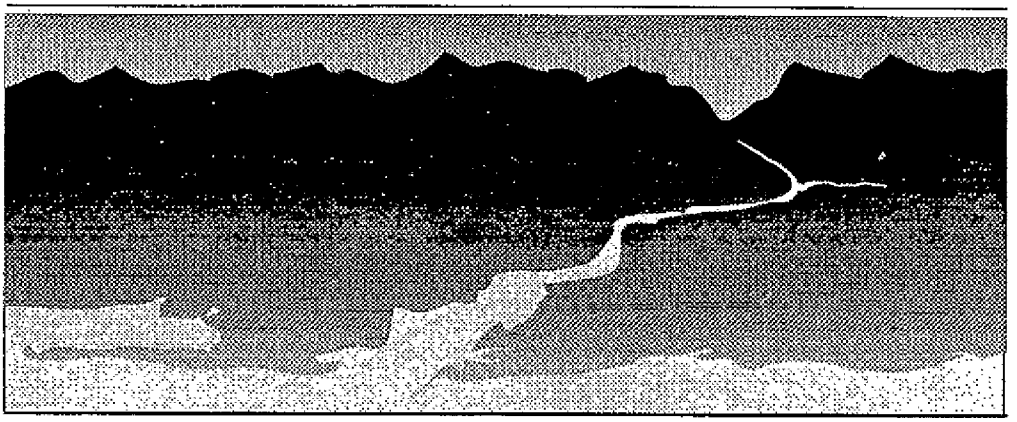
LOWER COLUMBIA RIVER



BI-STATE PROGRAM

RECONNAISSANCE SURVEY OF THE LOWER COLUMBIA RIVER

LABORATORY DATA REPORT
VOLUME 2: SEDIMENT INORGANIC DATA
SEDIMENT CONVENTIONAL DATA

JANUARY, 1992

Prepared By:

TETRA TECH

In Association With:

ALDEN ANALYTICAL LABORATORIES
KEYSTONE/NEA
PRECISION ANALYTICS

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VOLUME 2

INORGANIC CHEMICAL DATA - SEDIMENT

SECTION D	METALS
SECTION E	GRAIN SIZE
SECTION F	TOC/TBT/AVS/% SOLIDS

SECTION D

METALS (SEDIMENTS)

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FAX (509) 332-0666

Customer Sample Number: D37
Lab File ID: 1474TTI001
Matrix: Sediment
Percent Solids (decimal): 0.719

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	7650	
Antimony	5.22	U
Barium	111.3	
Chromium	8.69	
Copper	7.30	
Iron	13561	
Nickel	11.13	
Silver	0.31	U
Thallium	12.52	U
Zinc	111.3	
Arsenic	2.75	
Beryllium	3.70	U
Cadmium	0.37	
Lead	12.95	
Selenium	0.35	U
Mercury	0.070	U

Customer Sample Number: D40
Lab File ID: 1474TTI002
Matrix: Sediment
Percent Solids (decimal): 0.723

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	9336	
Antimony	5.19	U
Barium	117.6	
Chromium	9.34	
Copper	12.79	
Iron	15214	
Nickel	12.45	
Silver	0.31	U
Thallium	12.45	U
Zinc	114.1	
Arsenic	2.87	
Beryllium	3.22	U
Cadmium	0.32	
Lead	12.35	
Selenium	0.69	U
Mercury	0.069	U

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Customer Sample Number: D39
Lab File ID: 1474TTI003
Matrix: Sediment
Percent Solids (decimal): 0.794

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5038	
Antimony	4.72	U
Barium	69.3	
Chromium	8.82	
Copper	2.39	
Iron	11650	
Nickel	10.71	
Silver	0.28	U
Thallium	11.34	U
Zinc	44.1	
Arsenic	1.51	
Beryllium	3.25	U
Cadmium	0.13	
Lead	5.19	
Selenium	0.31	U
Mercury	0.063	U

Customer Sample Number: D35
Lab File ID: 1474TTI004
Matrix: Sediment
Percent Solids (decimal): 0.558

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	10753	
Antimony	6.72	U
Barium	125.4	
Chromium	9.41	
Copper	17.03	
Iron	16129	
Nickel	12.54	
Silver	0.40	U
Thallium	16.13	U
Zinc	161.3	
Arsenic	3.99	
Beryllium	4.64	U
Cadmium	0.93	
Lead	11.70	
Selenium	0.45	U
Mercury	0.090	

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Customer Sample Number:	D41
Lab File ID:	1474TTI005
Matrix:	Sediment
Percent Solids (decimal):	0.553

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	10850	
Antimony	6.78	U
Barium	126.6	
Chromium	9.95	
Copper	17.63	
Iron	16275	
Nickel	12.66	
Silver	0.41	U
Thallium	16.27	U
Zinc	158.2	
Arsenic	3.89	
Beryllium	4.24	U
Cadmium	1.44	
Lead	13.24	
Selenium	0.90	U
Mercury	0.107	

Customer Sample Number:	D38
Lab File ID:	1474TTI006
Matrix:	Sediment
Percent Solids (decimal):	0.781

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5122	
Antimony	4.80	U
Barium	60.8	
Chromium	6.72	
Copper	4.16	
Iron	10243	
Nickel	9.28	
Silver	0.29	U
Thallium	11.52	U
Zinc	67.2	
Arsenic	1.92	
Beryllium	3.14	U
Cadmium	0.19	
Lead	8.03	
Selenium	0.32	U
Mercury	0.064	U

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Customer Sample Number:	D36
Lab File ID:	1474TTI007
Matrix:	Sediment
Percent Solids (decimal):	0.71

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6338	
Antimony	5.28	U
Barium	66.9	
Chromium	7.39	
Copper	7.39	
Iron	10211	
Nickel	8.80	
Silver	0.32	U
Thallium	12.68	U
Zinc	59.9	
Arsenic	1.62	
Beryllium	3.32	U
Cadmium	0.40	
Lead	5.85	
Selenium	0.35	U
Mercury	0.070	U

Customer Sample Number:	E14
Lab File ID:	1474TTI008
Matrix:	Sediment
Percent Solids (decimal):	0.869

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6904	
Antimony	4.32	U
Barium	132.3	
Chromium	5.47	
Copper	7.48	
Iron	13521	
Nickel	12.95	
Silver	0.26	U
Thallium	10.36	U
Zinc	66.2	
Arsenic	2.36	
Beryllium	3.18	U
Cadmium	0.32	
Lead	4.83	
Selenium	0.29	U
Mercury	0.058	U

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Customer Sample Number: E12
Lab File ID: 1474TTI009
Matrix: Sediment
Percent Solids (decimal): 0.832

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	2794	
Antimony	4.51	U
Barium	28.2	
Chromium	2.34	
Copper	3.31	
Iron	3906	
Nickel	4.21	
Silver	0.27	U
Thallium	10.82	U
Zinc	22.5	
Arsenic	0.60	
Beryllium	2.82	U
Cadmium	0.11	
Lead	1.41	
Selenium	0.30	U
Mercury	0.060	U

Customer Sample Number: E10
Lab File ID: 1474TTI010
Matrix: Sediment
Percent Solids (decimal): 0.775

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	9032	
Antimony	4.84	U
Barium	164.5	
Chromium	5.48	
Copper	6.13	
Iron	17742	
Nickel	14.19	
Silver	0.29	U
Thallium	11.61	U
Zinc	103.2	
Arsenic	2.90	
Beryllium	3.31	U
Cadmium	0.46	
Lead	7.15	
Selenium	0.32	U
Mercury	0.065	U

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Customer Sample Number:	E9
Lab File ID:	1486TTI001
Matrix:	Sediment
Percent Solids (decimal):	0.651

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	12673	
Antimony	5.76	U
Barium	122.9	
Chromium	11.90	
Copper	12.67	
Iron	17281	
Nickel	13.44	
Silver	0.35	U
Thallium	13.82	U
Zinc	99.8	
Arsenic	2.00	
Beryllium	3.86	U
Cadmium	0.46	
Lead	10.81	
Selenium	0.38	U
Mercury	0.106	

Customer Sample Number:	E10
Lab File ID:	1486TTI002
Matrix:	Sediment
Percent Solids (decimal):	0.767

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6519	
Antimony	4.89	U
Barium	71.7	
Chromium	6.19	
Copper	5.87	
Iron	10756	
Nickel	8.47	
Silver	0.29	U
Thallium	11.73	U
Zinc	61.9	
Arsenic	1.63	
Beryllium	3.41	U
Cadmium	0.27	
Lead	5.67	
Selenium	0.33	U
Mercury	0.065	U

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Customer Sample Number:	E11
Lab File ID:	1486TTI003
Matrix:	Sediment
Percent Solids (decimal):	0.725

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	7241	
Antimony	5.17	U
Barium	110.3	
Chromium	7.93	
Copper	26.90	
Iron	12414	
Nickel	10.34	
Silver	0.31	U
Thallium	12.41	U
Zinc	103.4	
Arsenic	2.52	
Beryllium	3.47	U
Cadmium	0.55	
Lead	9.36	
Selenium	0.34	U
Mercury	0.069	U

Customer Sample Number:	D24
Lab File ID:	1486TTI004
Matrix:	Sediment
Percent Solids (decimal):	0.633

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	13033	
Antimony	5.92	U
Barium	122.4	
Chromium	12.64	
Copper	15.40	
Iron	17773	
Nickel	14.22	
Silver	0.36	U
Thallium	14.22	U
Zinc	110.6	
Arsenic	2.92	
Beryllium	4.34	U
Cadmium	0.52	
Lead	13.80	
Selenium	0.79	U
Mercury	0.125	

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Customer Sample Number:	D25
Lab File ID:	1486TTI005
Matrix:	Sediment
Percent Solids (decimal):	0.668

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	9731	
Antimony	5.61	U
Barium	127.2	
Chromium	10.48	
Copper	10.85	
Iron	15344	
Nickel	11.60	
Silver	0.34	U
Thallium	13.47	U
Zinc	74.9	
Arsenic	3.33	
Beryllium	3.98	U
Cadmium	0.48	
Lead	9.71	
Selenium	0.75	U
Mercury	0.075	U

Customer Sample Number:	D26
Lab File ID:	1486TTI006
Matrix:	Sediment
Percent Solids (decimal):	0.808

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	4950	
Antimony	4.64	U
Barium	77.4	
Chromium	5.88	
Copper	3.40	
Iron	10210	
Nickel	8.97	
Silver	0.28	U
Thallium	11.14	U
Zinc	49.5	
Arsenic	1.98	
Beryllium	3.34	U
Cadmium	0.27	
Lead	4.21	
Selenium	0.31	U
Mercury	0.062	U

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Customer Sample Number: D27
Lab File ID: 1486TTI007
Matrix: Sediment
Percent Solids (decimal): 0.765

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6536	
Antimony	4.90	U
Barium	75.2	
Chromium	5.88	
Copper	6.21	
Iron	11111	
Nickel	10.13	
Silver	0.29	U
Thallium	11.76	U
Zinc	55.6	
Arsenic	2.06	
Beryllium	3.53	U
Cadmium	0.28	
Lead	4.95	
Selenium	0.33	U
Mercury	0.065	U

Customer Sample Number: D28
Lab File ID: 1486TTI008
Matrix: Sediment
Percent Solids (decimal): 0.746

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5697	
Antimony	5.03	U
Barium	90.5	
Chromium	6.03	
Copper	8.71	
Iron	10724	
Nickel	8.71	
Silver	0.30	U
Thallium	12.06	U
Zinc	87.1	
Arsenic	2.58	
Beryllium	3.40	U
Cadmium	0.41	
Lead	9.73	
Selenium	0.34	U
Mercury	0.067	U

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Customer Sample Number:	D29
Lab File ID:	1486TTI009
Matrix:	Sediment
Percent Solids (decimal):	0.721

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6241	
Antimony	5.20	U
Barium	86.7	
Chromium	6.93	
Copper	6.24	
Iron	11096	
Nickel	10.40	
Silver	0.31	U
Thallium	12.48	U
Zinc	76.3	
Arsenic	2.18	
Beryllium	3.83	U
Cadmium	0.38	
Lead	6.90	
Selenium	0.35	U
Mercury	0.069	U

Customer Sample Number:	D30
Lab File ID:	1486TTI010
Matrix:	Sediment
Percent Solids (decimal):	0.651

