

Apex Labs

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FINAL
SAND SYSTEM FINES

Tuesday, July 17, 2012

Bruce Schacht
Columbia Steel Casting Co., Inc.
PO Box 83095
Portland, OR 97283

RE: Fines Analysis / [none]

Enclosed are the results of analyses for work order A12F192, which was received by the laboratory on 6/12/2012 at 7:30:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: dthomas@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.
PO Box 83095
Portland, OR 97283

Project: Fines Analysis
Project Number: [none]
Project Manager: Bruce Schacht

Reported:
07/17/12 09:13

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Fresh-1-061112	A12F192-01	Soil	06/11/12 10:30	06/12/12 07:30
Fresh-2-061112	A12F192-02	Soil	06/11/12 10:55	06/12/12 07:30
Newer-1-061112	A12F192-03	Soil	06/11/12 11:45	06/12/12 07:30
Newer-2-061112	A12F192-04	Soil	06/11/12 12:30	06/12/12 07:30
Aged-1-061112	A12F192-05	Soil	06/11/12 13:00	06/12/12 07:30
Aged-2-061112	A12F192-06	Soil	06/11/12 13:40	06/12/12 07:30

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Columbia Steel Casting Co., Inc.
PO Box 83095
Portland, OR 97283

Project: Fines Analysis
Project Number: [none]
Project Manager: Bruce Schacht

Reported:
07/17/12 09:13

ANALYTICAL CASE NARRATIVE

Work Order: A12F192

Alkalinity by EPA 310.1

Alkalinity by EPA method 310.1 is not applicable to soil samples. The method measures the capacity of an aqueous sample to absorb acid, and calculates the bicarbonate, carbonate and hydroxide contributions to the total alkalinity. In order to provide an estimate of the alkalinity of the soil approximately 5 grams of sample was brought to a total volume of 50 mL with DI water and agitated while slowly adding acid to an endpoint of pH 4.5. The alkalinity of the water and sample was then calculated.

When left to sit for a period, the pH of the samples increased from 4.5 to as much as 5.5, indicating that the total alkalinity of the sample had not been exhausted. We also cannot know if the only species in the soil sample able to react with acid were bicarbonate and carbonate. Therefore, these results should be viewed as Estimated Values, and used for comparison between samples only.

David Jack
Apex Laboratories
July 5, 2012

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 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Fresh-1-061112 (A12F192-01)			Matrix: Soil					
Batch: 1206361								
Antimony	ND	0.542	1.08	mg/kg dry	10	06/18/12 13:48	EPA 6020	
Arsenic	2.01	0.542	2.17	"	"	"	"	J
Barium	59.1	0.542	1.08	"	"	"	"	
Beryllium	ND	0.542	1.08	"	"	"	"	
Cadmium	ND	0.542	1.08	"	"	"	"	
Chromium	266	1.08	2.17	"	"	"	"	
Copper	46.2	1.08	2.17	"	"	"	"	
Lead	12.2	0.542	1.08	"	"	"	"	
Manganese	1020	0.542	1.08	"	"	"	"	
Mercury	ND	0.0434	0.0867	"	"	"	"	
Nickel	1760	1.08	2.17	"	"	"	"	
Selenium	2.85	1.08	2.17	"	"	"	"	
Silver	ND	0.542	1.08	"	"	"	"	
Thallium	ND	0.542	1.08	"	"	"	"	
Fresh-1-061112 (A12F192-01RE1)			Matrix: Soil					
Batch: 1206385								
Zinc	59.6	2.31	4.62	mg/kg dry	10	06/19/12 14:42	EPA 6020	
Fresh-2-061112 (A12F192-02)			Matrix: Soil					
Batch: 1206361								
Antimony	ND	0.589	1.18	mg/kg dry	10	06/18/12 14:03	EPA 6020	
Arsenic	1.91	0.589	2.35	"	"	"	"	J
Barium	60.9	0.589	1.18	"	"	"	"	
Beryllium	ND	0.589	1.18	"	"	"	"	
Cadmium	ND	0.589	1.18	"	"	"	"	
Chromium	181	1.18	2.35	"	"	"	"	
Copper	48.9	1.18	2.35	"	"	"	"	
Lead	9.30	0.589	1.18	"	"	"	"	
Manganese	1050	0.589	1.18	"	"	"	"	
Mercury	ND	0.0471	0.0942	"	"	"	"	
Nickel	2000	1.18	2.35	"	"	"	"	
Selenium	ND	1.18	2.35	"	"	"	"	
Silver	ND	0.589	1.18	"	"	"	"	
Thallium	ND	0.589	1.18	"	"	"	"	
Fresh-2-061112 (A12F192-02RE1)			Matrix: Soil					

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Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Fresh-2-061112 (A12F192-02RE1)			Matrix: Soil					
Batch: 1206385								
Zinc	55.1	2.29	4.58	mg/kg dry	10	06/19/12 14:45	EPA 6020	
Newer-1-061112 (A12F192-03)			Matrix: Soil					
Batch: 1206361								
Antimony	ND	0.554	1.11	mg/kg dry	10	06/18/12 14:06	EPA 6020	
Arsenic	1.80	0.554	2.22	"	"	"	"	J
Barium	982	0.554	1.11	"	"	"	"	
Beryllium	ND	0.554	1.11	"	"	"	"	
Cadmium	ND	0.554	1.11	"	"	"	"	
Chromium	113	1.11	2.22	"	"	"	"	
Copper	127	1.11	2.22	"	"	"	"	
Lead	9.05	0.554	1.11	"	"	"	"	
Manganese	1750	0.554	1.11	"	"	"	"	
Mercury	ND	0.0443	0.0887	"	"	"	"	
Nickel	1940	1.11	2.22	"	"	"	"	
Selenium	ND	1.11	2.22	"	"	"	"	
Silver	ND	0.554	1.11	"	"	"	"	
Thallium	ND	0.554	1.11	"	"	"	"	
Newer-1-061112 (A12F192-03RE1)			Matrix: Soil					
Batch: 1206385								
Zinc	75.2	2.21	4.43	mg/kg dry	10	06/19/12 14:48	EPA 6020	
Newer-2-061112 (A12F192-04)			Matrix: Soil					
Batch: 1206361								
Antimony	ND	0.559	1.12	mg/kg dry	10	06/18/12 14:09	EPA 6020	
Arsenic	2.47	0.559	2.24	"	"	"	"	
Barium	1040	0.559	1.12	"	"	"	"	
Beryllium	ND	0.559	1.12	"	"	"	"	
Cadmium	ND	0.559	1.12	"	"	"	"	
Chromium	184	1.12	2.24	"	"	"	"	
Copper	164	1.12	2.24	"	"	"	"	
Lead	10.1	0.559	1.12	"	"	"	"	
Manganese	1810	0.559	1.12	"	"	"	"	
Mercury	ND	0.0448	0.0895	"	"	"	"	
Nickel	2010	1.12	2.24	"	"	"	"	
Selenium	ND	1.12	2.24	"	"	"	"	

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Project: Fines Analysis
Project Number: [none]
Project Manager: Bruce Schacht

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07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Newer-2-061112 (A12F192-04)			Matrix: Soil					
Silver	ND	0.559	1.12	mg/kg dry	10	"	EPA 6020	
Thallium	ND	0.559	1.12	"	"	"	"	
Newer-2-061112 (A12F192-04RE1)			Matrix: Soil					
Batch: 1206385								
Zinc	65.8	2.24	4.48	mg/kg dry	10	06/19/12 14:51	EPA 6020	
Aged-1-061112 (A12F192-05)			Matrix: Soil					
Batch: 1206361								
Antimony	0.605	0.550	1.10	mg/kg dry	10	06/18/12 14:12	EPA 6020	J
Arsenic	4.76	0.550	2.20	"	"	"	"	
Barium	1360	0.550	1.10	"	"	"	"	
Beryllium	ND	0.550	1.10	"	"	"	"	
Cadmium	ND	0.550	1.10	"	"	"	"	
Chromium	225	1.10	2.20	"	"	"	"	
Copper	191	1.10	2.20	"	"	"	"	
Lead	28.2	0.550	1.10	"	"	"	"	
Manganese	7850	5.50	11.0	"	100	07/10/12 15:14	"	
Mercury	ND	0.0440	0.0881	"	10	06/18/12 14:12	"	
Nickel	1270	1.10	2.20	"	"	"	"	
Selenium	1.19	1.10	2.20	"	"	"	"	J
Silver	ND	0.550	1.10	"	"	"	"	
Thallium	ND	0.550	1.10	"	"	"	"	
Aged-1-061112 (A12F192-05RE1)			Matrix: Soil					
Batch: 1206385								
Zinc	104	2.33	4.67	mg/kg dry	10	06/19/12 14:54	EPA 6020	
Aged-2-061112 (A12F192-06)			Matrix: Soil					
Batch: 1206361								
Antimony	ND	0.716	1.43	mg/kg dry	10	06/18/12 14:15	EPA 6020	
Arsenic	2.61	0.716	2.86	"	"	"	"	J
Barium	1810	0.716	1.43	"	"	"	"	
Beryllium	ND	0.716	1.43	"	"	"	"	
Cadmium	ND	0.716	1.43	"	"	"	"	
Chromium	79.6	1.43	2.86	"	"	"	"	
Copper	124	1.43	2.86	"	"	"	"	
Lead	16.6	0.716	1.43	"	"	"	"	
Manganese	2440	0.716	1.43	"	"	"	"	

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 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Aged-2-061112 (A12F192-06)			Matrix: Soil					
Mercury	ND	0.0573	0.115	mg/kg dry	10	"	EPA 6020	
Nickel	1690	1.43	2.86	"	"	"	"	
Selenium	ND	1.43	2.86	"	"	"	"	
Silver	ND	0.716	1.43	"	"	"	"	
Thallium	ND	0.716	1.43	"	"	"	"	
Aged-2-061112 (A12F192-06RE1)			Matrix: Soil					
Batch: 1206385								
Zinc	73.3	2.96	5.92	mg/kg dry	10	06/19/12 14:57	EPA 6020	

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Columbia Steel Casting Co., Inc.
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 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

SPLP Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Fresh-1-061112 (A12F192-01)			Matrix: Soil					
Batch: 1206394								
Antimony	ND	0.0250	0.0500	mg/L	5	06/19/12 15:18	EPA 1312/6020	
Arsenic	ND	0.0500	0.100	"	"	"	"	
Barium	1.72	0.250	0.500	"	"	"	"	
Beryllium	ND	0.0250	0.0500	"	"	"	"	
Cadmium	ND	0.0250	0.0500	"	"	"	"	
Chromium	0.176	0.0500	0.100	"	"	"	"	
Copper	ND	0.125	0.250	"	"	"	"	
Lead	ND	0.0250	0.0500	"	"	"	"	
Manganese	0.412	0.0250	0.0500	"	"	"	"	B-02
Mercury	ND	0.00250	0.00500	"	"	"	"	
Nickel	0.344	0.0500	0.100	"	"	"	"	
Selenium	0.0520	0.0500	0.100	"	"	"	"	J
Silver	ND	0.0250	0.0500	"	"	"	"	
Thallium	ND	0.0250	0.0500	"	"	"	"	
Zinc	0.578	0.125	0.250	"	"	"	"	
Fresh-2-061112 (A12F192-02)			Matrix: Soil					
Batch: 1206394								
Antimony	ND	0.0250	0.0500	mg/L	5	06/19/12 15:21	EPA 1312/6020	
Arsenic	ND	0.0500	0.100	"	"	"	"	
Barium	0.820	0.250	0.500	"	"	"	"	
Beryllium	ND	0.0250	0.0500	"	"	"	"	
Cadmium	ND	0.0250	0.0500	"	"	"	"	
Chromium	0.322	0.0500	0.100	"	"	"	"	
Copper	0.308	0.125	0.250	"	"	"	"	
Lead	0.0485	0.0250	0.0500	"	"	"	"	J
Manganese	1.07	0.0250	0.0500	"	"	"	"	B-02
Mercury	ND	0.00250	0.00500	"	"	"	"	
Nickel	0.889	0.0500	0.100	"	"	"	"	
Selenium	ND	0.0500	0.100	"	"	"	"	
Silver	ND	0.0250	0.0500	"	"	"	"	
Thallium	ND	0.0250	0.0500	"	"	"	"	
Zinc	0.358	0.125	0.250	"	"	"	"	
Newer-1-061112 (A12F192-03)			Matrix: Soil					
Batch: 1206394								
Antimony	ND	0.0250	0.0500	mg/L	5	06/19/12 15:24	EPA 1312/6020	

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Project: **Fines Analysis**
Project Number: [none]
Project Manager: Bruce Schacht

