

## Memo

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|-----------------|---|--------------------|---------------------|
| <b>To:</b>      | Katsky Venter                                 | <b>Client:</b>     | TMAC Resources Inc. |
| <b>From:</b>    | Eduardo Marquez<br>Lisa Barazzuol             | <b>Project No:</b> | 1CT022.009          |
| <b>Cc:</b>      | Oliver Curran, TMAC<br>John Roberts, TMAC     | <b>Date:</b>       | April 28, 2016      |
| <b>Subject:</b> | 2015 Doris Waste Rock and Ore Seep Monitoring |                    |                     |

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## 1 Introduction

As part of the verification, monitoring and management plans for Hope Bay Project (the Project), TMAC Resources (TMAC) monitors seepage downstream of the Doris North infrastructure pads and roads, waste rock and quarries. The last reported seep survey included Doris North infrastructure, quarries, and waste rock, with results discussed in the *2014 Hope Bay Seepage Monitoring Program* (SRK 2015).

This memo presents the results of the 2015 freshet seep survey. The 2014 seep survey satisfied the water licence requirements for the seep monitoring associated with quarry construction rock. Accordingly, the scope of the 2015 survey included the waste rock stockpile and downstream areas only, which is referred to as “Waste Rock Influenced Area” in previous seepage monitoring programs, i.e. SRK (2015). The 2015 seepage program was completed in accordance with conditions outlined in Part D “Conditions applying to Construction and Operations” Item 20 of Water Licence 2AM-DOH1323 (Nunavut Water Board 2013) and the *Doris North Waste Rock and Ore Management Plan* (SRK 2010).

## 2 Methods

### 2.1 Seep Survey and Sample Collection

The seep survey was carried out on June 7 and June 8, 2015 by TMAC. Seep survey locations were established opportunistically by walking the down-gradient toe of the waste rock stockpile and below the Pollution Control Pond and access roads (Figure 1).

Field measurements were taken at all locations where water was observed flowing out of construction rock material including true seeps where precipitation runoff and snowmelt came into contact with rock along the roadways, building pads and berms. Electrical conductivity (EC), pH, temperature, oxidation-reduction potential (ORP) and flow rates (where possible) were measured at each of these locations at the time of monitoring.



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**Legend**

**2015 Seepage**

- Sampled
- Not Sampled

**Previous Surveys**

- 2014 Seepage
- 2013 Seepage
- 2012 Seepage
- 2011 Seepage
- 2010 Seepage

|                       | pH 6.0 to 6.9 | pH 7.0 to 7.9 | pH 8.0 to 8.9 |
|-----------------------|---------------|---------------|---------------|
| EC < 500 µS/cm        |               |               |               |
| 500µS/cm<EC<2000µS/cm |               |               |               |
| EC>2000µS/cm          |               |               |               |



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2015 Seepage Monitoring

**Hope Bay Gold Project**

Seep Survey Locations  
Waste Rock Influenced Area

Date:  
April 2016

Approved:  
JEM

Figure:  
**1**



A total of eight seepage sites were monitored opportunistically. As much as possible, the site locations coincided with the 2014 sites. Four samples were collected at these sites and submitted for laboratory analysis. In addition, one duplicate sample, a travel blank and field blank were collected and submitted for analysis, as part of SRK's quality assurance/quality control (QA/QC) program. No reference sites were sampled in 2015.

## **2.2 Laboratory Analysis**

A total of seven samples, including QA/QC samples, were collected and submitted by TMAC Resources to ALS Environmental Labs in Vancouver, BC where they were analyzed for pH, conductivity, sulphate, acidity, alkalinity, chloride, fluoride, nitrate, nitrite, phosphorus, ammonia, total dissolved solids (TDS), total suspended solids (TSS) and low level dissolved metals including mercury and selenium. Filtration and/or preservation of the samples was conducted in the field.

## **2.3 Quality Assurance and Quality Control**

QA/QC review of all data was conducted by SRK and deemed acceptable. One duplicate, one field blank and one travel blank were collected as part of SRK's QA/QC program.

The majority of the field blank parameters were below detection limits, indicating appropriate field filtration and sampling methods were employed. Only dissolved iron was measured at a concentration high enough to be flagged as possible contamination in the field. However, the remaining samples contained iron in concentrations an order of magnitude lower than in the field blank, indicating these samples were properly filtered and not contaminated. The travel blank parameters were below detection limits, indicating appropriate transportation of the samples was carried out.

The field duplicate results were within  $\pm 14\%$  relative percent difference (RPD) for all parameters measured at concentrations higher than ten times the detection limit. The RPD of concentrations near the detection limit is expected to be frequently greater than  $\pm 30\%$  due to reduced analytical accuracy at very low concentrations.

Laboratory and field values of pH and conductivity were compared. Conductivity values were near parity for all samples. Values of pH were slightly higher in the field than in the lab for all samples. For all samples, TDS demonstrated a strong positive correlation with lab conductivity, with values of conductivity exceeding TDS.

# **3 Results and Discussion**

## **3.1 Field Data**

Figure 1 presents a map of the seepage sample locations in the waste rock influenced area. A complete set of field observations and measurements is provided in Appendix A.

### 3.2 Field Measurements

Appendix A includes field measurements for electric conductivity and pH from the eight samples collected. The field data are summarized as follows:

- The pH at all sites was neutral to alkaline.
- The mean for conductivity was 570  $\mu\text{S}/\text{cm}$ . The sample with the highest level of conductivity was the sample collected at the base of the waste rock pile 15-WR-003 (1,138  $\mu\text{S}/\text{cm}$ ). All other samples had conductivities of less than 600  $\mu\text{S}/\text{cm}$ .

### 3.3 Laboratory Data

A summary of the water quality analyses for the samples is presented in Table 1. Complete results are presented in Appendix B. Key parameters were compared to five times the CCME water quality guidelines for the protection of aquatic life to screen for elevated parameters. Comparisons to these criteria were used solely for screening purposes and are not directly applicable because the seep locations do not support aquatic life.

Laboratory pH levels were slightly lower than those measured in the field, but were still neutral to alkaline (between 7.9 and 8.2). All parameter concentrations were below five times the guidelines values. For comparisons, the average hardness (150 mg  $\text{CaCO}_3/\text{L}$ ) was used to determine the hardness-dependent guidelines. Consistent with previous years, conductivity, ammonia, nitrate and chloride levels are indicative of flushing of drilling salts and explosives residues from the waste rock stockpile. Sulphate levels, which are an indicator of sulphide oxidation are low. The results indicate that there are no issues related to metal leaching and/or acid rock drainage (ML/ARD) in seepage from the waste rock influenced area at Doris but that there is leaching of explosives residues and drilling brines.

Table 1: Summary of Water Quality Results

| Sample ID       | Field pH | Lab pH  | Field EC | Lab EC  | Estimated Flow Velocity | Alkalinity, Total | Sulfate (SO4) | Ammonia, Total (as N) | Nitrate (as N) | Chloride (Cl) | Aluminum-Dissolved | Arsenic - Dissolved | Cadmium - Dissolved | Copper - Dissolved | Lead - Dissolved | Nickel - Dissolved | Zinc - Dissolved |
|-----------------|----------|---------|----------|---------|-------------------------|-------------------|---------------|-----------------------|----------------|---------------|--------------------|---------------------|---------------------|--------------------|------------------|--------------------|------------------|
| Units           | s.u.     | s.u.    | (µS/cm)  | (µS/cm) | (m/s)                   | (mg CaCO3/L)      | (mg/L)        | (mg/L)                | (mg/L)         | (mg/L)        | (mg/L)             | (mg/L)              | (mg/L)              | (mg/L)             | (mg/L)           | (mg/L)             | (mg/L)           |
| CCME guideline* | 6.5 - 9  | 6.5 - 9 | -        | -       | -                       | -                 | -             | 1.9**                 | 3.0            | 120           | 0.1                | 0.005               | 0.00022***          | 0.0033***          | 0.0053***        | 0.13***            | 0.03             |
| 15-WR-003       | 8.2      | 8.1     | 1100     | 1100    | ~1 L/s                  | 57                | 33            | <b>6.4</b>            | <b>14</b>      | <b>210</b>    | 0.02               | 0.0016              | 0.0000055           | 0.0028             | <0.00005         | <0.0005            | 0.0013           |
| 15-DC-17        | 8.3      | 8       | 430      | 380     | Little to no flow       | 36                | 9             | 0.95                  | 2.5            | 71            | 0.04               | 0.0011              | 0.000014            | <b>0.0071</b>      | 0.000067         | 0.00062            | 0.0012           |
| 15-DC-21        | 8.3      | 8.2     | 530      | 460     | ~2 L/s                  | 83                | 14            | 0.013                 | 0.17           | 68            | 0.012              | 0.0017              | 0.000015            | <b>0.012</b>       | <0.00005         | 0.002              | 0.0013           |
| 15-DC-08        | 8.4      | 7.9     | 550      | 510     | ~1 L/s                  | 37                | 12            | 1.3                   | <b>3.6</b>     | 110           | 0.032              | 0.0011              | 0.0000072           | <b>0.0066</b>      | <0.00005         | 0.00062            | 0.0012           |

Notes:

\*Comparisons to CCME water quality guidelines for the protection of aquatic life are intended for screening purposes and are not directly applicable because the seepage sites do not support aquatic life.

Values in **bold** indicate value exceeds respective water quality guideline for the parameter.

\*\*Guideline for ammonia is pH and temperature dependent. Seepage waters had an average temperature of 2.6°C at time of sampling. This guideline value is approximate.

\*\*\*The average hardness for the samples (150 mg CaCO3 mg/L) was used to determine hardness-dependent guidelines.

### 3.4 Comparison to Previous Seep Surveys

A comparison of 2015 samples collected at locations close to the 2014 seepage sites was carried out in order to assess the geochemical evolution of seepage in the waste rock influenced area at Hope Bay. The data is presented in Table 2 for seepage sites samples in 2015.

The primary concern identified with the waste rock stockpile is the leaching of constituents related to explosives residues and drilling salts (SRK 2013). Conductivity, chloride, ammonia and nitrate levels were lower in 2015 than previous years indicating continued flushing of drilling salts and explosive residues from the waste rock pile. Sulphate levels in the 2015 seep samples were lower than in 2014. Sulphate levels are an indicator of sulphide oxidation within the pile. Trace metal levels were roughly equivalent to 2014.

Table 2: Comparison of Water Quality Results from Samples Taken at the Same Location in 2014 and 2015

| Seepage Site | Year | Sample ID | pH   | Temp. | EC    | Total Ammonia | Chloride | Nitrate | Sulfate | Aluminum | Antimony | Arsenic | Cadmium   | Copper | Iron   | Lead      | Manganese | Molybdenum | Nickel  | Selenium | Zinc    |
|--------------|------|-----------|------|-------|-------|---------------|----------|---------|---------|----------|----------|---------|-----------|--------|--------|-----------|-----------|------------|---------|----------|---------|
|              |      |           | s.u. | °C    | µS/cm | mg/L          | mg/L     | mg/L    | mg/L    | mg/L     | mg/L     | mg/L    | mg/L      | mg/L   | mg/L   | mg/L      | mg/L      | mg/L       | mg/L    | mg/L     | mg/L    |
| WR-003       | 2014 | 14-WR-003 | 8.1  | 4.5   | 3000  | 21            | 880      | 55      | 88      | 0.011    | 0.00031  | 0.0018  | 0.000046  | 0.0051 | <0.010 | <0.00010  | 0.1       | 0.0034     | 0.0013  | 0.0015   | <0.0020 |
|              | 2015 | 15-WR-003 | 8.2  | 3.3   | 1100  | 6.4           | 210      | 14      | 33      | 0.02     | 0.00024  | 0.0016  | 0.0000055 | 0.0028 | <0.01  | <0.00005  | 0.034     | 0.0016     | <0.0005 | 0.00063  | 0.0013  |
| DC-17        | 2014 | 14-DC-17  | 8.3  | 2     | 700   | 2             | 160      | 5.2     | 24      | 0.012    | 0.00027  | 0.00084 | 0.000012  | 0.0058 | <0.010 | <0.000050 | 0.024     | 0.0014     | 0.00074 | 0.00036  | 0.0011  |
|              | 2015 | 15-DC-17  | 8.3  | 1.4   | 430   | 0.95          | 71       | 2.5     | 9       | 0.04     | 0.00022  | 0.0011  | 0.000014  | 0.0071 | 0.038  | 0.000067  | 0.019     | 0.0006     | 0.00062 | 0.00026  | 0.0012  |
| DC-21        | 2014 | 14-DC-21  | 7.9  | 11    | 590   | -             | -        | -       | -       | -        | -        | -       | -         | -      | -      | -         | -         | -          | -       | -        | -       |
|              | 2015 | 15-DC-21  | 8.3  | 2.4   | 530   | 0.013         | 68       | 0.17    | 14      | 0.012    | <0.0001  | 0.0017  | 0.000015  | 0.012  | 0.016  | <0.00005  | 0.0045    | 0.00067    | 0.002   | 0.00016  | 0.0013  |
| DC-08        | 2014 | 14-DC-08  | 8.2  | 2.6   | 2000  | 2.5           | 490      | 5.1     | 43      | 0.017    | 0.00029  | 0.0014  | 0.000022  | 0.0049 | 0.084  | <0.000050 | 0.056     | 0.0038     | 0.0011  | 0.00054  | 0.0012  |
|              | 2015 | 15-DC-08  | 8.4  | 1.3   | 550   | 1.3           | 110      | 3.6     | 12      | 0.032    | 0.00018  | 0.0011  | 0.0000072 | 0.0066 | 0.025  | <0.00005  | 0.064     | 0.00077    | 0.00062 | 0.00027  | 0.0012  |

Source: P:\01\_SITES\Hope.Bay\1CH008.023\_Geochem\_Monitoring\C\_Seep\_Surveys\June2015 Seepage Survey\Working File\2015 June Doris Seep Compiled Data\_rev00\_rtc\_JEM.xlsx]

Notes:

Concentrations for metals are dissolved concentrations.

## 4 Conclusions and Recommendations

The scope of the 2015 Hope Bay seepage monitoring survey included the waste rock stockpile and downstream area, also referred to as the waste rock influenced area. There was no mining after 2011, and no construction or quarry development after 2012, therefore the 2014 seepage survey fulfilled the permit requirements for quarry and construction rock.

The results of the 2015 sampling program are consistent with previous years and indicate that there are no issues with respect to ML/ARD in seepage from the waste rock influenced area at Doris but that there is leaching of explosive residues and drilling brines. Levels of conductivity, ammonia, nitrate and chloride have continuously decreased compared to previous years indicating that active flushing of drilling brines and blasting residues from the waste rock pile is ongoing. The majority of this seepage is captured in the water management system implemented at Doris and directed to the TIA. Continued management of seepage from the waste rock pile is recommended, as is a 2016 seepage survey of the waste rock stockpile and areas downstream of the pollution control pond.



## 5 References

Nunavut Water Board (2013) NWB Type “A” Water Licence No: 2AM-DOH0713 – Doris North Project, Nunavut; TMAC Resources Inc. August 16, 2013.

SRK (2010). Hope Bay Project, Doris North Waste Rock and Ore Management Plan. Prepared for Hope Bay Mining Ltd. SRK Project 1CH008.029. December 2010.

SRK (2013). 2012 Hope Bay Seepage Monitoring Program. Prepared for Hope Bay Mining Ltd. SRK Project No. 1CH008.057. January 2013.

SRK (2015). 2014 Hope Bay Seepage Monitoring Program. Prepared for TMAC Resources. SRK Project No. 1CT022.001. March 2015.

## Appendix A: Field Measurements

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| Date     | Station Code | Coordinates (UTM Zone 13W) |          | Location Description   | Field Measurements |            |            |            |                  |                                |            |                               | Observations  | Laboratory Samples |                   |                        | Sample Notes  |
|----------|--------------|----------------------------|----------|--|--------------------|------------|------------|------------|------------------|--------------------------------|------------|-------------------------------|---|--------------------|-------------------|------------------------|---|
|          |              | Easting                    | Northing |  | pH                 | Temp. (°C) | EC (µS/cm) | ORP* (RmV) | Flow Description | Depth (cm)                     | Width (cm) | ESTIMATED Flow Velocity (m/s) |   | Lab Sample (Y/N)   | Sample Code       | Duplicate/Blanks (Y/N) |   |
| 8-Jun-15 | 15-WR-003    | 433192                     | 7558991  | Toe of waste rock pile. Only seepage point of appreciable volume. SRK Coordinate.                                  | 8.2                | 3.3        | 1138       | 178.00     | Slow             | 1.0                            | 150        | ~1 L/s                        | Trickle from base of waste rock slope ~middle of north side of PCP. Clear, no precipitates observed or obvious suspended sediments. In clear contact with waste rock. Two additional smaller flows to the east. Closest flow is a small trickle draining into crack seeping into PCP( ~0.5 L/s). Furthest flow ~0.75 L/s trickling into PCP. Both consistent in appearance and field measurements with 15-WR-003. | Y                  | 15-WR-003-08JUN15 | N                      |   |
| 8-Jun-15 | 15-DC-15     | 433313                     | 7558885  | Shallow water at toe of road. Opposite pad below portal. SRK Coordinate  | 8.0                | 1.5        | 543        | 182.00     | Slow             | Shallow, surrounding tussocks. |            | ~0.25 L/s                     | Shallow flow at toe of roadway. Visible flow, though dispersed and shallow. Trace fines and brown particulate deposition on vegetation.   | N                  | -                 | -                      |   |
| 7-Jun-15 | 15-DC-17     | 433348                     | 7558862  | E-SE downstream of Sump 1. Approximately 5m from crush pad. SRK Coordinate.  | 8.3                | 1.4        | 430        | 183.00     | Slow/Pooling     | Shallow, surrounding tussocks. |            | Little to no flow             | Trickle of flow seeping from toe of road, immediately east of Sump 1. Large volume of water surrounding the sump, though little flow. Saline water spill upstream last fall; pumping activities ongoing.  | Y                  | 15-DC-17-07JUN15  | N                      | Station 15-DC-17 too far from toe of road. Moved closer to seepage point. |
| 7-Jun-15 | 15-DC-21     | 433523                     | 7558699  | Seepage coming directly out of face of road that enters Doris Lake. SRK Coordinate.                                | 8.3                | 2.4        | 525        | 195.00     | Fast             | Very shallow, and irregular.   |            | ~2 L/s                        | Trickle of flow coming through road materials to Doris Lake. Two separate seepage points. Flow emerges at melting shoreline ice. Sample Staion 15-DC-21 sampled earlier in year, but on Tundra to south (changed this to 15-DC-21B)   | Y                  | 15-DC-21-07JUN15  | N                      |   |
| 8-Jun-15 | 15-DC-08     | 433293                     | 7558889  | Shallow flow at toe of road. SRK Coordinate.   | 8.4                | 1.3        | 548        | 185.00     | Moderate         | 3.0                            | 500        | ~1 L/s                        | Shallow flow at toe of roadway. Visible flow, though dispersed and shallow. Trace fines and brown deposition on vegetation.   | Y                  | 15-DC-08-08JUN15  | Y                      | Duplicate 15-DC-DUP1-08JUN15  |
| 8-Jun-15 | 15-DC-14     | 433304                     | 7558884  | Shallow flow at toe of road. SRK Coordinate.   | 7.8                | 1.2        | 585        | 187.00     | Slow             | Shallow, surrounding tussocks. |            | only trace flow ~0.25 L/s     | Shallow flow at toe of roadway. Visible flow, though dispersed and shallow. Trace fines and brown deposition on vegetation.   | N                  | -                 | -                      |   |
| 7-Jun-15 | 15-DC-21B    | 433522                     | 7558678  | Fast flowing stream. Flows from Snow Berm 2 over road near Doris pumphouse and into Doris Lake (under gravel road) | 8.1                | 7.0        | 322        | 182.00     | Fast             |                                |            | ~5 L/s                        | Semi-channelized flow on vegetation. No precipitates observed and vegetation appears healthy. *Previously 15-DC-21 (south of road)  | N                  | -                 | -                      |   |
| 8-Jun-15 | MLL-17       | 433253                     | 7558891  | Shallow water at toe of road. West of Sump 1.  | 7.8                | 3.0        | 511        | 179.00     | Pooling          |                                | 200        | n/a                           | Shallow. Water at toe of road, well west of sump 1  | N                  | -                 | -                      |   |

Appendix B:  
Water Quality Analysis

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| ALS Sample ID     | ALS WO#    | Conductivity | Hardness (as CaCO3) | pH   | Total Suspended Solids | Total Dissolved Solids | Acidity (as CaCO3) | Alkalinity, Total (as CaCO3) | Ammonia, Total (as N) | Bromide (Br) | Chloride (Cl) | Fluoride (F) | Nitrate (as N) | Nitrite (as N) | Phosphorus (P)-Total | Sulfate (SO4) | Cyanide, Total | Aluminum (Al)-Total | Antimony (Sb)-Total | Arsenic (As)-Total | Barium (Ba)-Total |
|-------------------|------------|--------------|---------------------|------|------------------------|------------------------|--------------------|------------------------------|-----------------------|--------------|---------------|--------------|----------------|----------------|----------------------|---------------|----------------|---------------------|---------------------|--------------------|-------------------|
|                   | Units      | uS/cm        | mg/L                | pH   | mg/L                   | mg/L                   | mg/L               | mg/L                         | mg/L                  | mg/L         | mg/L          | mg/L         | mg/L           | mg/L           | mg/L                 | mg/L          | mg/L           | mg/L                | mg/L                | mg/L               | mg/L              |
|                   | LOR        | 2            | 0.5                 | 0.1  | 3                      | 10                     | 1                  | 1                            | 0.005                 | 0.05         | 0.5           | 0.02         | 0.005          | 0.001          | 0.002                | 0.3           | 0.005          | 0.003               | 0.0001              | 0.0001             | 0.00005           |
| 15-WR-003-08JUN15 | L1624351-1 | 1050         | 196                 | 8.08 | 43.1                   | 600                    | 2                  | 57.4                         | 6.4                   | 0.33         | 213           | <0.1         | 13.5           | 0.0478         | 0.0058               | 33.2          | -              | 0.2                 | 0.00025             | 0.00155            | 0.0097            |
| 15-DC-17-07JUN15  | L1624351-3 | 377          | 107                 | 7.95 | 5.1                    | 236                    | 2.1                | 36.1                         | 0.952                 | 0.107        | 70.5          | 0.027        | 2.49           | 0.0155         | 0.0094               | 9.01          | -              | 0.561               | 0.00023             | 0.0012             | 0.00851           |
| 15-DC-21-07JUN15  | L1624351-4 | 462          | 176                 | 8.19 | 21.8                   | 285                    | 1.8                | 83                           | 0.0126                | <0.05        | 68.3          | 0.076        | 0.171          | 0.0026         | 0.0294               | 14.3          | -              | 0.92                | 0.00012             | 0.00182            | 0.0079            |
| 15-DC-08-08JUN15  | L1624351-2 | 513          | 140                 | 7.94 | 20.2                   | 334                    | 2                  | 36.9                         | 1.29                  | 0.157        | 105           | 0.029        | 3.59           | 0.0159         | 0.0095               | 11.6          | -              | 0.424               | 0.00019             | 0.00112            | 0.0144            |

| ALS Sample ID     | ALS WO#    | Beryllium (Be)-Total | Bismuth (Bi)-Total | Boron (B)-Total | Cadmium (Cd)-Total | Calcium (Ca)-Total | Chromium (Cr)-Total | Cobalt (Co)-Total | Copper (Cu)-Total | Iron (Fe)-Total | Lead (Pb)-Total | Lithium (Li)-Total | Magnesium (Mg)-Total | Manganese (Mn)-Total | Mercury (Hg)-Total | Molybdenum (Mo)-Total | Nickel (Ni)-Total | Phosphorus (P)-Total | Potassium (K)-Total | Selenium (Se)-Total | