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NAS WHITING FIELD
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SURFACE SOIL INVESTIGATION SUMMARY DATA RELEASE FOR REMEDIAL
INVESTIGATION PHASE IIA WITH TRANSMITTAL NAS WHITING FIELD FL
9/28/1993
ABB ENVIRONMENTAL SERVICES, INC



file 7560 (7)

September 28, 1993

Commanding Officer
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**SUBJECT: Site 18, Surface Soil Investigation Summary - Data Release
Remedial Investigation - Phase IIA
Naval Air Station Whiting Field, Milton, Florida
Navy CLEAN District I
Contract N62467-89-D-0317**

Dear Jeff:

Enclosed please find a copy of the subject document for your files. The data release presents a preliminary assessment and evaluation of the Site 18 surface soil analytical results. The information presented in this report will be incorporated into the Surface Soils Assessment Technical Memorandum at a later date.

If you have any questions, please call me at 904-656-1293 (x 314).

Very truly yours,

ABB ENVIRONMENTAL SERVICES INC.

Rao V.R. Angara
Task Order Manager

Enclosure

cc: File: 7560-xx
Eric Blomberg, ABB-ES

ABB Environmental Services Inc.

**PHASE II-A REMEDIAL INVESTIGATION
DATA RELEASE**

**SURFACE SOIL SAMPLING INVESTIGATION SUMMARY
SITE 18, CRASH CREW TRAINING AREA**

**NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA**

SEPTEMBER 1993

1.0 INTRODUCTION

ABB-ES conducted surface soil sampling at Site 18, on 15-16 August 1992. The Site 18 soil sampling was a portion of the larger sampling effort which included nine other Remedial Investigation sites (Sites 1, 10, 11, 13, 14, 15, 16, 17 and 31) on the installation and 10 background locations. Details and results of the investigation are presented in the following sections.

2.0 INVESTIGATION OBJECTIVES

The objectives of the investigation at Site 18 were to characterize the nature and extent of contamination resulting from former fire-fighting training activities and to collect data to support an environmental and human health risk assessment. Background surface soil samples were collected from NAS Whiting Field to provide chemical data for comparison to source area surface soil samples. These samples were collected to characterize background concentrations for each of the three primary soil types (Lakeland Sand, Orangeburg Sandy Loam, and Troup Sandy Loam) in which sites are located. According to the U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Santa Rosa County, Florida (issued May 1980), Site 18 soils are characterized as Lakeland Sand. Three background surface soil samples (WHF-BKG-SL-01, 09, and 10) were collected from areas where Lakeland Sand were present. These samples were analyzed for TCL Pesticides/PCBs, PAHs, and TAL inorganics in accordance with NEESA Level C and D DQOs. All samples were collected following procedures outlined in the USEPA SOPs. The analytical results from samples collected from Site 18 were compared to the background samples to determine if the detected compounds exceeded naturally occurring concentrations of these compounds in the soil (natural soil conditions as described in the Soil Survey of Santa Rosa County, Florida, May 1980).

3.0 SURFACE SOIL SAMPLING AND ANALYSIS

Surface soil samples were collected from 47 locations at Site 18. All samples were analyzed for TCL VOC, TCL SVOC, PAHs, Pesticides/PCBs, TAL metals, and cyanide. Additional sample volume was collected and analyzed for TCLP VOCs and TCLP metals at twelve locations stained soil and high OVA readings. Sample collection focused on eleven areas (Areas A-K) that were associated with the former fire-fighting training activities (Figure 1). Area A consists of an area where a charred airplane carcass and encompasses a radius of approximately 50 feet. Area B consists of a dirt mound containing debris with a radius of approximately 5 feet. Areas C, D, E, F, and I are all former burn pits. Area C has a radius of approximately 30 feet, Areas D and F both have radii of approximately 50 feet, Area E has a radius of approximately 45 feet, and Area I has radius of approximately 12 feet. Area G is where a diesel tank on wheels was parked during fire-fighting activities and encompasses a radius of approximately 15 feet. Area H has four half buried rusted 55-gallon drums, and encompasses a radius of approximately 10 feet. Area J which has a radius of approximately 12 feet and has various airplane parts piled on the ground. Area K is an area of stressed vegetation with a radius of approximately 15 feet. Table 3-1 summarizes the number of samples collected at each of the eleven areas.

Soil collection typically consisted of collecting surface soil samples from the surface to 12 inches below land surface. A decontaminated stainless steel spoon was used to collect the soil for VOC analysis directly from the sample locations to the sample bottles. The sample portion for the remaining analyses was then thoroughly mixed in a glass bowl using the stainless steel spoon. After mixing, the soil was transferred to the appropriate sample containers.

Table 3-1
Sample Location Description

Site 18 Surface Soil Samples
Phase IIA RI, NAS Whiting Field
Milton, Florida

Area	Description	No. of Samples
A	Airplane carcass - approximately 50 foot radius	6
B	Dirt mound - approximately 5 foot radius	1
C	"Burn pit" - approximately 30 feet radius	1
D	"Burn pit" and drainage area - approximately 50 foot radius	12
E	"Burn pit" and drainage area - approximately 45 foot radius	11
F	"Burn pit" with tank in center and drainage area - approximately 50 foot radius	10
G	Former location of diesel tank on wheels - approximately 15 foot radius	1
H	Four half buried rusted 55-gallon drums - approximately 10 foot radius	1
I	"Burn Pit" - approximately 12 foot radius	1
J	Various airplane parts- approximately 12 foot radius	2
K	Stressed vegetation - approximately 25 feet by 15 feet.	1
Total		47

3.1 Data Quality Assessment. The quality control (QC) program uses QC samples to document the integrity of the associated environmental sample results and to evaluate the performance of the laboratory. The quality of the environmental data is controlled by two components: sampling and analysis. Various factors affecting each of these components are as follows:

1. Sampling
 - sampling design
 - sample collection techniques
 - sample handling and delivery
2. Analysis
 - analytical methods
 - laboratory instrumentation

Both the sampling and analytical components contain potential sources of uncertainty, error and biases that may affect the quality of the overall data:

The QC samples used to identify the source of uncertainty and magnitude of error include: Field and Laboratory QC samples as follows:

1. Field QC Samples
 - Field Duplicate
 - Field Blank
 - Equipment Rinsate Blank
 - Trip Blank
2. Laboratory QC Samples
 - Method Blanks
 - Surrogate Spikes
 - Matrix Spike / Matrix Spike Duplicate (MS/MSD).
 - Laboratory Control Samples (LCS) and LCS duplicates

The remaining portion of this chapter includes the quality control aspects of the Site 18 surface soil sampling episode.

3.2 Sample Handling, Delivery, and Chain-of-Custody. Collection of surface soil samples was performed in accordance with the procedures outlined in the Site-Specific Quality Assurance Plan Addendum and Quality Assurance Plan of June 1990, and in accordance with the USEPA Region IV Standard Operating Procedures and Quality Assurance Manual of February, 1991 (USEPA, 1991).

All samples were properly preserved, placed in coolers packed with bagged ice immediately after their collection, and shipped to the laboratory. All samples were shipped, complete with chain-of-custody forms, to CH2M HILL Laboratories in Montgomery, Alabama, and/or Redding, California. Upon arrival at the laboratory, the chain-of-custody form and temperature was checked for each cooler. The chain-of-custody form was then signed by laboratory personnel and the samples were accepted for analysis.

Review of the field notebooks and chain-of-custody forms did not identify any non-conformance relative to sample handling.

3.3 Field Quality Control Assessment. Field QC samples (e.g., field blanks, trip blanks, and duplicates) were collected, stored, transported and analyzed in the same manner as the site samples. Blank samples provide a measure of contamination that may have been introduced into a sample set either (1) in the field while samples were being collected or transported to the laboratory or (2) in the laboratory during sample preparation or analysis. Three types of blank samples, trip blanks, field blanks, and rinsate blanks were collected during sample collection at Site 18. Trip blanks are used to indicate potential contamination due to migration of VOCs from the air in sample shipping container, through the septum or around the lid of sampling vials, and into the sample. Field blanks and rinsate blanks are used to determine if field sampling or cleaning procedures (e.g., insufficient cleaning of sampling equipment) result in cross-contamination of site samples. Field duplicate samples are usually two samples collected simultaneously from the same sampling location and are used as measures of either the homogeneity of the medium sampled or the precision in sampling. One field blank (SUR-SL-FB-01), three trip blanks (WHF-2A-SUR/SL-TB-02, 03, and 04) three rinsate blanks (WHF-2A-SUR/SL-RB-03, 04, and 05), and five duplicate samples (WHF-2A-18-SL-01A, 10A, 23A, 31A, and 37A) were collected and analyzed at Site 18.

All field QC samples were collected in conformance with the requirements of the USEPA and FDER approved Quality Assurance Plan, and USEPA Region IV SOP (USEPA, 1991).

3.4 Laboratory Quality Control Assessment. Analytical results (see Appendix A) were validated by C.C. Johnson & Malhotra Environmental Engineers and Scientists (CCJM), Lakewood, Colorado. CCJM followed USEPA National Functional Guidelines for Inorganics and Organics Analysis (1991) and requirements found in Section 7.3 of the NEESA Sampling and Installation Restoration Program (1988).

3.5 Data Quality Objectives Assessment. Sample results are evaluated in terms of Data Quality Objectives (DQO). DQOs refer to a set of qualitative and quantitative statements which assess the quality of data generated during the sampling and analysis phases of the project as defined in Data Quality Objectives for Remedial Response Activities (EPA, March, 1987). The DQOs are defined by the parameters including: Precision, Accuracy, Representativeness, Completeness, and Comparability (PARCC). These parameters present an indication of data quality and the confidence that a particular compound may be present or absent in an associated environmental sample. The surface soil sampling program DQOs as stated in Section 4.0 of Volume I of the RI/FS Planning Document (E.C. Jordan, June 1990) are NEESA Level C with 10 percent being NEESA Level D.

The following paragraphs discuss each of the PARCC criteria.

3.6 Site Specific Data Quality Assessment. Forty seven surface soil samples were collected at 11 different locations at Site 18. All samples including quality control samples were analyzed for TCL VOCs, TCL SVOCs, TPH, Pesticides and PCBs, and TAL Metals, and Total Cyanide. Twelve of the 47 samples were analyzed for TCLP VOCs and TCLP metals. All samples were analyzed in accordance with CLP methodology. Results from QC samples presented in Table 3-2 are used to measure PARCC parameters. The following section presents the PARCC measurements specific to each analysis and an overall assessment of DQO's.

3.6.1 Precision Precision is a measure of the reproducibility of the analytical results under a given set of conditions. It is a quantitative measure of the variability of a group of measurements compared to their average value. Precision is measured as the Relative Percent Difference (RPD) between a sample and its duplicate, as is calculated for both field duplicate samples and MS/MSD samples. The following equation is used to calculate the RPD.

$$RPD = 100 \times \frac{|D_1 - D_2|}{0.5(D_1 + D_2)}$$

Where D_1 and D_2 are the reported concentrations for sample duplicate analyses. The results of duplicate samples are taken from the same source and analyzed under identical conditions to evaluate the precision.

Table 3-2
Field QC Sample Analysis Results

Site 18 Surface Soil Samples
Phase II-A RI, NAS Whiting Field
Milton, Florida

Analyte	Field Duplicate WHF-2A-18-SL-XX Soil					Trip Blank WHF-2A-SUR/SL-TB-XX		
	01/01A	10/10A	23/23A	31/31A	37/37A	02	03	04
TCL VOC (µg/kg)								
Methylene chloride	64 J/-	-/-	-/-	-/-	52/-	2 J	2 J	2 J
Acetone	-/-	-/-	-/-	-/-	1,400 J/-	-	4 J	7 J
Carbon disulfide	6/-	-/-	-/-	-/11 J	-/-	-	-	-
2-Butanone	-/-	36/35 J	-/-	-/-	-/-	-	-	-
Toluene	-/-	10 J/28	-/-	180 J/-	-/-	-	-	-
Ethylbenzene	-/-	23 J/70	-/-	290 J/-	-/-	-	-	-
Xylenes (total)	-/-	160/430	-/2 J	1,800/54	16 J/-	-	-	-
TCL SVOC (µg/kg)								
2-Methylnaphthalene	-/-	1,100 J/-	-/-	1,200 J/-	-/-	NA	NA	NA
Fluoranthene	-/-	-/-	3500 J/-	-/-	-/-	NA	NA	NA
Pyrene	-/-	-/-	7,700 J/6,200 J	-/730 J	-/-	NA	NA	NA
Benzo(a)anthracene	-/-	-/-	1300/-	-/-	-/-	NA	NA	NA
Crysene	-/-	-/-	1400/-	-/-	-/-	NA	NA	NA
Bis(2-Ethylhexyl)phthalate	700 J/1,200 J	-/-	5,600 J/4,100 J	-/-	1,800 J/3,500	NA	NA	NA
Benzo(a)Pyrene	-/-	-/-	1,200 J/-	-/-	-/-	NA	NA	NA
TPH (mg/kg)	9,020/8,876	6,210/4,820	18,000/17,800	9,190/11,300	16,000/19,300	NA	NA	NA
Pesticides/PCBs (µg/kg)								
None								

Table 3-2
Field QC Sample Analysis Results

Site 18 Surface Soil Samples
Phase II-A RI, NAS Whiting Field
Milton, Florida

Analyte	Field Duplicate WHF-2A-18-SL-XX Soil					Trip Blank WHF-2A-SUR/SL-TB-XX		
	01/01A	10/10A	23/23A	31/31A	37/37A	02	03	04
TAL Metals and Cyanides (mg/kg)								
Aluminum	3,850/4,580	3,200/2,520 J	13,200 J/4,970 J	7,100/13,500	4,190/3,600	NA	NA	NA
Antimony	-/5.8 J	2.9/-	-/3.5 J	4.1 J/3 J	-/-	NA	NA	NA
Arsenic	-/-	-/-	-/-	3.1/2.2 J	-/.67 J	NA	NA	NA
Barium	17.2 J/45.2 J	97.7/92.3	198/188	265/290	8.2 J/7.2 J	NA	NA	NA
Beryllium	-/-	-/.09 J	.09 J/.08 J	-/.14 J	.08 J/-	NA	NA	NA
Cadmium	22.6 J/33.7 J	-/.7 J	5.5/5 J	3.3 J/15.6	.84 J/1.4	NA	NA	NA
Calcium	-/-	-/-	-/-	-/592 J	-/147 J	NA	NA	NA
Chromium	16.5 J/34.3 J	95.7 J/10.2 J	33.9/23.4 J	23.2/43.8	4.5/3.8	NA	NA	NA
Cobalt	-/-	-/-	-/-	-/5.9 J	-/.55 J	NA	NA	NA
Copper	177/864	65.3 J/24.9 J	236 J/68.6 J	192 J/314	-/5.6	NA	NA	NA
Iron	1,710/2,580	35,600 J/14,100 J	12,900/23,500 J	41,600/51,700	2,110/1,980	NA	NA	NA
Lead	62.6/96.1 J	57.4/88.5	59.6/63.2	160/168	42.8/43.1	NA	NA	NA
Magnesium	94.7 J/103 J	237 J/185 J	455 J/267 J	518/657	119 J/69.4 J	NA	NA	NA
Manganese	18.3 J/22.6 J	317 J/124 J	131/141	309 J/457	15.7 J/13.8	NA	NA	NA
Mercury	-/-	.04 J/.06 J	.25/.07 J	-/-	-/-	NA	NA	NA
Nickel	-/15.9	18.9 J/5.4 J	6.5 J/6.7 J	-/19.7	-/-	NA	NA	NA
Potassium	-/216 J	276 J/261 J	1,210/1,060 J	2,860/2,930	-/-	NA	NA	NA
Silver	-/-	-/-	-/-	-/-	-/-	NA	NA	NA
Sodium	-/-	-/-	-/-	-/302 J	-/185 J	NA	NA	NA
Thallium	-/-	-/-	-/-	-/-	-/-	NA	NA	NA
Vanadium	-/-	3.8 J/2.9	4.3 J/3.8 J	5.7 J/5.9 J	6 J/5.2 J	NA	NA	NA
Zinc	94.2 J/174 J	181 J/99.3 J	631 J/210 J	326/779	-/19 J	NA	NA	NA
Cyanide	-/-	-/-	-/-	-/-	-/-	NA	NA	NA

**Table 3-2 Continued
Field QC Sample Analysis Results**

Site 18 Surface Soil Samples
Phase II-A RI, NAS Whiting Field
Milton, Florida

Analyte	Rinsate Blank WHF-2A-18-SL-XX Soil			FIELD Blank WHF-2A-SUR-SL-FB-XX
	03	04	05	01
TCL VOC ($\mu\text{g}/\text{kg}$)				
Methylene chloride	3 J	4 J	--	2 J
Acetone	--	6 J	--	--
Carbon disulfide	1 J	18	--	--
TCL SVOC ($\mu\text{g}/\text{kg}$)				
Di-n-butylphthalate	10	13	14	--
Anthracene	--	--	--	9 J
TPH (mg/kg)	NA	NA	NA	NA
Pesticides/PCBs ($\mu\text{g}/\text{kg}$)				
None				

Table 3-2 Continued
Field QC Sample Analysis Results

Site 18 Surface Soil Samples
Phase II-A RI, NAS Whiting Field
Milton, Florida

Analyte	Rinsate Blank WHF-2A-18-SL-XX Soil			FIELD Blank WHF-2A-SUR-SL-FB-XX
	03	04	05	01
TAL Metals and Cyanides (mg/kg)				
Aluminum	23.2 J	56.4 J	27.7 J	22.2 J
Antimony	--	--	--	--
Arsenic	--	--	--	1.5 J
Barium	0.8 J	1 J	1 J	1.3 J
Beryllium	--	--	--	--
Cadmium	--	--	--	--
Calcium	225 J	199 J	248 J	799 J
Chromium	--	--	2.8 J	--
Cobalt	--	--	4.4 J	--
Copper	5.9 J	2.3 J	4.2 J	4.9 J
Iron	24.4 J	36.7 J	69.8 J	46.6 J
Lead	2.7 J	2.2 J	2.8 J	17.7 J
Magnesium	--	--	--	--
Manganese	--	--	--	--
Mercury	--	--	--	--
Nickel	--	--	15.1 J	--
Potassium	--	--	--	--
Selenium	--	--	--	--
Silver	--	--	2.3 J	--
Sodium	736 J	646 J	608 J	746 J
Thallium	--	--	--	--
Vanadium	--	--	2.2 J	--
Zinc	71.7	68.2	94	7.6 J
Cyanide	--	--	--	--

**Table 3-2 Continued
Field QC Sample Analysis Results**

**Site 18 Surface Soil Samples
Phase II-A RI, NAS Whiting Field
Milton, Florida**

	Rinsate Blank WHF-2A-18-SL-XX Soil			FIELD Blank WHF-2A-SUR-SL-FB-XX
Analyte	03	04	05	01
<p>U = The analyte was analyzed for, but was not detected. UJ = The analyte was not detected, however, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. R = Quality Control indicates that data is not usable. J = The associated numerical value is an estimated quantity. B = Analyte was found in method blank. - = Non Detect NA = Not Analyzed</p>				

When measuring precision for organic analyses, the RPD of the MS/MSD samples are compared to established review criteria. The RPD of the field duplicate sample are reported but not compared to any specific review criteria because although RPDs can be calculated for field duplicate samples, they are only used as an indication of the overall precision. This is because field duplicate analyses measure both field and lab precision, resulting in more variability than lab duplicates which measure only lab performance. The RPD of field duplicate samples are still reported for positive results, however, and evaluated in conjunction with other QC data to evaluate the overall quality of the data. Tables 3-3 and 3-4 summarize the analytical results and the RPDs of compounds with positive results for the field duplicate results and the RPDs of the compounds that were detected outside control limits for the MS/MSD samples.

