Rico Argentine_SW_AUG 2011 Due:09/09/2011
TDF: DG-264 6481 LIMS: C110805

1258415 - R8 SDMS

Rico Argentine_SW_AUG 2011 Due:09/09/2011
TDF: DG-264 6481 LIMS: C110805

**FedEx Express** NEW Package US Airbill

FedEx Tracking Number 8758 4687 2255

Form ID No. 0200 **Recipient's Copy**

**1 From**

Date 8/9/11 [redacted]

Sender's Name Roxy Cowie Phone 970 708-0088

Company ~~URS~~ Roxy Cowie - URS

Address Box 460

Dept./Floor/Suite/Room

City Telluride State CO ZIP 81435

**2 Your Internal Billing Reference** 36548944.00004

**3 To**

Recipient's Name SCOTT WALKER Phone

Company EPA ESAT Laboratory

Address 16194 west 45th DRIVE

We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City GOLDEN State CO ZIP 80403

HOLD Weekday FedEx location address REQUIRED. **NOT available for** FedEx First Overnight.

HOLD Saturday FedEx location address REQUIRED. **Available ONLY for** FedEx Priority Overnight and FedEx 2Day to select locations.

8758 4687 2255

**4 Express Package Service** * To most locations.

**NOTE: Service order has changed. Please select carefully.**

***Packages up to 150 lbs.*** *For packages over 150 lbs., use the new FedEx Express Freight US Airbill.*

**Next Business Day**

- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [x] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

**2 or 3 Business Days**

- [ ] **NEW** FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
- [ ] FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

**5 Packaging** * Declared value limit $500.

- [ ] FedEx Envelope*
- [ ] FedEx Pak*
- [ ] FedEx Box
- [ ] FedEx Tube
- [x] Other

**6 Special Handling and Delivery Signature Options**

- [ ] SATURDAY Delivery — **NOT available for** FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
- [x] No Signature Required — Package may be left without obtaining a signature for delivery.
- [ ] Direct Signature — Someone at recipient's address may sign for delivery. ***Fee applies.***
- [ ] Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. ***Fee applies.***

**Does this shipment contain dangerous goods?**

One box must be checked.

- [x] No
- [ ] Yes — As per attached Shipper's Declaration.
- [ ] Yes — Shipper's Declaration not required.
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg.

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

- [ ] Cargo Aircraft Only

**7 Payment** *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. [ ]

- [ ] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

[redacted]

| Total Packages | Total Weight | Total Declared Value† | Credit Card Auth. |
|---|---|---|---|
| 1 | 16 lbs. | $ ____ .00 | |

†Our liability is limited to $100 unless you declare a higher value. See the current FedEx Service Guide for details.

612

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100% RECYCLED CONTENT

# ESAT Region 8 Chain of Custody Form
# U.S. Environmental Protection Agency
# Region 8 Superfund Program

Site Name: Rico-Argentine-Surface Water-Aug 2011 TDF: DG-264

Site Manager: Steve Way Work Order: C110805

**Relinquished By:**

| Print Name | Date | Signature |
|---|---|---|
| Scott Dellamia | 10/06/11 | |

**Received By:**

| Print Name | Date | Signature |
|---|---|---|
| Don Goodrich | 10/12/11 | |

**Relinquished By:**

| Print Name | Date | Signature |
|---|---|---|
| | | |

**Received By:**

| Print Name | Date | Signature |
|---|---|---|
| | | |

**Relinquished By:**

| Print Name | Date | Signature |
|---|---|---|
| | | |

**Received By:**

| Print Name | Date | Signature |
|---|---|---|
| | | |

TechLaw, Inc.
Environmental Services Assistance Team
16194 W. 45th Drive, Golden, CO 80403
(303) 312-7708

Task Order: 40 - Analytical Spt & Data Validation (Non-Libby)

DCN#: EP8 - 6 - 6481

Contract: EP-W-06-33

TDF#: D264

Line Item: All

TDF Status: In Progress

Date: 10/5/2011

To: Don Goodrich, USEPA, Region 8 ESAT Task Order Project Officer

From: Scout DellaMia, ESAT Environmental Scientist

Through: Mark McDaniel, Region 8 ESAT Team Manager for M. McDaniel

Subject: Rico-Argentine - Surface Waters - AUG 2011 (C110805)

Comments:

08/10/2011 Received 2 Water Samples for the following analyses:

Total Recoverable Metals by ICP-OE
Total Recoverable Metals by ICP-MS
Dissolved Metals / Hardness by ICP-OE
Dissolved Metals ICP-MS
WC - Anions by Ion Chromatography 2010

Thank You

# Deliverable Submission and Evaluation Form

EPA Region 8 ESAT

Contractor: TechLaw | Updated: 05/05/11 | Contract No: EP-W-06-33

**Submission Information (to be completed by ESAT):**

| | | | | | |
|---|---|---|---|---|---|
| Task Order: | 40 - Analytical Spt & Data Validation (Non-Libby) | | | | |
| DCN: | EP8 -6 - 6481 | | | | |
| TDF: | D264 | Line Item: | All | TDF Status: | In Progress |
| Submission Date: | 10/5/2011 | | | | |
| Submitted By: | Scout DellaMia, ESAT Environmental Scientist | | | | |
| **Deliverable Description:** | | | | | |
| Rico-Argentine - Surface Waters - AUG 2011 (C110805) | | | | | |
| **Submitter Comments:** | | | | | |
| Hardcopy Data Report and Hardcopy Raw Data + CD-ROM with Data Report .pdf, Scribe EXCEL EDD, and Raw Data .pdf | | | | | |

**Evaluation Information (to be completed by EPA):**

| | |
|---|---|
| Review Date: | 10-13-2011 |
| Reviewed by: | Fleanor MacDonald |
| Evaluation: | ☒ This deliverable is considered acceptable. |
| | ☐ This deliverable requires revisions as noted below or per attached. |
| **Evaluation Comments:** | |
| completeness check - 10-13-2011 | |

# Deliverable Submission and Evaluation Form

EPA Region 8 ESAT

Contractor: TechLaw | Updated: 05/05/11 | Contract No: EP-W-06-33

**Submission Information (to be completed by ESAT):**

| | | | | | |
|---|---|---|---|---|---|
| Task Order: | 40 - Analytical Spt & Data Validation (Non-Libby) | | | | |
| DCN: | EP8 -6 - 6481 | | | | |
| TDF: | D264 | Line Item: | All | TDF Status: | In Progress |
| Submission Date: | 10/5/2011 | | | | |
| Submitted By: | Scout DellaMia, ESAT Environmental Scientist | | | | |
| **Deliverable Description:** | | | | | |
| Rico-Argentine - Surface Waters - AUG 2011 (C110805) | | | | | |
| **Submitter Comments:** | | | | | |
| Hardcopy Data Report and Hardcopy Raw Data + CD-ROM with Data Report .pdf, Scribe EXCEL EDD, and Raw Data .pdf | | | | | |

**Evaluation Information (to be completed by EPA):**

| | |
|---|---|
| Review Date: | 10-13-2011 |
| Reviewed by: | Frances MacDonald |
| Evaluation: | ☒ This deliverable is considered acceptable. |
| | ☐ This deliverable requires revisions as noted below or per attached. |
| **Evaluation Comments:** | |
| completeness check - 10-13-2011 | |

6481

| TLF-05.04 | SOP: QAQ-04.00 | Eff. Date: 06/16/2009 |
|---|---|---|

# ESAT Region 8

Data Package Completeness and Tracking Form

The attached data package has been reviewed for completeness for the following items by the ESAT Document Control Officer and the ESAT Region 8 Manager

| | |
|---|---|
| LIMS: C110805 | Project Name: Rico-Argentine -SW - AUG 2011 |
| TDF: D6-264 | Due Date: 9/9/11 |

| Data Package Deliverable Element | ESAT Mgmt. / DCO / QAQC Rev. | |
|---|---|---|
| Final Report Data Deliverable Cover Page with DCN and Project Description | ☑ | Initials: |
| Analytical Data Review Forms and raw data for each analysis | ☑ | Initials: |
| Copy of MDL's | ☑ | Initials: |
| Certificates of Analysis (COAs) for Standards | ☑ | Initials: |
| Hardness Calculation Verification Form for Dissolved Analysis | ☑ | Initials: |
| Sample Cross Reference | ☑ | Initials: |
| Copy of COC's | ☑ | Initials: |
| Copy of project TDF | ☑ | Initials: |
| Case Narrative Reviewed | ☑ | Initials: |
| CD-ROM with EDD and .pdf of LIMS Report | ☑ | Initials: |

**Data Package Tracking**

| Destination | Date | Initials |
|---|---|---|
| Final Report Complete | 9/15/11 | |
| Package to ESAT Mgmt. For Approval | 10/5/11 | |
| Package to DCO for CD-ROM and EPA Delivery | 10/6/11 | |
| Raw Data Scanned, Copied to CD | 10/6/11 | |
| Package Ready for EPA Courier | | |
| Raw Data CD Ready for EPA Courier | | |
| EPA Deliverable Submission and Eval. Form Returned | | |
| Raw Data Returned | | |

| TLF-07.01 | SOP: QAQ-04.00 | Eff. Date: 1/17/2007 |
|---|---|---|

# ESAT Region 8

Final Report Review Form

| | |
|---|---|
| LIMS: C110805 | Project: Rico. Argentine - SW. Aug 2011 |
| TDF: DG-264 | Due Date: 9/9/11 |

**QA/QC Review – Level III**

| | | |
|---|---|---|
| Compare TDF to performed analysis / Ensure all analyses are complete | ☒ Yes | ☐ No |
| Review each Analytical Data Review form noting discrepancies for narrative | ☒ Yes | ☐ No |
| Examine each analytical sequence in LIMS using Data Entry Review application | ☒ Yes | ☐ No |
| Generate draft report, print QC section | ☒ Yes | ☐ No |
| Confirm presence of each analytical batch, QC samples | ☒ Yes | ☐ No |
| Examine analytical results (Form I) for accuracy and completeness | ☒ Yes | ☐ No |
| Check spike recoveries of LCSs, matrix spikes and post-digestion spikes | ☒ Yes | ☐ No |
| Verify serial dilution %D and duplicate RPD for each metals batch | ☒ Yes | ☐ No |

*Narrative Comments*

None.

| | |
|---|---|
| Review By: | Date: 9-15-11 |

**ESAT Management Review – Level IV**

| | | |
|---|---|---|
| All analytical data and deliverable review forms present and complete | ☑ Yes | ☐ No |
| COC copy, received temp. noted, preservatives noted, signature present, holding times met | ☑ Yes | ☐ No |
| Copy of TDF present, Analytical requirements met | ☑ Yes | ☐ No |
| Case narrative checked for spelling, grammar, technical content and completeness | ☑ Yes | ☐ No |
| 10% Validation of raw data to reported data on Form Ones | ☑ Yes | ☐ No |
| Standard Traceability COAs and ICP / ICP-MS MDL forms present | ☑ Yes | ☐ No |
| Final Report cover letter including DCN present | ☑ Yes | ☐ No |
| Deficiencies noted requiring correction before delivery to EPA Project Officer | ☑ Yes | ☐ No |

*Manager Review Comments*

| | |
|---|---|
| Review By: | Date: 10/6/11 |
| Corrections By: | Date: |

U.S. Environmental Protection Agency
Region 8
Technical and Management Services

Laboratory Services Program | Certificate of Analysis

Ref: 8TMS-L

MEMORANDUM

Date: 09/15/11

Subject: Analytical Results--- **Rico-Argentine_Surface Waters_AUG 2011_D264 / DG-264**

From: Don Goodrich; EPA Region 8 Analytical Chemistry WAM

To: Steve Way
Superfund
1595 Wynkoop Street

Received Sample Set(s), [Work Order : Date Received]:
[ C110805 : 08/10/2011 ]

Attached are the analytical results for the samples received from the Rico-Argentine_Surface Waters_AUG 2011_D264 sampling event, according to TDF DG-264. All analyses were performed within their method specified holding times unless otherwise noted in the following narrative.

These samples were prepared, analyzed, and verified by the Environmental Services Assistance Team Laboratory (ESAT) according to the requirements of the Technical Direction Form (TDF).

Note: The laboratory herewith transmits this deliverable to the program/project partner for determination of "final data usability" which may include data validation and data quality asessment per and in accordance with EPA QA/G-8, *Guidance on Environmental Data Verification and Data Validation*, November 2002, EPA/240/R-02/004. Laboratory data qualifiers are applied based on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* October 2004, referred to as "NFGI".

## Case Narrative

**C110805**

Quality Assessment: Unless indicated by exception, the QA/QC associated with this sample set produced data within the TDF-specified criteria.

Holding Times: All samples were analyzed within their method-specified technical holding time(s).

Other: It was noted during sample login that the cooler temperature was 7 degrees celcius.

1. Initial and Continuing calibration blanks (ICBs and CCBs).
   Exceptions: In ICP-MS sequence 1109045 and 1109046, molybdenum was detected in CCB1. As a result, the reporting limit for molybdenum was raised from 0.20 ug/L to 0.30 ug/L. In ICP-MS sequence 1109045 and 1109046, silver was detected in the ICB, CCB2, and CCB3. As a result, the reporting limit for silver was raised to 2.0 ug/L. No qualifiers were assigned.
2. Preparation (PB) / Method blanks (MB)
   Exceptions: None.
3. Interference Checks (ICSA / ICSAB) for ICP-MS and ICP-OE analyses only.
   Exceptions: None.
4. Initial and Continuing calibration verification analyses (ICVs and CCVs).
   Exceptions: None.
5. Laboratory Control Sample (LCS) or second source analysis or SRM.
   Exceptions: None.
6. Laboratory Fortified blank (LFB) / Blank spike (BS), same source as used for the matrix spikes. PBS performed with analyses/methods requiring preparation or digestion prior to analysis.
   Exceptions: None.
7. Contract Reporting Detection Limit Standard, labeled as CRA, CRDL or CRL.
   Exceptions: None.
8. Laboratory Duplicate (DUP). "Source" identifies field sample duplicated in the laboratory. If either the "source" or the duplicate result is <5X the reporting limit, the %D limit of 20% does not apply.
   Exceptions: None.
9. Laboratory Matrix Spike (MS) and spike duplicate (MSD). "Source" defines original field sample fortified prior to analysis. Percent recovery (%R) limits do not apply when sample concentration(s) exceed the corresponding analyte spike level by a factor of 4 or greater.
   Exceptions: None.
10. Serial Dilution sample analysis (SRD). "Source" is parent field sample diluted 1:5 in the laboratory. Performed for ICP-OE and ICP-MS metals analyses. Percent difference (%D) limits do not apply when analyte concentration(s) are below 50x the source sample's MDL (or 10x it's PQL).
    Exceptions: None.
11. Internal standards, criteria specified for ICP-MS analyses only, monitored at the instrument.
    Exceptions: None.
12. Any calibration using more than two-points produced a correlation coefficient equal to or greater than 0.995.
    Exceptions: None.

**Acronyms and Definitions:**

| | |
|---|---|
| ESAT | Environmental Services Assistance Team |
| J | Data Estimated qualifier (also applied to all data less than PQL, greater than or equal to MDL) |
| MDL | Method Detection Limit |
| PQL | Practical Quantitation Limit, also known as reporting limit. |
| RPD | Relative Percent Difference (difference divided by the mean) |
| %D | Percent difference, serial dilution criteria unit, difference divided by the original result. |
| %R | Percent recovery, analyzed (less sample contribution) divided by true value |
| < | Analyte NOT DETECTED at or above the Method Detection Limit (MDL) |
| mg/L | Parts per million (millligrams per liter). Solids equivalent = mg/Kg. |
| ug/L | Parts per billion (micrograms per liter). Solids equivalent = ug/Kg. |
| NR | No Recovery (matrix spike) - Often seen for calcium/magnesium when their concentration exceeds the spike level by > 4x. |
| NFGI | *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* October 2004 |
| RE | Sample Re-analysis. Usually seen on raw data and sequences for required sample dilutions due to over-range analytes. |

**Method(s) Summary:**

As defined in the Technical Direction Form (TDF), some or all of the methods listed below were used for the determination of the reported target analytes.

From EPA's *Methods for the Determination of Metals in Environmental Samples*, Supplement I, May 1994, dissolved, total, and/or total recoverable metals were determined by:

- Method 200.7 / 6010B using a PE Optima ICP-OE (ICP).
- Method 200.8 / 6020 using a Perkin-Elmer Elan 6000 ICP-MS.
- Method 200.2 for total recoverable metals (only) digestion.
- Method 245.1 using a Perkin-Elmer FIMS CVAA (aqueous mercury only).

From *Standard Methods for the Examination of Water and Wastewater*, 18th Edition, 1992, Method 2340B was used for the calculated hardness determination. Hardness is reported as mg (milligram) equivalent $CaCO_3$ per liter (L) determined as follows:

Calculated hardness = 2.497 * (Calcium, mg/L) + 4.118 * (Magnesium, mg/L).

From *EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846*,

- Method 3015A was used for microwave assisted total metals digestion.
- Method 7473 was used for mercury in solids.

From EPA's *Determination of Inorganic Anions by Ion Chromatography*, Revision 2.1, 1993, Method 300.0 was used to determine the anions.

From EPA's *Methods for Chemical Analysis of Water and Wastes*, March 1983:

- Method 310.1 was followed for the alkalinity determination.
- Method 160.1 was followed for gravimetric total dissolved solids (TDS) determination.
- Method 160.2 was used for gravimetric total suspended solids (TSS) determination.
- Method 415.3 was used for total organic carbon (TOC) determination using either an Apollo 9000 or Phoenix 8000 Non-Dispersive IR (NDIR) system. Also known as dissolved organic carbon (DOC) when performed on the dissolved sample fraction.

The quality control procedures listed in the TDF request were utilized by ESAT to verify accuracy of the results and to evaluate any matrix interferences.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Dissolved) by EPA 200/7000 Series Methods

**Station ID:** ArgentineShaft **Date / Time Sampled:** 08/04/11 13:30 **Workorder:** C110805
**EPA Tag No.:** No Tag Prefix-A **Matrix:** Water **Lab Number:** C110805-01 A

| Method | Parameter | Results | Qualifier | Units | MDL | Dilution Factor | Analyzed | By | Batch |
|---|---|---|---|---|---|---|---|---|---|
| 200.7 | **Aluminum** | **23600** | | ug/L | 100 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Calcium** | **332000** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Iron** | **46000** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Magnesium** | **56800** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Potassium** | **2820** | J | ug/L | 1250 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Sodium** | **7430** | | ug/L | 1250 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Zinc** | **51500** | | ug/L | 50.0 | 5 | 09/15/2011 | SW | 1109043 |
| 200.8 | Antimony | < 5.00 | U | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Arsenic** | **5.66** | J | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Barium** | **74.0** | | ug/L | 25.0 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Beryllium** | **3.63** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Cadmium** | **285** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Chromium** | **16.7** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Cobalt** | **27.2** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Copper** | **2250** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Lead** | **227** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Manganese** | **17000** | | ug/L | 1.00 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Molybdenum** | **5.30** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Nickel** | **49.7** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Selenium** | **9.89** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Silver** | **47.8** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | Thallium | < 5.00 | U | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | Vanadium | < 10.0 | U | ug/L | 5.00 | 5 | 09/15/2011 | SV | 1109044 |
| 2340B | **Hardness** | **1060** | | mg/L | 8 | 5 | 09/15/2011 | SW | 1109043 |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Dissolved) by EPA 200/7000 Series Methods

**Station ID:** BlaineTunnel **Date / Time Sampled:** 08/04/11 16:00 **Workorder:** C110805
**EPA Tag No.:** No Tag Prefix-A **Matrix:** Water **Lab Number:** C110805-03 A

| Method | Parameter | Results | Qualifier | Units | MDL | Dilution Factor | Analyzed | By | Batch |
|---|---|---|---|---|---|---|---|---|---|
| 200.7 | **Aluminum** | **41300** | | ug/L | 100 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Calcium** | **318000** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Iron** | **315000** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Magnesium** | **85900** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Potassium** | **6280** | | ug/L | 1250 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Sodium** | **4820** | | ug/L | 1250 | 5 | 09/15/2011 | SW | 1109043 |
| 200.7 | **Zinc** | **61700** | | ug/L | 50.0 | 5 | 09/15/2011 | SW | 1109043 |
| 200.8 | Antimony | < 5.00 | U | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Arsenic** | **19.4** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Barium** | **45.1** | J | ug/L | 25.0 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Beryllium** | **10.4** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Cadmium** | **339** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Chromium** | **29.2** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Cobalt** | **46.8** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Copper** | **4140** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Lead** | **179** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Manganese** | **28200** | | ug/L | 1.00 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Molybdenum** | **3.37** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Nickel** | **81.4** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Selenium** | **10.9** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | Silver | < 10.0 | U | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | Thallium | < 5.00 | U | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109044 |
| 200.8 | **Vanadium** | **49.5** | | ug/L | 5.00 | 5 | 09/15/2011 | SV | 1109044 |
| 2340B | **Hardness** | **1150** | | mg/L | 8 | 5 | 09/15/2011 | SW | 1109043 |

"J" Qualifier indicates an estimated value

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Total Recov) by EPA 200/7000 Series Methods

**Station ID:** BlaineTunnel **Date / Time Sampled:** 08/04/11 16:00 **Workorder:** C110805
**EPA Tag No.:** No Tag Prefix-B **Matrix:** Water **Lab Number:** C110805-04 A

| Method | Parameter | Results | Qualifier | Units | MDL | Dilution Factor | Analyzed | By | Batch |
|---|---|---|---|---|---|---|---|---|---|
| 200.7 | **Aluminum** | **55600** | | ug/L | 100 | 5 | 09/15/2011 | SW | 1109037 |
| 200.7 | **Calcium** | **332000** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109037 |
| 200.7 | **Iron** | **428000** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109037 |
| 200.7 | **Magnesium** | **95400** | | ug/L | 500 | 5 | 09/15/2011 | SW | 1109037 |
| 200.7 | **Potassium** | **6970** | | ug/L | 1250 | 5 | 09/15/2011 | SW | 1109037 |
| 200.7 | **Sodium** | **4310** | | ug/L | 1250 | 5 | 09/15/2011 | SW | 1109037 |
| 200.7 | **Zinc** | **67200** | | ug/L | 50.0 | 5 | 09/15/2011 | SW | 1109037 |
| 200.8 | Antimony | < 5.00 | U | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Arsenic** | **37.9** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | Barium | < 50.0 | U | ug/L | 25.0 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Beryllium** | **9.70** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Cadmium** | **387** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Chromium** | **42.1** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Cobalt** | **56.8** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Copper** | **5370** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Lead** | **237** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Manganese** | **31400** | | ug/L | 1.00 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Molybdenum** | **4.70** | | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Nickel** | **95.6** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Selenium** | **12.4** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Silver** | **0.953** | J | ug/L | 0.500 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Thallium** | **10.3** | | ug/L | 2.50 | 5 | 09/15/2011 | SV | 1109037 |
| 200.8 | **Vanadium** | **65.9** | | ug/L | 5.00 | 5 | 09/15/2011 | SV | 1109037 |

"J" Qualifier indicates an estimated value

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Classical Chemistry by EPA/ASTM/APHA Methods

**Station ID:** ArgentineShaft **Date / Time Sampled:** 08/04/11 13:30 **Workorder:** C110805
**EPA Tag No.:** No Tag Prefix-C **Matrix:** Water **Lab Number:** C110805-02 A

| Method | Parameter | Results | Qualifier | Units | MDL | Dilution Factor | Analyzed | By | Batch |
|---|---|---|---|---|---|---|---|---|---|
| EPA 300.0 | Bromide | < 0.5 | U | mg/L | 0.2 | 1 | 08/15/2011 | ZZZ | 1108056 |
| EPA 300.0 | Chloride | < 2.0 | U | mg/L | 1.0 | 1 | 08/15/2011 | ZZZ | 1108056 |
| EPA 300.0 | **Sulfate as SO4** | **149** | | mg/L | 2.0 | 1 | 08/15/2011 | ZZZ | 1108056 |

## Classical Chemistry by EPA/ASTM/APHA Methods

**Station ID:** BlaineTunnel **Date / Time Sampled:** 08/04/11 16:00 **Workorder:** C110805
**EPA Tag No.:** No Tag Prefix-C **Matrix:** Water **Lab Number:** C110805-05 A

| Method | Parameter | Results | Qualifier | Units | MDL | Dilution Factor | Analyzed | By | Batch |
|---|---|---|---|---|---|---|---|---|---|
| EPA 300.0 | Bromide | < 0.5 | U | mg/L | 0.2 | 1 | 08/15/2011 | ZZZ | 1108056 |
| EPA 300.0 | Chloride | < 2.0 | U | mg/L | 1.0 | 1 | 08/15/2011 | ZZZ | 1108056 |
| EPA 300.0 | **Sulfate as SO4** | **279** | | mg/L | 2.0 | 1 | 08/15/2011 | ZZZ | 1108056 |

"J" Qualifier indicates an estimated value

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **ICPMS-PE DRC-II** | | | | | | | | | |
| Batch 1109044 - No Lab Prep Reqd | | | *Water* | | | | | | **ICPMS-PE DRC-II** |
| **Method Blank (1109044-BLK1)** | | Dilution Factor: 1 | | | | Prepared: 09/14/11 Analyzed: 09/15/11 | | | |
| Beryllium | < 0.100 | 0.200 | ug/L | | | | | | |
| Vanadium | < 1.00 | 2.00 | " | | | | | | |
| Chromium | < 0.500 | 1.00 | " | | | | | | |
| Manganese | < 0.200 | 0.500 | " | | | | | | |
| Cobalt | < 0.100 | 0.200 | " | | | | | | |
| Nickel | < 0.500 | 1.00 | " | | | | | | |
| Copper | < 0.500 | 1.00 | " | | | | | | |
| Arsenic | < 0.500 | 2.00 | " | | | | | | |
| Selenium | < 0.500 | 1.00 | " | | | | | | |
| Molybdenum | < 0.100 | 0.300 | " | | | | | | |
| Silver | < 0.100 | 2.00 | " | | | | | | |
| Cadmium | < 0.100 | 0.200 | " | | | | | | |
| Antimony | < 0.500 | 1.00 | " | | | | | | |
| Barium | < 5.00 | 10.0 | " | | | | | | |
| Thallium | < 0.500 | 1.00 | " | | | | | | |
| Lead | < 0.100 | 0.200 | " | | | | | | |
| **Method Blank Spike (1109044-BS1)** | | Dilution Factor: 1 | | | | Prepared: 09/14/11 Analyzed: 09/15/11 | | | |
| Beryllium | 103 | 0.200 | ug/L | 100 | | 103 | 85-115 | | |
| Vanadium | 97.1 | 2.00 | " | 100 | | 97 | 85-115 | | |
| Chromium | 98.0 | 1.00 | " | 100 | | 98 | 85-115 | | |
| Manganese | 98.1 | 0.500 | " | 100 | | 98 | 85-115 | | |
| Cobalt | 98.2 | 0.200 | " | 100 | | 98 | 85-115 | | |
| Nickel | 98.8 | 1.00 | " | 100 | | 99 | 85-115 | | |
| Copper | 95.2 | 1.00 | " | 100 | | 95 | 85-115 | | |
| Arsenic | 103 | 2.00 | " | 100 | | 103 | 85-115 | | |
| Selenium | 508 | 1.00 | " | 500 | | 102 | 85-115 | | |
| Molybdenum | 99.4 | 0.300 | " | 100 | | 99 | 85-115 | | |
| Silver | 99.9 | 2.00 | " | 100 | | 100 | 85-115 | | |
| Cadmium | 103 | 0.200 | " | 100 | | 103 | 85-115 | | |
| Antimony | 102 | 1.00 | " | 100 | | 102 | 85-115 | | |
| Barium | 99.6 | 10.0 | " | 100 | | 100 | 85-115 | | |
| Thallium | 108 | 1.00 | " | 100 | | 108 | 85-115 | | |
| Lead | 106 | 0.200 | " | 100 | | 106 | 85-115 | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109044 - No Lab Prep Reqd | | | *Water* | | | | | | ICPMS-PE DRC-II |
| **Duplicate (1109044-DUP1)** | | Dilution Factor: 1 | Source: C110806-01 | | | Prepared: 09/14/11 | | Analyzed: 09/15/11 | |
| Beryllium | 0.543 | 0.200 | ug/L | | 0.546 | | | 0.5 | 20 |
| Vanadium | 1.47 | 2.00 | " | | 1.46 | | | 0.6 | 20 |
| Chromium | 0.768 | 1.00 | " | | 0.846 | | | 10 | 20 |
| Manganese | 514 | 0.500 | " | | 514 | | | 0.007 | 20 |
| Cobalt | 32.2 | 0.200 | " | | 31.8 | | | 1 | 20 |
| Nickel | 12.7 | 1.00 | " | | 12.5 | | | 2 | 20 |
| Copper | 602 | 1.00 | " | | 598 | | | 0.7 | 20 |
| Arsenic | 2010 | 2.00 | " | | 1990 | | | 0.7 | 20 |
| Selenium | 1.16 | 1.00 | " | | 1.06 | | | 9 | 20 |
| Molybdenum | 0.282 | 0.300 | " | | 0.287 | | | 2 | 20 |
| Silver | < 0.100 | 2.00 | " | | < 0.100 | | | | 20 |
| Cadmium | 31.4 | 0.200 | " | | 30.7 | | | 2 | 20 |
| Antimony | 21.2 | 1.00 | " | | 20.6 | | | 3 | 20 |
| Barium | 6.24 | 10.0 | " | | 6.16 | | | 1 | 20 |
| Thallium | < 0.500 | 1.00 | " | | < 0.500 | | | | 20 |
| Lead | 1110 | 0.200 | " | | 1020 | | | 9 | 20 |
| **Matrix Spike (1109044-MS1)** | | Dilution Factor: 1 | Source: C110806-01 | | | Prepared: 09/14/11 | | Analyzed: 09/15/11 | |
| Beryllium | 106 | 0.200 | ug/L | 100 | 0.546 | 106 | 75-125 | | |
| Vanadium | 94.8 | 2.00 | " | 100 | 1.46 | 93 | 75-125 | | |
| Chromium | 94.0 | 1.00 | " | 100 | 0.846 | 93 | 75-125 | | |
| Manganese | 593 | 0.500 | " | 100 | 514 | 79 | 75-125 | | |
| Cobalt | 125 | 0.200 | " | 100 | 31.8 | 93 | 75-125 | | |
| Nickel | 105 | 1.00 | " | 100 | 12.5 | 92 | 75-125 | | |
| Copper | 669 | 1.00 | " | 100 | 598 | 72 | 75-125 | | |
| Arsenic | 2040 | 2.00 | " | 100 | 1990 | 44 | 75-125 | | |
| Selenium | 513 | 1.00 | " | 500 | 1.06 | 102 | 75-125 | | |
| Molybdenum | 101 | 0.300 | " | 100 | 0.287 | 100 | 75-125 | | |
| Silver | 63.8 | 2.00 | " | 100 | < 0.100 | 64 | 75-125 | | |
| Cadmium | 137 | 0.200 | " | 100 | 30.7 | 106 | 75-125 | | |
| Antimony | 127 | 1.00 | " | 100 | 20.6 | 106 | 75-125 | | |
| Barium | 110 | 10.0 | " | 100 | 6.16 | 104 | 75-125 | | |
| Thallium | 115 | 1.00 | " | 100 | < 0.500 | 115 | 75-125 | | |
| Lead | 1150 | 0.200 | " | 100 | 1020 | 129 | 75-125 | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

**Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control**

**TechLaw, Inc. - ESAT Region 8**

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109044 - No Lab Prep Reqd | | | *Water* | | | | | | ICPMS-PE DRC-II |
| Matrix Spike Dup (1109044-MSD1) | | Dilution Factor: 1 | Source: C110806-01 | | | Prepared: 09/14/11 | | Analyzed: 09/15/11 | |
| Beryllium | 103 | 0.200 | ug/L | 100 | 0.546 | 102 | 75-125 | 4 | 20 |
| Vanadium | 93.8 | 2.00 | " | 100 | 1.46 | 92 | 75-125 | 1 | 20 |
| Chromium | 94.0 | 1.00 | " | 100 | 0.846 | 93 | 75-125 | 0.02 | 20 |
| Manganese | 591 | 0.500 | " | 100 | 514 | 77 | 75-125 | 0.4 | 20 |
| Cobalt | 124 | 0.200 | " | 100 | 31.8 | 92 | 75-125 | 0.9 | 20 |
| Nickel | 105 | 1.00 | " | 100 | 12.5 | 93 | 75-125 | 0.4 | 20 |
| Copper | 658 | 1.00 | " | 100 | 598 | 61 | 75-125 | 2 | 20 |
| Arsenic | 2040 | 2.00 | " | 100 | 1990 | 50 | 75-125 | 0.3 | 20 |
| Selenium | 517 | 1.00 | " | 500 | 1.06 | 103 | 75-125 | 0.8 | 20 |
| Molybdenum | 101 | 0.300 | " | 100 | 0.287 | 101 | 75-125 | 0.8 | 20 |
| Silver | 74.3 | 2.00 | " | 100 | < 0.100 | 74 | 75-125 | 15 | 20 |
| Cadmium | 136 | 0.200 | " | 100 | 30.7 | 105 | 75-125 | 0.9 | 20 |
| Antimony | 127 | 1.00 | " | 100 | 20.6 | 106 | 75-125 | 0.04 | 20 |
| Barium | 109 | 10.0 | " | 100 | 6.16 | 103 | 75-125 | 1 | 20 |
| Thallium | 117 | 1.00 | " | 100 | < 0.500 | 117 | 75-125 | 1 | 20 |
| Lead | 1150 | 0.200 | " | 100 | 1020 | 128 | 75-125 | 0.07 | 20 |
| Batch 1109045 - 1109044 | | | *Water* | | | | | | ICPMS-PE DRC-II |
| Serial Dilution (1109045-SRD1) | | Dilution Factor: 5 | Source: C110806-01 | | | Prepared: 09/14/11 | | Analyzed: 09/15/11 | |
| Beryllium | < 2.50 | 5.00 | ug/L | | 0.546 | | | | 10 |
| Vanadium | < 2.50 | 5.00 | " | | 1.46 | | | | 10 |
| Chromium | < 2.50 | 5.00 | " | | 0.846 | | | | 10 |
| Manganese | 556 | 5.00 | " | | 514 | | | 8 | 10 |
| Cobalt | 33.5 | 5.00 | " | | 31.8 | | | 5 | 10 |
| Nickel | 13.1 | 5.00 | " | | 12.5 | | | 5 | 10 |
| Copper | 615 | 5.00 | " | | 598 | | | 3 | 10 |
| Arsenic | 1960 | 5.00 | " | | 1990 | | | 2 | 10 |
| Selenium | < 2.50 | 5.00 | " | | 1.06 | | | | 10 |
| Molybdenum | < 0.500 | 1.50 | " | | 0.287 | | | | 10 |
| Silver | < 0.500 | 10.0 | " | | < 0.10 | | | | 10 |
| Cadmium | 31.6 | 5.00 | " | | 30.7 | | | 3 | 10 |
| Antimony | 21.1 | 5.00 | " | | 20.6 | | | 2 | 10 |
| Barium | 6.44 | 5.00 | " | | 6.16 | | | 4 | 10 |
| Thallium | < 2.50 | 5.00 | " | | < 0.50 | | | | 10 |
| Lead | 1070 | 5.00 | " | | 1020 | | | 4 | 10 |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **ICPOE - PE Optima** | | | | | | | | | |
| Batch 1109043 - No Lab Prep Reqd | | | *Water* | | | | | | ICPOE - PE Optima |
| **Method Blank (1109043-BLK1)** | | Dilution Factor: 1 | | | | Prepared: 09/14/11 | Analyzed: 09/15/11 | | |
| Aluminum | < 20.0 | 50.0 | ug/L | | | | | | |
| Calcium | < 100 | 250 | " | | | | | | |
| Iron | < 100 | 250 | " | | | | | | |
| Potassium | < 250 | 1000 | " | | | | | | |
| Magnesium | < 100 | 250 | " | | | | | | |
| Sodium | < 250 | 500 | " | | | | | | |
| Zinc | < 10.0 | 20.0 | " | | | | | | |
| **Method Blank Spike (1109043-BS1)** | | Dilution Factor: 1 | | | | Prepared: 09/14/11 | Analyzed: 09/15/11 | | |
| Aluminum | 10040 | 50.0 | ug/L | 10100 | | 99 | 85-115 | | |
| Calcium | 10080 | 250 | " | 10100 | | 100 | 85-115 | | |
| Iron | 10150 | 250 | " | 10100 | | 100 | 85-115 | | |
| Potassium | 10290 | 1000 | " | 10100 | | 102 | 85-115 | | |
| Magnesium | 10180 | 250 | " | 10100 | | 101 | 85-115 | | |
| Sodium | 10250 | 500 | " | 10100 | | 102 | 85-115 | | |
| Zinc | 103.3 | 20.0 | " | 100 | | 103 | 85-115 | | |
| **Duplicate (1109043-DUP1)** | | Dilution Factor: 1 | Source: C110806-01 | | | Prepared: 09/14/11 | Analyzed: 09/15/11 | | |
| Aluminum | 2344 | 50.0 | ug/L | | 2340 | | | 0.1 | 20 |
| Calcium | 9683 | 250 | " | | 9700 | | | 0.2 | 20 |
| Iron | 14940 | 250 | " | | 14880 | | | 0.4 | 20 |
| Potassium | 2091 | 1000 | " | | 2085 | | | 0.3 | 20 |
| Magnesium | 1738 | 250 | " | | 1738 | | | 0.02 | 20 |
| Sodium | 2842 | 500 | " | | 2867 | | | 0.9 | 20 |
| Zinc | 2321 | 20.0 | " | | 2331 | | | 0.4 | 20 |
| **Matrix Spike (1109043-MS1)** | | Dilution Factor: 1 | Source: C110806-01 | | | Prepared: 09/14/11 | Analyzed: 09/15/11 | | |
| Aluminum | 12490 | 50.0 | ug/L | 10100 | 2340 | 101 | 75-125 | | |
| Calcium | 19670 | 250 | " | 10100 | 9700 | 99 | 75-125 | | |
| Iron | 24600 | 250 | " | 10100 | 14880 | 96 | 75-125 | | |
| Potassium | 12570 | 1000 | " | 10100 | 2085 | 104 | 75-125 | | |
| Magnesium | 12120 | 250 | " | 10100 | 1738 | 103 | 75-125 | | |
| Sodium | 13410 | 500 | " | 10100 | 2867 | 104 | 75-125 | | |
| Zinc | 2342 | 20.0 | " | 100 | 2331 | 11 | 75-125 | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109043 - No Lab Prep Reqd | | | *Water* | | | | | | ICPOE - PE Optima |
| Matrix Spike Dup (1109043-MSD1) | | Dilution Factor: 1 | | Source: C110806-01 | | Prepared: 09/14/11 Analyzed: 09/15/11 | | | |
| Aluminum | 12600 | 50.0 | ug/L | 10100 | 2340 | 102 | 75-125 | 0.8 | 20 |
| Calcium | 19530 | 250 | " | 10100 | 9700 | 97 | 75-125 | 0.7 | 20 |
| Iron | 24390 | 250 | " | 10100 | 14880 | 94 | 75-125 | 0.8 | 20 |
| Potassium | 12590 | 1000 | " | 10100 | 2085 | 104 | 75-125 | 0.2 | 20 |
| Magnesium | 12230 | 250 | " | 10100 | 1738 | 104 | 75-125 | 0.9 | 20 |
| Sodium | 13510 | 500 | " | 10100 | 2867 | 105 | 75-125 | 0.7 | 20 |
| Zinc | 2363 | 20.0 | " | 100 | 2331 | 32 | 75-125 | 0.9 | 20 |
| Batch 1109047 - 1109043 | | | *Water* | | | | | | ICPOE - PE Optima |
| Serial Dilution (1109047-SRD1) | | Dilution Factor: 5 | | Source: C110806-01 | | Prepared: 09/14/11 Analyzed: 09/15/11 | | | |
| Aluminum | 2333 | 250 | ug/L | | 2340 | | | 0.3 | 10 |
| Calcium | 9598 | 1250 | " | | 9700 | | | 1 | 10 |
| Iron | 15030 | 1250 | " | | 14880 | | | 1 | 10 |
| Potassium | 2153 | 5000 | " | | 2085 | | | 3 | 10 |
| Magnesium | 1730 | 1250 | " | | 1738 | | | 0.5 | 10 |
| Sodium | 2867 | 2500 | " | | 2867 | | | 0.03 | 10 |
| Zinc | 2283 | 100 | " | | 2331 | | | 2 | 10 |

NOTE: %R = % Recovery. %R limits do not apply when sample levels exceed 4x the spike level.
RPD = Relative Percent Difference. %D = % Difference. DL = Detection Limit for QC sample

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **ICPMS-PE DRC-II** | | | | | | | | | |
| Batch 1109037 - 200.2 - TR Metals | | | *Water* | | | | | | **ICPMS-PE DRC-II** |
| **Method Blank (1109037-BLK2)** | | Dilution Factor: 5 | | | | | Prepared: 09/13/11 | Analyzed: 09/15/11 | |
| Beryllium | < 0.500 | 1.00 | ug/L | | | | | | |
| Vanadium | < 5.00 | 10.0 | " | | | | | | |
| Chromium | 2.774 | 5.00 | " | | | | | | |
| Manganese | < 1.00 | 2.50 | " | | | | | | |
| Cobalt | < 0.500 | 1.00 | " | | | | | | |
| Nickel | < 2.50 | 5.00 | " | | | | | | |
| Copper | < 2.50 | 5.00 | " | | | | | | |
| Arsenic | < 2.50 | 10.0 | " | | | | | | |
| Selenium | < 2.50 | 5.00 | " | | | | | | |
| Molybdenum | < 0.500 | 1.50 | " | | | | | | |
| Silver | < 0.500 | 10.0 | " | | | | | | |
| Cadmium | < 0.500 | 1.00 | " | | | | | | |
| Antimony | < 2.50 | 5.00 | " | | | | | | |
| Barium | < 25.0 | 50.0 | " | | | | | | |
| Thallium | < 2.50 | 5.00 | " | | | | | | |
| Lead | < 0.500 | 1.00 | " | | | | | | |
| **Duplicate (1109037-DUP2)** | | Dilution Factor: 5 | **Source: C110806-02** | | | | Prepared: 09/13/11 | Analyzed: 09/15/11 | |
| Beryllium | < 0.500 | 1.00 | ug/L | | 0.5634 | | | | 20 |
| Vanadium | < 5.00 | 10.0 | " | | < 5.00 | | | | 20 |
| Chromium | 7.262 | 5.00 | " | | 5.942 | | | 20 | 20 |
| Manganese | 552.3 | 2.50 | " | | 562.0 | | | 2 | 20 |
| Cobalt | 33.33 | 1.00 | " | | 33.80 | | | 1 | 20 |
| Nickel | 12.64 | 5.00 | " | | 13.40 | | | 6 | 20 |
| Copper | 612.9 | 5.00 | " | | 617.0 | | | 0.7 | 20 |
| Arsenic | 9130 | 10.0 | " | | 9259 | | | 1 | 20 |
| Selenium | < 2.50 | 5.00 | " | | < 2.50 | | | | 20 |
| Molybdenum | 0.5816 | 1.50 | " | | 0.5730 | | | 1 | 20 |
| Silver | < 0.500 | 10.0 | " | | < 0.500 | | | | 20 |
| Cadmium | 30.86 | 1.00 | " | | 31.95 | | | 3 | 20 |
| Antimony | 41.31 | 5.00 | " | | 41.66 | | | 0.8 | 20 |
| Barium | < 25.0 | 50.0 | " | | < 25.0 | | | | 20 |
| Thallium | < 2.50 | 5.00 | " | | < 2.50 | | | | 20 |
| Lead | 1271 | 1.00 | " | | 1267 | | | 0.4 | 20 |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109037 - 200.2 - TR Metals | | | *Water* | | | | | | ICPMS-PE DRC-II |
| **Matrix Spike (1109037-MS2)** | | Dilution Factor: 5 | | Source: C110806-02 | | Prepared: 09/13/11 | | Analyzed: 09/15/11 | |
| Beryllium | 180.3 | 1.00 | ug/L | 200 | 0.5634 | 90 | 75-125 | | |
| Vanadium | 283.5 | 10.0 | " | 300 | < 5.00 | 95 | 75-125 | | |
| Chromium | 384.8 | 5.00 | " | 400 | 5.942 | 95 | 75-125 | | |
| Manganese | 741.0 | 2.50 | " | 200 | 562.0 | 90 | 75-125 | | |
| Cobalt | 222.1 | 1.00 | " | 200 | 33.80 | 94 | 75-125 | | |
| Nickel | 494.9 | 5.00 | " | 500 | 13.40 | 96 | 75-125 | | |
| Copper | 912.5 | 5.00 | " | 300 | 617.0 | 98 | 75-125 | | |
| Arsenic | 9852 | 10.0 | " | 800 | 9259 | 74 | 75-125 | | |
| Selenium | 1932 | 5.00 | " | 2000 | < 2.50 | 97 | 75-125 | | |
| Molybdenum | 400.8 | 1.50 | " | 400 | 0.5730 | 100 | 75-125 | | |
| Silver | 65.37 | 10.0 | " | 75.0 | < 0.500 | 87 | 75-125 | | |
| Cadmium | 235.4 | 1.00 | " | 200 | 31.95 | 102 | 75-125 | | |
| Antimony | 860.1 | 5.00 | " | 800 | 41.66 | 102 | 75-125 | | |
| Barium | 202.5 | 50.0 | " | 200 | < 25.0 | 101 | 75-125 | | |
| Thallium | 2118 | 5.00 | " | 2000 | < 2.50 | 106 | 75-125 | | |
| Lead | 2274 | 1.00 | " | 1000 | 1267 | 101 | 75-125 | | |
| **Matrix Spike Dup (1109037-MSD2)** | | Dilution Factor: 5 | | Source: C110806-02 | | Prepared: 09/13/11 | | Analyzed: 09/15/11 | |
| Beryllium | 177.1 | 1.00 | ug/L | 200 | 0.5634 | 88 | 75-125 | 2 | 20 |
| Vanadium | 286.0 | 10.0 | " | 300 | < 5.00 | 95 | 75-125 | 0.8 | 20 |
| Chromium | 383.0 | 5.00 | " | 400 | 5.942 | 94 | 75-125 | 0.4 | 20 |
| Manganese | 749.2 | 2.50 | " | 200 | 562.0 | 94 | 75-125 | 1 | 20 |
| Cobalt | 224.0 | 1.00 | " | 200 | 33.80 | 95 | 75-125 | 0.9 | 20 |
| Nickel | 494.4 | 5.00 | " | 500 | 13.40 | 96 | 75-125 | 0.09 | 20 |
| Copper | 909.2 | 5.00 | " | 300 | 617.0 | 97 | 75-125 | 0.4 | 20 |
| Arsenic | 10260 | 10.0 | " | 800 | 9259 | 125 | 75-125 | 4 | 20 |
| Selenium | 2000 | 5.00 | " | 2000 | < 2.50 | 100 | 75-125 | 3 | 20 |
| Molybdenum | 397.4 | 1.50 | " | 400 | 0.5730 | 99 | 75-125 | 0.8 | 20 |
| Silver | 66.97 | 10.0 | " | 75.0 | < 0.500 | 89 | 75-125 | 2 | 20 |
| Cadmium | 235.8 | 1.00 | " | 200 | 31.95 | 102 | 75-125 | 0.2 | 20 |
| Antimony | 867.4 | 5.00 | " | 800 | 41.66 | 103 | 75-125 | 0.8 | 20 |
| Barium | 205.1 | 50.0 | " | 200 | < 25.0 | 103 | 75-125 | 1 | 20 |
| Thallium | 2177 | 5.00 | " | 2000 | < 2.50 | 109 | 75-125 | 3 | 20 |
| Lead | 2339 | 1.00 | " | 1000 | 1267 | 107 | 75-125 | 3 | 20 |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109037 - 200.2 - TR Metals | | | *Water* | | | | | | ICPMS-PE DRC-II |
| **Post Spike (1109037-PS2)** | | Dilution Factor: 5 | Source: C110806-02 | | | Prepared: 09/13/11 | Analyzed: 09/15/11 | | |
| Beryllium | 97.62 | | ug/L | 100 | 0.5634 | 97 | 80-120 | | |
| Vanadium | 91.28 | | " | 100 | -3.562 | 95 | 80-120 | | |
| Chromium | 103.0 | | " | 100 | 5.942 | 97 | 80-120 | | |
| Manganese | 642.1 | | " | 100 | 562.0 | 80 | 80-120 | | |
| Cobalt | 126.8 | | " | 100 | 33.80 | 93 | 80-120 | | |
| Nickel | 108.3 | | " | 100 | 13.40 | 95 | 80-120 | | |
| Copper | 698.7 | | " | 100 | 617.0 | 82 | 80-120 | | |
| Arsenic | 9186 | | " | 100 | 9259 | NR | 80-120 | | |
| Selenium | 495.8 | | " | 500 | 1.981 | 99 | 80-120 | | |
| Molybdenum | 100.6 | | " | 100 | 0.5730 | 100 | 80-120 | | |
| Silver | 90.46 | | " | 100 | 0.2586 | 90 | 80-120 | | |
| Cadmium | 134.4 | | " | 100 | 31.95 | 102 | 80-120 | | |
| Antimony | 144.1 | | " | 100 | 41.66 | 102 | 80-120 | | |
| Barium | 105.1 | | " | 100 | 6.258 | 99 | 80-120 | | |
| Thallium | 129.3 | | " | 100 | 0.3264 | 129 | 80-120 | | |
| Lead | 1369 | | " | 100 | 1267 | 102 | 80-120 | | |
| **Reference (1109037-SRM2)** | | Dilution Factor: 2 | | | | Prepared: 09/13/11 | Analyzed: 09/15/11 | | |
| Beryllium | 907.8 | 4.00 | ug/L | 1000 | | 91 | 80-120 | | |
| Vanadium | 960.1 | 40.0 | " | 1000 | | 96 | 80-120 | | |
| Chromium | 976.2 | 20.0 | " | 1000 | | 98 | 80-120 | | |
| Manganese | 966.9 | 10.0 | " | 1000 | | 97 | 80-120 | | |
| Cobalt | 978.9 | 4.00 | " | 1000 | | 98 | 80-120 | | |
| Nickel | 983.1 | 20.0 | " | 1000 | | 98 | 80-120 | | |
| Copper | 1013 | 20.0 | " | 1000 | | 101 | 80-120 | | |
| Arsenic | 2072 | 40.0 | " | 2000 | | 104 | 80-120 | | |
| Selenium | 1017 | 20.0 | " | 1000 | | 102 | 80-120 | | |
| Molybdenum | 996.1 | 6.00 | " | 1000 | | 100 | 80-120 | | |
| Silver | 195.9 | 40.0 | " | 250 | | 78 | 80-120 | | |
| Cadmium | 1028 | 4.00 | " | 1000 | | 103 | 80-120 | | |
| Antimony | 2034 | 20.0 | " | 2000 | | 102 | 80-120 | | |
| Barium | 1003 | 200 | " | 1000 | | 100 | 80-120 | | |
| Thallium | 5227 | 20.0 | " | 5000 | | 105 | 80-120 | | |
| Lead | 2106 | 4.00 | " | 2000 | | 105 | 80-120 | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109046 - 1109037 | | | *Water* | | | | | | ICPMS-PE DRC-II |
| **Serial Dilution (1109046-SRD1)** | | Dilution Factor: 2 | Source: C110806-02 | | | | Prepared: 09/13/11 Analyzed: 09/15/11 | | |
| Beryllium | < 12.5 | 25.0 | ug/L | | 0.5634 | | | | 10 |
| Vanadium | < 12.5 | 25.0 | " | | < 2.50 | | | | 10 |
| Chromium | < 12.5 | 25.0 | " | | 5.942 | | | | 10 |
| Manganese | 563.3 | 25.0 | " | | 562.0 | | | 0.2 | 10 |
| Cobalt | 34.59 | 25.0 | " | | 33.80 | | | 2 | 10 |
| Nickel | 13.65 | 25.0 | " | | 13.40 | | | 2 | 10 |
| Copper | 639.2 | 25.0 | " | | 617.0 | | | 4 | 10 |
| Arsenic | 9132 | 25.0 | " | | 9259 | | | 1 | 10 |
| Selenium | < 12.5 | 25.0 | " | | < 2.50 | | | | 10 |
| Molybdenum | < 2.50 | 7.50 | " | | 0.5730 | | | | 200 |
| Silver | < 2.50 | 50.0 | " | | < 0.50 | | | | 10 |
| Cadmium | 28.94 | 25.0 | " | | 31.95 | | | 10 | 10 |
| Antimony | 40.17 | 25.0 | " | | 41.66 | | | 4 | 10 |
| Barium | < 12.5 | 25.0 | " | | < 2.50 | | | | 10 |
| Thallium | < 12.5 | 25.0 | " | | < 2.50 | | | | 10 |
| Lead | 1253 | 25.0 | " | | 1267 | | | 1 | 10 |

**ICPOE - PE Optima**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109037 - 200.2 - TR Metals | | | *Water* | | | | | | ICPOE - PE Optima |
| **Method Blank (1109037-BLK1)** | | Dilution Factor: 1 | | | | | Prepared: 09/13/11 Analyzed: 09/15/11 | | |
| Aluminum | < 20.0 | 50.0 | ug/L | | | | | | |
| Calcium | < 100 | 250 | " | | | | | | |
| Iron | < 100 | 250 | " | | | | | | |
| Potassium | < 250 | 1000 | " | | | | | | |
| Magnesium | < 100 | 250 | " | | | | | | |
| Sodium | < 250 | 500 | " | | | | | | |
| Zinc | < 10.0 | 20.0 | " | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109037 - 200.2 - TR Metals | | | *Water* | | | | | | ICPOE - PE Optima |
| **Duplicate (1109037-DUP1)** | | Dilution Factor: 1 | | Source: C110806-02 | | Prepared: 09/13/11 Analyzed: 09/15/11 | | | |
| Aluminum | 2369 | 50.0 | ug/L | | 2384 | | | 0.6 | 20 |
| Calcium | 9449 | 250 | " | | 9548 | | | 1 | 20 |
| Iron | 22810 | 250 | " | | 22880 | | | 0.3 | 20 |
| Potassium | 2067 | 1000 | " | | 2085 | | | 0.9 | 20 |
| Magnesium | 1708 | 250 | " | | 1726 | | | 1 | 20 |
| Sodium | 2804 | 500 | " | | 2827 | | | 0.8 | 20 |
| Zinc | 2162 | 20.0 | " | | 2198 | | | 2 | 20 |
| **Matrix Spike (1109037-MS1)** | | Dilution Factor: 1 | | Source: C110806-02 | | Prepared: 09/13/11 Analyzed: 09/15/11 | | | |
| Aluminum | 4364 | 50.0 | ug/L | 2000 | 2384 | 99 | 75-125 | | |
| Calcium | 10530 | 250 | " | 1000 | 9548 | 99 | 75-125 | | |
| Iron | 25890 | 250 | " | 3000 | 22880 | 100 | 75-125 | | |
| Potassium | 12310 | 1000 | " | 10000 | 2085 | 102 | 75-125 | | |
| Magnesium | 3770 | 250 | " | 2000 | 1726 | 102 | 75-125 | | |
| Sodium | 5979 | 500 | " | 3000 | 2827 | 105 | 75-125 | | |
| Zinc | 2366 | 20.0 | " | 200 | 2198 | 84 | 75-125 | | |
| **Matrix Spike Dup (1109037-MSD1)** | | Dilution Factor: 1 | | Source: C110806-02 | | Prepared: 09/13/11 Analyzed: 09/15/11 | | | |
| Aluminum | 4361 | 50.0 | ug/L | 2000 | 2384 | 99 | 75-125 | 0.08 | 20 |
| Calcium | 10530 | 250 | " | 1000 | 9548 | 99 | 75-125 | 0.008 | 20 |
| Iron | 25990 | 250 | " | 3000 | 22880 | 104 | 75-125 | 0.4 | 20 |
| Potassium | 12230 | 1000 | " | 10000 | 2085 | 101 | 75-125 | 0.7 | 20 |
| Magnesium | 3753 | 250 | " | 2000 | 1726 | 101 | 75-125 | 0.4 | 20 |
| Sodium | 5952 | 500 | " | 3000 | 2827 | 104 | 75-125 | 0.5 | 20 |
| Zinc | 2359 | 20.0 | " | 200 | 2198 | 81 | 75-125 | 0.3 | 20 |
| **Post Spike (1109037-PS1)** | | Dilution Factor: 1 | | Source: C110806-02 | | Prepared: 09/13/11 Analyzed: 09/15/11 | | | |
| Aluminum | 12460 | | ug/L | 10100 | 2384 | 100 | 80-120 | | |
| Calcium | 19650 | | " | 10100 | 9548 | 100 | 80-120 | | |
| Iron | 32860 | | " | 10100 | 22880 | 99 | 80-120 | | |
| Potassium | 12540 | | " | 10100 | 2085 | 103 | 80-120 | | |
| Magnesium | 12010 | | " | 10100 | 1726 | 102 | 80-120 | | |
| Sodium | 13430 | | " | 10100 | 2827 | 105 | 80-120 | | |
| Zinc | 2227 | | " | 100 | 2198 | 28 | 80-120 | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Batch 1109037 - 200.2 - TR Metals | | | *Water* | | | | | | ICPOE - PE Optima |
| **Reference (1109037-SRM1)** | | Dilution Factor: 1 | | | | Prepared: 09/13/11 Analyzed: 09/15/11 | | | |
| Aluminum | 981.3 | 50.0 | ug/L | 1000 | | 98 | 80-120 | | |
| Calcium | 917.8 | 250 | " | 1000 | | 92 | 80-120 | | |
| Iron | 934.3 | 250 | " | 1000 | | 93 | 80-120 | | |
| Potassium | 4924 | 1000 | " | 5000 | | 98 | 80-120 | | |
| Magnesium | 996.4 | 250 | " | 1000 | | 100 | 80-120 | | |
| Sodium | 963.6 | 500 | " | 1000 | | 96 | 80-120 | | |
| Zinc | 1008 | 20.0 | " | 1000 | | 101 | 80-120 | | |
| Batch 1109048 - 1109037 | | | *Water* | | | | | | ICPOE - PE Optima |
| **Serial Dilution (1109048-SRD1)** | | Dilution Factor: 5 | Source: C110806-02 | | | Prepared: 09/13/11 Analyzed: 09/15/11 | | | |
| Aluminum | 2424 | 250 | ug/L | | 2384 | | | 2 | 10 |
| Calcium | 9671 | 1250 | " | | 9548 | | | 1 | 10 |
| Iron | 23470 | 1250 | " | | 22880 | | | 3 | 10 |
| Potassium | 2054 | 5000 | " | | 2085 | | | 2 | 10 |
| Magnesium | 1765 | 1250 | " | | 1726 | | | 2 | 10 |
| Sodium | 2887 | 2500 | " | | 2827 | | | 2 | 10 |
| Zinc | 2280 | 100 | " | | 2198 | | | 4 | 10 |

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.
RPD = Relative Percent Difference, %D = % Difference, DL = Detection Limit for QC sample

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## Classical Chemistry by EPA/ASTM/APHA Methods - Quality Control

## TechLaw, Inc. - ESAT Region 8

| Analyte | Result | Det. Limit | Units | Spike Level | Source Result | %R | %R Limits | %D or RPD | %D or RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| **ESAT Dionex IC** | | | | | | | | | |
| Batch 1108056 - No Prep Req | | | *Water* | | | | | | **ESAT Dionex IC** |
| **Method Blank (1108056-BLK1)** | | Dilution Factor: 1 | | | | Prepared & Analyzed: 08/15/11 | | | |
| Chloride | < 1.0 | 2.0 | mg/L | | | | | | |
| Bromide | < 0.2 | 0.5 | " | | | | | | |
| Sulfate as SO4 | < 2.0 | 5.0 | " | | | | | | |
| **Method Blank Spike (1108056-BS1)** | | Dilution Factor: 1 | | | | Prepared & Analyzed: 08/15/11 | | | |
| Chloride | 24.1 | 2.0 | mg/L | 25.0 | | 96 | 80-120 | | |
| Bromide | 9.9 | 0.5 | " | | | | 80-120 | | |
| Sulfate as SO4 | 23.5 | 5.0 | " | 25.0 | | 94 | 80-120 | | |
| **Duplicate (1108056-DUP1)** | | Dilution Factor: 1 | **Source: C110805-02** | | | Prepared & Analyzed: 08/15/11 | | | |
| Chloride | < 1.0 | 2.0 | mg/L | | < 1.0 | | | | 20 |
| Bromide | < 0.2 | 0.5 | " | | < 0.2 | | | | 20 |
| Sulfate as SO4 | 149 | 5.0 | " | | 149 | | | 0.3 | 20 |
| **Matrix Spike (1108056-MS1)** | | Dilution Factor: 1 | **Source: C110805-02** | | | Prepared & Analyzed: 08/15/11 | | | |
| Chloride | 24.4 | 2.0 | mg/L | 25.0 | < 1.0 | 98 | 80-120 | | |
| Bromide | 10.2 | 0.5 | " | | < 0.2 | | 80-120 | | |
| Sulfate as SO4 | 171 | 5.0 | " | 25.0 | 149 | 85 | 80-120 | | |
| **Matrix Spike Dup (1108056-MSD1)** | | Dilution Factor: 1 | **Source: C110805-02** | | | Prepared & Analyzed: 08/15/11 | | | |
| Chloride | 24.5 | 2.0 | mg/L | 25.0 | < 1.0 | 98 | 80-120 | 0.3 | 20 |
| Bromide | 10.0 | 0.5 | " | | < 0.2 | | 80-120 | 2 | 20 |
| Sulfate as SO4 | 172 | 5.0 | " | 25.0 | 149 | 91 | 80-120 | 0.8 | 20 |

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.
RPD = Relative Percent Difference, %D = % Difference, DL = Detection Limit for QC sample

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8
## INORGANIC ANALYSES DATA SHEET
### Intial and Continuing Calibration Blanks

Analytical Method: EPA 300.0 Analysis Name: WC - Anions by Ion Chromatography

Instrument: ESAT Dionex IC Work Order: Nu C110805

Analytical Sequence: 1108079 Dissolved Concentration Units: mg/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

| Analyte | Initial Calibration Blank (1 & 2) | Continuing Calibration Blanks | | | | Method Blank (Batch ID) | | PQL |
|---|---|---|---|---|---|---|---|---|
| Chloride | 0.00 | 1 | 2 | 3 | 4 | 1108056-BLK1 | NA | 2.00 |
| | | 0.00 | | | | 0.00 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Bromide | 0.00 | 1 | 2 | 3 | 4 | 1108056-BLK1 | NA | 0.50 |
| | | 0.00 | | | | 0.00 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Sulfate as SO4 | 0.00 | 1 | 2 | 3 | 4 | 1108056-BLK1 | NA | 5.00 |
| | | 0.00 | | | | 0.00 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

### Intial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Instrument: ICPMS-PE DRC-II Work Order: Nu C110805

Analytical Sequence: 1109045 Dissolved Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

| Analyte | Initial Calibration Blank (1 & 2) | Continuing Calibration Blanks | | | | Method Blank (Batch ID) | | PQL |
|---|---|---|---|---|---|---|---|---|
| Beryllium | -0.06 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 0.20 |
| | | -0.06 | -0.04 | | | -0.03 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Vanadium | -0.02 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 2.00 |
| | | -0.01 | -0.01 | | | 0.03 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Chromium | -0.05 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 1.00 |
| | | 0.01 | -0.08 | | | 0.06 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Manganese | 0.03 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 0.50 |
| | | 0.01 | 0.08 | | | 0.01 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Cobalt | 0.01 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 0.20 |
| | | 0.00 | 0.01 | | | 0.01 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Nickel | 0.01 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 1.00 |
| | | 0.00 | 0.00 | | | 0.02 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Copper | 0.05 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 1.00 |
| | | 0.06 | 0.10 | | | 0.03 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Arsenic | 0.09 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 2.00 |
| | | 0.08 | 0.11 | | | 0.06 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

### Intial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Instrument: ICPMS-PE DRC-II Work Order: Nu C110805

Analytical Sequence: 1109045 Dissolved Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

| Analyte | Initial Calibration Blank (1 & 2) | Continuing Calibration Blanks | | | | Method Blank (Batch ID) | | PQL |
|---|---|---|---|---|---|---|---|---|
| Selenium | 0.14 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 1.00 |
| | | 0.33 | -0.03 | | | 0.17 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Molybdenum | 0.17 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 0.30 |
| | | 0.28 | 0.15 | | | 0.08 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Silver | 0.51 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 2.00 |
| | | 0.42 | 1.09 | | | -0.02 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Cadmium | -0.01 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 0.20 |
| | | -0.02 | 0.05 | | | -0.04 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Antimony | 0.02 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 1.00 |
| | | 0.05 | 0.06 | | | 0.12 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Barium | 0.02 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 10.00 |
| | | 0.01 | 0.01 | | | 0.01 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Thallium | 0.00 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 1.00 |
| | | 0.00 | 0.00 | | | 0.02 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Lead | 0.01 | 1 | 2 | 3 | 4 | 1109044-BLK1 | NA | 0.20 |
| | | 0.01 | 0.01 | | | 0.02 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

### Intial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Instrument: ICPMS-PE DRC-II Work Order: Nu C110805

Analytical Sequence: 1109046 **Total Recoverable** Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

| Analyte | Initial Calibration Blank (1 & 2) | Continuing Calibration Blanks | | | | Method Blank (Batch ID) | | PQL |
|---|---|---|---|---|---|---|---|---|
| Beryllium | -0.06 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 0.20 |
| | | -0.06 | -0.04 | -0.05 | | NA | -0.03 | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Vanadium | -0.02 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 2.00 |
| | | -0.01 | -0.01 | -0.05 | | NA | -0.67 | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Chromium | -0.05 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 1.00 |
| | | 0.01 | -0.08 | -0.14 | | NA | 0.55 | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Manganese | 0.03 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 0.50 |
| | | 0.01 | 0.08 | 0.12 | | NA | 0.13 | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Cobalt | 0.01 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 0.20 |
| | | 0.00 | 0.01 | 0.01 | | NA | 0.00 | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Nickel | 0.01 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 1.00 |
| | | 0.00 | 0.00 | 0.01 | | NA | 0.02 | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Copper | 0.05 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 1.00 |
| | | 0.06 | 0.10 | 0.10 | | NA | 0.31 | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Arsenic | 0.09 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 2.00 |
| | | 0.08 | 0.11 | 0.13 | | NA | -0.25 | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

### Intial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Instrument: ICPMS-PE DRC-II Work Order: Nu C110805

Analytical Sequence: 1109046 Total Recoverable Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

| Analyte | Initial Calibration Blank (1 & 2) | Continuing Calibration Blanks | | | | Method Blank (Batch ID) | | PQL |
|---|---|---|---|---|---|---|---|---|
| Selenium | 0.14 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 1.00 |
| | | 0.33 | -0.03 | 0.15 | | NA | 0.06 | |
| | | 5 | 6 | 7 | 8 | | | |
| Molybdenum | 0.17 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 0.30 |
| | | 0.28 | 0.15 | 0.14 | | NA | -0.01 | |
| | | 5 | 6 | 7 | 8 | | | |
| Silver | 0.51 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 2.00 |
| | | 0.42 | 1.09 | 0.63 | | NA | -0.05 | |
| | | 5 | 6 | 7 | 8 | | | |
| Cadmium | -0.01 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 0.20 |
| | | -0.02 | 0.05 | 0.05 | | NA | 0.09 | |
| | | 5 | 6 | 7 | 8 | | | |
| Antimony | 0.02 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 1.00 |
| | | 0.05 | 0.06 | 0.06 | | NA | 0.03 | |
| | | 5 | 6 | 7 | 8 | | | |
| Barium | 0.02 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 10.00 |
| | | 0.01 | 0.01 | 0.01 | | NA | 0.20 | |
| | | 5 | 6 | 7 | 8 | | | |
| Thallium | 0.00 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 1.00 |
| | | 0.00 | 0.00 | 0.24 | | NA | 0.01 | |
| | | 5 | 6 | 7 | 8 | | | |
| Lead | 0.01 | 1 | 2 | 3 | 4 | NA | 1109037-BLK2 | 0.20 |
| | | 0.01 | 0.01 | 0.01 | | NA | 0.06 | |
| | | 5 | 6 | 7 | 8 | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

### Intial and Continuing Calibration Blanks

Analytical Method: 200.7 Analysis Name: ICPOE Diss. Metals-2010

Instrument: ICPOE - PE Optima Work Order: Nu C110805

Analytical Sequence: 1109047 Dissolved Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

| Analyte | Initial Calibration Blank (1 & 2) | Continuing Calibration Blanks | | | | Method Blank (Batch ID) | | PQL |
|---|---|---|---|---|---|---|---|---|
| Aluminum | -0.52 | 1 | 2 | 3 | 4 | 1109043-BLK1 | NA | 50.00 |
| | | 1.14 | -1.77 | | | -0.43 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Calcium | -0.69 | 1 | 2 | 3 | 4 | 1109043-BLK1 | NA | 250.00 |
| | | 1.87 | 1.24 | | | -10.43 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Iron | -1.48 | 1 | 2 | 3 | 4 | 1109043-BLK1 | NA | 250.00 |
| | | 26.10 | 13.13 | | | 11.25 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Potassium | 18.24 | 1 | 2 | 3 | 4 | 1109043-BLK1 | NA | 1,000.00 |
| | | 7.01 | 5.74 | | | 14.83 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Magnesium | 0.28 | 1 | 2 | 3 | 4 | 1109043-BLK1 | NA | 250.00 |
| | | 1.15 | 0.91 | | | -0.12 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Sodium | -1.30 | 1 | 2 | 3 | 4 | 1109043-BLK1 | NA | 500.00 |
| | | 6.41 | 0.53 | | | 1.66 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Zinc | -1.71 | 1 | 2 | 3 | 4 | 1109043-BLK1 | NA | 20.00 |
| | | -1.16 | 0.03 | | | -2.32 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

### Intial and Continuing Calibration Blanks

Analytical Method: 200.7 Analysis Name: ICPOE Tot. Rec Metals-2010

Instrument: ICPOE - PE Optima Work Order: Nu C110805

Analytical Sequence: 1109048 Total Recoverable Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

| Analyte | Initial Calibration Blank (1 & 2) | Continuing Calibration Blanks | | | | Method Blank (Batch ID) | | PQL |
|---|---|---|---|---|---|---|---|---|
| Aluminum | -0.52 | 1 | 2 | 3 | 4 | 1109037-BLK1 | NA | 50.00 |
| | | 1.14 | -1.77 | -0.68 | | -0.70 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Calcium | -0.69 | 1 | 2 | 3 | 4 | 1109037-BLK1 | NA | 250.00 |
| | | 1.87 | 1.24 | 1.90 | | -12.64 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Iron | -1.48 | 1 | 2 | 3 | 4 | 1109037-BLK1 | NA | 250.00 |
| | | 26.10 | 13.13 | 26.10 | | 13.36 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Potassium | 18.24 | 1 | 2 | 3 | 4 | 1109037-BLK1 | NA | 1,000.00 |
| | | 7.01 | 5.74 | 7.13 | | 24.89 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Magnesium | 0.28 | 1 | 2 | 3 | 4 | 1109037-BLK1 | NA | 250.00 |
| | | 1.15 | 0.91 | 1.29 | | -0.35 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Sodium | -1.30 | 1 | 2 | 3 | 4 | 1109037-BLK1 | NA | 500.00 |
| | | 6.41 | 0.53 | -1.23 | | 2.36 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |
| Zinc | -1.71 | 1 | 2 | 3 | 4 | 1109037-BLK1 | NA | 20.00 |
| | | -1.16 | 0.03 | 0.89 | | 4.66 | NA | |
| | | 5 | 6 | 7 | 8 | | | |
| | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

### Initial and Continuing Calibration Verification Results

ESAT Dionex IC | Method: EPA 300.0 | Analysis Name: WC - Anions by Ion Chromatography 2010

Sequence: 1108079 | Work Order: C110805 | Units: mg/L

| Dissolved Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Bromide | 50.1 | 49.4 | 98.6 | | 1 | | | 2 | | | 3 | |
| | | | | 10.0 | 10.0 | 100.0 | | | | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Chloride | 15.1 | 14.5 | 96.0 | | 1 | | | 2 | | | 3 | |
| | | | | 40.0 | 40.1 | 100.3 | | | | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Sulfate as SO4 | 75.2 | 78.5 | 104.4 | | 1 | | | 2 | | | 3 | |
| | | | | 100 | 101 | 101.0 | | | | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1109045 Work Order: C110805 Units: ug/L

| Dissolved Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Antimony | 50.0 | 49.3 | 98.6 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.6 | 99.2 | 50.0 | 49.9 | 99.8 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Arsenic | 50.0 | 50.5 | 101.0 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.8 | 99.6 | 50.0 | 50.7 | 101.4 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Barium | 50.0 | 50.4 | 100.8 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 48.8 | 97.6 | 50.0 | 49.4 | 98.8 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Beryllium | 50.0 | 49.3 | 98.6 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 51.5 | 103.0 | 50.0 | 49.4 | 98.8 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Cadmium | 50.0 | 50.3 | 100.6 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 50.9 | 101.8 | 50.0 | 51.6 | 103.2 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Chromium | 50.0 | 49.2 | 98.4 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.8 | 99.6 | 50.0 | 50.4 | 100.8 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1109045 Work Order: C110805 Units: ug/L

| Dissolved Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Cobalt | 50.0 | 49.3 | 98.6 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 48.7 | 97.4 | 50.0 | 50.3 | 100.6 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Copper | 50.0 | 49.8 | 99.6 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.3 | 98.6 | 50.0 | 49.7 | 99.4 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Lead | 50.0 | 49.6 | 99.2 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 50.4 | 100.8 | 50.0 | 52.8 | 105.6 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Manganese | 50.0 | 48.6 | 97.2 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.3 | 98.6 | 50.0 | 50.4 | 100.8 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Molybdenum | 50.0 | 50.1 | 100.2 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 50.1 | 100.2 | 50.0 | 50.2 | 100.4 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Nickel | 50.0 | 49.7 | 99.4 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 50.5 | 101.0 | 50.0 | 50.9 | 101.8 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1109045 Work Order: C110805 Units: ug/L

| Dissolved Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Selenium | 250 | 251 | 100.4 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.9 | 99.8 | 50.0 | 50.0 | 100.0 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Silver | 50.0 | 50.2 | 100.4 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.9 | 99.8 | 50.0 | 50.1 | 100.2 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Thallium | 50.0 | 51.6 | 103.2 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 51.7 | 103.4 | 50.0 | 53.6 | 107.2 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Vanadium | 50.0 | 48.6 | 97.2 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 48.5 | 97.0 | 50.0 | 49.4 | 98.8 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

**ICPMS-PE DRC-II** Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1109046 Work Order: C110805 Units: ug/L

| Total Recoverable Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Antimony | 50.0 | 49.26 | 98.5 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.64 | 99.3 | 50.0 | 49.88 | 99.8 | 50.0 | 50.21 | 100.4 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Arsenic | 50.0 | 50.47 | 100.9 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.82 | 99.6 | 50.0 | 50.69 | 101.4 | 50.0 | 50.64 | 101.3 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Barium | 50.0 | 50.41 | 100.8 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 48.77 | 97.5 | 50.0 | 49.45 | 98.9 | 50.0 | 49.90 | 99.8 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Beryllium | 50.0 | 49.33 | 98.7 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 51.53 | 103.1 | 50.0 | 49.36 | 98.7 | 50.0 | 50.52 | 101.0 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Cadmium | 50.0 | 50.35 | 100.7 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 50.87 | 101.7 | 50.0 | 51.55 | 103.1 | 50.0 | 52.04 | 104.1 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Chromium | 50.0 | 49.19 | 98.4 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.80 | 99.6 | 50.0 | 50.43 | 100.9 | 50.0 | 49.97 | 99.9 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1109046 Work Order: C110805 Units: ug/L

| Total Recoverable Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Cobalt | 50.0 | 49.35 | 98.7 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 48.74 | 97.5 | 50.0 | 50.29 | 100.6 | 50.0 | 49.11 | 98.2 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Copper | 50.0 | 49.81 | 99.6 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.27 | 98.5 | 50.0 | 49.72 | 99.4 | 50.0 | 50.18 | 100.4 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Lead | 50.0 | 49.63 | 99.3 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 50.36 | 100.7 | 50.0 | 52.84 | 105.7 | 50.0 | 54.18 | 108.4 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Manganese | 50.0 | 48.57 | 97.1 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.31 | 98.6 | 50.0 | 50.43 | 100.9 | 50.0 | 49.82 | 99.6 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Molybdenum | 50.0 | 50.09 | 100.2 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 50.12 | 100.2 | 50.0 | 50.16 | 100.3 | 50.0 | 50.12 | 100.2 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Nickel | 50.0 | 49.66 | 99.3 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 50.51 | 101.0 | 50.0 | 50.94 | 101.9 | 50.0 | 50.46 | 100.9 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1109046 Work Order: C110805 Units: ug/L

| Total Recoverable Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Selenium | 250 | 250.9 | 100.4 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.89 | 99.8 | 50.0 | 49.99 | 100.0 | 50.0 | 50.81 | 101.6 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Silver | 50.0 | 50.24 | 100.5 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 49.92 | 99.8 | 50.0 | 50.08 | 100.2 | 50.0 | 49.41 | 98.8 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Thallium | 50.0 | 51.55 | 103.1 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 51.73 | 103.5 | 50.0 | 53.58 | 107.2 | 50.0 | 54.27 | 108.5 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Vanadium | 50.0 | 48.63 | 97.3 | | 1 | | | 2 | | | 3 | |
| | | | | 50.0 | 48.51 | 97.0 | 50.0 | 49.41 | 98.8 | 50.0 | 48.96 | 97.9 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPOE - PE Optima Method: 200.7 Analysis Name: ICPOE Diss. Metals-2010

Sequence: 1109047 Work Order: C110805 Units: ug/L

| Dissolved Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Aluminum | 1000 | 991.0 | 99.1 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12710 | 101.7 | 12500 | 12640 | 101.1 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Calcium | 1000 | 948.0 | 94.8 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12580 | 100.6 | 12500 | 12440 | 99.5 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Iron | 1000 | 948.0 | 94.8 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12760 | 102.1 | 12500 | 12590 | 100.7 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Magnesium | 1000 | 1008 | 100.8 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12780 | 102.2 | 12500 | 12680 | 101.4 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Potassium | 5000 | 4950 | 99.0 | | 1 | | | 2 | | | 3 | |
| | | | | 25000 | 25330 | 101.3 | 25000 | 25190 | 100.8 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Sodium | 1000 | 962.3 | 96.2 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12740 | 101.9 | 12500 | 12750 | 102.0 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

**ICPOE - PE Optima** Method: 200.7 Analysis Name: ICPOE Diss. Metals-2010

Sequence: 1109047 Work Order: C110805 Units: ug/L

| Dissolved Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Zinc | 1000 | 1028 | 102.8 | | 1 | | | 2 | | | 3 | |
| | | | | 2500 | 2553 | 102.1 | 2500 | 2548 | 101.9 | | | |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPOE - PE Optima Method: 200.7 Analysis Name: ICPOE Tot. Rec Metals-2010

Sequence: 1109048 Work Order: C110805 Units: ug/L

| Total Recoverable Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| Aluminum | 1000 | 991.0 | 99.1 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12710 | 101.7 | 12500 | 12640 | 101.1 | 12500 | 12650 | 101.2 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Calcium | 1000 | 948.0 | 94.8 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12580 | 100.6 | 12500 | 12440 | 99.5 | 12500 | 12400 | 99.2 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Iron | 1000 | 948.0 | 94.8 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12760 | 102.1 | 12500 | 12590 | 100.7 | 12500 | 12520 | 100.2 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Magnesium | 1000 | 1008 | 100.8 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12780 | 102.2 | 12500 | 12680 | 101.4 | 12500 | 12680 | 101.4 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Potassium | 5000 | 4950 | 99.0 | | 1 | | | 2 | | | 3 | |
| | | | | 25000 | 25330 | 101.3 | 25000 | 25190 | 100.8 | 25000 | 25240 | 101.0 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |
| Sodium | 1000 | 962.3 | 96.2 | | 1 | | | 2 | | | 3 | |
| | | | | 12500 | 12740 | 101.9 | 12500 | 12750 | 102.0 | 12500 | 12830 | 102.6 |
| | | | | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

**ICPOE - PE Optima** Method: 200.7 Analysis Name: ICPOE Tot. Rec Metals-2010

Sequence: 1109048 Work Order: C110805 Units: ug/L

| Total Recoverable Analyte | Initial (ICV1, ICV2) | | | Continuing Calibration Verification Standards (CCVs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | %R | True | Found | %R | True | Found | %R |
| | | | | | 1 | | | 2 | | | 3 | |
| | | | | 2500 | 2553 | 102.1 | 2500 | 2548 | 101.9 | 2500 | 2547 | 101.9 |
| Zinc | 1000 | 1028 | 102.8 | | 4 | | | 5 | | | 6 | |
| | | | | | | | | | | | | |
| | | | | | 7 | | | 8 | | | 9 | |
| | | | | | | | | | | | | |

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

**TechLaw, Inc. - ESAT Region 8**

**ICP Interference Check Sample**

**ICPMS-PE DRC-II**

| Analyte | Check Sample | Result* | Units | True | %R | PQL |
|---|---|---|---|---|---|---|
| Sequence: 1109045 | Analysis: ICPMS Diss. Metals-2010 | | | | | |
| Antimony | IFA1 | 0.0 | ug/L | | | 1.00 |
| | IFB1 | 0.0 | ug/L | | | 1.00 |
| Arsenic | IFA1 | 0.0 | ug/L | | | 2.00 |
| | IFB1 | 21.0 | ug/L | 20 | 105 | 2.00 |
| Barium | IFA1 | 0.3 | ug/L | | | 10.0 |
| | IFB1 | 0.4 | ug/L | | | 10.0 |
| Beryllium | IFA1 | -0.1 | ug/L | | | 0.200 |
| | IFB1 | 0.0 | ug/L | | | 0.200 |
| Cadmium | IFA1 | 0.0 | ug/L | | | 0.200 |
| | IFB1 | 20.2 | ug/L | 20 | 101 | 0.200 |
| Chromium | IFA1 | 0.6 | ug/L | | | 1.00 |
| | IFB1 | 21.1 | ug/L | 20 | 105 | 1.00 |
| Cobalt | IFA1 | -0.1 | ug/L | | | 0.200 |
| | IFB1 | 19.8 | ug/L | 20 | 99 | 0.200 |
| Copper | IFA1 | 0.6 | ug/L | | | 1.00 |
| | IFB1 | 21.1 | ug/L | 20 | 105 | 1.00 |
| Lead | IFA1 | 0.1 | ug/L | | | 0.200 |
| | IFB1 | 0.1 | ug/L | | | 0.200 |
| Manganese | IFA1 | -0.3 | ug/L | | | 0.500 |
| | IFB1 | 19.7 | ug/L | 20 | 98 | 0.500 |
| Molybdenum | IFA1 | 205.0 | ug/L | 200 | 103 | 0.200 |
| | IFB1 | 207.4 | ug/L | 200 | 104 | 0.200 |
| Nickel | IFA1 | -0.1 | ug/L | | | 1.00 |
| | IFB1 | 20.3 | ug/L | 20 | 102 | 1.00 |
| Selenium | IFA1 | 0.5 | ug/L | | | 1.00 |
| | IFB1 | 0.3 | ug/L | | | 1.00 |
| Silver | IFA1 | -0.3 | ug/L | | | 0.500 |
| | IFB1 | 17.0 | ug/L | 20 | 85 | 0.500 |
| Thallium | IFA1 | 0.0 | ug/L | | | 1.00 |
| | IFB1 | 0.0 | ug/L | | | 1.00 |
| Vanadium | IFA1 | 0.0 | ug/L | | | 2.00 |
| | IFB1 | -0.1 | ug/L | | | 2.00 |

*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

**TechLaw, Inc. - ESAT Region 8**

**ICP Interference Check Sample**

**ICPMS-PE DRC-II**

| Analyte | Check Sample | Result* | Units | True | %R | PQL |
|---|---|---|---|---|---|---|
| Sequence: 1109046 | Analysis: ICP-MS Tot. Rec. Metals-2010 | | | | | |
| Antimony | IFA1 | 0.0 | ug/L | | | 1.00 |
| | IFB1 | 0.0 | ug/L | | | 1.00 |
| Arsenic | IFA1 | 0.0 | ug/L | | | 2.00 |
| | IFB1 | 21.0 | ug/L | 20 | 105 | 2.00 |
| Barium | IFA1 | 0.3 | ug/L | | | 10.0 |
| | IFB1 | 0.4 | ug/L | | | 10.0 |
| Beryllium | IFA1 | -0.1 | ug/L | | | 0.200 |
| | IFB1 | 0.0 | ug/L | | | 0.200 |
| Cadmium | IFA1 | 0.0 | ug/L | | | 0.200 |
| | IFB1 | 20.2 | ug/L | 20 | 101 | 0.200 |
| Chromium | IFA1 | 0.6 | ug/L | | | 1.00 |
| | IFB1 | 21.1 | ug/L | 20 | 105 | 1.00 |
| Cobalt | IFA1 | -0.1 | ug/L | | | 0.200 |
| | IFB1 | 19.8 | ug/L | 20 | 99 | 0.200 |
| Copper | IFA1 | 0.6 | ug/L | | | 1.00 |
| | IFB1 | 21.1 | ug/L | 20 | 105 | 1.00 |
| Lead | IFA1 | 0.1 | ug/L | | | 0.200 |
| | IFB1 | 0.1 | ug/L | | | 0.200 |
| Manganese | IFA1 | -0.3 | ug/L | | | 0.500 |
| | IFB1 | 19.7 | ug/L | 20 | 98 | 0.500 |
| Molybdenum | IFA1 | 205.0 | ug/L | 200 | 103 | 0.200 |
| | IFB1 | 207.4 | ug/L | 200 | 104 | 0.200 |
| Nickel | IFA1 | -0.1 | ug/L | | | 1.00 |
| | IFB1 | 20.3 | ug/L | 20 | 102 | 1.00 |
| Selenium | IFA1 | 0.5 | ug/L | | | 1.00 |
| | IFB1 | 0.3 | ug/L | | | 1.00 |
| Silver | IFA1 | -0.3 | ug/L | | | 0.500 |
| | IFB1 | 17.0 | ug/L | 20 | 85 | 0.500 |
| Thallium | IFA1 | 0.0 | ug/L | | | 1.00 |
| | IFB1 | 0.0 | ug/L | | | 1.00 |
| Vanadium | IFA1 | 0.0 | ug/L | | | 2.00 |
| | IFB1 | -0.1 | ug/L | | | 2.00 |

*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

**TechLaw, Inc. - ESAT Region 8**

**ICP Interference Check Sample**

**ICPOE - PE Optima**

| Analyte | Check Sample | Result* | Units | True | %R | PQL |
|---|---|---|---|---|---|---|
| Sequence: 1109047 Analysis: ICPOE Diss. Metals-2010 | | | | | | |
| Aluminum | IFA1 | 59,893.0 | ug/L | 60,000 | 100 | 50.0 |
| | IFB1 | 60,392.7 | ug/L | 60,000 | 101 | 50.0 |
| Calcium | IFA1 | 290,276.7 | ug/L | 300,000 | 97 | 250 |
| | IFB1 | 290,821.5 | ug/L | 300,000 | 97 | 250 |
| Iron | IFA1 | 225,637.6 | ug/L | 250,000 | 90 | 250 |
| | IFB1 | 227,571.1 | ug/L | 250,000 | 91 | 250 |
| Magnesium | IFA1 | 143,607.1 | ug/L | 150,000 | 96 | 250 |
| | IFB1 | 144,846.1 | ug/L | 150,000 | 97 | 250 |
| Potassium | IFA1 | -90.4 | ug/L | | | 1000 |
| | IFB1 | 21,220.2 | ug/L | 20,000 | 106 | 1000 |
| Sodium | IFA1 | 51,405.9 | ug/L | 50,000 | 103 | 500 |
| | IFB1 | 51,646.9 | ug/L | 50,000 | 103 | 500 |
| Zinc | IFA1 | 6.4 | ug/L | | | 20.0 |
| | IFB1 | 289.2 | ug/L | 300 | 96 | 20.0 |

*Criteria = 80-120%R of True Value or +/- PQL
See raw data for complete analyte list and results.

| | | | | | | |
|---|---|---|---|---|---|---|
| Sequence: 1109048 Analysis: ICPOE Tot. Rec Metals-2010 | | | | | | |
| Aluminum | IFA1 | 59,893.0 | ug/L | 60,000 | 100 | 50.0 |
| | IFB1 | 60,392.7 | ug/L | 60,000 | 101 | 50.0 |
| Calcium | IFA1 | 290,276.7 | ug/L | 300,000 | 97 | 250 |
| | IFB1 | 290,821.5 | ug/L | 300,000 | 97 | 250 |
| Iron | IFA1 | 225,637.6 | ug/L | 250,000 | 90 | 250 |
| | IFB1 | 227,571.1 | ug/L | 250,000 | 91 | 250 |
| Magnesium | IFA1 | 143,607.1 | ug/L | 150,000 | 96 | 250 |
| | IFB1 | 144,846.1 | ug/L | 150,000 | 97 | 250 |
| Potassium | IFA1 | -90.4 | ug/L | | | 1000 |
| | IFB1 | 21,220.2 | ug/L | 20,000 | 106 | 1000 |
| Sodium | IFA1 | 51,405.9 | ug/L | 50,000 | 103 | 500 |
| | IFB1 | 51,646.9 | ug/L | 50,000 | 103 | 500 |
| Zinc | IFA1 | 6.4 | ug/L | | | 20.0 |
| | IFB1 | 289.2 | ug/L | 300 | 96 | 20.0 |

*Criteria = 80-120%R of True Value or +/- PQL
See raw data for complete analyte list and results.

**TechLaw, Inc. - ESAT Region 8**
**Detection Limit (PQL) Standard**
**ICPMS-PE DRC-II**

Metals (Dissolved) by EPA 200/7000 Series Methods
Sequence: 1109045

| Analyte | True | Found | %R | Units |
|---|---|---|---|---|
| Antimony | 1.00 | 1.00 | 100 | ug/L |
| Arsenic | 2.00 | 2.07 | 103 | ug/L |
| Barium | 0.500 | 0.560 | 112 | ug/L |
| Beryllium | 0.200 | 0.180 | 90 | ug/L |
| Cadmium | 0.200 | 0.211 | 105 | ug/L |
| Chromium | 1.00 | 0.989 | 99 | ug/L |
| Cobalt | 0.200 | 0.219 | 110 | ug/L |
| Copper | 1.00 | 1.11 | 111 | ug/L |
| Lead | 0.200 | 0.187 | 93 | ug/L |
| Manganese | 0.200 | 0.211 | 105 | ug/L |
| Molybdenum | 0.200 | 0.217 | 109 | ug/L |
| Nickel | 1.00 | 1.02 | 102 | ug/L |
| Selenium | 1.00 | 1.08 | 108 | ug/L |
| Silver | 0.500 | 0.414 | 83 | ug/L |
| Thallium | 0.200 | 0.184 | 92 | ug/L |
| Vanadium | 2.00 | 1.99 | 100 | ug/L |

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

**TechLaw, Inc. - ESAT Region 8**

**Detection Limit (PQL) Standard**

**ICPOE - PE Optima**

Metals (Dissolved) by EPA 200/7000 Series Methods

Sequence: 1109047

| Analyte | True | Found | %R | Units |
|---|---|---|---|---|
| Aluminum | 100 | 100.5 | 101 | ug/L |
| Calcium | 250 | 249.6 | 100 | ug/L |
| Iron | 100 | 101.9 | 102 | ug/L |
| Magnesium | 1000 | 1072 | 107 | ug/L |
| Potassium | 1000 | 1098 | 110 | ug/L |
| Sodium | 1000 | 1079 | 108 | ug/L |
| Zinc | 50.0 | 56.26 | 113 | ug/L |

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

**TechLaw, Inc. - ESAT Region 8**

**Detection Limit (PQL) Standard**

**ICPMS-PE DRC-II**

Metals (Total Recov) by EPA 200/7000 Series Methods

Sequence: 1109046

| Analyte | True | Found | %R | Units |
|---|---|---|---|---|
| Antimony | 1.00 | 1.005 | 100 | ug/L |
| Arsenic | 2.00 | 2.069 | 103 | ug/L |
| Barium | 0.500 | 0.5602 | 112 | ug/L |
| Beryllium | 0.200 | 0.1798 | 90 | ug/L |
| Cadmium | 0.200 | 0.2110 | 105 | ug/L |
| Chromium | 1.00 | 0.9889 | 99 | ug/L |
| Cobalt | 0.200 | 0.2192 | 110 | ug/L |
| Copper | 1.00 | 1.106 | 111 | ug/L |
| Lead | 0.200 | 0.1869 | 93 | ug/L |
| Manganese | 0.200 | 0.2106 | 105 | ug/L |
| Molybdenum | 0.200 | 0.2175 | 109 | ug/L |
| Nickel | 1.00 | 1.020 | 102 | ug/L |
| Selenium | 1.00 | 1.083 | 108 | ug/L |
| Silver | 0.500 | 0.4140 | 83 | ug/L |
| Thallium | 0.200 | 0.1842 | 92 | ug/L |
| Vanadium | 2.00 | 1.992 | 100 | ug/L |

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

## TechLaw, Inc. - ESAT Region 8
## Detection Limit (PQL) Standard
### ICPOE - PE Optima

Metals (Total Recov) by EPA 200/7000 Series Methods

Sequence: 1109048

| Analyte | True | Found | %R | Units |
|---|---|---|---|---|
| Aluminum | 100 | 100.5 | 101 | ug/L |
| Calcium | 250 | 249.6 | 100 | ug/L |
| Iron | 100 | 101.9 | 102 | ug/L |
| Magnesium | 1000 | 1072 | 107 | ug/L |
| Potassium | 1000 | 1098 | 110 | ug/L |
| Sodium | 1000 | 1079 | 108 | ug/L |
| Zinc | 50.0 | 56.26 | 113 | ug/L |

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

**Analytical Method:** EPA 300.0 **Dissolved** **Sequence ID#:** 1108079

**Instrument ID #:** ESAT Dionex IC Water **LSR #:** DG-264

| Analysis ID | Sample Name | Analysis Date | Analysis Time |
|---|---|---|---|
| 1108079-ICV1 | Initial Cal Check | 08/15/11 | 10:46 |
| 1108079-ICB1 | Initial Cal Blank | 08/15/11 | 11:03 |
| 1108056-BLK1 | Blank | 08/15/11 | 11:21 |
| 1108056-BS1 | | 08/15/11 | 11:39 |
| C110805-02 | ArgentineShaft | 08/15/11 | 11:56 |
| 1108056-DUP1 | Duplicate | 08/15/11 | 12:14 |
| 1108056-MS1 | Matrix Spike | 08/15/11 | 12:31 |
| 1108056-MSD1 | Matrix Spike Dup | 08/15/11 | 12:49 |
| C110805-05 | BlaineTunnel | 08/15/11 | 13:06 |
| 1108079-CCV1 | Calibration Check | 08/15/11 | 13:24 |
| 1108079-CCB1 | Calibration Blank | 08/15/11 | 13:42 |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

**Analytical Method:** 200.8 **Dissolved** **Sequence ID#:** 1109045

**Instrument ID #:** ICPMS-PE DRC-II Water **LSR #:** DG-264

| Analysis ID | Sample Name | Analysis Date | Analysis Time |
|---|---|---|---|
| 1109045-ICV1 | Initial Cal Check | 09/15/11 | 10:37 |
| 1109045-ICB1 | Initial Cal Blank | 09/15/11 | 10:40 |
| 1109045-CRL1 | Instrument RL Check | 09/15/11 | 10:43 |
| 1109045-IFA1 | Interference Check A | 09/15/11 | 10:46 |
| 1109045-IFB1 | Interference Check B | 09/15/11 | 10:49 |
| 1109045-CCV1 | Calibration Check | 09/15/11 | 10:52 |
| 1109045-CCB1 | Calibration Blank | 09/15/11 | 10:55 |
| 1109044-BLK1 | Blank | 09/15/11 | 10:58 |
| 1109044-DUP1 | Duplicate | 09/15/11 | 11:04 |
| 1109045-SRD1 | Serial Dilution | 09/15/11 | 11:06 |
| 1109044-BS1 | | 09/15/11 | 11:09 |
| 1109044-MS1 | Matrix Spike | 09/15/11 | 11:12 |
| 1109044-MSD1 | Matrix Spike Dup | 09/15/11 | 11:15 |
| C110805-01 | ArgentineShaft | 09/15/11 | 11:18 |
| C110805-03 | BlaineTunnel | 09/15/11 | 11:20 |
| 1109045-CCV2 | Calibration Check | 09/15/11 | 11:41 |
| 1109045-CCB2 | Calibration Blank | 09/15/11 | 11:44 |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

**Analytical Method:** 200.8 **Total Recoverable** **Sequence ID#:** 1109046

**Instrument ID #:** ICPMS-PE DRC-II Water **LSR #:** DG-264

| Analysis ID | Sample Name | Analysis Date | Analysis Time |
|---|---|---|---|
| 1109046-ICV1 | Initial Cal Check | 09/15/11 | 10:37 |
| 1109046-ICB1 | Initial Cal Blank | 09/15/11 | 10:40 |
| 1109046-CRL1 | Instrument RL Check | 09/15/11 | 10:43 |
| 1109046-IFA1 | Interference Check A | 09/15/11 | 10:46 |
| 1109046-IFB1 | Interference Check B | 09/15/11 | 10:49 |
| 1109046-CCV1 | Calibration Check | 09/15/11 | 10:52 |
| 1109046-CCB1 | Calibration Blank | 09/15/11 | 10:55 |
| 1109046-CCV2 | Calibration Check | 09/15/11 | 11:41 |
| 1109046-CCB2 | Calibration Blank | 09/15/11 | 11:44 |
| 1109037-BLK2 | Blank | 09/15/11 | 11:47 |
| 1109037-DUP2 | Duplicate | 09/15/11 | 11:53 |
| 1109046-SRD1 | Serial Dilution | 09/15/11 | 11:56 |
| 1109037-SRM2 | Reference | 09/15/11 | 11:59 |
| 1109037-MS2 | Matrix Spike | 09/15/11 | 12:01 |
| 1109037-MSD2 | Matrix Spike Dup | 09/15/11 | 12:04 |
| 1109037-PS2 | Post Spike | 09/15/11 | 12:07 |
| C110805-04 | BlaineTunnel | 09/15/11 | 12:10 |
| 1109046-CCV3 | Calibration Check | 09/15/11 | 12:22 |
| 1109046-CCB3 | Calibration Blank | 09/15/11 | 12:25 |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

**Analytical Method:** 200.7 **Dissolved** **Sequence ID#:** 1109047

**Instrument ID #:** ICPOE - PE Optima Water **LSR #:** DG-264

| Analysis ID | Sample Name | Analysis Date | Analysis Time |
|---|---|---|---|
| 1109047-ICV1 | Initial Cal Check | 09/15/11 | 08:49 |
| 1109047-ICB1 | Initial Cal Blank | 09/15/11 | 08:52 |
| 1109047-CRL1 | Instrument RL Check | 09/15/11 | 08:55 |
| 1109047-IFA1 | Interference Check A | 09/15/11 | 08:58 |
| 1109047-IFB1 | Interference Check B | 09/15/11 | 09:02 |
| 1109047-CCV1 | Calibration Check | 09/15/11 | 09:06 |
| 1109047-CCB1 | Calibration Blank | 09/15/11 | 09:09 |
| 1109043-BLK1 | Blank | 09/15/11 | 09:12 |
| 1109043-BS1 | | 09/15/11 | 09:15 |
| 1109043-DUP1 | Duplicate | 09/15/11 | 09:21 |
| 1109047-SRD1 | Serial Dilution | 09/15/11 | 09:24 |
| 1109043-MS1 | Matrix Spike | 09/15/11 | 09:27 |
| 1109043-MSD1 | Matrix Spike Dup | 09/15/11 | 09:30 |
| C110805-01 | ArgentineShaft | 09/15/11 | 09:32 |
| C110805-03 | BlaineTunnel | 09/15/11 | 09:35 |
| 1109047-CCV2 | Calibration Check | 09/15/11 | 09:42 |
| 1109047-CCB2 | Calibration Blank | 09/15/11 | 09:45 |

**Project Name:** Rico-Argentine_Surface Waters_AUG 2011_D264 **Certificate of Analysis**

**TDF #:** DG-264

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

**Analytical Method:** 200.7 **Total Recoverable** **Sequence ID#:** 1109048

**Instrument ID #:** ICPOE - PE Optima Water **LSR #:** DG-264

| Analysis ID | Sample Name | Analysis Date | Analysis Time |
|---|---|---|---|
| 1109048-ICV1 | Initial Cal Check | 09/15/11 | 08:49 |
| 1109048-ICB1 | Initial Cal Blank | 09/15/11 | 08:52 |
| 1109048-CRL1 | Instrument RL Check | 09/15/11 | 08:55 |
| 1109048-IFA1 | Interference Check A | 09/15/11 | 08:58 |
| 1109048-IFB1 | Interference Check B | 09/15/11 | 09:02 |
| 1109048-CCV1 | Calibration Check | 09/15/11 | 09:06 |
| 1109048-CCB1 | Calibration Blank | 09/15/11 | 09:09 |
| 1109048-CCV2 | Calibration Check | 09/15/11 | 09:42 |
| 1109048-CCB2 | Calibration Blank | 09/15/11 | 09:45 |
| 1109037-BLK1 | Blank | 09/15/11 | 09:48 |
| 1109037-SRM1 | Reference | 09/15/11 | 09:51 |
| 1109037-DUP1 | Duplicate | 09/15/11 | 09:57 |
| 1109048-SRD1 | Serial Dilution | 09/15/11 | 10:00 |
| 1109037-MS1 | Matrix Spike | 09/15/11 | 10:03 |
| 1109037-MSD1 | Matrix Spike Dup | 09/15/11 | 10:06 |
| 1109037-PS1 | Post Spike | 09/15/11 | 10:08 |
| C110805-04 | BlaineTunnel | 09/15/11 | 10:11 |
| 1109048-CCV3 | Calibration Check | 09/15/11 | 10:17 |
| 1109048-CCB3 | Calibration Blank | 09/15/11 | 10:20 |

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quality & integrity

# ESAT Region 8

## Perkin Elmer Optima 4300 ICP-OE

## 2011 MDLs and PQLs
## Contract: EP-W-06-33

| 2011 | | Dissolved MDL u g/L | Tot Rec. MDL u g/L | Practical MDL u g/L | PQL H20 u g/L | PQL Soil mg/Kg | Linear Range mg/L |
|---|---|---|---|---|---|---|---|
| Ag | Silver | 0.349 | 0.188 | 2 | 10.0 | 1.0 | 5 |
| Al | Aluminum | 4.42 | 3.77 | 20 | 50.0 | 5.0 | 100 |
| As | Arsenic | 51.4 | 18.9 | 60 | 100.0 | 10.0 | 20 |
| B | Boron | 2.43 | 3.5 | 50 | 250.0 | 25.0 | 100 |
| Ba | Barium | 0.261 | 0.248 | 2 | 5.0 | 0.5 | 20 |
| Be | Beryllium | 0.122 | 0.088 | 2 | 5.0 | 0.5 | 10 |
| Ca | Calcium | 16.7 | 2.63 | 100 | 250.0 | 25.0 | 1000 |
| Cd | Cadmium | 0.798 | 0.74 | 2 | 5.0 | 0.5 | 20 |
| Co | Cobalt | 1.18 | 0.907 | 2 | 5.0 | 0.5 | 20 |
| Cr | Chromium | 0.587 | 0.462 | 2 | 5.0 | 0.5 | 20 |
| Cu | Copper | 0.589 | 0.538 | 2 | 2.0 | 1.0 | 100 |
| Fe | Iron | 15.2 | 17.4 | 100 | 250.0 | 25.0 | 500 |
| K | Potassium | 39 | 24.2 | 250 | 1000.0 | 100.0 | 500 |
| Mg | Magnesium | 6.01 | 27.2 | 100 | 250.0 | 25.0 | 500 |
| Mn | Manganese | 0.102 | 0.07 | 2 | 5.0 | 0.5 | 40 |
| Mo | Molybdenum | 5.44 | 1.61 | 6 | 10.0 | 1.0 | 50 |
| Na | Sodium | 25.6 | 5.36 | 250 | 1000.0 | 100.0 | 500 |
| Ni | Nickel | 3.07 | 2.38 | 5 | 10.0 | 1.0 | 100 |
| Pb | Lead | 8.81 | 7.37 | 10 | 25.0 | 2.5 | 100 |
| Sb | Antimony | 22.2 | 23.7 | 40 | 100.0 | 10.0 | 20 |
| Se | Selenium | 56.3 | 52.8 | 60 | 100.0 | 10.0 | 20 |
| SiO2 | Silica | 3.25 | 2.73 | 250 | 1000.0 | 100.0 | 100 |
| Sr | Strontium | 0.08 | 0.078 | 2 | 10.0 | 1.0 | 1 |
| Ti | Titanium | 0.263 | 0.084 | 5 | 10.0 | 1.0 | 10 |
| Tl | Thallium | 13 | 2.53 | 20 | 50.0 | 5.0 | 20 |
| V | Vanadium | 1.68 | 1.41 | 10 | 50.0 | 5.0 | 25 |
| Zn | Zinc | 3.59 | 3.4 | 10 | 20.0 | 2.0 | 100 |

ICP-OE * MDL determined: August 2011
Last Updated: August 2011

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## ESAT Region 8

## Perkin Elmer ELAN DRC-II ICP-MS

### 2011 MDLs and PQLs
### Contract: EP-W-06-33

| 2010 | Dissolved MDL u g/L | Tot Rec. MDL u g/L | Practical MDL u g/L | PQL H20 ug/L | PQL Soil ug/Kg |
|---|---|---|---|---|---|
| Ag 107 | 0.08 | 0.06 | 0.10 | 0.5 | 50.0 |
| Al 27 | 1.18 | 1.32 | 5.00 | 20.0 | 2000.0 |
| As 75 | 0.08 | 0.05 | 0.50 | 2.0 | 200.0 |
| Ba 135 | 0.14 | 0.08 | 5.00 | 10.0 | 1000.0 |
| Be 9 | 0.05 | 0.10 | 0.10 | 0.2 | 20.0 |
| Cd 111 | 0.04 | 0.02 | 0.10 | 0.2 | 20.0 |
| Co 59 | 0.01 | 0.01 | 0.10 | 0.2 | 20.0 |
| Cr 52 | 0.07 | 0.09 | 0.50 | 1.0 | 100.0 |
| Cu 65 | 0.15 | 0.06 | 0.50 | 1.0 | 100.0 |
| Mn 55 | 0.01 | 0.03 | 0.20 | 0.5 | 50.0 |
| Mo 98 | 0.09 | 0.02 | 0.10 | 0.2 | 20.0 |
| Ni 60 | 0.02 | 0.03 | 0.50 | 1.0 | 100.0 |
| Pb 208 | 0.01 | 0.01 | 0.10 | 0.2 | 20.0 |
| Sb 121 | 0.03 | 0.03 | 0.50 | 1.0 | 100.0 |
| Se 82 | 0.36 | 0.19 | 0.50 | 1.0 | 100.0 |
| Tl 205 | 0.01 | 0.01 | 0.50 | 1.0 | 100.0 |
| Th 232 | 0.05 | 0.14 | 0.50 | 1.0 | 100.0 |
| U 238 | 0.01 | 0.01 | 0.10 | 0.2 | 20.0 |
| V 51 | 0.08 | 0.09 | 1.00 | 2.0 | 200.0 |
| Zn 66 | 0.40 | 0.27 | 2.00 | 5.0 | 500.0 |

**ICP-MS * MDL determined: March 2011**

**Last Updated: March 2011**

TechLaw, Inc.
Environmental Services Assistance Team
16194 W. 45th Drive, Golden, CO 80403
303-312-7720

Task Order: 40
TDF: DG-264
LIMS: C110805
DCN #: EP8-6-6481
Contract: EP-W-06-33

## Rico-Argentine - Surface Waters - AUG 2011

Sample Calculation for Hardness

Sample ID: C110805-03

| Calcium (µg/L) | | | Ca Hardness, mg/L |
|---|---|---|---|
| 318000 | divide by 1000, then x 2.497 | = | 794.05 |

| Magnesium (µg/L) | | | Mg Hardness, mg/L |
|---|---|---|---|
| 85900 | divide by 1000, then x 4.118 | = | 353.74 |

Calculated Hardness, mg/L 1147.78

TechLaw, Inc.
Environmental Services Assistance Team
16194 W. 45th Drive, Golden, CO 80403
303-312-7720

Task Order: 40
TDF: DG-264
LIMS: C110805
DCN #: EP8-6-6481
Contract: EP-W-06-33

## Rico-Argentine – Surface Water – AUG 2011

Sample Identification
Cross-Reference Information

| EPA Sample ID | ESAT LIMS ID |
|---|---|
| ArgentineShaft | C110805-01 |
| ArgentineShaft | C110805-02 |
| BlaineTunnel | C110805-03 |
| BlaineTunnel | C110805-04 |
| BlaineTunnel | C110805-05 |

WORK ORDER

Printed: 8/11/2011 12:35:27PM

# C110805

## TechLaw, Inc. - ESAT Region 8

**Client:** Superfund
**Project:** Rico-Argentine_Surface Waters_AUG 2011_D264
**Project Manager:** Scott VanOvermeiren
**Project Number:** DG-264

**Report To:**
Superfund
Steve Way
1595 Wynkoop Street
Denver, CO 80202
Phone: (303) 312-7720
Fax: (303) 312-7801

**Invoice To:**
Superfund
Steve Way
1595 Wynkoop Street
Denver, CO 80202
Phone :(303) 312-7720
Fax: (303) 312-7801

Date Due: 09/09/11 00:00 (30 day TAT)
Received By: Nick Philpot
Date Received: 08/10/11 10:00
Logged In By: Nick Philpot
Date Logged In: 08/11/11 12:29

Samples Received at: 7°C
Custody Seals No
Received On Ice No
Containers Intact Yes
COC/Labels Agree No
Preservation Confin Yes

| Analysis | Due | TAT | Expires | Comments |
|---|---|---|---|---|
| **C110805-01 ArgentineShaft [Water] Sampled 08/04/11 13:30 Dateline** | | | | |
| Dissolved Metals + Hardness | 08/31/11 00:00 | 21 | 01/31/12 18:30 | |
| **C110805-02 ArgentineShaft [Water] Sampled 08/04/11 13:30 Dateline** | | | | |
| WC - Anions by Ion Chromatography 2( | 09/09/11 00:00 | 30 | 09/01/11 19:30 | |
| **C110805-03 BlaineTunnel [Water] Sampled 08/04/11 16:00 Dateline** | | | | |
| Dissolved Metals + Hardness | 08/31/11 00:00 | 21 | 01/31/12 21:00 | |
| **C110805-04 BlaineTunnel [Water] Sampled 08/04/11 16:00 Dateline** | | | | |
| Total Recoverable Metals | 08/31/11 00:00 | 21 | 01/31/12 21:00 | |

WORK ORDER

Printed: 8/11/2011 12:35:27PM

**C110805**

# TechLaw, Inc. - ESAT Region 8

| | | | |
|---|---|---|---|
| **Client:** | **Superfund** | **Project Manager:** | **Scott VanOvermeiren** |
| **Project:** | **Rico-Argentine_Surface Waters_AUG 2011_D264** | **Project Number:** | **DG-264** |

| Analysis | Due | TAT | Expires | Comments |
|---|---|---|---|---|
| **C110805-05 BlaineTunnel [Water] Sampled 08/04/11 16:00 Dateline** | | | | |
| WC - Anions by Ion Chromatography 2 | 09/09/11 00:00 | 30 | 09/01/11 22:00 | |

**Analysis groups included in this work order**

*Dissolved Metals + Hardness*

ICPOE Diss. Metals-2010 ICPMS Diss. Metals-2010 DM-Hardness - Calculated

*Total Recoverable Metals*

ICPOE Tot. Rec Metals-20 ICP-MS Tot. Rec. Metals-2

Reviewed By

Date

USEPA

DateShipped: 8/9/2011

CarrierName: FedEx

TDF No: DG-220

CHAIN OF CUSTODY RECORD

St. Louis Tunnel - Rico

Contact Name: Jan Christner

Contact Phone: 720.810.0759

110805

No: 8-081011-165652-0002

Lab: ESAT - Region 8 Laboratory

Lab Phone: 303.312.7708

| Lab # | Sample # | Location | Analyses | Matrix | Collection Method | Collected | Sample Time | Numb Cont | Container | Preservative | MS/MSD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ArgentineShaft_080411 | ArgentineShaft | Dissolved Metals | Water | Grab | 8/4/2011 | 13:30 | 1 | 500 mL poly | HNO3 pH<2 | |
| | ArgentineShaft_080411 | ArgentineShaft | Br, Cl, SO4 | Water | Grab | 8/4/2011 | 13:30 | 1 | 500 mL poly | 4 C | |
| | BlaineTunnel_080411 | BlaineTunnel | Br, Cl, SO4 | Water | Grab | 8/4/2011 | 16:00 | 1 | 500 mL poly | 4 C | |
| | BlaineTunnel_080411 | BlaineTunnel | Dissolved Metals | Water | Grab | 8/4/2011 | 16:00 | 1 | 500 mL poly | HNO3 pH<2 | |
| | BlaineTunnel_080411 | BlaineTunnel | Total Metals | Water | Grab | 8/4/2011 | 16:00 | 1 | 500 mL poly | HNO3 pH<2 | |

Special Instructions: SEE ATTACHED COC

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

| Items/Reason | Relinquished by | Date | Received by | Date | Time | | Items/Reason | Relinquished By | Date | Received by | Date | Tim |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
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