Reported:
07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

SPLP Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Newer-1-061112 (A12F192-03)			Matrix: Soil					
Arsenic	ND	0.0500	0.100	mg/L	5	"	EPA 1312/6020	
Barium	0.566	0.250	0.500	"	"	"	"	
Beryllium	ND	0.0250	0.0500	"	"	"	"	
Cadmium	ND	0.0250	0.0500	"	"	"	"	
Chromium	0.0850	0.0500	0.100	"	"	"	"	J
Copper	0.188	0.125	0.250	"	"	"	"	J
Lead	ND	0.0250	0.0500	"	"	"	"	
Manganese	0.416	0.0250	0.0500	"	"	"	"	B-02
Mercury	ND	0.00250	0.00500	"	"	"	"	
Nickel	0.163	0.0500	0.100	"	"	"	"	
Selenium	ND	0.0500	0.100	"	"	"	"	
Silver	ND	0.0250	0.0500	"	"	"	"	
Thallium	ND	0.0250	0.0500	"	"	"	"	
Zinc	0.126	0.125	0.250	"	"	"	"	J
Newer-2-061112 (A12F192-04)			Matrix: Soil					
Batch: 1206394								
Antimony	ND	0.0250	0.0500	mg/L	5	06/19/12 15:27	EPA 1312/6020	
Arsenic	ND	0.0500	0.100	"	"	"	"	
Barium	0.872	0.250	0.500	"	"	"	"	
Beryllium	ND	0.0250	0.0500	"	"	"	"	
Cadmium	ND	0.0250	0.0500	"	"	"	"	
Chromium	0.0670	0.0500	0.100	"	"	"	"	J
Copper	0.211	0.125	0.250	"	"	"	"	J
Lead	ND	0.0250	0.0500	"	"	"	"	
Manganese	0.486	0.0250	0.0500	"	"	"	"	B-02
Mercury	ND	0.00250	0.00500	"	"	"	"	
Nickel	0.186	0.0500	0.100	"	"	"	"	
Selenium	ND	0.0500	0.100	"	"	"	"	
Silver	ND	0.0250	0.0500	"	"	"	"	
Thallium	ND	0.0250	0.0500	"	"	"	"	
Zinc	0.181	0.125	0.250	"	"	"	"	J
Aged-1-061112 (A12F192-05)			Matrix: Soil					
Batch: 1206394								
Antimony	ND	0.0250	0.0500	mg/L	5	06/19/12 15:30	EPA 1312/6020	
Arsenic	ND	0.0500	0.100	"	"	"	"	
Barium	ND	0.250	0.500	"	"	"	"	

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Columbia Steel Casting Co., Inc.	Project: Fines Analysis	Reported:
PO Box 83095	Project Number: [none]	07/17/12 09:13
Portland, OR 97283	Project Manager: Bruce Schacht	

ANALYTICAL SAMPLE RESULTS

SPLP Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Aged-1-061112 (A12F192-05)			Matrix: Soil					
Beryllium	ND	0.0250	0.0500	mg/L	5	"	EPA 1312/6020	
Cadmium	ND	0.0250	0.0500	"	"	"	"	
Chromium	ND	0.0500	0.100	"	"	"	"	
Copper	ND	0.125	0.250	"	"	"	"	
Lead	ND	0.0250	0.0500	"	"	"	"	
Manganese	0.0865	0.0250	0.0500	"	"	"	"	B-02
Mercury	ND	0.00250	0.00500	"	"	"	"	
Nickel	ND	0.0500	0.100	"	"	"	"	
Selenium	ND	0.0500	0.100	"	"	"	"	
Silver	ND	0.0250	0.0500	"	"	"	"	
Thallium	ND	0.0250	0.0500	"	"	"	"	
Zinc	0.148	0.125	0.250	"	"	"	"	J
Aged-2-061112 (A12F192-06)			Matrix: Soil					
Batch: 1206394								
Antimony	ND	0.0250	0.0500	mg/L	5	06/19/12 15:36	EPA 1312/6020	
Arsenic	ND	0.0500	0.100	"	"	"	"	
Barium	2.02	0.250	0.500	"	"	"	"	
Beryllium	ND	0.0250	0.0500	"	"	"	"	
Cadmium	ND	0.0250	0.0500	"	"	"	"	
Chromium	0.132	0.0500	0.100	"	"	"	"	
Copper	0.394	0.125	0.250	"	"	"	"	
Lead	0.0365	0.0250	0.0500	"	"	"	"	J
Manganese	1.62	0.0250	0.0500	"	"	"	"	B-02
Mercury	ND	0.00250	0.00500	"	"	"	"	
Nickel	0.466	0.0500	0.100	"	"	"	"	
Selenium	ND	0.0500	0.100	"	"	"	"	
Silver	ND	0.0250	0.0500	"	"	"	"	
Thallium	ND	0.0250	0.0500	"	"	"	"	
Zinc	0.530	0.125	0.250	"	"	"	"	

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 PO Box 83095
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Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Fresh-1-061112 (A12F192-01) Matrix: Soil								
Batch: 1206285								
Total Organic Carbon	6700	100	200	mg/kg	1	06/18/12 12:30	SM 5310B MOD	
Batch: 1206289								
Soil pH (measured in H2O)	9.57			pH Units	"	06/13/12 17:26	EPA 9045D	
pH Temperature (deg C)	23.7			"	"	"	"	
Batch: 1206387								
Total Alkalinity	9200	19.7	19.7	mg CaCO3/kg	"	06/19/12 17:36	SM 2320 B	X
Bicarbonate Alkalinity	4990	19.7	19.7	"	"	"	"	X
Carbonate Alkalinity	4210	19.7	19.7	"	"	"	"	X
Hydroxide Alkalinity	ND	19.7	19.7	"	"	"	"	X
Fresh-2-061112 (A12F192-02) Matrix: Soil								
Batch: 1206285								
Total Organic Carbon	5300	100	200	mg/kg	1	06/18/12 12:30	SM 5310B MOD	
Batch: 1206289								
Soil pH (measured in H2O)	9.24			pH Units	"	06/13/12 17:28	EPA 9045D	
pH Temperature (deg C)	23.9			"	"	"	"	
Batch: 1206387								
Total Alkalinity	7290	18.3	18.3	mg CaCO3/kg	"	06/19/12 17:36	SM 2320 B	X
Bicarbonate Alkalinity	3390	18.3	18.3	"	"	"	"	X
Carbonate Alkalinity	3900	18.3	18.3	"	"	"	"	X
Hydroxide Alkalinity	ND	18.3	18.3	"	"	"	"	X
Newer-1-061112 (A12F192-03) Matrix: Soil								
Batch: 1206285								
Total Organic Carbon	3200	100	200	mg/kg	1	06/18/12 12:30	SM 5310B MOD	
Batch: 1206289								
Soil pH (measured in H2O)	9.34			pH Units	"	06/13/12 17:29	EPA 9045D	
pH Temperature (deg C)	23.8			"	"	"	"	
Batch: 1206387								
Total Alkalinity	4410	19.4	19.4	mg CaCO3/kg	"	06/19/12 17:36	SM 2320 B	X
Bicarbonate Alkalinity	2190	19.4	19.4	"	"	"	"	X
Carbonate Alkalinity	2210	19.4	19.4	"	"	"	"	X
Hydroxide Alkalinity	ND	19.4	19.4	"	"	"	"	X
Newer-2-061112 (A12F192-04) Matrix: Soil								
Batch: 1206285								
Total Organic Carbon	3500	100	200	mg/kg	1	06/18/12 12:30	SM 5310B MOD	