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	8065	
Antimony	5.76	U
Barium	99.8	
Chromium	8.83	
Copper	11.14	
Iron	12673	
Nickel	10.75	
Silver	0.35	U
Thallium	13.82	U
Zinc	76.8	
Arsenic	2.46	
Beryllium	3.90	U
Cadmium	0.55	
Lead	8.66	
Selenium	0.38	U
Mercury	0.086	

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Customer Sample Number:	D31
Lab File ID:	1486TTI011
Matrix:	Sediment
Percent Solids (decimal):	0.732

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6831	
Antimony	5.12	U
Barium	85.4	
Chromium	6.83	
Copper	6.83	
Iron	11954	
Nickel	8.88	
Silver	0.31	U
Thallium	12.30	U
Zinc	78.6	
Arsenic	4.10	
Beryllium	3.77	U
Cadmium	0.38	
Lead	7.02	
Selenium	0.34	U
Mercury	0.068	U

Customer Sample Number:	D32
Lab File ID:	1486TTI012
Matrix:	Sediment
Percent Solids (decimal):	0.774

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5814	
Antimony	4.84	U
Barium	77.5	
Chromium	7.43	
Copper	6.14	
Iron	11305	
Nickel	10.34	
Silver	0.29	U
Thallium	11.63	U
Zinc	77.5	
Arsenic	2.16	
Beryllium	3.40	U
Cadmium	0.27	
Lead	7.75	
Selenium	0.32	U
Mercury	0.065	U

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Customer Sample Number: D33
Lab File ID: 1486TTI013
Matrix: Sediment
Percent Solids (decimal): 0.74

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6757	
Antimony	5.07	U
Barium	101.4	
Chromium	7.43	
Copper	6.76	
Iron	11824	
Nickel	10.47	
Silver	0.30	U
Thallium	12.16	U
Zinc	84.5	
Arsenic	2.36	
Beryllium	3.56	U
Cadmium	0.43	
Lead	7.33	
Selenium	0.34	U
Mercury	0.068	U

Customer Sample Number: D34
Lab File ID: 1486TTI014
Matrix: Sediment
Percent Solids (decimal): 0.79

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	4747	
Antimony	4.75	U
Barium	63.3	
Chromium	6.65	
Copper	3.80	
Iron	8861	
Nickel	9.18	
Silver	0.28	U
Thallium	11.39	U
Zinc	53.8	
Arsenic	1.46	
Beryllium	3.46	U
Cadmium	0.21	
Lead	4.01	
Selenium	0.32	U
Mercury	0.063	U

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Customer Sample Number:	D42
Lab File ID:	1486TTI015
Matrix:	Sediment
Percent Solids (decimal):	0.739

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6766	
Antimony	5.07	U
Barium	94.7	
Chromium	7.44	
Copper	8.46	
Iron	11502	
Nickel	9.13	
Silver	0.30	U
Thallium	12.18	U
Zinc	81.2	
Arsenic	2.44	
Beryllium	3.32	U
Cadmium	0.46	
Lead	7.43	
Selenium	0.34	U
Mercury	0.068	U

Customer Sample Number:	E8
Lab File ID:	1502TTI012
Matrix:	Sediment
Percent Solids (decimal):	0.797

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	4705	
Antimony	4.71	U
Barium	47.1	
Chromium	2.63	
Copper	6.59	
Iron	8783	
Nickel	5.65	
Silver	0.28	U
Thallium	11.29	U
Zinc	40.8	
Arsenic	1.85	
Beryllium	3.30	U
Cadmium	0.20	
Lead	3.10	
Selenium	0.31	U
Mercury	0.063	U

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Customer Sample Number:	D22
Lab File ID:	1502TTI013
Matrix:	Sediment
Percent Solids (decimal):	0.562

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	10676	
Antimony	6.67	U
Barium	106.8	
Chromium	9.79	
Copper	18.68	
Iron	15569	
Nickel	11.12	
Silver	0.40	U
Thallium	16.01	U
Zinc	124.6	
Arsenic	2.54	
Beryllium	4.81	U
Cadmium	0.96	
Lead	13.85	
Selenium	0.44	U
Mercury	0.117	

Customer Sample Number:	D21
Lab File ID:	1502TTI014
Matrix:	Sediment
Percent Solids (decimal):	0.626

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	9984	
Antimony	5.99	U
Barium	115.8	
Chromium	9.98	
Copper	12.78	
Iron	15176	
Nickel	11.58	
Silver	0.36	U
Thallium	14.38	U
Zinc	99.8	
Arsenic	2.64	
Beryllium	7.99	U
Cadmium	1.12	
Lead	20.45	
Selenium	0.80	U
Mercury	0.080	U

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Customer Sample Number:	D20
Lab File ID:	1502TTI015
Matrix:	Sediment
Percent Solids (decimal):	0.634

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	10252	
Antimony	5.91	U
Barium	102.5	
Chromium	8.28	
Copper	16.17	
Iron	14196	
Nickel	11.04	
Silver	0.35	U
Thallium	14.20	U
Zinc	90.7	
Arsenic	3.59	
Beryllium	4.36	U
Cadmium	0.52	
Lead	9.41	
Selenium	0.39	U
Mercury	0.079	U

Customer Sample Number:	D23
Lab File ID:	1502TTI016
Matrix:	Sediment
Percent Solids (decimal):	0.646

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	10449	
Antimony	5.80	U
Barium	127.7	
Chromium	9.67	
Copper	13.16	
Iron	15480	
Nickel	11.22	
Silver	0.35	U
Thallium	13.93	U
Zinc	92.9	
Arsenic	4.64	
Beryllium	4.30	U
Cadmium	0.52	
Lead	11.27	
Selenium	0.77	U
Mercury	0.077	U

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Customer Sample Number:	D43
Lab File ID:	1502TTI017
Matrix:	Sediment
Percent Solids (decimal):	0.653

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	9571	
Antimony	5.74	U
Barium	126.3	
Chromium	9.19	
Copper	13.02	
Iron	14931	
Nickel	11.10	
Silver	0.34	U
Thallium	13.78	U
Zinc	91.9	
Arsenic	4.59	
Beryllium	4.05	U
Cadmium	0.49	
Lead	10.78	
Selenium	0.77	U
Mercury	0.077	U

Customer Sample Number:	D19
Lab File ID:	1502TTI018
Matrix:	Sediment
Percent Solids (decimal):	0.76

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	4605	
Antimony	4.93	U
Barium	23.7	
Chromium	2.86	
Copper	10.20	
Iron	6579	
Nickel	5.59	
Silver	0.30	U
Thallium	11.84	U
Zinc	28.3	
Arsenic	0.95	
Beryllium	3.54	U
Cadmium	0.14	
Lead	2.19	
Selenium	0.33	U
Mercury	0.066	U

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Customer Sample Number:	D18
Lab File ID:	1502TTI019
Matrix:	Sediment
Percent Solids (decimal):	0.757

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5945	
Antimony	4.95	U
Barium	62.7	
Chromium	4.95	
Copper	7.60	
Iron	9908	
Nickel	7.93	
Silver	0.30	U
Thallium	11.89	U
Zinc	59.4	
Arsenic	2.31	
Beryllium	3.24	U
Cadmium	0.26	
Lead	5.37	
Selenium	0.33	U
Mercury	0.066	U

Customer Sample Number:	E7
Lab File ID:	1502TTI020
Matrix:	Sediment
Percent Solids (decimal):	0.762

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	2887	
Antimony	4.92	U
Barium	8.5	
Chromium	2.30	U
Copper	8.53	
Iron	6234	
Nickel	5.91	
Silver	0.30	U
Thallium	11.81	U
Zinc	16.4	
Arsenic	0.46	
Beryllium	3.14	U
Cadmium	0.06	U
Lead	0.63	
Selenium	0.33	U
Mercury	0.066	U

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Customer Sample Number:	D14
Lab File ID:	1507TTI009
Matrix:	Sediment
Percent Solids (decimal):	0.729

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5830	
Antimony	5.14	U
Barium	54.9	
Chromium	4.80	
Copper	10.29	
Iron	9259	
Nickel	6.52	
Silver	0.31	U
Thallium	12.35	U
Zinc	48.0	
Arsenic	1.95	
Beryllium	3.38	U
Cadmium	0.27	
Lead	4.80	
Selenium	0.34	U
Mercury	0.069	U

Customer Sample Number:	D15
Lab File ID:	1507TTI010
Matrix:	Sediment
Percent Solids (decimal):	0.714

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6653	
Antimony	5.25	U
Barium	73.5	
Chromium	5.95	
Copper	8.40	
Iron	10504	
Nickel	8.05	
Silver	0.32	U
Thallium	12.61	U
Zinc	52.5	
Arsenic	2.10	
Beryllium	3.59	U
Cadmium	0.22	
Lead	5.67	
Selenium	0.35	U
Mercury	0.070	U

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Customer Sample Number:	D16
Lab File ID:	1507TTI011
Matrix:	Sediment
Percent Solids (decimal):	0.568

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	9243	
Antimony	6.60	U
Barium	70.4	
Chromium	8.36	
Copper	17.17	
Iron	13644	
Nickel	7.92	
Silver	0.40	U
Thallium	15.85	U
Zinc	61.6	
Arsenic	3.17	
Beryllium	4.13	U
Cadmium	0.41	
Lead	7.93	
Selenium	0.44	U
Mercury	0.093	

Customer Sample Number:	D17
Lab File ID:	1507TTI012
Matrix:	Sediment
Percent Solids (decimal):	0.713

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5610	
Antimony	5.26	U
Barium	42.1	
Chromium	4.91	
Copper	11.22	
Iron	8065	
Nickel	5.96	
Silver	0.32	U
Thallium	12.62	U
Zinc	35.1	
Arsenic	1.37	
Beryllium	3.37	U
Cadmium	0.20	
Lead	4.05	
Selenium	0.70	U
Mercury	0.070	U

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Customer Sample Number:	D13
Lab File ID:	1507TTI013
Matrix:	Sediment
Percent Solids (decimal):	0.704

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6747	
Antimony	5.33	U
Barium	49.7	
Chromium	5.33	
Copper	10.65	
Iron	9943	
Nickel	7.10	
Silver	0.32	U
Thallium	12.78	U
Zinc	46.2	
Arsenic	1.63	
Beryllium	3.37	U
Cadmium	0.20	
Lead	4.85	
Selenium	0.36	U
Mercury	0.071	U

Customer Sample Number:	D44
Lab File ID:	1507TTI014
Matrix:	Sediment
Percent Solids (decimal):	0.695

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5036	
Antimony	5.40	U
Barium	35.6	
Chromium	3.96	
Copper	9.35	
Iron	6835	
Nickel	5.04	
Silver	0.50	
Thallium	12.95	U
Zinc	31.3	
Arsenic	1.40	
Beryllium	3.71	U
Cadmium	0.22	
Lead	4.08	
Selenium	0.36	U
Mercury	0.072	U

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Customer Sample Number: E5
Lab File ID: 1507TTI015
Matrix: Sediment
Percent Solids (decimal): 0.876

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	5137	
Antimony	4.28	U
Barium	51.4	
Chromium	2.28	
Copper	4.85	
Iron	9989	
Nickel	5.99	
Silver	0.26	U
Thallium	10.27	U
Zinc	25.1	
Arsenic	1.86	
Beryllium	2.93	U
Cadmium	0.06	
Lead	2.17	
Selenium	0.29	U
Mercury	0.057	U

Customer Sample Number: E6
Lab File ID: 1507TTI016
Matrix: Sediment
Percent Solids (decimal): 0.804

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	4664	
Antimony	4.66	U
Barium	46.6	
Chromium	4.98	
Copper	5.91	
Iron	9328	
Nickel	9.02	
Silver	0.28	U
Thallium	11.19	U
Zinc	43.5	
Arsenic	1.87	
Beryllium	3.27	U
Cadmium	0.13	
Lead	4.26	
Selenium	0.31	U
Mercury	0.062	U

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Customer Sample Number:	D1
Lab File ID:	1523TTI005
Matrix:	Sediment
Percent Solids (decimal):	0.534

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	10768	
Antimony	7.02	U
Barium	30.4	
Chromium	11.24	
Copper	17.32	
Iron	14981	
Nickel	11.70	
Silver	0.42	U
Thallium	16.85	U
Zinc	79.6	
Arsenic	3.37	
Beryllium	4.42	U
Cadmium	0.71	
Lead	11.22	
Selenium	0.47	U
Mercury	0.094	U

Customer Sample Number:	D2
Lab File ID:	1523TTI006
Matrix:	Sediment
Percent Solids (decimal):	0.498