The evaluation of precision for inorganic analyses is measured by calculating the RPD between the sample and the field duplicate. The acceptance criteria for inorganic analysis for field duplicate samples that contain compounds that are greater than 5 times the CRDL is 35% RPD for soil matrices and 20% for water matrices [USEPA, 1991]. Table 3-5 identifies the compounds that meet the above criteria. For those samples that are associated with these SDGs, positive and non-detect results are qualified as estimated, "J" or "UJ". Matrix spike duplicates are generally not performed for inorganic analysis, therefore, no RPD were reported for MS/MSD for inorganics.

All data, based on RPD, are acceptable for use in site characterization and risk assessment.

3.6.2 Accuracy. Accuracy is a quantitative parameter which determines the nearness of a result to its true value. Accuracy measures the bias in a measurement system. The accuracy of each analytical method is evaluated based on percentage recoveries for MS/MSD samples, surrogate recoveries, and initial and continuing calibration standard results. Each of these criteria were evaluated and are discussed below:

3.6.2.1 Percent Recovery. Percent recovery is calculated using the equation:

$$100 \times \frac{A-B}{C}$$

Where A = measured concentration in the spiked samples
B = measured concentration in the spike compound
in the unspiked sample
C = concentration of the spike

Table 3-6 summarizes the MS/MSD samples and the analytes that were outside control limits for samples collected at Site 18. The required control limits have been identified for each analyte.

For those analytes having high recoveries, the results for the associated samples may be biased high and false positives may be reported. The analytes having low recoveries indicates that the reported results may be biased low and there is a possibility of false negatives being reported. Qualification was not necessary for any of the samples associated with these MS/MSD samples, except for those samples associated with MS/MSD WHF-2A-18-SL-23. These samples were qualified as "J/UJ" due to both poor percent recoveries and RPD's for both base neutral and acid spikes. In addition, no recoveries or RPD's were obtained for the Pesticide/PCB MS/MSD for sample WHF-2A-18-SL-23 due to required dilution. The samples associated with this sample were also qualified as "J/UJ". All data, based on percent recoveries, is acceptable for use in site characterization and risk assessment.

3.6.2.2 Surrogate Recovery Laboratory performance on individual samples is established by means of sample spiking. All samples are spiked with system monitoring compounds (surrogates) prior to sample purging to measure their recovery in environmental samples. Surrogate spiking is performed for all analyses except for inorganics.

Table 3-3
Analytical Results for Organics Analysis of
Field Duplicate Samples with Positive Detections

Site 18 Surface Soil Samples
Phase II-A RI, NAS Whiting Field
Milton, Florida

SDG	Sample ID	Compound	Sample Concentration (µg/kg)	Duplicate Concentration (µg/kg)	RPD	Control Limits
<u>Field Duplicates</u>						
22481	WHF-2A-18-SL-01	Methylene Chloride	64	20	105	NEC
		Acetone	19	8	81	NEC
		Bis(2-ethylhexyl)phthalate	700	1,200	53	NEC
22489	WHF-2A-18-SL-10	2-Butanone	36	35	3	NEC
		Toluene	10	28	95	NEC
		Ethylbenzene	23	70	101	NEC
		Xylenes (Total)	160	430	92	NEC
22489	WHF-2A-18-SL-23	Xylene(total)	ND	2	NC	NEC
		Fluoranthene	3,500	ND	NC	NEC
		Pyrene	7,700	6,200	22	NEC
		Benzo(a)anthracene	1,300	ND	NC	NEC
		Chrysene	1,400	ND	NC	NEC
		Bis(2-ethylhexyl)phthalate	5,600	4,100	31	NEC
		Benzo(a)pyrene	1,200	ND	NC	NEC

**Table 3-3
Analytical Results for Organics Analysis of
Field Duplicate Samples with Positive Detections**

**Site 18 Surface Soil Samples
Phase II-A RI, NAS Whiting Field
Milton, Florida**

SDG	Sample ID	Compound	Sample Concentration ($\mu\text{g}/\text{kg}$)	Duplicate Concentration ($\mu\text{g}/\text{kg}$)	RPD	Control Limits
Field Duplicates						
22507	WHF-2A-18-SL-31	Toluene	180	ND	NC	NEC
		Ethylbenzene	290	ND	NC	NEC
		Xylene	1,800	54	188	NEC
		2-Methylnaphthalene	1,200	ND	NC	NEC
		Carbon Disulfide	ND	11	NC	NEC
		Pyrene	MD	730	NC	NEC
22507	WHF-2A-18-SL-37	Xylene	16	ND	NC	NEC
		Bis(2-ethylhexyl)phthalate	1,800	3,500	179	NEC

SDG = Sample Delivery Group
 ND = Non Detect
 NC = Not Calculable
 NEC = No Established Criteria
 $\mu\text{g}/\text{kg}$ = micro grams per kilo grams
 RPD = Relative Percent Difference

Table 3-4
 Analytical Results for Organics Analysis of
 MS/MSD Samples
 Outside of Control Limits

Site 18 Surface Soil Samples
 Phase II-A RI, NAS Whiting Field
 Milton, Florida

SDG	Sample ID	Compound	Matrix Spike Percent Recovery	Matrix Spike Duplicate Percent Recovery	RPD	Control Limits
22462, 22488, and 22495	WHF-2A-18-SL-23	1,2,4-Trichlorobenzene	136	110	21	23
			106	100	6	33
			90	87	3	47
22489 and 22506	WHF-2A-18-SL-23	Phenol	124	62	67	35
		2-Chlorophenol	144	70	69	50
		1,2,4-Trichlorobenzene	109	0	200	23
		Acenaphthene	0	86	200	19
		4-Nitrophenol	393	0	200	50
		Pyrene	46	30	42	36

SDG = Sample Delivery Group
 RPD = Relative Percent Difference
 ug/kg = micrograms per kilo grams

Table 3-5

Inorganic Analytical Results
 Field Duplicate Samples
 Outside Control Limits

 Site 18 Surface Soil Samples
 Phase II-A, NAS Whiting Field
 Milton, Florida

SDG	Sample ID	Compound	Sample Concentration	Duplicate Concentration (µg/kg)	RPD	Control Limits
Field Duplicate Samples						
22481	WHF-2A-18-SL-01	Arsenic	0.55	1.1	66.7	≤ 35
		Barium	17.2	45.2	89.7	
		Cadmium	22.6	33.7	39.4	
		Chromium	16.5	34.3	70.1	
		Copper	177	864	132	
		Iron	1,710	2580	40.6	
		Lead	62.6	96.1	42.2	
		Zinc	94.2	174	59.5	
	WHF-2A-18-SL-10	Chromium	95.7	10.2	161.5	≤ 35
		Copper	65.3	24.9	89.6	
		Iron	35,600	14,100	86.5	
		Zinc	181	99.3	58.3	
	WHF-2A-18-SL-23	Copper	236	68.6	109.9	≤ 35
Zinc		631	210	100.1		

Table 3-5

Inorganic Analytical Results
Field Duplicate Samples
Outside Control Limits

Site 18 Surface Soil Samples
Phase II-A, NAS Whiting Field
Milton, Florida

SDG	Sample ID	Compound	Sample Concentration	Duplicate Concentration (µg/kg)	RPD	Control Limits
22489	WHF-2A-18-SL-10	Arsenic	.90	2.2	83.9	≤ 35
		Chromium	95.7	10.2	161.5	
		Cobalt	4.3	2.2	64.6	
		Copper	65.3	24.9	89.6	
		Iron	35,600	14,100	86.5	
		Lead	57.4	88.5	42.6	
		Manganese	317	124	87.5	
		Mercury	0.04	0.06	40.0	
		Nickel	18.9	5.4	111.1	
		Zinc	181	99.3	58.3	
	WHF-2A-18-SL-23	Aluminum	13,200	4,970	90.6	≤ 35
		arsenic	1.0	1.6	46.2	
		Calcium	786	555	34.4	
		Chromium	33.9	23.4	36.6	
		Copper	236	68.6	109.9	
		Iron	12,900	23,500	58.2	
		Magnesium	455	267	52.1	
		Mercury	0.25	0.07	112.5	
		Zinc	631	210	100.1	
22506 and 22507	WHF-2A-18-SL-31	Aluminum	7,100	13,500	62	≤ 35
		Cadmium	3.3	15.6	130	
		Chromium	23.2	43.8	61	
		Copper	192	314	48	
		Nickel	11.4	19.7	53	
		Zinc	326	779	82	

Table 3-5

Inorganic Analytical Results
 Field Duplicate Samples
 Outside Control Limits

Site 18 Surface Soil Samples
 Phase II-A, NAS Whiting Field
 Milton, Florida

SDG	Sample ID	Compound	Sample Concentration	Duplicate Concentration (µg/kg)	RPD	Control Limits
22506 and 22507	WHF-2A-18-SL-37	Cadmium	.84	1.4	50	≤ 35
		Cobalt	0.95	0.55	53	
		Magnesium	119	69.4	53	

SDG = Sample Delivery Group
 ug/kg = micrograms per kilo grams
 RPD = Relative Percent Difference

Table 3-6
Percent Recoveries for MS/MSD Samples Which are Outside Control Limits

Site 18 Surface Soil Samples
Phase IIA RI, NAS Whiting Field
Milton, Florida

SDG	MS/MSD Sample	Analyte	% Recovery MS/MSD*	Control Limits
<u>VOCs, SVOCs, Pesticides/PCBs</u>				
22488	WHF-2A-18-SL-01	1,2,4-Trichlorobenzene	136/110	38-107
		4-Chloro-3-methylphenol	106/100	26-103
		2,4-Dinitrotoluene	90/87	28-89
22489	WHF-2A-18-SL-23	N-nitroso-di-n-propylamine	171/149	41-126
		1,2,4-Trichlorobenzene	109/0	38-107
		4-Chloro-3-methylphenol	0/0	26/103
		4-Nitrophenol	393/0	11-114
		2,4-Dinitrotoluene	0/0	28-89
		Pentachlorophenol	0/0	17-109
		Pyrene	46/30	35-142
22495	WHF-2A-18-SL-01	1,2,4-Trichlorobenzene	136/110	38-23
		4-Chloro-3-Methylphenol	106/100	26-103
		2,4-Dinitrotoluene	90/87	28-89
22507	WHF-2A-18-SL-11	Phenol	86/96	26-90
		N-nitroso-di-n-propylamine	200/207	41-126
<u>TAL Metals and Cyanide*</u>				
22481	WHF-2A-18-SL-01	Antimony	74.7	75-125
		Cadmium	166.5	
		Chromium	126.8	
		Zinc	219.7	
22481 and 22495	WHF-2A-18-SL-10	Copper	33.7	75-125
		Manganese	20.5	
		Zinc	66.3	
22481 and 22495	WHF-2A-18-SL-23	Antimony	74.3	75-125
		Arsenic	73.0	
22488	WHF-2A-18-SL-03	Antimony	33.1	75-125
		Chromium	15.9	
		Lead	14.8	
22495 and 22507	SUR/SL-RB-05	Iron	72.8	75-125
		Barium	73.6	
		Lead	168.9	
22505	WHF-2A-18-SL-31	Copper	65	75-125
		Manganese	58	
22516	WHF-2A-18-SL-21	Mercury (TCLP)	191	75-125

Table 3-6
Percent Recoveries for MS/MSD Samples Which are Outside Control Limits

Site 18 Surface Soil Samples
Phase IIA RI, NAS Whiting Field
Milton, Florida

SDG = Sample Delivery Group
MS/MSD = Matrix Spike/ Matrix Spike Duplicate

Note: Matrix spike duplicates are generally not performed for inorganic analysis and therefore, only the % Recovery for the matrix spike is reported.

Pesticides and PCB analytes were not detected in the blanks.

Recoveries for surrogates must be within the limits specified in Appendix A, Contractual Requirements and Equations, Multi-media Multi-concentration, of the USEPA National Functional Guidelines for Organic Data Review.

Samples found to have surrogate recoveries outside specified QC criteria include: WHF-2A-SL-17-16, 17, 23, and 23 A for the semivolatile analysis, and WHF-2A-18-SL-23 and 23 A for pesticides and PCB analyses. For surrogate recoveries with high results, samples were flagged with a "J" qualifier, indicating a potentially biased high result. Low surrogate recoveries resulted in samples being flagged with a "UJ" qualifier, indicating a potentially biased low result. All data, based on surrogate recoveries, are acceptable for use in site characterization and risk assessment.

3.6.2.3 Initial and Continuing Calibrations: Initial calibrations are performed to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for compounds on the volatile target compound list. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. Continuing calibrations are performed to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration establishes the 12-hour relative response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. Initial calibrations for organic analysis are measured by the percent relative standard deviation (%RSD) and the average relative response factors (RRF). All %RSD must be $\leq 30\%$ and all average RRF must be ≥ 0.05 . Continuing calibrations for organic analysis are measured by the relative response factors (RRF) and the percent difference (%D). All RRF must be ≥ 0.05 and the %D must be $\leq 25\%$. The above criteria were not met for all initial and continuing calibrations. The associated samples were qualified with a "J" and "UJ". All data, based on initial and continuing calibrations, are acceptable for use in site characterization and risk assessment.

For inorganic analysis the initial calibration verification (ICV) and continuing calibration verification (CCV) are measured, and the percent recovery (%R) is calculated. The ICV and the CCV must fall within the control limits of 90-110 %R of the true value for all analytes except mercury and cyanide. Analysis for mercury must fall within the control limits of 80-120 %R and analysis results for cyanide must fall within the control limits of 85-115 %R. No deficiencies were found with the ICV and CCV for inorganic analysis. All data based on ICV and CCVs are acceptable for use in site characterization and risk assessment.

3.7 Representativeness. Representativeness is the degree to which the data obtained from a sample collection activity accurately reflects site conditions. Factors such as the proper selection of analytical methodology and sampling strategies establish the degree of representativeness achieved. Methods used during the field sampling activities to confirm sampling representativeness include collection of source water blanks, equipment rinsate blanks, and trip blanks. Methods used during the chemical analyses of environmental samples to confirm analytical representativeness include the analysis of analytical method blanks and the adherence to analysis holding times. Trip blanks (WHF-21-SUR/SL-TB-02, 03, and 04), rinsate blanks (WHF-21-SUR/SL-RB-03, 04, and 05), field blanks (WHF-2A-SUR/SL-FB-01), laboratory method blanks, laboratory preparation blanks, and adherence to holding times were evaluated for the data collected and analyzed for at Site 18. The results of the evaluation is summarized below:

Trip Blanks

Methylene chloride and acetone were detected at concentrations of 2 $\mu\text{g/L}$ for methylene chloride and 4 $\mu\text{g/L}$ to 7 $\mu\text{g/L}$ for acetone in the trip blanks from all SDGs, except for SDGs 22488. Sample results greater than the IDL but less than 10 times the amount detected in the trip blank were appropriately flagged with a "J" or "UJ" qualifier due to blank contamination.

Rinsate Blanks

Di-n-butylphthalate was detected in rinsate blanks WHF-2A-SUR/SL-RB-02 at 9 $\mu\text{g/L}$, WHF-2A-SUR/SL-RB-04 at 18 $\mu\text{g/L}$ and WHF-2A-SUR/SL-RB-05 at 14 $\mu\text{g/L}$. Methylene chloride was detected in rinsate blanks WHF-2A-SUR/SL-RB-03 at 3 $\mu\text{g/L}$, WHF-2A-SUR/SL-RB-04 at 5 $\mu\text{g/L}$, and WHF-2A-SUR/SL-RB-04 at 2 $\mu\text{g/L}$. Sample results for the above compounds which were greater than the IDL but less than 10 times the amount detected in the rinsate blank were appropriately flagged with a "J" or "UJ" qualifier due to blank contamination.

Carbon disulfide was detected in rinsate blank WHF-2A-SUR/SL-RB-04 at 18 $\mu\text{g/L}$, and acetone was detected in rinsate blank WHF-2A-SUR/SL-RB-04 at 5 $\mu\text{g/L}$. Sample results greater than the IDL but less than 5 times the amount detected in the rinsate blank were appropriately flagged with a "J" or "UJ" qualifier due to blank contamination.

Arsenic, calcium, copper, iron, and sodium, were detected in rinsate blank sample SUR/SL-RB-02. Aluminum, barium, calcium, copper, iron, lead, sodium, and zinc were detected in rinsate blank sample SUR/SL-RB-03. Arsenic, barium, calcium, copper, iron, sodium, and zinc were detected in rinsate blank WHF-2A-SUR/SL-RB-04, and arsenic, barium, calcium, chromium, cobalt, copper, iron, lead, mercury, nickel, silver, sodium, vanadium, and zinc were detected in rinsate blank WHF-2A-SUR/SL-RB-05. Sample results greater than the IDL but less than 5 times the amount detected in the rinsate blank were appropriately flagged with a "J" or "UJ" qualifier due to blank contamination.

Field Blanks

Methylene chloride and di-n-butylphthalate were detected in WHF-2A-SUR/SL-FB-01 at concentrations of 2 $\mu\text{g/L}$ and 9 $\mu\text{g/L}$. Sample results greater than the IDL but less than 10 times the amount detected in the field blank were appropriately flagged with a "UJ" qualifier due to blank contamination.

Arsenic, barium, calcium, copper, iron, lead, sodium and zinc were detected in the field blank SUR/SL-FB-01. Sample results greater than the IDL but less than 5 times the amount detected in the field blank were appropriately flagged with a "UJ" qualifier due to blank contamination.

Laboratory Method Blanks

Compounds detected in method blank samples were within specified limits. No data was qualified based on Laboratory Method Blanks

Laboratory Preparation Blanks

Methylene chloride, acetone, and di-n-butylphthalate were detected in the laboratory preparation blanks at concentrations ranging from 3 $\mu\text{g/kg}$ to 6 $\mu\text{g/kg}$ for methylene chloride, 5 $\mu\text{g/kg}$ to 9 $\mu\text{g/kg}$ for acetone, and 48 $\mu\text{g/kg}$ to 68 $\mu\text{g/kg}$ for di-n-butylphthalate. All methylene chloride and acetone sample results greater than the IDL but less than 10 times the amount detected in the laboratory preparation blanks were appropriately flagged with a "UJ" qualifier due to blank contamination. All di-n-butylphthalate sample results greater than the IDL but less than 5 times the amount detected in the laboratory preparation blanks were appropriately flagged with a "UJ" qualifier due to blank contamination.

Laboratory preparation blanks detected beryllium, calcium, sodium, and mercury. Sample results greater than the IDL but less than 5 times the amount detected in the laboratory preparation blanks were appropriately flagged with a "J" "UJ" or "UJ-B" qualifier due to blank contamination.

Holding Times

All samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines.

Semivolatile compounds and TCLP volatile compounds were not detected in any of the blank samples. All samples associated with the above blank samples were appropriately flagged with a "J", "UJ", "J-K", "UJ-B, or "UJ-K" qualifier due to blank contamination. Although some data has been qualified as estimated it is still acceptable for use for site characterization and risk assessment.

3.8 Completeness. Analytical completeness is the percentage of useable data reported and validated compared with the total number of samples submitted for analysis. The goal for analytical completeness for the RI is 85 percent useable data. Unusable analytical data are those data with results reported by the laboratory but rejected during the validation process. Sample results for the VOC, SVOC, Pesticide/PCBs, TPH, TCLP VOCS, TCLP metals, TAL metals, and Total Cyanide were all qualified as 100% valid.

3.9 Comparability. Comparability is the confidence with which one data set can be compared with another and the degree to which the data are found to be equivalent. Sample data should be comparable with other measurement data of similar samples and sample conditions. This goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Comparability can also be measured by submitting samples to two different laboratories and comparing results or by comparing results from previous sampling events with the current data set. Because environmental samples collected from Site 18 were not submitted to two different laboratories, comparability was measured by determining if standard techniques were used and consistent units of measurement were used throughout the project for all sampling results. Evaluation of these two criteria indicate that the data collected from Site 18 is comparable data.

3.10 Summary. Table 3-7 summarizes the results of the evaluation of the DQOs for the samples collected at site 18. Based on the results of the QC sample analyses, the established precision and accuracy goals of the project were achieved. Although some contamination is present in some of the blank samples, the results from the method, trip, rinsate, and field blank analyses indicate that the data are representative of the environmental soil conditions at Site 18. QC sample results and data validation criteria indicate that 100% completeness was achieved, thus satisfying the 85 % completeness goal. Standard methods of analyses and units of measure were used throughout the project, therefore meeting the QC criteria and the DQO's mentioned in the work plan.

4.0 RESULTS AND INTERPRETATION The surface soil (0 to 12 inches) collected from the site consisted mostly of fine to very fine silty sands. Silty sands, sandy clays, and clay was present below 0.5 feet at some locations. Soil colors included white, dark brown, yellowish orange, reddish brown, and tan. Black staining was present at some locations (Areas H, I, and J), and petroleum sheen was noted at sampling location WHF-2A-18-SL-12 F. The soil type at site 18 was characterized as Lakeland Sand, and therefore, the surface soil analytical results will be compared to the analytical results of the background surface soil samples WHF-BKG-SL-01, 09, and 10. Volatile compounds typically do not naturally occur in background soils, and therefore these compounds were not analyzed for in background samples.

4.1 Analytical Results. Forty seven surface soil samples and five duplicate surface soil samples were collected at Site 18 and analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides and PCBs, TAL metals, and total cyanide. Twelve of the 47 surface soil sampling locations exhibited soil staining. Additional sample volume was collected at these locations for TCLP VOCs, and TCLP metals analyses. The analytical results for the 52 surface soil samples, including the twelve samples collected for TCLP analysis, and associated QC samples are presented in Appendix A.

**Table 3-7
Summary of DQO Assessment (PARCC Parameters)**

Site 18 surface Soil Samples
Phase II-A, NAS Whiting Field
Milton, Florida

	Precision ¹	Accuracy ²	Representativeness	Completeness(%)	Comparability
Surface Soil Samples					
TCL VOC	Acceptable	Acceptable	Acceptable	100	Acceptable
TCL SVOCs	Acceptable	Acceptable	Acceptable	100	Acceptable
Pesticides and PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
TAL Metals and Total Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable

¹Cumulative of sampling and analytical components

²Analytical component

Notes: All the units are expressed as the ratio of number of analytes meeting the QC criteria to the total number of analytes.

PARCC = Precision, Accuracy, Reproducibility, Completeness, and Comparability.

TCL VOCs = Target Compound List Volatile Organic Compounds.

TCL SVOCs = Target Compound List Semivolatile Organic Compounds.

PCBs = Polychlorinated Biphenyl

TCL VOCs

Methylene chloride, acetone, carbon disulfide, 2-butanone, toluene, ethylbenzene, and total xylene were detected in surface soil samples collected at Site 18.

Methylene chloride was reported in five of the 52 surface soil samples collected at Site 18. Concentrations ranged from 49 J $\mu\text{g}/\text{kg}$ to 86 J $\mu\text{g}/\text{kg}$. Two of the samples six samples collected from Area A, where the airplane carcass is located, had concentrations of 64 J $\mu\text{g}/\text{kg}$ and 74 $\mu\text{g}/\text{kg}$. One of the ten samples collected from the Area F burn pit had a concentration of 86 J $\mu\text{g}/\text{kg}$, and the sample collected from Area G, where the diesel tank on wheels was formerly located, had a concentration of 52 $\mu\text{g}/\text{kg}$.

Acetone was reported for two of the 52 surface soil samples collected at Site 18. One of the four samples collected from the Area F burn pit had a concentration of 340 J $\mu\text{g}/\text{kg}$, and the sample collected from Area G, where the diesel tank on wheels was formerly located had a concentration of 1400 J.

Carbon disulfide was reported in eight of the 52 surface soil samples collected from the site. Concentrations ranged from 1 J $\mu\text{g}/\text{kg}$ to 11 J $\mu\text{g}/\text{kg}$. Three of the six samples collected from Area A, where the airplane carcass is located, had concentrations ranging from 4 J $\mu\text{g}/\text{kg}$ to 7 $\mu\text{g}/\text{kg}$. Five of the ten samples collected from Area F and the drainage ditch that drains Area F had concentrations ranging from 1 J $\mu\text{g}/\text{kg}$ to 11 J $\mu\text{g}/\text{kg}$. The sample collected from the area of stressed vegetation (Area K) had a concentration of 1 J $\mu\text{g}/\text{kg}$.

2-Butanone (MEK) was reported in seven of the 52 surface soil samples collected from this site. Concentrations ranged from 17 J $\mu\text{g}/\text{kg}$ to 1700 $\mu\text{g}/\text{kg}$. Five of the 12 samples collected from the former the Area D burn pit had concentrations ranging from 17 J $\mu\text{g}/\text{kg}$ to 36 $\mu\text{g}/\text{kg}$. One of the eleven samples collected from the Area E burn pit had a concentration of 1700 $\mu\text{g}/\text{kg}$, and one of the ten sample collected from the Area F burn pit had a concentration of 170 $\mu\text{g}/\text{kg}$.

Toluene was reported in 12 of the 52 surface soil samples from the site. Concentrations ranged from 1 J $\mu\text{g}/\text{kg}$ to 390 J $\mu\text{g}/\text{kg}$. Two of the six samples collected from Area A, where the airplane carcass is located had a concentrations of 1 J $\mu\text{g}/\text{kg}$ and 9 $\mu\text{g}/\text{kg}$. Three of the 12 samples collected from the Area D burn pit plus one duplicate sample had concentrations ranging form 10 $\mu\text{g}/\text{kg}$ to 34 $\mu\text{g}/\text{kg}$. Two of the 11 samples collected from the Area E burn pit had concentrations of 47 $\mu\text{g}/\text{kg}$ and 190 J $\mu\text{g}/\text{kg}$, and four of the ten samples collected from the Area F burn pit had concentrations ranging from 170 $\mu\text{g}/\text{kg}$ to 390 J $\mu\text{g}/\text{kg}$.

Ethylbenzene was reported in 11 of the 52 surface soil samples from the site. Concentrations ranged from 15 J $\mu\text{g}/\text{kg}$ to 800 $\mu\text{g}/\text{kg}$. Four of the 12 samples collected from Area D had concentrations ranging from 10 J $\mu\text{g}/\text{kg}$ to 120 $\mu\text{g}/\text{kg}$. Two of the 11 samples collected from Area E had concentrations of 190 $\mu\text{g}/\text{kg}$ to 430 J $\mu\text{g}/\text{kg}$, and five of the ten samples collected from Area F had concentrations of 73 $\mu\text{g}/\text{kg}$ to 800 $\mu\text{g}/\text{kg}$. All three of these areas are former burn pits areas.

Total xylenes were reported in 35 of the 52 surface soil samples at Site 18. Concentrations ranged from 1 J $\mu\text{g}/\text{kg}$ to 7000 J $\mu\text{g}/\text{kg}$. One of the six samples collected from Area A had a concentration of 5 J $\mu\text{g}/\text{kg}$, and the one samples collected from the dirt mound at Area B had a concentration of 3 J $\mu\text{g}/\text{kg}$. Eight of the 12 samples collected from The former burn pit at Area D, plus one duplicate sample had concentrations ranging from 2 J $\mu\text{g}/\text{kg}$ to 1000 $\mu\text{g}/\text{kg}$. Eight of the ten samples collected from the former burn pit at Area E, plus one duplicate sample had concentrations ranging from 2 J $\mu\text{g}/\text{kg}$ to 3300 $\mu\text{g}/\text{kg}$, and seven of the ten samples collected from the Area F burn pit, plus one duplicate sample had concentrations ranging from 7 J to 7000 $\mu\text{g}/\text{kg}$. The one samples collected from the Area G had

a concentration of 16 J $\mu\text{g}/\text{kg}$, and the sample collected from Area H, where four half buried drums are located had a concentration of 3 J $\mu\text{g}/\text{kg}$. Both samples collected from Area J, where various airplane parts are located, had concentrations of 2 J $\mu\text{g}/\text{kg}$, and the one sample collected from area of stressed vegetation at Area K had a concentration of 3 J $\mu\text{g}/\text{kg}$.

TCLP VOCs

Ten surface soil samples were collected from areas with high OVA readings and stained soil and were analyzed for TCLP VOCs. 2-Butanone was detected in one sample (WHF-2A-18-SL-25 TCLP) at .0047 J mg/kg . This sample was collected from one of the former burn pits (Area E). According to 40 CFR Part 261.24, the Maximum Concentration of Contaminants for the Toxicity Characteristics for 2-butanone is 200 mg/kg . Using this criteria, the sample (WHF-2A-18-SL-25 TCLP) which was collected from the burn pit at Area E, does not exhibit the characteristics of toxicity for 2-butanone.

TCL SVOCs

Based on analytical results, 11 SVOCs, bis(2-chloroethoxy)methane, naphthalene, 2-methylnaphthalene, fluorene, phenanthrene, pyrene, benzo(a)anthracene, bis(2-ethylhexyl)phthalate, and benzo(a)pyrene were detected in surface soils collected at Site 18.

Bis(2-chloroethoxy)methane was reported for one of the 52 surface soil samples from the site. One of the six samples collected from Area A had a concentration of 440 J $\mu\text{g}/\text{kg}$.

Naphthalene was reported for nine of the 52 surface soil samples from the site. Concentrations ranged from 990 $\mu\text{g}/\text{kg}$ to 8,000 J $\mu\text{g}/\text{kg}$. Four of the 12 samples collected from Area D had concentrations ranging from 990 $\mu\text{g}/\text{kg}$ to 3,500 J $\mu\text{g}/\text{kg}$. Two of the 11 samples collected from the Area E burn pit had concentrations of 4,100 J $\mu\text{g}/\text{kg}$ and 7,500 J $\mu\text{g}/\text{kg}$, and three of the ten samples collected from Area F had concentrations ranging from 4,200 J $\mu\text{g}/\text{kg}$ to 5,700 J $\mu\text{g}/\text{kg}$.

2-Methylnaphthalene was reported for nine of the 52 surface soil samples from Site 18. Concentrations ranged from 11,000 J $\mu\text{g}/\text{kg}$ to 33,000 $\mu\text{g}/\text{kg}$. Four of the 12 samples collected from Area D had concentrations of 1,100 J $\mu\text{g}/\text{kg}$ to 15,000 J $\mu\text{g}/\text{kg}$. Two of the 11 samples collected from Area E had concentrations of 14,000 $\mu\text{g}/\text{kg}$ and 33,000 J $\mu\text{g}/\text{kg}$, and three of the ten samples collected from Area F had concentrations ranging from 1,200 J $\mu\text{g}/\text{kg}$ to 24,000 $\mu\text{g}/\text{kg}$. All three of these areas are former burn pits.

Fluorene was reported for one of the 52 surface soil samples from the site. One of the 12 samples collected from the Area D burn pit had a concentration of 440 $\mu\text{g}/\text{kg}$.

Phenanthrene was reported for three of the 52 surface soil samples from Site 18. Concentrations ranged from 120 J $\mu\text{g}/\text{kg}$ to 2,200 J $\mu\text{g}/\text{kg}$. One of the 12 samples collected from Area D had a concentration of 120 J $\mu\text{g}/\text{kg}$, and two the 11 samples collected from Area E had concentrations of 730 J $\mu\text{g}/\text{kg}$ and 2,200 J $\mu\text{g}/\text{kg}$. Both of these area are former burn pits.

Fluoranthene, benzo(a)anthracene, chrysene, and benzo(a)pyrene were all reported for one of the 52 surface soil samples from the site. One of the 11 samples collected from the drainage ditch that drains Area E had concentrations of 3500 J $\mu\text{g}/\text{kg}$ for fluoranthene, 1,300 J $\mu\text{g}/\text{kg}$ for benzo(a)anthracene, 1,400 J $\mu\text{g}/\text{kg}$ for chrysene, and 1,200 J $\mu\text{g}/\text{kg}$ for benzo(a)pyrene. Area E is a former burn pit.

Pyrene was reported for four of the 52 surface soil samples from the site. Concentrations ranged from 730 J $\mu\text{g}/\text{kg}$ to 7,700 J $\mu\text{g}/\text{kg}$. Two of the 11 samples collected from Area E had concentrations of 6200

J $\mu\text{g}/\text{kg}$ and 7,700 J $\mu\text{g}/\text{kg}$). These two samples were both collected in the drainage ditch that drains Area E. Two of the ten samples collected from Area F had concentrations of 730 J $\mu\text{g}/\text{kg}$ and 2,100 J $\mu\text{g}/\text{kg}$. Both of these areas are former burn pits.

Bis(2-ethylhexyl)phthalate was reported in 18 of the 52 surface soil samples from Site 18. Concentrations ranged from 56 J $\mu\text{g}/\text{kg}$ to 56,00 J $\mu\text{g}/\text{kg}$. Three of the six samples collected from Area A had concentrations ranging from 77 J $\mu\text{g}/\text{kg}$ to 1200 J $\mu\text{g}/\text{kg}$. The sample collected from the dirt mound at Area B had a concentration of 56 J $\mu\text{g}/\text{kg}$. Four of the 12 samples collected from the Area D burn pit had concentrations ranging from 76 J $\mu\text{g}/\text{kg}$ to 340 J $\mu\text{g}/\text{kg}$. One of these samples was collected from the drainage ditch that drains Area D. Five of the 11 samples collected from the Area E burn pit had concentrations ranging from 68 J $\mu\text{g}/\text{kg}$ to 5600 J $\mu\text{g}/\text{kg}$. The higher concentrations (4100 J $\mu\text{g}/\text{kg}$ and 5600 J $\mu\text{g}/\text{kg}$) were detected in samples collected from the drainage ditch that drains this area. Two of the ten samples collected from the Area F burn pit had concentrations of 75 J $\mu\text{g}/\text{kg}$ and 170 J $\mu\text{g}/\text{kg}$. The sample collected from Area G and a duplicate sample had concentrations of 1800 J $\mu\text{g}/\text{kg}$ and 3500 $\mu\text{g}/\text{kg}$, and the sample collected from Area H had a concentration of 220 J $\mu\text{g}/\text{kg}$.

Pesticides and PCBs

Pesticides and PCBs were not detected in surface soil samples collected at Site 18.

TPH

TPH were detected in 45 of the 52 surface soil samples collected from Site 18. Concentrations ranged from 16.7 mg/kg to 23,500 mg/kg. In general, the higher concentrations were found in Areas A, D, E, and F which are all former burn pits.

TAL Metals and Total Cyanide

Table 3-8 summarizes the maximum concentrations, minimum concentrations, and arithmetic means for the inorganic compounds detected in samples collected from the background surface samples, WHF-BKG-SL-01, 09, and 10. The maximum concentrations, minimum concentrations, and frequency of detections for the inorganic compounds detected in the surface soil samples collected at Site 18 is also included in the table. The analytical results of the surface soil samples collected at Site 18 were compared to background concentrations. Compounds that are greater than or equal to twice the background concentrations include: aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, silver, thallium, vanadium, and zinc. Details pertaining to the frequency of detection, the range of detection, and the nature and extent of contamination for each compound is summarized below.

Aluminum was detected in all 52 surface soil samples collected at Site 18. Only one sample however, had a concentration (29,900 mg/kg) greater than twice the average background concentration of 14,767 mg/kg. This sample was one of 11 samples collected from Area E, which has been identified as a former burn pit.

Antimony was detected in 6 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 3.1 J mg/kg to 10.3 mg/kg. Antimony was not detected in background samples. One of the six samples collected from Area A had a concentration of 5.8 J mg/kg. One of the 12 samples collected from the Area D burn pit had a concentration of 2.9 mg/kg. One of the samples collected from the Area E burn pit had a concentration of 3.5 J mg/kg. One of the ten samples collected from the Area F burn pit, plus a duplicate sample had a concentration of 4.1 J mg/kg and 3 J mg/kg, and the sample

Table 3-8

Maximum, Minimum, and Mean Values
for Background Samples and
Maximum, Minimum and Frequency for Site 18 Samples

Background Samples				Site 18 Samples		
Compound	Maximum	Minimum	Mean	Maximum	Minimum	Frequency
Aluminum	5,040	2,510	3,552 ⁷⁰⁰	13,500	1,510	52/52
Antimony	4.1 U	2.6 U	U	5.8 J	2.9	6/52
Arsenic	1 J	0.58 J	0.8 ^{1.6}	3.1 J	0.24 J	36/52
Barium	5.2 J	2.4 J	3.6 ^{7.2}	290	2.5 J	52/52
Beryllium	0.08 U	0.05 U	U	0.14 J	0.06 J	23/52
Cadmium	0.9 J	0.58 U	0.7 ^{1.4}	38.8	0.6 J	26/52
Calcium	401 J	118 J	203 ⁴⁰⁰	1,050 J	63.0 J	36/52
Chromium	4.2	2.3	3.4 ^{6.8}	95.7 J	1.5 J	52/52
Cobalt	0.75	0.33 U	0.75 ^{1.5}	5.9 J	0.4 J	29/52
Copper	4.3 J	1.8 J	2.9 ^{5.8}	864	1.8 J	48/52
Iron	2,780	1,670	2,523 ^{5.0}	51,700	1,490	52/52
Lead	5.9 J	1.8	3.9 ^{7.8}	168	3.2	48/52
Magnesium	122 J	46.9 J	84.2 ¹⁶⁸	657 J	39.4 J	52/52
Manganese	144	14	61.9 ¹²²	457	12.1	52/52
Mercury	0.05 U	0.04 U	U	0.25	0.04 J	16/52
Nickel	4.1 J	2.3 U	4.1 ^{8.2}	19.7	2.5 J	25/52
Potassium	127 U	200 U	U	2930	138 J	35/52
Silver	0.31 U	0.5 U	U	0.35 J	0.35 J	1/52
Sodium	217 J	144 J	164 ³²⁸	302 J	137 J	36/52
Thallium	0.68 U	0.43 U	U	0.53 J	0.53 J	1/52
Vanadium	6.7 J	3.7 J	5.7 ^{11.4}	12.1	2.4 J	50/52
Zinc	12.1 J	4.8	8.6 ^{17.2}	779	4.3 J	43/52

from Area H had a concentration of 3.2 J mg/kg.