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Newer-2-061112 (A12F192-04)			Matrix: Soil					
Batch: 1206289								
Soil pH (measured in H2O)	9.54			pH Units	1	06/13/12 17:30	EPA 9045D	
pH Temperature (deg C)	23.8			"	"	"	"	
Batch: 1206387								
Total Alkalinity	5230	19.7	19.7	mg CaCO3/kg	"	06/19/12 17:36	SM 2320 B	X
Bicarbonate Alkalinity	2310	19.7	19.7	"	"	"	"	X
Carbonate Alkalinity	2920	19.7	19.7	"	"	"	"	X
Hydroxide Alkalinity	ND	19.7	19.7	"	"	"	"	X
Aged-1-061112 (A12F192-05)			Matrix: Soil					
Batch: 1206285								
Total Organic Carbon	5600	100	200	mg/kg	1	06/18/12 12:30	SM 5310B MOD	
Batch: 1206289								
Soil pH (measured in H2O)	8.47			pH Units	"	06/13/12 17:31	EPA 9045D	
pH Temperature (deg C)	23.8			"	"	"	"	
Batch: 1206387								
Total Alkalinity	4710	19.3	19.3	mg CaCO3/kg	"	06/19/12 17:36	SM 2320 B	X
Bicarbonate Alkalinity	3750	19.3	19.3	"	"	"	"	X
Carbonate Alkalinity	966	19.3	19.3	"	"	"	"	X
Hydroxide Alkalinity	ND	19.3	19.3	"	"	"	"	X
Aged-2-061112 (A12F192-06)			Matrix: Soil					
Batch: 1206285								
Total Organic Carbon	6300	100	200	mg/kg	1	06/18/12 12:30	SM 5310B MOD	
Batch: 1206289								
Soil pH (measured in H2O)	9.48			pH Units	"	06/13/12 17:32	EPA 9045D	
pH Temperature (deg C)	23.9			"	"	"	"	
Batch: 1206387								
Total Alkalinity	5820	19.0	19.0	mg CaCO3/kg	"	06/19/12 17:36	SM 2320 B	X
Bicarbonate Alkalinity	4010	19.0	19.0	"	"	"	"	X
Carbonate Alkalinity	1800	19.0	19.0	"	"	"	"	X
Hydroxide Alkalinity	ND	19.0	19.0	"	"	"	"	X

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Fresh-1-061112 (A12F192-01)			Matrix: Soil		Batch: 1206318			
% Solids	88.2	1.00	1.00	% by Weight	1	06/15/12 10:26	Apex SOP	
Fresh-2-061112 (A12F192-02)			Matrix: Soil		Batch: 1206318			
% Solids	83.1	1.00	1.00	% by Weight	1	06/15/12 10:26	Apex SOP	
Newer-1-061112 (A12F192-03)			Matrix: Soil		Batch: 1206318			
% Solids	82.9	1.00	1.00	% by Weight	1	06/15/12 10:26	Apex SOP	
Newer-2-061112 (A12F192-04)			Matrix: Soil		Batch: 1206318			
% Solids	82.0	1.00	1.00	% by Weight	1	06/15/12 10:26	Apex SOP	
Aged-1-061112 (A12F192-05)			Matrix: Soil		Batch: 1206318			
% Solids	85.7	1.00	1.00	% by Weight	1	06/15/12 10:26	Apex SOP	
Aged-2-061112 (A12F192-06)			Matrix: Soil		Batch: 1206318			
% Solids	71.0	1.00	1.00	% by Weight	1	06/15/12 10:26	Apex SOP	

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Columbia Steel Casting Co., Inc. PO Box 83095 Portland, OR 97283	Project: Fines Analysis Project Number: [none] Project Manager: Bruce Schacht	Reported: 07/17/12 09:13
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206361 - EPA 3051A						Soil						
Blank (1206361-BLK1)						Prepared: 06/18/12 08:31 Analyzed: 06/18/12 13:04						
EPA 6020												
Antimony	ND	0.500	1.00	mg/kg wet	10	---	---	---	---	---	---	---
Arsenic	ND	0.500	2.00	"	"	---	---	---	---	---	---	---
Barium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Beryllium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Cadmium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chromium	ND	1.00	2.00	"	"	---	---	---	---	---	---	---
Copper	ND	1.00	2.00	"	"	---	---	---	---	---	---	---
Lead	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Manganese	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	---
Nickel	ND	1.00	2.00	"	"	---	---	---	---	---	---	---
Selenium	ND	1.00	2.00	"	"	---	---	---	---	---	---	---
Silver	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Thallium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
LCS (1206361-BS1)						Prepared: 06/18/12 08:31 Analyzed: 06/18/12 13:07						
EPA 6020												
Antimony	24.2	0.500	1.00	mg/kg wet	10	25.0	---	97	80-120%	---	---	---
Arsenic	49.7	0.500	2.00	"	"	50.0	---	99	"	---	---	---
Barium	49.6	0.500	1.00	"	"	"	---	99	"	---	---	---
Beryllium	24.6	0.500	1.00	"	"	25.0	---	98	"	---	---	---
Cadmium	49.0	0.500	1.00	"	"	50.0	---	98	"	---	---	---
Chromium	49.4	1.00	2.00	"	"	"	---	99	"	---	---	---
Copper	52.4	1.00	2.00	"	"	"	---	105	"	---	---	---
Lead	50.2	0.500	1.00	"	"	"	---	100	"	---	---	---
Manganese	49.9	0.500	1.00	"	"	"	---	100	"	---	---	---
Mercury	1.00	0.0400	0.0800	"	"	1.00	---	100	"	---	---	---
Nickel	50.0	1.00	2.00	"	"	50.0	---	100	"	---	---	---
Selenium	26.5	1.00	2.00	"	"	25.0	---	106	"	---	---	---
Silver	24.7	0.500	1.00	"	"	"	---	99	"	---	---	---
Thallium	25.2	0.500	1.00	"	"	"	---	101	"	---	---	---

Duplicate (1206361-DUP1) Prepared: 06/18/12 08:31 Analyzed: 06/18/12 13:51

QC Source Sample: Fresh-I-061112 (A12F192-01)

EPA 6020

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Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206361 - EPA 3051A												
Soil												
Duplicate (1206361-DUP1)												
						Prepared: 06/18/12 08:31 Analyzed: 06/18/12 13:51						
QC Source Sample: Fresh-I-061112 (A12F192-01)												
Antimony	ND	0.562	1.12	mg/kg dry	10	---	ND	---	---	---	40%	
Arsenic	2.07	0.562	2.25	"	"	---	2.01	---	---	3	40%	J
Barium	54.3	0.562	1.12	"	"	---	59.1	---	---	8	40%	
Beryllium	ND	0.562	1.12	"	"	---	ND	---	---	---	40%	
Cadmium	ND	0.562	1.12	"	"	---	ND	---	---	---	40%	
Chromium	282	1.12	2.25	"	"	---	266	---	---	6	40%	
Copper	48.4	1.12	2.25	"	"	---	46.2	---	---	5	40%	
Lead	11.1	0.562	1.12	"	"	---	12.2	---	---	9	40%	
Manganese	988	0.562	1.12	"	"	---	1020	---	---	4	40%	
Mercury	ND	0.0450	0.0900	"	"	---	ND	---	---	---	40%	
Nickel	1820	1.12	2.25	"	"	---	1760	---	---	3	40%	
Selenium	1.97	1.12	2.25	"	"	---	2.85	---	---	37	40%	J
Silver	ND	0.562	1.12	"	"	---	ND	---	---	---	40%	
Thallium	ND	0.562	1.12	"	"	---	ND	---	---	---	40%	

Matrix Spike (1206361-MS1)

Prepared: 06/18/12 08:31 Analyzed: 06/18/12 14:00

QC Source Sample: Fresh-I-061112 (A12F192-01)

EPA 6020												
Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	19.1	0.577	1.15	mg/kg dry	10	28.8	ND	66	75-125%	---	---	Q-01
Arsenic	60.5	0.577	2.31	"	"	57.8	2.01	101	"	---	---	
Barium	117	0.577	1.15	"	"	"	59.1	100	"	---	---	
Beryllium	29.2	0.577	1.15	"	"	28.8	ND	101	"	---	---	
Cadmium	56.0	0.577	1.15	"	"	57.8	ND	97	"	---	---	
Chromium	376	1.15	2.31	"	"	"	266	190	"	---	---	Q-01
Copper	115	1.15	2.31	"	"	"	46.2	119	"	---	---	
Lead	63.7	0.577	1.15	"	"	"	12.2	89	"	---	---	
Manganese	1110	0.577	1.15	"	"	"	1020	151	"	---	---	Q-03
Mercury	1.11	0.0462	0.0924	"	"	1.15	ND	96	"	---	---	
Nickel	1900	1.15	2.31	"	"	57.8	1760	237	"	---	---	Q-03
Selenium	31.3	1.15	2.31	"	"	28.8	2.85	99	"	---	---	
Silver	28.5	0.577	1.15	"	"	"	ND	99	"	---	---	
Thallium	26.8	0.577	1.15	"	"	"	ND	93	"	---	---	

Matrix Spike (1206361-MS2)

Prepared: 06/18/12 08:31 Analyzed: 06/18/12 14:58

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: Fines Analysis
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206361 - EPA 3051A						Soil						
Matrix Spike (1206361-MS2)						Prepared: 06/18/12 08:31 Analyzed: 06/18/12 14:58						
QC Source Sample: Other (A12F269-06)												
EPA 6020												
Antimony	24.7	0.529	1.06	mg/kg dry	10	26.4	ND	94	75-125%	---	---	
Arsenic	53.6	0.529	2.11	"	"	52.9	0.884	100	"	---	---	
Barium	167	0.529	1.06	"	"	"	107	113	"	---	---	
Beryllium	27.1	0.529	1.06	"	"	26.4	0.534	101	"	---	---	
Cadmium	51.7	0.529	1.06	"	"	52.9	ND	98	"	---	---	
Chromium	58.5	1.06	2.11	"	"	"	5.43	100	"	---	---	
Copper	75.3	1.06	2.11	"	"	"	24.7	96	"	---	---	
Lead	54.4	0.529	1.06	"	"	"	4.29	95	"	---	---	
Manganese	402	0.529	1.06	"	"	"	424	-40	"	---	---	Q-03
Mercury	1.00	0.0423	0.0846	"	"	1.06	ND	95	"	---	---	
Nickel	62.3	1.06	2.11	"	"	52.9	8.09	103	"	---	---	
Selenium	27.5	1.06	2.11	"	"	26.4	ND	104	"	---	---	
Silver	26.3	0.529	1.06	"	"	"	ND	100	"	---	---	
Thallium	25.2	0.529	1.06	"	"	"	ND	96	"	---	---	
Post Spike (1206361-PS1)						Prepared: 06/19/12 08:58 Analyzed: 06/19/12 11:15						
QC Source Sample: Fresh-1-061112 (A12F192-01)												
EPA 6020												
Antimony	769			ug/L	10	769	0.846	100	80-120%	---	---	
Chromium	3380			"	"	1540	1890	97	"	---	---	
Manganese	8580			"	"	"	7270	85	"	---	---	
Nickel	13800			"	"	"	12500	85	"	---	---	
Post Spike (1206361-PS2)						Prepared: 07/10/12 14:23 Analyzed: 07/12/12 11:29						
QC Source Sample: Post Spike (A12F269-06)												
EPA 6020												
Manganese	6340			ug/L	10	909	3750	285	80-120%	---	---	PS-02

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206385 - EPA 3051A						Soil						
Blank (1206385-BLK1)						Prepared: 06/19/12 08:22 Analyzed: 06/19/12 14:36						
EPA 6020												
Zinc	ND	2.00	4.00	mg/kg wet	10	---	---	---	---	---	---	
LCS (1206385-BS1)						Prepared: 06/19/12 08:22 Analyzed: 06/19/12 14:39						
EPA 6020												
Zinc	48.2	2.00	4.00	mg/kg wet	10	50.0	---	96	80-120%	---	---	
Duplicate (1206385-DUP1)						Prepared: 06/19/12 08:22 Analyzed: 06/19/12 15:00						
QC Source Sample: Aged-2-061112 (A12F192-06RE1)												
EPA 6020												
Zinc	77.8	2.50	4.99	mg/kg dry	10	---	73.3	---	---	6	40%	
Matrix Spike (1206385-MS1)						Prepared: 06/19/12 08:22 Analyzed: 06/19/12 15:03						
QC Source Sample: Aged-2-061112 (A12F192-06RE1)												
EPA 6020												
Zinc	134	2.56	5.11	mg/kg dry	10	63.9	73.3	94	75-125%	---	---	

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Columbia Steel Casting Co., Inc. PO Box 83095 Portland, OR 97283	Project: Fines Analysis Project Number: [none] Project Manager: Bruce Schacht	Reported: 07/17/12 09:13
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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----	-----------------	-------	------	--------------	---------------	------	-------------	-----	-----------	-------

Batch 1206394 - EPA 1312/3015

Soil

Blank (1206394-BLK1)

Prepared: 06/19/12 13:06 Analyzed: 06/19/12 15:12

EPA 1312/6020

Antimony	ND	0.0250	0.0500	mg/L	5	---	---	---	---	---	---	TCLP
Arsenic	ND	0.0500	0.100	"	"	---	---	---	---	---	---	TCLP
Barium	ND	0.250	0.500	"	"	---	---	---	---	---	---	TCLP
Beryllium	ND	0.0250	0.0500	"	"	---	---	---	---	---	---	TCLP
Cadmium	ND	0.0250	0.0500	"	"	---	---	---	---	---	---	TCLP
Chromium	ND	0.0500	0.100	"	"	---	---	---	---	---	---	TCLP
Copper	ND	0.125	0.250	"	"	---	---	---	---	---	---	TCLP
Lead	ND	0.0250	0.0500	"	"	---	---	---	---	---	---	TCLP
Manganese	0.0355	0.0250	0.0500	"	"	---	---	---	---	---	---	B-02, TCLP, J
Mercury	ND	0.00250	0.00500	"	"	---	---	---	---	---	---	TCLP
Nickel	ND	0.0500	0.100	"	"	---	---	---	---	---	---	TCLP
Selenium	ND	0.0500	0.100	"	"	---	---	---	---	---	---	TCLP
Silver	ND	0.0250	0.0500	"	"	---	---	---	---	---	---	TCLP
Thallium	ND	0.0250	0.0500	"	"	---	---	---	---	---	---	TCLP
Zinc	ND	0.125	0.250	"	"	---	---	---	---	---	---	TCLP

LCS (1206394-BS1)

Prepared: 06/19/12 13:06 Analyzed: 06/19/12 15:15

EPA 1312/6020

Antimony	1.26	0.0250	0.0500	mg/L	5	1.25	---	101	80-120%	---	---	TCLP
Arsenic	2.66	0.0500	0.100	"	"	2.50	---	106	"	---	---	TCLP
Barium	2.69	0.250	0.500	"	"	"	---	107	"	---	---	TCLP
Beryllium	1.25	0.0250	0.0500	"	"	1.25	---	100	"	---	---	TCLP
Cadmium	2.48	0.0250	0.0500	"	"	2.50	---	99	"	---	---	TCLP
Chromium	2.58	0.0500	0.100	"	"	"	---	103	"	---	---	TCLP
Copper	2.76	0.125	0.250	"	"	"	---	111	"	---	---	TCLP
Lead	2.59	0.0250	0.0500	"	"	"	---	104	"	---	---	TCLP
Manganese	2.56	0.0250	0.0500	"	"	"	---	103	"	---	---	B-02, TCLP
Mercury	0.0484	0.00250	0.00500	"	"	0.0500	---	97	"	---	---	TCLP
Nickel	2.66	0.0500	0.100	"	"	2.50	---	106	"	---	---	TCLP
Selenium	1.26	0.0500	0.100	"	"	1.25	---	101	"	---	---	TCLP
Silver	1.21	0.0250	0.0500	"	"	"	---	97	"	---	---	TCLP
Thallium	1.22	0.0250	0.0500	"	"	"	---	98	"	---	---	TCLP
Zinc	2.66	0.125	0.250	"	"	2.50	---	106	"	---	---	TCLP

Matrix Spike (1206394-MS1)

Prepared: 06/19/12 13:06 Analyzed: 06/19/12 15:33

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206394 - EPA 1312/3015						Soil						
Matrix Spike (1206394-MS1)						Prepared: 06/19/12 13:06 Analyzed: 06/19/12 15:33						
QC Source Sample: Aged-1-061112 (A12F192-05)												
EPA 1312/6020												
Antimony	1.26	0.0250	0.0500	mg/L	5	1.25	ND	101	50-150%	---	---	
Arsenic	2.58	0.0500	0.100	"	"	2.50	ND	103	"	---	---	
Barium	2.68	0.250	0.500	"	"	"	ND	107	"	---	---	
Beryllium	1.27	0.0250	0.0500	"	"	1.25	ND	102	"	---	---	
Cadmium	2.43	0.0250	0.0500	"	"	2.50	ND	97	"	---	---	
Chromium	2.47	0.0500	0.100	"	"	"	ND	99	"	---	---	
Copper	2.67	0.125	0.250	"	"	"	ND	107	"	---	---	
Lead	2.50	0.0250	0.0500	"	"	"	ND	100	"	---	---	
Manganese	2.52	0.0250	0.0500	"	"	"	0.0865	97	"	---	---	B-02
Mercury	0.0495	0.00250	0.00500	"	"	0.0500	ND	99	"	---	---	
Nickel	2.53	0.0500	0.100	"	"	2.50	ND	101	"	---	---	
Selenium	1.31	0.0500	0.100	"	"	1.25	ND	105	"	---	---	
Silver	1.24	0.0250	0.0500	"	"	"	ND	100	"	---	---	
Thallium	1.26	0.0250	0.0500	"	"	"	ND	101	"	---	---	
Zinc	2.54	0.125	0.250	"	"	2.50	0.148	96	"	---	---	

Matrix Spike (1206394-MS2)

Prepared: 06/19/12 13:06 Analyzed: 06/19/12 15:47

QC Source Sample: Other (A12F252-01)

EPA 1312/6020

Antimony	1.26	0.0250	0.0500	mg/L	5	1.25	ND	101	50-150%	---	---	
Arsenic	2.54	0.0500	0.100	"	"	2.50	ND	102	"	---	---	
Barium	2.69	0.250	0.500	"	"	"	ND	107	"	---	---	
Beryllium	1.26	0.0250	0.0500	"	"	1.25	ND	101	"	---	---	
Cadmium	2.45	0.0250	0.0500	"	"	2.50	ND	98	"	---	---	
Chromium	2.45	0.0500	0.100	"	"	"	ND	98	"	---	---	
Copper	2.63	0.125	0.250	"	"	"	ND	105	"	---	---	
Lead	2.53	0.0250	0.0500	"	"	"	ND	101	"	---	---	
Manganese	2.50	0.0250	0.0500	"	"	"	0.0695	97	"	---	---	B-02
Mercury	0.0500	0.00250	0.00500	"	"	0.0500	ND	100	"	---	---	
Nickel	2.54	0.0500	0.100	"	"	2.50	ND	102	"	---	---	
Selenium	1.26	0.0500	0.100	"	"	1.25	ND	101	"	---	---	
Silver	1.23	0.0250	0.0500	"	"	"	ND	98	"	---	---	
Thallium	1.25	0.0250	0.0500	"	"	"	ND	100	"	---	---	

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc. PO Box 83095 Portland, OR 97283	Project: Fines Analysis Project Number: [none] Project Manager: Bruce Schacht	Reported: 07/17/12 09:13
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QUALITY CONTROL (QC) SAMPLE RESULTS

SPLP Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206394 - EPA 1312/3015						Soil						
Matrix Spike (1206394-MS2)						Prepared: 06/19/12 13:06 Analyzed: 06/19/12 15:47						
QC Source Sample: Other (A12F252-01)												
Zinc	2.61	0.125	0.250	mg/L	"	2.50	ND	104	"	---	---	
Matrix Spike (1206394-MS3)						Prepared: 06/19/12 13:06 Analyzed: 06/19/12 15:53						
QC Source Sample: Other (A12F276-01)												
EPA 1312/6020												
Antimony	1.23	0.0250	0.0500	mg/L	5	1.25	ND	99	50-150%	---	---	
Arsenic	2.64	0.0500	0.100	"	"	2.50	ND	106	"	---	---	
Barium	2.84	0.250	0.500	"	"	"	ND	114	"	---	---	
Beryllium	1.25	0.0250	0.0500	"	"	1.25	ND	100	"	---	---	
Cadmium	2.50	0.0250	0.0500	"	"	2.50	ND	100	"	---	---	
Chromium	2.53	0.0500	0.100	"	"	"	ND	101	"	---	---	
Copper	2.73	0.125	0.250	"	"	"	ND	109	"	---	---	
Lead	2.60	0.0250	0.0500	"	"	"	ND	104	"	---	---	
Manganese	2.70	0.0250	0.0500	"	"	"	0.185	101	"	---	---	B-02
Mercury	0.0490	0.00250	0.00500	"	"	0.0500	ND	98	"	---	---	
Nickel	2.59	0.0500	0.100	"	"	2.50	ND	104	"	---	---	
Selenium	1.25	0.0500	0.100	"	"	1.25	ND	100	"	---	---	
Silver	1.23	0.0250	0.0500	"	"	"	ND	98	"	---	---	
Thallium	1.23	0.0250	0.0500	"	"	"	ND	98	"	---	---	
Zinc	2.66	0.125	0.250	"	"	2.50	0.149	100	"	---	---	

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Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206285 - PSEP TOC						Soil						
Blank (1206285-BLK1)						Prepared: 06/13/12 12:05 Analyzed: 06/15/12 10:15						
SM 5310B MOD												
Total Organic Carbon	ND	100	200	mg/kg	1	---	---	---	---	---	---	---
LCS (1206285-BS1)						Prepared: 06/13/12 12:05 Analyzed: 06/15/12 10:15						
SM 5310B MOD												
Total Organic Carbon	5800			mg/kg	1	6120	---	95	90-110%	---	---	---
Duplicate (1206285-DUP1)						Prepared: 06/13/12 12:05 Analyzed: 06/15/12 10:15						
QC Source Sample: Other (A12F179-01)												
SM 5310B MOD												
Total Organic Carbon	890	100	200	mg/kg	1	---	1000	---	---	15	20%	
Duplicate (1206285-DUP2)						Prepared: 06/13/12 12:05 Analyzed: 06/18/12 12:30						
QC Source Sample: Aged-2-061112 (A12F192-06)												
SM 5310B MOD												
Total Organic Carbon	6400	100	200	mg/kg	1	---	6300	---	---	1	20%	

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc. PO Box 83095 Portland, OR 97283	Project: Fines Analysis Project Number: [none] Project Manager: Bruce Schacht	Reported: 07/17/12 09:13
---	--	------------------------------------

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206289 - Method Prep: Non-Aq						Soil						
Duplicate (1206289-DUP1)						Prepared: 06/13/12 12:39 Analyzed: 06/13/12 17:27						
QC Source Sample: Fresh-1-061112 (A12F192-01)												
EPA 9045D												
Soil pH (measured in H2O)	9.57			pH Units	1	---	9.57	---	---	0	10%	
pH Temperature (deg C)	24.0			"	"	---	23.7	---	---	1	30%	
Reference (1206289-SRM1)						Prepared: 06/13/12 12:39 Analyzed: 06/13/12 14:55						
EPA 9045D												
Soil pH (measured in H2O)	6.03			pH Units	1	6.00		100	98.4-101.7%	---	---	
Reference (1206289-SRM2)						Prepared: 06/13/12 12:39 Analyzed: 06/13/12 17:25						
EPA 9045D												
Soil pH (measured in H2O)	7.94			pH Units	1	8.00		99	98.75-101.26%	---	---	
Reference (1206289-SRM3)						Prepared: 06/13/12 12:39 Analyzed: 06/13/12 17:35						
EPA 9045D												
Soil pH (measured in H2O)	5.98			pH Units	1	6.00		100	98.4-101.7%	---	---	

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206387 - Method Prep: Non-Aq						Soil						
Blank (1206387-BLK1)						Prepared: 06/19/12 09:46 Analyzed: 06/19/12 17:36						
SM 2320 B												
Total Alkalinity	ND	20.0	20.0	mg CaCO3/kg	1	---	---	---	---	---	---	---
Bicarbonate Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	---
Carbonate Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	---
Hydroxide Alkalinity	ND	20.0	20.0	"	"	---	---	---	---	---	---	---
LCS (1206387-BS1)						Prepared: 06/19/12 09:46 Analyzed: 06/19/12 17:36						
SM 2320 B												
Total Alkalinity	1830	20.0	20.0	mg CaCO3/kg	1	1910	---	96	85-115%	---	---	---
Duplicate (1206387-DUP1)						Prepared: 06/19/12 09:46 Analyzed: 06/19/12 17:36						
QC Source Sample: Fresh-1-061112 (A12F192-01)												
SM 2320 B												
Total Alkalinity	9400	19.7	19.7	mg CaCO3/kg	1	---	9200	---	---	2	20%	---
Bicarbonate Alkalinity	5150	19.7	19.7	"	"	---	4990	---	---	3	20%	---
Carbonate Alkalinity	4250	19.7	19.7	"	"	---	4210	---	---	0.8	20%	---
Hydroxide Alkalinity	ND	19.7	19.7	"	"	---	ND	---	---	---	20%	---

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc. PO Box 83095 Portland, OR 97283	Project: Fines Analysis Project Number: [none] Project Manager: Bruce Schacht	Reported: 07/17/12 09:13
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1206318 - Total Solids (Dry Weight)						Soil						
Duplicate (1206318-DUP1)						Prepared: 06/14/12 13:06 Analyzed: 06/15/12 10:26						
QC Source Sample: Other (A12F191-01)												
Apex SOP												
% Solids	77.4	1.00	1.00	% by Weight	1	---	77.2	---	---	0.3	20%	
Duplicate (1206318-DUP2)						Prepared: 06/14/12 13:06 Analyzed: 06/15/12 10:26						
QC Source Sample: Other (A12F194-04)												
Apex SOP												
% Solids	75.9	1.00	1.00	% by Weight	1	---	76.9	---	---	1	20%	
Duplicate (1206318-DUP3)						Prepared: 06/14/12 13:06 Analyzed: 06/15/12 10:26						
QC Source Sample: Other (A12F203-01)												
Apex SOP												
% Solids	55.3	1.00	1.00	% by Weight	1	---	50.3	---	---	9	20%	
Duplicate (1206318-DUP4)						Prepared: 06/14/12 18:30 Analyzed: 06/15/12 10:26						
QC Source Sample: Other (A12F269-06)												
Apex SOP												
% Solids	91.6	1.00	1.00	% by Weight	1	---	91.3	---	---	0.3	20%	

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Darwin Thomas, Business Development Director

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Columbia Steel Casting Co., Inc.

PO Box 83095
 Portland, OR 97283

Project: **Fines Analysis**

Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1206361							
A12F192-01	Soil	EPA 6020	06/11/12 10:30	06/18/12 08:31	0.523g/50mL	0.5g/50mL	0.96
A12F192-02	Soil	EPA 6020	06/11/12 10:55	06/18/12 08:31	0.511g/50mL	0.5g/50mL	0.98
A12F192-03	Soil	EPA 6020	06/11/12 11:45	06/18/12 08:31	0.544g/50mL	0.5g/50mL	0.92
A12F192-04	Soil	EPA 6020	06/11/12 12:30	06/18/12 08:31	0.545g/50mL	0.5g/50mL	0.92
A12F192-05	Soil	EPA 6020	06/11/12 13:00	06/18/12 08:31	0.53g/50mL	0.5g/50mL	0.94
A12F192-06	Soil	EPA 6020	06/11/12 13:40	06/18/12 08:31	0.492g/50mL	0.5g/50mL	1.02
Batch: 1206385							
A12F192-01RE1	Soil	EPA 6020	06/11/12 10:30	06/19/12 08:22	0.491g/50mL	0.5g/50mL	1.02
A12F192-02RE1	Soil	EPA 6020	06/11/12 10:55	06/19/12 08:22	0.525g/50mL	0.5g/50mL	0.95
A12F192-03RE1	Soil	EPA 6020	06/11/12 11:45	06/19/12 08:22	0.545g/50mL	0.5g/50mL	0.92
A12F192-04RE1	Soil	EPA 6020	06/11/12 12:30	06/19/12 08:22	0.544g/50mL	0.5g/50mL	0.92
A12F192-05RE1	Soil	EPA 6020	06/11/12 13:00	06/19/12 08:22	0.5g/50mL	0.5g/50mL	1.00
A12F192-06RE1	Soil	EPA 6020	06/11/12 13:40	06/19/12 08:22	0.476g/50mL	0.5g/50mL	1.05

SPLP Metals by EPA 6020 (ICPMS)

Prep: EPA 1312/3015

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1206394							
A12F192-01	Soil	EPA 1312/6020	06/11/12 10:30	06/19/12 13:06	5mL/50mL	5mL/50mL	1.00
A12F192-02	Soil	EPA 1312/6020	06/11/12 10:55	06/19/12 13:06	5mL/50mL	5mL/50mL	1.00
A12F192-03	Soil	EPA 1312/6020	06/11/12 11:45	06/19/12 13:06	5mL/50mL	5mL/50mL	1.00
A12F192-04	Soil	EPA 1312/6020	06/11/12 12:30	06/19/12 13:06	5mL/50mL	5mL/50mL	1.00
A12F192-05	Soil	EPA 1312/6020	06/11/12 13:00	06/19/12 13:06	5mL/50mL	5mL/50mL	1.00
A12F192-06	Soil	EPA 1312/6020	06/11/12 13:40	06/19/12 13:06	5mL/50mL	5mL/50mL	1.00

Conventional Chemistry Parameters

Prep: Method Prep: Non-Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1206289							
A12F192-01	Soil	EPA 9045D	06/11/12 10:30	06/13/12 12:39	20g/30mL	20g/20mL	NA
A12F192-02	Soil	EPA 9045D	06/11/12 10:55	06/13/12 12:39	20g/20mL	20g/20mL	NA
A12F192-03	Soil	EPA 9045D	06/11/12 11:45	06/13/12 12:39	20g/20mL	20g/20mL	NA
A12F192-04	Soil	EPA 9045D	06/11/12 12:30	06/13/12 12:39	20g/20mL	20g/20mL	NA
A12F192-05	Soil	EPA 9045D	06/11/12 13:00	06/13/12 12:39	20g/20mL	20g/20mL	NA
A12F192-06	Soil	EPA 9045D	06/11/12 13:40	06/13/12 12:39	20g/20mL	20g/20mL	NA

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.
 PO Box 83095
 Portland, OR 97283

Project: Fines Analysis
 Project Number: [none]
 Project Manager: Bruce Schacht

Reported:
 07/17/12 09:13

SAMPLE PREPARATION INFORMATION

Conventional Chemistry Parameters

Prep: Method Prep: Non-Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1206387							
A12F192-01	Soil	SM 2320 B	06/11/12 10:30	06/19/12 09:46	5.0868g/50mL	5g/50mL	0.98
A12F192-02	Soil	SM 2320 B	06/11/12 10:55	06/19/12 09:46	5.4612g/50mL	5g/50mL	0.92
A12F192-03	Soil	SM 2320 B	06/11/12 11:45	06/19/12 09:46	5.151g/50mL	5g/50mL	0.97
A12F192-04	Soil	SM 2320 B	06/11/12 12:30	06/19/12 09:46	5.0678g/50mL	5g/50mL	0.99
A12F192-05	Soil	SM 2320 B	06/11/12 13:00	06/19/12 09:46	5.1785g/50mL	5g/50mL	0.97
A12F192-06	Soil	SM 2320 B	06/11/12 13:40	06/19/12 09:46	5.27g/50mL	5g/50mL	0.95

Prep: PSEP TOC

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 1206285							
A12F192-01	Soil	SM 5310B MOD	06/11/12 10:30	06/13/12 12:05	5g/5g	5g/5g	NA
A12F192-02	Soil	SM 5310B MOD	06/11/12 10:55	06/13/12 12:05	5g/5g	5g/5g	NA
A12F192-03	Soil	SM 5310B MOD	06/11/12 11:45	06/13/12 12:05	5g/5g	5g/5g	NA
A12F192-04	Soil	SM 5310B MOD	06/11/12 12:30	06/13/12 12:05	5g/5g	5g/5g	NA
A12F192-05	Soil	SM 5310B MOD	06/11/12 13:00	06/13/12 12:05	5g/5g	5g/5g	NA
A12F192-06	Soil	SM 5310B MOD	06/11/12 13:40	06/13/12 12:05	5g/5g	5g/5g	NA

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Darwin Thomas, Business Development Director

Columbia Steel Casting Co., Inc.

PO Box 83095
Portland, OR 97283

Project: **Fines Analysis**

Project Number: [none]
Project Manager: Bruce Schacht

Reported:
07/17/12 09:13

Notes and Definitions

Qualifiers:

- B-02 Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- J Estimated Result . Result detected below the lowest point of the calibration curve, but above the specified MDL.
- Q-01 Percent recovery and/or RPD is outside acceptance limits.
- Q-03 Percent recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- TCLP This batch QC sample was prepared with TCLP or SPLP fluid from preparation batch 1206372.
- X See Case Narrative.

Notes and Conventions:

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry' designation are not dry weight corrected.
- RPD Relative Percent Difference
- MDL If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
- WMSC Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
- Batch QC In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
- Blank Policy Apex assesses blank data for potential high bias down to a level equal to 1/2 the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.
- For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.
- Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
- QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- *** Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Darwin Thomas, Business Development Director

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Columbia Steel Casting Co., Inc.
PO Box 83095
Portland, OR 97283

Project: **Fines Analysis**
Project Number: [none]
Project Manager: Bruce Schacht

Reported:
07/17/12 09:13


Lab A12F192 DOC uc

CHAIN OF CUSTODY

APEX LABS

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

CONSIGOR	PROJECT NAME	PROJECT NUMBER	PROJECT ANALYSIS	PROJECT DATE	PROJECT TIME
COLUMBIA STEEL CASTING CO., INC.					
ADDRESS: 40425 N WOODS AVE, PORTLAND, OR					
SAMPLE BY: <u>MBB</u>					
SUB LOCATION: <u>OR</u> WA					
OTHER: _____					
SAMPLE ID					
1. <u>PK01-1 - GULL</u>					
2. <u>PK01-2 - GULL</u>					
3. <u>PK01-3 - GULL</u>					
4. <u>PK01-4 - GULL</u>					
5. <u>PK01-5 - GULL</u>					
6. <u>PK01-6 - GULL</u>					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
13. _____					
14. _____					
15. _____					
16. _____					
17. _____					
18. _____					
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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.