Kennecott Minerals

LGN: J0309107
CSN:

Chain of Custody Record / Analysis Request

Company Name: K.G.C.M.C. Greens Creek Mine

Company Address: P.O.Box 32199 Juneau, AK 99803

Telephone: (907) 790-8472 / 8473 / 8471
Fax: (907) 790-8478 or 789-8119

Project Name: NPDES Quarterly Seawater

Report To: Bill Oelklaus
Sampler: MTM, SLH
P.O.Number

Sample I.D.	Date Collected	Time Collected	Matrix Water / Soil	# Containers: Lt. White	Lt. Green	500ml. White		TSS	pH	Turbidity	T. Cn							pH < 2	RUSH (see below)	LAB I.D.
104-5'	09-11-03	0945	Water		1	1		X	X	X	X									1
106-5'	09-11-03	0840	Water		1	1		X	X	X	X									2
107-5'	09-11-03	0920	Water		1	1		X	X	X	X									3
108-5'	09-11-03	0900	Water		1	1		X	X	X	X									4

Comments:

Lab sent to: Analytica Alaska S.E.

Deliverables
- [ ] Level 1
- [ ] ADEC Format
- [ ] ACOE
- [ ] Other:_____
- [ ] EDD-Format:_____Specify

Turnaround Time
- [ ] 2 Business Days
- [ ] 5 Business Days
- [ ] 10-15 Business Days
- [ ] Other:_____# Business Days

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:	Condition of Sample Containers:
Signature: M.T. Morales	Signature: Kercia Schroeder	Signature:	Signature:	Temp Received: 4.1 °C
Printed Name: M.T. Morales	Printed Name: Kercia Schroeder	Printed Name:	Printed Name:	# of Coolers: 1
Firm: KGCMC	Firm: AAI SE	Firm:	Firm:	Seals Intact: y - KGCMC
Date / Time: 09-11-03 1840	Date / Time: 9/12/03 0710	Date / Time:	Date / Time:	Page ____ of ____

ANALYTICA

Cooler Receipt Form

Client: Kennecott Greens Creek Min Client Code: 012040 Order #: J0309107
Project: NPDES Quarterly Seawater

Cooler ID: 1

A. Preliminary Examination Phase: Date cooler opened: 9/12/2003
Cooler opened by: KS Signature: Kwara Schwab

1. Was airbill Attached? N/A Airbill #: Carrier Name: Client
2. Custody Seals? Yes How many? 1 Location: Cooler Seal Name: KGCMC
3. Seals intact? Yes
4. Screened for radiation? No
5. COC Attached? Yes Properly Completed? Yes Signed by AEL employee? Yes
6. Project Identification from custody paper: NPDES Quarterly Seawater
7. Preservative: BlueGel Temperature: 4.1

Designated person initial here to acknowledge receipt: _____ Date: 9/15/3

COMMENTS:

B. Log-In Phase: Samples Log-in Date: 9/12/2003 Log-in By: ML Signature: _____

1. Packing Type: Other
2. Were samples in separate bags? No
3. Were containers intact? Yes Labels agree with COC? Yes
4. Number of bottles received: 8 Number of samples received: 4
5. Correct containers used? Yes Correct preservatives added? Yes
6. Sufficient sample volume? Yes
7. Bubbles in VOA samples? N/A
8. Was Project manager called and status discussed? No
9. Was anyone called? No Who was called? _____ By whom? _____ Date: _____

COMMENTS:

October 24, 2003

Mr. Bill Oelklaus
Kennecott Greens Creek
P.O. Box 32199
Juneau, AK 99803-2199

Dear Bill:

Enclosed are the results for trace metals in Green's Creek (Hawk Inlet) seawater samples received on September 12, 2003. Holding times were met for all samples. The acceptable cooler temperature range was met with a temperature of 5.7°C upon receipt.

These results are comparable to past results and indicate mining activities are not contributing to ambient metal concentrations. The field blank water and lab blank water were collected in one bottle and split into two bottles, one was shipped to the field and one was acidified and stored here (lab blank). The lab blank contained levels of metals that we typically see for seawater, but the field blank was elevated in Zn and Hg, indicating contamination. The SRM and duplicate results were within Battelle's default criteria of ±20%, except CASS-4 for Cu, Zn and Pb. If these SRM results are blank corrected the Cu and Zn fall within acceptable criteria (non-blank corrected and blank corrected values shown on the summary table). Results for Pb were high, however the certified value is well below our method detection limit. SRM 1640 results are provided for Pb to show the instrument was operating properly and recoveries were within the acceptable criteria. Other QC for Pb were within acceptable limits. No corrective action was taken. Matrix spikes were within our criteria of ±25% for all metals, except Zn where the sample was under-spiked. Other QC for Zn were acceptable, therefore, no corrective action was taken. Duplicate results were within the criteria of ±20% for all metals. I have sent electronic copies of the data via email.

A cost breakdown has been included with these data and appears in Table 1. Our contracts department will send you an invoice for these costs shortly. If you have any questions or comments concerning the data or cost breakdowns, please don't hesitate to contact me at 360-681-3627 or email: l.bingler@pnl.gov at anytime. These samples will be disposed of on November 12th, 2003 unless otherwise advised by you.

TABLE 1.	Total Metals	Cost per Sample	Total Cost
Samples	5	$211	$955
Duplicate + Spikes	2	$211	$422
Bottles	5	$20	$100
		Total	**$1,477**

Sincerely,

Linda S. Bingler
Senior Research Scientist

Enc.

Clearance of CHEMISTRY DATA REPORTS

Marine Sciences Laboratory Sequim, WA 98382	Date Requested: 10/24/2003 Data Entry: LSB

CHEMICAL ANALYSES OF: Metals in Water

803GC

Lead Author: Linda S. Bingler	Other Authors (if applicable)

Green's Creek Seawater - third quarter 2003

I HAVE READ THE ATTACHED DOCUMENT(S)

Author: Linda S. Bingler 10/24/03 Date

QA Reviewer: J. Cloutier 10/24/03 Date

Peer Reviewer: Date

I certify that this data is in compliance with requirements specified in NPDES Permit No. AK-004320-6.

Richard M. Ecker 10/24/03 Date

RETURN COMPLETED FORM, ALONG WITH FINAL TABLE REPORT TO:

DATA ENTRY or AUTHOR
Linda Bingler

COMMENTS:

BATTELLE MARINE SCIENCES LABORATORY
1529 W. Sequim Bay Road
Sequim, WA 98382
(360) 683-4151

Report Date: 10/24/03

TRACE METAL CONCENTRATIONS IN GREENS CREEK SEAWATER SAMPLES

Samples received: 9/12/03

(concentrations in μg/L (not blank corrected))

Lab ID	Lab Sample Number	Sample Identifier	Sampling Date	Date Received	Date Analyzed	Parameter Number	Analysis Method	Value	Detection Limit	Parameter Description	Flag	Sample Description	RPD	Percent Recovery	Flag
SAMPLE RESULTS															
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/14/03	1119	1640m	0.662	0.018	TRM Cu-ICP/MS		Sample	N/A	N/A	
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/14/03	1094	1640m	1.09	0.140	TRM Zn-ICP/MS		Sample	N/A	N/A	
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/14/03	1113	1640m	0.0638	0.023	TRM Cd-ICP/MS		Sample	N/A	N/A	
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/14/03	1114	1640m	0.114	0.011	TRM Pb-ICP/MS		Sample	N/A	N/A	
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/1/03	71900	1631m	0.00131	0.00004	Total Hg-CVAF		Sample	N/A	N/A	
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/14/03	1119	1640m	0.675	0.018	TRM Cu-ICP/MS		Sample	N/A	N/A	
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/14/03	1094	1640m	2.49	0.140	TRM Zn-ICP/MS		Sample	N/A	N/A	
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/14/03	1113	1640m	0.0677	0.023	TRM Cd-ICP/MS		Sample	N/A	N/A	
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/14/03	1114	1640m	0.507	0.011	TRM Pb-ICP/MS		Sample	N/A	N/A	
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/1/03	71900	1631m	0.00128	0.00004	Total Hg-CVAF		Sample	N/A	N/A	
MSL	803GC*257	107-5'	9/11/03	9/12/03	10/14/03	1119	1640m	0.514	0.018	TRM Cu-ICP/MS		Sample	N/A	N/A	
MSL	803GC*257	107-5'	9/11/03	9/12/03	10/14/03	1094	1640m	1.09	0.140	TRM Zn-ICP/MS		Sample	N/A	N/A	
MSL	803GC*257	107-5'	9/11/03	9/12/03	10/14/03	1113	1640m	0.0682	0.023	TRM Cd-ICP/MS		Sample	N/A	N/A	
MSL	803GC*257	107-5'	9/11/03	9/12/03	10/14/03	1114	1640m	0.0999	0.011	TRM Pb-ICP/MS		Sample	N/A	N/A	
MSL	803GC*257	107-5'	9/11/03	9/12/03	10/1/03	71900	1631m	0.00443	0.00004	Total Hg-CVAF		Sample	N/A	N/A	
MSL	803GC*258	108-5'	9/11/03	9/12/03	10/14/03	1119	1640m	0.650	0.018	TRM Cu-ICP/MS		Sample	N/A	N/A	
MSL	803GC*258	108-5'	9/11/03	9/12/03	10/14/03	1094	1640m	3.45	0.140	TRM Zn-ICP/MS		Sample	N/A	N/A	
MSL	803GC*258	108-5'	9/11/03	9/12/03	10/14/03	1113	1640m	0.0752	0.023	TRM Cd-ICP/MS		Sample	N/A	N/A	
MSL	803GC*258	108-5'	9/11/03	9/12/03	10/14/03	1114	1640m	0.370	0.011	TRM Pb-ICP/MS		Sample	N/A	N/A	
MSL	803GC*258	108-5'	9/11/03	9/12/03	10/1/03	71900	1631m	0.00134	0.00004	Total Hg-CVAF		Sample	N/A	N/A	
MSL	803GC*259	Field Blank	9/11/03	9/12/03	10/14/03	1119	1640m	0.423	0.018	TRM Cu-ICP/MS		Sample	N/A	N/A	
MSL	803GC*259	Field Blank	9/11/03	9/12/03	10/14/03	1094	1640m	9.32	0.140	TRM Zn-ICP/MS		Sample	N/A	N/A	
MSL	803GC*259	Field Blank	9/11/03	9/12/03	10/14/03	1113	1640m	0.0712	0.023	TRM Cd-ICP/MS		Sample	N/A	N/A	
MSL	803GC*259	Field Blank	9/11/03	9/12/03	10/14/03	1114	1640m	0.0644	0.011	TRM Pb-ICP/MS		Sample	N/A	N/A	
MSL	803GC*259	Field Blank	9/11/03	9/12/03	10/1/03	71900	1631m	0.00743	0.00004	Total Hg-CVAF		Sample	N/A	N/A	
MSL	803GC*260	Lab Blank	9/11/03	9/12/03	10/14/03	1119	1640m	0.481	0.018	TRM Cu-ICP/MS		Sample	N/A	N/A	
MSL	803GC*260	Lab Blank	9/11/03	9/12/03	10/14/03	1094	1640m	0.669	0.140	TRM Zn-ICP/MS		Sample	N/A	N/A	
MSL	803GC*260	Lab Blank	9/11/03	9/12/03	10/14/03	1113	1640m	0.0721	0.023	TRM Cd-ICP/MS		Sample	N/A	N/A	
MSL	803GC*260	Lab Blank	9/11/03	9/12/03	10/14/03	1114	1640m	0.0286	0.011	TRM Pb-ICP/MS		Sample	N/A	N/A	
MSL	803GC*260	Lab Blank	9/11/03	9/12/03	10/1/03	71900	1631m	0.000551	0.00004	Total Hg-CVAF		Sample	N/A	N/A	

BATTELLE MARINE SCIENCES LABORATORY
1529 W. Sequim Bay Road
Sequim, WA 98382
(360) 683-4151

Report Date: 10/24/03

TRACE METAL CONCENTRATIONS IN GREENS CREEK SEAWATER SAMPLES

Samples received: 9/12/03

(concentrations in µg/L (not blank corrected))

Lab ID	Lab Sample Number	Sample Identifier	Sampling Date	Date Received	Date Analyzed	Parameter Number	Analysis Method	Value	Detection Limit	Parameter Description	Flag	Sample Description	RPD	Percent Recovery	Flag
PROCEDURAL BLANK															
MSL	Blank	N/A	N/A	N/A	10/14/03	1119	1640m	0.179	0.018	TRM Cu-ICP/MS		Blank	N/A	N/A	
MSL	Blank	N/A	N/A	N/A	10/14/03	1094	1640m	0.212	0.140	TRM Zn-ICP/MS		Blank	N/A	N/A	
MSL	Blank	N/A	N/A	N/A	10/14/03	1113	1640m	0.00252	0.023	TRM Cd-ICP/MS	U	Blank	N/A	N/A	
MSL	Blank	N/A	N/A	N/A	10/14/03	1114	1640m	0.0647	0.011	TRM Pb-ICP/MS		Blank	N/A	N/A	
MSL	Blank	N/A	N/A	N/A	10/1/03	71900	1631m	0.000118	0.00004	Total Hg-CVAF		Blank	N/A	N/A	
CERTIFIED REFERENCE MATERIAL RESULTS															
MSL	CASS-4	N/A	N/A	N/A	10/14/03	1119	1640m	0.747	0.018	TRM Cu-ICP/MS		SRM	26%	N/A	#
MSL	CASS-4	N/A	N/A	N/A	10/14/03	1094	1640m	0.527	0.140	TRM Zn-ICP/MS		SRM	38%	N/A	#
MSL	CASS-4	N/A	N/A	N/A	10/14/03	1113	1640m	0.0282	0.023	TRM Cd-ICP/MS		SRM	8%	N/A	
MSL	CASS-4	N/A	N/A	N/A	10/14/03	1114	1640m	0.0379	0.011	TRM Pb-ICP/MS		SRM	287%	N/A	#
MSL	1640	N/A	N/A	N/A	10/14/03	1114	1640m	29.7	0.011	TRM Pb-ICP/MS		SRM	6%	N/A	
MSL	1641d	N/A	N/A	N/A	10/1/03	71900	1631m	1620	0.0003	Total Hg-CVAF		SRM	2%	N/A	
Blank Corrected Certified Reference Material Results															
MSL	CASS-4	N/A	N/A	N/A	10/14/03	1119	1640m	0.568	0.018	TRM Cu-ICP/MS		SRM	4%	N/A	
MSL	CASS-4	N/A	N/A	N/A	10/14/03	1094	1640m	0.315	0.140	TRM Zn-ICP/MS		SRM	17%	N/A	
MSL	CASS-4	N/A	N/A	N/A	10/14/03	1113	1640m	0.0257	0.023	TRM Cd-ICP/MS		SRM	1%	N/A	
MATRIX SPIKE RESULTS (mean)															
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/14/03	1119	1640m	2.47	0.018	TRM Cu-ICP/MS		MS	N/A	90%	
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/14/03	1094	1640m	3.31	0.140	TRM Zn-ICP/MS		MS	N/A	41%	#
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/14/03	1113	1640m	1.80	0.023	TRM Cd-ICP/MS		MS	N/A	87%	
MSL	803GC*256	106-5'	9/11/03	9/12/03	10/14/03	1114	1640m	2.37	0.011	TRM Pb-ICP/MS		MS	N/A	93%	
MSL	803GC*257	107-5'	9/11/03	9/12/03	10/1/03	71900	1631m	0.0153	0.0003	Total Hg-CVAF		MS	N/A	105%	
REPLICATE RESULTS															
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/14/03	1119	1640m	0.698	0.018	TRM Cu-ICP/MS		Duplicate	5%	N/A	
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/14/03	1094	1640m	1.11	0.140	TRM Zn-ICP/MS		Duplicate	2%	N/A	
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/14/03	1113	1640m	0.0668	0.023	TRM Cd-ICP/MS		Duplicate	5%	N/A	
MSL	803GC*255	104-5'	9/11/03	9/12/03	10/14/03	1114	1640m	0.123	0.011	TRM Pb-ICP/MS		Duplicate	8%	N/A	
MSL	803GC*257	107-5'	9/11/03	9/12/03	10/1/03	71900	1631m	0.00428	0.0003	Total Hg-CVAF		Duplicate	3%	N/A	

= Outside QC limits.

U = Not detected at or above the detection limit.

N/A = Not applicable/analyzed.

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 803 Sample No(s): 255-259 Project Manager: Bingler

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: Seawater WP# W38822

Yes	No	
		Navy-type Project (requires high-level sample tracking procedures)
		Filter Samples: Amount: Entire sample Half of sample
		Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
		Special instructions:

Sample Preservation Instructions:

Date To Archive: Date To Dispose:

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes	No	N/A	Indicate in Appropriate Box
✓			Was a custody seal present?
✓			Was the custody seal intact?
✓			Was cooler(s) temperature(s) within acceptable range of 4±2°C? 5.7 °C (if multiple coolers, note temp. of each) °C
		✓	Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)? Comment/Remedy:
✓			Were all chain of custody forms signed and dated?
	✓		Were samples filtered at MSL?

Sample condition(s): Acceptable Other (explain):

Container type: Teflon Poly Glass Spex Other:

Notes:

Completed By: [signature] Date/Time: 09/12/03 1400

SAMPLE PRESERVATION

- [ ] Sample(s) were preserved at MSL
- [x] Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
- [ ] Random pH checked for ~10% of samples (use dip paper) Sample IDs:
- [ ] Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:
- [ ] 0.2% HNO3 Notes:
- [ ] 0.5% HCl (Hg samples) Notes:
- [ ] Refrigerate/Freeze Notes:
- [ ] Other Notes:

Completed By: [signature] Date/Time: 09/12/03 1400

Minerals

CSN:

Chain of Custody Record / Analysis Request

Company Name:	K.G.C.M.C. Greens Creek Mine
Company Address:	P.O.Box 32199 Juneau, AK 99803
Telephone:	(907) 790-8472 / 8473 / 8470
Fax:	(907) 790-8478 or 789-8119

Project Name: NPDES Quarterly Seawater

Report To: Bill Oelklaus

Sampler: M. Morales, S. Hutson

P.O.Number

Sample I.D.	Date Collected	Time Collected	Matrix Water/ Soil	# Containers 1lt. White	1lt. Green	500ml. Red		Metals										pH <2	RUSH (see below)	LAB I.D.
104- 5' 803- 255	09-11-03	0945	Water	1				x												
106-5' 256	09-11-03	0840	Water	1				x												
107-5' 257	09-11-03	0920	Water	1				x												
108-5' 258	09-11-03	0900	Water	1				x												
Field Blank # 107 803- 259	09-11-03	0922	Water	1				x												

Comments:

Lab sent to: Battelle Marine Science Lab

Deliverables

- [ ] Level 1
- [ ] ADEC Format
- [ ] ACOE
- [ ] Other:_____
- [ ] EDD-Format:_____Specify

Turnaround Time

- [ ] 2 Business Days
- [ ] 5 Business Days
- [ ] 10-15 Business Days
- [ ] Other:_____# Business Days

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:	Condition of Sample Containers:
Signature: M.T. Morales	Signature: [signature]	Signature:	Signature:	Temp Received: _____ °C
Printed Name: M.T. Morales	Printed Name: MLF McGahan	Printed Name:	Printed Name:	# of Coolers: _____
Firm: KGCMC	Firm: MSL	Firm:	Firm:	Seals Intact: _____
Date / Time: 09-11-03 1840	Date / Time: 09/12/03 1400	Date / Time:	Date / Time:	Page _____ of _____