

# Apex Labs

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Tuesday, May 13, 2008

James Graham  
Principals Environmental Group  
7220 SE 27th Ave.  
Portland, OR 97202 97202

RE: Echo / [none]

Enclosed are the results of analyses for samples received by the laboratory on 3/7/2008 at 11:08:00AM.

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](mailto:dthomas@apex-labs.com), or by phone at 503-718-2323.

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DRAFT REPORT

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DRAFT REPORT, DATA SUBJECT TO CHANGE

**Principals Environmental Group**

7220 SE 27th Ave.  
Portland, OR 97202 97202

Project: **Echo**

Project Number: [none]  
Project Manager: James Graham

**Reported:**

05/13/08 15:40

## ANALYTICAL REPORT FOR SAMPLES

### SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
U1269	A803069-01	Water	03/05/08 17:10	03/07/08 11:08
HW	A803069-02	Water	03/06/08 11:00	03/07/08 11:08
JSPW	A803069-03	Water	03/06/08 15:30	03/07/08 11:08

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 Portland, OR 97202 97202

Project: **Echo**  
 Project Number: [none]  
 Project Manager: James Graham

**Reported:**  
 05/13/08 15:40

## ANALYTICAL SAMPLE RESULTS

### Anions by EPA 300.0 (Ion Chromatography)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
<b>U1269 (A803069-01)</b>			<b>Matrix: Water</b>					
Nitrate-Nitrogen	8.34	---	0.0250	mg/L	1	03/07/08 16:16	EPA 300.0	
Nitrite-Nitrogen	0.0460	---	0.0250	"	"	"	"	
<b>U1269 (A803069-01RE1)</b>			<b>Matrix: Water</b>					
Chloride	64.6	---	0.500	mg/L	5	03/13/08 17:32	EPA 300.0	
Sulfate	83.3	---	0.500	"	"	"	"	
<b>HW (A803069-02)</b>			<b>Matrix: Water</b>					
Chloride	2.04	---	0.100	mg/L	1	03/07/08 16:32	EPA 300.0	
Nitrate-Nitrogen	0.214	---	0.0250	"	"	"	"	
Nitrite-Nitrogen	ND	---	0.0250	"	"	"	"	
Sulfate	2.09	---	0.100	"	"	"	"	
<b>JSPW (A803069-03)</b>			<b>Matrix: Water</b>					
Chloride	12.1	---	0.100	mg/L	1	03/07/08 15:44	EPA 300.0	
Nitrate-Nitrogen	3.62	---	0.0250	"	"	"	"	
Nitrite-Nitrogen	ND	---	0.0250	"	"	"	"	
Sulfate	20.3	---	0.100	"	"	"	"	

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Project: **Echo**  
 Project Number: [none]  
 Project Manager: James Graham

**Reported:**  
 05/13/08 15:40

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
<b>U1269 (A803069-01)</b>			<b>Matrix: Water</b>					
Calcium	72800	---	2500	ug/L	25	03/12/08 18:30	EPA 6020	
Magnesium	35000	---	2500	"	"	"	"	
Potassium	11200	---	2500	"	"	"	"	
Sodium	55000	---	2500	"	"	"	"	
Hardness (Calc)	326	---	16.5	mg CaCO3/L	"	"	Calc	
<b>HW (A803069-02)</b>			<b>Matrix: Water</b>					
Calcium	6990	---	100	ug/L	1	03/12/08 17:42	EPA 6020	
Magnesium	2760	---	100	"	"	"	"	
Potassium	1640	---	100	"	"	"	"	
Sodium	5010	---	100	"	"	"	"	
Hardness (Calc)	28.8	---	0.662	mg CaCO3/L	"	"	Calc	
<b>JSPW (A803069-03)</b>			<b>Matrix: Water</b>					
Calcium	33700	---	500	ug/L	5	03/12/08 18:33	EPA 6020	
Magnesium	14100	---	500	"	"	"	"	
Potassium	7970	---	100	"	1	03/12/08 17:36	"	
Sodium	13600	---	500	"	5	03/12/08 18:33	"	
Hardness (Calc)	142	---	3.31	mg CaCO3/L	"	"	Calc	

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 Project Number: [none]  
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**Reported:**  
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## ANALYTICAL SAMPLE RESULTS

### Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
<b>U1269 (A803069-01) Matrix: Water</b>								
Total Alkalinity	253	---	20.0	mg CaCO3/L	1	03/10/08 16:24	EPA 310.1	
Bicarbonate Alkalinity	253	---	20.0	"	"	"	"	
Carbonate Alkalinity	ND	---	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	---	20.0	"	"	"	"	
Total Dissolved Solids	590	---	10.0	mg/L	"	03/12/08 11:52	EPA 160.1	B, B-01
<b>HW (A803069-02) Matrix: Water</b>								
Total Alkalinity	34.0	---	20.0	mg CaCO3/L	1	03/10/08 16:24	EPA 310.1	
Bicarbonate Alkalinity	34.0	---	20.0	"	"	"	"	
Carbonate Alkalinity	ND	---	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	---	20.0	"	"	"	"	
<b>HW (A803069-02RE1) Matrix: Water</b>								
Total Dissolved Solids	89.0	---	10.0	mg/L	1	03/14/08 14:58	EPA 160.1	
<b>JSPW (A803069-03) Matrix: Water</b>								
Total Alkalinity	117	---	20.0	mg CaCO3/L	1	03/10/08 16:24	EPA 310.1	
Bicarbonate Alkalinity	117	---	20.0	"	"	"	"	
Carbonate Alkalinity	ND	---	20.0	"	"	"	"	
Hydroxide Alkalinity	ND	---	20.0	"	"	"	"	
<b>JSPW (A803069-03RE1) Matrix: Water</b>								
Total Dissolved Solids	231	---	10.0	mg/L	1	03/14/08 18:35	EPA 160.1	

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### DRAFT: Anions by EPA 300.0 (Ion Chromatography)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8030060 - Method Prep: Aq</b>						<b>Water</b>						
<b>Blank (8030060-BLK1)</b>						<b>Analyzed: 03/07/08 08:30</b>						
<b>EPA 300.0</b>												
Chloride	ND	---	0.100	mg/L	1	---	---	---	---	---	---	---
Nitrate-Nitrogen	ND	---	0.0250	"	"	---	---	---	---	---	---	---
Nitrite-Nitrogen	ND	---	0.0250	"	"	---	---	---	---	---	---	---
Sulfate	ND	---	0.100	"	"	---	---	---	---	---	---	---
<b>LCS (8030060-BS1)</b>						<b>Analyzed: 03/07/08 08:45</b>						
<b>EPA 300.0</b>												
Chloride	20.5	---	0.100	mg/L	1	20.0	---	102	85-115%	---	---	---
Nitrate-Nitrogen	5.16	---	0.0250	"	"	5.00	---	103	"	---	---	---
Nitrite-Nitrogen	5.00	---	0.0250	"	"	"	---	100	"	---	---	---
Sulfate	19.2	---	0.100	"	"	20.0	---	96	"	---	---	---

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### DRAFT: Anions by EPA 300.0 (Ion Chromatography)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8030129 - Method Prep: Aq</b>						<b>Water</b>						
<b>Blank (8030129-BLK1)</b>						<b>Analyzed: 03/13/08 15:48</b>						
<b>EPA 300.0</b>												
Chloride	ND	---	0.100	mg/L	1	---	---	---	---	---	---	---
Sulfate	ND	---	0.100	"	"	---	---	---	---	---	---	---
<b>LCS (8030129-BS1)</b>						<b>Analyzed: 03/13/08 16:04</b>						
<b>EPA 300.0</b>												
Chloride	20.3	---	0.100	mg/L	1	20.0	---	101	85-115%	---	---	---
Sulfate	19.1	---	0.100	"	"	"	---	95	"	---	---	---

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 Project Number: [none]  
 Project Manager: James Graham

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### DRAFT: Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8030097 - EPA 3015</b>						<b>Water</b>						
<b>Blank (8030097-BLK1)</b>						<b>Analyzed: 03/12/08 16:30</b>						
<b>EPA 6020</b>												
Calcium	ND	---	100	ug/L	1	---	---	---	---	---	---	---
Magnesium	ND	---	100	"	"	---	---	---	---	---	---	---
Potassium	ND	---	100	"	"	---	---	---	---	---	---	---
Sodium	ND	---	100	"	"	---	---	---	---	---	---	---
<b>LCS (8030097-BS1)</b>						<b>Analyzed: 03/12/08 16:32</b>						
<b>EPA 6020</b>												
Calcium	2290	---	100	ug/L	1	2220	---	103	80-120%	---	---	---
Magnesium	2360	---	100	"	"	"	---	106	"	---	---	---
Potassium	2270	---	100	"	"	"	---	102	"	---	---	---
Sodium	2320	---	100	"	"	"	---	105	"	---	---	---

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 Project Number: [none]  
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## QUALITY CONTROL (QC) SAMPLE RESULTS

### DRAFT: Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8030088 - Method Prep: Aq</b>						<b>Water</b>						
<b>Blank (8030088-BLK1)</b>						<b>Analyzed: 03/10/08 16:24</b>						
<b>EPA 310.1</b>												
Total Alkalinity	ND	---	20.0	mg CaCO3/L	1	---	---	---	---	---	---	---
Bicarbonate Alkalinity	ND	---	20.0	"	"	---	---	---	---	---	---	---
Carbonate Alkalinity	ND	---	20.0	"	"	---	---	---	---	---	---	---
Hydroxide Alkalinity	ND	---	20.0	"	"	---	---	---	---	---	---	---
<b>LCS (8030088-BS1)</b>						<b>Analyzed: 03/10/08 16:24</b>						
<b>EPA 310.1</b>												
Total Alkalinity	239	---	20.0	mg CaCO3/L	1	240	---	99.6	85-115%	---	---	---
<b>Duplicate (8030088-DUP1)</b>						<b>Source: A803069-01 Analyzed: 03/10/08 16:24</b>						
<b>EPA 310.1</b>												
Total Alkalinity	<b>248</b>	---	20.0	mg CaCO3/L	1	---	253	---	---	2.00	20%	---
Bicarbonate Alkalinity	<b>248</b>	---	20.0	"	"	---	253	---	---	2.00	20%	---
Carbonate Alkalinity	ND	---	20.0	"	"	---	ND	---	---	---	20%	---
Hydroxide Alkalinity	ND	---	20.0	"	"	---	ND	---	---	---	20%	---

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### DRAFT: Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8030098 - Total Dissolved Solids</b>						<b>Water</b>						
<b>Blank (8030098-BLK1)</b>						<b>Analyzed: 03/12/08 11:52</b>						
<b>EPA 160.1</b>												
Total Dissolved Solids	<b>28.0</b>	---	10.0	mg/L	1	---	---	---	---	---	---	B
<b>Duplicate (8030098-DUP1)</b>			<b>Source: A803069-02</b>			<b>Analyzed: 03/12/08 11:52</b>						
<b>EPA 160.1</b>												
Total Dissolved Solids	<b>93.0</b>	---	10.0	mg/L	1	---	92.0	---	---	1	20%	B
<b>Reference (8030098-SRM1)</b>						<b>Analyzed: 03/12/08 11:52</b>						
<b>EPA 160.1</b>												
Total Dissolved Solids	664	---		mg/L	1	600		111	85-115%		---	B

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### DRAFT: Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8030139 - Total Dissolved Solids</b>						<b>Water</b>						
<b>Blank (8030139-BLK1)</b>						<b>Analyzed: 03/14/08 14:58</b>						
<b>EPA 160.1</b>												
Total Dissolved Solids	ND	---	10.0	mg/L	1	---	---	---	---	---	---	---
<b>Duplicate (8030139-DUP1)</b>			<b>Source: A803069-02RE1</b>			<b>Analyzed: 03/14/08 14:58</b>						
<b>EPA 160.1</b>												
Total Dissolved Solids	<b>87.0</b>	---	10.0	mg/L	1	---	89.0	---	---	2	20%	
<b>Reference (8030139-SRM1)</b>						<b>Analyzed: 03/14/08 14:58</b>						
<b>EPA 160.1</b>												
Total Dissolved Solids	616	---		mg/L	1	600		103	85-115%		---	

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Project: **Echo**

Project Number: [none]  
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Reported:  
 05/13/08 15:40

**SAMPLE PREPARATION INFORMATION**

**Apex Laboratories**

**Anions by EPA 300.0 (Ion Chromatography)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Method Prep: Aq</b>							
<b>Batch: 8030060</b>							
A803069-01	Water	EPA 300.0	03/05/08 17:10	03/07/08 07:20	10mL/10mL	10mL/10mL	1.00
A803069-02	Water	EPA 300.0	03/06/08 11:00	03/07/08 07:20	10mL/10mL	10mL/10mL	1.00
A803069-03	Water	EPA 300.0	03/06/08 15:30	03/07/08 07:20	10mL/10mL	10mL/10mL	1.00
<b>Batch: 8030129</b>							
A803069-01RE1	Water	EPA 300.0	03/05/08 17:10	03/07/08 07:20	10mL/10mL	10mL/10mL	1.00

**Total Metals by EPA 6020 (ICPMS)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>[CALC]</b>							
<b>Batch: [CALC]</b>							
A803069-01	Water	Calc	03/05/08 17:10	03/11/08 11:22			NA
A803069-02	Water	Calc	03/06/08 11:00	03/11/08 11:22			NA
A803069-03	Water	Calc	03/06/08 15:30	03/11/08 11:22			NA

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
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**EPA 3015**

<b>Batch: 8030097</b>							
A803069-01	Water	EPA 6020	03/05/08 17:10	03/11/08 11:22	45mL/50mL	45mL/50mL	1.00
A803069-02	Water	EPA 6020	03/06/08 11:00	03/11/08 11:22	45mL/50mL	45mL/50mL	1.00
A803069-03	Water	EPA 6020	03/06/08 15:30	03/11/08 11:22	45mL/50mL	45mL/50mL	1.00

**Conventional Chemistry Parameters**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Method Prep: Aq</b>							
<b>Batch: 8030088</b>							
A803069-01	Water	EPA 310.1	03/05/08 17:10	03/10/08 14:34	50mL/50mL	50mL/50mL	NA
A803069-02	Water	EPA 310.1	03/06/08 11:00	03/10/08 14:34	50mL/50mL	50mL/50mL	NA
A803069-03	Water	EPA 310.1	03/06/08 15:30	03/10/08 14:34	50mL/50mL	50mL/50mL	NA

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## Apex Laboratories

### Conventional Chemistry Parameters

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Total Dissolved Solids</b>							
<u>Batch: 8030098</u>							
A803069-01	Water	EPA 160.1	03/05/08 17:10	03/11/08 11:35	100mL/1N/A	100mL/1mL	NA
<u>Batch: 8030139</u>							
A803069-02RE1	Water	EPA 160.1	03/06/08 11:00	03/13/08 11:10	100mL/1N/A	100mL/1mL	NA
A803069-03RE1	Water	EPA 160.1	03/06/08 15:30	03/13/08 11:10	100mL/1N/A	100mL/1mL	NA

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Project Number: [none]  
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## Notes and Definitions

### Qualifiers:

- B Analyte detected in the associated extraction blank.
- B-01 The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.

### 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
- RPD Relative Percent Difference
- MDL If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
- Batch QC Unless specifically stated, all analyses include full Batch QC, including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates, in order to meet or exceed method and regulatory requirements. This report contains only results for Batch QC derived from samples included in this report. Complete Batch QC results are available upon request. 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.

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