ACCREDITED IN ACCORDANCE WITH nelac

Columbia Analytical Services INC.
An Employee-Owned Company

May 3, 2002

Service Request No: K2202038

Mark Musial
Golder Associates, Inc.
1750 Abbott Road, Suite 200
Anchorage, AK 99507

Re: Sitka Dredge/023-5524

Dear Mark:

Enclosed are the results of the sample(s) submitted to our laboratory on April 2, 2002. For your reference, these analyses have been assigned our service request number K2202038.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3372.

Respectfully submitted,

Columbia Analytical Services, Inc.

Jim Smith
Project Chemist

JS/afs

317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Golder Associates, Inc.	**Service Request No.:**	K2202038
Project:	Sitka Dredge	**Date Received:**	4/2/02
Sample Matrix:	Sediment		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six samples were received for analysis at Columbia Analytical Services on 4/2/02. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Inorganic Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals Sediment

Relative Percent Difference (RPD) Exceptions:
The Relative Percent Differences (RPD) for the replicate analysis of Antimony and Cadmium in sample ITZ 1 (K2202038-001) were outside the normal CAS control limits. The variability in the results is attributed to the heterogeneous character these analytes of the sample. Mixing techniques within the scope of the EPA methodology were used, but were not sufficient for complete homogenization of this sample.

Matrix Spike (MS) Exceptions:
The low Matrix Spike (MS) recovery of Antimony is a result of a method defect in the EPA 3050B-digestion procedure that can be magnified by certain matrix components. The associated QA/QC (i.e. LCS) indicate the analysis was in control. No further corrective action was taken.

The low Matrix Spike (MS) recovery of Cadmium for sample ITZ 1 is a result of the heterogeneous character this analyte in the sample (see high RPD note above). The associated Laboratory Control Sample (LCS) was acceptable indicating the analysis was in control. No further corrective action was taken.

The Matrix Spike (MS) recovery criteria for Copper, Lead and Zinc for sample ITZ 1 are not applicable. The analyte concentrations in the sample were significantly higher than the added spike concentrations, preventing accurate evaluation of the spike recoveries.

No other anomalies associated with the analysis of these samples were observed.

Total Metals Tissue

No anomalies associated with the analysis of these samples were observed.

Approved by _____ Date 5/2/02

Organochlorine Pesticides by EPA Method 8081A

Method Reporting Limit (MRL) Exceptions:
The Method Reporting Limits have been elevated for 4,4'-DDE and 4,4'-DDT in samples ITZ 1 and ITZ2. The chromatogram indicated non-target components that prevented accurate quantification at the reporting limit. The results have been flagged to indicate the matrix interference. All efforts were made through various clean-up methods to reduce the matrix interference however the screening level of 6.9ppb for total DDT could not be met due to this interference.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

No anomalies associated with the analysis of these samples were observed.

Organotin Compounds

Sample Notes and Discussion:
The initial porewater extraction did not yield enough water for porewater analysis. Per Golder the analysis for Organotin would be performed on the soil and reported on a total basis.

Results for the Organotins will be reported at a later date.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID 1479: 2-Butanone (MEK), Tetrachloroethene (PCE) and sec-Butylbenzene. In accordance with CAS standard operating procedures and as specified in the analytical method, an alternative evaluation was performed using the average relative standard deviation of all analytes in the calibration. The calibration meets the alternative evaluation criteria.

Surrogate Exceptions:
The upper control criterion was exceeded for the following surrogate(s) in samples ITZ 1, ITZ 2, ITZ 3 and MB KWG0202342-4: Toluene-d8. No target analytes were detected above the Method Reporting Limit in the samples. The error associated with an elevated recovery equates to a high bias. The quality of the sample data has not been significantly affected. No further corrective action was feasible.

The upper control criterion was exceeded for the following surrogate in ITZ 3MS KWG0202342-4, ITZ 3DMS KWG0202342-5, LCS KWG0202342-3: Toluene-d8. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier has been flagged accordingly. No further corrective action was feasible.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270C

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL1435: Benzoic Acid, Pentachlorophenol, N-Nitrosodi-n-propylamine, and Hexachlorocyclopentadiene. In accordance with CAS standard operating procedures and as specified in the analytical method, an alternative evaluation was performed using the average relative standard deviation of all analytes in the calibration. The calibration meets the alternative evaluation criteria.

Matrix Spike (MS) Exceptions:
The Matrix Spike recovery of Phenol for sample ITZ 1DMS was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier does not indicate a significant data quality problem. No further corrective action was feasible.

Approved by _____ Date 5/2/08

The matrix spike recovery of Pentachlorophenol for sample ITZ 1MS/DMS was outside the lower control criteria because of suspected matrix interference. The sample was re-analyzed, and produced similar results. No recovery was detected in the spiked samples. The results indicate a potential low bias for this compound in this matrix. The results of the original analysis are reported.

The control criteria for the Matrix Spike recovery of Pyrene for sample ITZ 1MS/DMS is not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Laboratory Control Sample (LCS) Exceptions:
The spike recovery of Benzoic Acid in the Duplicate Laboratory Control Sample (DLCS) KWG0202327-6 was outside the lower control criterion. The analyte in question was not detected in the associated field samples. The error associated with reduced recovery equates to a potential low bias. The recovery for this analyte was within control criterion in the LCS KWG0202327-6 with acceptable RPDs. The data has been flagged to indicate the low recovery.

Method Reporting Limit (MRL) Exceptions:
Sample(s) ITZ 1, ITZ 2, ITZ 3 required dilutions due the presence non-target analytes interfering with compounds of interest. The reporting limits have been elevated accordingly.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____ Date 5/2/12

Columbia Analytical Services, Inc.
An Employee-Owned Company

CHAIN OF CUSTODY

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SR#: K1202038

PAGE 1 OF 1 COC #

PROJECT NAME: Sitka Dredge
PROJECT NUMBER: 023-5524
PROJECT MANAGER: Mark Musdl
COMPANY/ADDRESS: Golder Associates 1750 Abbott Rd Suite 200 Anchorage AK 99507-3443
PHONE #: (907) 344-6001 FAX #: (907) 344-6011
SAMPLER'S SIGNATURE: Michelle Evans

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐	Volatile Organics 624☐ 8260☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐Fuel Fingerprint (FIQ) ☐NW-HCID Screen	Oil & Grease/TRPH 413.1☐ 418.1☐ 1664 SGT☐ 1664 HEM☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics Tri☐ Tetra☐ - 8151M PCP☐	PAHS 8310☐ SIM☐	GC/MS-SIM PAH☐ Phenol☐ Phthalates☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond, Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle) NH_3-N, COD, Total-P, TKN, TOC, DOC (circle)	TOX 9020☐ AOX 1650☐ 506☐	As per quote				REMARKS
ITZ1	4/1/02	11:03	1	Sed.	10															X				
ITZ2	4/1/02	11:35	2	Sed	10															X				
ITZ3	4/1/02	11:35	3	Sed.	10															X				

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

25 per quote

INVOICE INFORMATION

P.O. #
Bill To: Golder
1750 Abbot Rd Suite 200
Anchorage AK 99507

TURNAROUND REQUIREMENTS

____ 24 hr. ____ 48 hr.
____ 5 Day
X Standard (10-15 working days)
____ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORHTWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY:		RECEIVED BY:		RELINQUISHED BY:		RECEIVED BY:	
M. Evans	4/1/02 1600	Tracy Black	4/2/02 1020				
Signature	Date/Time	Signature	Date/Time	Signature	Date/Time	Signature	Date/Time
M. Evans	Golder	Black	CAS				
Printed Name	Firm	Printed Name	Firm	Printed Name	Firm	Printed Name	Firm

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: WET

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
TZ 1	K2202038-001	04/01/2002	04/02/2002	04/10/2002	85.5	
TZ 2	K2202038-002	04/01/2002	04/02/2002	04/10/2002	76.4	
TZ 3	K2202038-003	04/01/2002	04/02/2002	04/10/2002	87.0	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Golder Associates Inc.	**Service Request:**	K2202038
Project:	Sitka Dredge/023-5524	**Date Collected:**	04/01/02
Sample Matrix:	Sediment	**Date Received:**	04/02/02

Carbon, Total Organic

Prep Method:	NONE		
Analysis Method:	PSEP	**Units:**	PERCENT
Test Notes:		**Basis:**	Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
ITZ 1	K2202038-001	0.05	0.03	1	NA	04/06/02	0.33	
ITZ 2	K2202038-002	0.05	0.03	1	NA	04/06/02	0.68	
ITZ 3	K2202038-003	0.05	0.03	1	NA	04/06/02	5.65	
Method Blank	K2202038-MB	0.05	0.03	1	NA	04/06/02	0.03	U

Approved By: _____ Date: 4/17/02

1A/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Golder Associates Inc.	Service Request:	K2202038
Project:	Sitka Dredge/023-5524	Date Collected:	04/01/02
Sample Matrix:	Sediment	Date Received:	04/02/02

Total Volatile Solids

Prep Method:	NONE	Units:	PERCENT
Analysis Method:	160.4M	Basis:	As Received
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
ITZ 1	K2202038-001	0.1	0.1	1	NA	04/10/02	1.09	
ITZ 2	K2202038-002	0.1	0.1	1	NA	04/10/02	2.87	
ITZ 3	K2202038-003	0.1	0.1	1	NA	04/10/02	0.74	
Method Blank	K2202038-MB	0.1	0.1	1	NA	04/10/02	0.1	U

M Modified.