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	15060	
Antimony	7.53	U
Barium	33.1	
Chromium	14.56	
Copper	23.59	
Iron	20582	
Nickel	12.55	
Silver	0.45	U
Thallium	18.07	U
Zinc	100.4	
Arsenic	5.02	
Beryllium	5.15	U
Cadmium	0.82	
Lead	16.27	
Selenium	0.50	U
Mercury	0.120	

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Customer Sample Number:	D3
Lab File ID:	1523TTI007
Matrix:	Sediment
Percent Solids (decimal):	0.699

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	8226	
Antimony	5.36	U
Barium	39.3	
Chromium	9.66	
Copper	8.94	
Iron	13591	
Nickel	8.94	
Silver	0.32	U
Thallium	12.88	U
Zinc	78.7	
Arsenic	2.43	
Beryllium	3.47	U
Cadmium	0.49	
Lead	12.78	
Selenium	0.36	U
Mercury	0.086	

Customer Sample Number:	D4
Lab File ID:	1523TTI008
Matrix:	Sediment
Percent Solids (decimal):	0.561

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	10250	
Antimony	6.68	U
Barium	25.0	
Chromium	10.25	
Copper	14.71	
Iron	14706	
Nickel	9.36	
Silver	0.40	U
Thallium	16.04	U
Zinc	66.8	
Arsenic	2.76	
Beryllium	4.46	U
Cadmium	0.53	
Lead	8.65	
Selenium	0.45	U
Mercury	0.089	U

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Customer Sample Number:	D10
Lab File ID:	1523TTI009
Matrix:	Sediment
Percent Solids (decimal):	0.653

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	7657	
Antimony	5.74	U
Barium	84.2	
Chromium	8.04	
Copper	10.34	
Iron	11868	
Nickel	9.19	
Silver	0.34	U
Thallium	13.78	U
Zinc	72.7	
Arsenic	2.14	
Beryllium	3.75	U
Cadmium	0.38	
Lead	7.88	
Selenium	0.38	U
Mercury	0.077	U

Customer Sample Number:	D11
Lab File ID:	1523TTI010
Matrix:	Sediment
Percent Solids (decimal):	0.624

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	8013	
Antimony	6.01	U
Barium	80.1	
Chromium	7.61	
Copper	9.62	
Iron	11619	
Nickel	8.41	
Silver	0.48	
Thallium	14.42	U
Zinc	56.1	
Arsenic	2.48	
Beryllium	3.69	U
Cadmium	0.37	
Lead	8.57	
Selenium	0.40	U
Mercury	0.080	U

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Customer Sample Number:	D12
Lab File ID:	1523TTI011
Matrix:	Sediment
Percent Solids (decimal):	0.61

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	9426	
Antimony	6.15	U
Barium	69.7	
Chromium	7.38	
Copper	16.39	
Iron	13934	
Nickel	8.61	
Silver	0.37	U
Thallium	14.75	U
Zinc	65.6	
Arsenic	2.05	
Beryllium	4.10	U
Cadmium	0.41	
Lead	7.79	
Selenium	0.41	U
Mercury	0.082	U

Customer Sample Number:	D45
Lab File ID:	1523TTI012
Matrix:	Sediment
Percent Solids (decimal):	0.626

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	10783	
Antimony	5.99	U
Barium	95.8	
Chromium	10.38	
Copper	11.58	
Iron	14776	
Nickel	10.38	
Silver	0.36	U
Thallium	14.38	U
Zinc	67.9	
Arsenic	2.44	
Beryllium	3.73	U
Cadmium	0.37	
Lead	8.73	
Selenium	0.40	U
Mercury	0.080	U

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Customer Sample Number: D46
Lab File ID: 1523TTI013
Matrix: Sediment
Percent Solids (decimal): 0.705

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	9220	
Antimony	5.32	U
Barium	39.0	
Chromium	10.99	
Copper	9.22	
Iron	14539	
Nickel	9.22	
Silver	0.46	
Thallium	12.77	U
Zinc	78.0	
Arsenic	2.66	
Beryllium	3.39	U
Cadmium	0.48	
Lead	11.40	
Selenium	0.35	U
Mercury	0.071	U

Customer Sample Number: E1
Lab File ID: 1523TTI014
Matrix: Sediment
Percent Solids (decimal): 0.759

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	4611	
Antimony	4.94	U
Barium	24.4	
Chromium	3.62	
Copper	1.84	
Iron	9552	
Nickel	6.92	
Silver	0.40	
Thallium	11.86	U
Zinc	27.7	
Arsenic	2.04	
Beryllium	3.33	U
Cadmium	0.07	
Lead	5.46	
Selenium	0.33	U
Mercury	0.066	U

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Customer Sample Number: E2
Lab File ID: 1523TTI015
Matrix: Sediment
Percent Solids (decimal): 0.741

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6410	
Antimony	5.06	U
Barium	47.2	
Chromium	6.07	
Copper	3.71	
Iron	10459	
Nickel	8.43	
Silver	0.30	U
Thallium	12.15	U
Zinc	37.1	
Arsenic	1.18	
Beryllium	3.36	U
Cadmium	0.07	
Lead	4.16	
Selenium	0.34	U
Mercury	0.067	U

Customer Sample Number: D5
Lab File ID: 1527TTI006
Matrix: Sediment
Percent Solids (decimal): 0.737

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	8141	
Antimony	10.18	U
Barium	74.6	
Chromium	7.46	
Copper	4.82	
Iron	12212	
Nickel	9.50	
Silver	0.61	U
Thallium	24.42	U
Zinc	44.8	
Arsenic	1.83	
Beryllium	3.39	U
Cadmium	0.14	
Lead	3.53	
Selenium	0.68	U
Mercury	0.068	U

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Customer Sample Number:	D6
Lab File ID:	1529TTI008
Matrix:	Sediment
Percent Solids (decimal):	0.673

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	12630	
Antimony	11.14	U
Barium	104.0	
Chromium	8.92	
Copper	12.63	
Iron	22288	
Nickel	20.06	
Silver	1.49	
Thallium	26.75	U
Zinc	104.0	
Arsenic	8.92	
Beryllium	3.71	U
Cadmium	1.11	
Lead	17.90	
Selenium	0.74	U
Mercury	0.074	U

Customer Sample Number:	D7
Lab File ID:	1527TTI008
Matrix:	Sediment
Percent Solids (decimal):	0.736

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	4823	
Antimony	10.19	U
Barium	67.9	
Chromium	4.76	
Copper	4.82	
Iron	8152	
Nickel	7.47	
Silver	0.68	
Thallium	24.46	U
Zinc	46.9	
Arsenic	1.97	
Beryllium	3.40	U
Cadmium	0.48	
Lead	6.11	
Selenium	0.68	U
Mercury	0.068	U

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Customer Sample Number:	D8
Lab File ID:	1527TTI009
Matrix:	Sediment
Percent Solids (decimal):	0.723

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	6155	
Antimony	10.37	U
Barium	83.0	
Chromium	5.46	
Copper	5.39	
Iron	8990	
Nickel	8.30	
Silver	0.83	
Thallium	24.90	U
Zinc	42.2	
Arsenic	1.80	
Beryllium	3.46	U
Cadmium	0.21	
Lead	5.95	
Selenium	0.69	U
Mercury	0.069	U

Customer Sample Number:	D9
Lab File ID:	1527TTI010
Matrix:	Sediment
Percent Solids (decimal):	0.676

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	14053	
Antimony	11.09	U
Barium	74.0	
Chromium	7.40	
Copper	13.31	
Iron	24408	
Nickel	10.36	
Silver	0.89	
Thallium	26.63	U
Zinc	57.0	
Arsenic	3.25	
Beryllium	3.70	U
Cadmium	2.66	
Lead	5.70	
Selenium	0.74	U
Mercury	0.074	U

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Customer Sample Number: E3
Lab File ID: 1527TTI011
Matrix: Sediment
Percent Solids (decimal): 0.801

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	4619	
Antimony	9.36	U
Barium	48.7	
Chromium	5.18	
Copper	3.62	
Iron	9988	
Nickel	6.87	
Silver	0.69	
Thallium	22.47	U
Zinc	39.3	
Arsenic	1.44	
Beryllium	3.12	U
Cadmium	0.19	
Lead	3.87	
Selenium	0.62	U
Mercury	0.062	U

Customer Sample Number: E4
Lab File ID: 1527TTI012
Matrix: Sediment
Percent Solids (decimal): 0.78

ANALYTE	CONCENTRATION mg/Kg (ppm)	Q
Aluminum	3397	
Antimony	9.62	U
Barium	40.4	
Chromium	4.49	U
Copper	2.56	
Iron	7051	
Nickel	4.87	
Silver	1.22	
Thallium	23.08	U
Zinc	21.8	
Arsenic	1.35	
Beryllium	3.21	U
Cadmium	0.90	
Lead	2.37	
Selenium	0.64	U
Mercury	0.064	U

SECTION E

GRAIN SIZE (SEDIMENTS)

SAMPLE D37

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI001
Dry Sample Weight (g): 35.95
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.09
Seive # 35:	0.07
Seive # 60:	0.95
Seive # 120:	16.9
Seive # 230:	13.29
1 min:	8
3 min:	7
10 min:	6
30 min:	6
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.3	1000
500 - 1000 um			0.2	500
250 - 500 um			2.6	250
125 - 250 um			47.0	125
63 - 125 um			37.0	63
47.2 -	63.0 um		7.4	47
27.4 -	47.2 um		2.8	27
15.1 -	27.4 um		0.0	15
8.7 -	15.1 um		0.0	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		2.8	3

SAMPLE D40

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI002
Dry Sample Weight (g): 39.7
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.71
Seive # 35:	0.46
Seive # 60:	2.71
Seive # 120:	21.35
Seive # 230:	6.35
1 min:	9
3 min:	8
10 min:	7
30 min:	7
90 min:	7
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			1.8	1000
500 - 1000 um			1.2	500
250 - 500 um			6.8	250
125 - 250 um			53.8	125
63 - 125 um			16.0	63
	46.9 -	63.0 um	12.9	47
	27.2 -	46.9 um	2.5	27
	15.0 -	27.2 um	0.0	15
	8.7 -	15.0 um	0.0	9
	5.0 -	8.7 um	2.5	5
	2.9 -	5.0 um	2.5	3

SAMPLE D39

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI003
Dry Sample Weight (g): 39.7
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.01
Seive # 35:	0.03
Seive # 60:	2.66
Seive # 120:	24.88
Seive # 230:	9.76
1 min:	6
3 min:	6
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.0	1000
500 - 1000 um			0.1	500
250 - 500 um			6.7	250
125 - 250 um			62.7	125
63 - 125 um			24.6	63
47.7 -	63.0 um		3.4	48
27.5 -	47.7 um		2.5	28
15.2 -	27.5 um		0.0	15
8.8 -	15.2 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE D35

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI004
Dry Sample Weight (g): 27.9
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	0.1
Seive # 18:	0.22
Seive # 35:	0.54
Seive # 60:	1.1
Seive # 120:	5.9
Seive # 230:	13.1
1 min:	10
3 min:	8
10 min:	7
30 min:	6
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.4	2000
1000 - 2000 um			0.8	1000
500 - 1000 um			1.9	500
250 - 500 um			3.9	250
125 - 250 um			21.1	125
63 - 125 um			47.0	63
46.6 -	63.0 um		14.1	47
27.2 -	46.6 um		3.6	27
15.0 -	27.2 um		3.6	15
8.7 -	15.0 um		0.0	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		3.6	3

SAMPLE D41

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI005
Dry Sample Weight (g): 27.65
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	1.44
Seive # 35:	0.42
Seive # 60:	0.81
Seive # 120:	7.74
Seive # 230:	12.5
1 min:	9
3 min:	8
10 min:	7
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE	PERCENT	
> 4000 um	0.0	4000
2360 - 4000 um	0.0	2360
2000 - 2360 um	0.0	2000
1000 - 2000 um	5.2	1000
500 - 1000 um	1.5	500
250 - 500 um	2.9	250
125 - 250 um	28.0	125
63 - 125 um	45.2	63
46.9 - 63.0 um	6.3	47
27.2 - 46.9 um	3.6	27
15.0 - 27.2 um	3.6	15
8.7 - 15.0 um	3.6	9
5.1 - 8.7 um	0.0	5
2.9 - 5.1 um	0.0	3