Arsenic was detected in 36 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 0.24 mg/kg to 3.10 mg/kg. Of the 36 samples, only three samples had detections greater than twice the average background concentration of 0.8 mg/kg. One of the ten samples collected from the burn pit at Area F, plus one duplicate sample had concentrations of 2.2 J mg/kg and 3.1 mg/kg, and the sample collected from the area of stressed vegetation at Area K had a concentration of 1.7 mg/kg.

Barium was detected in all 52 surface soil samples collected at Site 18. Concentrations ranged from 2.5 mg/kg to 290 mg/kg. Of the 52 samples, 27 samples had concentrations twice than the average background concentration of 3.6 mg/kg. Three of the six samples collected from Area A plus a duplicate sample had concentrations ranging from 10.6 J mg/kg to 45.2 J mg/kg. The sample collected from the dirt mound at Area B had a concentration of 38.6 J mg/kg. Six of the 12 samples plus a duplicate sample from Area D had concentrations ranging from 9.2 J mg/kg to 97.7 mg/kg. Two of these samples were collected from the drainage area that drains Area D. Five of the 11 samples collected from Area E had concentrations ranging from 13.4 J mg/kg to 198 mg/kg. Seven of the ten samples, plus a duplicate sample from Area F had concentrations ranging from 10.3 J mg/kg to 290 mg/kg. Two of these samples were collected from the ditch that drains Area F. The sample from Area G, where a tank on wheels was located had a concentration of 8.2 mg/kg, and the sample from Area H, where four half buried drums are located had a concentration of 7.7 mg/kg.

Beryllium was detected in 24 of the 52 surface soil samples collected at Site 18. Concentrations ranged from .06 mg/kg to 0.14 mg/kg. Beryllium was not detected in background samples. The sample collected from the former burn pit at Area C had a concentration of .06 J mg/kg. Five of the 12 samples collected from Area D had a concentrations ranging from .06 J mg/kg to .11 J mg/kg. Three of these samples were collected from the ditch that drains Area D. Seven of the ten samples collected from Area F had concentrations ranging from .06 J mg/kg to .14 J mg/kg. Four of these samples were collected from the ditch that drains Area F. One sample each was collected from Area G, Area I, and Area K, and the concentrations were .08 J mg/kg, .06 J mg/kg, and .06 J mg/kg respectively, and one of the two samples collected from Area J had a concentration of .07 mg/kg.

Cadmium was detected in 27 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 0.6 mg/kg to 38.8 mg/kg. Of the 27 samples, 13 samples had detections greater than twice the average background concentration of 0.7 mg/kg. Four of the six samples plus one duplicate sample collected from Area A had concentrations ranging from 2.8 mg/kg to 33.7 J mg/kg. The sample collected from Area B had a concentration of 20.6 mg/kg. One of the 12 samples collected from Area D had a concentration of 2.5 mg/kg. This sample was collected from the ditch that drains area D. One of the 11 samples plus a duplicate sample collected from the former burn pit at Area E had concentrations of 5.5 mg/kg and 5 J mg/kg. Two of the ten samples plus one duplicate sample collected from Area F had concentrations ranging from 1.9 mg/kg to 3.3 J mg/kg, and the sample collected from Area K had a concentration of 38.8 mg/kg.

Calcium was detected in 36 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 63.0 mg/kg to 1050 mg/kg. Of the 36 samples, only two samples had concentrations greater than twice the average concentration of 203 mg/kg. One of the 12 samples collected from Area D had a concentration of 1050 J mg/kg. This sample was collected from the ditch that drains area D. One of the ten samples collected from the former burn pit at Area F had a concentration of 592 J mg/kg.

Total chromium was detected in all of the 52 surface soil samples collected at Site 18. Concentrations ranged from 1.5 mg/kg to 95.7 mg/kg. Of the 52 samples, 19 samples had concentrations greater than twice the average background concentration of 3.4 mg/kg. Three of the six samples, plus one duplicate sample collected from Area A had concentrations ranging from 8.3 mg/kg to 34.3 J mg/kg. The sample

collected from Area B had a concentration of 39.8 mg/kg. Three of the 12 samples, plus one duplicate sample, collected from Area D had concentrations ranging from 8.6 mg/kg to 95.7 J mg/kg. Two of the 11 samples, plus a duplicate sample, collected from the former burn pit at Area E had concentrations ranging from 8.7 mg/kg to 33.9 mg/kg. Four of the ten samples, plus a duplicate sample collected from Area F had concentrations ranging from 7.1 mg/kg to 43.8 mg/kg. One sample each was collected from both Area H and Area K. The concentrations were 32 mg/kg and 8 mg/kg respectively.

Cobalt was detected in 29 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 0.4 mg/kg to 5.90 mg/kg. Of the 29 samples, five samples had concentrations greater than twice the average background concentration of 0.17 mg/kg. One of the 12 samples collected from Area D had a concentration of 1.8 J mg/kg. This sample was collected from the ditch that drains Area D. Three of the 11 samples collected from Area E had concentrations ranging from 1.8 J mg/kg to 2 J mg/kg, and one of the ten samples collected from Area F had a concentration of 5.9 J mg/kg. All three of these areas are former burn pits.

Copper was detected in 48 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 1.80 mg/kg to 864 mg/kg. Of the 48 samples, 5 samples had detections twice the average background concentration of 2.9 mg/kg. Five of the six samples, plus a duplicate sample collected from Area A had concentrations ranging from 6.8 mg/kg to 864 mg/kg. The sample collected from Area B had a concentration of 201 mg/kg. Six of the 12 samples, plus a duplicate sample collected from Area D had concentrations ranging from 6.5 mg/kg to 65.3 J mg/kg. Two of these samples were collected from the ditch that drains this area. Ten of the 11 samples collected from Area E had concentrations ranging from 6.4 mg/kg to 236 J mg/kg. One of these samples were collected from the ditch that drains this area. Eight of the ten samples, plus a duplicate sample collected from the former burn pit at Area F had concentrations ranging from 9.2 J mg/kg to 314 mg/kg. One of these samples were collected from the ditch that drains this area. One of the two samples collected from Area J had a concentration of 5.6 mg/kg, and the sample collected from Area K had a concentration of 6.9 mg/kg.

Iron was detected in all 52 surface soil samples collected at Site 18. Concentrations ranged from 2550 mg/kg to 23,800 mg/kg. Of the 52 samples, only seven samples had concentrations greater than twice the average background concentration of 2523 mg/kg. Two of the 12 samples, plus a duplicate sample collected from Area D had concentrations ranging from 7050 mg/kg to 35600 J mg/kg. One of the 11 samples, plus a duplicate sample collected from Area E had concentrations of 12900 mg/kg to 23500 mg/kg, and two of the ten samples collected from Area F had concentrations of 41600 J mg/kg and 51700 mg/kg.

Lead was detected in 48 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 3.2 mg/kg to 168 mg/kg. Of the 48 samples, 39 samples had concentrations greater than twice the average background concentration of 3.9 mg/kg. Four of the six samples, plus a duplicate sample collected from Area A had concentrations ranging from 28.9 J mg/kg to 96.1 J mg/kg. One sample each was collected from Areas B and C, and had concentrations were 76.5 mg/kg and 32.3 mg/kg respectively. Ten of the 12 samples, plus a duplicate sample collected from Area D had concentrations ranging from 11.5 mg/kg to 88.5 mg/kg. Four of these samples were collected from the ditch that drains this area. Ten of the 11 samples, plus a duplicate sample collected from the former burn pit at Area E had concentrations ranging from 8.4 mg/kg to 63.2 mg/kg. Three of these samples were collected from the ditch that drains this area. Seven of the ten samples collected from Area F had concentrations ranging from 22.6 mg/kg to 168 mg/kg. One of these samples were collected from the ditch that drains this area. The sample, plus a duplicate sample collected from Area G had concentrations of 42.8 mg/kg and 43.1 mg/kg, and the sample collected from Area K had a concentration of 10.6 mg/kg.

Magnesium was detected in all 52 surface soil samples collected at Site 18. Concentrations ranged from 33.8 mg/kg to 657 mg/kg. Of the 52 samples, six samples had concentration greater than twice the average background concentration of 61.9 mg/kg. One of the 12 samples, plus a duplicate sample had collected from Area D had concentrations of 237 J mg/kg and 185 J mg/kg. One of the 11 samples, plus a duplicate sample collected from Area E had concentrations of 455 J, mg/kg and 267 J mg/kg, and one of the ten samples, plus a duplicate sample collected from Area F had concentrations of 518 J mg/kg and 657 J mg/kg. All three of these areas are former burn pits.

Mercury was detected in 16 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 33.8 mg/kg to 657 mg/kg. Mercury was not detected in background samples. Four of the 12 samples, plus a duplicate sample collected from Area D had concentrations ranging form .04 J mg/kg to .07 mg/kg. Three of these samples were collected from the ditch that drains this area. Ten of the 11 samples, plus a duplicate sample collected from Area E had concentrations ranging from .06 J mg/kg to .09 J mg/kg. Two of these samples were collected from the ditch that drains this area. Both of these areas are former burn pits.

Nickel was detected in 25 of the 52 surface soil samples collected at Site 18. Concentrations ranged from 2.8 J mg/kg to 14.7 mg/kg. Of the 25 samples, only three samples had concentrations greater than twice the average background concentration of 4.1 mg/kg. One of the six samples collected from Area A, where the airplane frame is located, had a concentration of 15.9 mg/kg. One of the 12 samples collected from Area D had a concentration of 18.9 J mg/kg, and one of the ten samples collected from Area F had a concentration of 457 mg/kg.

Potassium was detected in 35 of the 52 surface soil samples collected at Site 18. Concentrations range from 153 J mg/kg to 1350 mg/kg. Potassium was not detected in background samples. Fix of the six sample collected from Area A, where the airplane frame is located, had concentrations ranging from 194 J mg/kg to 293 J mg/kg. Eleven of the 12 samples, plus a duplicate collected from Area D had concentrations ranging from 145 J mg/kg to 346 J mg/kg. Three of these samples were collected from the ditch that drains this area. Seven of the 11 samples, plus a duplicate sample collected from the former burn pit at Area E had concentrations ranging from 149 J mg/kg to 1060 J mg/kg. One of these samples was collected from the ditch that drains this area. Seven of the ten samples, plus a duplicate sample collected from Area F had concentrations ranging from 170 j mg/kg to 2930 mg/kg. One of the two samples collected from Area J had a concentration of 145 J mg/kg, and the sample collected from Area K had a concentration of 165 J mg/kg.

Silver was detected in 1 of the 52 surface soil samples collected at Site 18 at a concentration of .35 J mg/kg. Silver was not detected in background samples. This sample was one of six samples collected from Area A.

Thallium was detected in 1 of the 52 surface soil samples collected at Site 18 at a concentration of .53 mg/kg. This sample was collected from the ditch that drains the former burn pit at Area E, and is one of 11 samples collected in this area.

Vanadium was detected in 50 of the 52 surface soil samples collected at Site 18. Concentrations ranged from mg/kg 2.4 mg/kg to 12.10 mg/kg. Of the 50 samples, only one sample had concentrations greater than twice the average background concentration of 5.7 mg/kg. The sample collected from Area K had a concentration of 12.1 mg/kg.

Zinc was detected in 43 of the 52 surface soil samples collected at Site 18. Concentrations ranged form 7.2 J mg/kg to 179 mg/kg. Of the 43 samples, 23 samples had concentrations greater than twice the average background concentration of 8.6 mg/kg. Three of the six samples, plus a duplicate sample collected from Area A, where the airplane frame is located had concentrations ranging from 38.9 mg/kg

to 174 J mg/kg. The sample collected from Area B had a concentration of 200 mg/kg. Seven of the 12 samples, plus a duplicate sample collected from the former burn pit at Area D had concentrations ranging from 21.2 J mg/kg to 99.3 J mg/kg. Three of these samples were collected from the ditch that drains this area. Four of the 11 samples, plus a duplicate samples collected from the former burn pit at Area E had concentrations ranging from 20.1 J mg/kg to 631 J mg/kg. One of these samples was collected from the ditch that drains this area. Two of the ten samples, plus a duplicate sample collected from Area F had concentrations ranging from 21.9 J mg/kg to 326 mg/kg. One sample each was collected from Area G and Area K, and the concentrations were 19 J mg/kg and 25.8 J mg/kg respectively.

TCLP METALS

Twelve samples collected from Areas A, B, D, E, F, G, H, J, and K were analyzed for TCLP Metals. The analytical results reported detections of arsenic (.045 J mg/L) barium (.684 mg/L to 3.77 mg/L) in twelve samples, cadmium (.005 J mg/L to 2.250 mg/L) in seven samples, chromium (.0027 J mg/L to .050 mg/L) in seven samples, lead (.045 mg/l to 4.63 mg/L) in five samples, and mercury (.00014 mg/L to .00026 mg/kg) in four samples. According to 40 CFR Part 261.24 the Maximum Concentration of Contaminants for the Toxicity Characteristics for the above metals are: arsenic, 5.0 mg/L; barium , 100 mg/L; cadmium, 1.0 mg/L; chromium, 5.0 mg/L; lead, 5.0 mg/L; and mercury, 0.2 mg/L. Using this criteria, the soils at Site 18 exhibit the characteristics of toxicity for cadmium. Only one of the seven samples which had detections of cadmium was above the maximum concentration of contaminants level of 1.0 mg/L. This sample was collected from Area A where the airplane carcass is located.

APPENDIX A

**TOTAL PETROLEUM HYDROCARBONS
VALIDATED RESULTS**

WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22481001	22481P01	22481M01	22481002					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-01	18-SL-01 DUP	18-SL-01 MS	18-SL-01A					
Collect Date:	12-AUG-92	12-AUG-92	12-AUG-92	12-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON					
Total petroleum hydrocarbon	9020	mg/kg	8876	mg/kg	
			9020	mg/kg	
				12400	mg/kg

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

WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22462010	22462011	22462012	22507005					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-02	18-SL-03	18-SL-04	18-SL-05					
Collect Date:	12-AUG-92	12-AUG-92	12-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON				
Total petroleum hydrocarbon	195	mg/kg	- U	mg/kg
			1.7	13300
			mg/kg	
			16.7	mg/kg

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WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22507006		22488001		22488002		22488003		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-06		18-SL-07		18-SL-08		18-SL-09		
Collect Date:	14-AUG-92		13-AUG-92		13-AUG-92		13-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON											
Total petroleum hydrocarbon	7410	mg/kg		87.4	mg/kg		4.6	mg/kg		120	mg/kg

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WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22489001		22489002		22488004		22488005		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-10		18-SL-10A		18-SL-11		18-SL-12		
Collect Date:	13-AUG-92		13-AUG-92		13-AUG-92		13-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON							
Total petroleum hydrocarbon	6210	mg/kg	4820	mg/kg	56.6	mg/kg	- U mg/kg 1.8

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WHITING FIELD

Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22488006	22488008	22488009	22488010					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-13	18-SL-14	18-SL-15	18-SL-16					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON

Total petroleum hydrocarbon	55.7	mg/kg	- U	mg/kg	1.8	23500	mg/kg	10600	mg/kg
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WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22488011		22495001		22495002		22495003
Site	WHITING		WHITING		WHITING		WHITING
Locator	18-SL-17		18-SL-18		18-SL-19		18-SL-20
Collect Date:	13-AUG-92		13-AUG-92		13-AUG-92		13-AUG-92
	VALUE	DL	VALUE	DL	VALUE	DL	VALUE
	QUAL UNITS		QUAL UNITS		QUAL UNITS		QUAL UNITS

TOTAL PETROLEUM HYDROCARBON							
Total petroleum hydrocarbon	7040	mg/kg	1350	mg/kg	389	mg/kg	- U mg/kg 1.9

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WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22495004		22495005		22489003		22489004		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-21		18-SL-22		18-SL-23		18-SL-23A		
Collect Date:	13-AUG-92		13-AUG-92		13-AUG-92		13-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON									
Total petroleum hydrocarbon	2.9	mg/kg		54.8	mg/kg		18800	mg/kg	
							17800	mg/kg	

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WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22495006		22495007		22495008		22495009		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-24		18-SL-25		18-SL-26		18-SL-27		
Collect Date:	13-AUG-92		13-AUG-92		13-AUG-92		13-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON											
Total petroleum hydrocarbon	113	mg/kg		9950	mg/kg		58.6	mg/kg		20500	mg/kg

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WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22495010	22495011	22495012	22506002					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-28	18-SL-29	18-SL-30	18-SL-31					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON
Total petroleum hydrocarbon

- U	mg/kg	1.8	8770	mg/kg	2170	mg/kg	9190	mg/kg
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 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

WHITING FIELD

Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22507003		22506003		22506004		22506005		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-31A		18-SL-32		18-SL-33		18-SL-34		
Collect Date:	14-AUG-92		14-AUG-92		14-AUG-92		14-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON									
Total petroleum hydrocarbon	11300	mg/kg		15600	mg/kg		17400	mg/kg	
							14100	mg/kg	

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

WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22506006		22506007		22506008		22507001		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-35		18-SL-36		18-SL-37		18-SL-37A		
Collect Date:	14-AUG-92		14-AUG-92		14-AUG-92		14-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON											
Total petroleum hydrocarbon	806	mg/kg		16300	mg/kg		16000	mg/kg		19300	mg/kg

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 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

WHITING FIELD
Total petroleum hydrocarbon ----- VALIDATED RESULTS

Lab Sample Number:	22506009		22506010		22506P10		22506M10		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-38		18-SL-39		18-SL-39 DUP		18-SL-39 MS		
Collect Date:	14-AUG-92		14-AUG-92		14-AUG-92		14-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON									
Total petroleum hydrocarbon	- U	mg/kg	1.8	- U	mg/kg	1.8	- U	mg/kg	1.8

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

WHITING FIELD
Total petroleum hydrocarbon ---- VALIDATED RESULTS

Lab Sample Number:	22506011		22507002		22507007		22507008		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-40		18-SL-41		18-SL-42		18-SL-43		
Collect Date:	14-AUG-92		14-AUG-92		14-AUG-92		14-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON							
Total petroleum hydrocarbon	4.9	mg/kg	8.3	mg/kg	- U	mg/kg	1.8 67.7 mg/kg

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

WHITING FIELD
Total petroleum hydrocarbon ----- VALIDATED RESULTS

Lab Sample Number:	22507009		22507010		22507011		22507012		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-44		18-SL-45		18-SL-46		18-SL-47		
Collect Date:	14-AUG-92		14-AUG-92		14-AUG-92		14-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

TOTAL PETROLEUM HYDROCARBON											
Total petroleum hydrocarbon	842	mg/kg		19.8	mg/kg		15.8	mg/kg	- U	mg/kg	1.8

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

**VOLATILE ORGANIC COMPOUNDS
VALIDATED RESULTS**

WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22481001	22481002	22481M01	22481D01								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-01	18-SL-01A	18-SL-01MS	18-SL-01MSD								
Collect Date:	12-AUG-92	12-AUG-92	12-AUG-92	12-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	64	J	ug/kg	6	-	UJ	ug/kg	6	63	ug/kg	6	61	ug/kg	6		
Acetone	-	UJ	ug/kg	11	-	UJ	ug/kg	12	22	ug/kg	11	17	ug/kg	11		
Carbon disulfide	6		ug/kg	6	-	U	ug/kg	6	6	ug/kg	6	6	ug/kg	6		
2-Butanone	-	U	ug/kg	11	-	U	ug/kg	12	-	U	ug/kg	11	-	U	ug/kg	11
Toluene	-	U	ug/kg	6	-	U	ug/kg	6	-	U	ug/kg	6	-	U	ug/kg	6
Ethylbenzene	-	U	ug/kg	6	-	U	ug/kg	6	-	U	ug/kg	6	-	U	ug/kg	6
Xylenes (total)	-	U	ug/kg	6	-	U	ug/kg	6	-	U	ug/kg	6	-	U	ug/kg	6

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

WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22481001TC		22462010		22462011		22462012		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-01TCLP		18-SL-02		18-SL-03		18-SL-04		
Collect Date:	12-AUG-92		12-AUG-92		12-AUG-92		12-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	-			- UJ	ug/kg	6	74 J	ug/kg	5	- UJ	ug/kg	160
Acetone	-			- UJ	ug/kg	11	- UJ	ug/kg	11	- UJ	ug/kg	320
Carbon disulfide	-			4 J	ug/kg	6	7	ug/kg	5	- U	ug/kg	32
2-Butanone	- U	ug/l	50	- U	ug/kg	11	- U	ug/kg	11	- U	ug/kg	63
Toluene	-			9	ug/kg	6	1 J	ug/kg	5	- U	ug/kg	32
Ethylbenzene	-			- U	ug/kg	6	- U	ug/kg	5	- U	ug/kg	32
Xylenes (total)	-			- U	ug/kg	6	5 J	ug/kg	5	- U	ug/kg	32

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WHITING FIELD
VOLATILES ----- VALIDATED RESULTS

Lab Sample Number:	22507005	22507006	22507006TC	22488001					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-05	18-SL-06	18-SL-06TCLP	18-SL-07					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SQM

Methylene chloride	- UJ	ug/kg	5	- UJ	ug/kg	5	-	- UJ	ug/kg	6		
Acetone	- UJ	ug/kg	11	- UJ	ug/kg	11	-	- UJ	ug/kg	11		
Carbon disulfide	- U	ug/kg	5	- U	ug/kg	5	-	- UJ	ug/kg	6		
2-Butanone	- U	ug/kg	11	- U	ug/kg	11	- U	ug/l	50	- U	ug/kg	11
Toluene	- U	ug/kg	5	- U	ug/kg	5	-	- U	ug/kg	6		
Ethylbenzene	- U	ug/kg	5	- U	ug/kg	5	-	- U	ug/kg	6		
Xylenes (total)	- U	ug/kg	5	- U	ug/kg	5	-	3 J	ug/kg	6		

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22488001TC		22488002		22488002TC		22488003		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-07TCLP		18-SL-08		18-SL-08TCLP		18-SL-09		
Collect Date:	13-AUG-92		13-AUG-92		13-AUG-92		13-AUG-92		
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	
CLP VOLATILES 87-SOW									
Methylene chloride	-		- UJ	ug/kg	5	-	- UJ	ug/kg	150
Acetone	-		- UJ	ug/kg	11	-	- UJ	ug/kg	300
Carbon disulfide	-		- U	ug/kg	5	-	- U	ug/kg	30
2-Butanone	- U	ug/l	50	- U	ug/kg	11	- U	ug/l	50
Toluene	-		- U	ug/kg	5	-	- U	ug/kg	30
Ethylbenzene	-		- U	ug/kg	5	-	- U	ug/kg	30
Xylenes (total)	-		- U	ug/kg	5	-	- U	ug/kg	30

U= NOT DETECTED J = ESTIMATED VALUE
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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22488003TC	22489001	22489002	22489M01								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-09TCLP	18-SL-10	18-SL-10A	18-SL-10MS								
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	-	- UJ	ug/kg	130	- UJ	ug/kg	140	44 J	ug/kg	130		
Acetone	-	- UJ	ug/kg	260	- UJ	ug/kg	270	130 J	ug/kg	260		
Carbon disulfide	-	- U	ug/kg	27	- U	ug/kg	27	- U	ug/kg	27		
2-Butanone	- U	ug/l	50	36 J	ug/kg	260	35 J	ug/kg	270	32 J	ug/kg	260
Toluene	-			10 J	ug/kg	130	28	ug/kg	140	- U	ug/kg	27
Ethylbenzene	-			23 J	ug/kg	130	70	ug/kg	140	28	ug/kg	130
Xylenes (total)	-			160	ug/kg	130	430	ug/kg	140	220	ug/kg	130

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22489D01	22489001TC	22488004	22488005					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-10MSD	18-SL-10TCLP	18-SL-11	18-SL-12					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	38 J	ug/kg	130	-	UJ	ug/kg	5	-	UJ	ug/kg	6	
Acetone	110 J	ug/kg	260	-	UJ	ug/kg	11	-	UJ	ug/kg	12	
Carbon disulfide	- U	ug/kg	27	-	U	ug/kg	5	-	UJ	ug/kg	6	
2-Butanone	32 J	ug/kg	260	- U	ug/l	50	- U	ug/kg	11	- U	ug/kg	12
Toluene	- U	ug/kg	27	-	U	ug/kg	5	-	U	ug/kg	6	
Ethylbenzene	31	ug/kg	130	-	U	ug/kg	5	-	U	ug/kg	6	
Xylenes (total)	210	ug/kg	130	-	J	ug/kg	5	-	U	ug/kg	6	

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22488006	22488008	22488009	22488010					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-13	18-SL-14	18-SL-15	18-SL-16					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	140	- UJ	ug/kg	5	- UJ	ug/kg	140	- UJ	ug/kg	130
Acetone	- UJ	ug/kg	270	- UJ	ug/kg	11	- UJ	ug/kg	270	- UJ	ug/kg	270
Carbon disulfide	- U	ug/kg	27	- U	ug/kg	5	- UJ	ug/kg	140	- U	ug/kg	27
2-Butanone	30 J	ug/kg	270	- U	ug/kg	11	- U	ug/kg	55	36 J	ug/kg	270
Toluene	14 J	ug/kg	140	- U	ug/kg	5	34	ug/kg	140	- U	ug/kg	27
Ethylbenzene	- U	ug/kg	27	- U	ug/kg	5	120	ug/kg	140	15 J	ug/kg	130
Xylenes (total)	67	ug/kg	140	3 J	ug/kg	5	1000	ug/kg	140	76	ug/kg	130

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22488011	22495001	22495002	22495003					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-17	18-SL-18	18-SL-19	18-SL-20					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	34	- UJ	ug/kg	6	- UJ	ug/kg	6	- UJ	ug/kg	6
Acetone	- UJ	ug/kg	69	- UJ	ug/kg	12	- UJ	ug/kg	12	- UJ	ug/kg	12
Carbon disulfide	- U	ug/kg	14	- U	ug/kg	6	- UJ	ug/kg	6	- U	ug/kg	6
2-Butanone	17 J	ug/kg	69	- U	ug/kg	12	- U	ug/kg	12	- U	ug/kg	12
Toluene	- U	ug/kg	14	- U	ug/kg	6	- U	ug/kg	6	- U	ug/kg	6
Ethylbenzene	- U	ug/kg	14	- U	ug/kg	6	- U	ug/kg	6	- U	ug/kg	6
Xylenes (total)	- U	ug/kg	14	- U	ug/kg	6	3 J	ug/kg	6	4 J	ug/kg	6

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22495004	22495005	22489003	22489004								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-21	18-SL-22	18-SL-23	18-SL-23A								
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	6									
Acetone	- UJ	ug/kg	12	- UJ	ug/kg	13	- UJ	ug/kg	12	- UJ	ug/kg	11
Carbon disulfide	- U	ug/kg	6	- U	ug/kg	6	- UJ	ug/kg	6	- UJ	ug/kg	6
2-Butanone	- U	ug/kg	12	- U	ug/kg	13	- U	ug/kg	12	- U	ug/kg	11
Toluene	- U	ug/kg	6	- U	ug/kg	6	- UJ	ug/kg	6	- UJ	ug/kg	6
Ethylbenzene	- U	ug/kg	6	- U	ug/kg	6	- UJ	ug/kg	6	- UJ	ug/kg	6
Xylenes (total)	4 J	ug/kg	6	2 J	ug/kg	6	- UJ	ug/kg	6	2 J	ug/kg	6

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22489004R		22489M03		22489D03		22489003TC		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-23A_R		18-SL-23MS		18-SL-23MSD		18-SL-23TCLP		
Collect Date:	13-AUG-92		13-AUG-92		13-AUG-92		13-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	6	50	ug/kg	6	45	ug/kg	6	-		
Acetone	- UJ	ug/kg	11	21	ug/kg	12	15	ug/kg	12	-		
Carbon disulfide	- UJ	ug/kg	6	3 J	ug/kg	6	2 J	ug/kg	6	-		
2-Butanone	- UJ	ug/kg	11	- U	ug/kg	12	- U	ug/kg	12	- U	ug/l	50
Toluene	- UJ	ug/kg	6	- U	ug/kg	6	- U	ug/kg	6	-		
Ethylbenzene	- UJ	ug/kg	6	- U	ug/kg	6	- U	ug/kg	6	-		
Xylenes (total)	2 J	ug/kg	6	3 J	ug/kg	6	- U	ug/kg	6	-		

U= NOT DETECTED J = ESTIMATED VALUE
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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22495006	22495007	22495007TC	22495008					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-24	18-SL-25	18-SL-25TCLP	18-SL-26					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOM

Methylene chloride	- UJ	ug/kg	6	- UJ	ug/kg	27	-	- UJ	ug/kg	6		
Acetone	- UJ	ug/kg	11	- UJ	ug/kg	54	-	- UJ	ug/kg	12		
Carbon disulfide	- UJ	ug/kg	6	- UJ	ug/kg	27	-	- UJ	ug/kg	6		
2-Butanone	- U	ug/kg	11	- U	ug/kg	54	47 J	ug/l	47	- U	ug/kg	12
Toluene	- U	ug/kg	6	47	ug/kg	140	-	- U	ug/kg	6		
Ethylbenzene	- U	ug/kg	6	190	ug/kg	140	-	- U	ug/kg	6		
Xylenes (total)	- U	ug/kg	6	670	ug/kg	140	-	1 J	ug/kg	6		

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22495009	22495M09	22495D09	22495010					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-27	18-SL-27MS	18-SL-27MSD	18-SL-28					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	680	440 J	ug/kg	680	330 J	ug/kg	680	- UJ	ug/kg	6
Acetone	- UJ	ug/kg	1400	710 J	ug/kg	1400	520 J	ug/kg	1400	- UJ	ug/kg	11
Carbon disulfide	- U	ug/kg	680	- U	ug/kg	680	- U	ug/kg	680	- U	ug/kg	6
2-Butanone	1700	ug/kg	1400	- U	ug/kg	1400	- U	ug/kg	1400	- U	ug/kg	11
Toluene	190 J	ug/kg	7	- U	ug/kg	680	- U	ug/kg	680	- U	ug/kg	6
Ethylbenzene	430 J	ug/kg	7	460 J	ug/kg	680	440 J	ug/kg	680	- U	ug/kg	6
Xylenes (total)	3300	ug/kg	7	3700	ug/kg	680	3500	ug/kg	680	1 J	ug/kg	6

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22495011	22495012	22506002	22507003					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-29	18-SL-30	18-SL-31	18-SL-31A					
Collect Date:	13-AUG-92	13-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	30	- UJ	ug/kg	27	- UJ	ug/kg	710	- UJ	ug/kg	140
Acetone	- UJ	ug/kg	61	- UJ	ug/kg	55	- UJ	ug/kg	1400	- UJ	ug/kg	280
Carbon disulfide	- UJ	ug/kg	30	- U	ug/kg	27	- U	ug/kg	710	11 J	ug/kg	140
2-Butanone	- U	ug/kg	61	- U	ug/kg	55	- UJ	ug/kg	1400	- U	ug/kg	56
Toluene	- U	ug/kg	30	- U	ug/kg	27	180 J	ug/kg	7	- U	ug/kg	28
Ethylbenzene	- U	ug/kg	30	- U	ug/kg	27	290 J	ug/kg	7	- U	ug/kg	28
Xylenes (total)	- U	ug/kg	30	12 J	ug/kg	27	1800	ug/kg	7	54	ug/kg	140

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

WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22506002TC	22506003	22506004	22506005								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-31TCLP	18-SL-32	18-SL-33	18-SL-34								
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	-	86 J	ug/kg	140	-	UJ	ug/kg	740	-	UJ	ug/kg	690			
Acetone	-	340 J	ug/kg	290	-	UJ	ug/kg	1500	-	UJ	ug/kg	1400			
Carbon disulfide	-	7 J	ug/kg	140	-	U	ug/kg	740	-	U	ug/kg	690			
2-Butanone	- U	ug/l		50	140	ug/kg	290	-	UJ	ug/kg	1500	-	UJ	ug/kg	1400
Toluene	-	170	ug/kg	140	390 J	ug/kg	740	-	U	ug/kg	690				
Ethylbenzene	-	73	ug/kg	140	800	ug/kg	7	240 J	ug/kg	690					
Xylenes (total)	-	530	ug/kg	140	7000	ug/kg	7	2500	ug/kg	690					

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WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22506006	22506007	22506008	22507001					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-35	18-SL-36	18-SL-37	18-SL-37A					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	29	- UJ	ug/kg	680	52 J	ug/kg	27	- UJ	ug/kg	130
Acetone	- UJ	ug/kg	59	- UJ	ug/kg	1400	1400 J	ug/kg	54	- UJ	ug/kg	260
Carbon disulfide	- U	ug/kg	29	- U	ug/kg	680	- U	ug/kg	27	- U	ug/kg	27
2-Butanone	- U	ug/kg	59	- UJ	ug/kg	1400	- U	ug/kg	54	- U	ug/kg	53
Toluene	- U	ug/kg	29	210 J	ug/kg	680	- U	ug/kg	27	- U	ug/kg	27
Ethylbenzene	- U	ug/kg	29	320 J	ug/kg	680	- U	ug/kg	27	- U	ug/kg	27
Xylenes (total)	7 J	ug/kg	150	2700	ug/kg	680	16 J	ug/kg	27	- U	ug/kg	27

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

WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22506008TC	22506008DL	22506009	22506009TC								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-37TCLP	18-SL-37 DL	18-SL-38	18-SL-38TCLP								
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
CLP VOLATILES 87-SOW												
Methylene chloride	-			- UJ	ug/kg	670	49 J	ug/kg	5	-		
Acetone	-			- UJ	ug/kg	1300	- UJ	ug/kg	11	-		
Carbon disulfide	-			- U	ug/kg	670	- U	ug/kg	5	-		
2-Butanone	- U	ug/l	50	- UJ	ug/kg	1300	- U	ug/kg	11	- U	ug/l	50
Toluene	-			- U	ug/kg	670	- U	ug/kg	5	-		
Ethylbenzene	-			- U	ug/kg	670	- U	ug/kg	5	-		
Xylenes (total)	-			- U	ug/kg	670	3 J	ug/kg	5	-		

U= NOT DETECTED J = ESTIMATED VALUE
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 R = RESULT IS REJECTED AND UNUSABLE

WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22506010	22506011	22506011TC	22507002					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-39	18-SL-40	18-SL-40TCLP	18-SL-41					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	5	- UJ	ug/kg	6	-	- UJ	ug/kg	6		
Acetone	- UJ	ug/kg	11	- UJ	ug/kg	11	-	- UJ	ug/kg	11		
Carbon disulfide	- U	ug/kg	5	- U	ug/kg	6	-	- U	ug/kg	6		
2-Butanone	- U	ug/kg	11	- U	ug/kg	11	- U	ug/l	50	- U	ug/kg	11
Toluene	- U	ug/kg	5	- U	ug/kg	6	-	- U	ug/kg	6		
Ethylbenzene	- U	ug/kg	5	- U	ug/kg	6	-	- U	ug/kg	6		
Xylenes (total)	- U	ug/kg	5	2 J	ug/kg	6	-	2 J	ug/kg	6		

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

WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22507007	22507008	22507009	22507009R					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-42	18-SL-43	18-SL-44	18-SL-44_R					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 87-SOW

Methylene chloride	- UJ	ug/kg	5									
Acetone	- UJ	ug/kg	11									
Carbon disulfide	1 J	ug/kg	5	- U	ug/kg	5	1 J	ug/kg	5	4 J	ug/kg	5
2-Butanone	- U	ug/kg	11									
Toluene	- U	ug/kg	5									
Ethylbenzene	- U	ug/kg	5									
Xylenes (total)	3 J	ug/kg	5	3 J	ug/kg	5	- U	ug/kg	5	3 J	ug/kg	5

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

WHITING FIELD
VOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22507010	22507011	22507012
Site	WHITING	WHITING	WHITING
Locator	18-SL-45	18-SL-46	18-SL-47
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
CLP VOLATILES 87-SOW									
Methylene chloride	- UJ	ug/kg	5	- UJ	ug/kg	6	- UJ	ug/kg	6
Acetone	- U	ug/kg	11	- U	ug/kg	11	- U	ug/kg	11
Carbon disulfide	2 J	ug/kg	5	- U	ug/kg	6	- U	ug/kg	6
2-Butanone	- U	ug/kg	11	- UJ	ug/kg	11	- UJ	ug/kg	11
Toluene	- U	ug/kg	5	- U	ug/kg	6	- U	ug/kg	6
Ethylbenzene	- U	ug/kg	5	- U	ug/kg	6	- U	ug/kg	6
Xylenes (total)	- U	ug/kg	5	2 J	ug/kg	6	- U	ug/kg	6

U= NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
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**SEMIVOLATILE ORGANIC COMPOUNDS
VALIDATED RESULTS**

WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

	22481001			22481002			22481M01			22481D01		
	VALUE	QUAL UNITS	DL									
CLP SEMIVOLATILES 87-SOW												
bis(2-Chloroethoxy) methane	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
Naphthalene	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
2-Methylnaphthalene	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
Fluorene	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
Phenanthrene	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
Fluoranthene	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
Pyrene	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
Benzo (a) anthracene	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
Chrysene	- U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000
bis(2-Ethylhexyl) phthalate	700 J	ug/kg	3000	1200 J	ug/kg	3100	660 J	ug/kg	3000	780 J	ug/kg	3000
Benzo (a) pyrene	r U	ug/kg	3000	- U	ug/kg	3100	- U	ug/kg	3000	- U	ug/kg	3000

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22462010	22462011	22462012	22507005					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-02	18-SL-03	18-SL-04	18-SL-05					
Collect Date:	12-AUG-92	12-AUG-92	12-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW												
bis(2-Chloroethoxy) methane	- U	ug/kg	380	- U	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
Naphthalene	- U	ug/kg	380	- U	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
2-Methylnaphthalene	- U	ug/kg	380	- U	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
Fluorene	- U	ug/kg	380	- U	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
Phenanthrene	- U	ug/kg	380	- U	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
Fluoranthene	- U	ug/kg	380	- U	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
Pyrene	- UJ	ug/kg	380	- UJ	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
Benzo (a) anthracene	- U	ug/kg	380	- U	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
Chrysene	- UJ	ug/kg	380	- UJ	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360
bis(2-Ethylhexyl) phthalate	- UJ	ug/kg	380	- UJ	ug/kg	350	1000 J	ug/kg	3200	- U	ug/kg	360
Benzo (a) pyrene	- U	ug/kg	380	- U	ug/kg	350	- U	ug/kg	3300	- U	ug/kg	360

