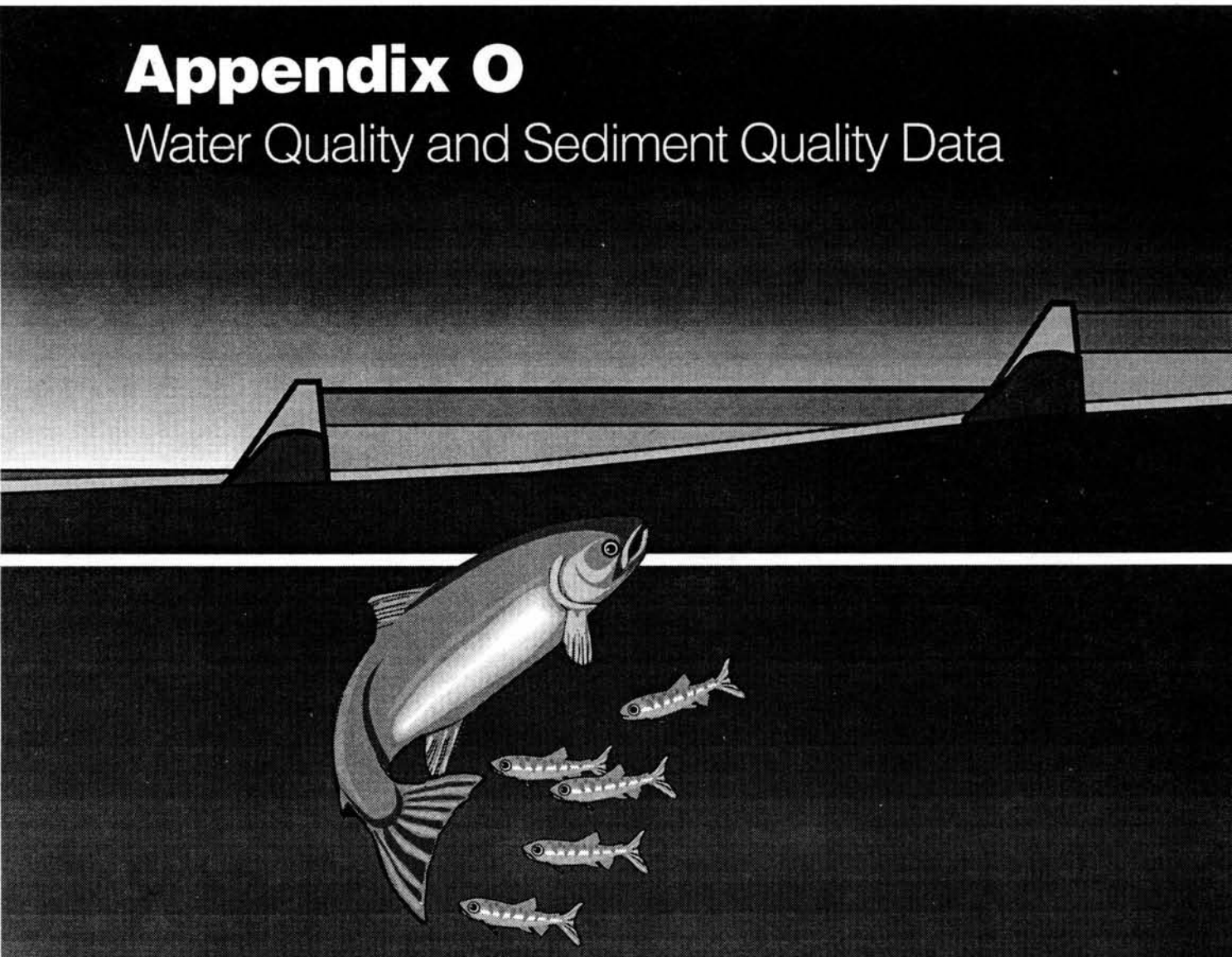
US Army Corps
of Engineers
Walla Walla District

1992 Reservoir Drawdown Test

Lower Granite and Little Goose Dams

Appendix O

Water Quality and Sediment Quality Data



December 1993

APPENDIX O

WATER QUALITY AND SEDIMENT QUALITY DATA

1992 Reservoir Drawdown Test

Lower Granite and Little Goose Dams

Thomas D. Miller
Walla Walla District
U.S. Army Corps of Engineers

APPENDIX O

WATER AND SEDIMENT QUALITY DATA

INTRODUCTION

This appendix contains the raw turbidity and contaminant data that were collected by the Corps of Engineers and the Geological survey during the March 1992 Lower Granite-Little Goose Reservoir Drawdown Test. Summarized results are contained in the main report.

To assess the impact of drawdown of Lower Granite Reservoir on the turbidity (cloudiness) of its water, two separate turbidity monitoring programs were planned. The aim of the Corps team was to track daily changes in turbidity at selected stations, and to record turbidity inputs to the river as a result of mudflat erosion during storm events. Concurrent with their velocity and temperature measurements, the U.S. Geological Survey, under contract to the Corps, was tasked with turbidity measurement focused on cross-sectional and vertical profiles at chosen sediment ranges.

In preparation for the drawdown test, the Corps worked with other regional entities to try to develop objectives and a plan to evaluate contaminant concerns related to reservoir drawdown. One of the main concerns was that of resuspension/redistribution/dissolution of contaminants associated with sediment that would be resuspended by scouring as the pool was drafted. The complexity of the problem and the lack of available expertise resulted in the Corps developing a simplified plan. The goals were to collect water samples for contaminant analyses from: a) mudflat runoff during storm events; b) below the Port of Lewiston where they could be resuspended by scouring; and c) representative ponds left standing in the drawdown zone. Another objective was to perform toxicity tests with Daphnia on some of the samples collected.

METHODS

Turbidity

The Corps monitoring plan was based on daily road tours to Lower Granite Lake Habitat Management Unit (for Snake River background), City of Lewiston drinking water intake (for Clearwater River. background), US Highway 12 Snake R. Bridge (immediately above the confluence of the Snake and Clearwater rivers), Redwolf Bridge, Silcott Island, Lower Granite Dam, and Central Ferry Bridge. Samples were collected at Little Goose Dam by project personnel. Water samples were collected from one foot below the surface and analyzed for turbidity in Nephelometric Turbidity Units (NTU) with a Hach portable turbidimeter. (This method is based on comparison of intensity of light scattered by the sample with intensity of light scattered by a standard

reference suspension. On a few occasions samples were collected by boat from reaches not included in the road tours to fill in the longitudinal data gap (between Silcott Island and Lower Granite Dam).

The USGS collected turbidity data by boat at three points along the river mile transects shown in Table 1. At each point, a light transmissometer (probe) was lowered to 1 m and to approximately 20 percent, 40 percent, 60 percent, and 80 percent of the total depth of water at that location. Turbidity was recorded as a percent of light transmission, where 0 percent equals total light extinction and 100 percent equals a completely transparent solution.

Contaminants

Corps personnel collected water and sediment samples for contaminant analyses on 24 and 25 March from the following locations:

water-
#1, exposed Potlatch Corp. effluent diffusor;
#2, immediately downstream of Redwolf Marina;
#3, stream flowing from Redwolf Marina;
#4, Lewiston drinking water intake;
#5, exposed Potlatch Corp. effluent diffusor;
#6, mudflats pond in Port of Clarkston;
#7, 0.5 mi. downstream of Potlatch Corp. diffusor;
#8, Clearwater R. at confluence;
#9, Snake R. immediately above confluence;
#10, mudflats pond near Clarkston waste water treatment plant;

sediment-
#11, mudflats at port of Clarkston;
#12, Redwolf Marina;
#101, mudflats near Clarkston waste water treatment plant.

Water samples collected from ponds were thought to be representative of the numerous ponds left standing in the extensive mudflats. Sediment samples chosen were the most foul and discolored that could be found as those were thought to be areas where contaminants were concentrated, and assessment of the worst case of possible human exposure was the goal. Samples were placed directly into USEPA approved precleaned containers, put on ice and shipped to USACE North Pacific Division Laboratory for analyses of pesticides/PCB's, volatile and semi-volatile organics, metals, and nutrients. Samples #1, #5 and #10 were analyzed for dioxins/furans.

Samples #1, #2, #5, #6 and #7 were also shipped to the Western Region Hazardous Substance Research Center at Oregon State University for toxicity testing. Daphnia magna were exposed to 6.3, 12.5, 25, 50, and 100% sample for 48 hours.

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DRAWDOWN '92 TURBIDITY DATA

*** NO TURBIDITY DATA COLLECTED ON 03 AND 06 MARCH

STATION	RM	DATE (MARCH) 1	2	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
LGR LK HMU	147	6.6	7.2	6.6	5.3	5.7	4.7	5.4	4.4	4.2	4.1		4.1			3.7	4												
CLWTR @ LEW.INTA	4	7.6	8.9	5	8.9	5.1	4.3	3.6	3.6	3.1	2.9		3			3.5	4.2												
CLWTR @ MEMORIAL	BR												4.2			3.4													
SNAKE HWY 12	139.5				8.5		6.1	9.8	14	11.5	9.9		10.2			5.1	8.2								3.6				
RED WOLF BR.1 (SO)	137.3	32	18		23	45	32	18	42	47	36		43			20	27								23				
RED WOLF BR.2	137.3	8.7	12	19	10.6	14.5	12	13	15	15	29		26.5			15.5	14.5												
RED WOLF BR.3	137.3	7.4	9.2		7.2	17	7.9	10.2	20.5	18	18.5		29			12	11								8				
RED WOLF BR.4	137.3	7.9	7.7	8.1	8.4	7.3	8.5	23	31	28	32		26			24	19												
RED WOLF BR.5 (NO	137.3	8.2	8.2		8.8	7.1	10.1	26	29	36	46		32			16	23								9				
SILCOTT ISLAND	131		8.5		15	18.2	9.8		24	12	17.5		34			22	13.5		5.9						14				
ALPOWA CREEK	130										17								8.1										
STEPTOE CANYON	128										11														19				
MISQUALLY JOHN L	125										10.6														13				
CENTENNIAL ISLAN	120.5														14				7.8						8.3				
BLYTON LDG	119										9.3				12.5										11				
KNOXWAY BAY	115.7														11.5										8.8				
WAWAWAI	110.5										6.7				11				7.3						7.5				
LOWER GRANITE DA	107.4	8.8	7.9	7.8	8	8.2	8.9	5.7	6.9	6	6.7		9.3	9.8	8.9	8.9	12	10.9	8.4	7.2	8.7	8	8.8		6.6	7.1	6.9		
WADE'S BAR	99																			13									
RICE BAR	93																9.3			10									
CENTRAL FERRY BR	83.2				8.3		8.9	5.4	6.4		5.9						7.1		8.5										
LITTLE GOOSE DAM	70.3			12.2		7.2				6.7	6.2	6.3	5.2	4	5.7	5.7	5.9	6.2	6.4	7	6.8	7.4	7.3	7	6	5	4.8	4.8	4

DRALOCUN '92
TURBIDITY PROFILES

18MAR

RICE BAR	1'	9.3
	15'	9.8
	30'	9.9
	50'	9.5
~~CANYON FERRY~~	1'	7.1
	15'	7.7
	30'	8.1
	60'	8.9
RM77.5	1'	7.1
	50'	8.8

20MAR

SILCOTT	1'	5.9
	10'	7
	20'	8.6
	30'	12.5
CENTENNIAL	1'	7.9
	10'	8.6
	30'	9.8
	50'	9.4
WAWAWAI	1'	7.3
	10'	7.9
	20'	8.1
	30'	8.4
	60'	8
	90'	8.4

21MAR

WADE'S BAR	1'	13
	20'	13
	35'	16
RICE BAR	1'	10
	25'	11
	50'	11.5

22MAR

ALMOTA	1'	6.7
(SPILLING INFLOW)	20'	7.2
	35'	7.1
ALMOTA	1'	12
(SPILLING 100Kcfs)	20'	11
	40'	11

WESTERN REGION
HAZARDOUS SUBSTANCE
RESEARCH CENTER

April 13, 1992

Tom Miller
U.S. Army Corps of Engineers
Walla Walla District
CENPW-PL-ER

Dear Tom,

Enclosed you will find the final report and copies of the laboratory data sheets for the five river and effluent samples that you sent for testing. The *Daphnia magna* toxicity tests demonstrated that none of the samples contained constituents that were toxic to the test organism. If I can be of further service please call.

Sincerely,

Joe Greene

Joseph C. Greene
Research Biologist

Tom ~~if~~ I have your address and will send this report in the mail.

jcs

OREGON
STATE
UNIVERSITY

Apperson Hall 206
Corvallis, Oregon
97331-2302

Telephone
503-737-2751

Fax
503-737-3462

WESTERN REGION
HAZARDOUS SUBSTANCE
RESEARCH CENTER

LOWER GRANITE RESERVOIR STUDY

Freshwater Macroinvertebrate Toxicity Test

March 1992

OREGON
STATE
UNIVERSITY

Apperson Hall 206
Corvallis, Oregon
97331-2302

Telephone
503-737-2751

Fax
503-737-3462

This test method measured the acute toxicity of freshwater solutions to the cladoceran *Daphnia magna* during a 48-hour static exposure. The responses measured include the synergistic, antagonistic, and additive effects of all the chemical, physical and biological components that adversely affect the physiological and biochemical functions of the test organism. The standard practice followed was that of Greene et al. (1989).

The waters samples were shipped, in ice, by overnight express air service. Upon arrival the temperature of the samples was measured and found to meet the storage criteria of 4°C. Samples were then stored in the dark at 4°C until performance of the test.

The river and effluent samples were diluted with well water obtained from the Willamette Research Station located in Corvallis, Oregon. Prior to dilution the water was adjusted to a hardness of 98 mg/L (as $CaCO_3$). Samples were tested at 6.3, 12.5, 25, 50, and 100% river water or effluent. The hardness adjusted well water served as the test controls and for culture of the test organisms. Each concentration was tested in triplicate. The replicates, 100 ml beakers containing 50 ml of test solution, were inoculated with 10 $\leq$24-hour-old neonates. The 48-hours of exposure was composed of two diurnal (16:8 hour light:dark) light cycles.

Control survival ranged from 93 to 100 percent. Acceptability criteria for the 48-hour *D. magna* acute toxicity test requires a mean control survival of 90 percent.

Sample, test and chemical codes used to track the river water and effluent are listed in Table 1. Toxicity was not demonstrated in any of the five river water and effluent samples tested.

Table 1. Sample identifications, test codes, and chemical codes.

Sample ID	OSU Chem Code	Biological Test Code	Initial pH	Result
Red Wolf Manha River #1	0313001	LG040892A	7.31	NE[1]
Red Wolf Manha River #2	0313002	LG040692	7.22	NE
Potlach Effluent #5	0313003	LG040792	7.22	NE
Port of Clarkston #6	0313004	LG040892B	7.09	NE
Below Effluent #7	0313005	LG040992	7.82	NE

[1] NE = No toxic effect demonstrated.

LABORATORY DATA SHEET
Daphnia magna Static Acute

Site Identification: Red Wolf Manka River #1
Collected 07-March-1992 14:00 hrs

Test Code: LG040892A Chem. Code: 0313 001

No. Replicates: 3 No. Daphnids per Conc: 30

(Mark choice) [ ] Range finding Test, [X] Definitive Test, [ ] Abbreviated
Sample as: [ ] Percent or [ ] Concentration

Date Test Terminated: 4/10/92 (mm dd yr) Testor: Joseph C. Greene

48-Hours	Percent Mortality	Rep 1	Rep 2	Rep 3	Mean	SD	Percent Survival
Negative Control Well Water - 0%	[0]	0	0	0	__.__	__.__	100 %
Conc:_____	[ ]				__.__	__.__	
Conc: 6.25%	[7]	2 (2 corpses)	0	0	__.__	__.__	
Conc: 12.5%	[7]	1	1	0	__.__	__.__	
Conc: 25%	[0]	0	0	0	__.__	__.__	
Conc: 50%	[0]	0	0	0	__.__	__.__	
Conc: 100%	[3]	0	0	1	__.__	__.__	

RESULTS: LC_{50} Concentration_____ mg/L or Percent (%) or other_____

95% CI: Lower_____ Upper_____

Initial pH: 7.31

DM2_MORT.FRM

LABORATORY DATA SHEET
Daphnia magna Static Acute

Site Identification: Red Wolf Manha River #2
Collected 25-March-1992 14:30 hours

Test Code: LG040692 Chem. Code: 03 13 002

No. Replicates: 10 No. Daphnids per Conc: 30

(Mark choice) [ ] Range finding Test, [X] Definitive Test, [ ] Abbreviated
Sample as: [X] Percent or [ ] Concentration _____

Date Test Terminated: 04/08/92 Testor: Joseph C. Greene
mm dd yr

48-Hours	Percent Mortality	Rep 1	Rep 2	Rep 3	Mean	SD	Percent Survival
Negative Control Well Water - 0%	[0]	0	0	0	__.__	± __.__	100%
Conc: _____	[ ]				__.__	± __.__	
Conc: 6.25%	[0]	0	0	0	__.__	± __.__	
Conc: 12.5%	[0]	0	0	0	__.__	± __.__	
Conc: 25%	[10]	1	2	0	__.__	± __.__	
Conc: 50%	[0]	0	0	0	__.__	± __.__	
Conc: 100%	[3]	0	0	1	__.__	± __.__	

RESULTS: LC_{50} Concentration _____ mg/L or Percent (%) or other _____

95% CI: Lower _____ Upper _____

Initial pH: 7.22

DM2_MORT.FRM

LABORATORY DATA SHEET
Daphnia magna Static Acute

Site Identification: Potlach Effluent #5
Collected 25-March-1992 06.45 hours

Test Code: LG040792 Chem. Code: 03 13 003

No. Replicates: 10 No. Daphnids per Conc: 30

(Mark choice) [ ] Range finding Test, [X] Definitive Test, [ ] Abbreviated
Sample as: [ ] Percent or [ ] Concentration _____

Date Test Terminated: 04/09/92 (mm dd yr) Testor: Joseph C. Greene

48-Hours	Percent Mortality	Rep 1	Rep 2	Rep 3	Mean	SD	Percent Survival
Negative Control Well Water - 0%	[0]	0	0	0	__.__	± __.__	100%
Conc: _____	[ ]				__.__	± __.__	
Conc: 6.25%	[0]	0	0	0	__.__	± __.__	
Conc: 12.5%	[3]	0	1	0	__.__	± __.__	
Conc: 25%	[7]	0	1	1	__.__	± __.__	
Conc: 50%	[0]	0	0	0	__.__	± __.__	
Conc: 100%	[7]	0	2	0	__.__	± __.__	

RESULTS: LC_{50} Concentration _____ mg/L or Percent (%) or other _____

95% CI: Lower _____ Upper _____

Initial pH: 7.22

DM2_MORT.FRM

LABORATORY DATA SHEET
Daphnia magna Static Acute

Site Identification: Port of Clarkston #6
Collected 25-March-1992 10:14 hrs

Test Code: LG040892B Chem. Code: 03 13 004

No. Replicates: 3 No. Daphnids per Conc: 30

(Mark choice) [ ] Range finding Test, [X] Definitive Test, [ ] Abbreviated
Sample as: [ ] Percent or [ ] Concentration_____

Date Test Terminated: 4/10/92 (mm dd yr) Testor: Joseph C. Greene

48-Hours	Percent Mortality	Rep 1	Rep 2	Rep 3	Mean	SD	Percent Survival
Negative Control Well Water - 0%	[3]	1	0	0	___	___	97%
Conc:_____	[ ]	___	___	___	___	___	___
Conc: 6.25%	[3]	0	0	1	___	___	___
Conc: 12.5%	[3]	1	0	0	___	___	___
Conc: 25%	[0]	0	0	0	___	___	___
Conc: 50%	[10]	1	0	2	___	___	___
Conc: 100%	[13]	3	1	0	___	___	___

RESULTS: LC_{50} Concentration_____ mg/L or Percent (%) or other_____

95% CI: Lower_____ Upper_____

Initial pH: 7.09

DM2_MORT.FRM

LABORATORY DATA SHEET
Daphnia magna Static Acute

Site Identification: Below Effluent #7
Collected 25-March-1992 10:45 hours

Test Code: LG040992 Chem. Code: 03 13 005

No. Replicates: 10 No. Daphnids per Conc: 30

(Mark choice) [ ] Range finding Test, [X] Definitive Test, [ ] Abbreviated
Sample as: [ ] Percent or [ ] Concentration _____

Date Test Terminated: 04/11/92 (mm dd yr) Testor: Joseph C. Greene

48-Hours	Percent Mortality	Rep 1	Rep 2	Rep 3	Mean	SD	Percent Survival
Negative Control Well Water - 0%	[7]	2 stuck on side	0	0	__.__	__.__	93 %
Conc: _____	[-]	___	___	___	__.__	__.__	___
Conc: 6.25%	[3]	1	0	0	__.__	__.__	___
Conc: 12.5%	[0]	0	0	0	__.__	__.__	___
Conc: 25%	[7]	0	1 on side	1	__.__	__.__	___
Conc: 50%	[7]	1	1	0	__.__	__.__	___
Conc: 100%	[3]	0	1	0	__.__	__.__	___

RESULTS: LC_{50} Concentration _____ mg/L or Percent (%) or other _____

95% CI: Lower _____ Upper _____

Initial pH: 7.82

DM2_MORT.FRM

Columbia Analytical Services, Inc.

May 15, 1992

Tim Seeman
U.S. Army Corps of Engineers
CENPD Materials Laboratory
1491 NW Graham Avenue
Troutdale, OR 97060-9503

Re: **Draw Down 92 Project**

Dear Tim:

Enclosed are the results of the dioxin/furan analyses submitted to our lab on March 30, 1992. The report has been reviewed by CAS analysts and no problems were found. For your reference, these analyses have been assigned our work order number K921979.

All analyses were performed in accordance with our laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Kevin DeWhitt
Project Chemist

KD/mbm

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

ALTA

Section I. Sample Inventory

Date Received: 1-Apr-92

Alta Lab ID.	Client ID.	ACOE NAME
11151-1-SA	#10 K1979-1	# 10
11151-2-SA	#5 K1979-11	# 5

ALTA

SECTION II.

ALTA

PCDD & PCDF
EPA METHOD 8290

METHOD BLANK
Lab ID: 11151-001-MB
Matrix: Sediment

Date Received: NA
Date Extracted: 4/09/92
Sample Amount: 10.00 g

ICAL ID: I1613A
QC Lot: LC0329S
Units: pg/g

Compound	Conc.	D.L.	Ratio	S/N Ratio	Qualifier
2,3,7,8-TCDD	ND	0.39			
Total TCDD	ND	0.58			
1,2,3,7,8-PeCDD	ND	0.66			
Total PeCDD	ND	0.66			
1,2,3,4,7,8-HxCDD	ND	0.85			
1,2,3,6,7,8-HxCDD	ND	0.87			
1,2,3,7,8,9-HxCDD	ND	1.0			
Total HxCDD	ND	1.0			
1,2,3,4,6,7,8-HpCDD	ND	0.72			
Total HpCDD	ND	0.72			
OCDD	ND	1.4			
2,3,7,8-TCDF	ND	0.26			
Total TCDF	ND	0.26			
1,2,3,7,8-PeCDF	ND	0.58			
2,3,4,7,8-PeCDF	ND	0.52			
Total PeCDF	ND	0.58			
1,2,3,4,7,8-HxCDF	ND	0.21			
1,2,3,6,7,8-HxCDF	ND	0.21			
2,3,4,6,7,8-HxCDF	ND	0.23			
1,2,3,7,8,9-HxCDF	ND	0.26			
Total HxCDF	ND	0.26			
1,2,3,4,6,7,8-HpCDF	ND	0.23			
1,2,3,4,7,8,9-HpCDF	ND	0.29			
Total HpCDF	ND	0.29			
OCDF	ND	1.0			

Analyst: [signature]

Reviewer: [signature]

ALTA

PCDD & PCDF
EPA METHOD 8290

METHOD BLANK
Lab ID: 11151-001-MB

Isotopic Recovery Results

Internal Standard	% R	Ratio	Qualifier
^{13}C-2,3,7,8-TCDD	81	0.79	
^{13}C-1,2,3,7,8-PeCDD	71	1.55	
^{13}C-1,2,3,4,7,8-HxCDD	110	1.31	
^{13}C-1,2,3,6,7,8-HxCDD	86	1.28	
^{13}C-1,2,3,4,6,7,8-HpCDD	103	1.07	
^{13}C-OCDD	86	0.91	
^{13}C-2,3,7,8-TCDF	79	0.79	
^{13}C-1,2,3,7,8-PeCDF	73	1.45	
^{13}C-2,3,4,7,8-PeCDF	67	1.50	
^{13}C-1,2,3,4,7,8-HxCDF	99	0.52	
^{13}C-1,2,3,6,7,8-HxCDF	91	0.52	
^{13}C-2,3,4,6,7,8-HxCDF	90	0.53	
^{13}C-1,2,3,7,8,9-HxCDF	109	0.52	
^{13}C-1,2,3,4,6,7,8-HpCDF	100	0.43	
^{13}C-1,2,3,4,7,8,9-HpCDF	108	0.46	
Clean-up Recovery Standard:			
^{37}Cl-2,3,7,8-TCDD	72	NA	

Dates Analyzed:

DB-5: 4/12/92 **DB-225:** NA **SP-2331:** NA

Analyst: [signature] **Reviewer:** [signature]

ALTA

PCDD & PCDF
EPA METHOD 8290

LCS RESULTS
Lab ID: 11151-LCS1/LCS2
Matrix: Sediment

Date Received: NA
Date Extracted: 3/29/92
Sample Amount: 10.00 g

ICAL ID: I1613A
QC Lot: LC0329S
Units: NA

Compound	LCS1 % R	LCS2 % R	RPD %
2,3,7,8-TCDD	107	110	2.8
1,2,3,7,8-PeCDD	104	106	1.9
1,2,3,4,7,8-HxCDD	104	109	4.7
1,2,3,6,7,8-HxCDD	109	106	2.8
1,2,3,7,8,9-HxCDD	127	119	6.5
1,2,3,4,6,7,8-HpCDD	139	121	14
OCDD	171	180	5.1
2,3,7,8-TCDF	106	106	0.0
1,2,3,7,8-PeCDF	105	107	1.9
2,3,4,7,8-PeCDF	109	109	0.0
1,2,3,4,7,8-HxCDF	106	105	0.95
1,2,3,6,7,8-HxCDF	110	113	2.7
2,3,4,6,7,8-HxCDF	102	102	0.0
1,2,3,7,8,9-HxCDF	101	100	1.0
1,2,3,4,6,7,8-HpCDF	114	107	6.3
1,2,3,4,7,8,9-HpCDF	104	107	2.8
OCDF	138	155	12

Analyst: BM

Reviewer: JM

ALTA

PCDD & PCDF
EPA METHOD 8290

LCS RESULTS
Lab ID: 11151-LCS1/LCS2

Isotopic Recovery Results

Internal Standard:	LCS1 % R	LCS2 % R
^{13}C-2,3,7,8-TCDD	100	97
^{13}C-1,2,3,7,8-PeCDD	97	99
^{13}C-1,2,3,4,7,8-HxCDD	112	112
^{13}C-1,2,3,6,7,8-HxCDD	82	84
^{13}C-1,2,3,4,6,7,8-HpCDD	108	96
^{13}C-OCDD	81	74
^{13}C-2,3,7,8-TCDF	96	92
^{13}C-1,2,3,7,8-PeCDF	98	97
^{13}C-2,3,4,7,8-PeCDF	90	94
^{13}C-1,2,3,4,7,8-HxCDF	110	115
^{13}C-1,2,3,6,7,8-HxCDF	90	89
^{13}C-2,3,4,6,7,8-HxCDF	101	100
^{13}C-1,2,3,7,8,9-HxCDF	122	119
^{13}C-1,2,3,4,6,7,8-HpCDF	103	96
^{13}C-1,2,3,4,7,8,9-HpCDF	124	111
Clean-up Recovery Standard:		
^{37}C-2,3,7,8-TCDD	91	86

Date Analyzed: 3/31/92

Analyst: [signature]

Reviewer: [signature]

ALTA

PCDD & PCDF
EPA METHOD 8290

Sample ID: #10 K1979-1
Lab ID: 11151-001-SA #10
Matrix: Sediment
% Solids: 29.5

Date Received: 4/01/92
Date Extracted: 4/09/92
Sample Amount: 9.99 g

ICAL ID: I1613A
QC Lot: LC0329S
Units: pg/g

Compound	Conc.	D.L.	Ratio	S/N Ratio	Qualifier
2,3,7,8-TCDD	ND	0.49			
Total TCDD	ND	0.49			
1,2,3,7,8-PeCDD	ND	0.48			
Total PeCDD	ND	0.48			
1,2,3,4,7,8-HxCDD	ND	0.57			
1,2,3,6,7,8-HxCDD	ND	0.62			
1,2,3,7,8,9-HxCDD	ND	0.74			
Total HxCDD	ND	0.74			
1,2,3,4,6,7,8-HpCDD	4.9		1.13	>10:1	
Total HpCDD	9.5		1.12	>10:1	
OCDD	36		0.92	>10:1	
2,3,7,8-TCDF	ND	0.24			
Total TCDF	2.0		0.78	>10:1	
1,2,3,7,8-PeCDF	ND	0.37			
2,3,4,7,8-PeCDF	ND	0.31			
Total PeCDF	ND	0.45			
1,2,3,4,7,8-HxCDF	ND	0.20			
1,2,3,6,7,8-HxCDF	ND	0.20			
2,3,4,6,7,8-HxCDF	ND	0.46			
1,2,3,7,8,9-HxCDF	ND	0.15			
Total HxCDF	ND	0.46			
1,2,3,4,6,7,8-HpCDF	1.6		0.89	>10:1	
1,2,3,4,7,8,9-HpCDF	ND	0.27			
Total HpCDF	1.6		0.91	>10:1	
OCDF	2.9		0.83	>10:1	

Analyst: [signature]

Reviewer: [signature]

ALTA

PCDD & PCDF
EPA METHOD 8290

Sample ID: #5 K1979-11
Lab ID: 11115-002-SA

Isotopic Recovery Results

Internal Standard:	% R	Ratio	Qualifier
^{13}C-2,3,7,8-TCDD	56	0.80	
^{13}C-1,2,3,7,8-PeCDD	65	1.59	
^{13}C-1,2,3,4,7,8-HxCDD	70	1.28	
^{13}C-1,2,3,6,7,8-HxCDD	56	1.26	
^{13}C-1,2,3,4,6,7,8-HpCDD	63	1.02	
^{13}C-OCDD	50	0.91	
^{13}C-2,3,7,8-TCDF	52	0.80	
^{13}C-1,2,3,7,8-PeCDF	59	1.52	
^{13}C-2,3,4,7,8-PeCDF	59	1.57	
^{13}C-1,2,3,4,7,8-HxCDF	72	0.54	
^{13}C-1,2,3,6,7,8-HxCDF	60	0.52	
^{13}C-2,3,4,6,7,8-HxCDF	62	0.54	
^{13}C-1,2,3,7,8,9-HxCDF	73	0.54	
^{13}C-1,2,3,4,6,7,8-HpCDF	61	0.46	
^{13}C-1,2,3,4,7,8,9-HpCDF	70	0.45	
Clean-up Recovery Standard:			
^{37}Cl-2,3,7,8-TCDD	81	NA	

Dates Analyzed:

DB-5: 4/06/92 **DB-225:** NA **SP-2331:** NA

Analyst: _____ **Page 2 of 2** **Reviewer:** _____

00014

ALTA

PCDD & PCDF
EPA METHOD 8290

METHOD BLANK
Lab ID: 11151-002-MB
Matrix: Aqueous

Date Received: NA
Date Extracted: 4/06/92
Sample Amount: 1.0 L

ICAL ID: I1613A
QC Lot: LC0406A
Units: pg/L

Compound	Conc.	D.L.	Ratio	S/N Ratio	Qualifier
2,3,7,8-TCDD	ND	1.9			
Total TCDD	ND	1.9			
1,2,3,7,8-PeCDD	ND	3.9			
Total PeCDD	ND	5.8			
1,2,3,4,7,8-HxCDD	ND	3.4			
1,2,3,6,7,8-HxCDD	ND	3.8			
1,2,3,7,8,9-HxCDD	ND	4.5			
Total HxCDD	ND	4.5			
1,2,3,4,6,7,8-HpCDD	ND	5.6			
Total HpCDD	ND	5.6			
OCDD	37		0.85	>10:1	A
2,3,7,8-TCDF	ND	0.90			
Total TCDF	ND	0.90			
1,2,3,7,8-PeCDF	ND	1.9			
2,3,4,7,8-PeCDF	ND	1.6			
Total PeCDF	ND	1.9			
1,2,3,4,7,8-HxCDF	ND	1.2			
1,2,3,6,7,8-HxCDF	ND	1.2			
2,3,4,6,7,8-HxCDF	ND	3.3			
1,2,3,7,8,9-HxCDF	ND	2.0			
Total HxCDF	ND	3.3			
1,2,3,4,6,7,8-HpCDF	ND	2.7			
1,2,3,4,7,8,9-HpCDF	ND	1.5			
Total HpCDF	ND	2.7			
OCDF	ND	6.1			

Analyst: [signature]

Reviewer: [signature]

ALTA

PCDD & PCDF
EPA METHOD 8290

METHOD BLANK
Lab ID: 11115-002-MB

Isotopic Recovery Results

Internal Standard	% R	Ratio	Qualifier
^{13}C-2,3,7,8-TCDD	80	0.79	
^{13}C-1,2,3,7,8-PeCDD	77	1.60	
^{13}C-1,2,3,4,7,8-HxCDD	95	1.29	
^{13}C-1,2,3,6,7,8-HxCDD	73	1.32	
^{13}C-1,2,3,4,6,7,8-HpCDD	79	1.02	
^{13}C-OCDD	60	0.93	
^{13}C-2,3,7,8-TCDF	78	0.81	
^{13}C-1,2,3,7,8-PeCDF	71	1.55	
^{13}C-2,3,4,7,8-PeCDF	71	1.54	
^{13}C-1,2,3,4,7,8-HxCDF	92	0.54	
^{13}C-1,2,3,6,7,8-HxCDF	77	0.52	
^{13}C-2,3,4,6,7,8-HxCDF	86	0.52	
^{13}C-1,2,3,7,8,9-HxCDF	105	0.54	
^{13}C-1,2,3,4,6,7,8-HpCDF	83	0.46	
^{13}C-1,2,3,4,7,8,9-HpCDF	93	0.45	

Clean-up Recovery Standard:

^{37}Cl-2,3,7,8-TCDD	84	NA

Dates Analyzed:

DB-5: 4/06/92 **DB-225:** NA **SP-2331:** NA

Analyst: [signature] **Reviewer:** [signature]

ALTA

PCDD & PCDF
EPA METHOD 8290

LCS RESULTS
Lab ID: 11115-LCS1/LCS2
Matrix: Aqueous

Date Received: NA
Date Extracted: 4/06/92
Sample Amount: 1.0 L

ICAL ID: I1613A
QC Lot: LC0406A
Units: NA

Compound	LCS1 % R	LCS2 % R	RPD %
2,3,7,8-TCDD	101	90	12
1,2,3,7,8-PeCDD	100	100	0.0
1,2,3,4,7,8-HxCDD	100	106	5.8
1,2,3,6,7,8-HxCDD	106	108	1.9
1,2,3,7,8,9-HxCDD	118	122	3.3
1,2,3,4,6,7,8-HpCDD	104	107	2.8
OCDD	116	112	3.5
2,3,7,8-TCDF	94	86	8.9
1,2,3,7,8-PeCDF	98	97	1.0
2,3,4,7,8-PeCDF	99	108	8.7
1,2,3,4,7,8-HxCDF	100	106	5.8
1,2,3,6,7,8-HxCDF	101	103	2.0
2,3,4,6,7,8-HxCDF	98	104	7.9
1,2,3,7,8,9-HxCDF	95	103	8.1
1,2,3,4,6,7,8-HpCDF	105	102	2.9
1,2,3,4,7,8,9-HpCDF	103	112	8.4
OCDF	110	111	0.90

Analyst: [signature]

Reviewer: [signature]

ALTA

PCDD & PCDF
EPA METHOD 8290

LCS RESULTS
Lab ID: 11115-LCS1/LCS2

Isotopic Recovery Results

Internal Standard:	LCS1 % R	LCS2 % R
^{13}C-2,3,7,8-TCDD	75	96
^{13}C-1,2,3,7,8-PeCDD	72	85
^{13}C-1,2,3,4,7,8-HxCDD	76	100
^{13}C-1,2,3,6,7,8-HxCDD	53	73
^{13}C-1,2,3,4,6,7,8-HpCDD	58	90
^{13}C-OCDD	42	72
^{13}C-2,3,7,8-TCDF	74	90
^{13}C-1,2,3,7,8-PeCDF	73	85
^{13}C-2,3,4,7,8-PeCDF	71	72
^{13}C-1,2,3,4,7,8-HxCDF	73	96
^{13}C-1,2,3,6,7,8-HxCDF	59	84
^{13}C-2,3,4,6,7,8-HxCDF	69	86
^{13}C-1,2,3,7,8,9-HxCDF	78	106
^{13}C-1,2,3,4,6,7,8-HpCDF	61	94
^{13}C-1,2,3,4,7,8,9-HpCDF	64	101
Clean-up Recovery Standard:		
^{37}C-2,3,7,8-TCDD	87	115

Date Analyzed: 4/06/92

Analyst: _____ **Page 2 of 2** **Reviewer:** _____

00012

ALTA

PCDD & PCDF
EPA METHOD 8290

Sample ID: #5 K1979-11
Lab ID: 11115-002-SA
Matrix: Aqueous

Date Received: 4/01/92
Date Extracted: 4/06/92
Sample Amount: 0.513 L

ICAL ID: I1613A
QC Lot: LC0406A
Units: pg/L

Compound	Conc.	D.L.	Ratio	S/N Ratio	Qualifier
2,3,7,8-TCDD	ND	8.4			
Total TCDD	ND	8.4			
1,2,3,7,8-PeCDD	ND	14			
Total PeCDD	ND	17			I
1,2,3,4,7,8-HxCDD	ND	7.8			
1,2,3,6,7,8-HxCDD	ND	6.5			
1,2,3,7,8,9-HxCDD	ND	7.7			
Total HxCDD	ND	7.8			
1,2,3,4,6,7,8-HpCDD	ND	14			
Total HpCDD	ND	14			
OCDD	100		0.77	>10:1	B
2,3,7,8-TCDF	ND	8.2			
Total TCDF	ND	8.2			
1,2,3,7,8-PeCDF	ND	11			
2,3,4,7,8-PeCDF	ND	5.4			
Total PeCDF	ND	11			
1,2,3,4,7,8-HxCDF	ND	7.0			
1,2,3,6,7,8-HxCDF	ND	5.2			
2,3,4,6,7,8-HxCDF	ND	11			
1,2,3,7,8,9-HxCDF	ND	5.7			
Total HxCDF	ND	11			
1,2,3,4,6,7,8-HpCDF	ND	8.2			
1,2,3,4,7,8,9-HpCDF	ND	4.5			
Total HpCDF	ND	8.2			
OCDF	ND	16			

Analyst: [signature]

Reviewer: [signature]

ALTA

PCDD & PCDF
EPA METHOD 8290

Sample ID: #10 K1979-1
Lab ID: 11151-001-SA

Isotopic Recovery Results

Internal Standard:	% R	Ratio	Qualifier
^{13}C-2,3,7,8-TCDD	85	0.80	
^{13}C-1,2,3,7,8-PeCDD	75	1.55	
^{13}C-1,2,3,4,7,8-HxCDD	103	1.31	
^{13}C-1,2,3,6,7,8-HxCDD	77	1.27	
^{13}C-1,2,3,4,6,7,8-HpCDD	93	1.06	
^{13}C-OCDD	73	0.92	
^{13}C-2,3,7,8-TCDF	80	0.80	
^{13}C-1,2,3,7,8-PeCDF	69	1.49	
^{13}C-2,3,4,7,8-PeCDF	68	1.52	
^{13}C-1,2,3,4,7,8-HxCDF	86	0.54	
^{13}C-1,2,3,6,7,8-HxCDF	72	0.53	
^{13}C-2,3,4,6,7,8-HxCDF	81	0.50	
^{13}C-1,2,3,7,8,9-HxCDF	94	0.51	
^{13}C-1,2,3,4,6,7,8-HpCDF	77	0.45	
^{13}C-1,2,3,4,7,8,9-HpCDF	83	0.46	
Clean-up Recovery Standard:			
^{37}Cl-2,3,7,8-TCDD	77	NA	

Dates Analyzed:

DB-5: 4/12/92 **DB-225:** NA **SP-2331:** NA

Analyst: KPM

Reviewer:

APPENDIX

ALTA

DATA QUALIFIERS & ABBREVIATIONS

A	**The amount detected is below the Method Quantitation Limit.**
B	**This compound was also detected in the blank.**
C	**The amount detected is less than five times the Method Quantitation Limit.**
D	**The amount reported is the maximum possible concentration.**
E	**The detection limit was raised above the Method Quantitation Limit due to chemical interferences.**
F	**This result has been confirmed on a DB-225 column.**
G	**This result has been confirmed on a SP-2331 column.**
H	**The signal-to-noise ratio is greater than 10:1.**
I	**Chemical Interference**

Conc.	Concentration
D.L.	Detection Limit
NA	Not applicable
S/N	Signal-to-noise
R.L.	Reporting Limit

DEPARTMENT OF THE ARMY
NORTH PACIFIC DIVISION LABORATORY
CORPS OF ENGINEERS
1491 N.W. GRAHAM AVENUE
TROUTDALE, OREGON 97060-9503

CENPD-PE-GT-L (1110-1-8100c) 4 Jun 92

MEMORANDUM FOR: Commander, Walla Walla District, ATTN: CENPW-PL-ER (Miller)

SUBJECT: W.O. 92-HM-179, Report of Chemical Analysis

Project: DRAWDOWN 92
Intended Use: Evaluate site
Source of Material: Reference Chain of Custody Records
Submitted by: CENPW-PL-ER
Date Sampled: 22,24, 25 Mar 92 Date Received: 28 & 30 Mar 92
Methods of Test: Reference Enclosure 1
Reference: DD Form 448, MIPR No. E86-92-0114, dated 20 Apr 92

1. Enclosed are results of analyses and quality assurance data for environmental samples collected from the above site. Included are:

a. Enclosure 1, Chemical Quality Assurance Report.

b. Enclosure 2, Report number K921979 from Columbia Analytical Services, Inc.

c. Enclosure 3, Report number 92.1645 from NET Pacific, Inc.

d. Enclosure 4, Chain of Custody and Cooler Receipt forms.

2. This completes all work requested for this site.

3. If you have any questions or comments regarding the Chemical Quality Assurance Report, please contact Dr. Ajmal Ilias at (503) 665-4166.

Timothy J. Seeman

TIMOTHY J. SEEMAN
Director

Enclosures

Copy Furnished: CENPD-PE-GT
CEMRD-EP-EC
CEMP-RT

CHEMICAL QUALITY ASSURANCE REPORT

DRAWDOWN 92

1. SUMMARY:

a. Up to 0.032, 8870, 584 and 9.8 ppm of volatiles (VOCs) in water, metals in soil, metals in water and non-metallics in water were found, respectively. Four total dioxin/furans, up to a maximum of 36 parts per trillion (ppt), were found in the sediment samples. 100 parts per quadrillion (ppq) of OCDD was detected in water sample #5 due to laboratory contamination.

b. All project data are acceptable based on acceptable internal quality control (QC) except dioxin detected in the water sample. The project and quality assurance (QA) data comparisons for VOCs, semi-volatiles (BNAs) and pesticides/PCBs are shown in Table II. All data agree.

2. BACKGROUND: The samples were collected on March 22, 24 and 25, 1992 and were received by the analytical laboratories on March 28 and 30, 1992.

3. OBJECTIVES:

a. Ten water and three sediment samples were collected from various locations to determine the extent of chemical contamination on the site.

b. One QA sample and two trip blanks were submitted to evaluate the project laboratory's data.

4. PROJECT ORGANIZATION:

a. The samples were collected by North Pacific Division/Walla Walla District staff.

b. The project samples were analyzed by Columbia Analytical Services, Inc. (CAS), Kelso, Washington.

c. The QA samples were analyzed by NET Pacific, Inc., Santa Rosa, California.

5. ANALYTICAL REFERENCES:

	Number	Title	Date
a.	SW-846, Third Edition	Test Methods for Evaluating Solid Waste	11/86
b.	CENPD-PE-GT-L Proposed Modified Method 8015	Fuel Quantitation and Identification	1989
	1) Method D-3328-78	Annual Book of ASTM Standards, Part 31	1980
	2) Method D-2600	Annual Book of ASTM Standards, Part 24	1980
c.	EPA-600/4-79-020	Methods for Chemical Analysis of Water and Wastes	3/83

6. PROJECT LABORATORY'S DATA:

a. Volatile Organics (VOC): Thirty-four and two ppb of bromethane and acetone, respectively, were detected in water samples #5 and #7, 1 and 2 ppb carbon disulfide and chloroform, respectively, in water sample #5, and 32, 3 and 27 ppb of acetone, carbon disulfide and chloroform, respectively, in water sample #1. No VOCs were detected in five out of eleven water or any sediment sample.

b. Organochlorine/PCBs and Semi-Volatiles (BNAs): None were detected above detection limits in any sample.

c. Dioxin and Furans: 100 parts per quadrillion (ppq) of OCDD was detected in water sample #5, which could be due to laboratory contamination as 37 ppq of this analyte was also detected in the laboratory blank. 9.5, 2, 1.6 and 2.9 parts per trillion (ppt) of total HPCDD, TCDF, HPCDF and OCDF were found, respectively, in sediment sample #10.

d. Metals: Fifteen out of twenty-three metals were detected from 6 through 8870 ppm in the sediment samples and 0.021 through 584 ppm of sixteen out of twenty-three metals were found in the water samples.

e. Non-Metallics: Up to 1.21, 2.8, 9.8 and 4.3 ppm of ammonia as nitrogen, nitrate as nitrogen, total Kjeldahl nitrogen and total phosphorous were found, respectively, in the water samples.

7. EVALUATION OF THE PROJECT LABORATORY'S DATA:

a. Surrogate, Laboratory Control (LC), Matrix Spike (MS) and Matrix Spike Duplicates (MSD): All recoveries met method requirements and are acceptable except LC recoveries of pesticides/PCBs and BNAs were below lower QC limits, the data were accepted based on acceptable surrogate, MS and MSD recoveries. The MS and LC recoveries of metals and non-metallics met method requirements and are acceptable.

b. Laboratory Duplicates: The relative percent differences (RPDs) of all methods were within EPA required QC limits and acceptable.

c. Blind Duplicates: None submitted for analysis or were not identified.

d. Trip and Laboratory Blanks: Trip blanks results are shown in Table I. No targeted VOCs were detected in any trip blank. All laboratory blanks were free from targeted analytes except sediment laboratory blanks were contaminated with 7 ppm of iron and 3 ppm of magnesium. The water dioxin and furan laboratory blanks were contaminated with 37 ppq OCDD.

This analyte was also detected at 100 ppq in water sample #5, which is due to laboratory contamination. The iron and magnesium levels found in the sediment samples were ten times above the blank levels; therefore, data of metals are not affected.

e. Detection Limits, Holding Times, Tuning and Mass Calibration: All met method requirements and are acceptable.

f. Overall Evaluation: All project data are acceptable except dioxin in water sample #5, which is due to laboratory contamination.

8. EVALUATION OF THE QA LABORATORY'S DATA: Only three parameters were analyzed by the QA laboratory, NET Pacific. Detection limits, method blanks, surrogates, MS, MSD and RPD all met method requirements except four out of twelve MS and MSDs of pesticides/PCBs were above upper QC limits. Data were not affected as no targeted analytes were detected in the QA sample. Overall, all QA data are acceptable.

9. QA/QC COMPARISONS: All data comparisons are shown in Table II. All data agree.

10. LESSONS LEARNED/PROBLEMS ENCOUNTERED: QA samples were only submitted for pesticides/PCBs, VOCs and BNAs; therefore, comparisons were only made for these parameters.

CENPD-PE-GT-L (92-HM-179)

COMPARISON OF PROJECT BLIND DUPLICATES

TABLE I

TRIP BLANKS

Project: DRAWDOWN 92 Matrix: water Units: ug/L (ppb)
Project Laboratory: CAS QA Laboratory: NET Pacific

Method: Volatile Organics (EPA 8240)

Analytes Detected	13	14	Limits
	ND	ND	1-20
Tentatively Identified Compounds			
	ND	ND	

ND = None detected

SUMMARY: The absence of targeted analytes indicates that no cross-contamination was encountered during shipment, storage or analysis.

CENPD-PE-GT-L (92-HM-179)

COMPARISON OF PROJECT AND QA RESULTS

TABLE II

Project: DRAWDOWN 92 Matrix: water Units: ug/L (ppb)
Project Laboratory: CAS QA Laboratory: NET Pacific

1. Method: Volatile Organics (EPA 8240)

Analytes Detected	Project Lab 10	Detection Limits	QA Lab 10	Detection Limits
	ND	1-20	ND	5-25
Tentatively Identified Compounds				
	ND		ND	

ND = None detected

SUMMARY: The project and QA data agree for all targeted analytes.

2. Method: Semi-Volatile Organics (EPA 8270)

Analytes Detected	Project Lab 10	Detection Limits	QA Lab 10	Detection Limits
	ND	5-50	ND	10-50
Tentatively Identified Compounds				
	ND		ND	

SUMMARY: The project and QA data agree for all 65 targeted analytes.

3. Method: Pesticides/PCBs (EPA 8080)

Analytes Detected	Project Lab 10	Detection Limits	QA Lab 10	Detection Limits
	ND	0.04-1	ND	0.005-1

SUMMARY: The project and QA data agree for all targeted analytes.

Columbia Analytical Services inc.

April 30, 1992

Tim Seeman
U.S. Army Corps of Engineers
CENPD Materials Laboratory
1491 NW Graham Avenue
Troutdale, OR 97060-9503

Re: **Draw Down 92/Project #92-HM-179**

Dear Tim:

Enclosed are the results of the samples submitted to our lab on March 30, 1992. For your reference, these analyses have been assigned our work order number K921979.

The dioxin/furan analyses will follow under separate cover; the results from ALTA labs have not yet been received by Columbia Analytical Services.

All analyses were performed in accordance with our laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Kevin DeWhitt
Project Chemist

KD/so

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/02/92
Sample Matrix:	Sediment	**Work Order No.:**	K921979

Solids, Total
EPA Method Modified 160.3
Percent (%)

Sample Name	Lab Code	Result
#11	K1979-2	55.2
#101	K1979-10	76.5
#12	K1979-14	56.1

Approved by Kevin Rowan Date 4-30

00001

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Work Order No.: K921979

Inorganic Parameters
mg/L (ppm)

Sample Name:			#8	#9	#1
Lab Code:			K1979-3	K1979-4	K1979-6
Analyte	EPA Method	MRL			
Ammonia as Nitrogen	350.3	0.05	0.07	ND	0.09
Nitrate + Nitrite as Nitrogen	353.2	0.2	ND	0.72	2.8
Nitrogen, Total Kjeldahl (TKN)	351.4	0.1	--	--	0.6
Orthophosphate as Phosphorus	365.3	0.01	•0.04	•0.04	--
Phosphorus, Total	365.3	0.01	0.01	0.01	--

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
• Sample was received past the end of the recommended maximum holding time.

Approved by Kevin Rewitt Date 4-30

00002

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Inorganic Parameters
mg/L (ppm)

Sample Name:			#2	#3	#4
Lab Code:			K1979-7	K1979-8	K1979-9
Analyte	**EPA Method**	**MRL**			
Ammonia as Nitrogen	350.3	0.05	0.52	--	0.06
Nitrate + Nitrite as Nitrogen	353.2	0.2	0.8	--	0.3
Nitrogen, Total Kjeldahl (TKN)	351.4	0.1	2.3	--	0.8
Orthophosphate as Phosphorus	365.3	0.01	--	0.02	--
Phosphorus, Total	365.3	0.01	--	4.3	--

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MRL Method Reporting Limit

Approved by Kenn Dewott Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Inorganic Parameters
mg/L (ppm)

Sample Name:			#5	#6	#7
Lab Code:			K1979-11	K1979-12	K1979-13
Analyte	**EPA Method**	**MRL**			
Ammonia as Nitrogen	350.3	0.05	0.36	1.21	ND
Nitrate + Nitrite as Nitrogen	353.2	0.2	1.4	0.06	0.6
Nitrogen, Total Kjeldahl (TKN)	351.4	0.1	9.8	2.2	1.7
Orthophosphate as Phosphorus	365.3	0.01	--	--	--
Phosphorus, Total	365.3	0.01	--	--	--

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Pearson Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Work Order No.: K921979

Inorganic Parameters
mg/L (ppm)

Sample Name:			**Method Blank**
Lab Code:			**K1979-MB**
Analyte	**EPA Method**	**MRL**	
Ammonia as Nitrogen	350.3	0.05	ND
Nitrate + Nitrite as Nitrogen	353.2	0.2	ND
Nitrogen, Total Kjeldahl (TKN)	351.4	0.1	ND
Orthophosphate as Phosphorus	365.3	0.01	ND
Phosphorus, Total	365.3	0.01	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Renfrow Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Sediment		

Total Metals
mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	#11	#101	#12
	Lab Code:	K1979-2	K1979-10	K1979-14
Analyte	**EPA Method**	**MRL**		
Aluminum	6010	10	8,870	5,050	7,090
Antimony	6010	10	ND	ND	ND
Arsenic	7060	1	4	6	4
Barium	6010	1	109	71	98
Beryllium	6010	1	ND	ND	ND
Cadmium	6010	1	ND	ND	ND
Calcium	6010	10	4,680	3,190	3,920
Chromium	6010	2	15	12	16
Cobalt	6010	2	16	14	17
Copper	6010	2	21	12	18
Iron	6010	4	19,200	16,800	20,100
Lead	6010	20	ND	ND	ND
Magnesium	6010	2	3,970	3,270	4,170
Manganese	6010	1	326	373	286
Mercury	7471	0.2	ND	ND	ND
Nickel	6010	10	12	10	12
Potassium	6010	400	1,200	600	1,100
Selenium	7740	1	ND	ND	ND
Silver	6010	2	ND	ND	ND
Sodium	6010	20	252	176	185
Thallium	7841	1	ND	ND	ND
Vanadium	6010	2	56	47	68
Zinc	6010	2	52	45	54

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Tennant Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Sediment

Work Order No.: K921979

Total Metals
mg/Kg (ppm)
Dry Weight Basis

	Sample Name:	Method Blank
	Lab Code:	K1979-MB

Analyte	EPA Method	MRL	
Aluminum	6010	10	ND
Antimony	6010	10	ND
Arsenic	7060	1	ND
Barium	6010	1	ND
Beryllium	6010	1	ND
Cadmium	6010	1	ND
Calcium	6010	10	ND
Chromium	6010	2	ND
Cobalt	6010	2	ND
Copper	6010	2	ND
Iron	6010	4	7
Lead	6010	20	ND
Magnesium	6010	2	3
Manganese	6010	1	ND
Mercury	7471	0.2	ND
Nickel	6010	10	ND
Potassium	6010	400	ND
Selenium	7740	1	ND
Silver	6010	2	ND
Sodium	6010	20	ND
Thallium	7841	1	ND
Vanadium	6010	2	ND
Zinc	6010	2	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Rettmann Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Work Order No.: K921979

Total Metals
µg/L (ppb)

Analyte	EPA Method	MRL	Sample Name: #10 Lab Code: K1979-1	#8 K1979-3	#9 K1979-4
Aluminum	6010	50	1,480	666	119
Antimony	6010	50	ND	ND	ND
Arsenic	7060	5	21	ND	ND
Barium	6010	5	143	16	22
Beryllium	6010	5	ND	ND	ND
Cadmium	6010	3	ND	ND	ND
Calcium	6010	50	75,500	3,790	25,900
Chromium	6010	5	ND	ND	ND
Cobalt	6010	10	ND	ND	ND
Copper	6010	10	ND	ND	ND
Iron	6010	20	30,700	1,040	171
Lead	7421	2	ND	ND	ND
Magnesium	6010	10	20,400	1,010	9,560
Manganese	6010	5	4,390	32	11
Mercury	7470	0.5	ND	ND	ND
Nickel	6010	20	ND	ND	ND
Potassium	6010	2,000	5,000	ND	ND
Selenium	7740	5	ND	ND	ND
Silver	6010	10	ND	ND	ND
Sodium	6010	100	20,700	2,400	20,700
Thallium	7841	5	ND	ND	ND
Vanadium	6010	10	ND	ND	ND
Zinc	6010	10	21	12	47

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Bennett Date 4-30

00008

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Work Order No.: K921979

Total Metals
µg/L (ppb)

	Sample Name:	#1	#3	#4
	Lab Code:	K1979-6	K1979-8	K1979-9
Analyte	EPA Method	MRL		
Aluminum	6010	50	1,150	55,200	119
Antimony	6010	50	ND	ND	ND
Arsenic	7060	5	ND	16	ND
Barium	6010	5	175	635	6
Beryllium	6010	5	ND	ND	ND
Cadmium	6010	3	ND	ND	ND
Calcium	6010	50	41,500	109,000	3,510
Chromium	6010	5	9	66	ND
Cobalt	6010	10	ND	74	ND
Copper	6010	10	ND	136	ND
Iron	6010	20	425	88,300	144
Lead	7421	2	5	46	ND
Magnesium	6010	10	2,280	38,400	832
Manganese	6010	5	348	1,790	ND
Mercury	7470	0.5	ND	ND	ND
Nickel	6010	20	ND	66	ND
Potassium	6010	2,000	19,000	14,000	ND
Selenium	7740	5	ND	ND	ND
Silver	6010	10	ND	ND	ND
Sodium	6010	100	584,000	63,900	2,240
Thallium	7841	5	ND	ND	ND
Vanadium	6010	10	ND	236	ND
Zinc	6010	10	40	298	12

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Rennert Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Total Metals
µg/L (ppb)

	Sample Name:		#5	#6	#7
	Lab Code:		K1979-11	K1979-12	K1979-13
Analyte	**EPA Method**	**MRL**			
Aluminum	6010	50	1,140	54	481
Antimony	6010	50	ND	ND	ND
Arsenic	7060	5	ND	17	ND
Barium	6010	5	186	54	23
Beryllium	6010	5	ND	ND	ND
Cadmium	6010	3	ND	ND	ND
Calcium	6010	50	42,000	64,000	22,000
Chromium	6010	5	9	ND	ND
Cobalt	6010	10	ND	ND	ND
Copper	6010	10	ND	ND	ND
Iron	6010	20	558	3,270	696
Lead	7421	2	18	ND	ND
Magnesium	6010	10	2,380	17,200	8,100
Manganese	6010	5	390	2,430	22
Mercury	7470	0.5	ND	ND	ND
Nickel	6010	20	ND	ND	ND
Potassium	6010	2,000	18,000	2,500	ND
Selenium	7740	5	ND	ND	ND
Silver	6010	10	ND	ND	ND
Sodium	6010	100	562,000	23,300	18,200
Thallium	7841	5	ND	ND	ND
Vanadium	6010	10	ND	ND	ND
Zinc	6010	10	328	15	32

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Brennan Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Work Order No.: K921979

Total Metals
µg/L (ppb)

	Sample Name:	Method Blank
	Lab Code:	K1979-MB

Analyte	EPA Method	MRL	
Aluminum	6010	50	ND
Antimony	6010	50	ND
Arsenic	7060	5	ND
Barium	6010	5	ND
Beryllium	6010	5	ND
Cadmium	6010	3	ND
Calcium	6010	50	ND
Chromium	6010	5	ND
Cobalt	6010	10	ND
Copper	6010	10	ND
Iron	6010	20	ND
Lead	7421	2	ND
Magnesium	6010	10	ND
Manganese	6010	5	ND
Mercury	7470	0.5	ND
Nickel	6010	20	ND
Potassium	6010	2,000	ND
Selenium	7740	5	ND
Silver	6010	10	ND
Sodium	6010	100	ND
Thallium	7841	5	ND
Vanadium	6010	10	ND
Zinc	6010	10	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Bennett Date 4-30

00011

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/02/92
Sample Matrix:	Sediment	**Work Order No.:**	K921979

Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3540/8080
mg/Kg (ppm)
Dry Weight Basis

Sample Name:		#11	#101	#12
Lab Code:		K1979-2	K1979-10	K1979-14
Date Analyzed:		04/16/92	04/16/92	04/16/92
Analyte	**MRL**			
Alpha-BHC	0.01	•<0.02	•<0.02	•<0.02
Gamma-BHC (Lindane)	0.01	•<0.02	•<0.02	•<0.02
Beta-BHC	0.03	•<0.06	•<0.06	•<0.06
Heptachlor	0.01	•<0.02	•<0.02	•<0.02
Delta-BHC	0.01	•<0.02	•<0.02	•<0.02
Aldrin	0.01	•<0.02	•<0.02	•<0.02
Heptachlor Epoxide	0.01	ND	ND	ND
Endosulfan I	0.01	ND	ND	ND
4,4'-DDE	0.01	ND	ND	ND
Dieldrin	0.01	ND	ND	ND
Endrin	0.01	ND	ND	ND
4,4'-DDD	0.01	ND	ND	ND
Endosulfan II	0.01	ND	ND	ND
4,4'-DDT	0.01	ND	ND	ND
Endrin Aldehyde	0.01	ND	ND	ND
Endosulfan Sulfate	0.01	ND	ND	ND
Methoxychlor	0.02	ND	ND	ND
Toxaphene	0.3	ND	ND	ND
Chlordane	0.1	ND	ND	ND
PCBs: Aroclor 1016	0.1	ND	ND	ND
Aroclor 1221	0.1	ND	ND	ND
Aroclor 1232	0.1	ND	ND	ND
Aroclor 1242	0.1	ND	ND	ND
Aroclor 1248	0.1	ND	ND	ND
Aroclor 1254	0.1	ND	ND	ND
Aroclor 1260	0.1	ND	ND	ND

MRL Method Reporting Limit
• MRL is elevated because of matrix interferences.
ND None Detected at or above the method reporting limit

Approved by Kevin Bennett Date 4-30

00012

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Extracted:**	04/02/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Sediment		

Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3540/8080
mg/Kg (ppm)
Dry Weight Basis

Sample Name:	**Method Blank**
Lab Code:	**K1979-MB**
Date Analyzed:	**04/16/92**

Analyte	MRL	
Alpha-BHC	0.01	ND
Gamma-BHC (Lindane)	0.01	ND
Beta-BHC	0.03	ND
Heptachlor	0.01	ND
Delta-BHC	0.01	ND
Aldrin	0.01	ND
Heptachlor Epoxide	0.01	ND
Endosulfan I	0.01	ND
4,4'-DDE	0.01	ND
Dieldrin	0.01	ND
Endrin	0.01	ND
4,4'-DDD	0.01	ND
Endosulfan II	0.01	ND
4,4'-DDT	0.01	ND
Endrin Aldehyde	0.01	ND
Endosulfan Sulfate	0.01	ND
Methoxychlor	0.02	ND
Toxaphene	0.3	ND
Chlordane	0.1	ND
PCBs: Aroclor 1016	0.1	ND
Aroclor 1221	0.1	ND
Aroclor 1232	0.1	ND
Aroclor 1242	0.1	ND
Aroclor 1248	0.1	ND
Aroclor 1254	0.1	ND
Aroclor 1260	0.1	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Rennert Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	Date Received:	03/30/92
Project:	Draw Down 92/#92-HM-179	Date Extracted:	03/31/92
Sample Matrix:	Water	Work Order No.:	K921979

Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3510/8080
µg/L (ppb)

Sample Name:		#10	#8	#9
Lab Code:		K1979-1	K1979-3	K1979-4
Date Analyzed:		04/04/92	04/04/92	04/04/92
Analyte	MRL			
Alpha-BHC	0.04	ND	ND	ND
Gamma-BHC (Lindane)	0.04	ND	ND	ND
Beta-BHC	0.1	ND	ND	ND
Heptachlor	0.04	ND	ND	ND
Delta-BHC	0.04	ND	ND	ND
Aldrin	0.04	ND	ND	ND
Heptachlor Epoxide	0.04	ND	ND	ND
Endosulfan I	0.04	ND	ND	ND
4,4'-DDE	0.04	ND	ND	ND
Dieldrin	0.04	ND	ND	ND
Endrin	0.04	ND	ND	ND
4,4'-DDD	0.04	ND	ND	ND
Endosulfan II	0.04	ND	ND	ND
4,4'-DDT	0.04	ND	ND	ND
Endrin Aldehyde	0.04	ND	ND	ND
Endosulfan Sulfate	0.04	ND	ND	ND
Methoxychlor	0.1	ND	ND	ND
Toxaphene	1	ND	ND	ND
Chlordane	0.5	ND	ND	ND
PCBs: Aroclor 1016	0.2	ND	ND	ND
Aroclor 1221	0.2	ND	ND	ND
Aroclor 1232	0.2	ND	ND	ND
Aroclor 1242	0.2	ND	ND	ND
Aroclor 1248	0.2	ND	ND	ND
Aroclor 1254	0.2	ND	ND	ND
Aroclor 1260	0.2	ND	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Tennant Date 4-30

00014

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3510/8080
µg/L (ppb)

Sample Name:		#1	#3	#4
Lab Code:		K1979-6	K1979-8	K1979-9
Date Analyzed:		04/07/92	04/04/92	04/04/92
Analyte	**MRL**			
Alpha-BHC	0.04	•<0.4	ND	ND
Gamma-BHC (Lindane)	0.04	•<0.4	ND	ND
Beta-BHC	0.1	•<1.0	ND	ND
Heptachlor	0.04	•<0.4	ND	ND
Delta-BHC	0.04	•<0.4	ND	ND
Aldrin	0.04	•<0.4	ND	ND
Heptachlor Epoxide	0.04	•<0.4	ND	ND
Endosulfan I	0.04	•<0.4	ND	ND
4,4'-DDE	0.04	•<0.4	ND	ND
Dieldrin	0.04	•<0.4	ND	ND
Endrin	0.04	•<0.4	ND	ND
4,4'-DDD	0.04	•<0.4	ND	ND
Endosulfan II	0.04	•<0.4	ND	ND
4,4'-DDT	0.04	•<0.4	ND	ND
Endrin Aldehyde	0.04	•<0.4	ND	ND
Endosulfan Sulfate	0.04	•<0.4	ND	ND
Methoxychlor	0.1	•<1.0	ND	ND
Toxaphene	1	•<10	ND	ND
Chlordane	0.5	•<5.0	ND	ND
PCBs: Aroclor 1016	0.2	•<1.0	ND	ND
Aroclor 1221	0.2	•<1.0	ND	ND
Aroclor 1232	0.2	•<1.0	ND	ND
Aroclor 1242	0.2	•<1.0	ND	ND
Aroclor 1248	0.2	•<1.0	ND	ND
Aroclor 1254	0.2	•<1.0	ND	ND
Aroclor 1260	0.2	•<1.0	ND	ND

MRL Method Reporting Limit
• MRL is elevated because of matrix interferences and because the sample(s) required diluting.
ND None Detected at or above the method reporting limit

Approved by Kevin Rowan Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3510/8080
µg/L (ppb)

Sample Name:		#5	#6	#7
Lab Code:		K1979-11	K1979-12	K1979-13
Date Analyzed:		04/07/92	04/04/92	04/04/92
Analyte	**MRL**			
Alpha-BHC	0.04	•<0.4	ND	ND
Gamma-BHC (Lindane)	0.04	•<0.4	ND	ND
Beta-BHC	0.1	•<1.0	ND	ND
Heptachlor	0.04	•<0.4	ND	ND
Delta-BHC	0.04	•<0.4	ND	ND
Aldrin	0.04	•<0.4	ND	ND
Heptachlor Epoxide	0.04	•<0.4	ND	ND
Endosulfan I	0.04	•<0.4	ND	ND
4,4'-DDE	0.04	•<0.4	ND	ND
Dieldrin	0.04	•<0.4	ND	ND
Endrin	0.04	•<0.4	ND	ND
4,4'-DDD	0.04	•<0.4	ND	ND
Endosulfan II	0.04	•<0.4	ND	ND
4,4'-DDT	0.04	•<0.4	ND	ND
Endrin Aldehyde	0.04	•<0.4	ND	ND
Endosulfan Sulfate	0.04	•<0.4	ND	ND
Methoxychlor	0.1	•<1.0	ND	ND
Toxaphene	1	•<10	ND	ND
Chlordane	0.5	•<5.0	ND	ND
PCBs: Aroclor 1016	0.2	•<1.0	ND	ND
Aroclor 1221	0.2	•<1.0	ND	ND
Aroclor 1232	0.2	•<1.0	ND	ND
Aroclor 1242	0.2	•<1.0	ND	ND
Aroclor 1248	0.2	•<1.0	ND	ND
Aroclor 1254	0.2	•<1.0	ND	ND
Aroclor 1260	0.2	•<1.0	ND	ND

MRL Method Reporting Limit
• MRL is elevated because of matrix interferences and because the sample(s) required diluting.
ND None Detected at or above the method reporting limit

Approved by Kevin DeWaard Date 4-30

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Extracted:**	03/31/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3510/8080
µg/L (ppb)

Sample Name:		**Method Blank**
Lab Code:		**K1979-MB**
Date Analyzed:		**04/04/92**

Analyte		MRL	
Alpha-BHC		0.04	ND
Gamma-BHC (Lindane)		0.04	ND
Beta-BHC		0.1	ND
Heptachlor		0.04	ND
Delta-BHC		0.04	ND
Aldrin		0.04	ND
Heptachlor Epoxide		0.04	ND
Endosulfan I		0.04	ND
4,4'-DDE		0.04	ND
Dieldrin		0.04	ND
Endrin		0.04	ND
4,4'-DDD		0.04	ND
Endosulfan II		0.04	ND
4,4'-DDT		0.04	ND
Endrin Aldehyde		0.04	ND
Endosulfan Sulfate		0.04	ND
Methoxychlor		0.1	ND
Toxaphene		1	ND
Chlordane		0.5	ND
PCBs:	Aroclor 1016	0.2	ND
	Aroclor 1221	0.2	ND
	Aroclor 1232	0.2	ND
	Aroclor 1242	0.2	ND
	Aroclor 1248	0.2	ND
	Aroclor 1254	0.2	ND
	Aroclor 1260	0.2	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Bennett Date 4-30

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Sediment		

Volatile Organic Compounds
EPA Method 8240 (Low Level)
µg/Kg (ppb) Dry Weight Basis

		#11	#12
Sample Name:			
Lab Code:		K1979-2	K1979-14
Date Analyzed:		04/03/92	04/03/92
Analyte	**MRL***		
Chloromethane	10	ND	ND
Vinyl Chloride	10	ND	ND
Bromomethane	10	ND	ND
Chloroethane	10	ND	ND
Trichlorofluoromethane (Freon 11)	10	ND	ND
Trichlorotrifluoroethane (Freon 113)	20	ND	ND
1,1-Dichloroethene	10	ND	ND
Acetone	100	ND	ND
Carbon Disulfide	10	ND	ND
Methylene Chloride	20	ND	ND
trans-1,2-Dichloroethene	10	ND	ND
cis-1,2-Dichloroethene	10	ND	ND
2-Butanone (MEK)	20	ND	ND
1,1-Dichloroethane	10	ND	ND
Chloroform	10	ND	ND
1,1,1-Trichloroethane (TCA)	10	ND	ND
Carbon Tetrachloride	10	ND	ND
Benzene	10	ND	ND
1,2-Dichloroethane	10	ND	ND
Vinyl Acetate	20	ND	ND
Trichloroethene (TCE)	10	ND	ND
1,2-Dichloropropane	10	ND	ND
Bromodichloromethane	10	ND	ND
2-Chloroethyl Vinyl Ether	20	ND	ND
trans-1,3-Dichloropropene	10	ND	ND
2-Hexanone	20	ND	ND
4-Methyl-2-pentanone (MIBK)	20	ND	ND
Toluene	10	ND	ND
cis-1,3-Dichloropropene	10	ND	ND
1,1,2-Trichloroethane	10	ND	ND
Tetrachloroethene (PCE)	10	ND	ND
Dibromochloromethane	10	ND	ND
Chlorobenzene	10	ND	ND
Ethylbenzene	10	ND	ND
Styrene	10	ND	ND
Total Xylenes	10	ND	ND
Bromoform	10	ND	ND
1,1,2,2-Tetrachloroethane	10	ND	ND
1,3-Dichlorobenzene	10	ND	ND
1,4-Dichlorobenzene	10	ND	ND
1,2-Dichlorobenzene	10	ND	ND

MRL Method Reporting Limit
* MRLs are elevated because of the low percent solids in the sample as received.
ND None Detected at or above the method reporting limit

Approved by Kevin Dennis Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Sediment		

Volatile Organic Compounds
EPA Method 8240 (Low Level)
µg/Kg (ppb) Dry Weight Basis

Sample Name:	**#101**
Lab Code:	**K1979-10**
Date Analyzed:	**04/03/92**

Analyte	MRL	
Chloromethane	5	ND
Vinyl Chloride	5	ND
Bromomethane	5	ND
Chloroethane	5	ND
Trichlorofluoromethane (Freon 11)	5	ND
Trichlorotrifluoroethane (Freon 113)	10	ND
1,1-Dichloroethene	5	ND
Acetone	50	ND
Carbon Disulfide	5	ND
Methylene Chloride	10	ND
trans-1,2-Dichloroethene	5	ND
cis-1,2-Dichloroethene	5	ND
2-Butanone (MEK)	10	ND
1,1-Dichloroethane	5	ND
Chloroform	5	ND
1,1,1-Trichloroethane (TCA)	5	ND
Carbon Tetrachloride	5	ND
Benzene	5	ND
1,2-Dichloroethane	5	ND
Vinyl Acetate	10	ND
Trichloroethene (TCE)	5	ND
1,2-Dichloropropane	5	ND
Bromodichloromethane	5	ND
2-Chloroethyl Vinyl Ether	10	ND
trans-1,3-Dichloropropene	5	ND
2-Hexanone	10	ND
4-Methyl-2-pentanone (MIBK)	10	ND
Toluene	5	ND
cis-1,3-Dichloropropene	5	ND
1,1,2-Trichloroethane	5	ND
Tetrachloroethene (PCE)	5	ND
Dibromochloromethane	5	ND
Chlorobenzene	5	ND
Ethylbenzene	5	ND
Styrene	5	ND
Total Xylenes	5	ND
Bromoform	5	ND
1,1,2,2-Tetrachloroethane	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
1,2-Dichlorobenzene	5	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Rowland Date 4-30

U0019

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Sediment

Work Order No.: K921979

Volatile Organic Compounds
EPA Method 8240 (Low Level)
µg/Kg (ppb) Dry Weight Basis

Sample Name:		**Method Blank**
Lab Code:		**K1979-MB**
Date Analyzed:		**04/03/92**
Analyte	**MRL**	
Chloromethane	5	ND
Vinyl Chloride	5	ND
Bromomethane	5	ND
Chloroethane	5	ND
Trichlorofluoromethane (Freon 11)	5	ND
Trichlorotrifluoroethane (Freon 113)	10	ND
1,1-Dichloroethene	5	ND
Acetone	50	ND
Carbon Disulfide	5	ND
Methylene Chloride	10	ND
trans-1,2-Dichloroethene	5	ND
cis-1,2-Dichloroethene	5	ND
2-Butanone (MEK)	10	ND
1,1-Dichloroethane	5	ND
Chloroform	5	ND
1,1,1-Trichloroethane (TCA)	5	ND
Carbon Tetrachloride	5	ND
Benzene	5	ND
1,2-Dichloroethane	5	ND
Vinyl Acetate	10	ND
Trichloroethene (TCE)	5	ND
1,2-Dichloropropane	5	ND
Bromodichloromethane	5	ND
2-Chloroethyl Vinyl Ether	10	ND
trans-1,3-Dichloropropene	5	ND
2-Hexanone	10	ND
4-Methyl-2-pentanone (MIBK)	10	ND
Toluene	5	ND
cis-1,3-Dichloropropene	5	ND
1,1,2-Trichloroethane	5	ND
Tetrachloroethene (PCE)	5	ND
Dibromochloromethane	5	ND
Chlorobenzene	5	ND
Ethylbenzene	5	ND
Styrene	5	ND
Total Xylenes	5	ND
Bromoform	5	ND
1,1,2,2-Tetrachloroethane	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
1,2-Dichlorobenzene	5	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Devaney Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/03/92
Sample Matrix:	Sediment	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240 (Low Level)
µg/Kg (ppb)
Dry Weight Basis

Sample Name: #11
Lab Code: K1979-2

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Brummett Date 4-30

U0021

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/03/92
Sample Matrix:	Sediment	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240 (Low Level)
µg/Kg (ppb)
Dry Weight Basis

Sample Name: #101
Lab Code: K1979-10

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Rennert Date 4-30

U0022

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/03/92
Sample Matrix:	Sediment	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240 (Low Level)
µg/Kg (ppb)
Dry Weight Basis

Sample Name: #12
Lab Code: K1979-14

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Rochette Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name:		#10	#8	#9
Lab Code:		K1979-1	K1979-3	K1979-4
Date Analyzed:		04/03/92	04/03/92	04/03/92
Analyte	**MRL**			
Chloromethane	1	ND	ND	ND
Vinyl Chloride	1	ND	ND	ND
Bromomethane	1	ND	ND	2
Chloroethane	1	ND	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND	ND
1,1-Dichloroethene	1	ND	ND	ND
Acetone	20	ND	ND	ND
Carbon Disulfide	1	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	1	ND	ND	ND
cis-1,2-Dichloroethene	1	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND
Chloroform	1	ND	ND	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND	ND
Carbon Tetrachloride	1	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	1	ND	ND	ND
Vinyl Acetate	10	ND	ND	ND
Trichloroethene (TCE)	1	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND
Bromodichloromethane	1	ND	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND	ND
trans-1,3-Dichloropropene	1	ND	ND	ND
2-Hexanone	10	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND	ND
Toluene	1	ND	ND	ND
cis-1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND
Tetrachloroethene (PCE)	1	ND	ND	ND
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND
Bromoform	1	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin T Bennett Date 4-30

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name:		#14	#1	#3
Lab Code:		K1979-5	K1979-6	K1979-8
Date Analyzed:		04/06/92	04/06/92	04/06/92
Analyte	**MRL**			
Chloromethane	1	ND	ND	ND
Vinyl Chloride	1	ND	ND	ND
Bromomethane	1	ND	ND	ND
Chloroethane	1	ND	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND	ND
1,1-Dichloroethene	1	ND	ND	ND
Acetone	20	ND	32	ND
Carbon Disulfide	1	ND	3	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	1	ND	ND	ND
cis-1,2-Dichloroethene	1	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND
Chloroform	1	ND	27	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND	ND
Carbon Tetrachloride	1	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	1	ND	ND	ND
Vinyl Acetate	10	ND	ND	ND
Trichloroethene (TCE)	1	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND
Bromodichloromethane	1	ND	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND	ND
trans-1,3-Dichloropropene	1	ND	ND	ND
2-Hexanone	10	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND	ND
Toluene	1	ND	ND	ND
cis-1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND
Tetrachloroethene (PCE)	1	ND	ND	ND
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND
Bromoform	1	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by _____ Date 4-30

Q0025

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Work Order No.: K921979

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name:		#4	#5	#6
Lab Code:		K1979-9	K1979-11	K1979-12
Date Analyzed:		04/06/92	04/06/92	04/06/92
Analyte	MRL			
Chloromethane	1	ND	ND	ND
Vinyl Chloride	1	ND	ND	ND
Bromomethane	1	ND	ND	ND
Chloroethane	1	ND	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND	ND
1,1-Dichloroethene	1	ND	ND	ND
Acetone	20	ND	ND	ND
Carbon Disulfide	1	ND	1	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	1	ND	ND	ND
cis-1,2-Dichloroethene	1	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND
Chloroform	1	ND	22	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND	ND
Carbon Tetrachloride	1	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	1	ND	ND	ND
Vinyl Acetate	10	ND	ND	ND
Trichloroethene (TCE)	1	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND
Bromodichloromethane	1	ND	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND	ND
trans-1,3-Dichloropropene	1	ND	ND	ND
2-Hexanone	10	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND	ND
Toluene	1	ND	ND	ND
cis-1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND
Tetrachloroethene (PCE)	1	ND	ND	ND
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND
Bromoform	1	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by [signature] Date 4-30

00026

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name:		#7	#13	Method Blank
Lab Code:		K1979-13	K1979-15	K1979-MB
Date Analyzed:		04/06/92	04/06/92	04/03/92
Analyte	**MRL**			
Chloromethane	1	ND	ND	ND
Vinyl Chloride	1	ND	ND	ND
Bromomethane	1	ND	ND	ND
Chloroethane	1	ND	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND	ND
1,1-Dichloroethene	1	ND	ND	ND
Acetone	20	34	ND	ND
Carbon Disulfide	1	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	1	ND	ND	ND
cis-1,2-Dichloroethene	1	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND
Chloroform	1	ND	ND	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND	ND
Carbon Tetrachloride	1	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	1	ND	ND	ND
Vinyl Acetate	10	ND	ND	ND
Trichloroethene (TCE)	1	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND
Bromodichloromethane	1	ND	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND	ND
trans-1,3-Dichloropropene	1	ND	ND	ND
2-Hexanone	10	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND	ND
Toluene	1	ND	ND	ND
cis-1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND
Tetrachloroethene (PCE)	1	ND	ND	ND
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND
Bromoform	1	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by _____ Date 4-30

010027

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Work Order No.: K921979

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

		Method Blank
Sample Name:		**K1979-MB**
Lab Code:		
Date Analyzed:		**04/06/92**
Analyte	**MRL**	
Chloromethane	1	ND
Vinyl Chloride	1	ND
Bromomethane	1	ND
Chloroethane	1	ND
Trichlorofluoromethane (Freon 11)	1	ND
Trichlorotrifluoroethane (Freon 113)	10	ND
1,1-Dichloroethene	1	ND
Acetone	20	ND
Carbon Disulfide	1	ND
Methylene Chloride	10	ND
trans-1,2-Dichloroethene	1	ND
cis-1,2-Dichloroethene	1	ND
2-Butanone (MEK)	10	ND
1,1-Dichloroethane	1	ND
Chloroform	1	ND
1,1,1-Trichloroethane (TCA)	1	ND
Carbon Tetrachloride	1	ND
Benzene	1	ND
1,2-Dichloroethane	1	ND
Vinyl Acetate	10	ND
Trichloroethene (TCE)	1	ND
1,2-Dichloropropane	1	ND
Bromodichloromethane	1	ND
2-Chloroethyl Vinyl Ether	10	ND
trans-1,3-Dichloropropene	1	ND
2-Hexanone	10	ND
4-Methyl-2-pentanone (MIBK)	10	ND
Toluene	1	ND
cis-1,3-Dichloropropene	1	ND
1,1,2-Trichloroethane	1	ND
Tetrachloroethene (PCE)	1	ND
Dibromochloromethane	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
Styrene	1	ND
Total Xylenes	1	ND
Bromoform	1	ND
1,1,2,2-Tetrachloroethane	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Bennett Date 4-30

028

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/03/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #10
Lab Code: K1979-1

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Devaney Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/03/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #8
Lab Code: K1979-3

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Bennett Date 4-30

U0030

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/03/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #9
Lab Code: K1979-4

CAS Number	TIC	Retention Time	Estimated Concentration
--	Unknown	19.61	7

Approved by Kevin Dennett Date 4-30

00031

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #1
Lab Code: K1979-6

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by _____ Date 4-30

00033

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #14
Lab Code: K1979-5

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Dennett Date 4-30

U0032

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #3
Lab Code: K1979-8

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin T Dewhirst Date 4-30

U0034

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #4
Lab Code: K1979-9

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by _____ Date 4-30

U0035

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #5
Lab Code: K1979-11

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Dennett Date 4-30

U0036

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #6
Lab Code: K1979-12

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Brown Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #7
Lab Code: K1979-13

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Dennett Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #13
Lab Code: K1979-15

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by [signature] Date 4-30

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Analyzed:**	04/03/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: Method Blank
Lab Code: K1979-MB

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Bennett Date 4-30

U0040

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Analyzed:**	04/06/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Tentatively Identified Compounds (TIC)

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: Method Blank
Lab Code: K1979-MB

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS

DETECTED

Approved by Kevin Tarrant Date 4-30

00041

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Sediment

Date Received: 03/30/92
Date Extracted: 04/06/92
Date Analyzed: 04/20/92
Work Order No.: K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #11
Lab Code: K1979-2

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	0.3	ND	2,6-Dinitrotoluene	0.3	ND
Aniline	0.3	ND	Diethyl Phthalate	0.3	ND
Bis(2-chloroethyl) Ether	0.3	ND	4-Chlorophenyl Phenyl Ether	0.3	ND
1,2-Dichlorobenzene	0.3	ND	Fluorene	0.3	ND
1,3-Dichlorobenzene	0.3	ND	4-Nitroaniline	2	ND
1,4-Dichlorobenzene	0.3	ND	N-Nitrosodiphenylamine	0.3	ND
Bis(2-chloroisopropyl) Ether	0.3	ND	4-Bromophenyl Phenyl Ether	0.3	ND
N-Nitrosodi-n-propylamine	0.3	ND	Hexachlorobenzene	0.3	ND
Hexachloroethane	0.3	ND	Phenanthrene	0.3	ND
Nitrobenzene	0.3	ND	Anthracene	0.3	ND
Isophorone	0.3	ND	Di-n-butyl Phthalate	0.3	ND
Bis(2-chloroethoxy)methane	0.3	ND	Fluoranthene	0.3	ND
1,2,4-Trichlorobenzene	0.3	ND	Pyrene	0.3	ND
Naphthalene	0.3	ND	Butylbenzyl Phthalate	0.3	ND
4-Chloroaniline	0.3	ND	3,3'-Dichlorobenzidine	0.3	ND
Hexachlorobutadiene	0.3	ND	Benz(a)anthracene	0.3	ND
2-Methylnaphthalene	0.3	ND	Bis(2-ethylhexyl) Phthalate	0.3	ND
Hexachlorocyclopentadiene	0.3	ND	Chrysene	0.3	ND
2-Chloronaphthalene	0.3	ND	Di-n-octyl Phthalate	0.3	ND
2-Nitroaniline	2	ND	Benzo(b)fluoranthene	0.3	ND
Dimethyl Phthalate	0.3	ND	Benzo(k)fluoranthene	0.3	ND
Acenaphthylene	0.3	ND	Benzo(a)pyrene	0.3	ND
3-Nitroaniline	2	ND	Indeno(1,2,3-c,d)pyrene	0.3	ND
Acenaphthene	0.3	ND	Dibenz(a,h)anthracene	0.3	ND
Dibenzofuran	0.3	ND	Benzo(g,h,i)perylene	0.3	ND
2,4-Dinitrotoluene	0.3	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	0.3	ND	2,4-Dichlorophenol	0.3	ND
2-Chlorophenol	0.3	ND	4-Chloro-3-methylphenol	0.3	ND
Benzyl Alcohol	0.3	ND	2,4,6-Trichlorophenol	0.3	ND
2-Methylphenol	0.3	ND	2,4,5-Trichlorophenol	0.3	ND
3- and 4-Methylphenol◆	0.3	ND	2,4-Dinitrophenol	2	ND
2-Nitrophenol	0.3	ND	4-Nitrophenol	2	ND
2,4-Dimethylphenol	0.3	ND	2-Methyl-4,6-dinitrophenol	2	ND
Benzoic Acid	2	ND	Pentachlorophenol	2	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kenn Brannan Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/16/92
		Work Order No.:	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #101
Lab Code: K1979-10

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	0.3	ND	2,6-Dinitrotoluene	0.3	ND
Aniline	0.3	ND	Diethyl Phthalate	0.3	ND
Bis(2-chloroethyl) Ether	0.3	ND	4-Chlorophenyl Phenyl Ether	0.3	ND
1,2-Dichlorobenzene	0.3	ND	Fluorene	0.3	ND
1,3-Dichlorobenzene	0.3	ND	4-Nitroaniline	2	ND
1,4-Dichlorobenzene	0.3	ND	N-Nitrosodiphenylamine	0.3	ND
Bis(2-chloroisopropyl) Ether	0.3	ND	4-Bromophenyl Phenyl Ether	0.3	ND
N-Nitrosodi-n-propylamine	0.3	ND	Hexachlorobenzene	0.3	ND
Hexachloroethane	0.3	ND	Phenanthrene	0.3	ND
Nitrobenzene	0.3	ND	Anthracene	0.3	ND
Isophorone	0.3	ND	Di-n-butyl Phthalate	0.3	ND
Bis(2-chloroethoxy)methane	0.3	ND	Fluoranthene	0.3	ND
1,2,4-Trichlorobenzene	0.3	ND	Pyrene	0.3	ND
Naphthalene	0.3	ND	Butylbenzyl Phthalate	0.3	ND
4-Chloroaniline	0.3	ND	3,3'-Dichlorobenzidine	0.3	ND
Hexachlorobutadiene	0.3	ND	Benz(a)anthracene	0.3	ND
2-Methylnaphthalene	0.3	ND	Bis(2-ethylhexyl) Phthalate	0.3	ND
Hexachlorocyclopentadiene	0.3	ND	Chrysene	0.3	ND
2-Chloronaphthalene	0.3	ND	Di-n-octyl Phthalate	0.3	ND
2-Nitroaniline	2	ND	Benzo(b)fluoranthene	0.3	ND
Dimethyl Phthalate	0.3	ND	Benzo(k)fluoranthene	0.3	ND
Acenaphthylene	0.3	ND	Benzo(a)pyrene	0.3	ND
3-Nitroaniline	2	ND	Indeno(1,2,3-c,d)pyrene	0.3	ND
Acenaphthene	0.3	ND	Dibenz(a,h)anthracene	0.3	ND
Dibenzofuran	0.3	ND	Benzo(g,h,i)perylene	0.3	ND
2,4-Dinitrotoluene	0.3	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	0.3	ND	2,4-Dichlorophenol	0.3	ND
2-Chlorophenol	0.3	ND	4-Chloro-3-methylphenol	0.3	ND
Benzyl Alcohol	0.3	ND	2,4,6-Trichlorophenol	0.3	ND
2-Methylphenol	0.3	ND	2,4,5-Trichlorophenol	0.3	ND
3- and 4-Methylphenol◆	0.3	ND	2,4-Dinitrophenol	2	ND
2-Nitrophenol	0.3	ND	4-Nitrophenol	2	ND
2,4-Dimethylphenol	0.3	ND	2-Methyl-4,6-dinitrophenol	2	ND
Benzoic Acid	2	ND	Pentachlorophenol	2	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kevin Brittain Date 4-30

00043

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

lient:	U.S. Army Corps of Engineers	Date Received:	03/30/92
Project:	Draw Down 92/#92-HM-179	Date Extracted:	04/06/92
Sample Matrix:	Sediment	Date Analyzed:	04/22/92
		Work Order No.:	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #12
Lab Code: K1979-14

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	0.3	ND	2,6-Dinitrotoluene	0.3	ND
Aniline	0.3	ND	Diethyl Phthalate	0.3	ND
Bis(2-chloroethyl) Ether	0.3	ND	4-Chlorophenyl Phenyl Ether	0.3	ND
1,2-Dichlorobenzene	0.3	ND	Fluorene	0.3	ND
1,3-Dichlorobenzene	0.3	ND	4-Nitroaniline	2	ND
1,4-Dichlorobenzene	0.3	ND	N-Nitrosodiphenylamine	0.3	ND
Bis(2-chloroisopropyl) Ether	0.3	ND	4-Bromophenyl Phenyl Ether	0.3	ND
N-Nitrosodi-n-propylamine	0.3	ND	Hexachlorobenzene	0.3	ND
Hexachloroethane	0.3	ND	Phenanthrene	0.3	ND
Nitrobenzene	0.3	ND	Anthracene	0.3	ND
Isophorone	0.3	ND	Di-n-butyl Phthalate	0.3	ND
Bis(2-chloroethoxy)methane	0.3	ND	Fluoranthene	0.3	ND
1,2,4-Trichlorobenzene	0.3	ND	Pyrene	0.3	ND
Naphthalene	0.3	ND	Butylbenzyl Phthalate	0.3	ND
4-Chloroaniline	0.3	ND	3,3'-Dichlorobenzidine	0.3	ND
Hexachlorobutadiene	0.3	ND	Benz(a)anthracene	0.3	ND
2-Methylnaphthalene	0.3	ND	Bis(2-ethylhexyl) Phthalate	0.3	ND
Hexachlorocyclopentadiene	0.3	ND	Chrysene	0.3	ND
2-Chloronaphthalene	0.3	ND	Di-n-octyl Phthalate	0.3	ND
2-Nitroaniline	2	ND	Benzo(b)fluoranthene	0.3	ND
Dimethyl Phthalate	0.3	ND	Benzo(k)fluoranthene	0.3	ND
Acenaphthylene	0.3	ND	Benzo(a)pyrene	0.3	ND
3-Nitroaniline	2	ND	Indeno(1,2,3-c,d)pyrene	0.3	ND
Acenaphthene	0.3	ND	Dibenz(a,h)anthracene	0.3	ND
Dibenzofuran	0.3	ND	Benzo(g,h,i)perylene	0.3	ND
2,4-Dinitrotoluene	0.3	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	0.3	ND	2,4-Dichlorophenol	0.3	ND
2-Chlorophenol	0.3	ND	4-Chloro-3-methylphenol	0.3	ND
Benzyl Alcohol	0.3	ND	2,4,6-Trichlorophenol	0.3	ND
2-Methylphenol	0.3	ND	2,4,5-Trichlorophenol	0.3	ND
3- and 4-Methylphenol◆	0.3	ND	2,4-Dinitrophenol	2	ND
2-Nitrophenol	0.3	ND	4-Nitrophenol	2	ND
2,4-Dimethylphenol	0.3	ND	2-Methyl-4,6-dinitrophenol	2	ND
Benzoic Acid	2	ND	Pentachlorophenol	2	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by [signature] Date 4-30

U0044

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Extracted:**	04/06/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/10/92
Sample Matrix:	Sediment	**Work Order No.:**	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Sample Name: Method Blank
Lab Code: K1979-MB

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	0.3	ND	2,6-Dinitrotoluene	0.3	ND
Aniline	0.3	ND	Diethyl Phthalate	0.3	ND
Bis(2-chloroethyl) Ether	0.3	ND	4-Chlorophenyl Phenyl Ether	0.3	ND
1,2-Dichlorobenzene	0.3	ND	Fluorene	0.3	ND
1,3-Dichlorobenzene	0.3	ND	4-Nitroaniline	2	ND
1,4-Dichlorobenzene	0.3	ND	N-Nitrosodiphenylamine	0.3	ND
Bis(2-chloroisopropyl) Ether	0.3	ND	4-Bromophenyl Phenyl Ether	0.3	ND
N-Nitrosodi-n-propylamine	0.3	ND	Hexachlorobenzene	0.3	ND
Hexachloroethane	0.3	ND	Phenanthrene	0.3	ND
Nitrobenzene	0.3	ND	Anthracene	0.3	ND
Isophorone	0.3	ND	Di-n-butyl Phthalate	0.3	ND
Bis(2-chloroethoxy)methane	0.3	ND	Fluoranthene	0.3	ND
1,2,4-Trichlorobenzene	0.3	ND	Pyrene	0.3	ND
Naphthalene	0.3	ND	Butylbenzyl Phthalate	0.3	ND
4-Chloroaniline	0.3	ND	3,3'-Dichlorobenzidine	0.3	ND
Hexachlorobutadiene	0.3	ND	Benz(a)anthracene	0.3	ND
2-Methylnaphthalene	0.3	ND	Bis(2-ethylhexyl) Phthalate	0.3	ND
Hexachlorocyclopentadiene	0.3	ND	Chrysene	0.3	ND
2-Chloronaphthalene	0.3	ND	Di-n-octyl Phthalate	0.3	ND
2-Nitroaniline	2	ND	Benzo(b)fluoranthene	0.3	ND
Dimethyl Phthalate	0.3	ND	Benzo(k)fluoranthene	0.3	ND
Acenaphthylene	0.3	ND	Benzo(a)pyrene	0.3	ND
3-Nitroaniline	2	ND	Indeno(1,2,3-c,d)pyrene	0.3	ND
Acenaphthene	0.3	ND	Dibenz(a,h)anthracene	0.3	ND
Dibenzofuran	0.3	ND	Benzo(g,h,i)perylene	0.3	ND
2,4-Dinitrotoluene	0.3	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	0.3	ND	2,4-Dichlorophenol	0.3	ND
2-Chlorophenol	0.3	ND	4-Chloro-3-methylphenol	0.3	ND
Benzyl Alcohol	0.3	ND	2,4,6-Trichlorophenol	0.3	ND
2-Methylphenol	0.3	ND	2,4,5-Trichlorophenol	0.3	ND
3- and 4-Methylphenol◆	0.3	ND	2,4-Dinitrophenol	2	ND
2-Nitrophenol	0.3	ND	4-Nitrophenol	2	ND
2,4-Dimethylphenol	0.3	ND	2-Methyl-4,6-dinitrophenol	2	ND
Benzoic Acid	2	ND	Pentachlorophenol	2	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kevin Tennant Date 4-30

U0045

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #11
Lab Code: K1979-2

CAS Number	TIC	Retention Time	Estimated Concentration
74367332	2-Methyl-2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester of Propanoic Acid	14.16	0.5
--	Unknown	14.45	0.7
--	Unknown Hydrocarbon	18.53	0.6
544638	Tetradecanoic Acid	19.23	0.7
--	Unknown	19.62	0.5
--	Unknown	20.02	0.5
--	Unknown	21.22	3.4
57103	Hexadecanoic Acid	21.39	1.6
10544500	Molecular Sulfur	22.41	15
--	Unknown	22.87	0.8
--	Unknown	23.15	2.8
--	Unknown	24.69	0.9
--	Unknown Hydrocarbon	26.24	0.7
--	Unknown Hydrocarbon	27.88	2.2
--	Unknown	29.31	1.2
--	Unknown Hydrocarbon	30.02	1.9
--	Unknown	32.13	0.5
--	Unknown	33.17	0.6
--	Unknown	36.38	1.0
--	Unknown	37.06	3.3

Approved by Kevin Dewhirst Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/16/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #101
Lab Code: K1979-10

CAS Number	TIC	Retention Time	Estimated Concentration
74367332	2-Methyl-2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester of Propanoic Acid	14.51	0.3
--	Unknown	14.80	0.3
--	Unknown	16.56	0.3
544638	Tetradecanoic Acid	19.59	0.4
--	Unknown	20.07	0.4
--	Unknown	21.59	1.8
--	Unknown	21.66	0.3
57103	Hexadecanoic Acid	21.76	0.3
10544500	Molecular Sulfur	22.88	12
--	Unknown	25.05	0.5
--	Unknown Hydrocarbon	28.32	0.4
--	Unknown	30.65	0.4

Approved by [signature] Date 4-30

00047

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/22/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #12
Lab Code: K1979-14

CAS Number	TIC	Retention Time	Estimated Concentration
74367332	2-Methyl-2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester of Propanoic Acid	14.17	0.3
--	Unknown	14.44	0.4
10544500	Molecular Sulfur	22.35	4.1
--	Unknown Hydrocarbon	27.85	0.5
--	Unknown	36.99	0.8

Approved by Kevin Pelham Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/08/92
		Work Order No.:	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #10
Lab Code: K1979-1

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol◆	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kevin Rennett Date 4-30

00049

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

ient: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Date Extracted: 03/31/92
Date Analyzed: 04/20/92
Work Order No.: K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #8
Lab Code: K1979-3

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol♦	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
♦ Quantified as 4-methylphenol.

Approved by _____ Date 4-30

00050

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #9
Lab Code: K1979-4

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol◆	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kevin Rathbun Date 4-30

00051

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Date Extracted: 03/31/92
Date Analyzed: 04/21/92
Work Order No.: K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #1
Lab Code: K1979-6

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol◆	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kevin Bennett Date 4-30

U0052

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	Date Received:	03/30/92
Project:	Draw Down 92/#92-HM-179	Date Extracted:	03/31/92
Sample Matrix:	Water	Date Analyzed:	04/20/92
		Work Order No.:	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #3
Lab Code: K1979-8

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol♦	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
♦ Quantified as 4-methylphenol.

Approved by Kevin Date 4-30

00053

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Date Extracted: 03/31/92
Date Analyzed: 04/20/92
Work Order No.: K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #4
Lab Code: K1979-9

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol◆	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kevin Trewhitt Date 4-30

U0054

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #5
Lab Code: K1979-11

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol◆	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kevin Pearson Date 4-30

00055

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	Date Received:	03/30/92
Project:	Draw Down 92/#92-HM-179	Date Extracted:	03/31/92
Sample Matrix:	Water	Date Analyzed:	04/20/92
		Work Order No.:	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #6
Lab Code: K1979-12

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol◆	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by _____ Date 4-30

U0056

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #7
Lab Code: K1979-13

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol◆	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
◆ Quantified as 4-methylphenol.

Approved by Kevin Beaumont Date 4-30

U0057

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Extracted: 03/31/92
Date Analyzed: 04/08/92
Work Order No.: K921979

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: Method Blank
Lab Code: K1979-MB

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol♦	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
♦ Quantified as 4-methylphenol.

Approved by Kevin Tennant Date 4-30

00058

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/08/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #10
Lab Code: K1979-1

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Trewitt Date 4-30

U0059

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #8
Lab Code: K1979-3

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by _____ Date 4-30

U0060

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #9
Lab Code: K1979-4

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kristine Brummett Date 4-30

U0061

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/21/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #1
Lab Code: K1979-6

CAS Number	TIC	Retention Time	Estimated Concentration
--	Dimethylcyclopentenone Isomer	6.88	60
--	Unknown	9.44	28
--	Unknown	9.50	31
--	Unknown	10.00	36
--	Unknown	10.32	24
--	Unknown	10.42	42
--	Unknown	13.14	150
--	Unknown	13.32	32
--	Unknown Hydrocarbon	14.96	29
--	Unknown	19.19	29
--	Unknown Hydrocarbon	21.24	71
--	Unknown	21.41	41
--	Unknown	21.90	32
--	Unknown Hydrocarbon	22.00	28
--	Unknown Hydrocarbon	22.50	24
--	Unknown	22.79	120
--	Unknown Organic Acid	23.35	29
--	Unknown	25.61	31
--	Unknown	26.32	78
--	(3.beta)-Stigmast-5-en-3-ol Isomer	36.47	76

Approved by [signature] Date 4-30

U0062

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	Date Received:	03/30/92
Project:	Draw Down 92/#92-HM-179	Date Extracted:	03/31/92
Sample Matrix:	Water	Date Analyzed:	04/20/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #3
Lab Code: K1979-8

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by Kevin Dennett Date 4-30

U0063

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #4
Lab Code: K1979-9

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by [signature] Date 4-30

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #5
Lab Code: K1979-11

CAS Number	TIC	Retention Time	Estimated Concentration
--	Unknown		32
--	Unknown		29
--	Dimethylcyclopentenone Isomer		92
--	Unknown		36
--	Unknown		64
--	Unknown		44
--	Unknown		20
--	Unknown		39
--	Unknown		21
--	Unknown		140
--	Unknown		34
--	Unknown Hydrocarbon	14.95	21
--	Unknown	19.17	22
--	Unknown Hydrocarbon	21.23	58
--	Unknown	21.39	37
--	Unknown	21.88	21
--	Unknown Hydrocarbon	22.00	18
--	Unknown Hydrocarbon	22.49	20
--	Unknown	22.77	80
--	Unknown Organic Acid	23.32	26

Approved by [signature] Date 4-30

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #6
Lab Code: K1979-12

CAS Number	TIC	Retention Time	Estimated Concentration

NO TENTATIVELY IDENTIFIED COMPOUNDS DETECTED

Approved by _____ Date 4-30

U0066

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Tentatively Identified Compounds (TIC)

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #7
Lab Code: K1979-13

CAS Number	TIC	Retention Time	Estimated Concentration
115866	Phosphoric Acid - Triphenyl Ester	25.58	7

Approved by Kevin Tennant Date 4-30

00067

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APPENDIX A

LABORATORY QC RESULTS

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COLUMBIA ANALYTICAL SERVICES, INC.

Laboratory Chronicle

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179

Date Received: 03/30/92
Work Order No.: K921979

Inorganic Parameters

Analyte	EPA Method	Date Analyzed
Ammonia as Nitrogen	350.3	04/06/92
Nitrate + Nitrite as Nitrogen	353.2	03/31/92
Nitrogen, Total Kjeldahl (TKN)	351.4	04/08,21/92
Orthophosphate as Phosphorus	365.3	04/01/92*
Phosphorus, Total	365.3	04/01/92

* Sample was received past the end of the recommended maximum holding time.

Approved by Kevin Tennant Date 4-30

00069

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Work Order No.: K921979

Duplicate Summary
Inorganic Parameters
mg/L (ppm)

Sample Name: #8
Lab Code: K1979-3

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Ammonia as Nitrogen	350.3	0.05	0.07	0.07	0.07	<1
Nitrate + Nitrite as Nitrogen	353.2	0.2	ND	ND	ND	--
Nitrogen, Total Kjeldahl (TKN)	351.4	0.1	0.7	0.7	0.7	<1
Orthophosphate as Phosphorus	365.3	0.01	0.04	0.04	0.04	<1
Phosphorus, Total	365.3	0.01	0.01	0.03	0.02	NC

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
NC Not Calculated

Approved by [signature] Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Work Order No.: K921979

Matrix Spike Summary
Inorganic Parameters
mg/L (ppm)

Sample Name: #8
Lab Code: K1979-3

Analyte	EPA Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Nitrate + Nitrite as Nitrogen	353.2	0.2	2.0	ND	1.9	95	75-125
Nitrogen, Total Kjeldahl (TKN)	351.4	0.1	100	0.7	99.8	99	75-125
Orthophosphate as Phosphorus	365.3	0.01	0.2	0.04	0.22	90	75-125
Phosphorus, Total	365.3	0.01	0.2	0.01	0.23	110	75-125

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin Trewitt Date 4-30

U0071

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Sediment

Date Received: 03/30/92
Work Order No.: K921979

Duplicate Summary
Total Metals
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #11
Lab Code: K1979-2

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Aluminum	6010	10	8,870	8,120	8,500	9
Antimony	6010	10	ND	ND	ND	--
Arsenic	7060	1	4	4	4	<1
Barium	6010	1	109	102	106	7
Beryllium	6010	1	ND	ND	ND	--
Cadmium	6010	1	ND	ND	ND	--
Calcium	6010	10	4,680	4,220	4,450	10
Chromium	6010	2	15	14	14	7
Cobalt	6010	2	16	15	15	6
Copper	6010	2	21	18	20	15
Iron	6010	4	19,200	18,200	18,700	5
Lead	6010	20	ND	ND	ND	--
Magnesium	6010	2	3,970	3,850	3,910	3
Manganese	6010	1	326	311	318	5
Mercury	7471	0.2	ND	ND	ND	--
Nickel	6010	10	12	12	12	<1
Potassium	6010	400	1,200	1,100	1,200	<1
Selenium	7740	1	ND	ND	ND	--
Silver	6010	2	ND	ND	ND	--
Sodium	6010	20	252	252	252	<1
Thallium	7841	1	ND	ND	ND	--
Vanadium	6010	2	56	51	54	9
Zinc	6010	2	52	50	51	4

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by [signature] Date 4-30

00072

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Sediment

Date Received: 03/30/92
Work Order No.: K921979

Matrix Spike Summary
Total Metals
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #11
Lab Code: K1979-2

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Aluminum	10	724	8,870	8,800	NA	60-130
Antimony	10	181	ND	121	67	30-120
Arsenic	1	15	4	17	87	60-130
Barium	1	724	109	768	91	60-130
Beryllium	1	18	ND	17	94	60-130
Cadmium	1	18	ND	17	94	60-130
Chromium	2	72	15	84	96	60-130
Cobalt	2	181	16	181	91	60-130
Copper	2	91	21	101	88	60-130
Iron	4	362	19,200	18,600	NA	60-130
Lead	20	181	ND	173	96	60-130
Manganese	1	181	326	476	83	60-130
Mercury	0.2	0.5	ND	0.5	100	60-130
Nickel	10	181	12	187	97	60-130
Selenium	1	4	ND	4	100	60-130
Silver	2	18	ND	17	94	60-130
Thallium	1	18	ND	18	100	60-130
Vanadium	2	181	56	229	96	60-130
Zinc	2	181	52	208	86	60-130

MRL Method Reporting Limit
NA Not Applicable because of the sample matrix. Accuracy of the spike recovery value is reduced, since the sample concentration was greater than four times the amount spiked.
ND None Detected at or above the method reporting limit

Approved by [signature] Date 4-30

U0073

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Duplicate Summary
Total Metals
µg/L (ppb)

Sample Name: #10
Lab Code: K1979-1

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Aluminum	6010	50	1,480	1,300	1,390	13
Antimony	6010	50	ND	ND	ND	--
Arsenic	7060	5	21	21	21	<1
Barium	6010	5	143	141	142	1
Beryllium	6010	5	ND	ND	ND	--
Cadmium	6010	3	ND	ND	ND	--
Calcium	6010	50	75,500	74,900	75,200	<1
Chromium	6010	5	ND	ND	ND	--
Cobalt	6010	10	ND	ND	ND	--
Copper	6010	10	ND	ND	ND	--
Iron	6010	20	30,700	30,300	30,500	1
Lead	7421	2	ND	ND	ND	--
Magnesium	6010	10	20,400	20,200	20,300	<1
Manganese	6010	5	4,390	4,360	4,380	<1
Mercury	7470	0.5	ND	ND	ND	--
Nickel	6010	20	ND	ND	ND	--
Potassium	6010	2,000	5,000	5,000	5,000	<1
Selenium	7740	5	ND	ND	ND	--
Silver	6010	10	ND	ND	ND	--
Sodium	6010	100	20,700	20,500	20,600	<1
Thallium	7841	5	ND	ND	ND	--
Vanadium	6010	10	ND	ND	ND	--
Zinc	6010	10	21	16	18	28

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin T Bennett Date 4-30

00074

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Work Order No.:**	K921979
Sample Matrix:	Water		

Matrix Spike Summary
Total Metals
µg/L (ppb)

Sample Name: #10
Lab Code: K1979-1

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Aluminum	50	2,000	1,480	3,080	80	75-125
Antimony	50	500	ND	486	97	75-125
Arsenic	5	40	21	51	75	75-125
Barium	5	2,000	143	1,940	90	75-125
Beryllium	5	50	ND	47	94	75-125
Cadmium	3	50	ND	48	96	75-125
Chromium	5	200	ND	195	98	75-125
Cobalt	10	500	ND	467	93	75-125
Copper	10	250	ND	236	94	75-125
Iron	20	1,000	30,700	30,900	NA	75-125
Lead	2	20	ND	21	105	75-125
Manganese	5	500	4,390	4,810	84	75-125
Mercury	0.5	1.0	ND	0.9	90	60-140
Nickel	20	500	ND	481	96	75-125
Selenium	5	10	ND	8	80	60-125
Silver	10	50	ND	51	102	75-125
Thallium	5	50	ND	49	98	75-125
Vanadium	10	500	ND	496	99	75-125
Zinc	10	500	21	475	91	75-125

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
NA Not Applicable because of the sample matrix. Accuracy of the spike recovery value is reduced, since the sample concentration was greater than four times the amount spiked.

Approved by [signature] Date 4-30

U0075

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/02/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/16/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3540/8080

Sample Name	Lab Code	Percent Recovery	
		Tetrachloro-*m*-xylene	Decachlorobiphenyl
#11	K1979-2	60	70
#11	K1979-2MS	74	65
#11	K1979-2DMS	77	66
#101	K1979-10	77	67
#12	K1979-14	75	82
Laboratory Control Sample	K1979-LCS	82	74
Method Blank	K1979-MB	84	74
	CAS Acceptance Criteria	45-112	53-120

Approved by Kevin Rewata Date 4-30

U0076

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/02/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/16/92
		Work Order No.:	K921979

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3540/8080
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #11
Lab Code: K1979-2

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	Result	MS	DMS	MS	DMS	Criteria	Difference
Gamma-BHC (Lindane)	0.12	0.12	ND	0.15	0.15	125	125	52-125	<1
Heptachlor	0.12	0.12	ND	0.09	0.09	75	75	38-147	<1
Aldrin	0.12	0.12	ND	0.13	0.10	108	83	51-124	26
Dieldrin	0.12	0.12	ND	0.11	0.10	92	83	57-130	10
Endrin	0.12	0.12	ND	0.11	0.10	92	83	54-143	10
4,4'-DDT	0.12	0.12	ND	0.08	0.07	67	58	40-157	14

ND None Detected at or above the method reporting limit

Approved by Kevin Dennett Date 4-30

U0077

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Extracted:**	04/02/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/16/92
LCS Matrix:	Soil	**Work Order No.:**	K921979

Laboratory Control Sample Summary
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3540/8080
mg/Kg (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Gamma-BHC (Lindane)	0.07	0.06	86	52-125
Heptachlor	0.07	0.06	86	38-147
Aldrin	0.07	0.06	86	51-124
Dieldrin	0.07	0.06	86	57-130
Endrin	0.07	0.07	100	54-143
4,4'-DDT	0.07	0.07	100	40-157

Approved by Kevin Rennick Date 4-30

U0078

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/04,07/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3510/8080

Sample Name	Lab Code	Percent Recovery	
		Tetrachloro-*m*-xylene	Decachlorobiphenyl
#10	K1979-1	38	41
#10	K1979-1MS	53	42
#10	K1979-1DMS	67	45
#8	K1979-3	46	56
#9	K1979-4	59	48
#1	K1979-6	62	NA
#3	K1979-8	49	41
#4	K1979-9	38	43
#5	K1979-11	73	NA
#6	K1979-12	43	37
	CAS Acceptance Criteria	26-93	31-111

NA Not Applicable because of the sample matrix. Analysis of this sample required a dilution such that the surrogate concentration was diluted below the MRL.

Approved by KEVIN DENNETT Date 4-30

00079

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/04/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3510/8080

Sample Name	Lab Code	Percent Recovery	
		Tetrachloro-*m*-xylene	Decachlorobiphenyl
#7	K1979-13	33	61
Laboratory Control Sample	K1979-LCS	42	*30
Method Blank	K1979-MB	85	77
	CAS Acceptance Criteria	26-93	31-111

* Outside of acceptance limits. Since the reduced recovery is for the LCS, and since all recoveries for pesticides of interest were *within* acceptance criteria, it is the laboratory's opinion that the data has not been adversely impacted.

Approved by Kevin T Burnett Date 4-30

U0080

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/04/92
		Work Order No.:	K921979

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3510/8080
µg/L (ppb)

Sample Name: #10
Lab Code: K1979-1

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Criteria	Relative Percent Difference
Gamma-BHC (Lindane)	1.0	1.0	ND	0.64	0.75	64	75	58-119	16
Heptachlor	1.0	1.0	ND	0.62	0.71	62	71	37-115	14
Aldrin	1.0	1.0	ND	0.56	0.66	56	66	30-111	16
Dieldrin	1.0	1.0	ND	0.92	1.09	92	109	55-124	17
Endrin	1.0	1.0	ND	0.78	0.88	78	88	64-127	12
4,4'-DDT	1.0	1.0	ND	0.74	0.78	74	78	57-132	5

ND None Detected at or above the method reporting limit

Approved by [signature] Date 4-30

U0081

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Extracted:**	03/31/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/04/92
LCS Matrix:	Water	**Work Order No.:**	K921979

Laboratory Control Sample Summary
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs)
EPA Methods 3510/8080
µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Gamma-BHC (Lindane)	1.0	0.67	67	58-119
Heptachlor	1.0	0.43	43	37-115
Aldrin	1.0	0.33	33	30-111
Dieldrin	1.0	0.88	88	55-124
Endrin	1.0	0.93	93	64-127
4,4'-DDT	1.0	0.71	71	57-132

Approved by Kevin Dewhirst Date 4-30

U0082

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/03/92
Sample Matrix:	Sediment	**Work Order No.:**	K921979

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8240 (Low Level)

Sample Name	Lab Code	Percent Recovery		
		1,2-Dichloroethane - D_4	Toluene - D_8	4-Bromofluorobenzene
#11	K1979-2	110	90	99
#101	K1979-10	106	91	100
#12	K1979-14	111	95	99
Method Blank	K1979-MB	104	89	97
#12	K1979-14MS	75	108	105
#12	K1979-14DMS	78	102	105
	EPA Acceptance Criteria	70-121	84-138	59-113

Approved by Kevin Dermott Date 4-30

U0083

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Sediment

Date Received: 03/30/92
Date Analyzed: 04/03/92
Work Order No.: K921979

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8240 (Low Level)
µg/Kg (ppb)
Dry Weight Basis

Sample Name: #12
Lab Code: K1979-14

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria	Relative Percent Difference
1,1-Dichloroethene	97	95	ND	76	62	78	65	59-172	18
Benzene	97	95	ND	73	91	75	96	66-142	25
Trichloroethene	97	95	ND	80	77	82	81	62-137	1
Toluene	97	95	ND	96	91	99	96	59-139	3
Chlorobenzene	97	95	ND	91	92	94	97	60-133	3

ND None Detected at or above the method reporting limit

Approved by Kevin Dennett Date 4-30

U0084

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/03/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8240

Sample Name	Lab Code	Percent Recovery		
		1,2-Dichloroethane - D_4	Toluene - D_8	4-Bromofluorobenzene
#10	K1979-1	110	99	104
#8	K1979-3	107	99	101
#9	K1979-4	102	98	92
Method Blank	K1979-MB	101	99	102
	EPA Acceptance Criteria	76-114	88-110	86-115

Approved by Kevin Dennett Date 4-30

U0085

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8240

Sample Name	Lab Code	Percent Recovery		
		1,2-Dichloroethane - D_4	Toluene - D_8	4-Bromofluorobenzene
#14	K1979-5	105	107	109
#1	K1979-6	98	98	102
#3	K1979-8	107	105	106
#4	K1979-9	105	104	105
#5	K1979-11	103	99	104
#6	K1979-12	106	105	104
#7	K1979-13	112	104	107
#13	K1979-15	109	106	109
#6	K1979-12MS	108	103	106
#6	K1979-12DMS	105	103	103
Method Blank	K1979-MB	98	104	103
	EPA Acceptance Criteria	76-114	88-110	86-115

Approved by Kevin Trewhitt Date 4-30

U0086

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/06/92
Sample Matrix:	Water	**Work Order No.:**	K921979

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: #6
Lab Code: K1979-12

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria	Relative Percent Difference
1,1-Dichloroethene	50	ND	47	45	94	90	61-145	4
Benzene	50	ND	48	49	96	98	76-127	2
Trichloroethene	50	ND	47	49	94	98	71-120	4
Toluene	50	ND	49	51	98	102	76-125	4
Chlorobenzene	50	ND	49	49	98	98	75-130	<1

ND None Detected at or above the method reporting limit

Approved by Kevin Dewalt Date 4-30

U0087

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
#11	K1979-2	66	71	93	72	82	89
EPA Acceptance Criteria		25-121	24-113	19-122	23-120	30-115	18-137

2FP 2-Fluorophenol
PHL Phenol-D_6
TBP 2,4,6-Tribromophenol
NBZ Nitrobenzene-D_5
FBP 2-Fluorobiphenyl
TPH Terphenyl-D_{14}

Approved by _____ Date 4-30

U0088

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/16/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
#101	K1979-10	70	72	95	72	77	94
EPA Acceptance Criteria		25-121	24-113	19-122	23-120	30-115	18-137

2FP	2-Fluorophenol
PHL	Phenol-D_6
TBP	2,4,6-Tribromophenol
NBZ	Nitrobenzene-D_5
FBP	2-Fluorobiphenyl
TPH	Terphenyl-D_{14}

Approved by KEVIN RENNATA Date 4-30

U0089

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/21/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
#101	K1979-10MS	68	72	91	70	78	101
#101	K1979-10DMS	70	73	88	75	79	95
EPA Acceptance Criteria		25-121	24-113	19-122	23-120	30-115	18-137

2FP	2-Fluorophenol
PHL	Phenol-D_6
TBP	2,4,6-Tribromophenol
NBZ	Nitrobenzene-D_5
FBP	2-Fluorobiphenyl
TPH	Terphenyl-D_{14}

Approved by Kevin Brumm Date 4-30

U0090

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/22/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
#12	K1979-14	67	66	81	70	75	110
EPA Acceptance Criteria		25-121	24-113	19-122	23-120	30-115	18-137

2FP	2-Fluorophenol
PHL	Phenol-D_6
TBP	2,4,6-Tribromophenol
NBZ	Nitrobenzene-D_5
FBP	2-Fluorobiphenyl
TPH	Terphenyl-D_{14}

Approved by Kevin Dewhirst Date 4-30

U0091

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/10/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
Method Blank	K1979-MB	76	78	81	81	89	113
Laboratory Control Sample	K1979-LCS	77	78	88	80	88	103
EPA Acceptance Criteria		25-121	24-113	19-122	23-120	30-115	18-137

2FP	2-Fluorophenol
PHL	Phenol-D_6
TBP	2,4,6-Tribromophenol
NBZ	Nitrobenzene-D_5
FBP	2-Fluorobiphenyl
TPH	Terphenyl-D_{14}

Approved by Kevin Bennett Date 4-30

U0092

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	04/06/92
Sample Matrix:	Sediment	**Date Analyzed:**	04/21/92
		Work Order No.:	K921979

Matrix Spike/Duplicate Matrix Spike Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Sample Name: #101
Lab Code: K1979-10

	Spike Level		Sample	Spike Result		Percent Recovery		EPA	Relative
Analyte	MS	DMS	Result	MS	DMS	MS	DMS	Acceptance Criteria	Percent Difference
Phenol	4.3	4.3	ND	2.9	2.9	67	67	26-90	<1
2-Chlorophenol	4.3	4.3	ND	2.7	2.7	63	63	25-102	<1
1,4-Dichlorobenzene	1.7	1.7	ND	1.2	1.3	71	76	28-104	7
N-Nitrosodi-n-propylamine	1.7	1.7	ND	1.2	1.3	71	76	41-126	7
1,2,4-Trichlorobenzene	1.7	1.7	ND	1.2	1.3	71	76	38-107	7
4-Chloro-3-methylphenol	4.3	4.3	ND	3.3	3.4	77	79	26-103	3
Acenaphthene	1.7	1.7	ND	1.4	1.4	82	82	31-137	<1
4-Nitrophenol	4.3	4.3	ND	3.1	3.1	72	72	11-114	<1
2,4-Dinitrotoluene	1.7	1.7	ND	1.4	1.5	82	88	28-89	7
Pentachlorophenol	4.3	4.3	ND	2.9	2.5	67	58	17-109	14
Pyrene	1.7	1.7	ND	1.7	1.6	100	94	35-142	6

ND None Detected at or above the method reporting limit

Approved by Kevin Tennant Date 4-30

U0093

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	Date Extracted:	04/06/92
Project:	Draw Down 92/#92-HM-179	Date Analyzed:	04/10/92
LCS Matrix:	Soil	Work Order No.:	K921979

Laboratory Control Sample Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3550/8270
mg/Kg (ppm)
Dry Weight Basis

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Phenol	3.0	2.0	67	5-112
2-Chlorophenol	3.0	2.3	77	23-134
1,4-Dichlorobenzene	1.2	0.9	75	20-124
N-Nitrosodi-n-propylamine	1.2	1.0	83	D-230
1,2,4-Trichlorobenzene	1.2	1.0	83	44-142
4-Chloro-3-methylphenol	3.0	2.2	73	22-147
Acenaphthene	1.2	1.1	92	47-145
4-Nitrophenol	3.0	2.1	70	D-132
2,4-Dinitrotoluene	1.2	0.9	75	39-139
Pentachlorophenol	3.0	2.5	83	14-176
Pyrene	1.2	1.2	100	52-115

D Detected; result must be greater than zero.

Approved by Kevin DeWalt Date 4-30

U0094

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/08/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
#10	K1979-1	48	34	84	78	80	87
Method Blank	K1979-MB	48	33	73	76	62	90
EPA Acceptance Criteria		21-100	10-94	10-123	35-114	43-116	33-141

2FP 2-Fluorophenol
PHL Phenol-D_6
TBP 2,4,6-Tribromophenol
NBZ Nitrobenzene-D_5
FBP 2-Fluorobiphenyl
TPH Terphenyl-D_{14}

Approved by [signature] Date 4-30

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/20/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
#10	K1979-1MS	57	46	88	73	69	75
#10	K1979-1DMS	57	47	98	78	76	101
#8	K1979-3	43	32	91	85	80	91
#9	K1979-4	38	27	80	73	72	95
#3	K1979-8	45	32	90	77	77	91
#4	K1979-9	44	32	88	75	72	87
#5	K1979-11	50	30	87	66	61	49
#6	K1979-12	46	33	101	80	75	89
#7	K1979-13	37	28	85	69	70	88
Laboratory Control Sample	K1979-LCS	47	33	105	77	56	94
EPA Acceptance Criteria		21-100	10-94	10-123	35-114	43-116	33-141

2FP	2-Fluorophenol
PHL	Phenol-D_6
TBP	2,4,6-Tribromophenol
NBZ	Nitrobenzene-D_5
FBP	2-Fluorobiphenyl
TPH	Terphenyl-D_{14}

Approved by _____ Date 4-30

U0096

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Received:**	03/30/92
Project:	Draw Down 92/#92-HM-179	**Date Extracted:**	03/31/92
Sample Matrix:	Water	**Date Analyzed:**	04/21/92
		Work Order No.:	K921979

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270

Sample Name	Lab Code	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
#1	K1979-6	57	39	89	76	72	62
EPA Acceptance Criteria		21-100	10-94	10-123	35-114	43-116	33-141

2FP 2-Fluorophenol
PHL Phenol-D_6
TBP 2,4,6-Tribromophenol
NBZ Nitrobenzene-D_5
FBP 2-Fluorobiphenyl
TPH Terphenyl-D_{14}

Approved by _____ Date 4-30

00097

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: U.S. Army Corps of Engineers
Project: Draw Down 92/#92-HM-179
Sample Matrix: Water

Date Received: 03/30/92
Date Extracted: 03/31/92
Date Analyzed: 04/20/92
Work Order No.: K921979

Matrix Spike/Duplicate Matrix Spike Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: #10
Lab Code: K1979-1

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria	Relative Percent Difference
Phenol	200	200	ND	90	87	45	44	12-89	2
2-Chlorophenol	200	200	ND	140	140	70	70	27-123	<1
1,4-Dichlorobenzene	82	82	ND	38	44	46	54	36-97	16
N-Nitrosodi-n-propylamine	82	82	ND	61	65	74	79	41-116	7
1,2,4-Trichlorobenzene	82	82	ND	42	47	51	57	39-98	11
4-Chloro-3-methylphenol	200	200	ND	150	150	75	75	23-97	<1
Acenaphthene	82	82	ND	62	67	76	82	46-118	8
4-Nitrophenol	200	200	ND	80	72	40	36	10-80	11
2,4-Dinitrotoluene	82	82	ND	54	59	66	72	24-96	9
Pentachlorophenol	200	200	ND	180	180	90	90	9-103	<1
Pyrene	82	82	ND	60	84	73	102	26-127	33

ND None Detected at or above the method reporting limit

Approved by Kevin Tebbutt Date 4-30

U0098

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	U.S. Army Corps of Engineers	**Date Extracted:**	03/31/92
Project:	Draw Down 92/#92-HM-179	**Date Analyzed:**	04/20/92
LCS Matrix:	Water	**Work Order No.:**	K921979

Laboratory Control Sample Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Phenol	100	27	27	5-112
2-Chlorophenol	100	67	67	23-134
1,4-Dichlorobenzene	40	12	30	20-124
N-Nitrosodi-n-propylamine	40	33	82	D-230
1,2,4-Trichlorobenzene	40	13	*32	44-142
4-Chloro-3-methylphenol	100	75	75	22-147
Acenaphthene	40	24	60	47-145
4-Nitrophenol	100	26	26	D-132
2,4-Dinitrotoluene	40	31	78	39-139
Pentachlorophenol	100	101	101	14-176
Pyrene	40	34	85	52-115

D Detected; result must be greater than zero.
* Outside acceptance limits

Approved by Kevin Trewhitt Date 4-30

00099

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APPENDIX B

CHAIN OF CUSTODY INFORMATION

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COOLER RECEIPT FORM

Project: Drawn Down 92

Cooler received on 3/30/92 and opened on 3/30/92 by L. Jordins

1)	Were custody seals on outside of cooler? ----------	(YES)	NO
	If yes, how many and where? Two front + side		
	Were signature and date correct? ----------	(YES)	NO
2)	Were custody papers taped to lid inside cooler? ----------	(YES)	NO
3)	Were custody papers properly filled out (ink, signed, etc.)? --------	(YES)	NO
4)	Did you sign custody papers in the appropriate place? ----------	(YES)	NO
5)	Did you attach shipper's packing slip to this form? ----------	(YES)	NO
6)	What kind of packing material was used? Vermiculite		
7)	Was sufficient ice used (if appropriate)? ----------	(YES)	NO
8)	Were all bottles sealed in separate plastic bags? ----------	(YES)	NO
9)	Did all bottles arrive in good condition (unbroken)? ----------	(YES)	NO
10)	Were all bottle labels complete (No., date, signed, anal. pres, etc.)	(YES)	NO
11)	Did all bottle labels and tags agree with custody papers? ----------	(YES)	NO
12)	Were correct bottles used for the tests indicated? ----------	(YES)	NO
13)	Were VOA vials checked for absence of air bubbles, & noted if so?	(YES)	NO
14)	Was sufficient amount of sample sent in each bottle? ----------	(YES)	NO

Explain any discrepancies -----> Sample #10 One VOA Recvd broken no sample Contained. LJ. 3/30/92.

COOLER RECEIPT FORM

Project: Drawn Down 92

Cooler received on 3/30/92 and opened on 3/30/92 by L. Jordins

1) Were custody seals on outside of cooler ---------- (YES) NO
If yes, how many and where? Two front + side
Were signature and date correct? ---------- (YES) NO

2) Were custody papers taped to lid inside cooler? ---------- (YES) NO

3) Were custody papers properly filled out (ink, signed, etc.)? -------- (YES) NO

4) Did you sign custody papers in the appropriate place? ---------- (YES) NO

5) Did you attach shipper's packing slip to this form? ---------- (YES) NO

6) What kind of packing material was used? Vermiculite

7) Was sufficient ice used (if appropriate)? ---------- (YES) NO

8) Were all bottles sealed in separate plastic bags? ---------- (YES) NO

9) Did all bottles arrive in good condition (unbroken)? ---------- (YES) NO

10) Were all bottle labels complete (No., date, signed, anal. pres, etc.) (YES) NO

11) Did all bottle labels and tags agree with custody papers? ---------- (YES) NO

12) Were correct bottles used for the tests indicated? ---------- (YES) NO

13) Were VOA vials checked for absence of air bubbles, & noted if so? (YES) NO

14) Was sufficient amount of sample sent in each bottle? ---------- (YES) NO

Explain any discrepancies -----> Sample #10 One VOA Record broken no sample Contained. LJ. 3/30/92.

COOLER RECEIPT FORM

Project: Drawn Down 92

Cooler received on 3/30/92 and opened on 3/30/92 by L. Jordins

1)	Were custody seals on outside of cooler ----------	(YES)	NO
	If yes, how many and where? This front side		
	Were signature and date correct? ----------	(YES)	NO
2)	Were custody papers taped to lid inside cooler? ----------	(YES)	NO
3)	Were custody papers properly filled out (ink, signed, etc.)? ----------	(YES)	NO
4)	Did you sign custody papers in the appropriate place? ----------	(YES)	NO
5)	Did you attach shipper's packing slip to this form? ----------	(YES)	NO
6)	What kind of packing material was used? Vermiculite		
7)	Was sufficient ice used (if appropriate)? ----------	(YES)	NO
8)	Were all bottles sealed in separate plastic bags? ----------	(YES)	NO
9)	Did all bottles arrive in good condition (unbroken)? ----------	(YES)	NO
10)	Were all bottle labels complete (No., date, signed, anal. pres, etc.)	(YES)	NO
11)	Did all bottle labels and tags agree with custody papers? ----------	(YES)	NO
12)	Were correct bottles used for the tests indicated? ----------	(YES)	NO
13)	Were VOA vials checked for absence of air bubbles, & noted if so?	(YES)	NO
14)	Was sufficient amount of sample sent in each bottle? ----------	(YES)	NO

Explain any discrepancies -----> Sample #10 one VOA Record broken no sample contained. LJ 3/30/92.

APPENDIX C

RAW DATA

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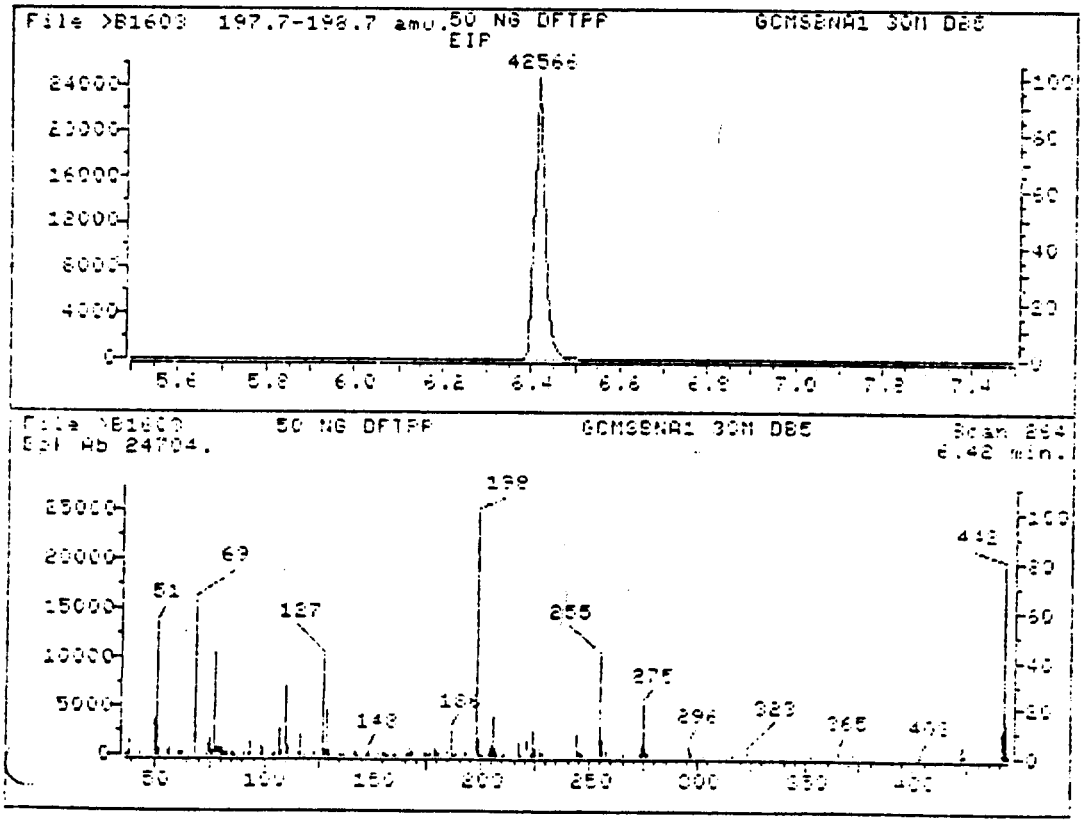
GC/MS PERFORMANCE STANDARD

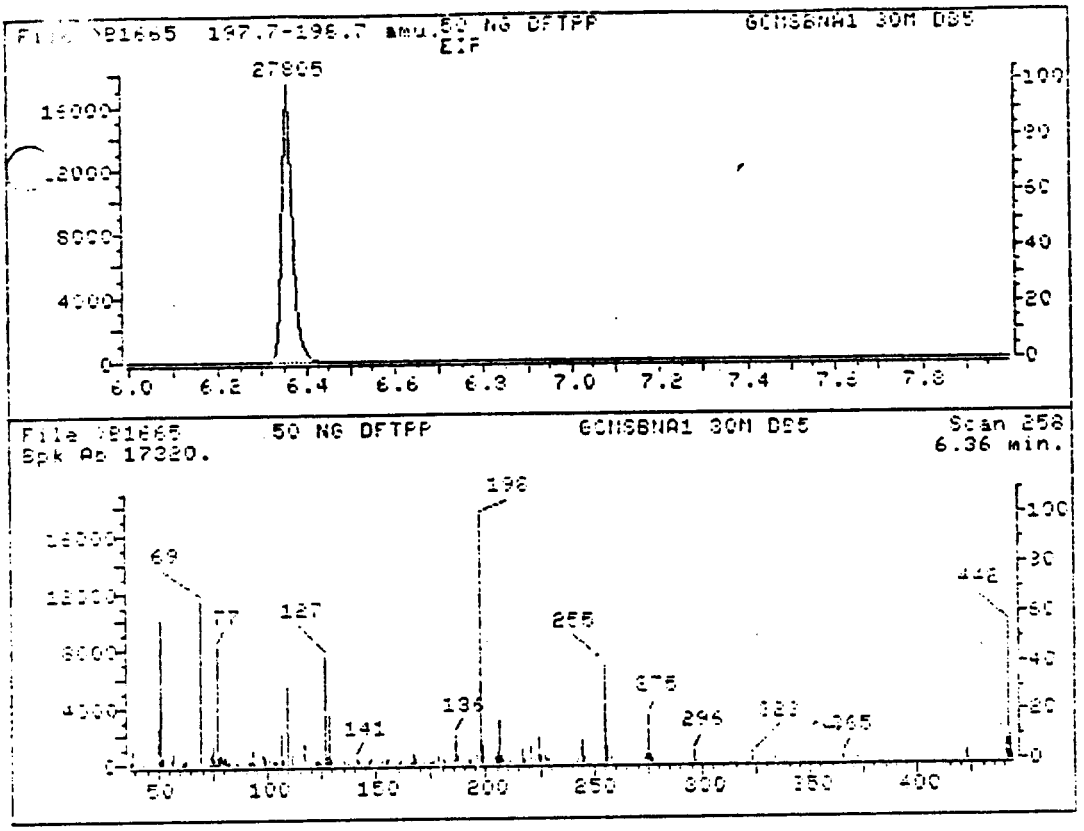
Decafluorotriphenylphospine (DFTPP)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
51	30-60% of mass 198	54.62	54.62	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	63.24	63.24	Ok
70	Less than 2% of mass 69	.30	.47	Ok
127	40-60% of mass 198	41.01	41.01	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.54	6.54	Ok
275	10-30% of mass 198	21.24	21.24	Ok
365	Greater than 1% of mass 198	2.03	2.03	Ok
441	0-100% of mass 443	10.86	78.74	Ok
442	Greater than 40% of mass 198	78.98	78.98	Ok
443	17-23% of mass 442	13.79	17.46	Ok

Injection Date: 04/08/92
Injection Time: 10:58
Data File: >B1603
Scan: 264

FMGR : AL, Move cursor; then press carriage return :





GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
51	30-60% of mass 198	58.49	58.49	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	65.88	65.88	Ok
70	Less than 2% of mass 69	0.00	0.00	Ok
127	40-60% of mass 198	43.44	43.44	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	7.01	7.01	Ok
275	10-30% of mass 198	18.61	18.61	Ok
365	Greater than 1% of mass 198	1.86	1.86	Ok
441	0-100% of mass 443	8.15	81.81	Ok
442	Greater than 40% of mass 198	54.71	54.71	Ok
443	17-23% of mass 442	9.97	18.22	Ok

Injection Date: 04/10/92
Injection Time: 10:44
Data File: >B1665
Scan: 258

FMGR : AL, Move cursor; then press carriage return :

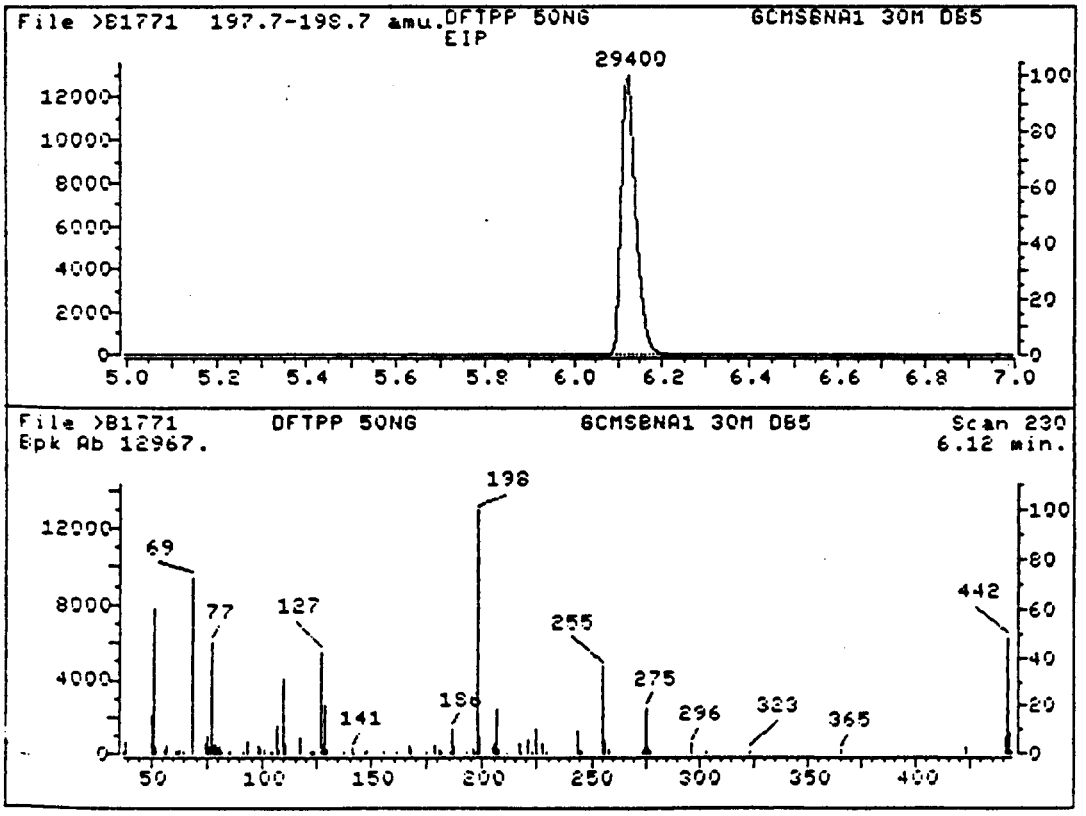
GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
51	30-60% of mass 198	59.78	59.78	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	72.60	72.60	Ok
70	Less than 2% of mass 69	0.00	0.00	Ok
127	40-60% of mass 198	42.40	42.40	Ok
197	Less than 1% of mass 198	.57	.57	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.73	6.73	Ok
275	10-30% of mass 198	18.78	18.78	Ok
365	Greater than 1% of mass 198	1.90	1.90	Ok
441	0-100% of mass 443	7.15	81.03	Ok
442	Greater than 40% of mass 198	48.35	48.35	Ok
443	17-23% of mass 442	8.82	18.25	Ok

Injection Date: 04/15/92
Injection Time: 15:19
Data File: >B1771
Scan: 230

ER : AL, Move cursor; then press carriage return :



GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
51	30-60% of mass 198	48.55	48.55	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	62.34	62.34	Ok
70	Less than 2% of mass 69	0.00	0.00	Ok
127	40-60% of mass 198	43.86	43.86	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.22	6.22	Ok
275	10-30% of mass 198	20.24	20.24	Ok
365	Greater than 1% of mass 198	2.00	2.00	Ok
441	0-100% of mass 443	8.04	80.81	Ok
442	Greater than 40% of mass 198	56.72	56.72	Ok
443	17-23% of mass 442	9.94	17.53	Ok

Injection Date: 04/20/92
Injection Time: 10:43
Data File: >B1862
Scan: 202

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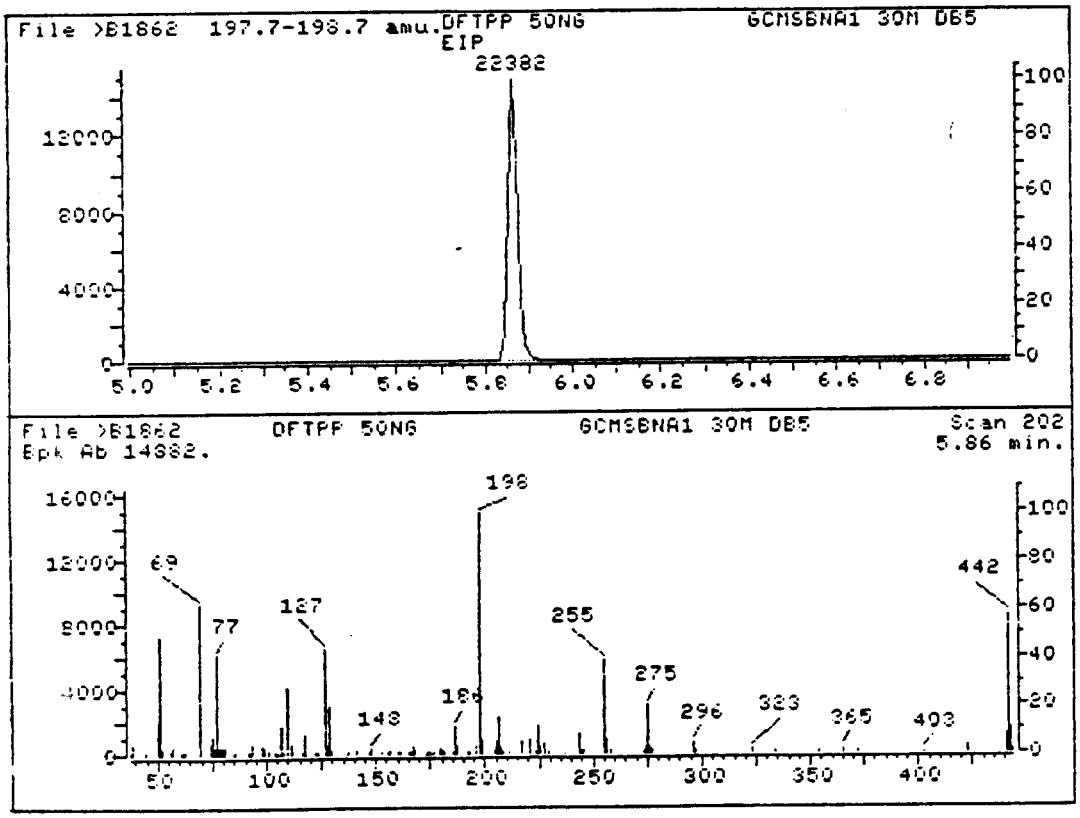
FMGR : AL, Move cursor; then press carriage return :



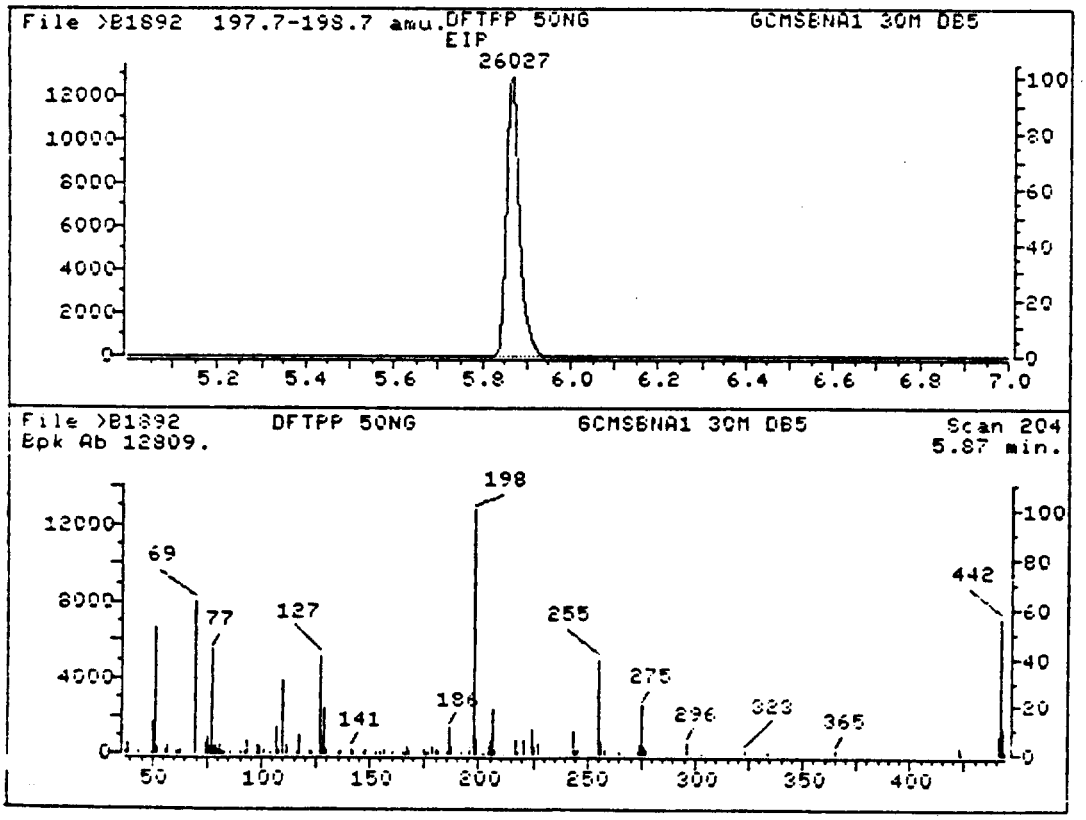
GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
51	30-60% of mass 198	52.62	52.62	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	62.50	62.50	Ok
70	Less than 2% of mass 69	0.00	0.00	Ok
127	40-60% of mass 198	40.53	40.53	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.26	6.26	Ok
275	10-30% of mass 198	20.13	20.13	Ok
365	Greater than 1% of mass 198	1.87	1.87	Ok
441	0-100% of mass 443	7.92	76.26	Ok
442	Greater than 40% of mass 198	56.03	56.03	Ok
443	17-23% of mass 442	10.39	18.55	Ok

Injection Date: 04/21/92
Injection Time: 11:46
Data File: >B1892
Scan: 204

FMGR : AL, Move cursor; then press carriage return :



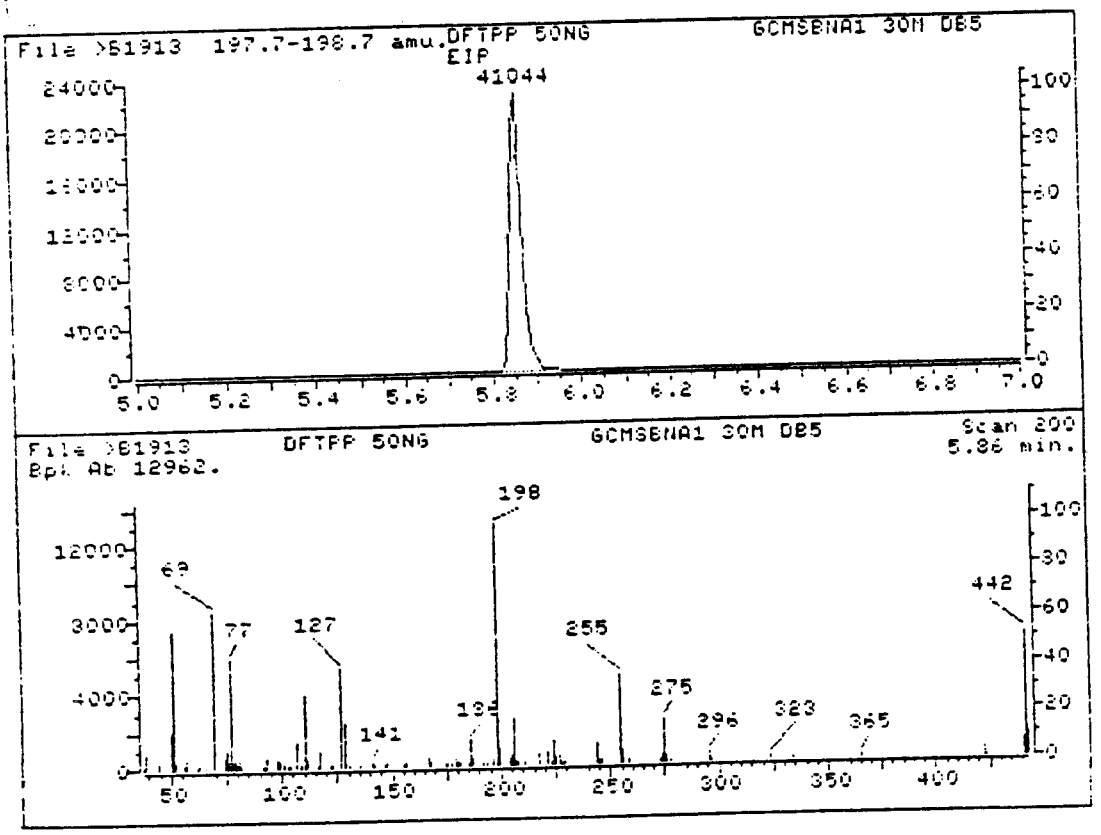
GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
51	30-60% of mass 198	57.01	57.01	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	65.19	65.19	Ok
70	Less than 2% of mass 69	0.00	0.00	Ok
127	40-60% of mass 198	41.14	41.14	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.73	6.73	Ok
275	10-30% of mass 198	18.19	18.19	Ok
365	Greater than 1% of mass 198	1.55	1.55	Ok
441	0-100% of mass 443	6.84	72.50	Ok
442	Greater than 40% of mass 198	50.83	50.83	Ok
443	17-23% of mass 442	9.43	18.55	Ok

Injection Date: 04/22/92
Injection Time: 08:50
Data File: >B1913
Scan: 200

::
FMGR : AL, Move cursor; then press carriage return :



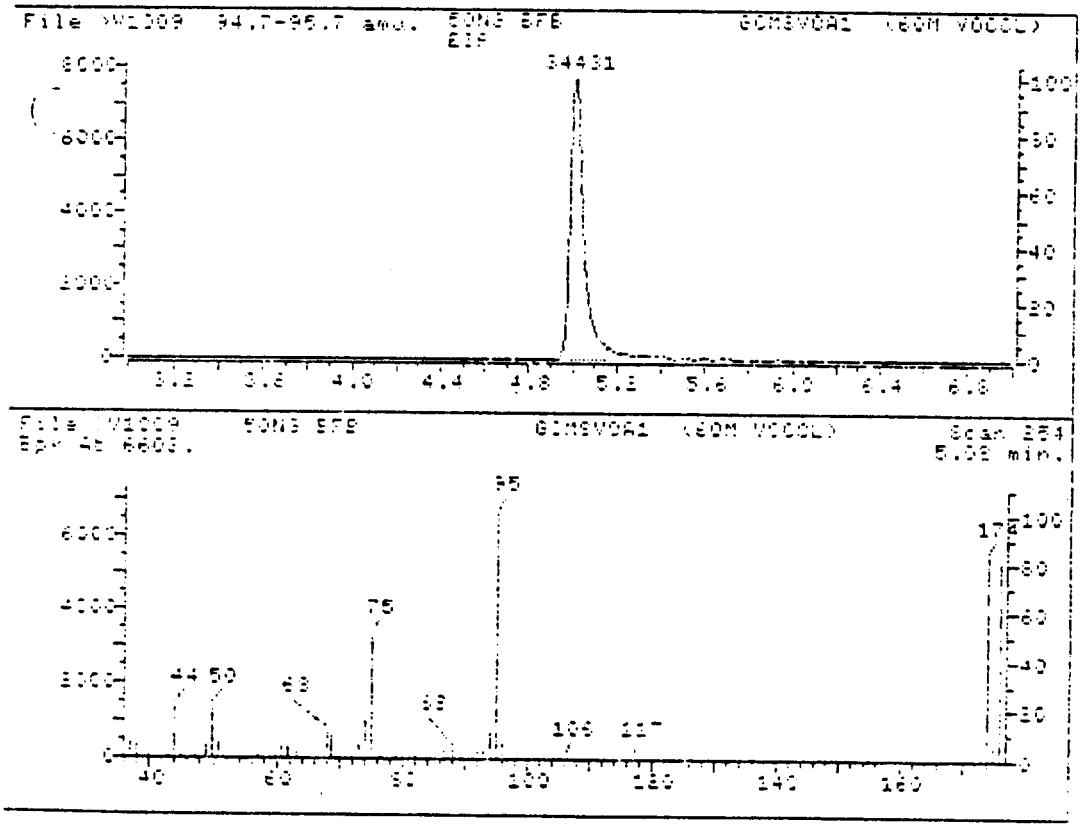
GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Move cursor; then press carriage return :	% Relative Abundance Base Peak	 Appropriate Peak	Status
50	15-40% of mass 95	20.38	20.38	Ok
75	30-60% of mass 95	49.28	49.28	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	6.41	6.41	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	83.40	83.40	Ok
175	5-9% of mass 174	5.06	6.07	Ok
176	95-101% of mass 174	80.63	96.68	Ok
177	5-9% of mass 176	5.38	6.67	Ok

Injection Date: 04/03/92
Injection Time: 13:52
Data File: >V1009
Scan: 254

FMGR : AL,,3



QUANT REPORT

Operator ID: JEFFG-1
Output File: >V1003::D1
Data File: >V1003::D5
Name: K1961-8 NTL-392-8
Misc: GCMSVOA1 (60M VOCOL)

Quant Rev: 7 Quant Time: 920403 08:37
Injected at: 920402 19:09
Dilution Factor: 1.00000
Instrument ID: GCMSVOA1

ID File: ID_LLV::D1
Title: GCMS LOW LEVEL VOLATILES METHOD 8240 MODIFIED

00114

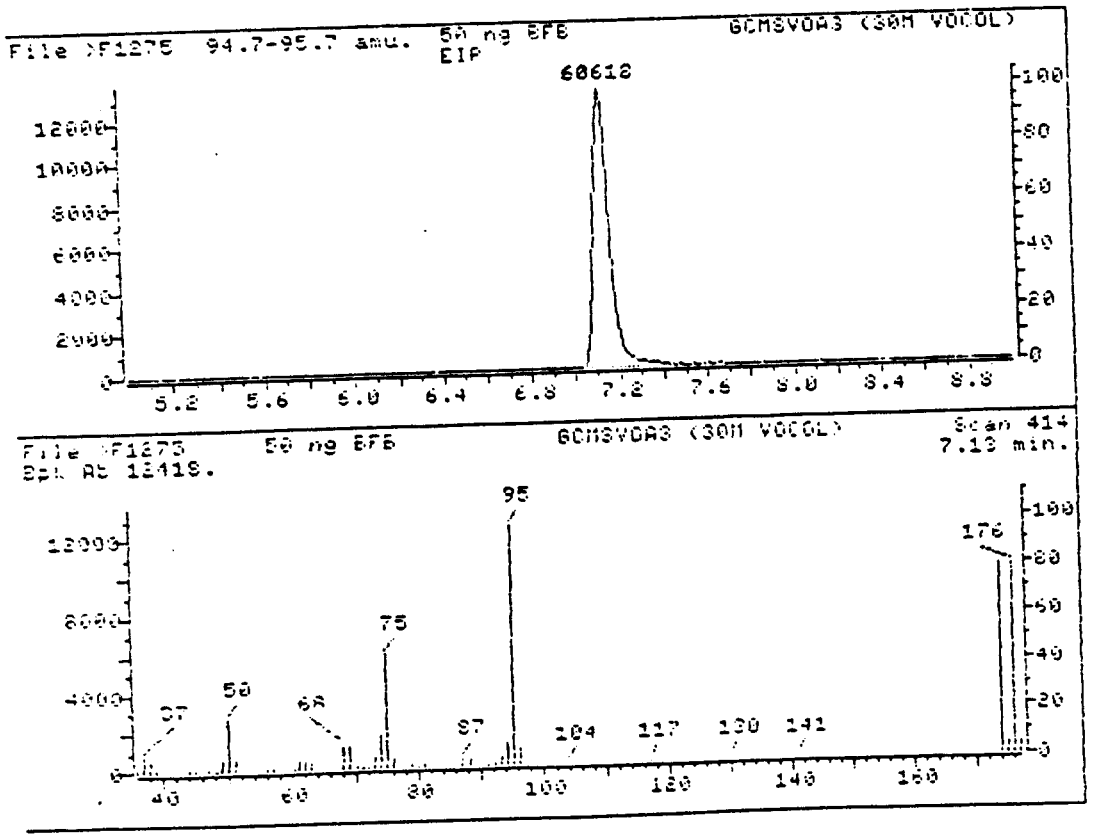
GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	21.78	21.78	Ok
75	30-60% of mass 95	47.88	47.88	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	6.56	6.56	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	79.00	79.00	Ok
175	5-9% of mass 174	5.54	7.01	Ok
176	95-101% of mass 174	79.05	100.06	Ok
177	5-9% of mass 176	5.27	6.66	Ok

Injection Date: 04/06/92
Injection Time: 10:10
Data File: >F1275
Scan: 414

.MGR : a1, Move cursor; then press carriage return :



NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Director
Portland Army Corps of Eng
CENPD Materials Lab.
1491 NW Graham Ave.
Troutdale, OR 97060

Date: 04/13/1992
NET Client Acct No: 702
NET Pacific Log No: 92.1645
Received: 03/28/1992

Client Reference Information

Draw Down 92, Work Order No: 92-HM-179

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. The analytical results for solid samples are reported on dry weight basis. The reporting limits have not been adjusted for dry weight. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

Enclosure(s)

NET Pacific, Inc

Client No: 702
Client Name: Portland Army Corps of Eng
NET Log No: 92.1645

Date: 04/13/1992
Page: 2

Ref: Draw Down 92, Work Order No: 92-HM-179

SAMPLE DESCRIPTION: 10 Clarkston W. W. Plant
SAMPLE RECEIVED: 03/28/1992
LAB JOB NO: (-117766)

SAMPLE TAKEN: 03/25/1992
TIME TAKEN: 14:00

Parameter	Method	Reporting Limit	Results	Units	Date Received	Date Extracted	Date Analyzed	QC Batch ID
METHOD 8080 (GC,Liquid)					03/28/1992			
DATE EXTRACTED			03-31-92		03/28/1992	03/31/1992	04/10/1992	G9P161W3
DATE ANALYZED			04-10-92		03/28/1992	03/31/1992	04/10/1992	G9P161W3
DILUTION FACTOR*			1		03/28/1992	03/31/1992	04/10/1992	G9P161W3
Aldrin	8080	0.02	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
alpha-BHC	8080	0.005	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
beta-BHC	8080	0.005	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
delta-BHC	8080	0.005	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
gamma-BHC (Lindane)	8080	0.02	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Chlordane	8080	0.4	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
4,4'-DDD	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
4,4'-DDE	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
4,4'-DDT	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Dieldrin	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Endosulfan I	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Endosulfan II	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Endosulfan sulfate	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Endrin	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Endrin aldehyde	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Heptachlor	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Heptachlor epoxide	8080	0.05	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Methoxychlor	8080	0.08	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Toxaphene	8080	1.0	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
POLYCHLORINATED BIPHENYLS			--		03/28/1992	03/31/1992	04/10/1992	G9P161W3
Aroclor 1016	8080	0.5	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Aroclor 1221	8080	0.5	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Aroclor 1232	8080	0.5	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Aroclor 1242	8080	0.6	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Aroclor 1248	8080	0.5	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Aroclor 1254	8080	0.5	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Aroclor 1260	8080	0.5	ND	ug/L	03/28/1992	03/31/1992	04/10/1992	G9P161W3
SURROGATE RESULTS			--		03/28/1992	03/31/1992	04/10/1992	G9P161W3
Tetrachlorometaxylene			N/A *	% Rec.	03/28/1992	03/31/1992	04/10/1992	G9P161W3
Dibutylchlorendate			N/A *	% Rec.	03/28/1992	03/31/1992	04/10/1992	G9P161W3

* Surrogates not added, insufficient sample to reextract.

Ref: Draw Down 92, Work Order No: 92-HM-179

SAMPLE DESCRIPTION: 10 Clarkston W. W. Plant SAMPLE TAKEN: 03/25/1992
SAMPLE RECEIVED: 03/28/1992 TIME TAKEN: 14:00
LAB JOB NO: (-117766)

Parameter	Method	Reporting Limit	Results	Units	Date Received	Date Extracted	Date Analyzed	QC Batch ID
METHOD 8240(GCMS,Liquid)					03/28/1992			
DATE ANALYZED			03-31-92		03/28/1992	:	03/31/1992	SC0229W1
DILUTION FACTOR*			1		03/28/1992	:	03/31/1992	SC0229W1
Acetone	8240	10	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Benzene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Bromodichloromethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Bromoform	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Bromomethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
2-Butanone	8240	10	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Carbon disulfide	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Carbon Tetrachloride	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Chlorobenzene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Chloroethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
2-Chloroethyl vinyl ether	8240	10	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Chloroform	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Chloromethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Dibromochloromethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,2-Dichlorobenzene	8240	6.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,3-Dichlorobenzene	8240	6.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,4-Dichlorobenzene	8240	6.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,1-Dichloroethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,2-Dichloroethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,1-Dichloroethene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
trans-1,2-Dichloroethene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,2-Dichloropropane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
cis-1,3-Dichloropropene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
trans-1,3-Dichloropropene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Ethyl benzene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
2-Hexanone	8240	10	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Methylene chloride	8240	25	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
4-Methyl-2-pentanone	8240	10	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Styrene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,1,2,2-Tetrachloroethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Tetrachloroethene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Toluene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,1,1-Trichloroethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
1,1,2-Trichloroethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Trichloroethene	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Trichlorofluoromethane	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Vinyl acetate	8240	10	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Vinyl chloride	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
Xylenes (total)	8240	5.0	ND	ug/L	03/28/1992	:	03/31/1992	SC0229W1
SURROGATE RESULTS			--		03/28/1992	:	03/31/1992	SC0229W1
Toluene-d8	8240		105	% Rec.	03/28/1992	:	03/31/1992	SC0229W1
Bromofluorobenzene	8240		103	% Rec.	03/28/1992	:	03/31/1992	SC0229W1
1,2-Dichloroethane-d4	8240		94	% Rec.	03/28/1992	:	03/31/1992	SC0229W1

NET Pacific, Inc

Client No: 702
Client Name: Portland Army Corps of Eng
NET Log No: 92.1645

Date: 04/13/1992

Ref: Draw Down 92, Work Order No: 92-MM-179

SAMPLE DESCRIPTION: 10 Clarkston W. W. Plant
SAMPLE RECEIVED: 03/28/1992
LAB JOB NO: (-117766)

SAMPLE TAKEN: 03/25/1992
TIME TAKEN: 14:00

Parameter	Method	Reporting Limit	Results	Units	Date Received	Date Extracted	Date Analyzed	QC Batch ID
					03/28/1992			
METHOD 8270(GCMS,Liquid)					03/28/1992	03/31/1992	04/03/1992	SB0476W1
DATE EXTRACTED			03-31-92		03/28/1992	03/31/1992	04/03/1992	SB0476W1
DATE ANALYZED			04-03-92		03/28/1992	03/31/1992	04/03/1992	SB0476W1
DILUTION FACTOR*			1		03/28/1992	03/31/1992	04/03/1992	SB0476W1
Acenaphthene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Acenaphthylene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Aldrin	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Anthracene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Benzidine	8270	44	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Benzo(a)anthracene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Benzo(b)fluoranthene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Benzo(k)fluoranthene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Benzo(a)pyrene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Benzo(g,h,i)perylene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Benzoic acid	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Benzyl alcohol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Butyl benzyl phthalate	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
delta-BHC	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
gamma-BHC	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
bis(2-Chloroethyl)ether	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
bis(2-Chloroethoxy)methane	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
bis(2-Chloroisopropyl)ether	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
bis(2-Ethylhexyl)phthalate	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4-Bromophenyl phenyl ether	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4-Chloroaniline	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2-Chloronaphthalene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4-Chlorophenyl phenyl ether	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Chrysene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4,4'-DDD	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4,4'-DDE	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4,4'-DDT	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Dibenzo(a,h)anthracene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Dibenzofuran	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Di-n-butylphthalate	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
1,2-Dichlorobenzene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
1,3-Dichlorobenzene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
1,4-Dichlorobenzene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
3,3'-Dichlorobenzidine	8270	20	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Dieldrin	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Diethylphthalate	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Dimethyl phthalate	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2,4-Dinitrotoluene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2,6-Dinitrotoluene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Di-n-octyl phthalate	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Endrin aldehyde	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Fluoranthene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Fluorene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1

NET Pacific, Inc

Client No: 702
Client Name: Portland Army Corps of Eng
NET Log No: 92.1645

Date: 04/13/1992

Ref: Draw Down 92, Work Order No: 92-HM-179

SAMPLE DESCRIPTION: 10 Clarkston W. W. Plant
SAMPLE RECEIVED: 03/28/1992
LAB JOB NO: (-117766)

SAMPLE TAKEN: 03/25/1992
TIME TAKEN: 14:00

Parameter	Method	Reporting Limit	Results	Units	Date Received	Date Extracted	Date Analyzed	QC Batch ID
Heptachlor	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Heptachlor epoxide	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Hexachlorobenzene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Hexachlorobutadiene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Hexachlorocyclopentadiene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Hexachloroethane	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Indeno(1,2,3-cd)pyrene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Isophorone	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2-Methylnaphthalene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Naphthalene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2-Nitroaniline	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
3-Nitroaniline	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4-Nitroaniline	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Nitrobenzene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
N-Nitroso-Di-N-propylamine	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
N-Nitrosodiphenylamine	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Phenanthrene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Pyrene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
1,2,4-Trichlorobenzene	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
ACID EXTRACTABLES			--		03/28/1992	03/31/1992	04/03/1992	SB0476W1
4-Chloro-3-methylphenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2-Chlorophenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2,4-Dichlorophenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2,4-Dimethylphenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2,4-Dinitrophenol	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4,6-Dinitro-2-methylphenol	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2-Nitrophenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4-Nitrophenol	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Pentachlorophenol	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Phenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2,4,6-Trichlorophenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2-Methylphenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
4-Methylphenol	8270	10	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2,4,5-Trichlorophenol	8270	50	ND	ug/L	03/28/1992	03/31/1992	04/03/1992	SB0476W1
SURROGATE RESULTS			--		03/28/1992	03/31/1992	04/03/1992	SB0476W1
Nitrobenzene-d5	8270		97	% Rec.	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2-Fluorobiphenyl	8270		82	% Rec.	03/28/1992	03/31/1992	04/03/1992	SB0476W1
p-Terphenyl-d14	8270		76	% Rec.	03/28/1992	03/31/1992	04/03/1992	SB0476W1
Phenol-d5	8270		31	% Rec.	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2-Fluorophenol	8270		28	% Rec.	03/28/1992	03/31/1992	04/03/1992	SB0476W1
2,4,6-Tribromophenol	8270		29	% Rec.	03/28/1992	03/31/1992	04/03/1992	SB0476W1

APPENDIX 0-1

The following tables are from the U.S. Geological Service report on the 1992 reservoir drawdown test. The Service collected water quality data in addition to velocity, as reported in Appendix M.

Table 1. Lower Granite Drawdown Study Cross-section Locations

Snake River Mile	Type of Data				
	Sediment	Velocity	Temperature	Turbidity	Dye
70.5 a					
70.9		X			
79.2		X			
91.		X			
101.		X			
106.		X			
107.5 b					
107.73		X			
108.31		X	X	X	X
114.		X			X
119.		X	X	X	
120.46		X	X	X	X
126.		X			X
130.66		X	X	X	
132.05	X	X	X	X	X
137.17	X	X	X	X	
138.34		X	X	X	X
139.43	X	X	X	X	X
141.21		X	X	X	
142.		X			X
145.		X			X
148.09		X			X
167.2 c	X		X		
Clearwater River Mile					
0.41	X	X	X	X	
1.26		X	X	X	
2.34		X	X	X	
11.6 d	X		X		

a - location of Little Goose Dam
b - location of Lower Granite Dam
c - location of gaging station, Snake River near Anatone, WA (13334300)
d - location of gaging station, Clearwater River at Spalding, ID (13342500)

TEMPERATURE AND TURBIDITY

Background stream temperature at the two gaging stations that monitor Lower Granite Reservoir inflow are shown in tables 10 and 11. The data shown cover the period of this project.

Temperature and turbidity data from the river and reservoir cross-sections were collected by the crew and boat that also collected the velocity data. In the riverine environment where high velocities were encountered, the lake-sampling equipment available to us did not work well. The large diameter cylindrical probes tended to float on the surface. To overcome this problem, we developed a "drift and drop" method. In this method, the boat was maneuvered slightly upstream of the section, engine power was cut back and the boat was allowed to drift back through the section. When the boat was again on section, the probes were lowered to about one-half total depth as recorded by the boats fathometer. One quick reading at each location in the cross-section was obtained. This method was repeated at three locations in each cross-section. The lateral distribution of temperature and turbidity was recorded in this manner and the vertical distribution was assumed to be constant in the turbulent flow.

Tables 12-48 show data from the several verticals at each river mile location assigned. Stream temperature is recorded to the nearest tenth of degree on the Centigrade Scale, and turbidity is indicated as a percent of light transmissivity, where 0 percent = total light extinction and 100 percent = completely translucent medium.

PROVISIONAL DATA

SUBJECT TO REVISION

STATION NUMBER 13334300
SNAKE RIVER NR ANATONE WA

WATER TEMPERATURE, DEGREES CELSIUS, FEBRUARY 20 TO MARCH 31, 1992

DAY	MAX	MIN	MAX	MIN
	FEBRUARY		MARCH	
1			7.7	6.7
2			7.6	6.9
3			7.7	6.8
4			8.3	6.9
5			7.3	6.6
6			7.4	6.6
7			7.6	7.2
8			7.8	7.3
9			---	---
10			---	---
11			---	---
12			---	---
13			---	---
14			---	---
15			---	---
16			---	---
17			---	---
18			---	---
19			---	---
20	6.2	5.1	---	---
21	6.2	5.8	---	---
22	6.6	5.7	---	---
23	6.3	5.7	---	---
24	6.7	5.9	---	---
25	7.3	6.3	---	---
26	7.3	6.7	---	---
27	7.2	6.3	---	---
28	7.2	6.4	---	---
29	7.2	6.6	---	---
30	---	---	---	---
31	---	---	---	---

Table 10.

STATION NUMBER 13342500
CLEARWATER RIVER AT SPALDING ID

DAY	MAX	MIN	MAX	MIN
	FEBRUARY		MARCH	
1			8.0	8.0
2			8.0	8.0
3			8.0	8.0
4			9.0	9.0
5			9.0	9.0
6			8.5	8.5
7			8.5	8.5
8			8.5	8.5
9			9.0	9.0
10			9.0	9.0
11			8.5	8.5
12			8.5	8.5
13			9.0	9.0
14			8.5	8.5
15			9.0	9.0
16			9.0	9.0
17			9.0	9.0
18			9.0	9.0
19			8.0	8.0
20	5.5	5.5	9.0	9.0
21	5.5	5.5	9.5	9.5
22	6.5	6.0	9.5	9.5
23	6.5	6.0	9.0	9.0
24	6.5	6.5	9.0	9.0
25	7.0	6.5	9.5	9.5
26	7.0	7.0	9.5	9.5
27	8.0	8.0	9.5	9.5
28	8.0	8.0	9.5	9.5
29	8.0	8.0	9.5	9.5
30	---	---	10.0	10.0
31	---	---	10.5	10.5

Table 11.

Table 12.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 148.09 on March 19, 1992.*

Distance from left bank (feet)									
175		350		525					
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
7.2	8.0	4.8	8.1	3.6	8.1				
12	Btm	8	Btm	6	Btm				

Distance from left bank (feet)									
175		350		525					
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	42.0	5.0	42.0	3.3	42.0				
12	Btm	8	Btm	6	Btm				

Table 13.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 145.0 on March 19, 1992.*

Distance from left bank (feet)									
200		400		600					
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
7.8	8.0	7.8	8.0	5.4	8.0				
13	Btm	13	Btm	9	Btm				

Distance from left bank (feet)									
225		450		675					
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	42.0	6.7	42.0	5.0	42.0				
13	Btm	13	Btm	9	Btm				

Table 14.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 142.00 on March 19, 1992.*

Distance from left bank (feet)									
150		300		450					
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
6.0	8.0	8.4	8.0	8.4	8.0				
10	Btm	14	Btm	14	Btm				

Distance from left bank (feet)									
150		300		450					
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
5.0	43.0	8.2	43.0	8.2	43.0				
10	Btm	14	Btm	14	Btm				

Table 15.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 141.21 on February 25, 1992.*

Distance from left bank (feet)									
150		400		700		900		1,200	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
1.2	5.8	1.9	5.8	1.6	5.7	1.5	5.7	1.7	5.7
2.4	5.8	3.7	5.7	3.2	5.7	3.0	5.7	3.4	5.7
3.6	5.8	5.6	5.7	4.8	5.7	4.5	5.7	5.2	5.7
4.8	5.8	7.4	5.7	6.4	5.7	6.0	5.7	6.9	5.7
6	Btm	9.3	Btm	8	Btm	7.5	Btm	8.6	Btm

Distance from left bank (feet)									
150		400		700		900		1,200	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	29	3.3	33	3.3	32	3.3	31	3.3	32
6.7	28	6.7	32	6.7	31	6.7	31	6.7	31
9.8	27	9.8	31	9.8	31	9.8	31	9.8	31
13.1	27	13.1	31	13.1	30	13.1	31	13.1	31
16.4	28	16.4	31	16.4	30	16.4	31	16.4	31
		19.7	29	19.7	30	19.7	31	19.7	31
		23.0	30	23.0	30	23.0	29	23.0	31
		26.3	28					26.3	31
6	Btm	9.3	Btm	8	Btm	7.5	Btm	8.6	Btm

Table 16.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 141.21 on March 5, 1992.*

Distance from left bank (feet)									
130		390		650		910		1,170	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
2.8	6.8	2.4	6.7	2.4	6.7	2.8	6.7	2.6	6.7
5.6	6.8	4.8	6.7	4.8	6.7	5.6	6.7	5.2	6.7
8.4	6.8	7.2	6.7	7.2	6.7	8.4	6.7	7.8	6.7
11.2	6.7	9.6	6.7	9.6	6.7	11.2	6.7	10.4	6.7
14	Btm	12	Btm	12	Btm	14	Btm	13	Btm

Distance from left bank (feet)									
130		390		650		910		1,170	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	32	3.3	39	3.3	39	3.3	39	3.3	38
5.0	32	5.0	38	5.0	38	5.0	39	5.0	39
6.7	31	6.7	38	6.7	38	6.7	39	6.7	38
8.2	32	8.2	38	8.2	39	8.2	39	8.2	38
9.8	33	9.8	38	9.8	38	9.8	39	9.8	37
11.5	30	11.5	38			11.5	38	11.5	37
13.1	32					13.1	37	13.1	35
14	Btm	12	Btm	12	Btm	14	Btm	13	Btm

Table 17.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 139.43 on March 5, 1992.*

Distance from left bank (feet)									
100		300		500		700		900	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
4.0	6.9	5.2	6.9	4.8	6.9	2.8	6.9	1.2	6.9
8.0	6.9	10.4	6.8	9.6	6.8	5.6	6.8	2.4	6.9
12.0	6.9	15.6	6.8	14.4	6.8	8.4	6.8	3.6	6.9
16.0	6.9	20.8	6.8	19.2	6.8	11.2	6.8	4.8	6.9
20	Btm	26	Btm	24	Btm	14	Btm	6	Btm

Distance from left bank (feet)									
130		390		650		910		1,170	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	32	6.7	37	3.3	38	3.3	38	1.7	38
6.7	32	13.1	37	9.8	37	5.0	38	3.3	38
9.8	31	19.7	38	16.4	37	6.7	37	5.0	38
13.1	30	26.3	36	23.0	37	8.4	38	6.7	38
16.4	30					9.8	37		
19.7	30					11.5	36		
20	Btm	26	Btm	24	Btm	14	Btm	6	Btm

Table 18.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 139.43 on March 19, 1992.*

Distance from left bank (feet)									
150		300		450					
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
9.0	7.9	9.0	7.9	5.4	7.9				
15	Btm	15	Btm	9	Btm				

Distance from left bank (feet)									
150		300		450					
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
8.2	33	8.2	40	5.0	40				
15	Btm	15	Btm	9	Btm				

Table 19.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 138.34 on February 26, 1992.*

Distance from left bank (feet)									
160		480		800		1,100		1,480	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
4.8	5.9	5.4	5.9	5.8	6.0	7.4	6.0	8.0	6.0
9.6	5.9	10.8	5.9	11.6	5.9	14.8	5.9	16.0	6.0
14.4	3.9	16.2	5.9	17.4	5.9	22.2	5.9	26.0	6.0
19.2	5.9	21.6	5.9	23.2	5.9	29.6	5.9	32.0	6.0
24	Btm	27	Btm	29	Btm	37	Btm	40	Btm

Distance from left bank (feet)									
160		480		800		1,100		1,480	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	32	3.3	33	3.3	32	3.3	31	6.7	30
6.7	32	6.9	33	6.7	33	9.8	32	13.1	28
9.8	32	9.8	33	9.8	34	16.4	34	19.7	27
13.1	32	13.1	33	13.1	34	23.0	34	26.3	26
16.4	32	16.4	33	16.4	34	29.5	32	32.8	27
19.7	31	19.7	33	19.7	34	36.1	32	39.4	28
23.0	30	23.0	33	23.0	34				
		26.3	33	26.3	34				
24	Btm	27	Btm	29	Btm	37	Btm	40	Btm

Table 20.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 138.34 on March 5, 1992.*

Distance from left bank (feet)									
160		480		800		1,120		1,440	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
2.4	6.8	3.0	6.8	2.4	7.0	5.6	7.2	6.0	7.1
4.8	6.8	6.0	6.8	4.8	7.0	11.2	7.2	12.0	7.1
7.2	6.8	9.0	6.8	7.2	7.0	16.8	7.0	18.0	7.0
9.6	6.8	12.0	6.8	9.6	7.0	22.4	7.0	24.0	7.0
12	Btm	15	Btm	12	Btm	28	Btm	30	Btm

Distance from left bank (feet)									
160		480		800		1,120		1,440	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	28	3.3	33	3.3	36	6.7	34	3.3	35
6.7	27	6.7	32	6.7	36	13.1	35	9.8	32
9.8	28	9.8	32	9.8	35	19.7	32	16.4	32
13.1	27	13.1	33	13.1	35	26.3	31	23.0	32
								29.5	26
12	Btm	15	Btm	12	Btm	28	Btm	30	Btm

Table 21.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 138.34 on March 18, 1992.*

Distance from left bank (feet)									
175		350		525					
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
4.8	8.5	4.8	8.2	4.2	7.8				
8	Btm	8	Btm	7	Btm				

Distance from left bank (feet)									
175		350		525					
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
5.0	33	5.0	10	5.0	5				
8	Btm	8	Btm	7	Btm				

Table 22.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 137.17 on February 25, 1992.*

Distance from left bank (feet)									
150		450		750		1,050		1,350	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
4.0	5.9	7.0	5.8	8.0	5.8	9.0	5.9	9.0	5.9
8.0	5.9	14.0	5.8	16.0	5.8	18.0	5.8	18.0	5.9
12.0	5.9	21.0	5.8	24.0	5.8	27.0	5.8	27.0	5.8
16.0	5.8	28.0	5.8	32.0	5.8	36.0	5.8	36.0	5.9
20	Btm	35	Btm	40	Btm	45	Btm	45	Btm

Distance from left bank (feet)									
150		450		750		1,050		1,350	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	18	6.7	28	6.7	28	3.3	26	6.7	23
6.7	16	13.1	28	13.1	28	9.8	25	13.1	24
9.8	17	19.7	30	19.7	29	16.4	26	19.7	24
13.1	18	26.3	30	26.3	28	23.0	25	26.3	24
16.4	18	32.8	28	32.8	29	29.5	26	32.8	23
19.7	18			39.4	28	36.1	26	39.4	23
						42.7	25		
20	Btm	35	Btm	40	Btm	45	Btm	45	Btm

Table 23.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 137.17 on March 5, 1992.*

Distance from left bank (feet)									
120		360		600		840		1,060	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
1.4	7.0	5.6	6.9	7.6	6.9	5.0	6.8	2.8	7.3
2.8	7.0	11.2	6.8	15.2	6.8	10.0	6.7	5.6	7.2
4.2	7.0	16.8	6.8	22.8	6.8	15.0	6.7	8.4	7.2
5.6	7.0	22.4	6.8	30.4	6.8	20.0	6.7	11.2	7.0
7	Btm	28	Btm	38	Btm	25	Btm	14	Btm

Distance from left bank (feet)									
120		360		600		840		1,060	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
1.7	31	6.7	31	6.7	35	3.3	34	3.3	17
3.3	30	13.1	30	16.4	34	9.8	34	6.7	18
5.0	30	19.7	30	26.3	34	16.4	29	9.8	15
6.7	30	26.3	30	36.1	29	23.0	29	13.1	8
8.2	30								
7	Btm	28	Btm	38	Btm	25	Btm	14	Btm

Table 24.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 137.17 on March 19, 1992.*

Distance from left bank (feet)									
225		450		675					
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
8.4	8.2	9.0	8.1	12.0	7.6				
14	Btm	15	Btm	20	Btm				

Distance from left bank (feet)									
225		450		675					
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
8.2	22	8.2	28	11.5	19				
14	Btm	15	Btm	20	Btm				

Table 25.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 132.05 on February 26, 1992.*

Distance from left bank (feet)									
170		520		870		1,220		1,570	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
10.0	6.3	14.0	6.2	12.6	6.2	9.2	6.2	1.0	6.3
20.0	6.2	28.0	6.2	25.2	6.2	18.4	6.2	2.0	6.3
30.0	6.2	42.0	6.2	37.8	6.2	27.6	6.2	3.0	6.2
40.0	6.2	56.0	6.2	50.4	6.2	36.8	6.2	4.0	6.2
50	Btm	70	Btm	63	Btm	46	Btm	5	Btm

Distance from left bank (feet)									
170		520		870		1,220		1,570	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	31	9.8	30	9.8	30	6.7	29	1.7	19
13.1	31	19.7	31	19.7	30	13.1	28	3.3	16
19.7	31	29.5	31	29.5	29	19.7	28	5.0	19
26.3	31	39.4	30	39.4	29	26.3	28		
32.8	31	49.2	30	49.2	28	32.8	27		
39.4	30	59.1	30	59.1	28	39.4	28		
45.9	30	68.9	29			45.9	28		
50	Btm	70	Btm	63	Btm	46	Btm	5	Btm

Table 26.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 132.05 on February 27, 1992.*

Distance from left bank (feet)									
170		520		870		1,220		1,570	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
10.0	6.0	13.0	6.0	12.6	5.9	9.4	6.0	1.6	5.9
20.0	6.0	26.0	6.0	25.2	5.9	18.8	6.0	3.2	5.9
30.0	6.0	39.0	5.9	37.8	6.0	28.2	6.0	4.8	5.9
40.0	6.0	52.0	6.0	50.4	6.0	37.6	6.0	6.4	5.9
50	Btm	65	Btm	63	Btm	47	Btm	8	Btm

Distance from left bank (feet)									
170		520		870		1,220		1,570	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	35	6.7	35	9.8	34	3.3	34	1.7	28
13.1	35	16.4	34	19.7	34	9.8	32	3.3	26
19.7	34	26.3	34	29.5	34	16.4	32	5.0	26
26.3	34	36.1	34	39.4	34	23.0	32	6.7	25
32.8	34	45.9	34	49.2	32	29.5	30		
39.4	34	55.8	33	59.1	28	36.1	30		
45.9	33					42.7	28		
50	Btm	65	Btm	63	Btm	47	Btm	8	Btm

Table 27.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 132.05 on March 19, 1992.*

Distance from left bank (feet)									
90		270		450		630		810	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
3.6	8.0	5.4	8.1	6.4	8.0	7.4	7.6	5.6	7.4
7.2	8.0	10.8	8.0	12.8	8.0	14.8	7.6	11.2	7.4
10.8	8.0	16.2	8.0	19.2	7.9	22.2	7.8	16.8	7.4
14.4	8.0	21.6	8.0	25.6	7.9	29.6	7.9	22.4	7.4
18	Btm	27	Btm	32	Btm	37	Btm	28	Btm

Distance from left bank (feet)									
90		270		450		630		810	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	18	6.7	18	3.3	19	6.7	17	6.7	17
6.7	10	13.1	10	9.8	14	13.1	17	13.1	10
9.8	10	19.7	3	16.4	16	19.7	10	19.7	6
13.1	5	26.3	0	23.0	4	26.3	4	26.3	4
16.4	5			29.5	1	32.8	1		
18	Btm	27	Btm	32	Btm	37	Btm	28	Btm

Table 28.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 130.66 on February 26, 1992.*

Distance from left bank (feet)									
300		900		1,500		2,100		2,700	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
9.4	6.2	12.8	6.2	7.0	6.1	4.0	6.0	2.6	6.1
18.4	6.2	25.6	6.2	14.0	6.1	8.0	6.0	5.2	6.1
28.2	6.2	38.4	6.2	21.0	6.1	12.0	6.0	7.8	6.0
37.6	6.2	51.2	6.2	28.0	6.1	16.0	5.9	10.4	6.0
47	Btm	64	Btm	35	Btm	20	Btm	13	Btm

Distance from left bank (feet)									
300		900		1,500		2,100		2,700	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	30	6.7	30	6.7	27	3.3	27	3.3	27
13.1	29	13.1	30	13.1	27	6.7	26	6.7	26
19.7	29	19.7	29	19.7	27	9.8	25	9.8	24
26.3	29	26.3	29	26.3	27	13.1	25	13.1	23
32.8	29	32.8	28	32.8	27	16.4	24		
39.4	29	39.4	28			19.7	21		
45.9	29	45.9	29						
		52.5	29						
		59.1	27						
47	Btm	64	Btm	35	Btm	20	Btm	13	Btm

Table 29.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 130.66 on March 6, 1992.*

Distance from left bank (feet)									
200		600		1,000		1,400		1,800	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
.8	7.8	1.6	7.6	2.8	7.4	8.8	7.0	8.8	7.1
1.6	7.8	3.2	7.6	5.6	7.4	17.6	6.9	17.6	7.0
2.4	7.8	4.8	7.6	8.4	7.4	26.4	6.9	26.4	6.9
3.2	7.8	6.4	7.5	11.2	7.4	35.2	6.9	35.2	6.8
4	Btm	8	Btm	14	Btm	44	Btm	44	Btm

Distance from left bank (feet)									
200		600		1,000		1,400		1,800	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
1.7	20	1.7	26	3.3	31	3.3	37	3.3	36
3.3	21	3.3	26	6.7	31	13.1	37	13.1	35
		5.0	27	9.8	31	23.0	33	23.0	33
				13.1	30	32.8	34	32.8	28
						42.7	30	42.7	17
4	Btm	8	Btm	14	Btm	44	Btm	44	Btm

Table 30.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 130.66 on March 7, 1992.*

Distance from left bank (feet)									
170		510		850		1,190		1,530	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
.6	7.2	8.0	7.0	8.8	7.0	8.6	7.0	6.6	7.2
2.4	7.2	16.0	7.0	17.6	7.0	17.2	7.0	13.2	7.2
		24.0	7.0	26.4	7.0	25.8	7.0	19.8	7.0
		32.0	7.0	35.2	7.0	34.4	7.0	26.4	7.0
3	Btm	40	Btm	44	Btm	43	Btm	33	Btm

Distance from left bank (feet)									
170		510		850		1,190		1,530	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
1.7	25	9.8	33	3.3	36	3.3	37	6.7	36
		19.7	32	13.1	31	13.1	34	13.1	35
		29.5	30	23.0	31	23.0	30	19.7	36
		39.4	28	32.8	28	32.8	26	26.3	34
				42.7	28	42.7	18	32.8	27
3	Btm	40	Btm	44	Btm	43	Btm	33	Btm

Table 31.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 130.66 on March 18, 1992.*

Distance from left bank (feet)									
100		300		500		700		900	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
5.2	8.4	6.0	8.3	7.2	8.2	7.2	8.2	5.2	8.3
10.4	8.4	12.0	8.3	14.4	8.2	14.4	8.2	10.4	8.2
15.6	8.4	18.0	8.3	21.6	8.2	21.6	8.2	15.6	8.2
20.8	8.4	24.0	8.3	28.8	8.3	28.8	8.2	20.8	8.2
26	Btm	30	Btm	36	Btm	36	Btm	26	Btm

Distance from left bank (feet)									
100		300		500		700		900	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	17	3.3	21	6.7	21	6.7	20	3.3	22
9.8	14	9.8	16	13.1	16	13.1	17	9.8	16
16.4	12	19.7	16	19.7	16	19.7	15	16.4	12
23.0	10	29.5	12	26.3	14	26.3	11	23.0	7
				32.8	11	32.8	4		
26	Btm	30	Btm	36	Btm	36	Btm	26	Btm

Table 32.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 130.66 on March 19, 1992.*

Distance from left bank (feet)									
110		330		550		770		990	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
5.2	7.9	6.4	7.8	7.0	7.8	5.6	7.6	4.6	7.5
10.4	7.9	12.8	7.9	14.0	7.8	11.2	7.6	9.2	7.5
15.6	8.0	19.2	7.9	21.0	7.9	16.8	7.8	13.8	7.7
20.8	8.0	25.6	7.9	28.0	7.9	22.4	7.8	18.4	7.7
26	Btm	32	Btm	35	Btm	28	Btm	23	Btm

Distance from left bank (feet)									
110		330		550		770		990	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	16	3.3	18	6.7	20	6.7	20	5.0	16
19.8	14	9.8	10	13.1	12	13.1	16	9.8	13
16.4	10	16.4	9	19.7	8	19.7	6	14.8	10
23.0	4	23.0	9	26.3	10	26.3	2	19.7	3
		29.5	7	32.8	2				
26	Btm	32	Btm	35	Btm	28	Btm	23	Btm

Table 33.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 130.66 on March 20, 1992.*

Distance from left bank (feet)									
110		330		550		770		990	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
5.4	7.8	6.6	7.7	7.4	7.7	5.8	7.8	5.0	7.8
10.8	7.8	13.2	7.7	14.8	7.7	11.6	7.7	10.0	7.8
16.2	7.8	19.8	7.8	22.2	7.7	17.4	7.7	15.0	7.7
21.6	7.9	26.4	7.8	29.6	7.7	23.2	7.7	20.0	7.7
27	Btm	33	Btm	37	Btm	29	Btm	25	Btm

Distance from left bank (feet)									
110		330		550		770		990	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	22	3.3	27	3.3	30	6.7	27	6.7	25
13.1	22	13.1	26	13.1	27	13.1	26	13.1	22
19.7	22	23.0	21	23.0	25	19.7	20	19.7	14
23.0	18	29.5	21	32.8	20	26.3	14	23.0	10
		32.8	0						
27	Btm	33	Btm	37	Btm	29	Btm	25	Btm

Table 34.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 120.46 on February 27 , 1992.*

Distance from left bank (feet)									
200		600		1,000		1,400		1,800	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
9.8	6.0	20.0	5.8	17.2	5.8	8.0	5.9	2.0	5.9
19.6	5.9	40.0	5.8	34.3	5.8	16.0	5.8	4.0	5.9
29.4	5.9	60.0	5.8	51.6	5.8	24.0	5.8	6.0	5.8
39.2	5.9	80.0	5.8	68.8	5.8	32.0	5.8	8.0	5.8
49	Btm	100	Btm	86	Btm	40	Btm	10	Btm

Distance from left bank (feet)									
200		600		1,000		1,400		1,800	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	28	16.4	27	3.3	28	3.3	28	1.7	26
16.4	28	32.8	28	16.4	27	9.8	27	3.3	25
26.3	28	49.2	27	29.5	27	19.7	26	5.0	25
36.1	28	65.6	27	42.7	27	29.5	25	6.7	25
45.9	28	82.0	27	55.8	27	39.4	25	8.2	25
		98.4	28	68.9	27			9.8	25
				82.0	27				
49	Btm	100	Btm	86	Btm	40	Btm	10	Btm

Table 35.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 120.46 on March 7, 1992.*

Distance from left bank (feet)									
150		450		750		1,050		1,350	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
8.0	7.3	11.2	7.3	14.6	7.2	17.4	7.2	7.8	7.2
16.0	7.2	22.4	7.2	29.2	7.2	34.8	7.2	15.6	7.2
24.0	7.2	33.6	7.2	43.8	7.2	52.2	7.2	23.4	7.2
32.0	7.2	44.8	7.2	58.4	7.2	69.6	7.2	31.2	7.2
40	Btm	56	Btm	73	Btm	87	Btm	39	Btm

Distance from left bank (feet)									
150		450		750		1,050		1,350	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	30	13.1	34	6.7	35	3.3	36	6.7	36
16.4	30	26.3	33	23.0	34	19.7	36	16.4	36
26.3	27	39.4	27	39.4	32	36.1	36	26.3	35
36.1	22	52.5	24	55.8	32	52.5	35	36.1	35
				72.2	32	68.9	34		
						85.3	34		
40	Btm	56	Btm	73	Btm	87	Btm	39	Btm

Table 36.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 120.46 on March 20, 1992.*

Distance from left bank (feet)									
140		420		700		980		1,360	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
6.6	8.0	10.0	8.0	14.0	8.0	14.0	89.0	5.0	8.1
13.2	7.9	20.0	8.0	28.0	7.9	28.0	8.0	10.0	8.0
19.8	7.9	30.0	7.9	42.0	7.9	42.0	8.0	15.0	8.0
26.4	7.9	40.0	7.9	56.0	7.9	56.0	8.0	20.0	8.0
33	Btm	50	Btm	70	Btm	70	Btm	25	Btm

Distance from left bank (feet)									
140		420		700		980		1,360	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	21	3.3	21	3.3	22	3.3	18	3.3	22
13.1	19	16.4	21	19.7	22	19.7	18	9.8	22
23.0	16	29.5	20	36.1	22	36.1	18	16.4	22
32.8	16	42.7	20	52.5	22	52.5	18	23.0	22
		55.8	14	68.9	21	68.9	16		
33	Btm	50	Btm	70	Btm	70	Btm	25	Btm

Table 37.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 119.00 on February 27, 1992.*

Distance from left bank (feet)									
220		660		1,100		1,540		1,980	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
5.0	5.9	14.0	5.9	15.0	5.8	15.0	5.9	12.0	5.9
10.0	5.9	28.0	5.8	30.0	5.8	30.0	5.8	24.0	5.8
15.0	5.9	42.0	5.8	45.0	5.8	45.0	5.8	36.0	5.8
20.0	5.9	56.0	5.8	60.0	5.8	60.0	5.8	48.0	5.8
25	Btm	70	Btm	75	Btm	75	Btm	60	Btm

Distance from left bank (feet)									
220		660		1,100		1,540		1,980	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	29	3.3	29	3.3	29	3.3	29	6.7	28
6.7	28	9.8	28	13.1	28	13.1	28	16.4	28
9.8	28	19.7	28	23.0	28	23.0	28	26.3	27
13.1	28	29.5	28	32.8	28	32.8	28	36.1	27
16.4	28	39.4	28	42.7	28	42.7	27	45.9	27
19.7	28	49.2	28	52.5	28	52.5	27	55.8	27
		59.1	28	62.3	27	62.3	27		
		68.9	27	72.2	26	72.2	27		
25	Btm	70	Btm	75	Btm	75	Btm	60	Btm

Table 38.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 119.00 on March 7, 1992.*

Distance from left bank (feet)									
210		630		1,050		1,470		1,890	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
7.6	7.3	10.6	7.4	11.4	7.3	9.6	7.4	7.2	7.4
15.2	7.3	21.2	7.3	22.8	7.3	19.2	7.3	14.4	7.3
22.8	7.3	31.8	7.3	34.2	7.3	28.8	7.3	21.6	7.3
30.4	7.2	42.4	7.3	45.6	7.3	38.4	7.3	28.8	7.3
38	Btm	53	Btm	57	Btm	48	Btm	36	Btm

Distance from left bank (feet)									
210		630		1,050		1,470		1,890	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
6.7	34	9.8	36	13.1	35	6.7	37	6.7	36
13.1	32	19.7	34	26.3	32	19.7	35	13.1	36
19.7	32	29.5	31	39.4	32	32.8	32	19.7	35
26.3	31	39.4	30	52.5	34	45.9	31	26.3	36
32.8	27	49.2	30					32.8	34
38	Btm	53	Btm	57	Btm	48	Btm	36	Btm

Table 39.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 119.0 on March 20, 1992.*

Distance from left bank (feet)									
200		600		1,000		1,400		1,800	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
7.6	8.1	7.2	8.0	7.8	8.0	9.0	8.1	5.2	8.1
15.2	8.0	14.4	8.0	15.6	8.0	18.0	7.9	10.4	8.0
22.8	7.9	21.6	7.9	23.4	7.9	27.0	7.9	15.6	7.9
30.4	7.8	28.8	7.9	31.2	7.9	36.0	7.8	20.8	7.9
38	Btm	36	Btm	39	Btm	45	Btm	26	Btm

Distance from left bank (feet)									
200		600		1,000		1,400		1,800	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	18	3.3	22	3.3	22	3.3	23	3.3	23
13.1	19	13.0	22	13.1	22	13.1	23	9.8	21
23.0	20	23.0	22	23.0	22	23.0	22	16.4	21
32.8	18	32.8	20	32.8	21	32.8	22	23.0	20
						42.7	20		
38	Btm	36	Btm	39	Btm	45	Btm	26	Btm

Table 40.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 108.31 on February 27, 1992.*

Distance from left bank (feet)									
300		900		1,500		2,100		2,700	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
17.0	5.8	18.6	5.7	23.6	5.6	17.0	5.5	11.8	5.6
34.0	5.7	37.2	5.7	47.2	5.5	34.0	5.4	23.6	5.5
51.0	5.7	55.8	5.6	70.8	5.4	51.0	5.4	35.4	5.4
68.0	5.7	74.4	5.3	94.4	5.3	68.0	5.3	47.2	5.3
85	Btm	93	Btm	118	Btm	85	Btm	59	Btm

Distance from left bank (feet)									
300		900		1,500		2,100		2,700	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
9.8	14	3.3	14	16.4	10	13.1	8	9.8	8
23.0	13	19.7	12	32.8	9	26.3	8	19.7	8
36.1	12	36.1	12	49.2	8	39.4	8	29.5	8
49.2	12	52.5	10	65.6	8	52.5	8	39.4	8
62.3	12	68.9	8	82.0	8	65.6	8	49.2	8
75.5	12	85.3	10	98.4	10	78.7	8	59.1	0
				114.8	10				
85	Btm	93	Btm	118	Btm	85	Btm	59	Btm

Table 41.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 108.31 on March 7, 1992.*

Distance from left bank (feet)									
300		900		1,500		2,100		2,700	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
9.0	7.3	13.4	7.1	20.8	6.9	20.0	7.0	14.6	7.0
18.0	6.9	26.8	6.8	41.6	6.8	40.0	7.0	29.2	7.0
27.0	6.6	40.2	6.8	62.4	6.8	60.0	6.8	43.8	6.9
36.0	6.6	53.6	6.7	83.2	6.7	80.0	6.8	58.4	6.9
45	Btm	67	Btm	104	Btm	100	Btm	73	Btm

Distance from left bank (feet)									
300		900		1,500		2,100		2,700	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	33	13.1	36	16.4	35	16.4	36	16.4	35
13.1	32	26.3	34	36.1	34	36.1	35	29.5	36
23.0	31	39.4	33	55.8	33	55.8	35	42.7	35
32.6	30	52.5	30	75.5	30	75.5	33	55.8	34
42.7	30	65.6	26	95.2	30	95.2	32	68.9	34
45	Btm	67	Btm	104	Btm	100	Btm	73	Btm

Table 42.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Snake River mile 108.31 on March 20, 1992.*

Distance from left bank (feet)									
300		900		1,500		2,100		2,700	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
10.6	9.0	16.6	9.0	17.0	9.0	13.6	9.0	11.4	9.1
21.2	9.0	33.2	9.0	34.0	8.9	27.2	8.8	22.8	9.1
31.8	9.0	49.8	8.9	51.0	8.8	40.8	8.8	34.2	9.0
42.4	9.0	66.4	8.8	68.0	8.8	54.4	8.8	45.6	9.0
53	Btm	83	Btm	85	Btm	68	Btm	57	Btm

Distance from left bank (feet)									
300		900		1,500		2,100		2,700	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	15	13.3	16	16.6	16	3.3	18	3.3	20
19.7	15	23.0	16	23.0	16	19.7	18	19.7	18
36.1	15	42.1	14	42.7	18	36.1	18	36.1	18
49.2	10	62.3	14	62.3	18	52.5	18	52.5	16
		78.7	13	82.0	16	68.9	16		
53	Btm	83	Btm	85	Btm	68	Btm	57	Btm

Table 43.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Clearwater River mile 2.34 on February 25, 1992.*

Distance from left bank (feet)									
90		270		450		630		810	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
3.0	6.5	3.0	6.3	2.0	6.3	2.0	6.4	1.8	6.5
6.0	6.4	6.0	6.3	4.0	6.3	4.0	6.4	3.5	6.5
9.0	6.4	9.0	6.3	6.0	6.3	6.0	6.4	5.4	6.5
12.0	6.4	12.0	6.3	8.0	6.3	8.0	6.4	7.2	6.5
15	Btm	15	Btm	10	Btm	10	Btm	9	Btm

Distance from left bank (feet)									
90		270		450		630		810	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	21	3.3	21	3.3	20	3.3	19	3.3	15
6.7	21	6.7	21	6.7	19	6.7	19	6.7	14
9.8	23	9.8	20	9.8	18	9.8	18		
13.1	18	13.1	18						
16.4	15								
15	Btm	15	Btm	10	Btm	10	Btm	9	Btm

Table 44.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Clearwater River mile 2.34 on March 6, 1992.*

Distance from left bank (feet)									
30		90		150		210		270	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
	6.6		6.4		6.4		6.5		6.5
5	Btm	5	Btm	5	Btm	4	Btm	3	Btm

Table 45.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Clearwater River mile 2.34 on March 17, 1992.*

Distance from left bank (feet)									
35		105		175		245		315	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
1.4	8.6	1.8	8.4	1.4	8.4	1.0	8.6	.4	8.6
7	Btm	9	Btm	7	Btm	5	Btm	2	Btm

Table 46.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Clearwater River mile 1.26 on February 26, 1992.*

Distance from left bank (feet)									
120		370		620		870		1,120	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
5.0	5.8	3.0	5.8	2.4	5.7	4.0	5.7	4.2	5.7
10.0	5.7	6.0	5.8	4.8	5.7	8.0	5.7	8.4	5.7
15.0	5.7	9.0	5.7	7.2	5.7	12.0	5.7	12.6	5.7
20.0	5.7	12.0	5.7	9.6	5.7	16.0	5.7	16.8	5.7
25	Btm	15	Btm	12	Btm	20	Btm	21	Btm

Distance from left bank (feet)									
120		370		620		870		1,120	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	33	3.3	32	1.7	33	3.3	32	3.3	29
6.7	32	6.7	31	3.3	32	6.7	32	6.7	29
9.8	32	9.8	30	5.0	32	9.8	31	9.8	29
13.1	32	13.1	30	6.7	32	13.1	31	13.1	28
16.4	31			8.2	32	16.4	31	16.4	22
19.7	31			9.8	32	19.7	30	19.7	26
23.0	30								
25	Btm	15	Btm	12	Btm	20	Btm	21	Btm

Table 47.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Clearwater River mile 1.26 on March 18, 1992.*

Distance from left bank (feet)

100		120		210					
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
3.6	7.2	4.2	7.2	3.0	7.2				
6	Btm	7	Btm	5	Btm				

Distance from left bank (feet)

100		120		210					
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	32	3.3	38	3.3	37				
6	Btm	7	Btm	5	Btm				

Table 48.—*Temperature and light transmissivity profiles for Lower Granite Reservoir at Clearwater River mile .41 on March 6, 1992.*

Distance from left bank (feet)									
90		270		450		630		810	
Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)	Depth (ft)	Temp (C)
2.6	6.7	2.2	6.6	1.6	6.6	3.0	6.5	2.8	6.6
5.2	6.7	4.4	6.6	3.2	6.6	6.0	6.5	5.6	6.6
7.8	6.6	6.6	6.6	4.8	6.5	9.0	6.5	8.4	6.6
10.4	6.6	8.8	6.6	6.4	6.5	12.0	6.5	11.2	6.6
13	Btm	11	Btm	8	Btm	15	Btm	14	Btm

Distance from left bank (feet)									
90		270		450		630		810	
Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)	Depth (ft)	Trans (%)
3.3	30	3.3	35	1.7	32	3.3	25	3.3	27
6.7	30	6.7	32	3.3	31	5.0	27	6.7	27
9.8	28	9.8	32	5.0	26	6.7	26	9.8	25
13.1	26	13.1	31	6.7	23	8.4	27	13.1	22
		16.4	20			9.8	25		
14	Btm	15	Btm	8	Btm	11	Btm	13	Btm