Approved By: _____ Date: 4/17/02

1A/020597p

02038WET.MR2 - Sample 04/17/02

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/02
Date Received: 04/02/02
Date Analyzed: 04/05/02

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: ITZ 1
Lab Code: K2202038-001

Sand Fraction: Dry Weight (Grams)	82.8226
Sand Fraction: Weight Recovered (Grams)	82.9310
Sand Fraction: Percent Recovery	100

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	5.3053	6.45
Very Coarse Sand	-1 to 0 Ø	12.6631	15.4
Coarse Sand	0 to 1 Ø	33.9444	41.3
Medium Sand	1 to 2 Ø	16.6430	20.2
Fine Sand	2 to 3 Ø	8.0590	9.80
Very Fine Sand	3 to 4 Ø	5.7245	6.96
Silt	4 to 8 Ø	2.0600	2.50
Clay	> 8 Ø	0.8200	1.00
	Total	85.2193	104

Approved By: EL Date: 4/16/02

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Golder Associates Inc.		
Project:	Sitka Dredge/023-5524	**Service Request:**	K2202038
Sample Matrix:	Sediment	**Date Collected:**	04/01/02
		Date Received:	04/02/02
		Date Analyzed:	04/05/02

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: ITZ 2
Lab Code: K2202038-002

Sand Fraction: Dry Weight (Grams)	74.3881
Sand Fraction: Weight Recovered (Grams)	74.5864
Sand Fraction: Percent Recovery	100

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	24.0930	31.1
Very Coarse Sand	-1 to 0 Ø	20.7979	26.9
Coarse Sand	0 to 1 Ø	14.1032	18.2
Medium Sand	1 to 2 Ø	6.3471	8.19
Fine Sand	2 to 3 Ø	3.6395	4.70
Very Fine Sand	3 to 4 Ø	4.7710	6.16
Silt	4 to 8 Ø	1.3650	1.76
Clay	> 8 Ø	0.9400	1.21
	Total	76.0567	98.2

Approved By: _____ Date: 4/16/02

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/02
Date Received: 04/02/02
Date Analyzed: 04/05/02

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: ITZ 3
Lab Code: K2202038-003

Sand Fraction: Dry Weight (Grams)	88.1308
Sand Fraction: Weight Recovered (Grams)	88.0881
Sand Fraction: Percent Recovery	100

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	38.6594	44.7
Very Coarse Sand	-1 to 0 Ø	14.3449	16.6
Coarse Sand	0 to 1 Ø	16.4083	19.0
Medium Sand	1 to 2 Ø	12.9562	15.0
Fine Sand	2 to 3 Ø	4.9481	5.73
Very Fine Sand	3 to 4 Ø	0.7073	0.82
Silt	4 to 8 Ø	1.9100	2.21
Clay	> 8 Ø	1.3150	1.52
	Total	91.2492	106

Approved By: EL Date: 4/16/02

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: Golder Associates Inc.
Project No.: 023-5524
Project Name: Sitka Dredge
Matrix: SEDIMENT

Service Request: K2202038
Date Collected: 04/01/02
Date Received: 04/02/02
Units: MG/KG
Basis: Dry

Sample Name: ITZ 1

Lab Code: K2202038-001

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.11	0.11	10	4/17/02	4/18/02	58.9		*N
Arsenic	200.8	29.0	5.8	250	4/17/02	4/18/02	1060		
Cadmium	200.8	0.06	0.02	5	4/17/02	4/18/02	8.14		*N
Chromium	200.8	0.2	0.0	5	4/17/02	4/18/02	75.8		
Copper	200.8	5.8	2.3	250	4/17/02	4/18/02	2940		
Lead	200.8	2.90	1.74	250	4/17/02	4/18/02	833		
Mercury	7471A	0.02	0.01	1	4/9/02	4/9/02	0.02		
Nickel	200.8	0.2	0.1	5	4/17/02	4/18/02	27.0		
Silver	200.8	0.04	0.02	10	4/17/02	4/18/02	1.69		
Zinc	200.8	145	57.9	1250	4/17/02	4/18/02	7590		

% Solids: 85.5

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: Golder Associates Inc.
Project No.: 023-5524
Project Name: Sitka Dredge
Matrix: SEDIMENT

Service Request: K2202038
Date Collected: 04/01/02
Date Received: 04/02/02
Units: MG/KG
Basis: Dry

Sample Name: ITZ 2
Lab Code: K2202038-002

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.10	0.10	10	4/17/02	4/18/02	114		*N
Arsenic	200.8	27.3	5.5	250	4/17/02	4/18/02	963		
Cadmium	200.8	0.05	0.02	5	4/17/02	4/18/02	3.08		*N
Chromium	200.8	0.2	0.0	5	4/17/02	4/18/02	83.1		
Copper	200.8	5.5	2.2	250	4/17/02	4/18/02	2100		
Lead	200.8	2.73	1.64	250	4/17/02	4/18/02	1910		
Mercury	7471A	0.01	0.01	1	4/9/02	4/9/02	0.07		
Nickel	200.8	0.2	0.1	5	4/17/02	4/18/02	32.9		
Silver	200.8	0.04	0.02	10	4/17/02	4/18/02	1.29		
Zinc	200.8	27.3	10.9	250	4/17/02	4/18/02	4860		

Solids: 76.4

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: Golder Associates Inc.
Project No.: 023-5524
Project Name: Sitka Dredge
Matrix: SEDIMENT

Service Request: K2202038
Date Collected: 04/01/02
Date Received: 04/02/02
Units: MG/KG
Basis: Dry

Sample Name: ITZ 3
Lab Code: K2202038-003

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.05	0.05	5	4/17/02	4/18/02	0.18		*N
Arsenic	200.8	0.6	0.1	5	4/17/02	4/18/02	5.0		
Cadmium	200.8	0.06	0.02	5	4/17/02	4/18/02	0.05	B	*N
Chromium	200.8	0.2	0.0	5	4/17/02	4/18/02	66.5		
Copper	200.8	0.1	0.0	5	4/17/02	4/18/02	13.7		
Lead	200.8	0.06	0.03	5	4/17/02	4/18/02	4.26		
Mercury	7471A	0.01	0.01	1	4/9/02	4/9/02	0.01	U	
Nickel	200.8	0.2	0.1	5	4/17/02	4/18/02	29.0		
Silver	200.8	0.02	0.01	5	4/17/02	4/18/02	0.03		
Zinc	200.8	0.6	0.2	5	4/17/02	4/18/02	58.2		

% Solids: 87.0

Comments:

COLUMBIA ANALYTICAL SERVICES, INC

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Organochlorine Pesticides

Sample Name: ITZ 1
Lab Code: K2202038-001

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
4'-DDD	ND	U	7.8	0.36	2	04/10/02	04/17/02	KWG0202322	
4'-DDE	ND	Ui	5.4	5.4	2	04/10/02	04/17/02	KWG0202322	
4'-DDT	ND	Ui	16	2.8	2	04/10/02	04/17/02	KWG0202322	
ldrin	ND	U	4.0	0.55	2	04/10/02	04/17/02	KWG0202322	
pha-Chlordane	ND	U	4.0	0.26	2	04/10/02	04/17/02	KWG0202322	
ieldrin	ND	U	5.4	0.72	2	04/10/02	04/17/02	KWG0202322	
mma-BHC (Lindane)	ND	U	4.0	0.57	2	04/10/02	04/17/02	KWG0202322	
eptachlor	ND	U	4.0	0.32	2	04/10/02	04/17/02	KWG0202322	

rrogate Name	%Rec	Control Limits	Date Analyzed	Note
trachloro-m-xylene	64	48-119	04/17/02	Acceptable
cachlorobiphenyl	98	48-136	04/17/02	Acceptable