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22507006	22488001	22488002	22488003					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-06	18-SL-07	18-SL-08	18-SL-09					
Collect Date:	14-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
bis(2-Chloroethoxy) methane	440 J	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	- U	ug/kg	1900
Naphthalene	- U	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	2200	ug/kg	1900
2-Methylnaphthalene	- U	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	8100	ug/kg	1900
Fluorene	- U	ug/kg	1800	- U	ug/kg	380	- UJ	ug/kg	360	- UJ	ug/kg	1900
Phenanthrene	- U	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	- U	ug/kg	1900
Fluoranthene	- U	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	- U	ug/kg	1900
Pyrene	- U	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	- U	ug/kg	1900
Benzo (a) anthracene	- U	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	- U	ug/kg	1900
Chrysene	- U	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	- U	ug/kg	1900
bis(2-Ethylhexyl) phthalate	- U	ug/kg	1800	56 J	ug/kg	380	- U	ug/kg	360	340 J	ug/kg	1900
Benzo (a) pyrene	- U	ug/kg	1800	- U	ug/kg	380	- U	ug/kg	360	- U	ug/kg	1900

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22489001		22489002		22489M01		22489D01		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-10		18-SL-10A		18-SL-10MS		18-SL-10MSD		
Collect Date:	13-AUG-92		13-AUG-92		13-AUG-92		13-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW

bis(2-Chloroethoxy) methane	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
Naphthalene	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
2-Methylnaphthalene	1100 J	ug/kg	3800	- U	ug/kg	3700	- U	ug/kg	3700
Fluorene	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
Phenanthrene	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
Fluoranthene	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
Pyrene	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
Benzo (a) anthracene	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
Chrysene	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
bis(2-Ethylhexyl) phthalate	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700
Benzo (a) pyrene	- U	ug/kg	3700	- U	ug/kg	3700	- U	ug/kg	3700

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

	22488004			22488005			22488006			22488008		
	VALUE	QUAL UNITS	DL									
CLP SEMIVOLATILES 87-SOW												
bis(2-Chloroethoxy) methane	- U	ug/kg	360	- U	ug/kg	360	- U	ug/kg	350	- U	ug/kg	360
Naphthalene	- U	ug/kg	360	- U	ug/kg	360	990	ug/kg	350	- U	ug/kg	360
2-Methylnaphthalene	- U	ug/kg	360	- U	ug/kg	360	- U	ug/kg	350	- U	ug/kg	360
Fluorene	- U	ug/kg	360	- U	ug/kg	360	440	ug/kg	350	- U	ug/kg	360
Phenanthrene	- U	ug/kg	360	- U	ug/kg	360	120 J	ug/kg	350	- U	ug/kg	360
Fluoranthene	- U	ug/kg	360	- U	ug/kg	360	- U	ug/kg	350	- U	ug/kg	360
Pyrene	- U	ug/kg	360	- U	ug/kg	360	- U	ug/kg	350	- U	ug/kg	360
Benzo (a) anthracene	- U	ug/kg	360	- U	ug/kg	360	- U	ug/kg	350	- U	ug/kg	360
Chrysene	- U	ug/kg	360	- U	ug/kg	360	- U	ug/kg	350	- U	ug/kg	360
bis(2-Ethylhexyl) phthalate	110 J	ug/kg	360	- U	ug/kg	360	76 J	ug/kg	350	- U	ug/kg	360
Benzo (a) pyrene	- U	ug/kg	360	- U	ug/kg	360	- U	ug/kg	350	- U	ug/kg	360

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22488009	22488010	22488011	22495001					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-15	18-SL-16	18-SL-17	18-SL-18					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW

bis(2-Chloroethoxy) methane	- UJ	ug/kg	7300	- UJ	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800
Naphthalene	3000 J	ug/kg	7200	3500 J	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800
2-Methylnaphthalene	11000 J	ug/kg	7200	15000 J	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800
Fluorene	- UJ	ug/kg	7300	- UJ	ug/kg	8900	- UJ	ug/kg	1900	- UJ	ug/kg	3800
Phenanthrene	- UJ	ug/kg	7300	- UJ	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800
Fluoranthene	- UJ	ug/kg	7300	- UJ	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800
Pyrene	- UJ	ug/kg	7300	- UJ	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800
Benzo (a) anthracene	- UJ	ug/kg	7300	- UJ	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800
Chrysene	- UJ	ug/kg	7300	- UJ	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800
bis(2-Ethylhexyl) phthalate	- UJ	ug/kg	7300	- UJ	ug/kg	8900	320 J	ug/kg	1800	- U	ug/kg	3800
Benzo (a) pyrene	- UJ	ug/kg	7300	- UJ	ug/kg	8900	- U	ug/kg	1900	- U	ug/kg	3800

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

	22495002			22495003			22495004			22495005		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
CLP SEMIVOLATILES 87-SOW												
bis(2-Chloroethoxy) methane	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
Naphthalene	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
2-Methylnaphthalene	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
Fluorene	- UJ	ug/kg	1900	- UJ	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
Phenanthrene	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
Fluoranthene	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
Pyrene	- U	ug/kg	1900	- UJ	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
Benzo (a) anthracene	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
Chrysene	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
bis(2-Ethylhexyl) phthalate	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390
Benzo (a) pyrene	- U	ug/kg	1900	- U	ug/kg	380	- U	ug/kg	390	- U	ug/kg	390

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22489003	22489004	22489M03	22489D03					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-23	18-SL-23A	18-SL-23MS	18-SL-23MSD					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW

bis(2-Chloroethoxy) methane	- UJ	ug/kg	9500	- UJ	ug/kg	9500	- U	ug/kg	9500	- U	ug/kg	9500
Naphthalene	- UJ	ug/kg	9500	- UJ	ug/kg	9500	- U	ug/kg	9500	- U	ug/kg	9500
2-Methylnaphthalene	- UJ	ug/kg	9500	- UJ	ug/kg	9500	- U	ug/kg	9500	- U	ug/kg	9500
Fluorene	- UJ	ug/kg	9500	- UJ	ug/kg	9500	- U	ug/kg	9500	- U	ug/kg	9500
Phenanthrene	- UJ	ug/kg	9500	- UJ	ug/kg	9500	- U	ug/kg	9500	- U	ug/kg	9500
Fluoranthene	3500 J	ug/kg	9500	- UJ	ug/kg	9500	3000 J	ug/kg	9500	3000 J	ug/kg	9500
Pyrene	7700 J	ug/kg	9500	6200 J	ug/kg	9500	- U	ug/kg	9500	- U	ug/kg	9500
Benzo (a) anthracene	1300 J	ug/kg	9500	- UJ	ug/kg	9500	- U	ug/kg	9500	1300 J	ug/kg	9500
Chrysene	1400 J	ug/kg	9500	- UJ	ug/kg	9500	1400 J	ug/kg	9500	- U	ug/kg	9500
bis(2-Ethylhexyl) phthalate	5600 J	ug/kg	9500	4100 J	ug/kg	9500	4400 J	ug/kg	9500	3600 J	ug/kg	9500
Benzo (a) pyrene	1200 J	ug/kg	9500	- UJ	ug/kg	9500	- U	ug/kg	9500	- U	ug/kg	9500

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 R = RESULT IS REJECTED AND UNUSABLE

WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22495006	22495007	22495008	22495009					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-24	18-SL-25	18-SL-26	18-SL-27					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW

bis(2-Chloroethoxy) methane	- U	ug/kg	370	- U	ug/kg	5400	- U	ug/kg	370	- UJ	ug/kg	8900
Naphthalene	- U	ug/kg	370	4100 J	ug/kg	5400	- U	ug/kg	370	7500 J	ug/kg	8900
2-Methylnaphthalene	- U	ug/kg	370	14000	ug/kg	5400	- U	ug/kg	370	33000 J	ug/kg	8900
Fluorene	- U	ug/kg	370	- UJ	ug/kg	5400	- U	ug/kg	370	- UJ	ug/kg	8900
Phenanthrene	- U	ug/kg	370	730 J	ug/kg	5400	- U	ug/kg	370	2200 J	ug/kg	8900
Fluoranthrene	- U	ug/kg	370	- U	ug/kg	5400	- U	ug/kg	370	- UJ	ug/kg	8900
Pyrene	- U	ug/kg	370	- U	ug/kg	5400	- U	ug/kg	370	- UJ	ug/kg	8900
Benzo (a) anthracene	- U	ug/kg	370	- U	ug/kg	5400	- U	ug/kg	370	- UJ	ug/kg	8900
Chrysene	- U	ug/kg	370	- U	ug/kg	5400	- U	ug/kg	370	- UJ	ug/kg	8900
bis(2-Ethylhexyl) phthalate	68 J	ug/kg	380	- U	ug/kg	5400	- U	ug/kg	370	- UJ	ug/kg	8900
Benzo (a) pyrene	- U	ug/kg	370	- U	ug/kg	5400	- U	ug/kg	370	- UJ	ug/kg	8900

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 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

	22495010			22495011			22495012			22506002		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Lab Sample Number:	22495010			22495011			22495012			22506002		
Site	WHITING			WHITING			WHITING			WHITING		
Locator	18-SL-28			18-SL-29			18-SL-30			18-SL-31		
Collect Date:	13-AUG-92			13-AUG-92			13-AUG-92			14-AUG-92		
CLP SEMIVOLATILES 87-SOW												
bis(2-Chloroethoxy) methane	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	- U	ug/kg	4600
Naphthalene	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	- U	ug/kg	4600
2-Methylnaphthalene	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	1200 J	ug/kg	4600
Fluorene	- U	ug/kg	360	- UJ	ug/kg	4000	- UJ	ug/kg	1500	- U	ug/kg	4600
Phenanthrene	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	- U	ug/kg	4600
Fluoranthene	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	- U	ug/kg	4600
Pyrene	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	- U	ug/kg	4600
Benzo (a) anthracene	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	- U	ug/kg	4600
Chrysene	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	- U	ug/kg	4600
bis(2-Ethylhexyl) phthalate	- U	ug/kg	360	790 J	ug/kg	4000	600 J	ug/kg	1500	- U	ug/kg	4600
Benzo (a) pyrene	- U	ug/kg	360	- U	ug/kg	4000	- U	ug/kg	1500	- U	ug/kg	4600

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 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22507003	22506003	22506004	22506005								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-31A	18-SL-32	18-SL-33	18-SL-34								
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW

bis(2-Chloroethoxy) methane	- U	ug/kg	4600	- U	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000
Naphthalene	- U	ug/kg	4600	5700 J	ug/kg	19000	8000 J	ug/kg	20000	- U	ug/kg	11000
2-Methylnaphthalene	- U	ug/kg	4600	- U	ug/kg	19000	24000	ug/kg	20000	- U	ug/kg	11000
Fluorene	- U	ug/kg	4600	- U	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000
Phenanthrene	- U	ug/kg	4600	- U	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000
Fluoranthene	- U	ug/kg	4600	- U	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000
Pyrene	730 J	ug/kg	4600	2100 J	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000
Benzo (a) anthracene	- U	ug/kg	4600	- U	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000
Chrysene	- U	ug/kg	4600	- U	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000
bis(2-Ethylhexyl) phthalate	- U	ug/kg	4600	- U	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000
Benzo (a) pyrene	- U	ug/kg	4600	- U	ug/kg	19000	- U	ug/kg	20000	- U	ug/kg	11000

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 R = RESULT IS REJECTED AND UNUSABLE

WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22506006		22506007		22506008		22507001		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	18-SL-35		18-SL-36		18-SL-37		18-SL-37A		
Collect Date:	14-AUG-92		14-AUG-92		14-AUG-92		14-AUG-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
bis(2-Chloroethoxy) methane	- U	ug/kg	1200	- U	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
Naphthalene	- U	ug/kg	1200	4200 J	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
2-Methylnaphthalene	- U	ug/kg	1200	19000	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
Fluorene	- U	ug/kg	1200	- U	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
Phenanthrene	- U	ug/kg	1200	- U	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
Fluoranthene	- U	ug/kg	1200	- U	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
Pyrene	- U	ug/kg	1200	- U	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
Benzo (a) anthracene	- U	ug/kg	1200	- U	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
Chrysene	- U	ug/kg	1200	- U	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500
bis(2-Ethylhexyl) phthalate	170 J	ug/kg	1200	- U	ug/kg	13000	1800 J	ug/kg	2500	3500	ug/kg	1500
Benzo (a) pyrene	- U	ug/kg	1200	- U	ug/kg	13000	- U	ug/kg	2500	- U	ug/kg	1500

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WHITING FIELD
SEMIVOLATILES ----- VALIDATED RESULTS

Lab Sample Number:	22506009		22506010		22506011		22507002					
Site	WHITING		WHITING		WHITING		WHITING					
Locator	18-SL-38		18-SL-39		18-SL-40		18-SL-41					
Collect Date:	14-AUG-92		14-AUG-92		14-AUG-92		14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL			
CLP SEMIVOLATILES 87-SOW												
bis(2-Chloroethoxy) methane	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
Naphthalene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
2-Methylnaphthalene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
Fluorene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
Phenanthrene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
Fluoranthene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
Pyrene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
Benzo (a) anthracene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
Chrysene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
bis(2-Ethylhexyl) phthalate	220 J	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350
Benzo (a) pyrene	- U	ug/kg	370	- U	ug/kg	360	- U	ug/kg	370	- U	ug/kg	350

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

	22507007			22507008			22507009			22507010		
	VALUE	QUAL UNITS	DL									
Lab Sample Number:	22507007			22507008			22507009			22507010		
Site	WHITING			WHITING			WHITING			WHITING		
Locator	18-SL-42			18-SL-43			18-SL-44			18-SL-45		
Collect Date:	14-AUG-92			14-AUG-92			14-AUG-92			14-AUG-92		
CLP SEMIVOLATILES 87-SOW												
bis(2-Chloroethoxy) methane	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
Naphthalene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
2-Methylnaphthalene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
Fluorene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
Phenanthrene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
Fluoranthene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
Pyrene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
Benzo (a) anthracene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
Chrysene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370
bis(2-Ethylhexyl) phthalate	- U	ug/kg	350	- U	ug/kg	350	75 J	ug/kg	350	- U	ug/kg	370
Benzo (a) pyrene	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	350	- U	ug/kg	370

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WHITING FIELD
SEMIVOLATILES ---- VALIDATED RESULTS

Lab Sample Number:	22507011	22507012	
Site	WHITING	WHITING	
Locator	18-SL-46	18-SL-47	
Collect Date:	14-AUG-92	14-AUG-92	
	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 87-SOW

bis(2-Chloroethoxy) methane	- U	ug/kg	380	- U	ug/kg	350
Naphthalene	- U	ug/kg	380	- U	ug/kg	350
2-Methylnaphthalene	- U	ug/kg	380	- U	ug/kg	350
Fluorene	- U	ug/kg	380	- U	ug/kg	350
Phenanthrene	- U	ug/kg	380	- U	ug/kg	350
Fluoranthene	- U	ug/kg	380	- U	ug/kg	350
Pyrene	- U	ug/kg	380	- U	ug/kg	350
Benzo (a) anthracene	- U	ug/kg	380	- U	ug/kg	350
Chrysene	- U	ug/kg	380	- U	ug/kg	350
bis(2-Ethylhexyl) phthalate	- U	ug/kg	380	- U	ug/kg	350
Benzo (a) pyrene	- U	ug/kg	380	- U	ug/kg	350

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**INORGANICS (METALS)
VALIDATED RESULTS**

WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22481001	22481002	22481001TC	22462010								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-01	18-SL-01A	18-SL-01TCLP	18-SL-02								
Collect Date:	12-AUG-92	12-AUG-92	12-AUG-92	12-AUG-92								
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	
CLP METALS AND CYANIDE												
Aluminum	3850	mg/kg	40	4580	mg/kg	40	-		3140	mg/kg	40	
Antimony	- UJ	mg/kg	12	5.8 J	mg/kg	12	-		- U	mg/kg	12	
Arsenic	- UJ	mg/kg	2	- UJ	mg/kg	2	- UJ	ug/l	10	.59 J	mg/kg	2
Barium	17.2 J	mg/kg	40	45.2 J	mg/kg	40	1490	ug/l	200	7.1 J	mg/kg	40
Beryllium	- U	mg/kg	1	- U	mg/kg	1	-		- U	mg/kg	1	
Cadmium	22.6 J	mg/kg	1	33.7 J	mg/kg	1	2250	ug/l	5	2.8	mg/kg	1
Calcium	- UJ	mg/kg	1000	- UJ	mg/kg	1000	-		197 J	mg/kg	1000	
Chromium	16.5 J	mg/kg	2	34.3 J	mg/kg	2	6.2 J	ug/l	10	5.4	mg/kg	2
Cobalt	- UJ	mg/kg	10	- UJ	mg/kg	10	-		1.3 J	mg/kg	10	
Copper	177	mg/kg	5	864	mg/kg	5	-		8.4 J	mg/kg	5	
Iron	1710	mg/kg	20	2580	mg/kg	20	-		1800	mg/kg	20	
Lead	62.6	mg/kg	1	96.1 J	mg/kg	1	450	ug/l	3	28.9 J	mg/kg	1
Magnesium	94.7 J	mg/kg	1000	103 J	mg/kg	1000	-		94.9 J	mg/kg	1000	
Manganese	18.3 J	mg/kg	3	22.6 J	mg/kg	3	-		24.1	mg/kg	3	
Mercury	- U	mg/kg	.1	- U	mg/kg	.1	.2	ug/l	.2	- U	mg/kg	.1
Nickel	- U	mg/kg	8	15.9	mg/kg	8	-		- U	mg/kg	8	
Potassium	- U	mg/kg	1000	216 J	mg/kg	1000	-		280 J	mg/kg	1000	
Silver	- U	mg/kg	2	- UJ	mg/kg	2	- UJ	ug/l	10	- U	mg/kg	2
Sodium	- UJ	mg/kg	1000	- UJ	mg/kg	1000	-		279 J	mg/kg	1000	
Thallium	- U	mg/kg	2	- U	mg/kg	2	-		- U	mg/kg	2	
Vanadium	- UJ	mg/kg	10	- UJ	mg/kg	10	-		4.4 J	mg/kg	10	
Zinc	94.2 J	mg/kg	4	174 J	mg/kg	4	-		10.5 J	mg/kg	4	

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22462011	22462012	22507005	22507006								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-03	18-SL-04	18-SL-05	18-SL-06								
Collect Date:	12-AUG-92	12-AUG-92	14-AUG-92	14-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	3100	mg/kg	40	4550	mg/kg	40	3260	mg/kg	40	3140	mg/kg	40
Antimony	- U	mg/kg	12	- U	mg/kg	12	- U	mg/kg	12	- U	mg/kg	12
Arsenic	.77 J	mg/kg	2	.72 J	mg/kg	2	.26 J	mg/kg	2	- U	mg/kg	2
Barium	5.5 J	mg/kg	40	27.2 J	mg/kg	40	6.5 J	mg/kg	40	10.6 J	mg/kg	40
Beryllium	- U	mg/kg	1	- U	mg/kg	1	- U	mg/kg	1	- U	mg/kg	1
Cadmium	- U	mg/kg	1	9	mg/kg	1	- U	mg/kg	1	9.3	mg/kg	1
Calcium	151 J	mg/kg	1000	296 J	mg/kg	1000	91.3 J	mg/kg	1000	151 J	mg/kg	1000
Chromium	2.9	mg/kg	2	8.3	mg/kg	2	4	mg/kg	2	10.7	mg/kg	2
Cobalt	1 J	mg/kg	10	.87 J	mg/kg	10	.78 J	mg/kg	10	.47 J	mg/kg	10
Copper	1.8 J	mg/kg	5	32.6	mg/kg	5	6.8	mg/kg	5	45.3	mg/kg	5
Iron	1700	mg/kg	20	2180	mg/kg	20	1790	mg/kg	20	1490	mg/kg	20
Lead	6.7 J	mg/kg	1	35.6	mg/kg	1	5.1	mg/kg	1	32.6	mg/kg	1
Magnesium	116 J	mg/kg	1000	126 J	mg/kg	1000	84.1 J	mg/kg	1000	125 J	mg/kg	1000
Manganese	102	mg/kg	3	27.8	mg/kg	3	18.5	mg/kg	3	16	mg/kg	3
Mercury	- U	mg/kg	.1	- U	mg/kg	.1	- U	mg/kg	.1	- U	mg/kg	.1
Nickel	2.6 J	mg/kg	8	- U	mg/kg	8	- U	mg/kg	8	- U	mg/kg	8
Potassium	293 J	mg/kg	1000	- U	mg/kg	1000	199 J	mg/kg	1000	194 J	mg/kg	1000
Silver	.35 J	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2
Sodium	164 J	mg/kg	1000	220 J	mg/kg	1000	182 J	mg/kg	1000	155 J	mg/kg	1000
Thallium	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2
Vanadium	4.5 J	mg/kg	10	5.4 J	mg/kg	10	4.6 J	mg/kg	10	4.2 J	mg/kg	10
Zinc	4.9 J	mg/kg	4	50.3 J	mg/kg	4	9.1 J	mg/kg	4	38.9	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22507006TC	22488001	22488001TC	22488002					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-06TCLP	18-SL-07	18-SL-07TCLP	18-SL-08					
Collect Date:	14-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	-			6530	mg/kg	40	-			3380	mg/kg	40
Antimony	-			- U	mg/kg	12	-			- U	mg/kg	12
Arsenic	- U	ug/l	10	.64 J	mg/kg	2	- UJ	ug/l	10	.46 J	mg/kg	2
Barium	1000	ug/l	200	38.6 J	mg/kg	40	1380	ug/l	200	5.7 J	mg/kg	40
Beryllium	-			- U	mg/kg	1	-			.06 J	mg/kg	1
Cadmium	136	ug/l	5	20.6	mg/kg	1	407	ug/l	5	.88 J	mg/kg	1
Calcium	-			153 J	mg/kg	1000	-			107 J	mg/kg	1000
Chromium	8.8 J	ug/l	10	39.8	mg/kg	2	6.7 J	ug/l	10	3.6	mg/kg	2
Cobalt	-			- U	mg/kg	10	-			- U	mg/kg	10
Copper	-			201	mg/kg	5	-			8	mg/kg	5
Iron	-			1990	mg/kg	20	-			1690	mg/kg	20
Lead	259	ug/l	5	76.5	mg/kg	1	474	ug/l	3	32.3	mg/kg	1
Magnesium	-			133 J	mg/kg	1000	-			81.8 J	mg/kg	1000
Manganese	-			38.2	mg/kg	3	-			27.7	mg/kg	3
Mercury	- U	ug/l	.2	- U	mg/kg	.1	.26	ug/l	.2	- U	mg/kg	.1
Nickel	-			2.5 J	mg/kg	8	-			- U	mg/kg	8
Potassium	-			- U	mg/kg	1000	-			- U	mg/kg	1000
Silver	- UJ	ug/l	10	- U	mg/kg	2	- U	ug/l	10	- U	mg/kg	2
Sodium	-			163 J	mg/kg	1000	-			171 J	mg/kg	1000
Thallium	-			- U	mg/kg	2	-			- U	mg/kg	2
Vanadium	-			3.4 J	mg/kg	10	-			4.4 J	mg/kg	10
Zinc	-			200	mg/kg	4	-			9.4 J	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22488002TC	22488003	22488003TC	22489001					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-08TCLP	18-SL-09	18-SL-09TCLP	18-SL-10					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	-			2880	mg/kg	40	-			3000	mg/kg	40
Antimony	-			- U	mg/kg	12	-			2.9	mg/kg	12
Arsenic	- UJ	ug/l	10	1.1 J	mg/kg	2	- UJ	ug/l	10	- UJ	mg/kg	2
Barium	3770	ug/l	200	32.4 J	mg/kg	40	1300	ug/l	200	97.7	mg/kg	40
Beryllium	-			- U	mg/kg	1	-			- U	mg/kg	1
Cadmium	6.7	ug/t	5	- U	mg/kg	1	5 J	ug/l	5	- UJ	mg/kg	1
Calcium	-			115 J	mg/kg	1000	-			- UJ	mg/kg	1000
Chromium	- U	ug/l	10	3.6	mg/kg	2	- U	ug/l	10	95.7 J	mg/kg	2
Cobalt	-			.76 J	mg/kg	10	-			- UJ	mg/kg	10
Copper	-			13.9	mg/kg	5	-			65.3 J	mg/kg	5
Iron	-			7050	mg/kg	20	-			35600 J	mg/kg	20
Lead	152	ug/l	3	55.4 J	mg/kg	1	142	ug/l	3	57.4	mg/kg	1
Magnesium	-			116 J	mg/kg	1000	-			237 J	mg/kg	1000
Manganese	-			52.6	mg/kg	3	-			317 J	mg/kg	3
Mercury	.21	ug/l	.2	- U	mg/kg	.1	- U	ug/l	.2	.04 J	mg/kg	.1
Nickel	-			3.7 J	mg/kg	8	-			18.9 J	mg/kg	8
Potassium	-			175 J	mg/kg	1000	-			276 J	mg/kg	1000
Silver	- U	ug/l	10	- U	mg/kg	2	- U	ug/l	10	- UJ	mg/kg	2
Sodium	-			196 J	mg/kg	1000	-			- UJ	mg/kg	1000
Thallium	-			- U	mg/kg	2	-			- UJ	mg/kg	2
Vanadium	-			3.3 J	mg/kg	10	-			3.8 J	mg/kg	10
Zinc	-			32.7 J	mg/kg	4	-			181 J	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22489002	22489001TC	22488004	22488005
Site	WHITING	WHITING	WHITING	WHITING
Locator	18-SL-10A	18-SL-10TCLP	18-SL-11	18-SL-12
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92
	VALUE QUAL UNITS DL			

CLP METALS AND CYANIDE

Aluminum	2520 J	mg/kg	40	-			3240	mg/kg	40	2480	mg/kg	40
Antimony	- UJ	mg/kg	12	-			- U	mg/kg	12	- U	mg/kg	12
Arsenic	- UJ	mg/kg	2	- U	ug/l	10	.53 J	mg/kg	2	.52 J	mg/kg	2
Barium	92.3	mg/kg	40	1510	ug/l	200	14.1 J	mg/kg	40	4.3 J	mg/kg	40
Beryllium	.09 J	mg/kg	1	-			- U	mg/kg	1	- U	mg/kg	1
Cadmium	.7 J	mg/kg	1	5.8	ug/l	5	.81 J	mg/kg	1	- U	mg/kg	1
Calcium	- UJ	mg/kg	1000	-			160 J	mg/kg	1000	112 J	mg/kg	1000
Chromium	10.2 J	mg/kg	2	- UJ	ug/l	10	4.5 J	mg/kg	2	1.5 J	mg/kg	2
Cobalt	- UJ	mg/kg	10	-			.45 J	mg/kg	10	- U	mg/kg	10
Copper	24.9 J	mg/kg	5	-			6.5 J	mg/kg	5	2.4 J	mg/kg	5
Iron	14100 J	mg/kg	20	-			1760 J	mg/kg	20	1600 J	mg/kg	20
Lead	88.5	mg/kg	1	599	ug/l	3	60 J	mg/kg	1	3.2 J	mg/kg	1
Magnesium	185 J	mg/kg	1000	-			92.4 J	mg/kg	1000	63.4 J	mg/kg	1000
Manganese	124 J	mg/kg	3	-			13.8 J	mg/kg	3	68.8 J	mg/kg	3
Mercury	.06 J	mg/kg	.1	- UJ	ug/l	.2	- U	mg/kg	.1	- U	mg/kg	.1
Nickel	5.4 J	mg/kg	8	-			3.4 J	mg/kg	8	- U	mg/kg	8
Potassium	261 J	mg/kg	1000	-			318 J	mg/kg	1000	145 J	mg/kg	1000
Silver	- UJ	mg/kg	2	- UJ	ug/l	10	- U	mg/kg	2	- U	mg/kg	2
Sodium	- UJ	mg/kg	1000	-			182 J	mg/kg	1000	169 J	mg/kg	1000
Thallium	- UJ	mg/kg	2	-			- U	mg/kg	2	- U	mg/kg	2
Vanadium	2.9	mg/kg	10	-			4 J	mg/kg	10	3.4 J	mg/kg	10
Zinc	99.3 J	mg/kg	4	-			21.2 J	mg/kg	4	4.3 J	mg/kg	4

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

WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22488006	22488008	22488009	22488010								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	18-SL-13	18-SL-14	18-SL-15	18-SL-16								
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	3990	mg/kg	40	4880	mg/kg	40	4240	mg/kg	40	3910	mg/kg	40
Antimony	- U	mg/kg	12	- U	mg/kg	12	- U	mg/kg	12	- U	mg/kg	12
Arsenic	.66 J	mg/kg	2	.78 J	mg/kg	2	.56 J	mg/kg	2	.53 J	mg/kg	2
Barium	5.7 J	mg/kg	40	6 J	mg/kg	40	10.9 J	mg/kg	40	7.2 J	mg/kg	40
Beryllium	- U	mg/kg	1	.07 J	mg/kg	1	- U	mg/kg	1	- U	mg/kg	1
Cadmium	- U	mg/kg	1	.99 J	mg/kg	1	- U	mg/kg	1	- U	mg/kg	1
Calcium	93 J	mg/kg	1000	80.1 J	mg/kg	1000	96.9 J	mg/kg	1000	151 J	mg/kg	1000
Chromium	5.4	mg/kg	2	3.1	mg/kg	2	8.6	mg/kg	2	3.8	mg/kg	2
Cobalt	- U	mg/kg	10	.81 J	mg/kg	10	.4 J	mg/kg	10	.4 J	mg/kg	10
Copper	3.2 J	mg/kg	5	3.5 J	mg/kg	5	3 J	mg/kg	5	8.7	mg/kg	5
Iron	2240	mg/kg	20	2810	mg/kg	20	2870	mg/kg	20	2060	mg/kg	20
Lead	29.6	mg/kg	1	3.4 J	mg/kg	1	54.5 J	mg/kg	1	19	mg/kg	1
Magnesium	122 J	mg/kg	1000	88.7 J	mg/kg	1000	106 J	mg/kg	1000	137 J	mg/kg	1000
Manganese	21.3	mg/kg	3	79.3	mg/kg	3	19.3	mg/kg	3	22.9	mg/kg	3
Mercury	- U	mg/kg	.1	- U	mg/kg	.1	- U	mg/kg	.1	- U	mg/kg	.1
Nickel	2.9 J	mg/kg	8	3.9 J	mg/kg	8	- U	mg/kg	8	7 J	mg/kg	8
Potassium	247 J	mg/kg	1000	346 J	mg/kg	1000	301 J	mg/kg	1000	297 J	mg/kg	1000
Silver	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2
Sodium	164 J	mg/kg	1000	179 J	mg/kg	1000	195 J	mg/kg	1000	213 J	mg/kg	1000
Thallium	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2
Vanadium	5 J	mg/kg	10	6.4 J	mg/kg	10	6.2 J	mg/kg	10	4.7 J	mg/kg	10
Zinc	9.4 J	mg/kg	4	8.9 J	mg/kg	4	9.1 J	mg/kg	4	27.5 J	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22488011	22495001	22495002	22495003					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-17	18-SL-18	18-SL-19	18-SL-20					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

	VALUE	QUAL UNITS	DL									
Aluminum	2260	mg/kg	40	3780	mg/kg	40	2300	mg/kg	40	4690	mg/kg	40
Antimony	- U	mg/kg	12									
Arsenic	.36 J	mg/kg	2	.73 J	mg/kg	2	.67 J	mg/kg	2	1 J	mg/kg	2
Barium	25 J	mg/kg	40	31.4 J	mg/kg	40	24 J	mg/kg	40	9.2 J	mg/kg	40
Beryllium	- U	mg/kg	1	.06 J	mg/kg	1	.09 J	mg/kg	1	.08 J	mg/kg	1
Cadmium	- U	mg/kg	1	1.2	mg/kg	1	2.5	mg/kg	1	- U	mg/kg	1
Calcium	96.6 J	mg/kg	1000	181 J	mg/kg	1000	353 J	mg/kg	1000	1050 J	mg/kg	1000
Chromium	2.4 J	mg/kg	2	15.5	mg/kg	2	5	mg/kg	2	3.5	mg/kg	2
Cobalt	- U	mg/kg	10	1.8 J	mg/kg	10	1.3 J	mg/kg	10	1.4 J	mg/kg	10
Copper	3.8 J	mg/kg	5	9.5	mg/kg	5	10.3	mg/kg	5	3 J	mg/kg	5
Iron	1750	mg/kg	20	4190	mg/kg	20	1900	mg/kg	20	3340	mg/kg	20
Lead	20	mg/kg	1	48.7	mg/kg	1	57.9	mg/kg	1	11.5	mg/kg	1
Magnesium	53.4 J	mg/kg	1000	94.6 J	mg/kg	1000	78.5 J	mg/kg	1000	87.6 J	mg/kg	1000
Manganese	15.1	mg/kg	3	20.8	mg/kg	3	35.2	mg/kg	3	47.8	mg/kg	3
Mercury	- U	mg/kg	.1	.07 J	mg/kg	.1	.06 J	mg/kg	.1	.06 J	mg/kg	.1
Nickel	3.1 J	mg/kg	8	2.6 J	mg/kg	8	- U	mg/kg	8	3.3 J	mg/kg	8
Potassium	166 J	mg/kg	1000	181 J	mg/kg	1000	198 J	mg/kg	1000	- U	mg/kg	1000
Silver	- U	mg/kg	2	- UJ	mg/kg	2	- UJ	mg/kg	2	- UJ	mg/kg	2
Sodium	216 J	mg/kg	1000	155 J	mg/kg	1000	137 J	mg/kg	1000	150 J	mg/kg	1000
Thallium	- U	mg/kg	2									
Vanadium	3 J	mg/kg	10	8.4 J	mg/kg	10	2.9 J	mg/kg	10	8 J	mg/kg	10
Zinc	17.6 J	mg/kg	4	16.5 J	mg/kg	4	28.6 J	mg/kg	4	21.3 J	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22495004	22495005	22489003	22489004
Site	WHITING	WHITING	WHITING	WHITING
Locator	18-SL-21	18-SL-22	18-SL-23	18-SL-23A
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92

VALUE	QUAL	UNITS	DL												
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CLP METALS AND CYANIDE

Aluminum	1510	mg/kg	40	1990	mg/kg	40	13200 J	mg/kg	40	4970 J	mg/kg	40
Antimony	- U	mg/kg	12	- U	mg/kg	12	- UJ	mg/kg	12	3.5 J	mg/kg	12
Arsenic	.37 J	mg/kg	2	.51 J	mg/kg	2	- UJ	mg/kg	2	- UJ	mg/kg	2
Barium	4.8 J	mg/kg	40	3.4 J	mg/kg	40	198	mg/kg	40	188	mg/kg	40
Beryllium	.11 J	mg/kg	1	- U	mg/kg	1	.09 J	mg/kg	1	.08 J	mg/kg	1
Cadmium	- U	mg/kg	1	1 J	mg/kg	1	5.5	mg/kg	1	5 J	mg/kg	1
Calcium	367 J	mg/kg	1000	189 J	mg/kg	1000	- UJ	mg/kg	1000	- UJ	mg/kg	1000
Chromium	3.1	mg/kg	2	3.4	mg/kg	2	33.9	mg/kg	2	23.4 J	mg/kg	2
Cobalt	.77 J	mg/kg	10	1.1 J	mg/kg	10	- UJ	mg/kg	10	- UJ	mg/kg	10
Copper	7.5 J	mg/kg	5	7.3 J	mg/kg	5	236 J	mg/kg	5	68.6 J	mg/kg	5
Iron	1140	mg/kg	20	1520	mg/kg	20	12900	mg/kg	20	23500 J	mg/kg	20
Lead	8.4	mg/kg	1	10.4	mg/kg	1	59.6	mg/kg	1	63.2	mg/kg	1
Magnesium	67.3 J	mg/kg	1000	33.8 J	mg/kg	1000	455 J	mg/kg	1000	267 J	mg/kg	1000
Manganese	18	mg/kg	3	15.1	mg/kg	3	131	mg/kg	3	141 J	mg/kg	3
Mercury	.09 J	mg/kg	.1	.08 J	mg/kg	.1	.25	mg/kg	.1	.07 J	mg/kg	.1
Nickel	2.6 J	mg/kg	8	2.6 J	mg/kg	8	6.5 J	mg/kg	8	6.7 J	mg/kg	8
Potassium	- U	mg/kg	1000	149 J	mg/kg	1000	1210	mg/kg	1000	1060 J	mg/kg	1000
Silver	- UJ	mg/kg	2	- UJ	mg/kg	2	- UJ	mg/kg	2	- UJ	mg/kg	2
Sodium	232 J	mg/kg	1000	201 J	mg/kg	1000	- UJ	mg/kg	1000	- UJ	mg/kg	1000
Thallium	- U	mg/kg	2	- U	mg/kg	2	- UJ	mg/kg	2	- UJ	mg/kg	2
Vanadium	2.6 J	mg/kg	10	4 J	mg/kg	10	4.3 J	mg/kg	10	3.8 J	mg/kg	10
Zinc	10.1 J	mg/kg	4	9.8 J	mg/kg	4	631 J	mg/kg	4	210 J	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22489003TC	22495006	22495007	22495007TC					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-23TCLP	18-SL-24	18-SL-25	18-SL-25TCLP					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	-			3480	mg/kg	40	3790	mg/kg	40	-		
Antimony	-			-	U	12	-	U	12	-		
Arsenic	-	U	10	.63	J	2	.58	J	2	-	UJ	10
Barium	1980	ug/l	200	6.9	J	40	5.2	J	40	684	ug/l	200
Beryllium	-			-	U	1	.08	J	1	-		
Cadmium	186	ug/l	5	-	U	1	.6	J	1	-	U	5
Calcium	-			185	J	1000	211	J	1000	-		
Chromium	10.3	J	10	8.7	mg/kg	2	3.6	mg/kg	2	-	U	10
Cobalt	-			1.8	J	10	1.9	J	10	-		
Copper	-			14.5	mg/kg	5	5.2	J	5	-		
Iron	-			2070	mg/kg	20	2500	mg/kg	20	-		
Lead	70	ug/l	3	24.5	mg/kg	1	19.1	mg/kg	1	256	ug/l	5
Magnesium	-			90	J	1000	93.2	J	1000	-		
Manganese	-			12.2	mg/kg	3	134	mg/kg	3	-		
Mercury	-	UJ	.2	.09	J	.1	.06	J	.1	.14	J	.2
Nickel	-			-	U	8	-	U	8	-		
Potassium	-			-	U	1000	301	J	1000	-		
Silver	-	UJ	10	-	UJ	2	-	UJ	2	-	U	10
Sodium	-			173	J	1000	190	J	1000	-		
Thallium	-			-	U	2	-	U	2	-		
Vanadium	-			5	J	10	5.4	J	10	-		
Zinc	-			11.7	J	4	7	J	4	-		

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22495008	22495009	22495010	22495011					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-26	18-SL-27	18-SL-28	18-SL-29					
Collect Date:	13-AUG-92	13-AUG-92	13-AUG-92	13-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	2310	mg/kg	40	4100	mg/kg	40	1730	mg/kg	40	2910	mg/kg	40
Antimony	- U	mg/kg	12									
Arsenic	.56 J	mg/kg	2	.71 J	mg/kg	2	.24 J	mg/kg	2	.81 J	mg/kg	2
Barium	28.8 J	mg/kg	40	4.7 J	mg/kg	40	6.8 J	mg/kg	40	46.2 J	mg/kg	40
Beryllium	.1 J	mg/kg	1	.08 J	mg/kg	1	- U	mg/kg	1	- U	mg/kg	1
Cadmium	1.2 J	mg/kg	1	- U	mg/kg	1	- U	mg/kg	1	.91 J	mg/kg	1
Calcium	100 J	mg/kg	1000	75.2 J	mg/kg	1000	63 J	mg/kg	1000	148 J	mg/kg	1000
Chromium	5.6	mg/kg	2	3.6	mg/kg	2	1.8 J	mg/kg	2	6.6	mg/kg	2
Cobalt	1.1 J	mg/kg	10	1.4 J	mg/kg	10	- U	mg/kg	10	2 J	mg/kg	10
Copper	6.9 J	mg/kg	5	6.4 J	mg/kg	5	5.6 J	mg/kg	5	27.5	mg/kg	5
Iron	1530	mg/kg	20	2350	mg/kg	20	1490	mg/kg	20	3200	mg/kg	20
Lead	16.8	mg/kg	1	35.1	mg/kg	1	3.2	mg/kg	1	32.1	mg/kg	1
Magnesium	65.4 J	mg/kg	1000	106 J	mg/kg	1000	35.6 J	mg/kg	1000	136 J	mg/kg	1000
Manganese	45.8	mg/kg	3	21.7	mg/kg	3	39.6	mg/kg	3	35.4	mg/kg	3
Mercury	.05 J	mg/kg	.1	.08 J	mg/kg	.1	.19	mg/kg	.1	.08 J	mg/kg	.1
Nickel	4.5 J	mg/kg	8	- U	mg/kg	8	- U	mg/kg	8	7.2 J	mg/kg	8
Potassium	260 J	mg/kg	1000	259 J	mg/kg	1000	- U	mg/kg	1000	359 J	mg/kg	1000
Silver	- UJ	mg/kg	2									
Sodium	231 J	mg/kg	1000	169 J	mg/kg	1000	137 J	mg/kg	1000	203 J	mg/kg	1000
Thallium	- U	mg/kg	2									
Vanadium	3.7 J	mg/kg	10	5.4 J	mg/kg	10	2.4 J	mg/kg	10	3.3 J	mg/kg	10
Zinc	27.9 J	mg/kg	4	5.5 J	mg/kg	4	11 J	mg/kg	4	57.7 J	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22495012	22506002	22507003	22506002TC					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-30	18-SL-31	18-SL-31A	18-SL-31TCLP					
Collect Date:	13-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	3330	mg/kg	40	7100	mg/kg	40	13500	mg/kg	40	-	-	-
Antimony	- U	mg/kg	12	4.1 J	mg/kg	12	3 J	mg/kg	12	-	-	-
Arsenic	.74 J	mg/kg	2	3.1	mg/kg	2	2.2 J	mg/kg	2	45.2 J	ug/l	10
Barium	13.4 J	mg/kg	40	265	mg/kg	40	290	mg/kg	40	3380	ug/l	200
Beryllium	.09 J	mg/kg	1	- U	mg/kg	1	.14 J	mg/kg	1	-	-	-
Cadmium	- U	mg/kg	1	3.3 J	mg/kg	1	15.6	mg/kg	1	67.8	ug/l	5
Calcium	167 J	mg/kg	1000	- UJ	mg/kg	1000	592 J	mg/kg	1000	-	-	-
Chromium	2.6	mg/kg	2	23.2	mg/kg	2	43.8	mg/kg	2	49.7	ug/l	10
Cobalt	- U	mg/kg	10	- UJ	mg/kg	10	5.9 J	mg/kg	10	-	-	-
Copper	7.2 J	mg/kg	5	192 J	mg/kg	5	314	mg/kg	5	-	-	-
Iron	1790	mg/kg	20	41600 J	mg/kg	20	51700	mg/kg	20	-	-	-
Lead	22.2	mg/kg	1	160	mg/kg	1	168	mg/kg	1	4630	ug/l	5
Magnesium	83.4 J	mg/kg	1000	518 J	mg/kg	1000	657 J	mg/kg	1000	-	-	-
Manganese	45	mg/kg	3	309 J	mg/kg	3	457	mg/kg	3	-	-	-
Mercury	.07 J	mg/kg	.1	- U	mg/kg	.1	- U	mg/kg	.1	- UJ	ug/l	.2
Nickel	2.5 J	mg/kg	8	- UJ	mg/kg	8	19.7	mg/kg	8	-	-	-
Potassium	168 J	mg/kg	1000	2860	mg/kg	1000	2930	mg/kg	1000	-	-	-
Silver	- UJ	mg/kg	2	- UJ	mg/kg	2	- U	mg/kg	2	- U	ug/l	10
Sodium	156 J	mg/kg	1000	- UJ	mg/kg	1000	302 J	mg/kg	1000	-	-	-
Thallium	- U	mg/kg	2	- UJ	mg/kg	2	- U	mg/kg	2	-	-	-
Vanadium	4.4 J	mg/kg	10	5.7 J	mg/kg	10	5.9 J	mg/kg	10	-	-	-
Zinc	9.8 J	mg/kg	4	326	mg/kg	4	779	mg/kg	4	-	-	-

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22506003	22506004	22506005	22506006					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-32	18-SL-33	18-SL-34	18-SL-35					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

	VALUE	QUAL UNITS	DL									
Aluminum	4590	mg/kg	40	4350	mg/kg	40	3560	mg/kg	40	3540	mg/kg	40
Antimony	- U	mg/kg	12									
Arsenic	- UJ	mg/kg	2									
Barium	59.7	mg/kg	40	46.1	mg/kg	40	22.6 J	mg/kg	40	15.1 J	mg/kg	40
Beryllium	.07 J	mg/kg	1	- U	mg/kg	1	- U	mg/kg	1	- U	mg/kg	1
Cadmium	- U	mg/kg	1									
Calcium	- UJ	mg/kg	1000									
Chromium	7.1	mg/kg	2	8	mg/kg	2	3.7	mg/kg	2	3.6	mg/kg	2
Cobalt	- UJ	mg/kg	10	- UJ	mg/kg	10	- UJ	mg/kg	10	- U	mg/kg	10
Copper	25.2 J	mg/kg	5	32.7 J	mg/kg	5	9.2 J	mg/kg	5	10.9 J	mg/kg	5
Iron	2590 J	mg/kg	20	5610 J	mg/kg	20	2110 J	mg/kg	20	1760 J	mg/kg	20
Lead	61.1	mg/kg	1	44.9	mg/kg	1	23.4	mg/kg	1	- UJ	mg/kg	1
Magnesium	171 J	mg/kg	1000	192 J	mg/kg	1000	114 J	mg/kg	1000	97.2 J	mg/kg	1000
Manganese	34.1 J	mg/kg	3	57.2 J	mg/kg	3	28.8 J	mg/kg	3	23.8 J	mg/kg	3
Mercury	- U	mg/kg	.1									
Nickel	- U	mg/kg	8	- UJ	mg/kg	8	- U	mg/kg	8	- UJ	mg/kg	8
Potassium	462 J	mg/kg	1000	436 J	mg/kg	1000	198 J	mg/kg	1000	170 J	mg/kg	1000
Silver	- UJ	mg/kg	2	- UJ	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2
Sodium	- UJ	mg/kg	1000									
Thallium	- U	mg/kg	2									
Vanadium	5.9 J	mg/kg	10	5 J	mg/kg	10	4.5 J	mg/kg	10	4.8 J	mg/kg	10
Zinc	- UJ	mg/kg	4									

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22506007	22506008	22507001	22506008TC					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-36	18-SL-37	18-SL-37A	18-SL-37TCLP					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	3790	mg/kg	40	4190	mg/kg	40	3600	mg/kg	40	-		
Antimony	- U	mg/kg	12	- U	mg/kg	12	- U	mg/kg	12	-		
Arsenic	- UJ	mg/kg	2	- UJ	mg/kg	2	.67 J	mg/kg	2	- UJ	ug/l	10
Barium	24.6 J	mg/kg	40	8.2 J	mg/kg	40	7.2 J	mg/kg	40	893	ug/l	200
Beryllium	.06 J	mg/kg	1	.08 J	mg/kg	1	- U	mg/kg	1	-		
Cadmium	1.9	mg/kg	1	.84 J	mg/kg	1	1.4	mg/kg	1	- UJ	ug/l	5
Calcium	- UJ	mg/kg	1000	- UJ	mg/kg	1000	147 J	mg/kg	1000	-		
Chromium	9	mg/kg	2	4.5	mg/kg	2	3.8	mg/kg	2	- UJ	ug/l	10
Cobalt	- UJ	mg/kg	10	- UJ	mg/kg	10	.55 J	mg/kg	10	-		
Copper	106 J	mg/kg	5	- UJ	mg/kg	5	5.6	mg/kg	5	-		
Iron	2090 J	mg/kg	20	2110 J	mg/kg	20	1980	mg/kg	20	-		
Lead	99.5	mg/kg	1	42.8	mg/kg	1	43.1	mg/kg	1	734	ug/l	5
Magnesium	127 J	mg/kg	1000	119 J	mg/kg	1000	69.4 J	mg/kg	1000	-		
Manganese	21.3 J	mg/kg	3	15.7 J	mg/kg	3	13.8	mg/kg	3	-		
Mercury	- U	mg/kg	.1	- U	mg/kg	.1	- U	mg/kg	.1	- UJ	ug/l	.2
Nickel	- U	mg/kg	8	- U	mg/kg	8	- U	mg/kg	8	-		
Potassium	235 J	mg/kg	1000	- U	mg/kg	1000	- U	mg/kg	1000	-		
Silver	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2	- U	ug/l	10
Sodium	- UJ	mg/kg	1000	- UJ	mg/kg	1000	185 J	mg/kg	1000	-		
Thallium	- U	mg/kg	2	- UJ	mg/kg	2	- U	mg/kg	2	-		
Vanadium	4.2 J	mg/kg	10	6 J	mg/kg	10	5.2 J	mg/kg	10	-		
Zinc	- UJ	mg/kg	4	- UJ	mg/kg	4	19 J	mg/kg	4	-		

U= NOT DETECTED J = ESTIMATED VALUE
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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22506009	22506009TC	22506010	22506011					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-38	18-SL-38TCLP	18-SL-39	18-SL-40					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	4100	mg/kg	40	-			4840	mg/kg	40	6050	mg/kg	40
Antimony	3.2 J	mg/kg	12	-			- U	mg/kg	12	- U	mg/kg	12
Arsenic	- UJ	mg/kg	2	- UJ	ug/l	10	- UJ	mg/kg	2	- UJ	mg/kg	2
Barium	7.7 J	mg/kg	40	681	ug/l	200	5.6 J	mg/kg	40	5.9 J	mg/kg	40
Beryllium	- U	mg/kg	1	-			.06 J	mg/kg	1	.07 J	mg/kg	1
Cadmium	- U	mg/kg	1	- U	ug/l	5	- U	mg/kg	1	- U	mg/kg	1
Calcium	- UJ	mg/kg	1000	-			- UJ	mg/kg	1000	- UJ	mg/kg	1000
Chromium	32	mg/kg	2	5.7 J	ug/l	10	4.4	mg/kg	2	5.4	mg/kg	2
Cobalt	- UJ	mg/kg	10	-			- UJ	mg/kg	10	- UJ	mg/kg	10
Copper	- UJ	mg/kg	5	-			- UJ	mg/kg	5	- UJ	mg/kg	5
Iron	3270 J	mg/kg	20	-			2690 J	mg/kg	20	3880 J	mg/kg	20
Lead	- UJ	mg/kg	1	44.7 J	ug/l	5	- UJ	mg/kg	1	- UJ	mg/kg	1
Magnesium	122 J	mg/kg	1000	-			75.9 J	mg/kg	1000	83.2 J	mg/kg	1000
Manganese	125 J	mg/kg	3	-			58.8 J	mg/kg	3	67.8 J	mg/kg	3
Mercury	- U	mg/kg	.1	- UJ	ug/l	.2	- U	mg/kg	.1	- U	mg/kg	.1
Nickel	- U	mg/kg	8	-			- U	mg/kg	8	- U	mg/kg	8
Potassium	- U	mg/kg	1000	-			- U	mg/kg	1000	- U	mg/kg	1000
Silver	- U	mg/kg	2	- U	ug/l	10	- U	mg/kg	2	- U	mg/kg	2
Sodium	- UJ	mg/kg	1000	-			- UJ	mg/kg	1000	- UJ	mg/kg	1000
Thallium	- UJ	mg/kg	2	-			- UJ	mg/kg	2	- U	mg/kg	2
Vanadium	6.3 J	mg/kg	10	-			7 J	mg/kg	10	9.5 J	mg/kg	10
Zinc	- UJ	mg/kg	4	-			- UJ	mg/kg	4	- UJ	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22506011TC	22507002	22507007	22507008					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-40TCLP	18-SL-41	18-SL-42	18-SL-43					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	-	4740	mg/kg	40	8390	mg/kg	40	3880	mg/kg	40
Antimony	- U	- U	mg/kg	12	- U	mg/kg	12	- U	mg/kg	12
Arsenic	- UJ	.75 J	ug/l	10	1.7 J	mg/kg	2	.49 J	mg/kg	2
Barium	888	6.4 J	ug/l	200	7 J	mg/kg	40	5.7 J	mg/kg	40
Beryllium	-	- U	mg/kg	1	.06 J	mg/kg	1	- U	mg/kg	1
Cadmium	- UJ	- U	ug/l	5	38.8	mg/kg	1	.95 J	mg/kg	1
Calcium	-	245 J	mg/kg	1000	116 J	mg/kg	1000	79.3 J	mg/kg	1000
Chromium	2.7 J	5.9	ug/l	10	8	mg/kg	2	5.2	mg/kg	2
Cobalt	-	.53 J	mg/kg	10	.88 J	mg/kg	10	.62	mg/kg	10
Copper	-	5.6	mg/kg	5	6.9	mg/kg	5	6.2	mg/kg	5
Iron	-	2840	mg/kg	20	4500	mg/kg	20	2270	mg/kg	20
Lead	4610	6.7	ug/l	5	10.6	mg/kg	1	9.3	mg/kg	1
Magnesium	-	140 J	mg/kg	1000	81.5 J	mg/kg	1000	77.5 J	mg/kg	1000
Manganese	-	132	mg/kg	3	77.5	mg/kg	3	58.6	mg/kg	3
Mercury	- UJ	- U	ug/l	.2	- U	mg/kg	.1	- U	mg/kg	.1
Nickel	-	- U	mg/kg	8	2.9 J	mg/kg	8	3.3 J	mg/kg	8
Potassium	-	145 J	mg/kg	1000	165 J	mg/kg	1000	- U	mg/kg	1000
Silver	- U	- U	ug/l	10	- U	mg/kg	2	- U	mg/kg	2
Sodium	-	171 J	mg/kg	1000	147 J	mg/kg	1000	170 J	mg/kg	1000
Thallium	-	- U	mg/kg	2	- U	mg/kg	2	.53 J	mg/kg	2
Vanadium	-	7.4 J	mg/kg	10	12.1	mg/kg	10	5.6 J	mg/kg	10
Zinc	-	14.9 J	mg/kg	4	25.8 J	mg/kg	4	20.1 J	mg/kg	4

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WHITING FIELD
INORGANICS --- METALS ---- VALIDATED RESULTS

Lab Sample Number:	22507009	22507010	22507011	22507012					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	18-SL-44	18-SL-45	18-SL-46	18-SL-47					
Collect Date:	14-AUG-92	14-AUG-92	14-AUG-92	14-AUG-92					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	3680	mg/kg	40	3600	mg/kg	40	3330	mg/kg	40	4200	mg/kg	40
Antimony	- U	mg/kg	12	- U	mg/kg	12	- U	mg/kg	12	- U	mg/kg	12
Arsenic	.36 J	mg/kg	2	.32 J	mg/kg	2	.55 J	mg/kg	2	.31 J	mg/kg	2
Barium	10.3 J	mg/kg	40	25.4 J	mg/kg	40	2.5 J	mg/kg	40	5.3 J	mg/kg	40
Beryllium	.08 J	mg/kg	1	.07 J	mg/kg	1	.07 J	mg/kg	1	.08 J	mg/kg	1
Cadmium	- U	mg/kg	1	1.2	mg/kg	1	- U	mg/kg	1	.69 J	mg/kg	1
Calcium	98.3 J	mg/kg	1000	232 J	mg/kg	1000	157 J	mg/kg	1000	124 J	mg/kg	1000
Chromium	3.1	mg/kg	2	6.1	mg/kg	2	4.1	mg/kg	2	2.9 J	mg/kg	2
Cobalt	1 J	mg/kg	10	.74 J	mg/kg	10	.54 J	mg/kg	10	.62 J	mg/kg	10
Copper	4.6 J	mg/kg	5	13.5	mg/kg	5	1.8 J	mg/kg	5	5.7	mg/kg	5
Iron	2350	mg/kg	20	2050	mg/kg	20	2700	mg/kg	20	2370	mg/kg	20
Lead	4.9	mg/kg	1	22.6	mg/kg	1	4.3	mg/kg	1	6.6	mg/kg	1
Magnesium	84.6 J	mg/kg	1000	110 J	mg/kg	1000	39.4 J	mg/kg	1000	83.2 J	mg/kg	1000
Manganese	29.7	mg/kg	3	92.5	mg/kg	3	12.1	mg/kg	3	67.3	mg/kg	3
Mercury	- U	mg/kg	.1	- U	mg/kg	.1	- U	mg/kg	.1	- U	mg/kg	.1
Nickel	2.7 J	mg/kg	8	- U	mg/kg	8	- U	mg/kg	8	3.1 J	mg/kg	8
Potassium	- U	mg/kg	1000	138 J	mg/kg	1000	- U	mg/kg	1000	- U	mg/kg	1000
Silver	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2
Sodium	227 J	mg/kg	1000	260 J	mg/kg	1000	18 J	mg/kg	1000	175 J	mg/kg	1000
Thallium	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2	- U	mg/kg	2
Vanadium	5.2 J	mg/kg	10	5.3 J	mg/kg	10	7.1 J	mg/kg	10	5.5 J	mg/kg	10
Zinc	5.7 J	mg/kg	4	21.9 J	mg/kg	4	7.8	mg/kg	4	9.3 J	mg/kg	4

2X 3kg

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