PARTICLE SIZE DISTRIBUTION

SAMPLE D38

Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI006
Dry Sample Weight (g): 39.05
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.08
Seive # 35:	0.18
Seive # 60:	7.15
Seive # 120:	25.36
Seive # 230:	3.83
1 min:	6
3 min:	6
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.2	1000
500 - 1000 um			0.5	500
250 - 500 um			18.3	250
125 - 250 um			64.9	125
63 - 125 um			9.8	63
47.7 -	63.0 um		3.7	48
27.5 -	47.7 um		2.6	28
15.2 -	27.5 um		0.0	15
8.8 -	15.2 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE D36

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI007
Dry Sample Weight (g): 35.5
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.05
Seive # 35:	0.53
Seive # 60:	12.33
Seive # 120:	12.52
Seive # 230:	5.02
1 min:	11
3 min:	10
10 min:	8
30 min:	7
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			1.5	500
250 - 500 um			34.7	250
125 - 250 um			35.3	125
63 - 125 um			14.1	63
	46.4 -	63.0 um	0.1	46
	26.9 -	46.4 um	5.6	27
	14.9 -	26.9 um	2.8	15
	8.7 -	14.9 um	2.8	9
	5.0 -	8.7 um	0.0	5
	2.9 -	5.0 um	2.8	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI008

SAMPLE E14

Dry Sample Weight (g): 44.4
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	34
Seive # 35:	0.7
Seive # 60:	4.75
Seive # 120:	4.5
Seive # 230:	0.3
1 min:	5
3 min:	5
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			76.6	1000
500 - 1000 um			1.6	500
250 - 500 um			10.7	250
125 - 250 um			10.1	125
63 - 125 um			0.7	63
48.0 -	63.0 um		0.3	48
27.7 -	48.0 um		0.0	28
15.2 -	27.7 um		0.0	15
8.8 -	15.2 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI009

SAMPLE E12

Dry Sample Weight (g):	42
Calgon Reading:	5

	grams
Seive # 5:	0.82
Seive # 8:	2.52
Seive # 10:	1.03
Seive # 18:	6.72
Seive # 35:	12.55
Seive # 60:	14.15
Seive # 120:	3.87
Seive # 230:	0.09
1 min:	5
3 min:	5
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			2.0	4000
2360 - 4000 um			6.0	2360
2000 - 2360 um			2.5	2000
1000 - 2000 um			16.0	1000
500 - 1000 um			29.9	500
250 - 500 um			33.7	250
125 - 250 um			9.2	125
63 - 125 um			0.2	63
48.0 -	63.0	um	0.6	48
27.7 -	48.0	um	0.0	28
15.2 -	27.7	um	0.0	15
8.8 -	15.2	um	0.0	9
5.1 -	8.8	um	0.0	5
2.9 -	5.1	um	0.0	3

SAMPLE E13

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1474TTI010
Dry Sample Weight (g): 38.75
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	5.44
Seive # 35:	10.35
Seive # 60:	16.98
Seive # 120:	4.88
Seive # 230:	0.07
1 min:	5
3 min:	5
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE	PERCENT	
> 4000 um	0.0	4000
2360 - 4000 um	0.0	2360
2000 - 2360 um	0.0	2000
1000 - 2000 um	14.0	1000
500 - 1000 um	26.7	500
250 - 500 um	43.8	250
125 - 250 um	12.6	125
63 - 125 um	0.2	63
48.0 - 63.0 um	2.7	48
27.7 - 48.0 um	0.0	28
15.2 - 27.7 um	0.0	15
8.8 - 15.2 um	0.0	9
5.1 - 8.8 um	0.0	5
2.9 - 5.1 um	0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI001
Dry Sample Weight (g): 32.55
Calgon Reading: 5

SAMPLE E9

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.26
Seive # 35:	0.19
Seive # 60:	0.83
Seive # 120:	13.34
Seive # 230:	10.89
1 min:	10
3 min:	9
10 min:	7
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.8	1000
500 - 1000 um			0.6	500
250 - 500 um			2.5	250
125 - 250 um			41.0	125
63 - 125 um			33.5	63
	46.6 -	63.0 um	9.3	47
	27.1 -	46.6 um	6.1	27
	15.0 -	27.1 um	6.1	15
	8.8 -	15.0 um	0.0	9
	5.1 -	8.8 um	0.0	5
	2.9 -	5.1 um	0.0	3

PARTICLE SIZE DISTRIBUTION

Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI002
Dry Sample Weight (g): 38.35
Calgon Reading: 5

SAMPLE E10

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	1.97
Seive # 35:	8.76
Seive # 60:	8.75
Seive # 120:	8.71
Seive # 230:	5.9
1 min:	11
3 min:	7
10 min:	6
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			5.1	1000
500 - 1000 um			22.8	500
250 - 500 um			22.8	250
125 - 250 um			22.7	125
63 - 125 um			15.4	63
46.4 -	63.0 um		5.9	46
27.4 -	46.4 um		2.6	27
15.1 -	27.4 um		0.0	15
8.7 -	15.1 um		2.6	9
5.1 -	8.7 um		0.0	5
2.9 -	5.1 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI003
Dry Sample Weight (g): 36.25
Calgon Reading: 5

SAMPLE E11

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.02
Seive # 35:	0.18
Seive # 60:	2.78
Seive # 120:	17.32
Seive # 230:	7.48
1 min:	10
3 min:	9
10 min:	7
30 min:	7
90 min:	6
270 min:	6
720 min:	6

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			0.5	500
250 - 500 um			7.7	250
125 - 250 um			47.8	125
63 - 125 um			20.6	63
46.6 -	63.0	um	12.3	47
27.1 -	46.6	um	5.5	27
15.0 -	27.1	um	0.0	15
8.7 -	15.0	um	2.8	9
5.0 -	8.7	um	0.0	5
2.9 -	5.0	um	0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI004
Dry Sample Weight (g): 31.65
Calgon Reading: 5

SAMPLE D24

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.03
Seive # 35:	0.12
Seive # 60:	0.31
Seive # 120:	7.81
Seive # 230:	14.48
1 min:	10
3 min:	7
10 min:	7
30 min:	7
90 min:	6
270 min:	6
720 min:	6

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			0.4	500
250 - 500 um			1.0	250
125 - 250 um			24.7	125
63 - 125 um			45.8	63
46.6 -	63.0 um		21.8	47
27.4 -	46.6 um		0.0	27
15.0 -	27.4 um		0.0	15
8.7 -	15.0 um		3.2	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI005
Dry Sample Weight (g): 33.4
Calgon Reading: 5

SAMPLE D25

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.04
Seive # 35:	0.04
Seive # 60:	0.22
Seive # 120:	5.46
Seive # 230:	17.02
1 min:	12
3 min:	11
10 min:	8
30 min:	7
90 min:	6
270 min:	6
720 min:	6

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			0.1	500
250 - 500 um			0.7	250
125 - 250 um			16.3	125
63 - 125 um			51.0	63
46.1 -	63.0 um		13.8	46
26.8 -	46.1 um		9.0	27
14.9 -	26.8 um		3.0	15
8.7 -	14.9 um		3.0	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI006
Dry Sample Weight (g): 40.4
Calgon Reading: 5

SAMPLE D26

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.47
Seive # 35:	1.07
Seive # 60:	16.95
Seive # 120:	12.49
Seive # 230:	4.55
1 min:	7
3 min:	6
10 min:	6
30 min:	6
90 min:	6
270 min:	5
720 min:	5

RANGE	PERCENT	
> 4000 um	0.0	4000
2360 - 4000 um	0.0	2360
2000 - 2360 um	0.0	2000
1000 - 2000 um	1.2	1000
500 - 1000 um	2.6	500
250 - 500 um	42.0	250
125 - 250 um	30.9	125
63 - 125 um	11.3	63
47.4 - 63.0 um	9.6	47
27.5 - 47.4 um	0.0	28
15.1 - 27.5 um	0.0	15
8.7 - 15.1 um	0.0	9
5.0 - 8.7 um	2.5	5
2.9 - 5.0 um	0.0	3

(13)

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI007
Dry Sample Weight (g): 38.25
Calgon Reading: 5

SAMPLE D27

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	1.77
Seive # 35:	5.29
Seive # 60:	14.38
Seive # 120:	8.69
Seive # 230:	3.75
1 min:	9
3 min:	8
10 min:	7
30 min:	7
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			4.6	1000
500 - 1000 um			13.8	500
250 - 500 um			37.6	250
125 - 250 um			22.7	125
63 - 125 um			9.8	63
46.9 -	63.0 um		3.6	47
27.2 -	46.9 um		2.6	27
15.0 -	27.2 um		0.0	15
8.7 -	15.0 um		2.6	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		2.6	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI008
Dry Sample Weight (g): 37.3
Calgon Reading: 5

SAMPLE D28

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.83
Seive # 35:	1.99
Seive # 60:	5.28
Seive # 120:	15.63
Seive # 230:	6.19
1 min:	9
3 min:	8
10 min:	7
30 min:	7
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			2.2	1000
500 - 1000 um			5.3	500
250 - 500 um			14.2	250
125 - 250 um			41.9	125
63 - 125 um			16.6	63
46.9 -	63.0 um		11.7	47
27.2 -	46.9 um		2.7	27
15.0 -	27.2 um		0.0	15
8.7 -	15.0 um		2.7	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		2.7	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI009
Dry Sample Weight (g): 36.05
Calgon Reading: 5

SAMPLE D29

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.13
Seive # 35:	0.98
Seive # 60:	14.88
Seive # 120:	12.51
Seive # 230:	4.9
1 min:	8
3 min:	7
10 min:	7
30 min:	6
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.4	1000
500 - 1000 um			2.7	500
250 - 500 um			41.3	250
125 - 250 um			34.7	125
63 - 125 um			13.6	63
47.2 -	63.0	um	1.8	47
27.4 -	47.2	um	0.0	27
15.0 -	27.4	um	2.8	15
8.7 -	15.0	um	0.0	9
5.0 -	8.7	um	0.0	5
2.9 -	5.0	um	2.8	3

SAMPLE D30

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI010
Dry Sample Weight (g): 32.55
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.02
Seive # 35:	0.04
Seive # 60:	0.16
Seive # 120:	10.03
Seive # 230:	13.31
1 min:	9
3 min:	8
10 min:	7
30 min:	7
90 min:	6
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			0.1	500
250 - 500 um			0.5	250
125 - 250 um			30.8	125
63 - 125 um			40.9	63
46.9 -	63.0 um		18.4	47
27.2 -	46.9 um		3.1	27
15.0 -	27.2 um		0.0	15
8.7 -	15.0 um		3.1	9
5.0 -	8.7 um		3.1	5
2.9 -	5.0 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI011
Dry Sample Weight (g): 36.6
Calgon Reading: 5

SAMPLE D31

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.08
Seive # 35:	0.38
Seive # 60:	7.85
Seive # 120:	13.2
Seive # 230:	8
1 min:	9
3 min:	8
10 min:	7
30 min:	7
90 min:	6
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.2	1000
500 - 1000 um			1.0	500
250 - 500 um			21.4	250
125 - 250 um			36.1	125
63 - 125 um			21.9	63
46.9 -	63.0 um		11.2	47
27.2 -	46.9 um		2.7	27
15.0 -	27.2 um		0.0	15
8.7 -	15.0 um		2.7	9
5.0 -	8.7 um		2.7	5
2.9 -	5.0 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI012
Dry Sample Weight (g): 38.7
Calgon Reading: 5

SAMPLE D32

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.82
Seive # 35:	0.91
Seive # 60:	4.26
Seive # 120:	25.72
Seive # 230:	3.97
1 min:	7
3 min:	6
10 min:	6
30 min:	6
90 min:	6
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			2.1	1000
500 - 1000 um			2.4	500
250 - 500 um			11.0	250
125 - 250 um			66.5	125
63 - 125 um			10.3	63
47.4 -	63.0 um		5.2	47
27.5 -	47.4 um		0.0	28
15.1 -	27.5 um		0.0	15
8.7 -	15.1 um		0.0	9
5.0 -	8.7 um		2.6	5
2.9 -	5.0 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTIØ13
Dry Sample Weight (g): 37
Calgon Reading: 5

Sample D33

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	Ø.Ø6
Seive # 35:	Ø.28
Seive # 60:	3.52
Seive # 120:	19.25
Seive # 230:	9.4
1 min:	9
3 min:	7
10 min:	6
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4ØØØ um			Ø.Ø	4ØØØ
236Ø - 4ØØØ um			Ø.Ø	236Ø
2ØØØ - 236Ø um			Ø.Ø	2ØØØ
1ØØØ - 2ØØØ um			Ø.2	1ØØØ
5ØØ - 1ØØØ um			Ø.8	5ØØ
25Ø - 5ØØ um			9.5	25Ø
125 - 25Ø um			52.Ø	125
63 - 125 um			25.4	63
46.9 -	63.Ø um		6.7	47
27.4 -	46.9 um		2.7	27
15.1 -	27.4 um		Ø.Ø	15
8.7 -	15.1 um		2.7	9
5.1 -	8.7 um		Ø.Ø	5
2.9 -	5.1 um		Ø.Ø	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI014

SAMPLE D34

Dry Sample Weight (g):	39.5
Calgon Reading:	5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.03
Seive # 35:	0.83
Seive # 60:	13.2
Seive # 120:	18.75
Seive # 230:	2.16
1 min:	8
3 min:	7
10 min:	6
30 min:	6
90 min:	6
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			2.1	500
250 - 500 um			33.4	250
125 - 250 um			47.5	125
63 - 125 um			5.5	63
47.2 -	63.0 um		6.4	47
27.4 -	47.2 um		2.5	27
15.1 -	27.4 um		0.0	15
8.7 -	15.1 um		0.0	9
5.0 -	8.7 um		2.5	5
2.9 -	5.0 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1486TTI015
Dry Sample Weight (g): 36.95
Calgon Reading: 5

SAMPLE D42

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.91
Seive # 35:	2.34
Seive # 60:	5.22
Seive # 120:	16.99
Seive # 230:	6.24
1 min:	9
3 min:	8
10 min:	7
30 min:	7
90 min:	6
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			2.5	1000
500 - 1000 um			6.3	500
250 - 500 um			14.1	250
125 - 250 um			46.0	125
63 - 125 um			16.9	63
46.9 -	63.0	um	6.1	47
27.2 -	46.9	um	2.7	27
15.0 -	27.2	um	0.0	15
8.7 -	15.0	um	2.7	9
5.0 -	8.7	um	2.7	5
2.9 -	5.0	um	0.0	3

SAMPLE E-8

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1502TTI012
Dry Sample Weight (g): 39.85
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	9.29
Seive # 35:	18.58
Seive # 60:	6.23
Seive # 120:	2.43
Seive # 230:	1.54
1 min:	6
3 min:	6
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			23.3	1000
500 - 1000 um			46.6	500
250 - 500 um			15.6	250
125 - 250 um			6.1	125
63 - 125 um			3.9	63
47.7 -	63.0 um		2.0	48
27.5 -	47.7 um		2.5	28
15.2 -	27.5 um		0.0	15
8.8 -	15.2 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE D22

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1502TTI013
Dry Sample Weight (g): 28.1
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.26
Seive # 35:	0.95
Seive # 60:	2.88
Seive # 120:	1.53
Seive # 230:	6.99
1 min:	17
3 min:	12
10 min:	8
30 min:	7
90 min:	6
270 min:	6
720 min:	6

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.9	1000
500 - 1000 um			3.4	500
250 - 500 um			10.2	250
125 - 250 um			5.4	125
63 - 125 um			24.9	63
44.8 -	63.0 um		30.2	45
26.6 -	44.8 um		14.2	27
14.9 -	26.6 um		3.6	15
8.7 -	14.9 um		3.6	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		0.0	3

SAMPLE D21

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1502TTI014
Dry Sample Weight (g): 31.3
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	1.29
Seive # 35:	0.96
Seive # 60:	1.48
Seive # 120:	7.43
Seive # 230:	12.6
1 min:	11
3 min:	9
10 min:	7
30 min:	7
90 min:	6
270 min:	6
720 min:	6

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			4.1	1000
500 - 1000 um			3.1	500
250 - 500 um			4.7	250
125 - 250 um			23.7	125
63 - 125 um			40.3	63
46.4 -	63.0 um		11.3	46
27.1 -	46.4 um		6.4	27
15.0 -	27.1 um		0.0	15
8.7 -	15.0 um		3.2	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		0.0	3

SAMPLE D20

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 15Ø2TTIØ15
Dry Sample Weight (g): 31.7
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 1Ø:	
Seive # 18:	Ø.Ø3
Seive # 35:	Ø.11
Seive # 6Ø:	Ø.28
Seive # 12Ø:	4.56
Seive # 23Ø:	17.33
1 min:	11
3 min:	8
1Ø min:	7
3Ø min:	6
9Ø min:	6
27Ø min:	6
72Ø min:	5

RANGE			PERCENT	
> 4ØØØ um			Ø.Ø	4ØØØ
236Ø - 4ØØØ um			Ø.Ø	236Ø
2ØØØ - 236Ø um			Ø.Ø	2ØØØ
1ØØØ - 2ØØØ um			Ø.1	1ØØØ
5ØØ - 1ØØØ um			Ø.3	5ØØ
25Ø - 5ØØ um			Ø.9	25Ø
125 - 25Ø um			14.4	125
63 - 125 um			54.7	63
46.4 -	63.Ø um		2Ø.2	46
27.2 -	46.4 um		3.2	27
15.Ø -	27.2 um		3.2	15
8.7 -	15.Ø um		Ø.Ø	9
5.Ø -	8.7 um		Ø.Ø	5
2.9 -	5.Ø um		3.2	3

SAMPLE D23

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1502TTI016
Dry Sample Weight (g): 32.3
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.01
Seive # 35:	0.17
Seive # 60:	0.76
Seive # 120:	3.61
Seive # 230:	14.73
1 min:	15
3 min:	12
10 min:	8
30 min:	7
90 min:	7
270 min:	7
720 min:	6

RANGE				PERCENT	
> 4000 um				0.0	4000
2360 - 4000 um				0.0	2360
2000 - 2360 um				0.0	2000
1000 - 2000 um				0.0	1000
500 - 1000 um				0.5	500
250 - 500 um				2.4	250
125 - 250 um				11.2	125
63 - 125 um				45.6	63
	45.3 -	63.0	um	18.6	45
	26.6 -	45.3	um	12.4	27
	14.9 -	26.6	um	3.1	15
	8.7 -	14.9	um	0.0	9
	5.0 -	8.7	um	0.0	5
	2.9 -	5.0	um	3.1	3

SAMPLE D43

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 15Ø2TTIØ17
Dry Sample Weight (g): 32.65
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	Ø
Seive # 35:	Ø.14
Seive # 60:	Ø.62
Seive # 120:	2.95
Seive # 230:	15.2
1 min:	17
3 min:	13
10 min:	8
30 min:	7
90 min:	6
270 min:	6
720 min:	6

RANGE	PERCENT	
> 4ØØØ um	Ø.Ø	4ØØØ
236Ø - 4ØØØ um	Ø.Ø	236Ø
2ØØØ - 236Ø um	Ø.Ø	2ØØØ
1ØØØ - 2ØØØ um	Ø.Ø	1ØØØ
5ØØ - 1ØØØ um	Ø.4	5ØØ
25Ø - 5ØØ um	1.9	25Ø
125 - 25Ø um	9.Ø	125
63 - 125 um	46.6	63
44.8 - 63.Ø um	17.6	45
26.5 - 44.8 um	15.3	26
14.9 - 26.5 um	3.1	15
8.7 - 14.9 um	3.1	9
5.Ø - 8.7 um	Ø.Ø	5
2.9 - 5.Ø um	Ø.Ø	3

SAMPLE D19

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1502TTI018
Dry Sample Weight (g): 38
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.01
Seive # 35:	0.02
Seive # 60:	0.07
Seive # 120:	16.33
Seive # 230:	16.3
1 min:	9
3 min:	7
10 min:	6
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.0	1000
500 - 1000 um			0.1	500
250 - 500 um			0.2	250
125 - 250 um			43.0	125
63 - 125 um			42.9	63
46.9 -	63.0 um		8.6	47
27.4 -	46.9 um		2.6	27
15.1 -	27.4 um		0.0	15
8.7 -	15.1 um		2.6	9
5.1 -	8.7 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE D18

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 150ZTTI019
Dry Sample Weight (g): 37.85
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	1.29
Seive # 35:	5.85
Seive # 60:	8.18
Seive # 120:	10.53
Seive # 230:	6.74
1 min:	10
3 min:	8
10 min:	7
30 min:	7
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			3.4	1000
500 - 1000 um			15.5	500
250 - 500 um			21.6	250
125 - 250 um			27.8	125
63 - 125 um			17.8	63
46.6 -	63.0	um	6.0	47
27.2 -	46.6	um	2.6	27
15.0 -	27.2	um	0.0	15
8.7 -	15.0	um	2.6	9
5.0 -	8.7	um	0.0	5
2.9 -	5.0	um	2.6	3

SAMPLE E-7

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1502TTI020
Dry Sample Weight (g): 38.1
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	2.93
Seive # 35:	0.08
Seive # 60:	5.75
Seive # 120:	28.18
Seive # 230:	0
1 min:	5
3 min:	5
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			7.7	1000
500 - 1000 um			0.2	500
250 - 500 um			15.1	250
125 - 250 um			74.0	125
63 - 125 um			0.0	63
48.0 -	63.0	um	3.0	48
27.7 -	48.0	um	0.0	28
15.2 -	27.7	um	0.0	15
8.8 -	15.2	um	0.0	9
5.1 -	8.8	um	0.0	5
2.9 -	5.1	um	0.0	3

SAMPLE D14

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1507TTI009
Dry Sample Weight (g): 36.45
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.03
Seive # 35:	0.06
Seive # 60:	0.45
Seive # 120:	7.8
Seive # 230:	19.94
1 min:	11
3 min:	10
10 min:	8
30 min:	7
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			0.2	500
250 - 500 um			1.2	250
125 - 250 um			21.4	125
63 - 125 um			54.7	63
46.4 -	63.0	um	8.7	46
26.9 -	46.4	um	5.5	27
14.9 -	26.9	um	2.7	15
8.7 -	14.9	um	2.7	9
5.0 -	8.7	um	0.0	5
2.9 -	5.0	um	2.7	3

Sample D15

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1507TTI010
Dry Sample Weight (g): 35.7
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.1
Seive # 35:	0.1
Seive # 60:	2.04
Seive # 120:	18.14
Seive # 230:	8.26
1 min:	12
3 min:	10
10 min:	8
30 min:	6
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.3	1000
500 - 1000 um			0.3	500
250 - 500 um			5.7	250
125 - 250 um			50.8	125
63 - 125 um			23.1	63
46.1 -	63.0 um		5.8	46
26.9 -	46.1 um		5.6	27
14.9 -	26.9 um		5.6	15
8.7 -	14.9 um		0.0	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		2.8	3

SAMPLE D16

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1507TTI011
Dry Sample Weight (g): 28.4
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0
Seive # 35:	0.01
Seive # 60:	0.04
Seive # 120:	0.5
Seive # 230:	14.62
1 min:	16
3 min:	14
10 min:	11
30 min:	9
90 min:	7
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.0	1000
500 - 1000 um			0.0	500
250 - 500 um			0.1	250
125 - 250 um			1.8	125
63 - 125 um			51.5	63
45.0 -	63.0 um		14.9	45
26.3 -	45.0 um		10.6	26
14.7 -	26.3 um		7.0	15
8.6 -	14.7 um		7.0	9
5.0 -	8.6 um		3.5	5
2.9 -	5.0 um		3.5	3

SAMPLE D17

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1507TTI012
Dry Sample Weight (g): 35.65
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.15
Seive # 35:	0.2
Seive # 60:	0.42
Seive # 120:	8.18
Seive # 230:	18.95
1 min:	11
3 min:	9
10 min:	7
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.4	1000
500 - 1000 um			0.6	500
250 - 500 um			1.2	250
125 - 250 um			22.9	125
63 - 125 um			53.2	63
46.4 -	63.0 um		10.5	46
27.1 -	46.4 um		5.6	27
15.0 -	27.1 um		2.8	15
8.7 -	15.0 um		2.8	9
5.1 -	8.7 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE D13

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1507TTI013
Dry Sample Weight (g): 35.2
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.01
Seive # 35:	0.03
Seive # 60:	0.14
Seive # 120:	3.63
Seive # 230:	24.74
1 min:	11
3 min:	8
10 min:	7
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.0	1000
500 - 1000 um			0.1	500
250 - 500 um			0.4	250
125 - 250 um			10.3	125
63 - 125 um			70.3	63
46.4 -	63.0 um		10.4	46
27.2 -	46.4 um		2.8	27
15.0 -	27.2 um		2.8	15
8.7 -	15.0 um		2.8	9
5.1 -	8.7 um		0.0	5
2.9 -	5.1 um		0.0	3

Sample ~~D13~~ M
D 44

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1507TTI014
Dry Sample Weight (g): 34.75
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.18
Seive # 35:	0.18
Seive # 60:	0.42
Seive # 120:	9.03
Seive # 230:	18.96
1 min:	12
3 min:	9
10 min:	8
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.5	1000
500 - 1000 um			0.5	500
250 - 500 um			1.2	250
125 - 250 um			26.0	125
63 - 125 um			54.6	63
	46.1 -	63.0 um	5.7	46
	27.1 -	46.1 um	2.9	27
	14.9 -	27.1 um	5.8	15
	8.7 -	14.9 um	2.9	9
	5.1 -	8.7 um	0.0	5
	2.9 -	5.1 um	0.0	3

SAMPLE E5

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 15Ø7TTIØ15
Dry Sample Weight (g): 43.8
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 1Ø:	Ø.56
Seive # 18:	3.72
Seive # 35:	25.36
Seive # 6Ø:	12.46
Seive # 12Ø:	Ø.62
Seive # 23Ø:	Ø.1
1 min:	5
3 min:	5
1Ø min:	5
3Ø min:	5
9Ø min:	5
27Ø min:	5
72Ø min:	5

RANGE			PERCENT	
> 4ØØØ um			Ø.Ø	4ØØØ
236Ø - 4ØØØ um			Ø.Ø	2360
2ØØØ - 236Ø um			1.3	2ØØØ
1ØØØ - 2ØØØ um			8.5	1ØØØ
5ØØ - 1ØØØ um			57.9	5ØØ
25Ø - 5ØØ um			28.4	25Ø
125 - 25Ø um			1.4	125
63 - 125 um			Ø.2	63
48.Ø -	63.Ø um		2.2	48
27.7 -	48.Ø um		Ø.Ø	28
15.2 -	27.7 um		Ø.Ø	15
8.8 -	15.2 um		Ø.Ø	9
5.1 -	8.8 um		Ø.Ø	5
2.9 -	5.1 um		Ø.Ø	3

SAMPLE E6

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1507TTI016
Dry Sample Weight (g): 40.2
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.35
Seive # 35:	4.37
Seive # 60:	16.56
Seive # 120:	9.56
Seive # 230:	3.38
1 min:	9
3 min:	8
10 min:	7
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE	PERCENT	
> 4000 um	0.0	4000
2360 - 4000 um	0.0	2360
2000 - 2360 um	0.0	2000
1000 - 2000 um	0.9	1000
500 - 1000 um	10.9	500
250 - 500 um	41.2	250
125 - 250 um	23.8	125
63 - 125 um	8.4	63
46.9 - 63.0 um	7.4	47
27.2 - 46.9 um	2.5	27
15.0 - 27.2 um	2.5	15
8.7 - 15.0 um	2.5	9
5.1 - 8.7 um	0.0	5
2.9 - 5.1 um	0.0	3

PARTICLE SIZE DISTRIBUTION

SAMPLE D1

Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI005
Dry Sample Weight (g): 26.7
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.11
Seive # 35:	0.13
Seive # 60:	0.95
Seive # 120:	5.13
Seive # 230:	9
1 min:	13
3 min:	12
10 min:	10
30 min:	8
90 min:	7
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.4	1000
500 - 1000 um			0.5	500
250 - 500 um			3.6	250
125 - 250 um			19.2	125
63 - 125 um			33.7	63
45.8 -	63.0 um		16.4	46
26.6 -	45.8 um		7.5	27
14.7 -	26.6 um		7.5	15
8.6 -	14.7 um		3.7	9
5.0 -	8.6 um		3.7	5
2.9 -	5.0 um		3.7	3

SAMPLE D2

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI006
Dry Sample Weight (g): 24.9
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.05
Seive # 35:	0.04
Seive # 60:	0.15
Seive # 120:	0.26
Seive # 230:	1.09
1 min:	25
3 min:	23
10 min:	17
30 min:	13
90 min:	10
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.2	1000
500 - 1000 um			0.2	500
250 - 500 um			0.6	250
125 - 250 um			1.0	125
63 - 125 um			4.4	63
42.6 -	63.0 um		21.3	43
24.9 -	42.6 um		24.1	25
14.2 -	24.9 um		16.1	14
8.4 -	14.2 um		12.0	8
4.9 -	8.4 um		20.1	5
2.9 -	4.9 um		0.0	3

SAMPLE D3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI007
Dry Sample Weight (g): 34.95
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.06
Seive # 35:	0.11
Seive # 60:	1.44
Seive # 120:	6.75
Seive # 230:	16.85
1 min:	13
3 min:	12
10 min:	9
30 min:	6
90 min:	6
270 min:	6
720 min:	6

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.2	1000
500 - 1000 um			0.3	500
250 - 500 um			4.1	250
125 - 250 um			19.3	125
63 - 125 um			48.2	63
45.8 -	63.0	um	7.8	46
26.6 -	45.8	um	8.6	27
14.8 -	26.6	um	8.6	15
8.7 -	14.8	um	0.0	9
5.0 -	8.7	um	0.0	5
2.9 -	5.0	um	0.0	3

SAMPLE D4

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI008
Dry Sample Weight (g): 28.05
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.14
Seive # 35:	0.16
Seive # 60:	0.84
Seive # 120:	2.97
Seive # 230:	9.83
1 min:	18
3 min:	15
10 min:	11
30 min:	9
90 min:	8
270 min:	7
720 min:	6

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.5	1000
500 - 1000 um			0.6	500
250 - 500 um			3.0	250
125 - 250 um			10.6	125
63 - 125 um			35.0	63
44.5 -	63.0 um		14.7	45
26.2 -	44.5 um		14.3	26
14.7 -	26.2 um		7.1	15
8.6 -	14.7 um		3.6	9
5.0 -	8.6 um		3.6	5
2.9 -	5.0 um		3.6	3

SAMPLE D10

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI009
Dry Sample Weight (g): 32.65
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.16
Seive # 35:	0.03
Seive # 60:	0.62
Seive # 120:	14.3
Seive # 230:	10.3
1 min:	12
3 min:	8
10 min:	7
30 min:	6
90 min:	6
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.5	1000
500 - 1000 um			0.1	500
250 - 500 um			1.9	250
125 - 250 um			43.8	125
63 - 125 um			31.5	63
46.1 -	63.0 um		13.0	46
27.2 -	46.1 um		3.1	27
15.0 -	27.2 um		3.1	15
8.7 -	15.0 um		0.0	9
5.0 -	8.7 um		3.1	5
2.9 -	5.0 um		0.0	3

SAMPLE D11

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI01Ø
Dry Sample Weight (g): 31.2
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	Ø.Ø5
Seive # 35:	Ø.Ø9
Seive # 60:	Ø.21
Seive # 120:	5.72
Seive # 230:	16.8
1 min:	1Ø
3 min:	9
10 min:	7
30 min:	6
90 min:	6
270 min:	6
720 min:	6

RANGE			PERCENT	
> 4ØØØ um			Ø.Ø	4ØØØ
236Ø - 4ØØØ um			Ø.Ø	236Ø
2ØØØ - 236Ø um			Ø.Ø	2ØØØ
1ØØØ - 2ØØØ um			Ø.2	1ØØØ
5ØØ - 1ØØØ um			Ø.3	5ØØ
25Ø - 5ØØ um			Ø.7	25Ø
125 - 25Ø um			18.3	125
63 - 125 um			53.8	63
46.6 -	63.Ø um		13.9	47
27.1 -	46.6 um		6.4	27
15.Ø -	27.1 um		3.2	15
8.7 -	15.Ø um		Ø.Ø	9
5.Ø -	8.7 um		Ø.Ø	5
2.9 -	5.Ø um		Ø.Ø	3

SAMPLE D12

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI011
Dry Sample Weight (g): 30.5
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.02
Seive # 35:	0.05
Seive # 60:	0.16
Seive # 120:	1.71
Seive # 230:	18.09
1 min:	14
3 min:	12
10 min:	8
30 min:	7
90 min:	6
270 min:	6
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			0.2	500
250 - 500 um			0.5	250
125 - 250 um			5.6	125
63 - 125 um			59.3	63
45.6 -	63.0 um		11.4	46
26.6 -	45.6 um		13.1	27
14.9 -	26.6 um		3.3	15
8.7 -	14.9 um		3.3	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		3.3	3

SAMPLE D45

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI012
Dry Sample Weight (g): 31.3
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.05
Seive # 35:	0.07
Seive # 60:	0.09
Seive # 120:	11.17
Seive # 230:	10.85
1 min:	11
3 min:	8
10 min:	7
30 min:	6
90 min:	6
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.2	1000
500 - 1000 um			0.2	500
250 - 500 um			0.3	250
125 - 250 um			35.7	125
63 - 125 um			34.7	63
	46.4 -	63.0 um	19.4	46
	27.2 -	46.4 um	3.2	27
	15.0 -	27.2 um	3.2	15
	8.7 -	15.0 um	0.0	9
	5.0 -	8.7 um	3.2	5
	2.9 -	5.0 um	0.0	3

SAMPLE D46

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI013
Dry Sample Weight (g): 35.25
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.03
Seive # 35:	0.16
Seive # 60:	1.25
Seive # 120:	10.36
Seive # 230:	12.47
1 min:	12
3 min:	11
10 min:	8
30 min:	7
90 min:	6
270 min:	6
720 min:	6

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			0.5	500
250 - 500 um			3.5	250
125 - 250 um			29.4	125
63 - 125 um			35.4	63
46.1 -	63.0 um		14.1	46
26.8 -	46.1 um		8.5	27
14.9 -	26.8 um		2.8	15
8.7 -	14.9 um		2.8	9
5.0 -	8.7 um		0.0	5
2.9 -	5.0 um		0.0	3

SAMPLE E1

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI014
Dry Sample Weight (g): 37.65
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.02
Seive # 35:	0.89
Seive # 60:	28.96
Seive # 120:	6.25
Seive # 230:	0.38
1 min:	6
3 min:	5
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			2.4	500
250 - 500 um			76.9	250
125 - 250 um			16.6	125
63 - 125 um			1.0	63
47.7 -	63.0 um		3.1	48
27.7 -	47.7 um		0.0	28
15.2 -	27.7 um		0.0	15
8.8 -	15.2 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1523TTI015
Dry Sample Weight (g): 37.05
Calgon Reading: 5

Sample E2

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.07
Seive # 35:	0.54
Seive # 60:	3.36
Seive # 120:	24
Seive # 230:	6.9
1 min:	6
3 min:	5
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.2	1000
500 - 1000 um			1.5	500
250 - 500 um			9.1	250
125 - 250 um			64.8	125
63 - 125 um			18.6	63
47.7 -	63.0 um		5.9	48
27.7 -	47.7 um		0.0	28
15.2 -	27.7 um		0.0	15
8.8 -	15.2 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE D5

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1527TTI006
Dry Sample Weight (g): 36.85
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.03
Seive # 35:	0.12
Seive # 60:	6.05
Seive # 120:	23.69
Seive # 230:	3.36
1 min:	7
3 min:	6
10 min:	6
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			0.3	500
250 - 500 um			16.4	250
125 - 250 um			64.3	125
63 - 125 um			9.1	63
	47.4 -	63.0 um	7.1	47
	27.5 -	47.4 um	0.0	28
	15.1 -	27.5 um	2.7	15
	8.8 -	15.1 um	0.0	9
	5.1 -	8.8 um	0.0	5
	2.9 -	5.1 um	0.0	3

SAMPLE D6

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1527TTI007
Dry Sample Weight (g): 33.65
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0
Seive # 35:	0.13
Seive # 60:	9.65
Seive # 120:	15.28
Seive # 230:	3.8
1 min:	10
3 min:	8
10 min:	7
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.0	1000
500 - 1000 um			0.4	500
250 - 500 um			28.7	250
125 - 250 um			45.4	125
63 - 125 um			11.3	63
46.6 -	63.0 um		5.3	47
27.2 -	46.6 um		3.0	27
15.0 -	27.2 um		3.0	15
8.7 -	15.0 um		3.0	9
5.1 -	8.7 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE D7

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1527TTI008
Dry Sample Weight (g): 36.86
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.01
Seive # 35:	0.31
Seive # 60:	8.73
Seive # 120:	15.81
Seive # 230:	8.7
1 min:	8
3 min:	7
10 min:	7
30 min:	6
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.0	1000
500 - 1000 um			0.8	500
250 - 500 um			23.7	250
125 - 250 um			42.9	125
63 - 125 um			23.6	63
47.2 -	63.0	um	3.5	47
27.4 -	47.2	um	0.0	27
15.0 -	27.4	um	2.7	15
8.7 -	15.0	um	2.7	9
5.1 -	8.7	um	0.0	5
2.9 -	5.1	um	0.0	3

SAMPLE D8

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1527TTI009
Dry Sample Weight (g): 36.15
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0
Seive # 35:	0.02
Seive # 60:	0.26
Seive # 120:	17.63
Seive # 230:	14.03
1 min:	9
3 min:	7
10 min:	7
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.0	1000
500 - 1000 um			0.1	500
250 - 500 um			0.7	250
125 - 250 um			48.8	125
63 - 125 um			38.8	63
46.9 -	63.0 um		6.1	47
27.4 -	46.9 um		0.0	27
15.0 -	27.4 um		5.5	15
8.8 -	15.0 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE D9

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1527TTI010
Dry Sample Weight (g): 33.8
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.05
Seive # 35:	0.8
Seive # 60:	10.32
Seive # 120:	14.17
Seive # 230:	5.68
1 min:	7
3 min:	6
10 min:	6
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			0.1	1000
500 - 1000 um			2.4	500
250 - 500 um			30.5	250
125 - 250 um			41.9	125
63 - 125 um			16.8	63
47.4 -	63.0 um		5.3	47
27.5 -	47.4 um		0.0	28
15.1 -	27.5 um		3.0	15
8.8 -	15.1 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

SAMPLE E3

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1527TTI011
Dry Sample Weight (g): 40.05
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	1.41
Seive # 35:	1.76
Seive # 60:	18.17
Seive # 120:	13.02
Seive # 230:	1.41
1 min:	9
3 min:	7
10 min:	6
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			3.5	1000
500 - 1000 um			4.4	500
250 - 500 um			45.4	250
125 - 250 um			32.5	125
63 - 125 um			3.5	63
46.9 -	63.0	um	5.7	47
27.4 -	46.9	um	2.5	27
15.1 -	27.4	um	2.5	15
8.8 -	15.1	um	0.0	9
5.1 -	8.8	um	0.0	5
2.9 -	5.1	um	0.0	3

SAMPLE E4

PARTICLE SIZE DISTRIBUTION
Analyst: Shane Anderson
Date: 12/22/91
Sample ID#: 1527TTI012
Dry Sample Weight (g): 39
Calgon Reading: 5

	grams
Seive # 5:	
Seive # 8:	
Seive # 10:	
Seive # 18:	0.89
Seive # 35:	5.97
Seive # 60:	26.22
Seive # 120:	5.08
Seive # 230:	0.15
1 min:	5
3 min:	5
10 min:	5
30 min:	5
90 min:	5
270 min:	5
720 min:	5

RANGE			PERCENT	
> 4000 um			0.0	4000
2360 - 4000 um			0.0	2360
2000 - 2360 um			0.0	2000
1000 - 2000 um			2.3	1000
500 - 1000 um			15.3	500
250 - 500 um			67.2	250
125 - 250 um			13.0	125
63 - 125 um			0.4	63
48.0 -	63.0 um		1.8	48
27.7 -	48.0 um		0.0	28
15.2 -	27.7 um		0.0	15
8.8 -	15.2 um		0.0	9
5.1 -	8.8 um		0.0	5
2.9 -	5.1 um		0.0	3

SECTION F

TOC/TBT/AVS/% SOLIDS (SEDIMENT)

ANALYTICAL RESOURCES INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

Final Report
Laboratory Analysis of Selected Parameters

Matrix: SEDIMENT

Data Release Authorized: M Nelson
Report Prepared : November 25, 1991

Project No: 9110024/1
Columbia River
QC Report No: ALDEN-9252
Date Received: 10/15/91

				DATE OF ANALYSIS		
Sample Data:				*11/19/91*	*11/15-18/91*	*11/18/91*
	Lab ID		Sample Number	SOLIDS (%)	AVS (mg/kg)	TOC (mg/kg)
	SEDIMENT SAMPLES					
D5	9252	B	8792 C,D	64.90%	< 0.5	3,690
D6	9252	C	8793 C,D	63.28%	< 0.5	4,576
D7	9252	D	8794 C,D	66.69%	< 0.4	3,513
D8	9252	E	8795 C,D	66.64%	< 0.4	2,552
D9	9252	F	8796 C,D	62.81%	< 0.5	5,113
E3	9252	G	8797 C,D	74.93%	109.8	2,075
E4	9252	H	8798 C,D	74.94%	< 0.5	< 502
	AQUEOUS SAMPLE					(mg/l)
W6	9252	A	8789 E	-	-	0.75

Method Blank Analysis:			SEDIMENT	AQUEOUS
Sample Number	SOLIDS (%)	AVS (mg S)	TOC (mg/kg)	TOC (mg/l)
Method Blank 1	-	< 0.001	316	< 0.37
Detection Limit :	-	0.001	502	0.37

Check Standard:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Measured Value	-	0.210	1,966	4.44
"True" Value	-	0.405	2,000	5.00
% Recovery	-	51.85%	98.30%	88.80%

Duplicate Analysis:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	109.8	4576	0.75
Duplicate	-	87.7	4605	0.62
RSD	-	15.85%	0.45%	13.42%

Spike Analysis:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	< 0.5	4,576	0.75
Spike	-	210.4	11,804	15.49
Spike level	-	158.4	6,250	20.00
% Recovery	-	132.84%	115.65%	73.70%

Comments:

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Final Report
Laboratory Analysis of Selected Parameters

Matrix: SEDIMENT

Data Release Authorized:

Report Prepared : November 25, 1991

Project No: 9109034/1
Columbia River
QC Report No: ALDEN-9147
Date Received: 10/1/91

Sample Data:

	Lab ID		Sample Number	DATE OF ANALYSIS 10/22/91 SOLIDS (%)	10/18/91 AVS (mg/kg)	10/31/91 TOC (mg/kg)
	SEDIMENT SAMPLES					
E12	9147	A	8567 C,D	84.20%	< 0.3	< 432
D36	9147	B	8568 C,D	63.55%	< 0.6	7,315
E13	9147	C	8569 C,D	77.50%	< 0.3	< 432
D39	9147	E	8571 C,D	74.27%	< 0.2	589
D40	9147	F	8572 C,D	67.47%	< 0.5	4,488
E14	9147	G	8575 C,D	89.15%	< 0.2	(776)
D37	9147	H	8576 C,D	65.74%	< 0.5	4,665
D38	9147	I	8577 C,D	74.04%	< 0.4	702
D41	9147	J	8578 C,D	48.96%	6.0	51,154
D35	9147	K	8579 C,D	49.57%	(15.4)	30,042
	AQUEOUS SAMPLE					(mg/l)
W45	9147	D	8570 E	-	-	< 2.41

Method Blank Analysis:

Sample Number	SOLIDS (%)	AVS (mg S)	SEDIMENT TOC (mg/kg)	AQUEOUS TOC (mg/l)
Method Blank 1	-	< 0.001	< 432	<2.41
Detection Limit :	-	0.001	432	2.41

Check Standard:

	(%)	(mg/kg)	(mg/kg)	(mg/l)
Measured Value	-	0.042	1,922	4.32
"True" Value	-	0.0477	2,000	5.00
% Recovery	-	88.05%	96.10%	86.40%

Duplicate Analysis:

	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	15.4	776	< 2.41
Duplicate	-	21.8	786	< 2.41
RSD	-	24.34%	0.91%	-

Spike Analysis:

	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	-	776	< 2.41
Spike	-	-	8,371	16.13
Spike level	-	-	6,672	20.00
% Recovery	-	-	113.83%	80.65%

112.39
ok

Comments:

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ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 1024MB
Matrix: Soil/Sediment

Sample No: Method Blank
QC Report No: 9147, 9162, 9193, 9233-Alden
Project No: Columbia River

VTSR: NA

Data Release Authorized: *Ann B. Peterson*
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 30.0 gm (Equivalent Dry Weight)
Percent Moisture: NA
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
44.2% Tin Triethyl Butyl Tin	6.7 U	4 U
40.3% Tin Diethyl Dibutyl Tin	6.7 U	3 U
36.5% Tin Ethyl Tributyl Tin	6.7 U	3 U
	Total:	11 U

Surrogate recovery

Ethyl Tripropyl Tin	54.1%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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D40

ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9147F
Matrix: Soil/Sediment

Sample No: 8572 C,D,E

QC Report No: 9147-Alden
Project No: Columbia River

VTSR: 10/01/91

Data Release Authorized:
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 27.8 gm (Dry Weight)
Percent Moisture: 27.1%
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	*7.2 U*	*4 U*
Diethyl Dibutyl Tin	*7.2 U*	*4 U*
Ethyl Tributyl Tin	*7.2 U*	*3 U*
	Total :	*11 U*

Surrogate recovery

Ethyl Tripropyl Tin	61.7%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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D.37

ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9147H
Matrix: Soil/Sediment

Sample No: 8576 C,D,E

QC Report No: 9147-Alden
Project No: Columbia River

VTSR: 10/01/91

Data Release Authorized: *James B. Latt*
Report prepared 11/5/91 - MAC:K kas

Sample Wt: 26.8 gm (Dry Weight)
Date extracted: 10/24/91 Percent Moisture: 31.6%
Analyzed (FINN 4): 11/1/91 Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	*7.5 U*	*4 U*
Diethyl Dibutyl Tin	*7.5 U*	*4 U*
Ethyl Tributyl Tin	*7.5 U*	*4 U*
	Total :	*12 U*

Surrogate recovery

Ethyl Tripropyl Tin	75.5%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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Final Report
Laboratory Analysis of Selected Parameters

Matrix: SEDIMENT

Data Release Authorized: [signature]
Report Prepared : November 25, 1991

Project No: 9110001/1
Columbia River
QC Report No: ALDEN-9162
Date Received: 10/2/91

Sample Data:

	Lab ID		Sample Number	DATE OF ANALYSIS 11/7/91 SOLIDS (%)	11/5-7/91 AVS (mg/kg)	11/8/91 TOC (mg/kg)
	SEDIMENT SAMPLES					
D34	9162	A	8610 C,D	73.36%	< 0.4	2,070
D33	9162	B	8611 C,D	68.46%	< 0.7	4,832
D31	9162	C	8612 C,D	66.12%	< 0.6	4,289
D30	9162	D	8613 C,D	54.18%	< 0.8	5,834
D29	9162	E	8614 C,D	70.06%	< 0.5	4,102
E11	9162	F	8616 C,D	61.44%	< 0.6	6,355
D32	9162	G	8618 C,D	71.48%	< 0.3	2,449
E9	9162	H	8620 C,D	55.22%	< 0.9	6,809
D24	9162	I	8621 C,D	52.85%	< 0.8	7,495
D27	9162	J	8622 C,D	70.78%	< 0.5	4,075
D26	9162	K	8623 C,D	72.68%	< 0.5	1,946
D25	9162	L	8624 C,D	56.81%	< 0.5	5,123
D28	9162	M	8627 C,D	64.96%	< 0.5	7,180
D42	9162	N	8628 C,D	63.78%	< 0.6	5,865
E10	9162	O	8629 C,D	72.18%	< 0.5	3,802
	AQUEOUS SAMPLE					(mg/l)
W37	9162	P	8615 F	-	-	< 2.41

Method Blank Analysis:

Sample Number	SOLIDS (%)	AVS (mg S)	SEDIMENT TOC (mg/kg)	AQUEOUS TOC (mg/l)
Method Blank 1	-	< 0.001	276	<2.41
Detection Limit :	-	0.001	187	2.41

Check Standard:

	(%)	(mg/kg)	(mg/kg)	(mg/l)
Measured Value	-	0.156	1,787	4.32
"True" Value	-	0.461	2,000	5.00
% Recovery	-	33.84%	89.35%	86.40%

Duplicate Analysis:

	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	< 0.3	3802	< 2.41
Duplicate	-	< 0.3	3673	< 2.41
RSD	-	-	2.44%	-

Spike Analysis:

	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	< 0.5	3,802	< 2.41
Spike	-	81.2	8,938	16.96
Spike level	-	175.7	5,575	20.00
% Recovery	-	46.20%	92.13%	84.80%

~~D 46.22~~ ok ~~D 95.32~~ ok

Comments:

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ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9162C
Matrix: Soil/Sediment

Sample No: 8612 C,D,E

QC Report No: 9162-Alden
Project No: Columbia River 9110001/1
VTSR: 10/02/91

Data Release Authorized: _____
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 28.3 gm (Dry Weight)
Percent Moisture: 28.3%
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	**3.4 J**	**2 J**
Diethyl Dibutyl Tin	**6.1 J**	**3 J**
Ethyl Tributyl Tin	*7.1 U*	*3 U*
	Total :	**5 J**

Surrogate recovery

Ethyl Tripropyl Tin	96.7%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9162E
Matrix: Soil/Sediment

Sample No: 8614 C,D,E

QC Report No: 9162-Alden
Project No: Columbia River
9110001/1
VTSR: 10/02/91

Data Release Authorized: _____
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 28.6 gm (Dry Weight)
Percent Moisture: 26.7%
Extract Volume: 1 ml
Conc/Dil: 1 to 1.

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	**2.9 J**	**2 J**
Diethyl Dibutyl Tin	**6.3 J**	**3 J**
Ethyl Tributyl Tin	**7.1 M**	**3 M**
	Total :	**8 J**

Surrogate recovery

Ethyl Tripropyl Tin	96.6%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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D24

ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9162I
Matrix: Soil/Sediment

Sample No: 8621 C,D,E

QC Report No: 9162-Alden
Project No: Columbia River 91.10001/1
VTSR: 10/02/91

Data Release Authorized:
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 22.9 gm (Dry Weight)
Percent Moisture: 39.7%
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	**6.8 J**	**4 J**
Diethyl Dibutyl Tin	**13**	**7**
Ethyl Tributyl Tin	**27**	**13**
	Total :	**24**

Surrogate recovery

Ethyl Tripropyl Tin	89.3%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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Final Report
Laboratory Analysis of Selected Parameters

Matrix: SEDIMENT

Data Release Authorized:
Report Prepared : November 25, 1991

Project No: 9110010/1
Columbia River
QC Report No: ALDEN-9193
Date Received: 10/7/91

				DATE OF ANALYSIS		
Sample Data:				*11/13/91*	*11/12/91*	*11/8/91*
	Lab ID		Sample Number	SOLIDS (%)	AVS (mg/kg)	TOC (mg/kg)
	SEDIMENT SAMPLES					
· E8	9193	B	8672 C,D	79.13%	< 0.4	1,676
· D22	9193	C	8673 C,D	44.56%	4.8	15,424
· D21	9193	D	8674 C,D	52.08%	0.7	8,669
· D20	9193	E	8675 C,D	52.24%	0.6	8,486
· D23	9193	F	8676 C,D	53.70%	< 0.9	6,873
· D43	9193	G	8677 C,D	53.99%	< 0.8	6,575
· D19	9193	H	8680 C,D	68.47%	< 0.3	1,821
· D18	9193	I	8681 C,D	65.85%	< 0.5	6,875
· E7	9193	J	8682 C,D	76.16%	0.6	< 257
	AQUEOUS SAMPLE					(mg/l)
· W26	9193	A	8669 F	-	-	< 2.41

Method Blank Analysis:			SEDIMENT	AQUEOUS
Sample Number	SOLIDS (%)	AVS (mg S)	TOC (mg/kg)	TOC (mg/l)
Method Blank 1	-	< 0.001	257	<2.41
Detection Limit :	-	0.001	257	2.41

Check Standard:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Measured Value	-	0.156	1,741	4.32
"True" Value	-	0.461	2,000	5.00
% Recovery	-	33.84%	87.05%	86.40%

Duplicate Analysis:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	4.8	1676	< 2.41
Duplicate	-	6.6	1773	< 2.41
RSD	-	22.15%	3.98%	-

Spike Analysis:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	4.8	1,676	< 2.41
Spike	-	179.0	6,531	17.07
Spike level	-	266.1	5,193	20.00
% Recovery	-	65.46%	93.49%	85.35%

Comments:

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ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9193C
Matrix: Soil/Sediment

Sample No: 8673 C,D,E

QC Report No: 9193-Alden
Project No: Columbia River
9110010/1
VTSR: 10/07/91

Data Release Authorized: _____
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 20.0 gm (Dry Weight)
Percent Moisture: 48.7%
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	**6.0 J**	**3 J**
Diethyl Dibutyl Tin	**11**	**6**
Ethyl Tributyl Tin	**12 M**	**6 M**
	Total :	**15**

Surrogate recovery

Ethyl Tripropyl Tin	92.3%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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D19

ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9193H
Matrix: Soil/Sediment

Sample No: 8680 C,D,E

QC Report No: 9193-Alden
Project No: Columbia River 9110010/1
VTSR: 10/07/91

Data Release Authorized: *Ron B. Pitt*
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 27.1 gm (Dry Weight)
Percent Moisture: 29.4%
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	**110**	**62**
Diethyl Dibutyl Tin	*7.4 U*	*4 U*
Ethyl Tributyl Tin	**28**	**13**
	Total :	**76**

Surrogate recovery

Ethyl Tripropyl Tin	117%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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Final Report
Laboratory Analysis of Selected Parameters

Matrix: SEDIMENT

Data Release Authorized:
Report Prepared : November 25, 1991

Project No: 9110013/1
Columbia River
QC Report No: ALDEN-9196
Date Received: 10/8/91

				DATE OF ANALYSIS		
Sample Data:				*11/18/91*	*11/14/91*	*11/10-12/91*
	Lab ID		Sample Number	SOLIDS (%)	AVS (mg/kg)	TOC (mg/kg)
	SEDIMENT SAMPLES					
D14	9196	B	8719 C,D	59.94%	< 0.6	2,567
D15	9196	C	8720 C,D	59.98%	< 0.8	6,796
D16	9196	D	8721 C,D	46.12%	< 0.7	7,296
D17	9196	E	8722 C,D	61.67%	< 0.5	4,491
D13	9196	F	8723 C,D	60.35%	< 0.7	3,664
D44	9196	G	8724 C,D	62.15%	< 0.5	4,223
E5	9196	H	8725 C,D	85.64%	< 0.5	259
E6	9196	I	8726 C,D	74.29%	< 0.4	3,068
	AQUEOUS SAMPLE					(mg/l)
W14	9196	A	8716 E	-	-	< 2.41

Method Blank Analysis:			SEDIMENT	AQUEOUS
Sample Number	SOLIDS (%)	AVS (mg S)	TOC (mg/kg)	TOC (mg/l)
Method Blank 1	-	< 0.001	276	<2.41
Detection Limit :	-	0.001	187	2.41

Check Standard:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Measured Value	-	0.197	1,787	4.32
"True" Value	-	0.444	2,000	5.00
% Recovery	-	44.37%	89.35%	86.40%

Duplicate Analysis:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	< 0.7	2567	< 2.41
Duplicate	-	< 0.6	2692	< 2.41
RSD	-	-	3.36%	-

Spike Analysis:	(%)	(mg/kg)	(mg/kg)	(mg/l)
Original	-	< 0.5	2,567	< 2.41
Spike	-	373.9	7,573	16.73
Spike level	-	406.9	4,813	20.00
% Recovery	-	91.89%	104.01%	83.65%

Comments:

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Final Report
Laboratory Analysis of Selected Parameters

Matrix: SEDIMENT

Data Release Authorized:
Report Prepared : November 25, 1991

Project No: 9110020/1
Columbia River
QC Report No: ALDEN-9233
Date Received: 10/11/91

				DATE OF ANALYSIS		
Sample Data:				*11/19/91*	*11/15/91*	*11/19/91*
	Lab ID		Sample Number	SOLIDS (%)	AVS (mg/kg)	TOC (mg/kg)
	SEDIMENT SAMPLES					
D1	9233	A	8766 C,D	44.96%	61.9	13,642
D2	9233	B	8767 C,D	40.45%	101.9	16,312
D4	9233	C	8768 C,D	48.15%	89.9	11,282
D10	9233	D	8769 C,D	53.99%	< 0.6	7,872
D12	9233	E	8771 C,D	51.87%	< 0.7	7,725
D45	9233	F	8772 C,D	52.43%	1.4	8,100
D46	9233	G	8775 C,D	61.79%	41.5	5,991
E1	9233	H	8776 C,D	73.15%	20.7	1,309
E2	9233	I	8777 C,D	69.56%	< 0.5	1,012
D3	9233	J	8778 C,D	61.79%	3.2	5,977
D11	9233	K	8770 C,D	53.75%	11.2	7,909

Method Blank Analysis:			SEDIMENT
Sample Number	SOLIDS (%)	AVS (mg S)	TOC (mg/kg)
Method Blank 1	-	< 0.001	298
Detection Limit :	-	0.001	233

Check Standard:	(%)	(mg/kg)	(mg/kg)
Measured Value	-	0.059	2,060
"True" Value	-	0.087	2,000
% Recovery	-	67.82%	103.00%

Duplicate Analysis:	(%)	(mg/kg)	(mg/kg)
Original	-	61.9	16,312
Duplicate	-	66.9	16,862
RSD	-	5.44%	2.34%

Spike Analysis:	(%)	(mg/kg)	(mg/kg)
Original	-	3.2	16,312
Spike	-	58.4	29,252
Spike level	-	208.6	10,526
% Recovery	-	26.50%	122.93%

Comments:

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D2

ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9233B
Matrix: Soil/Sediment

Sample No: 8767 C,D,E

QC Report No: 9233-Alden
Project No: Columbia River
9110020/1
VTSR: 10/11/91

Data Release Authorized: _____
Report prepared 11/5/91 - MAC:K kas

Sample Wt: 17.9 gm (Dry Weight)
Date extracted: 10/24/91
Percent Moisture: 55.2%
Analyzed (FINN 4): 11/1/91
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	*11 U*	*6 U*
Diethyl Dibutyl Tin	*11 U*	*6 U*
Ethyl Tributyl Tin	*11 U*	*5 U*
	Total :	*18 U*

Surrogate recovery

Ethyl Tripropyl Tin	95.9%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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D12

ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9233E
Matrix: Soil/Sediment

Sample No: 8771 C,D,E

QC Report No: 9233-Alden
Project No: Columbia River
9110020/1
VTSR: 10/11/91

Data Release Authorized:
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 23.2 gm (Dry Weight)
Percent Moisture: 41.2%
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	**5.2 J**	**3 J**
Diethyl Dibutyl Tin	**10**	**5**
Ethyl Tributyl Tin	**21**	**10**
	Total :	**18**

Surrogate recovery

Ethyl Tripropyl Tin	105%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.

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D46

ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample No: 8775 C,D,E

Sample ID: 9233G
Matrix: Soil/Sediment

QC Report No: 9233-Alden
Project No: Columbia River 9110020/1
VTSR: 10/11/91

Data Release Authorized:
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 25.8 gm (Dry Weight)
Percent Moisture: 33.6%
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	**4.3 J**	**2 J**
Diethyl Dibutyl Tin	*7.8 U*	*4 U*
Ethyl Tributyl Tin	*7.8 U*	*4 U*
	Total:	**10 J**

Surrogate recovery

Ethyl Tripropyl Tin	92.4%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
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D 3

ORGANICS ANALYSIS DATA SHEET
Tributyl Tin Analysis by SIM GC/MS

Sample ID: 9233J
Matrix: Soil/Sediment

Sample No: 8778 C,D,E

QC Report No: 9233-Alden
Project No: Columbia River
9110020/1
VTSR: 10/11/91

Data Release Authorized: _____
Report prepared 11/5/91 - MAC:K kas

Date extracted: 10/24/91
Analyzed (FINN 4): 11/1/91

Sample Wt: 25.8 gm (Dry Weight)
Percent Moisture: 33.0%
Extract Volume: 1 ml
Conc/Dil: 1 to 1

	µg/Kg	µg Tin /Kg
Triethyl Butyl Tin	**6.9 J**	**4 J**
Diethyl Dibutyl Tin	**6.6 J**	**3 J**
Ethyl Tributyl Tin	*7.8 U*	*4 U*
	Total :	**7 J**

Surrogate recovery

Ethyl Tripropyl Tin	107%

Data Reporting Qualifiers

Value	If the result is a value greater than or equal to the detection limit, report the value.
U	Indicates compound was analyzed for but not detected at the given detection limit.
J	Indicates an estimated value when result is less than specified detection limit.
NR	Analysis not required.
B	This flag is used when the analyte is found in the blank as well as a sample. Indicates possible/probable blank contamination.
K	This flag is used when quantitated value falls above the limit of the calibration curve and dilution should be run.
M	Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match parameters.