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Form 1A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Organochlorine Pesticides

Sample Name: ITZ 2
Lab Code: K2202038-002

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
4'-DDD	ND	U	8.7	0.40	2	04/10/02	04/17/02	KWG0202322	
4'-DDE	ND	Ui	15	15	2	04/10/02	04/17/02	KWG0202322	
4'-DDT	ND	Ui	18	18	2	04/10/02	04/17/02	KWG0202322	
ldrin	ND	U	4.5	0.61	2	04/10/02	04/17/02	KWG0202322	
pha-Chlordane	ND	U	4.5	0.29	2	04/10/02	04/17/02	KWG0202322	
ieldrin	ND	U	6.1	0.81	2	04/10/02	04/17/02	KWG0202322	
mma-BHC (Lindane)	ND	U	4.5	0.64	2	04/10/02	04/17/02	KWG0202322	
eptachlor	ND	U	4.5	0.36	2	04/10/02	04/17/02	KWG0202322	

rrogate Name	%Rec	Control Limits	Date Analyzed	Note
trachloro-m-xylene	63	48-119	04/17/02	Acceptable
cachlorobiphenyl	48	48-136	04/17/02	Acceptable

uments:

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Organochlorine Pesticides

Sample Name: ITZ 3
Lab Code: K2202038-003

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
4'-DDD	ND	U	7.6	0.35	2	04/10/02	04/17/02	KWG0202322	
4'-DDE	ND	U	5.3	0.57	2	04/10/02	04/17/02	KWG0202322	
4'-DDT	ND	U	16	0.39	2	04/10/02	04/17/02	KWG0202322	
ldrin	ND	U	4.0	0.54	2	04/10/02	04/17/02	KWG0202322	
pha-Chlordane	ND	U	4.0	0.25	2	04/10/02	04/17/02	KWG0202322	
ieldrin	ND	U	5.3	0.71	2	04/10/02	04/17/02	KWG0202322	
umma-BHC (Lindane)	ND	U	4.0	0.56	2	04/10/02	04/17/02	KWG0202322	
eptachlor	ND	U	4.0	0.32	2	04/10/02	04/17/02	KWG0202322	

rrogate Name	%Rec	Control Limits	Date Analyzed	Note
trachloro-m-xylene	73	48-119	04/17/02	Acceptable
cachlorobiphenyl	75	48-136	04/17/02	Acceptable

nments:

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Golder Associates Inc.	**Service Request:**	K2202038
Project:	Sitka Dredge/023-5524	**Date Collected:**	04/01/2002
Sample Matrix:	Sediment	**Date Received:**	04/02/2002

Polychlorinated Biphenyls (PCBs)

Sample Name:	ITZ 1		
Lab Code:	K2202038-001	**Units:**	ug/Kg
		Basis:	Dry
Extraction Method:	EPA 3540C		
Analysis Method:	8082	**Level:**	Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1221	ND	U	24	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1232	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1242	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1248	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1254	190		12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1260	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	82	57-136	04/16/02	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Polychlorinated Biphenyls (PCBs)

Sample Name: ITZ 2
Lab Code: K2202038-002

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	14	3.2	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1221	ND	U	27	3.2	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1232	ND	U	14	3.2	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1242	ND	U	14	3.2	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1248	ND	U	14	3.2	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1254	510		14	3.2	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1260	ND	U	14	3.2	1	04/10/02	04/16/02	KWG0202317	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	93	57-136	04/16/02	Acceptable

Comments:

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Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Polychlorinated Biphenyls (PCBs)

Sample Name: ITZ 3
Lab Code: K2202038-003

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1221	ND	U	23	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1232	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1242	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1248	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1254	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	
Aroclor 1260	ND	U	12	2.8	1	04/10/02	04/16/02	KWG0202317	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	101	57-136	04/16/02	Acceptable

Comments:

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Semi-Volatile Organic Compounds by GC/MS

Sample Name: ITZ 1
Lab Code: K2202038-001

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	700	65	10	04/10/02	04/12/02	KWG0202327	
1,3-Dichlorobenzene	ND	U	240	59	10	04/10/02	04/12/02	KWG0202327	
1,4-Dichlorobenzene	ND	U	240	55	10	04/10/02	04/12/02	KWG0202327	
1,2-Dichlorobenzene	ND	U	240	57	10	04/10/02	04/12/02	KWG0202327	
Benzyl Alcohol	ND	U	240	65	10	04/10/02	04/12/02	KWG0202327	
2-Methylphenol	ND	U	240	56	10	04/10/02	04/12/02	KWG0202327	
Hexachloroethane	ND	U	240	54	10	04/10/02	04/12/02	KWG0202327	
4-Methylphenol†	ND	U	240	55	10	04/10/02	04/12/02	KWG0202327	
2,4-Dimethylphenol	ND	U	1200	360	10	04/10/02	04/12/02	KWG0202327	
Benzoic Acid	ND	U	4700	390	10	04/10/02	04/12/02	KWG0202327	*
1,2,4-Trichlorobenzene	ND	U	240	62	10	04/10/02	04/12/02	KWG0202327	
Naphthalene	**120**	JD	240	35	10	04/10/02	04/12/02	KWG0202327	
Hexachlorobutadiene	ND	U	240	65	10	04/10/02	04/12/02	KWG0202327	
2-Methylnaphthalene	ND	U	240	70	10	04/10/02	04/12/02	KWG0202327	
Acenaphthylene	**44**	JD	240	38	10	04/10/02	04/12/02	KWG0202327	
Dimethyl Phthalate	ND	U	240	60	10	04/10/02	04/12/02	KWG0202327	
Acenaphthene	**100**	JD	240	61	10	04/10/02	04/12/02	KWG0202327	
Dibenzofuran	**98**	JD	240	67	10	04/10/02	04/12/02	KWG0202327	
Fluorene	**120**	JD	240	55	10	04/10/02	04/12/02	KWG0202327	
Diethyl Phthalate	ND	U	240	71	10	04/10/02	04/12/02	KWG0202327	
N-Nitrosodiphenylamine	ND	U	240	57	10	04/10/02	04/12/02	KWG0202327	
Hexachlorobenzene	ND	U	240	71	10	04/10/02	04/12/02	KWG0202327	
Pentachlorophenol	ND	U	1200	53	10	04/10/02	04/12/02	KWG0202327	
Phenanthrene	**1100**	D	240	48	10	04/10/02	04/12/02	KWG0202327	
Anthracene	**200**	JD	240	54	10	04/10/02	04/12/02	KWG0202327	
Di-n-butyl Phthalate	ND	U	240	61	10	04/10/02	04/12/02	KWG0202327	
Fluoranthene	**1600**	D	240	56	10	04/10/02	04/12/02	KWG0202327	
Pyrene	**1300**	D	240	60	10	04/10/02	04/12/02	KWG0202327	
Butyl Benzyl Phthalate	ND	U	240	32	10	04/10/02	04/12/02	KWG0202327	
Benz(a)anthracene	**770**	D	240	25	10	04/10/02	04/12/02	KWG0202327	
Chrysene	**930**	D	240	26	10	04/10/02	04/12/02	KWG0202327	
Bis(2-ethylhexyl) Phthalate	ND	U	4700	2900	10	04/10/02	04/12/02	KWG0202327	
Di-n-octyl Phthalate	ND	U	240	38	10	04/10/02	04/12/02	KWG0202327	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Semi-Volatile Organic Compounds by GC/MS

Sample Name: ITZ 1
Lab Code: K2202038-001

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(b)fluoranthene	1000	D	240	22	10	04/10/02	04/12/02	KWG0202327	
Benzo(k)fluoranthene	340	D	240	38	10	04/10/02	04/12/02	KWG0202327	
Benzo(a)pyrene	720	D	240	23	10	04/10/02	04/12/02	KWG0202327	
Indeno(1,2,3-cd)pyrene	480	D	240	11	10	04/10/02	04/12/02	KWG0202327	
Dibenz(a,h)anthracene	140	JD	240	23	10	04/10/02	04/12/02	KWG0202327	
Benzo(g,h,i)perylene	430	D	240	24	10	04/10/02	04/12/02	KWG0202327	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	72	12-104	04/12/02	Acceptable
Phenol-d6	87	38-116	04/12/02	Acceptable
Nitrobenzene-d5	89	38-121	04/12/02	Acceptable
2-Fluorobiphenyl	78	52-113	04/12/02	Acceptable
2,4,6-Tribromophenol	62	34-141	04/12/02	Acceptable
Terphenyl-d14	82	47-152	04/12/02	Acceptable

Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Semi-Volatile Organic Compounds by GC/MS

Sample Name: ITZ 2
Lab Code: K2202038-002

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	**73**	JD	790	73	10	04/10/02	04/12/02	KWG0202327	
1,3-Dichlorobenzene	ND	U	270	66	10	04/10/02	04/12/02	KWG0202327	
1,4-Dichlorobenzene	ND	U	270	61	10	04/10/02	04/12/02	KWG0202327	
1,2-Dichlorobenzene	ND	U	270	64	10	04/10/02	04/12/02	KWG0202327	
Benzyl Alcohol	ND	U	270	72	10	04/10/02	04/12/02	KWG0202327	
2-Methylphenol	ND	U	270	63	10	04/10/02	04/12/02	KWG0202327	
Hexachloroethane	ND	U	270	61	10	04/10/02	04/12/02	KWG0202327	
4-Methylphenol†	**100**	JD	270	61	10	04/10/02	04/12/02	KWG0202327	
2,4-Dimethylphenol	ND	U	1400	400	10	04/10/02	04/12/02	KWG0202327	
Benzoic Acid	ND	U	5300	430	10	04/10/02	04/12/02	KWG0202327	*
1,2,4-Trichlorobenzene	ND	U	270	69	10	04/10/02	04/12/02	KWG0202327	
Naphthalene	**57**	JD	270	39	10	04/10/02	04/12/02	KWG0202327	
Hexachlorobutadiene	ND	U	270	72	10	04/10/02	04/12/02	KWG0202327	
2-Methylnaphthalene	ND	U	270	79	10	04/10/02	04/12/02	KWG0202327	
Acenaphthylene	**180**	JD	270	43	10	04/10/02	04/12/02	KWG0202327	
Dimethyl Phthalate	ND	U	270	68	10	04/10/02	04/12/02	KWG0202327	
Acenaphthene	**190**	JD	270	68	10	04/10/02	04/12/02	KWG0202327	
Dibenzofuran	**110**	JD	270	75	10	04/10/02	04/12/02	KWG0202327	
Fluorene	**210**	JD	270	62	10	04/10/02	04/12/02	KWG0202327	
Diethyl Phthalate	ND	U	270	80	10	04/10/02	04/12/02	KWG0202327	
N-Nitrosodiphenylamine	ND	U	270	64	10	04/10/02	04/12/02	KWG0202327	
Hexachlorobenzene	ND	U	270	79	10	04/10/02	04/12/02	KWG0202327	
Pentachlorophenol	**190**	JD	1400	60	10	04/10/02	04/12/02	KWG0202327	
Phenanthrene	**2400**	D	270	53	10	04/10/02	04/12/02	KWG0202327	
Anthracene	**810**	D	270	61	10	04/10/02	04/12/02	KWG0202327	
Di-n-butyl Phthalate	ND	U	270	68	10	04/10/02	04/12/02	KWG0202327	
Fluoranthene	**5600**	D	270	63	10	04/10/02	04/12/02	KWG0202327	
Pyrene	**4500**	D	270	68	10	04/10/02	04/12/02	KWG0202327	
Butyl Benzyl Phthalate	**82**	JD	270	36	10	04/10/02	04/12/02	KWG0202327	
Benz(a)anthracene	**2900**	D	270	28	10	04/10/02	04/12/02	KWG0202327	
Chrysene	**3600**	D	270	29	10	04/10/02	04/12/02	KWG0202327	
Bis(2-ethylhexyl) Phthalate	ND	U	5300	3300	10	04/10/02	04/12/02	KWG0202327	
Di-n-octyl Phthalate	ND	U	270	43	10	04/10/02	04/12/02	KWG0202327	

Comments:

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Golder Associates Inc.	**Service Request:**	K2202038
Project:	Sitka Dredge/023-5524	**Date Collected:**	04/01/2002
Sample Matrix:	Sediment	**Date Received:**	04/02/2002

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	ITZ 2	**Units:**	ug/Kg
Lab Code:	K2202038-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(b)fluoranthene	**4000**	D	270	24	10	04/10/02	04/12/02	KWG0202327	
Benzo(k)fluoranthene	**1100**	D	270	42	10	04/10/02	04/12/02	KWG0202327	
Benzo(a)pyrene	**2600**	D	270	25	10	04/10/02	04/12/02	KWG0202327	
Indeno(1,2,3-cd)pyrene	**1700**	D	270	13	10	04/10/02	04/12/02	KWG0202327	
Dibenz(a,h)anthracene	**480**	D	270	26	10	04/10/02	04/12/02	KWG0202327	
Benzo(g,h,i)perylene	**1500**	D	270	27	10	04/10/02	04/12/02	KWG0202327	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	87	12-104	04/12/02	Acceptable
Phenol-d6	102	38-116	04/12/02	Acceptable
Nitrobenzene-d5	114	38-121	04/12/02	Acceptable
2-Fluorobiphenyl	88	52-113	04/12/02	Acceptable
2,4,6-Tribromophenol	72	34-141	04/12/02	Acceptable
Terphenyl-d14	107	47-152	04/12/02	Acceptable

Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Golder Associates Inc.	**Service Request:**	K2202038
Project:	Sitka Dredge/023-5524	**Date Collected:**	04/01/2002
Sample Matrix:	Sediment	**Date Received:**	04/02/2002

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	ITZ 3	**Units:**	ug/Kg
Lab Code:	K2202038-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	69	6.4	1	04/10/02	04/12/02	KWG0202327	
1,3-Dichlorobenzene	ND	U	23	5.8	1	04/10/02	04/12/02	KWG0202327	
1,4-Dichlorobenzene	ND	U	23	5.4	1	04/10/02	04/12/02	KWG0202327	
1,2-Dichlorobenzene	ND	U	23	5.6	1	04/10/02	04/12/02	KWG0202327	
Benzyl Alcohol	ND	U	23	6.4	1	04/10/02	04/12/02	KWG0202327	
2-Methylphenol	ND	U	23	5.5	1	04/10/02	04/12/02	KWG0202327	
Hexachloroethane	ND	U	23	5.3	1	04/10/02	04/12/02	KWG0202327	
4-Methylphenol†	ND	U	23	5.4	1	04/10/02	04/12/02	KWG0202327	
2,4-Dimethylphenol	ND	U	120	35	1	04/10/02	04/12/02	KWG0202327	
Benzoic Acid	ND	U	460	38	1	04/10/02	04/12/02	KWG0202327	*
1,2,4-Trichlorobenzene	ND	U	23	6.1	1	04/10/02	04/12/02	KWG0202327	
Naphthalene	ND	U	23	3.4	1	04/10/02	04/12/02	KWG0202327	
Hexachlorobutadiene	ND	U	23	6.4	1	04/10/02	04/12/02	KWG0202327	
2-Methylnaphthalene	ND	U	23	6.9	1	04/10/02	04/12/02	KWG0202327	
Acenaphthylene	ND	U	23	3.7	1	04/10/02	04/12/02	KWG0202327	
Dimethyl Phthalate	ND	U	23	5.9	1	04/10/02	04/12/02	KWG0202327	
Acenaphthene	ND	U	23	6.0	1	04/10/02	04/12/02	KWG0202327	
Dibenzofuran	ND	U	23	6.6	1	04/10/02	04/12/02	KWG0202327	
Fluorene	ND	U	23	5.4	1	04/10/02	04/12/02	KWG0202327	
Diethyl Phthalate	ND	U	23	7.0	1	04/10/02	04/12/02	KWG0202327	
N-Nitrosodiphenylamine	ND	U	23	5.6	1	04/10/02	04/12/02	KWG0202327	
Hexachlorobenzene	ND	U	23	7.0	1	04/10/02	04/12/02	KWG0202327	
Pentachlorophenol	ND	U	120	5.3	1	04/10/02	04/12/02	KWG0202327	
Phenanthrene	**6.6**	J	23	4.7	1	04/10/02	04/12/02	KWG0202327	
Anthracene	ND	U	23	5.4	1	04/10/02	04/12/02	KWG0202327	
Di-n-butyl Phthalate	ND	U	23	6.0	1	04/10/02	04/12/02	KWG0202327	
Fluoranthene	**52**		23	5.6	1	04/10/02	04/12/02	KWG0202327	
Pyrene	**39**		23	5.9	1	04/10/02	04/12/02	KWG0202327	
Butyl Benzyl Phthalate	ND	U	23	3.2	1	04/10/02	04/12/02	KWG0202327	
Benz(a)anthracene	**17**	J	23	2.5	1	04/10/02	04/12/02	KWG0202327	
Chrysene	**27**		23	2.5	1	04/10/02	04/12/02	KWG0202327	
Bis(2-ethylhexyl) Phthalate	ND	U	460	290	1	04/10/02	04/12/02	KWG0202327	
Di-n-octyl Phthalate	ND	U	23	3.8	1	04/10/02	04/12/02	KWG0202327	

Comments:

01847

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Golder Associates Inc.	**Service Request:**	K2202038
Project:	Sitka Dredge/023-5524	**Date Collected:**	04/01/2002
Sample Matrix:	Sediment	**Date Received:**	04/02/2002

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	ITZ 3	**Units:**	ug/Kg
Lab Code:	K2202038-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(b)fluoranthene	**30**		23	2.2	1	04/10/02	04/12/02	KWG0202327	
Benzo(k)fluoranthene	**11**	J	23	3.7	1	04/10/02	04/12/02	KWG0202327	
Benzo(a)pyrene	**14**	J	23	2.2	1	04/10/02	04/12/02	KWG0202327	
Indeno(1,2,3-cd)pyrene	**8.8**	J	23	1.1	1	04/10/02	04/12/02	KWG0202327	
Dibenz(a,h)anthracene	ND	U	23	2.3	1	04/10/02	04/12/02	KWG0202327	
Benzo(g,h,i)perylene	**8.4**	J	23	2.4	1	04/10/02	04/12/02	KWG0202327	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	75	12-104	04/12/02	Acceptable
Phenol-d6	101	38-116	04/12/02	Acceptable
Nitrobenzene-d5	101	38-121	04/12/02	Acceptable
2-Fluorobiphenyl	93	52-113	04/12/02	Acceptable
2,4,6-Tribromophenol	85	34-141	04/12/02	Acceptable
Terphenyl-d14	107	47-152	04/12/02	Acceptable

Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

011848

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 1
Lab Code: K2202038-001

Extraction Method: EPA 5030A
Analysis Method: 8260B

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.9	0.79	1	04/08/02	04/08/02	KWG0202342	
Chloromethane	ND	U	5.9	0.68	1	04/08/02	04/08/02	KWG0202342	
Vinyl Chloride	ND	U	5.9	0.82	1	04/08/02	04/08/02	KWG0202342	
Bromomethane	ND	U	5.9	1.1	1	04/08/02	04/08/02	KWG0202342	
Chloroethane	ND	U	5.9	0.67	1	04/08/02	04/08/02	KWG0202342	
Trichlorofluoromethane	ND	U	5.9	0.79	1	04/08/02	04/08/02	KWG0202342	
Acetone	**15**	J	59	4.6	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloroethene	ND	U	5.9	0.82	1	04/08/02	04/08/02	KWG0202342	
Carbon Disulfide	ND	U	5.9	1.1	1	04/08/02	04/08/02	KWG0202342	
Methylene Chloride	**3.2**	J	12	0.54	1	04/08/02	04/08/02	KWG0202342	
trans-1,2-Dichloroethene	ND	U	5.9	0.64	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloroethane	ND	U	5.9	0.53	1	04/08/02	04/08/02	KWG0202342	
2-Butanone (MEK)	**3.2**	J	24	1.5	1	04/08/02	04/08/02	KWG0202342	
2,2-Dichloropropane	ND	U	5.9	0.70	1	04/08/02	04/08/02	KWG0202342	
cis-1,2-Dichloroethene	ND	U	5.9	0.54	1	04/08/02	04/08/02	KWG0202342	
Chloroform	ND	U	5.9	0.49	1	04/08/02	04/08/02	KWG0202342	
Bromochloromethane	ND	U	5.9	0.54	1	04/08/02	04/08/02	KWG0202342	
1,1,1-Trichloroethane (TCA)	ND	U	5.9	0.53	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloropropene	ND	U	5.9	0.66	1	04/08/02	04/08/02	KWG0202342	
Carbon Tetrachloride	ND	U	5.9	0.72	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichloroethane (EDC)	ND	U	5.9	0.48	1	04/08/02	04/08/02	KWG0202342	
Benzene	ND	U	5.9	0.52	1	04/08/02	04/08/02	KWG0202342	
Trichloroethene (TCE)	ND	U	5.9	0.57	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichloropropane	ND	U	5.9	0.47	1	04/08/02	04/08/02	KWG0202342	
Bromodichloromethane	ND	U	5.9	0.47	1	04/08/02	04/08/02	KWG0202342	
Dibromomethane	ND	U	5.9	0.46	1	04/08/02	04/08/02	KWG0202342	
2-Hexanone	ND	U	24	1.8	1	04/08/02	04/08/02	KWG0202342	
cis-1,3-Dichloropropene	ND	U	5.9	0.42	1	04/08/02	04/08/02	KWG0202342	
Toluene	ND	U	5.9	0.50	1	04/08/02	04/08/02	KWG0202342	
trans-1,3-Dichloropropene	ND	U	5.9	0.38	1	04/08/02	04/08/02	KWG0202342	
1,1,2-Trichloroethane	ND	U	5.9	0.53	1	04/08/02	04/08/02	KWG0202342	
4-Methyl-2-pentanone (MIBK)	ND	U	24	1.5	1	04/08/02	04/08/02	KWG0202342	
1,3-Dichloropropane	ND	U	5.9	0.37	1	04/08/02	04/08/02	KWG0202342	

Comments:

01142

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 1
Lab Code: K2202038-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 5030A
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetrachloroethene (PCE)	ND	U	5.9	0.57	1	04/08/02	04/08/02	KWG0202342	
Dibromochloromethane	ND	U	5.9	0.49	1	04/08/02	04/08/02	KWG0202342	
1,2-Dibromoethane (EDB)	ND	U	24	0.58	1	04/08/02	04/08/02	KWG0202342	
Chlorobenzene	ND	U	5.9	0.66	1	04/08/02	04/08/02	KWG0202342	
1,1,1,2-Tetrachloroethane	ND	U	5.9	0.57	1	04/08/02	04/08/02	KWG0202342	
Ethylbenzene	ND	U	5.9	0.64	1	04/08/02	04/08/02	KWG0202342	
m,p-Xylenes	ND	U	5.9	1.3	1	04/08/02	04/08/02	KWG0202342	
o-Xylene	ND	U	5.9	0.72	1	04/08/02	04/08/02	KWG0202342	
Styrene	ND	U	5.9	0.73	1	04/08/02	04/08/02	KWG0202342	
Bromoform	ND	U	5.9	0.50	1	04/08/02	04/08/02	KWG0202342	
Isopropylbenzene	ND	U	24	0.66	1	04/08/02	04/08/02	KWG0202342	
1,1,2,2-Tetrachloroethane	ND	U	5.9	0.60	1	04/08/02	04/08/02	KWG0202342	
1,2,3-Trichloropropane	ND	U	5.9	0.59	1	04/08/02	04/08/02	KWG0202342	
Bromobenzene	ND	U	5.9	0.70	1	04/08/02	04/08/02	KWG0202342	
n-Propylbenzene	ND	U	24	0.58	1	04/08/02	04/08/02	KWG0202342	
2-Chlorotoluene	ND	U	24	0.68	1	04/08/02	04/08/02	KWG0202342	
4-Chlorotoluene	ND	U	24	0.71	1	04/08/02	04/08/02	KWG0202342	
1,3,5-Trimethylbenzene	ND	U	24	0.67	1	04/08/02	04/08/02	KWG0202342	
tert-Butylbenzene	ND	U	24	0.62	1	04/08/02	04/08/02	KWG0202342	
1,2,4-Trimethylbenzene	ND	U	24	0.66	1	04/08/02	04/08/02	KWG0202342	
sec-Butylbenzene	ND	U	24	0.71	1	04/08/02	04/08/02	KWG0202342	
1,3-Dichlorobenzene	ND	U	5.9	0.78	1	04/08/02	04/08/02	KWG0202342	
4-Isopropyltoluene	ND	U	24	0.75	1	04/08/02	04/08/02	KWG0202342	
1,4-Dichlorobenzene	ND	U	5.9	0.87	1	04/08/02	04/08/02	KWG0202342	
n-Butylbenzene	ND	U	24	0.87	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichlorobenzene	ND	U	5.9	0.76	1	04/08/02	04/08/02	KWG0202342	
1,2-Dibromo-3-chloropropane	ND	U	24	0.62	1	04/08/02	04/08/02	KWG0202342	
1,2,4-Trichlorobenzene	ND	U	24	0.73	1	04/08/02	04/08/02	KWG0202342	
1,2,3-Trichlorobenzene	ND	U	24	0.92	1	04/08/02	04/08/02	KWG0202342	
Naphthalene	ND	U	24	0.88	1	04/08/02	04/08/02	KWG0202342	
Hexachlorobutadiene	ND	U	24	0.78	1	04/08/02	04/08/02	KWG0202342	

Comments:

01143

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 1
Lab Code: K2202038-001

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	109	75-132	04/08/02	Acceptable
Toluene-d8	111	85-109	04/08/02	Outside Control Limits
4-Bromofluorobenzene	116	49-131	04/08/02	Acceptable

Comments:

01144

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 2
Lab Code: K2202038-002

Extraction Method: EPA 5030A
Analysis Method: 8260B

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	6.6	0.89	1	04/08/02	04/08/02	KWG0202342	
Chloromethane	ND	U	6.6	0.77	1	04/08/02	04/08/02	KWG0202342	
Vinyl Chloride	ND	U	6.6	0.92	1	04/08/02	04/08/02	KWG0202342	
Bromomethane	ND	U	6.6	1.2	1	04/08/02	04/08/02	KWG0202342	
Chloroethane	ND	U	6.6	0.75	1	04/08/02	04/08/02	KWG0202342	
Trichlorofluoromethane	ND	U	6.6	0.89	1	04/08/02	04/08/02	KWG0202342	
Acetone	ND	U	66	5.1	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloroethene	ND	U	6.6	0.92	1	04/08/02	04/08/02	KWG0202342	
Carbon Disulfide	ND	U	6.6	1.2	1	04/08/02	04/08/02	KWG0202342	
Methylene Chloride	**2.5**	J	14	0.60	1	04/08/02	04/08/02	KWG0202342	
trans-1,2-Dichloroethene	ND	U	6.6	0.71	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloroethane	ND	U	6.6	0.59	1	04/08/02	04/08/02	KWG0202342	
2-Butanone (MEK)	ND	U	27	1.7	1	04/08/02	04/08/02	KWG0202342	
2,2-Dichloropropane	ND	U	6.6	0.78	1	04/08/02	04/08/02	KWG0202342	
cis-1,2-Dichloroethene	ND	U	6.6	0.60	1	04/08/02	04/08/02	KWG0202342	
Chloroform	ND	U	6.6	0.55	1	04/08/02	04/08/02	KWG0202342	
Bromochloromethane	ND	U	6.6	0.60	1	04/08/02	04/08/02	KWG0202342	
1,1,1-Trichloroethane (TCA)	ND	U	6.6	0.60	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloropropene	ND	U	6.6	0.74	1	04/08/02	04/08/02	KWG0202342	
Carbon Tetrachloride	ND	U	6.6	0.80	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichloroethane (EDC)	ND	U	6.6	0.54	1	04/08/02	04/08/02	KWG0202342	
Benzene	ND	U	6.6	0.58	1	04/08/02	04/08/02	KWG0202342	
Trichloroethene (TCE)	ND	U	6.6	0.64	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichloropropane	ND	U	6.6	0.52	1	04/08/02	04/08/02	KWG0202342	
Bromodichloromethane	ND	U	6.6	0.53	1	04/08/02	04/08/02	KWG0202342	
Dibromomethane	ND	U	6.6	0.52	1	04/08/02	04/08/02	KWG0202342	
2-Hexanone	ND	U	27	2.0	1	04/08/02	04/08/02	KWG0202342	
cis-1,3-Dichloropropene	ND	U	6.6	0.47	1	04/08/02	04/08/02	KWG0202342	
Toluene	ND	U	6.6	0.56	1	04/08/02	04/08/02	KWG0202342	
trans-1,3-Dichloropropene	ND	U	6.6	0.43	1	04/08/02	04/08/02	KWG0202342	
1,1,2-Trichloroethane	ND	U	6.6	0.59	1	04/08/02	04/08/02	KWG0202342	
4-Methyl-2-pentanone (MIBK)	ND	U	27	1.7	1	04/08/02	04/08/02	KWG0202342	
1,3-Dichloropropane	ND	U	6.6	0.42	1	04/08/02	04/08/02	KWG0202342	

Comments:

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 2
Lab Code: K2202038-002

Extraction Method: EPA 5030A
Analysis Method: 8260B

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetrachloroethene (PCE)	ND	U	6.6	0.64	1	04/08/02	04/08/02	KWG0202342	
Dibromochloromethane	ND	U	6.6	0.55	1	04/08/02	04/08/02	KWG0202342	
1,2-Dibromoethane (EDB)	ND	U	27	0.65	1	04/08/02	04/08/02	KWG0202342	
Chlorobenzene	ND	U	6.6	0.74	1	04/08/02	04/08/02	KWG0202342	
1,1,1,2-Tetrachloroethane	ND	U	6.6	0.63	1	04/08/02	04/08/02	KWG0202342	
Ethylbenzene	ND	U	6.6	0.72	1	04/08/02	04/08/02	KWG0202342	
m,p-Xylenes	ND	U	6.6	1.4	1	04/08/02	04/08/02	KWG0202342	
o-Xylene	ND	U	6.6	0.80	1	04/08/02	04/08/02	KWG0202342	
Styrene	ND	U	6.6	0.82	1	04/08/02	04/08/02	KWG0202342	
Bromoform	ND	U	6.6	0.56	1	04/08/02	04/08/02	KWG0202342	
Isopropylbenzene	ND	U	27	0.74	1	04/08/02	04/08/02	KWG0202342	
1,1,2,2-Tetrachloroethane	ND	U	6.6	0.68	1	04/08/02	04/08/02	KWG0202342	
1,2,3-Trichloropropane	ND	U	6.6	0.66	1	04/08/02	04/08/02	KWG0202342	
Bromobenzene	ND	U	6.6	0.78	1	04/08/02	04/08/02	KWG0202342	
n-Propylbenzene	ND	U	27	0.65	1	04/08/02	04/08/02	KWG0202342	
2-Chlorotoluene	ND	U	27	0.76	1	04/08/02	04/08/02	KWG0202342	
4-Chlorotoluene	ND	U	27	0.80	1	04/08/02	04/08/02	KWG0202342	
1,3,5-Trimethylbenzene	ND	U	27	0.75	1	04/08/02	04/08/02	KWG0202342	
tert-Butylbenzene	ND	U	27	0.69	1	04/08/02	04/08/02	KWG0202342	
1,2,4-Trimethylbenzene	ND	U	27	0.74	1	04/08/02	04/08/02	KWG0202342	
sec-Butylbenzene	ND	U	27	0.79	1	04/08/02	04/08/02	KWG0202342	
1,3-Dichlorobenzene	ND	U	6.6	0.88	1	04/08/02	04/08/02	KWG0202342	
4-Isopropyltoluene	ND	U	27	0.84	1	04/08/02	04/08/02	KWG0202342	
1,4-Dichlorobenzene	ND	U	6.6	0.97	1	04/08/02	04/08/02	KWG0202342	
n-Butylbenzene	ND	U	27	0.97	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichlorobenzene	ND	U	6.6	0.85	1	04/08/02	04/08/02	KWG0202342	
1,2-Dibromo-3-chloropropane	ND	U	27	0.69	1	04/08/02	04/08/02	KWG0202342	
1,2,4-Trichlorobenzene	ND	U	27	0.81	1	04/08/02	04/08/02	KWG0202342	
1,2,3-Trichlorobenzene	ND	U	27	1.1	1	04/08/02	04/08/02	KWG0202342	
Naphthalene	ND	U	27	0.98	1	04/08/02	04/08/02	KWG0202342	
Hexachlorobutadiene	ND	U	27	0.87	1	04/08/02	04/08/02	KWG0202342	

Comments:

01146

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 2
Lab Code: K2202038-002

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	110	75-132	04/08/02	Acceptable
Toluene-d8	112	85-109	04/08/02	Outside Control Limits
4-Bromofluorobenzene	109	49-131	04/08/02	Acceptable

Comments:

01147

COLUMBIA ANALYTICAL SERVICES, INC

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 3
Lab Code: K2202038-003

Extraction Method: EPA 5030A
Analysis Method: 8260B

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	5.8	0.78	1	04/08/02	04/08/02	KWG0202342	
Chloromethane	ND	U	5.8	0.67	1	04/08/02	04/08/02	KWG0202342	
Vinyl Chloride	ND	U	5.8	0.81	1	04/08/02	04/08/02	KWG0202342	
Bromomethane	ND	U	5.8	1.1	1	04/08/02	04/08/02	KWG0202342	
Chloroethane	ND	U	5.8	0.66	1	04/08/02	04/08/02	KWG0202342	
Trichlorofluoromethane	ND	U	5.8	0.78	1	04/08/02	04/08/02	KWG0202342	
Acetone	ND	U	58	4.5	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloroethene	ND	U	5.8	0.81	1	04/08/02	04/08/02	KWG0202342	
Carbon Disulfide	ND	U	5.8	0.99	1	04/08/02	04/08/02	KWG0202342	
Methylene Chloride	**0.80**	**J**	12	0.53	1	04/08/02	04/08/02	KWG0202342	
trans-1,2-Dichloroethene	ND	U	5.8	0.62	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloroethane	ND	U	5.8	0.52	1	04/08/02	04/08/02	KWG0202342	
2-Butanone (MEK)	ND	U	23	1.5	1	04/08/02	04/08/02	KWG0202342	
2,2-Dichloropropane	ND	U	5.8	0.69	1	04/08/02	04/08/02	KWG0202342	
cis-1,2-Dichloroethene	ND	U	5.8	0.53	1	04/08/02	04/08/02	KWG0202342	
Chloroform	ND	U	5.8	0.49	1	04/08/02	04/08/02	KWG0202342	
Bromochloromethane	ND	U	5.8	0.53	1	04/08/02	04/08/02	KWG0202342	
1,1,1-Trichloroethane (TCA)	ND	U	5.8	0.52	1	04/08/02	04/08/02	KWG0202342	
1,1-Dichloropropene	ND	U	5.8	0.65	1	04/08/02	04/08/02	KWG0202342	
Carbon Tetrachloride	ND	U	5.8	0.71	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichloroethane (EDC)	ND	U	5.8	0.47	1	04/08/02	04/08/02	KWG0202342	
Benzene	ND	U	5.8	0.51	1	04/08/02	04/08/02	KWG0202342	
Trichloroethene (TCE)	ND	U	5.8	0.56	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichloropropane	ND	U	5.8	0.46	1	04/08/02	04/08/02	KWG0202342	
Bromodichloromethane	ND	U	5.8	0.46	1	04/08/02	04/08/02	KWG0202342	
Dibromomethane	ND	U	5.8	0.46	1	04/08/02	04/08/02	KWG0202342	
2-Hexanone	ND	U	23	1.8	1	04/08/02	04/08/02	KWG0202342	
cis-1,3-Dichloropropene	ND	U	5.8	0.41	1	04/08/02	04/08/02	KWG0202342	
Toluene	ND	U	5.8	0.49	1	04/08/02	04/08/02	KWG0202342	
trans-1,3-Dichloropropene	ND	U	5.8	0.38	1	04/08/02	04/08/02	KWG0202342	
1,1,2-Trichloroethane	ND	U	5.8	0.52	1	04/08/02	04/08/02	KWG0202342	
4-Methyl-2-pentanone (MIBK)	ND	U	23	1.5	1	04/08/02	04/08/02	KWG0202342	
1,3-Dichloropropane	ND	U	5.8	0.37	1	04/08/02	04/08/02	KWG0202342	

Comments:

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 3
Lab Code: K2202038-003

Extraction Method: EPA 5030A
Analysis Method: 8260B

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetrachloroethene (PCE)	ND	U	5.8	0.56	1	04/08/02	04/08/02	KWG0202342	
Dibromochloromethane	ND	U	5.8	0.48	1	04/08/02	04/08/02	KWG0202342	
1,2-Dibromoethane (EDB)	ND	U	23	0.57	1	04/08/02	04/08/02	KWG0202342	
Chlorobenzene	ND	U	5.8	0.65	1	04/08/02	04/08/02	KWG0202342	
1,1,1,2-Tetrachloroethane	ND	U	5.8	0.56	1	04/08/02	04/08/02	KWG0202342	
Ethylbenzene	ND	U	5.8	0.63	1	04/08/02	04/08/02	KWG0202342	
m,p-Xylenes	ND	U	5.8	1.2	1	04/08/02	04/08/02	KWG0202342	
o-Xylene	ND	U	5.8	0.70	1	04/08/02	04/08/02	KWG0202342	
Styrene	ND	U	5.8	0.72	1	04/08/02	04/08/02	KWG0202342	
Bromoform	ND	U	5.8	0.50	1	04/08/02	04/08/02	KWG0202342	
Isopropylbenzene	ND	U	23	0.65	1	04/08/02	04/08/02	KWG0202342	
1,1,2,2-Tetrachloroethane	ND	U	5.8	0.59	1	04/08/02	04/08/02	KWG0202342	
1,2,3-Trichloropropane	ND	U	5.8	0.58	1	04/08/02	04/08/02	KWG0202342	
Bromobenzene	ND	U	5.8	0.69	1	04/08/02	04/08/02	KWG0202342	
n-Propylbenzene	ND	U	23	0.57	1	04/08/02	04/08/02	KWG0202342	
2-Chlorotoluene	ND	U	23	0.66	1	04/08/02	04/08/02	KWG0202342	
4-Chlorotoluene	ND	U	23	0.70	1	04/08/02	04/08/02	KWG0202342	
1,3,5-Trimethylbenzene	ND	U	23	0.66	1	04/08/02	04/08/02	KWG0202342	
tert-Butylbenzene	ND	U	23	0.61	1	04/08/02	04/08/02	KWG0202342	
1,2,4-Trimethylbenzene	ND	U	23	0.65	1	04/08/02	04/08/02	KWG0202342	
sec-Butylbenzene	ND	U	23	0.69	1	04/08/02	04/08/02	KWG0202342	
1,3-Dichlorobenzene	ND	U	5.8	0.77	1	04/08/02	04/08/02	KWG0202342	
4-Isopropyltoluene	ND	U	23	0.74	1	04/08/02	04/08/02	KWG0202342	
1,4-Dichlorobenzene	ND	U	5.8	0.85	1	04/08/02	04/08/02	KWG0202342	
n-Butylbenzene	ND	U	23	0.85	1	04/08/02	04/08/02	KWG0202342	
1,2-Dichlorobenzene	ND	U	5.8	0.75	1	04/08/02	04/08/02	KWG0202342	
1,2-Dibromo-3-chloropropane	ND	U	23	0.61	1	04/08/02	04/08/02	KWG0202342	
1,2,4-Trichlorobenzene	ND	U	23	0.71	1	04/08/02	04/08/02	KWG0202342	
1,2,3-Trichlorobenzene	ND	U	23	0.90	1	04/08/02	04/08/02	KWG0202342	
Naphthalene	ND	U	23	0.86	1	04/08/02	04/08/02	KWG0202342	
Hexachlorobutadiene	ND	U	23	0.76	1	04/08/02	04/08/02	KWG0202342	

Comments:

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Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Volatile Organic Compounds

Sample Name: ITZ 3
Lab Code: K2202038-003

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	75-132	04/08/02	Acceptable
Toluene-d8	115	85-109	04/08/02	Outside Control Limits
4-Bromofluorobenzene	119	49-131	04/08/02	Acceptable

Comments:

ACCREDITED IN ACCORDANCE WITH nelac

Columbia Analytical Services INC.
An Employee-Owned Company

May 10, 2002

Service Request No: K2202038

Mark Musial
Golder Associates, Inc.
1750 Abbott Road, Suite 200
Anchorage, AK 99507

Re: Sitka Dredge/023-5524

Dear Mark:

Enclosed are the additional pages for the sample(s) submitted to our laboratory on April 2, 2002. For your reference, these analyses have been assigned our service request number K2202038.

Enclosed are additional report pages for the Butyltin analysis. The case narrative has been updated to reflect the additional results.

Please call if you have any questions. My extension is 3372.

Respectfully submitted,

Columbia Analytical Services, Inc.

Jim Smith
Project Chemist

JS/jeb

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 360/ 577-7222 • Fax 360/636-1068

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Golder Associates, Inc.	**Service Request No.:**	K2202038
Project:	Sitka Dredge	**Date Received:**	4/2/02
Sample Matrix:	Sediment		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six samples were received for analysis at Columbia Analytical Services on 4/2/02. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Inorganic Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals Sediment

Relative Percent Difference (RPD) Exceptions:
The Relative Percent Differences (RPD) for the replicate analysis of Antimony and Cadmium in sample ITZ 1 (K2202038-001) were outside the normal CAS control limits. The variability in the results is attributed to the heterogeneous character these analytes of the sample. Mixing techniques within the scope of the EPA methodology were used, but were not sufficient for complete homogenization of this sample.

Matrix Spike (MS) Exceptions:
The low Matrix Spike (MS) recovery of Antimony is a result of a method defect in the EPA 3050B-digestion procedure that can be magnified by certain matrix components. The associated QA/QC (i.e. LCS) indicate the analysis was in control. No further corrective action was taken.

The low Matrix Spike (MS) recovery of Cadmium for sample ITZ 1 is a result of the heterogeneous character this analyte in the sample (see high RPD note above). The associated Laboratory Control Sample (LCS) was acceptable indicating the analysis was in control. No further corrective action was taken.

The Matrix Spike (MS) recovery criteria for Copper, Lead and Zinc for sample ITZ 1 are not applicable. The analyte concentrations in the sample were significantly higher than the added spike concentrations, preventing accurate evaluation of the spike recoveries.

No other anomalies associated with the analysis of these samples were observed.

Total Metals Tissue

No anomalies associated with the analysis of these samples were observed.

Approved by _____ **Date** 5/10/2

Organochlorine Pesticides by EPA Method 8081A

Method Reporting Limit (MRL) Exceptions:
The Method Reporting Limits have been elevated for 4,4'-DDE and 4,4'-DDT in samples ITZ 1 and ITZ2. The chromatogram indicated non-target components that prevented accurate quantification at the reporting limit. The results have been flagged to indicate the matrix interference. All efforts were made through various clean-up methods to reduce the matrix interference however the screening level of 6.9ppb for total DDT could not be met due to this interference.

No other anomalies associated with the analysis of these samples were observed.

PCB Aroclors by EPA Method 8082

No anomalies associated with the analysis of these samples were observed.

Organotin Compounds

Sample Notes and Discussion:
The initial porewater extraction did not yield enough water for porewater analysis. Per Golder the analysis for Organotin would be performed on the soil and reported on a total basis.

Holding Time Exceptions:
The analysis of samples ITZ 1, ITZ 2, ITZ 3, ITZ 3MSand ITZ 3DMS was initially performed within the recommended holding time. Re-analysis was required due to a QA/QC failure relating to surrogates and the Matrix Spikes. The QA/QC results for the re-analysis were within control criteria. The sample results from the re-analysis differ significantly from the initial analysis, indicating a potential quality problem with the initial sample data. The re-extract data has been reported.

No other anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID 1479: 2-Butanone (MEK), Tetrachloroethene (PCE) and sec-Butylbenzene. In accordance with CAS standard operating procedures and as specified in the analytical method, an alternative evaluation was performed using the average relative standard deviation of all analytes in the calibration. The calibration meets the alternative evaluation criteria.

Surrogate Exceptions:
The upper control criterion was exceeded for the following surrogate(s) in samples ITZ 1, ITZ 2, ITZ 3 and MB KWG0202342-4: Toluene-d8. No target analytes were detected above the Method Reporting Limit in the samples. The error associated with an elevated recovery equates to a high bias. The quality of the sample data has not been significantly affected. No further corrective action was feasible.

The upper control criterion was exceeded for the following surrogate in ITZ 3MS KWG0202342-4, ITZ 3DMS KWG0202342-5, LCS KWG0202342-3: Toluene-d8. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier has been flagged accordingly. No further corrective action was feasible.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270C

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL1435: Benzoic Acid, Pentachlorophenol, N-Nitrosodi-n-propylamine, and Hexachlorocyclopentadiene. In accordance with CAS standard operating procedures and as specified in the analytical method, an alternative

evaluation was performed using the average relative standard deviation of all analytes in the calibration. The calibration meets the alternative evaluation criteria.

Matrix Spike (MS) Exceptions:
The Matrix Spike recovery of Phenol for sample ITZ 1DMS was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier does not indicate a significant data quality problem. No further corrective action was feasible.

The matrix spike recovery of Pentachlorophenol for sample ITZ 1MS/DMS was outside the lower control criteria because of suspected matrix interference. The sample was re-analyzed, and produced similar results. No recovery was detected in the spiked samples. The results indicate a potential low bias for this compound in this matrix. The results of the original analysis are reported.

The control criteria for the Matrix Spike recovery of Pyrene for sample ITZ 1MS/DMS is not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Laboratory Control Sample (LCS) Exceptions:
The spike recovery of Benzoic Acid in the Duplicate Laboratory Control Sample (DLCS) KWG0202327-6 was outside the lower control criterion. The analyte in question was not detected in the associated field samples. The error associated with reduced recovery equates to a potential low bias. The recovery for this analyte was within control criterion in the LCS KWG0202327-6 with acceptable RPDs. The data has been flagged to indicate the low recovery.

Method Reporting Limit (MRL) Exceptions:
Sample(s) ITZ 1, ITZ 2, ITZ 3 required dilutions due the presence non-target analytes interfering with compounds of interest. The reporting limits have been elevated accordingly.

No other anomalies associated with the analysis of these samples were observed.

Approved by D Date 5/10/12

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524

Service Request: K2202038

Cover Page - Organic Analysis Data Package
Butyltins

Sample Name	Lab Code	Date Collected	Date Received
ITZ 1	K2202038-001	04/01/2002	04/02/2002
ITZ 2	K2202038-002	04/01/2002	04/02/2002
ITZ 3	K2202038-003	04/01/2002	04/02/2002
ITZ 3MS	KWG0203101-1	04/01/2002	04/02/2002
ITZ 3DMS	KWG0203101-2	04/01/2002	04/02/2002

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: MManthe

Name: M.Manthe

Date: 5/16/02

Title: Scientist

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Golder Associates Inc.	**Service Request:**	K2202038
Project:	Sitka Dredge/023-5524	**Date Collected:**	04/01/2002
Sample Matrix:	Sediment	**Date Received:**	04/02/2002

Butyltins

Sample Name:	ITZ 1	**Units:**	ug/Kg
Lab Code:	K2202038-001	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tri-n-butyltin	11000	D	350	120	300	05/02/02	05/08/02	KWG0203101	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	49	31-111	05/07/02	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Golder Associates Inc.
Project: Sitka Dredge/023-5524
Sample Matrix: Sediment

Service Request: K2202038
Date Collected: 04/01/2002
Date Received: 04/02/2002

Butyltins

Sample Name: ITZ 2
Lab Code: K2202038-002

Extraction Method: METHOD
Analysis Method: Krone

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tri-n-butyltin	**13000**	D	390	130	300	05/02/02	05/08/02	KWG0203101	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	44	31-111	05/07/02	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Golder Associates Inc.	**Service Request:**	K2202038
Project:	Sitka Dredge/023-5524	**Date Collected:**	04/01/2002
Sample Matrix:	Sediment	**Date Received:**	04/02/2002

Butyltins

Sample Name:	ITZ 3	**Units:**	ug/Kg
Lab Code:	K2202038-003	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tri-n-butyltin	1.1	J	1.2	0.37	1	05/02/02	05/07/02	KWG0203101	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	38	31-111	05/07/02	Acceptable

Comments: