93	1,725	1,150	1,200	N	N	33.33
3/23/93	1,019	800	1,000	N	N	5.56
3/23/93	1,027	850	1,000	N	Y	16,963.64
3/23/93	1,041	900	1,000	Y	Y	139.22
3/23/93	1,053	950	1,000	Y	–	1,245.83
3/23/93	1,105	1,000	1,000	N	–	75.25

Appendix A
TPH Field Screening Results

Date	Time	P-Coord	L-Coord	Sheen	Odor	TPH (mg/ℓ)
3/23/93	1,120	1,050	1,000	N	N	–
3/23/93	1,120	1,050 A	1,000 A	N	N	93.88
3/23/93	1,135	1,100	1,000	Y	Y	3,123.60
3/23/93	1,152	1,150	1,000	N	N	82.14
3/23/93	1,200	1,150 A	1,000 A	N	N	0.00
3/23/93	1,444	1,150	1,100	N	N	–
3/23/93	1,452	1,100	1,100	N	N	21.57
3/23/93	1,500	1,050	1,100	N	N	–
3/23/93	1,515	1,020	1,070	Y	Y	114.56
3/23/93	1,531	1,000	1,100	Y	Y	–
3/23/93	1,607	900	1,100	Y	Y	–
3/23/93	1,646	1,020	1,020	N	Y	553.54
3/23/93	1,655	1,070	1,030	Y	Y	7,372.55
3/23/93	1,715	980	1,030	Y	Y	–
3/23/93	1,723	980	1,080	Y	Y	2,320.00
3/23/93	1,732	980	1,100	Y	Y	0.00
3/23/93	1,736	980	1,120	Y	Y	110.00
3/24/93	843	A-1	–	Y	Y	14,524.27
3/24/93	900	A-2	–	Y	Y	1,594.17
3/24/93	950	BKG-1	–	N	N	67.33
3/24/93	1,010	1,000 B	950 B	Y	Y	–
3/24/93	1,640	835	985	N	Y	–
3/24/93	1,659	885	965	Y	Y	–
3/24/93	1,721	890	1,030	Y	Y	–
3/24/93	1,740	840	1,000	N	N	–
3/24/93	1,756	1,030	890	Y	Y	–
3/24/93	1,805	1,070	900	Y	Y	–
3/24/93	1,730	A 0	–	Y	Y	8.08
3/24/93	1,745	A 3	–	Y	Y	48.00
3/24/93	1,800	A 4	–	Y	N	45.54

Appendix A
TPH Field Screening Results

Date	Time	P-Coord	L-Coord	Sheen	Odor	TPH (mg/ℓ)
3/25/93	1,000	SD-01	--	Y	Y	--
3/25/93	1,050	SD-02	--	Y	Y	--
3/25/93	1,215	1,100	875	Y	Y	--
3/25/93	1,235	SD-04	--	Y	Y	--
3/25/93	1,500	SD-13	--	N	N	--
3/25/93	--	SD-13 MS	--	N	N	--
3/25/93	--	SD-13 MSD	--	N	N	--
3/25/93	1,025	SD-06	--	Y	Y	56.31
3/25/93	1,115	SD-08	--	Y	Y	--
3/25/93	1,200	SD-05	--	--	--	--
3/25/93	1,623	SD-07	--	--	--	--
3/25/93	1,700	SD-11	--	--	--	--
3/25/93	1,725	SD-12	--	Y	--	--
3/26/93	830	SD-09	--	--	--	3,485.71
3/26/93	830	SD-09A	--	--	--	--
3/26/93	926	SD-10	--	--	--	--

APPENDIX B

SEDIMENT SAMPLE ANALYTICAL RESULTS

SAMPLE DESIGNATION
CLEAR CREEK FLOODPLAIN INVESTIGATION

[illegible]	[illegible]	[illegible]
WHF-CCF-SD-01	CCFSD01	35476001
WHF-CCF-SD-02	CCFSD02	35476002
WHF-CCF-SD-03	CCFSD03	35476003
WHF-CCF-SD-04	CCFSD04	35476004
WHF-CCF-SD-05	CCFSD05	35476005
WHF-CCF-SD-06	CCFSD06	35476006
WHF-CCF-SD-07	CCFSD07	35476009
WHF-CCF-SD-08	CCFSD08	35476007
WHF-CCF-SD-09	CCFSD09	35480001
WHF-CCF-SD-090A	CCFSD09A	35480002
WHF-CCF-SD-10	CCFSD10	35480003
WHF-CCF-SD-11	CCFSD11	35476013
WHF-CCF-SD-12	CCFSD12	35476014
WHF-CCF-SD-13	CCFSD13	35476008
WHF-CCF-SD-FB	CCFSDFB	35476K10
WHF-CCF-SD-RB	CCFSDRB	35476K11
WHF-CCF-SD-RB02	CCFSDRB02	35480K04

VALIDATED DATA

TOTAL PETROLEUM HYDROCARBON

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
TOTAL PETROLEUM HYDROCARBON --- VALIDATED DATA

Lab Sample Number:	35476006			35480001			35480002			35476K10		
Site	CCFI			CCFI			CCFI			CCFI		
Locator	CCFSD06			CCFSD09			CCFSD09A			CCFSDFB		
Collect Date:	25-MAR-93			26-MAR-93			26-MAR-93			25-MAR-93		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
TOTAL PETROLEUM HYDROCARBON												
Total Petroleum Hydrocarbon	189	mg/kg		13700	mg/kg		7940	mg/kg		.05 U	mg/l	.05

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
TOTAL PETROLEUM HYDROCARBON --- VALIDATED DATA

Lab Sample Number:	35476K11				35480K04			
Site	CCFI				CCFI			
Locator	CCFSDRB				CCFSDRB02			
Collect Date:	25-MAR-93				26-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
TOTAL PETROLEUM HYDROCARBON								
Total Petroleum Hydrocarbon	.05	U	mg/l	.05	.33		mg/l	

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
RESULT IS REJECTED AND UNUSABLE

VALIDATED DATA

TOTAL ORGANIC CARBON

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
TOTAL ORGANIC CARBON -- VALIDATED DATA

Lab Sample Number:	35476002			35476004			35476006			35476009		
Site	CCFI			CCFI			CCFI			CCFI		
Locator	CCFSD02			CCFSD04			CCFSD06			CCFSD07		
Collect Date:	25-MAR-93			25-MAR-93			25-MAR-93			25-MAR-93		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
TOTAL ORGANIC CARBON												
TOC	37700	mg/kg		64200	mg/kg		40500	mg/kg		35000	mg/kg	

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
TOTAL ORGANIC CARBON -- VALIDATED DATA

Lab Sample Number:	35480001			35480002			35480003			35476008		
Site	CCFI			CCFI			CCFI			CCFI		
Locator	CCFSD09			CCFSD09A			CCFSD10			CCFSD13		
Collect Date:	26-MAR-93			26-MAR-93			26-MAR-93			25-MAR-93		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
TOTAL ORGANIC CARBON TOC	86400	mg/kg		60100	mg/kg		125000	mg/kg		13400	mg/kg	

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
TOTAL ORGANIC CARBON -- VALIDATED DATA

Lab Sample Number:	35476K10				35476K11				35480K04			
Site	CCFI				CCFI				CCFI			
Locator	CCFSDFB				CCFSDRB				CCFSDRB02			
Collect Date:	25-MAR-93				25-MAR-93				26-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
TOTAL ORGANIC CARBON												
TOC	-	U	mg/l	1	-	U	mg/l	1	-	U	mg/l	1

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

VALIDATED DATA

INORGANICS - METALS AND CYANIDE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
INORGANICS --- METALS AND CYANIDE ---- VALIDATED DATA

Lab Sample Number:	35476001				35476002				35476003				35476004			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD01				CCFSD02				CCFSD03				CCFSD04			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP METALS AND CYANIDE																
Aluminum	32300		mg/kg	40	66000		mg/kg	40	9330		mg/kg	40	15200		mg/kg	40
Antimony	4.7	U	mg/kg	12	12.9	U	mg/kg	12	3.1	U	mg/kg	12	4.4	U	mg/kg	12
Arsenic	4.7	J	mg/kg	2	20	J	mg/kg	2	4.1	J	mg/kg	2	6.4	J	mg/kg	2
Barium	49.7	J	mg/kg	40	68.5	J	mg/kg	40	15.4	J	mg/kg	40	34.9	J	mg/kg	40
Beryllium	.36	J	mg/kg	1	.71	U	mg/kg	1	.17	U	mg/kg	1	.25	U	mg/kg	1
Cadmium	.74	U	mg/kg	1	2.1	J	mg/kg	1	2.1		mg/kg	1	4.7		mg/kg	1
Calcium	478	J	mg/kg	1000	933	J	mg/kg	1000	261	J	mg/kg	1000	379	J	mg/kg	1000
Chromium	32.4		mg/kg	2	70.1		mg/kg	2	29.8		mg/kg	2	33.6		mg/kg	2
Cobalt	5.3	J	mg/kg	10	11.3	J	mg/kg	10	1.4	UJ	mg/kg	10	2.1	UJ	mg/kg	10
Copper	27.5		mg/kg	5	52.1		mg/kg	5	15.4		mg/kg	5	26.6		mg/kg	5
Iron	31200		mg/kg	20	54800		mg/kg	20	12200		mg/kg	20	8330		mg/kg	20
Lead	18.1		mg/kg	1	339		mg/kg	1	218		mg/kg	1	434		mg/kg	1
Magnesium	338	J	mg/kg	1000	764	J	mg/kg	1000	111	J	mg/kg	1000	210	J	mg/kg	1000
Manganese	76.6		mg/kg	3	83.7		mg/kg	3	11.6		mg/kg	3	11.7		mg/kg	3
Mercury	.36		mg/kg	.1	.84		mg/kg	.1	.19		mg/kg	.1	.23		mg/kg	.1
Nickel	6.2	J	mg/kg	8	18.6	J	mg/kg	8	2.4	U	mg/kg	8	3.5	U	mg/kg	8
Potassium	214	J	mg/kg	1000	613	J	mg/kg	1000	49.4	J	mg/kg	1000	162	J	mg/kg	1000
Selenium	.85	J	mg/kg	1	1.9	J	mg/kg	1	.43	J	mg/kg	1	.77	J	mg/kg	1
Silver	.65	J	mg/kg	2	2.3	J	mg/kg	2	.99	J	mg/kg	2	1.9	J	mg/kg	2
Sodium	496	J	mg/kg	1000	1100	J	mg/kg	1000	246	J	mg/kg	1000	362	J	mg/kg	1000
Thallium	.47	U	mg/kg	2	1.3	U	mg/kg	2	.31	U	mg/kg	2	.44	U	mg/kg	2
Vanadium	89.9		mg/kg	10	110		mg/kg	10	30.2		mg/kg	10	51.8		mg/kg	10
Zinc	30.3		mg/kg	4	76.3		mg/kg	4	36.9		mg/kg	4	69.4		mg/kg	4
Cyanide	.12	U	mg/kg	1	.32	U	mg/kg	1	.1	U	mg/kg	1	.11	U	mg/kg	1

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
INORGANICS --- METALS AND CYANIDE ---- VALIDATED DATA

Lab Sample Number:	35476005				35476006				35476009				35476007			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD05				CCFSD06				CCFSD07				CCFSD08			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP METALS AND CYANIDE																
Aluminum	12900		mg/kg	40	13500		mg/kg	40	37100		mg/kg	40	36300		mg/kg	40
Antimony	3.1	U	mg/kg	12	3.6	U	mg/kg	12	3.9	U	mg/kg	12	14.1	U	mg/kg	12
Arsenic	3.2	J	mg/kg	2	1.5	J	mg/kg	2	3.9	J	mg/kg	2	7.7	J	mg/kg	2
Barium	24.7	J	mg/kg	40	26	J	mg/kg	40	70.4	J	mg/kg	40	417	J	mg/kg	40
Beryllium	.17	U	mg/kg	1	.21	J	mg/kg	1	.22	U	mg/kg	1	1	J	mg/kg	1
Cadmium	1.9		mg/kg	1	.55	U	mg/kg	1	1.5	J	mg/kg	1	19.8		mg/kg	1
Calcium	294	J	mg/kg	1000	304	J	mg/kg	1000	1570	J	mg/kg	1000	2700	J	mg/kg	1000
Chromium	21.3		mg/kg	2	16.2		mg/kg	2	34.5		mg/kg	2	117		mg/kg	2
Cobalt	1.4	UJ	mg/kg	10	1.7	UJ	mg/kg	10	4.2	J	mg/kg	10	6.6	UJ	mg/kg	10
Copper	17		mg/kg	5	7.1	J	mg/kg	5	25.8		mg/kg	5	438		mg/kg	5
Iron	8960		mg/kg	20	4240		mg/kg	20	15400		mg/kg	20	18000		mg/kg	20
Lead	113		mg/kg	1	35.4	J	mg/kg	1	62.5		mg/kg	1	825		mg/kg	1
Magnesium	179	J	mg/kg	1000	165	J	mg/kg	1000	522	J	mg/kg	1000	1130	J	mg/kg	1000
Manganese	14.4		mg/kg	3	9.8		mg/kg	3	44.9		mg/kg	3	63.5		mg/kg	3
Mercury	.14		mg/kg	.1	.06	J	mg/kg	.1	.07	J	mg/kg	.1	6.5		mg/kg	.1
Nickel	2.4	U	mg/kg	8	4.5	J	mg/kg	8	8.7	J	mg/kg	8	23.8	J	mg/kg	8
Potassium	102	J	mg/kg	1000	56.8	J	mg/kg	1000	321	J	mg/kg	1000	219	U	mg/kg	1000
Selenium	.57	J	mg/kg	1	.94	J	mg/kg	1	.95	J	mg/kg	1	3.6	J	mg/kg	1
Silver	1.8	J	mg/kg	2	.47	U	mg/kg	2	1.1	J	mg/kg	2	105		mg/kg	2
Sodium	262	J	mg/kg	1000	312	J	mg/kg	1000	370	J	mg/kg	1000	1430	J	mg/kg	1000
Thallium	.31	U	mg/kg	2	.36	U	mg/kg	2	.39	U	mg/kg	2	1.4	U	mg/kg	2
Vanadium	30.5		mg/kg	10	35.4		mg/kg	10	85.6		mg/kg	10	71.2	J	mg/kg	10
Zinc	57.5		mg/kg	4	13.1		mg/kg	4	74.2		mg/kg	4	1270		mg/kg	4
Cyanide	.1	U	mg/kg	1	.11	J	mg/kg	1	.1	U	mg/kg	1	1	U	mg/kg	1

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
INORGANICS --- METALS AND CYANIDE ---- VALIDATED DATA

Lab Sample Number:	35480001				35480002				35480003				35476013			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD09				CCFSD09A				CCFSD10				CCFSD11			
Collect Date:	26-MAR-93				26-MAR-93				26-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP METALS AND CYANIDE																
Aluminum	9560		mg/kg	40	9910		mg/kg	40	27600		mg/kg	40	16800		mg/kg	40
Antimony	4.9	U	mg/kg	12	4.4	U	mg/kg	12	8.2	U	mg/kg	12	6	U	mg/kg	12
Arsenic	3	J	mg/kg	2	2.6	J	mg/kg	2	4.6	J	mg/kg	2	10.1		mg/kg	2
Barium	27.1	J	mg/kg	40	29.3	J	mg/kg	40	37.2	J	mg/kg	40	65.8	J	mg/kg	40
Beryllium	.27	U	mg/kg	1	.25	U	mg/kg	1	.45	U	mg/kg	1	.34	U	mg/kg	1
Cadmium	3.5		mg/kg	1	2.8		mg/kg	1	3.1	J	mg/kg	1	6.5		mg/kg	1
Calcium	489	J	mg/kg	1000	635	J	mg/kg	1000	544	J	mg/kg	1000	1500	J	mg/kg	1000
Chromium	36.2		mg/kg	2	36.6		mg/kg	2	48		mg/kg	2	29.7		mg/kg	2
Cobalt	2.3	UJ	mg/kg	10	2.1	UJ	mg/kg	10	3.8	UJ	mg/kg	10	2.8	UJ	mg/kg	10
Copper	27.4		mg/kg	5	29.4		mg/kg	5	40.8		mg/kg	5	152		mg/kg	5
Iron	4760		mg/kg	20	4820		mg/kg	20	5880		mg/kg	20	8630		mg/kg	20
Lead	370		mg/kg	1	252		mg/kg	1	296		mg/kg	1	190		mg/kg	1
Magnesium	168	J	mg/kg	1000	229	J	mg/kg	1000	409	J	mg/kg	1000	439	J	mg/kg	1000
Manganese	13.4		mg/kg	3	14.9		mg/kg	3	18.5		mg/kg	3	51.8		mg/kg	3
Mercury	.22		mg/kg	.1	.2		mg/kg	.1	.22	J	mg/kg	.1	1.1		mg/kg	.1
Nickel	4	J	mg/kg	8	3.5	U	mg/kg	8	14.5	J	mg/kg	8	10.7	J	mg/kg	8
Potassium	219	J	mg/kg	1000	189	J	mg/kg	1000	411	J	mg/kg	1000	262	J	mg/kg	1000
Selenium	.85	J	mg/kg	1	.56	J	mg/kg	1	1.1	J	mg/kg	1	1.6	J	mg/kg	1
Silver	3.4	J	mg/kg	2	2.7	J	mg/kg	2	2.9	J	mg/kg	2	30.6		mg/kg	2
Sodium	446	J	mg/kg	1000	587	J	mg/kg	1000	613	J	mg/kg	1000	619	J	mg/kg	1000
Thallium	.49	U	mg/kg	2	.44	U	mg/kg	2	.82	U	mg/kg	2	.6	U	mg/kg	2
Vanadium	30.8		mg/kg	10	24.8		mg/kg	10	56.1		mg/kg	10	46.9		mg/kg	10
Zinc	61.1		mg/kg	4	66.4		mg/kg	4	51.3		mg/kg	4	380		mg/kg	4
Cyanide	.12	U	mg/kg	1	.14	U	mg/kg	1	.26	U	mg/kg	1	.15	U	mg/kg	1

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
INORGANICS --- METALS AND CYANIDE ---- VALIDATED DATA

Lab Sample Number:	35476014				35476008				35476K10				35476K11			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD12				CCFSD13				CCFSDFB				CCFSDRB			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP METALS AND CYANIDE																
Aluminum	2890		mg/kg	40	3970		mg/kg	40	84.9	J	ug/l	200	12.7	J	ug/l	200
Antimony	3	U	mg/kg	12	4.9	U	mg/kg	12	9.4	J	ug/l	60	9	U	ug/l	60
Arsenic	.73	J	mg/kg	2	3	J	mg/kg	2	.8	U	ug/l	10	.8	U	ug/l	10
Barium	16.9	J	mg/kg	40	8.9	J	mg/kg	40	.1	U	ug/l	200	.1	U	ug/l	200
Beryllium	.17	U	mg/kg	1	.27	U	mg/kg	1	.5	U	ug/l	5	.5	U	ug/l	5
Cadmium	.47	U	mg/kg	1	.77	U	mg/kg	1	1.4	U	ug/l	5	1.4	U	ug/l	5
Calcium	428	J	mg/kg	1000	213	J	mg/kg	1000	77.5	U	ug/l	5000	73.2	U	ug/l	5000
Chromium	6.2		mg/kg	2	8.4		mg/kg	2	2.9	U	ug/l	10	2.9	U	ug/l	10
Cobalt	1.4	UJ	mg/kg	10	2.3	UJ	mg/kg	10	4.2	U	ug/l	50	4.2	U	ug/l	50
Copper	9.7		mg/kg	5	5.4	J	mg/kg	5	3.8	J	ug/l	25	.7	U	ug/l	25
Iron	2740		mg/kg	20	7310		mg/kg	20	8.2	U	ug/l	100	8.2	U	ug/l	100
Lead	28.9		mg/kg	1	12.9		mg/kg	1	.4	U	ug/l	5	.4	U	ug/l	5
Magnesium	125	J	mg/kg	1000	66	J	mg/kg	1000	13.6	U	ug/l	5000	19.8	U	ug/l	5000
Manganese	11.9		mg/kg	3	4.6	J	mg/kg	3	1.1	J	ug/l	15	.3	U	ug/l	15
Mercury	.05	U	mg/kg	.1	.08	U	mg/kg	.1	.1	U	ug/l	.2	.1	U	ug/l	.2
Nickel	2.4	U	mg/kg	8	4.2	J	mg/kg	8	7.1	U	ug/l	40	7.1	U	ug/l	40
Potassium	63.1	J	mg/kg	1000	87.5	J	mg/kg	1000	214	U	ug/l	5000	327	U	ug/l	5000
Selenium	.44	J	mg/kg	1	.44	J	mg/kg	1	.7	U	ug/l	5	.7	U	ug/l	5
Silver	.76	J	mg/kg	2	.66	U	mg/kg	2	1.2	U	ug/l	10	1.2	U	ug/l	10
Sodium	262	J	mg/kg	1000	475	J	mg/kg	1000	38.6	J	ug/l	5000	59.4	J	ug/l	5000
Thallium	.3	U	mg/kg	2	.49	U	mg/kg	2	.9	U	ug/l	10	.9	U	ug/l	10
Vanadium	7.9	J	mg/kg	10	16.2	J	mg/kg	10	1.7	U	ug/l	50	1.7	U	ug/l	50
Zinc	19.4		mg/kg	4	11.9		mg/kg	4	2.5	U	ug/l	20	1.4	U	ug/l	20
Cyanide	.1	J	mg/kg	1	.12	U	mg/kg	1	.9	UJ	ug/l	10	.9	UJ	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
INORGANICS --- METALS AND CYANIDE ---- VALIDATED DATA

Lab Sample Number:	35480K04
Site	CCFI
Locator	CCFSDRB02
Collect Date:	26-MAR-93

	VALUE	QUAL	UNITS	DL
CLP METALS AND CYANIDE				
Aluminum	7	U	ug/l	200
Antimony	9	U	ug/l	40
Arsenic	.8	U	ug/l	10
Barium	.1	U	ug/l	200
Beryllium	.5	U	ug/l	5
Cadmium	1.4	U	ug/l	5
Calcium	90.7	U	ug/l	5000
Chromium	2.9	U	ug/l	10
Cobalt	4.2	U	ug/l	50
Copper	.8	J	ug/l	25
Iron	10.5	U	ug/l	100
Lead	.4	U	ug/l	5
Magnesium	22.9	U	ug/l	5000
Manganese	.44	J	ug/l	15
Mercury	.1	U	ug/l	.2
Nickel	8	J	ug/l	40
Potassium	140	U	ug/l	5000
Selenium	.7	U	ug/l	5
Silver	1.3	J	ug/l	10
Sodium	50.1	J	ug/l	5000
Thallium	.9	U	ug/l	10
Vanadium	1.7	U	ug/l	50
Zinc	3	U	ug/l	20
Cyanide	.9	UJ	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

VALIDATED DATA

VOLATILE ORGANIC COMPOUNDS

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
VOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476001				35476002				35476003				35476004			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD01				CCFSD02				CCFSD03				CCFSD04			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW																
Chloromethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Bromomethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Vinyl chloride	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Chloroethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Methylene chloride	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Acetone	36		ug/kg	26	170		ug/kg	71	7	J	ug/kg	17	24	U	ug/kg	24
Carbon disulfide	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
1,1-Dichloroethene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
1,1-Dichloroethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
1,2-Dichloroethene (total)	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	8	J	ug/kg	24
Chloroform	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
1,2-Dichloroethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
2-Butanone	8	J	ug/kg	26	45	J	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
1,1,1-Trichloroethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Carbon tetrachloride	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Bromodichloromethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
1,2-Dichloropropane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
cis-1,3-Dichloropropene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Trichloroethene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	13	J	ug/kg	24
Dibromochloromethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
1,1,2-Trichloroethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Benzene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
trans-1,3-Dichloropropene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Bromoform	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
4-Methyl-2-pentanone	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
2-Hexanone	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Tetrachloroethene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Toluene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
1,1,2,2-Tetrachloroethane	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Chlorobenzene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Ethylbenzene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Styrene	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24
Xylenes (total)	26	U	ug/kg	26	71	U	ug/kg	71	17	U	ug/kg	17	24	U	ug/kg	24

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
VOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476005				35476006				35476009				35476007			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD05				CCFSD06				CCFSD07				CCFSD08			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW																
Chloromethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Bromomethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Vinyl chloride	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Chloroethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Methylene chloride	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Acetone	210		ug/kg	86	18	J	ug/kg	20	25		ug/kg	22	830		ug/kg	77
Carbon disulfide	9	J	ug/kg	86	20	U	ug/kg	20	4	J	ug/kg	22	29	J	ug/kg	77
1,1-Dichloroethene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
1,1-Dichloroethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
1,2-Dichloroethene (total)	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Chloroform	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
1,2-Dichloroethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
2-Butanone	50	J	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	240		ug/kg	77
1,1,1-Trichloroethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Carbon tetrachloride	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Bromodichloromethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
1,2-Dichloropropane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
cis-1,3-Dichloropropene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Trichloroethene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Dibromochloromethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
1,1,2-Trichloroethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Benzene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
trans-1,3-Dichloropropene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Bromoform	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
4-Methyl-2-pentanone	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	22	J	ug/kg	77
2-Hexanone	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Tetrachloroethene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Toluene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
1,1,2,2-Tetrachloroethane	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Chlorobenzene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Ethylbenzene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Styrene	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77
Xylenes (total)	86	U	ug/kg	86	20	U	ug/kg	20	22	U	ug/kg	22	77	U	ug/kg	77

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
VOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35480001				35480002				35480003				35476013			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD09				CCFSD09A				CCFSD10				CCFSD11			
Collect Date:	26-MAR-93				26-MAR-93				26-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW																
Chloromethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Bromomethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Vinyl chloride	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Chloroethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Methylene chloride	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Acetone	42	U	ug/kg	27	25	U	ug/kg	24	48	U	ug/kg	45	44	U	ug/kg	33
Carbon disulfide	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
1,1-Dichloroethene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
1,1-Dichloroethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
1,2-Dichloroethene (total)	35		ug/kg	27	54		ug/kg	24	10	J	ug/kg	45	33	U	ug/kg	33
Chloroform	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
1,2-Dichloroethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
2-Butanone	27	U	ug/kg	27	24	U	ug/kg	24	11	J	ug/kg	45	12	J	ug/kg	33
1,1,1-Trichloroethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Carbon tetrachloride	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Bromodichloromethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
1,2-Dichloropropane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
cis-1,3-Dichloropropene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Trichloroethene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Dibromochloromethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
1,1,2-Trichloroethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Benzene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
trans-1,3-Dichloropropene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Bromoform	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
4-Methyl-2-pentanone	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
2-Hexanone	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Tetrachloroethene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Toluene	3	J	ug/kg	27	3	J	ug/kg	24	12	J	ug/kg	45	33	U	ug/kg	33
1,1,2,2-Tetrachloroethane	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Chlorobenzene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Ethylbenzene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Styrene	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33
Xylenes (total)	27	U	ug/kg	27	24	U	ug/kg	24	45	U	ug/kg	45	33	U	ug/kg	33

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
VOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476014				35476008				35476K12				35476K10			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD12				CCFSD13				CCFSDTB				CCFSDFB			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW																
Chloromethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Bromomethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Vinyl chloride	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Chloroethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Methylene chloride	17	U	ug/kg	17	28	U	ug/kg	28	1	J	ug/l	10	10	U	ug/l	10
Acetone	14	J	ug/kg	17	13	J	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Carbon disulfide	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
1,1-Dichloroethene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
1,1-Dichloroethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
1,2-Dichloroethene (total)	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Chloroform	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
1,2-Dichloroethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
2-Butanone	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
1,1,1-Trichloroethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Carbon tetrachloride	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Bromodichloromethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
1,2-Dichloropropane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
cis-1,3-Dichloropropene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Trichloroethene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Dibromochloromethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
1,1,2-Trichloroethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Benzene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
trans-1,3-Dichloropropene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Bromoform	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
4-Methyl-2-pentanone	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
2-Hexanone	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Tetrachloroethene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Toluene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
1,1,2,2-Tetrachloroethane	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Chlorobenzene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Ethylbenzene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Styrene	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10
Xylenes (total)	17	U	ug/kg	17	28	U	ug/kg	28	10	U	ug/l	10	10	U	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
''' = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
VOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476K11				35480K05				35480K04			
Site	CCFI				CCFI				CCFI			
Locator	CCFSDRB				CCFSDTB02				CCFSDRB02			
Collect Date:	25-MAR-93				26-MAR-93				26-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW												
Chloromethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Bromomethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Vinyl chloride	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Chloroethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Methylene chloride	10	U	ug/l	10	1	J	ug/l	10	10	U	ug/l	10
Acetone	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Carbon disulfide	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,1-Dichloroethene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,1-Dichloroethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,2-Dichloroethene (total)	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Chloroform	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,2-Dichloroethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
2-Butanone	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,1,1-Trichloroethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Carbon tetrachloride	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Bromodichloromethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,2-Dichloropropane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
cis-1,3-Dichloropropene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Trichloroethene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Dibromochloromethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,1,2-Trichloroethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Benzene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
trans-1,3-Dichloropropene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Bromoform	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
4-Methyl-2-pentanone	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
2-Hexanone	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Tetrachloroethene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Toluene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,1,2,2-Tetrachloroethane	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Chlorobenzene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Ethylbenzene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Styrene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Xylenes (total)	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

VALIDATED DATA

SEMI-VOLATILE ORGANIC COMPOUNDS

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476001				35476002				35476003				35476004			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD01				CCFSD02				CCFSD03				CCFSD04			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP SEMIVOLATILES 90-SOW																
Phenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
bis(2-Chloroethyl) ether	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2-Chlorophenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
1,3-Dichlorobenzene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
1,4-Dichlorobenzene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
1,2-Dichlorobenzene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2-Methylphenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2,2-oxybis(1-Chloropropane)	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
4-Methylphenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
N-Nitroso-di-n-propylamine	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Hexachloroethane	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Nitrobenzene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Isophorone	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2-Nitrophenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2,4-Dimethylphenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
bis(2-Chloroethoxy) methane	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2,4-Dichlorophenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
1,2,4-Trichlorobenzene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Naphthalene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
4-Chloroaniline	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Hexachlorobutadiene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
4-Chloro-3-methylphenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2-Methylnaphthalene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Hexachlorocyclopentadiene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2,4,6-Trichlorophenol	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2,4,5-Trichlorophenol	2100	U	ug/kg	2100	23000	U	ug/kg	23000	14000	U	ug/kg	14000	20000	U	ug/kg	20000
2-Chloronaphthalene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2-Nitroaniline	2100	U	ug/kg	2100	23000	U	ug/kg	23000	14000	U	ug/kg	14000	20000	U	ug/kg	20000
Dimethylphthalate	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Acenaphthylene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2,6-Dinitrotoluene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
3-Nitroaniline	2100	U	ug/kg	2100	23000	U	ug/kg	23000	14000	U	ug/kg	14000	20000	U	ug/kg	20000
Acenaphthene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2,4-Dinitrophenol	2100	U	ug/kg	2100	23000	U	ug/kg	23000	14000	U	ug/kg	14000	20000	U	ug/kg	20000
4-Nitrophenol	2100	U	ug/kg	2100	23000	U	ug/kg	23000	14000	U	ug/kg	14000	20000	U	ug/kg	20000
Dibenzofuran	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
2,4-Dinitrotoluene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Diethylphthalate	870	U	ug/kg	870	990	J	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
4-Chlorophenyl-phenylether	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Fluorene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
4-Nitroaniline	2100	U	ug/kg	2100	23000	U	ug/kg	23000	14000	U	ug/kg	14000	20000	U	ug/kg	20000
4,6-Dinitro-2-methylphenol	2100	U	ug/kg	2100	23000	U	ug/kg	23000	14000	U	ug/kg	14000	20000	U	ug/kg	20000
N-Nitrosodiphenylamine (1)	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
4-Bromophenyl-phenylether	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Hexachlorobenzene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Pentachlorophenol	2100	U	ug/kg	2100	23000	U	ug/kg	23000	14000	U	ug/kg	14000	20000	U	ug/kg	20000
Phenanthrene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Anthracene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Carbazole	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Di-n-butylphthalate	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Fluoranthene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Pyrene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Butylbenzylphthalate	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476001				35476002				35476003				35476004			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD01				CCFSD02				CCFSD03				CCFSD04			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
3,3-Dichlorobenzidine	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Benzo (a) anthracene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Chrysene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
bis(2-Ethylhexyl) phthalate	870	U	ug/kg	870	1400	J	ug/kg	9400	2200	J	ug/kg	5700	3300	J	ug/kg	8000
Di-n-octylphthalate	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Benzo (b) fluoranthene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Benzo (k) fluoranthene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Benzo (a) pyrene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Indeno (1,2,3-cd) pyrene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Dibenz (a,h) anthracene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000
Benzo (g,h,i) perylene	870	U	ug/kg	870	9400	U	ug/kg	9400	5700	U	ug/kg	5700	8000	U	ug/kg	8000

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476005				35476006				35476009				35476007			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD05				CCFSD06				CCFSD07				CCFSD08			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP SEMIVOLATILES 90-SOW																
Phenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
bis(2-Chloroethyl) ether	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2-Chlorophenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
1,3-Dichlorobenzene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
1,4-Dichlorobenzene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
1,2-Dichlorobenzene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2-Methylphenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2,2-oxybis(1-Chloropropane)	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
4-Methylphenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
N-Nitroso-di-n-propylamine	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Hexachloroethane	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Nitrobenzene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Isophorone	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2-Nitrophenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2,4-Dimethylphenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
bis(2-Chloroethoxy) methane	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2,4-Dichlorophenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
1,2,4-Trichlorobenzene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Naphthalene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
4-Chloroaniline	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Hexachlorobutadiene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
4-Chloro-3-methylphenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2-Methylnaphthalene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Hexachlorocyclopentadiene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2,4,6-Trichlorophenol	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2,4,5-Trichlorophenol	14000	U	ug/kg	14000	3100	U	ug/kg	3100	1700	U	ug/kg	1700	31000	U	ug/kg	31000
2-Chloronaphthalene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2-Nitroaniline	14000	U	ug/kg	14000	3100	U	ug/kg	3100	1700	U	ug/kg	1700	31000	U	ug/kg	31000
Dimethylphthalate	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Acenaphthylene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2,6-Dinitrotoluene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
3-Nitroaniline	14000	U	ug/kg	14000	3100	U	ug/kg	3100	1700	U	ug/kg	1700	31000	U	ug/kg	31000
Acenaphthene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2,4-Dinitrophenol	14000	U	ug/kg	14000	3100	U	ug/kg	3100	1700	U	ug/kg	1700	31000	U	ug/kg	31000
4-Nitrophenol	14000	U	ug/kg	14000	3100	U	ug/kg	3100	1700	U	ug/kg	1700	31000	U	ug/kg	31000
Dibenzofuran	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
2,4-Dinitrotoluene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Diethylphthalate	5700	U	ug/kg	5700	160	J	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
4-Chlorophenyl-phenylether	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Fluorene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
4-Nitroaniline	14000	U	ug/kg	14000	3100	U	ug/kg	3100	1700	U	ug/kg	1700	31000	U	ug/kg	31000
4,6-Dinitro-2-methylphenol	14000	U	ug/kg	14000	3100	U	ug/kg	3100	1700	U	ug/kg	1700	31000	U	ug/kg	31000
N-Nitrosodiphenylamine (1)	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
4-Bromophenyl-phenylether	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Hexachlorobenzene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Pentachlorophenol	14000	U	ug/kg	14000	3100	U	ug/kg	3100	1700	U	ug/kg	1700	31000	U	ug/kg	31000
Phenanthrene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Anthracene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Carbazole	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Di-n-butylphthalate	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Fluoranthene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Pyrene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476005				35476006				35476009				35476007			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD05				CCFSD06				CCFSD07				CCFSD08			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Butylbenzylphthalate	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
3,3-Dichlorobenzidine	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Benzo (a) anthracene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Chrysene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
bis(2-Ethylhexyl) phthalate	3600	J	ug/kg	5700	400	J	ug/kg	1300	120	J	ug/kg	720	10000	J	ug/kg	13000
Di-n-octylphthalate	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Benzo (b) fluoranthene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Benzo (k) fluoranthene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Benzo (a) pyrene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Indeno (1,2,3-cd) pyrene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Dibenz (a,h) anthracene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000
Benzo (g,h,i) perylene	5700	U	ug/kg	5700	1300	U	ug/kg	1300	720	U	ug/kg	720	13000	U	ug/kg	13000

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35480001				35480002				35480003				35476013			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD09				CCFSD09A				CCFSD10				CCFSD11			
Collect Date:	26-MAR-93				26-MAR-93				26-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP SEMIVOLATILES 90-SOW																
Phenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
bis(2-Chloroethyl) ether	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2-Chlorophenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
1,3-Dichlorobenzene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
1,4-Dichlorobenzene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
1,2-Dichlorobenzene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2-Methylphenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2,2-oxybis(1-Chloropropane)	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
4-Methylphenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
N-Nitroso-di-n-propylamine	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Hexachloroethane	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Nitrobenzene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Isophorone	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2-Nitrophenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2,4-Dimethylphenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
bis(2-Chloroethoxy) methane	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2,4-Dichlorophenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
1,2,4-Trichlorobenzene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Naphthalene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
4-Chloroaniline	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Hexachlorobutadiene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
4-Chloro-3-methylphenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2-Methylnaphthalene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Hexachlorocyclopentadiene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2,4,6-Trichlorophenol	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2,4,5-Trichlorophenol	22000	U	ug/kg	22000	20000	U	ug/kg	20000	15000	U	ug/kg	15000	13000	U	ug/kg	13000
2-Chloronaphthalene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2-Nitroaniline	22000	U	ug/kg	22000	20000	U	ug/kg	20000	15000	U	ug/kg	15000	13000	U	ug/kg	13000
Dimethylphthalate	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Acenaphthylene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2,6-Dinitrotoluene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
3-Nitroaniline	22000	U	ug/kg	22000	20000	U	ug/kg	20000	15000	U	ug/kg	15000	13000	U	ug/kg	13000
Acenaphthene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2,4-Dinitrophenol	22000	U	ug/kg	22000	20000	U	ug/kg	20000	15000	U	ug/kg	15000	13000	U	ug/kg	13000
4-Nitrophenol	22000	U	ug/kg	22000	20000	U	ug/kg	20000	15000	U	ug/kg	15000	13000	U	ug/kg	13000
Dibenzofuran	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
2,4-Dinitrotoluene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Diethylphthalate	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
4-Chlorophenyl-phenylether	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Fluorene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
4-Nitroaniline	22000	U	ug/kg	22000	20000	U	ug/kg	20000	15000	U	ug/kg	15000	13000	U	ug/kg	13000
4,6-Dinitro-2-methylphenol	22000	U	ug/kg	22000	20000	U	ug/kg	20000	15000	U	ug/kg	15000	13000	U	ug/kg	13000
N-Nitrosodiphenylamine (1)	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
4-Bromophenyl-phenylether	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Hexachlorobenzene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Pentachlorophenol	22000	U	ug/kg	22000	20000	U	ug/kg	20000	15000	U	ug/kg	15000	13000	U	ug/kg	13000
Phenanthrene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Anthracene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Carbazole	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Di-n-butylphthalate	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Fluoranthene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Pyrene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35480001				35480002				35480003				35476013			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD09				CCFSD09A				CCFSD10				CCFSD11			
Collect Date:	26-MAR-93				26-MAR-93				26-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Butylbenzylphthalate	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
3,3-Dichlorobenzidine	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Benzo (a) anthracene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Chrysene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
bis(2-Ethylhexyl) phthalate	8000	J	ug/kg	8900	6500	J	ug/kg	8000	1800	J	ug/kg	6000	690	J	ug/kg	5500
Di-n-octylphthalate	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Benzo (b) fluoranthene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Benzo (k) fluoranthene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Benzo (a) pyrene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Indeno (1,2,3-cd) pyrene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Dibenz (a,h) anthracene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500
Benzo (g,h,i) perylene	8900	U	ug/kg	8900	8000	U	ug/kg	8000	6000	U	ug/kg	6000	5500	U	ug/kg	5500

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476014			35476008			35476K10			35476K11		
Site	CCFI			CCFI			CCFI			CCFI		
Locator	CCFSD12			CCFSD13			CCFSDFB			CCFSDRB		
Collect Date:	25-MAR-93			25-MAR-93			25-MAR-93			25-MAR-93		
	VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL
CLP SEMIVOLATILES 90-SOW												
Phenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
bis(2-Chloroethyl) ether	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2-Chlorophenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
1,3-Dichlorobenzene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
1,4-Dichlorobenzene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichlorobenzene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2-Methylphenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2,2-oxybis(1-Chloropropane)	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
4-Methylphenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
N-Nitroso-di-n-propylamine	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Hexachloroethane	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Nitrobenzene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Isophorone	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2-Nitrophenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2,4-Dimethylphenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
bis(2-Chloroethoxy) methane	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2,4-Dichlorophenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
1,2,4-Trichlorobenzene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Naphthalene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
4-Chloroaniline	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Hexachlorobutadiene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
4-Chloro-3-methylphenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2-Methylnaphthalene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Hexachlorocyclopentadiene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2,4,6-Trichlorophenol	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2,4,5-Trichlorophenol	1300 U	ug/kg	1300	2200 U	ug/kg	2200	25 U	ug/l	25	25 U	ug/l	25
2-Chloronaphthalene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2-Nitroaniline	1300 U	ug/kg	1300	2200 U	ug/kg	2200	25 U	ug/l	25	25 U	ug/l	25
Dimethylphthalate	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Acenaphthylene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2,6-Dinitrotoluene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
3-Nitroaniline	1300 U	ug/kg	1300	2200 U	ug/kg	2200	25 U	ug/l	25	25 U	ug/l	25
Acenaphthene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2,4-Dinitrophenol	1300 U	ug/kg	1300	2200 U	ug/kg	2200	25 U	ug/l	25	25 U	ug/l	25
4-Nitrophenol	1300 U	ug/kg	1300	2200 U	ug/kg	2200	25 U	ug/l	25	25 U	ug/l	25
Dibenzofuran	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
2,4-Dinitrotoluene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Diethylphthalate	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
4-Chlorophenyl-phenylether	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Fluorene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
4-Nitroaniline	1300 U	ug/kg	1300	2200 U	ug/kg	2200	25 U	ug/l	25	25 U	ug/l	25
4,6-Dinitro-2-methylphenol	1300 U	ug/kg	1300	2200 U	ug/kg	2200	25 U	ug/l	25	25 U	ug/l	25
N-Nitrosodiphenylamine (1)	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
4-Bromophenyl-phenylether	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Hexachlorobenzene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Pentachlorophenol	1300 U	ug/kg	1300	2200 U	ug/kg	2200	25 U	ug/l	25	25 U	ug/l	25
Phenanthrene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Anthracene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Carbazole	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Di-n-butylphthalate	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	9 J	ug/l	10
Fluoranthene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10
Pyrene	550 U	ug/kg	550	920 U	ug/kg	920	10 U	ug/l	10	10 U	ug/l	10

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476014				35476008				35476K10				35476K11			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD12				CCFSD13				CCFSDFB				CCFSDRB			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Butylbenzylphthalate	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
3,3-Dichlorobenzidine	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Benzo (a) anthracene	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Chrysene	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
bis(2-Ethylhexyl) phthalate	200	J	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Di-n-octylphthalate	140	J	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Benzo (b) fluoranthene	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Benzo (k) fluoranthene	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Benzo (a) pyrene	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Indeno (1,2,3-cd) pyrene	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Dibenz (a,h) anthracene	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10
Benzo (g,h,i) perylene	550	U	ug/kg	550	920	U	ug/kg	920	10	U	ug/l	10	10	U	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
[1] = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:		35480K04		
Site		CCFI		
Locator		CCFSDRB02		
Collect Date:		26-MAR-93		
	VALUE	QUAL	UNITS	DL
CLP SEMIVOLATILES 90-SOW				
Phenol	10	U	ug/l	10
bis(2-Chloroethyl) ether	10	U	ug/l	10
2-Chlorophenol	10	U	ug/l	10
1,3-Dichlorobenzene	10	U	ug/l	10
1,4-Dichlorobenzene	10	U	ug/l	10
1,2-Dichlorobenzene	10	U	ug/l	10
2-Methylphenol	10	U	ug/l	10
2,2-oxybis(1-Chloropropane)	10	U	ug/l	10
4-Methylphenol	10	U	ug/l	10
N-Nitroso-di-n-propylamine	10	U	ug/l	10
Hexachloroethane	10	U	ug/l	10
Nitrobenzene	10	U	ug/l	10
Isophorone	10	U	ug/l	10
2-Nitrophenol	10	U	ug/l	10
2,4-Dimethylphenol	10	U	ug/l	10
bis(2-Chloroethoxy) methane	10	U	ug/l	10
2,4-Dichlorophenol	10	U	ug/l	10
1,2,4-Trichlorobenzene	10	U	ug/l	10
Naphthalene	10	U	ug/l	10
4-Chloroaniline	10	U	ug/l	10
Hexachlorobutadiene	10	U	ug/l	10
4-Chloro-3-methylphenol	10	U	ug/l	10
2-Methylnaphthalene	10	U	ug/l	10
Hexachlorocyclopentadiene	10	U	ug/l	10
2,4,6-Trichlorophenol	10	U	ug/l	10
2,4,5-Trichlorophenol	25	U	ug/l	25
2-Chloronaphthalene	10	U	ug/l	10
2-Nitroaniline	25	U	ug/l	25
Dimethylphthalate	10	U	ug/l	10
Acenaphthylene	10	U	ug/l	10
2,6-Dinitrotoluene	10	U	ug/l	10
3-Nitroaniline	25	U	ug/l	25
Acenaphthene	10	U	ug/l	10
2,4-Dinitrophenol	25	U	ug/l	25
4-Nitrophenol	25	U	ug/l	25
Dibenzofuran	10	U	ug/l	10
2,4-Dinitrotoluene	10	U	ug/l	10
Diethylphthalate	10	U	ug/l	10
4-Chlorophenyl-phenylether	10	U	ug/l	10
Fluorene	10	U	ug/l	10
4-Nitroaniline	25	U	ug/l	25
4,6-Dinitro-2-methylphenol	25	U	ug/l	25
N-Nitrosodiphenylamine (1)	10	U	ug/l	10
4-Bromophenyl-phenylether	10	U	ug/l	10
Hexachlorobenzene	10	U	ug/l	10
Pentachlorophenol	25	U	ug/l	25
Phenanthrene	10	U	ug/l	10
Anthracene	10	U	ug/l	10
Carbazole	10	U	ug/l	10
Di-n-butylphthalate	9	J	ug/l	10
Fluoranthene	10	U	ug/l	10
Pyrene	10	U	ug/l	10

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
SEMIVOLATILE ORGANIC COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35480K04			
Site	CCFI			
Locator	CCFSDRB02			
Collect Date:	26-MAR-93			
	VALUE	QUAL	UNITS	DL
Butylbenzylphthalate	10	U	ug/l	10
3,3-Dichlorobenzidine	10	U	ug/l	10
Benzo (a) anthracene	10	U	ug/l	10
Chrysene	10	U	ug/l	10
bis(2-Ethylhexyl) phthalate	10	U	ug/l	10
Di-n-octylphthalate	10	U	ug/l	10
Benzo (b) fluoranthene	10	U	ug/l	10
Benzo (k) fluoranthene	10	U	ug/l	10
Benzo (a) pyrene	10	U	ug/l	10
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10
Dibenz (a,h) anthracene	10	U	ug/l	10
Benzo (g,h,i) perylene	10	U	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
) RESULT IS REJECTED AND UNUSABLE

VALIDATED DATA

PESTICIDES AND POLYCHLORINATED BIPHENYLS

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
PESTICIDES AND PCB COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476001				35476002				35476003				35476004			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD01				CCFSD02				CCFSD03				CCFSD04			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP PESTICIDES/PCBS 90-SOW																
alpha-BHC	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	4.1	U	ug/kg	4.1
beta-BHC	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	4.1	U	ug/kg	4.1
delta-BHC	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	4.1	U	ug/kg	4.1
gamma-BHC (Lindane)	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	4.1	U	ug/kg	4.1
Heptachlor	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	4.1	U	ug/kg	4.1
Aldrin	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	4.1	U	ug/kg	4.1
Heptachlor epoxide	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	4.1	U	ug/kg	4.1
Endosulfan I	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	4.1	U	ug/kg	4.1
Dieldrin	8.7	U	ug/kg	8.7	24	U	ug/kg	24	18		ug/kg	6	55		ug/kg	8
4,4-DDE	8.7	U	ug/kg	8.7	12	J	ug/kg	24	23		ug/kg	6	47		ug/kg	8
Endrin	8.7	U	ug/kg	8.7	24	U	ug/kg	24	5.7	U	ug/kg	5.7	8	U	ug/kg	8
Endosulfan II	8.7	U	ug/kg	8.7	24	U	ug/kg	24	5.7	U	ug/kg	5.7	8	U	ug/kg	8
4,4-DDD	8.7	U	ug/kg	8.7	24	U	ug/kg	24	6.5		ug/kg	6	8	U	ug/kg	8
Endosulfan sulfate	8.7	U	ug/kg	8.7	24	U	ug/kg	24	5.7	U	ug/kg	5.7	8	U	ug/kg	8
4,4-DDT	8.7	U	ug/kg	8.7	24	U	ug/kg	24	5.7	U	ug/kg	5.7	8	U	ug/kg	8
Methoxychlor	45	U	ug/kg	45	120	U	ug/kg	120	29	U	ug/kg	29	41	U	ug/kg	41
Endrin ketone	8.7	U	ug/kg	8.7	24	U	ug/kg	24	5.7	U	ug/kg	5.7	8	U	ug/kg	8
Endrin aldehyde	8.7	U	ug/kg	8.7	24	U	ug/kg	24	5.7	U	ug/kg	5.7	8	U	ug/kg	8
alpha-Chlordane	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2.9	U	ug/kg	2.9	3.4	J	ug/kg	4
gamma-Chlordane	4.5	U	ug/kg	4.5	12	U	ug/kg	12	2	J	ug/kg	3	4.7		ug/kg	4
Toxaphene	450	U	ug/kg	450	1200	U	ug/kg	1200	290	U	ug/kg	290	410	U	ug/kg	410
Aroclor-1016	87	U	ug/kg	87	240	U	ug/kg	240	57	U	ug/kg	57	80	U	ug/kg	80
Aroclor-1221	180	U	ug/kg	180	480	U	ug/kg	480	120	U	ug/kg	120	160	U	ug/kg	160
Aroclor-1232	87	U	ug/kg	87	240	U	ug/kg	240	57	U	ug/kg	57	80	U	ug/kg	80
Aroclor-1242	87	U	ug/kg	87	240	U	ug/kg	240	57	U	ug/kg	57	80	U	ug/kg	80
Aroclor-1248	87	U	ug/kg	87	240	U	ug/kg	240	57	U	ug/kg	57	80	U	ug/kg	80
Aroclor-1254	87	U	ug/kg	87	240	U	ug/kg	240	57	U	ug/kg	57	80	U	ug/kg	80
Aroclor-1260	87	U	ug/kg	87	240	U	ug/kg	240	72		ug/kg	57	74	J	ug/kg	80

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
PESTICIDES AND PCB COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476005				35476006				35476009				35476007			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD05				CCFSD06				CCFSD07				CCFSD08			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP PESTICIDES/PCBS 90-SOW																
alpha-BHC	2.9	U	ug/kg	2.9	3.3	U	ug/kg	3.3	3.7	U	ug/kg	3.7	13	U	ug/kg	13
beta-BHC	2.9	U	ug/kg	2.9	3.3	U	ug/kg	3.3	3.7	U	ug/kg	3.7	13	U	ug/kg	13
delta-BHC	2.9	U	ug/kg	2.9	3.3	U	ug/kg	3.3	3.7	U	ug/kg	3.7	13	U	ug/kg	13
gamma-BHC (Lindane)	2.9	U	ug/kg	2.9	3.3	U	ug/kg	3.3	3.7	U	ug/kg	3.7	13	U	ug/kg	13
Heptachlor	2.9	U	ug/kg	2.9	3.3	U	ug/kg	3.3	3.7	U	ug/kg	3.7	13	U	ug/kg	13
Aldrin	2.9	U	ug/kg	2.9	3.3	U	ug/kg	3.3	3.7	U	ug/kg	3.7	13	U	ug/kg	13
Heptachlor epoxide	2.9	U	ug/kg	2.9	3.3	U	ug/kg	3.3	3.7	U	ug/kg	3.7	13	U	ug/kg	13
Endosulfan I	2.9	U	ug/kg	2.9	3.3	U	ug/kg	3.3	3.7	U	ug/kg	3.7	13	U	ug/kg	13
Dieldrin	21		ug/kg	6	6.5	U	ug/kg	6.5	6.2	J	ug/kg	7	260		ug/kg	25
4,4-DDE	27		ug/kg	6	6.5	U	ug/kg	6.5	23		ug/kg	7	660	R	ug/kg	25
Endrin	5.7	U	ug/kg	5.7	6.5	U	ug/kg	6.5	7.2	U	ug/kg	7.2	25	U	ug/kg	25
Endosulfan II	5.7	U	ug/kg	5.7	6.5	U	ug/kg	6.5	7.2	U	ug/kg	7.2	25	U	ug/kg	25
4,4-DDD	8.2		ug/kg	6	6.5	U	ug/kg	6.5	47		ug/kg	7	110		ug/kg	25
Endosulfan sulfate	5.7	U	ug/kg	5.7	6.5	U	ug/kg	6.5	7.2	U	ug/kg	7.2	25	U	ug/kg	25
4,4-DDT	5.7	U	ug/kg	5.7	6.5	U	ug/kg	6.5	7.2	U	ug/kg	7.2	25	U	ug/kg	25
Methoxychlor	29	U	ug/kg	29	33	U	ug/kg	33	37	U	ug/kg	37	130	U	ug/kg	130
Endrin ketone	5.7	U	ug/kg	5.7	6.5	U	ug/kg	6.5	7.2	U	ug/kg	7.2	25	U	ug/kg	25
Endrin aldehyde	5.7	U	ug/kg	5.7	6.5	U	ug/kg	6.5	7.2	U	ug/kg	7.2	25	U	ug/kg	25
alpha-Chlordane	16		ug/kg	3	3.3	U	ug/kg	3.3	1.9	J	ug/kg	4	70		ug/kg	13
gamma-Chlordane	17		ug/kg	3	1.9	J	ug/kg	3	1.9	J	ug/kg	4	86		ug/kg	13
Toxaphene	290	U	ug/kg	290	330	U	ug/kg	330	370	U	ug/kg	370	1300	U	ug/kg	1300
Aroclor-1016	57	U	ug/kg	57	65	U	ug/kg	65	72	U	ug/kg	72	250	U	ug/kg	250
Aroclor-1221	120	U	ug/kg	120	130	U	ug/kg	130	150	U	ug/kg	150	520	U	ug/kg	520
Aroclor-1232	57	U	ug/kg	57	65	U	ug/kg	65	72	U	ug/kg	72	250	U	ug/kg	250
Aroclor-1242	57	U	ug/kg	57	65	U	ug/kg	65	72	U	ug/kg	72	250	U	ug/kg	250
Aroclor-1248	57	U	ug/kg	57	65	U	ug/kg	65	72	U	ug/kg	72	250	U	ug/kg	250
Aroclor-1254	57	U	ug/kg	57	65	U	ug/kg	65	72	U	ug/kg	72	250	U	ug/kg	250
Aroclor-1260	110		ug/kg	57	65	U	ug/kg	65	72	U	ug/kg	72	680	U	ug/kg	250

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
PESTICIDES AND PCB COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476007DL				35480001				35480002				35480003			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD08DL				CCFSD09				CCFSD09A				CCFSD10			
Collect Date:	25-MAR-93				26-MAR-93				26-MAR-93				26-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP PESTICIDES/PCBS 90-SOW																
alpha-BHC	65	R	ug/kg	65	4.6	U	ug/kg	4.6	4.1	U	ug/kg	4.1	7.7	U	ug/kg	7.7
beta-BHC	65	R	ug/kg	65	4.6	U	ug/kg	4.6	4.1	U	ug/kg	4.1	7.7	U	ug/kg	7.7
delta-BHC	65	R	ug/kg	65	4.6	U	ug/kg	4.6	4.1	U	ug/kg	4.1	7.7	U	ug/kg	7.7
gamma-BHC (Lindane)	65	R	ug/kg	65	4.6	U	ug/kg	4.6	4.1	U	ug/kg	4.1	7.7	U	ug/kg	7.7
Heptachlor	65	R	ug/kg	65	4.6	U	ug/kg	4.6	4.1	U	ug/kg	4.1	7.7	U	ug/kg	7.7
Aldrin	65	R	ug/kg	65	4.6	U	ug/kg	4.6	4.1	U	ug/kg	4.1	7.7	U	ug/kg	7.7
Heptachlor epoxide	65	R	ug/kg	65	4.6	U	ug/kg	4.6	4.1	U	ug/kg	4.1	7.7	U	ug/kg	7.7
Endosulfan I	65	R	ug/kg	65	4.6	U	ug/kg	4.6	4.1	U	ug/kg	4.1	7.7	U	ug/kg	7.7
Dieldrin	290		ug/kg	130	57		ug/kg	9	60		ug/kg	8	15	U	ug/kg	15
4,4-DDE	830		ug/kg	130	76		ug/kg	9	73		ug/kg	8	35		ug/kg	15
Endrin	130	R	ug/kg	130	8.9	U	ug/kg	8.9	8	U	ug/kg	8	15	U	ug/kg	15
Endosulfan II	130	R	ug/kg	130	8.9	U	ug/kg	8.9	8	U	ug/kg	8	15	U	ug/kg	15
4,4-DDD	120	R	ug/kg	130	16		ug/kg	9	14		ug/kg	8	15		ug/kg	15
Endosulfan sulfate	130	R	ug/kg	130	8.9	U	ug/kg	8.9	8	U	ug/kg	8	15	U	ug/kg	15
4,4-DDT	130	R	ug/kg	130	8.9	U	ug/kg	8.9	8	U	ug/kg	8	15	U	ug/kg	15
Methoxychlor	650	R	ug/kg	650	46	U	ug/kg	46	41	U	ug/kg	41	77	U	ug/kg	77
Endrin ketone	130	R	ug/kg	130	8.9	U	ug/kg	8.9	8	U	ug/kg	8	15	U	ug/kg	15
Endrin aldehyde	130	R	ug/kg	130	8.9	U	ug/kg	8.9	8	U	ug/kg	8	15	U	ug/kg	15
alpha-Chlordane	92	R	ug/kg	65	16		ug/kg	4	14		ug/kg	4	10		ug/kg	8
gamma-Chlordane	83	R	ug/kg	65	18		ug/kg	4	16		ug/kg	4	8.8		ug/kg	8
Toxaphene	6500	R	ug/kg	6500	460	U	ug/kg	460	410	U	ug/kg	410	770	U	ug/kg	770
Aroclor-1016	1300	R	ug/kg	1300	89	U	ug/kg	89	80	U	ug/kg	80	150	U	ug/kg	150
Aroclor-1221	2600	R	ug/kg	2600	180	U	ug/kg	180	160	U	ug/kg	160	300	U	ug/kg	300
Aroclor-1232	1300	R	ug/kg	1300	89	U	ug/kg	89	80	U	ug/kg	80	150	U	ug/kg	150
Aroclor-1242	1300	R	ug/kg	1300	89	U	ug/kg	89	80	U	ug/kg	80	150	U	ug/kg	150
Aroclor-1248	1300	R	ug/kg	1300	89	U	ug/kg	89	80	U	ug/kg	80	150	U	ug/kg	150
Aroclor-1254	1300	R	ug/kg	1300	89	U	ug/kg	89	80	U	ug/kg	80	150	U	ug/kg	150
Aroclor-1260	690	R	ug/kg	1300	240		ug/kg	89	180		ug/kg	80	140	J	ug/kg	150

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
PESTICIDES AND PCB COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476013				35476013DL				35476014				35476008			
Site	CCFI				CCFI				CCFI				CCFI			
Locator	CCFSD11				CCFSD11DL				CCFSD12				CCFSD13			
Collect Date:	25-MAR-93				25-MAR-93				25-MAR-93				25-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP PESTICIDES/PCBS 90-SOW																
alpha-BHC	5.7	U	ug/kg	5.7	28	R	ug/kg	28	2.8	U	ug/kg	2.8	4.7	U	ug/kg	4.7
beta-BHC	5.7	U	ug/kg	5.7	28	R	ug/kg	28	2.8	U	ug/kg	2.8	4.7	U	ug/kg	4.7
delta-BHC	5.7	U	ug/kg	5.7	28	R	ug/kg	28	2.8	U	ug/kg	2.8	4.7	U	ug/kg	4.7
gamma-BHC (Lindane)	5.7	U	ug/kg	5.7	28	R	ug/kg	28	2.8	U	ug/kg	2.8	4.7	U	ug/kg	4.7
Heptachlor	5.7	U	ug/kg	5.7	28	R	ug/kg	28	2.8	U	ug/kg	2.8	4.7	U	ug/kg	4.7
Aldrin	5.7	U	ug/kg	5.7	28	R	ug/kg	28	2.8	U	ug/kg	2.8	4.7	U	ug/kg	4.7
Heptachlor epoxide	5.7	U	ug/kg	5.7	28	R	ug/kg	28	2.8	U	ug/kg	2.8	4.7	U	ug/kg	4.7
Endosulfan I	5.7	U	ug/kg	5.7	28	R	ug/kg	28	2.8	U	ug/kg	2.8	4.7	U	ug/kg	4.7
Dieldrin	31		ug/kg	11	36	R	ug/kg	55	5.5	U	ug/kg	5.5	9.2	U	ug/kg	9.2
4,4-DDE	310	R	ug/kg	11	410		ug/kg	55	3.4	J	ug/kg	6	9.2	U	ug/kg	9.2
Endrin	11	U	ug/kg	11	55	R	ug/kg	55	5.5	U	ug/kg	5.5	9.2	U	ug/kg	9.2
Endosulfan II	11	U	ug/kg	11	55	R	ug/kg	55	5.5	U	ug/kg	5.5	9.2	U	ug/kg	9.2
4,4-DDD	80		ug/kg	11	79	R	ug/kg	55	5.5	U	ug/kg	5.5	9.2	U	ug/kg	9.2
Endosulfan sulfate	11	U	ug/kg	11	55	R	ug/kg	55	5.5	U	ug/kg	5.5	9.2	U	ug/kg	9.2
4,4-DDT	11	U	ug/kg	11	55	R	ug/kg	55	5.5	U	ug/kg	5.5	9.2	U	ug/kg	9.2
Methoxychlor	57	U	ug/kg	57	280	R	ug/kg	280	28	U	ug/kg	28	47	U	ug/kg	47
Endrin ketone	11	U	ug/kg	11	55	R	ug/kg	55	5.5	U	ug/kg	5.5	9.2	U	ug/kg	9.2
Endrin aldehyde	11	U	ug/kg	11	55	R	ug/kg	55	5.5	U	ug/kg	5.5	9.2	U	ug/kg	9.2
alpha-Chlordane	39		ug/kg	6	50	R	ug/kg	28	2	J	ug/kg	3	4.7	U	ug/kg	4.7
gamma-Chlordane	34		ug/kg	6	40	R	ug/kg	28	1.9	J	ug/kg	3	4.7	U	ug/kg	4.7
Toxaphene	570	U	ug/kg	570	2800	R	ug/kg	2800	280	U	ug/kg	280	470	U	ug/kg	470
Aroclor-1016	110	U	ug/kg	110	550	R	ug/kg	550	55	U	ug/kg	55	92	U	ug/kg	92
Aroclor-1221	220	U	ug/kg	220	1100	R	ug/kg	1100	110	U	ug/kg	110	190	U	ug/kg	190
Aroclor-1232	110	U	ug/kg	110	550	R	ug/kg	550	55	U	ug/kg	55	92	U	ug/kg	92
Aroclor-1242	110	U	ug/kg	110	550	R	ug/kg	550	55	U	ug/kg	55	92	U	ug/kg	92
Aroclor-1248	110	U	ug/kg	110	550	R	ug/kg	550	55	U	ug/kg	55	92	U	ug/kg	92
Aroclor-1254	110	U	ug/kg	110	550	R	ug/kg	550	55	U	ug/kg	55	92	U	ug/kg	92
Aroclor-1260	230		ug/kg	110	230	R	ug/kg	550	55	U	ug/kg	55	92	U	ug/kg	92

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS WHITING FIELD ---- CLEAR CREEK FLOODPLAIN INVESTIGATION
PESTICIDES AND PCB COMPOUNDS -- VALIDATED DATA

Lab Sample Number:	35476K10				35476K11				35480K04			
Site	CCFI				CCFI				CCFI			
Locator	CCFSDFB				CCFSDRB				CCFSDRB02			
Collect Date:	25-MAR-93				25-MAR-93				26-MAR-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP PESTICIDES/PCBS 90-SOW												
alpha-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
beta-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
delta-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
gamma-BHC (Lindane)	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Heptachlor	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Aldrin	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Heptachlor epoxide	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Endosulfan I	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Dieldrin	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDE	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Endrin	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Endosulfan II	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDD	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Endosulfan sulfate	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDT	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Methoxychlor	.5	U	ug/l	.5	.5	U	ug/l	.5	.5	U	ug/l	.5
Endrin ketone	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Endrin aldehyde	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
alpha-Chlordane	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
gamma-Chlordane	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Toxaphene	5	U	ug/l	5	5	U	ug/l	5	5	U	ug/l	5
Aroclor-1016	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1221	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Aroclor-1232	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1242	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1248	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1254	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1260	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1

U = NOT DETECTED J = ESTIMATED VALUE D = DILUTED SAMPLE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE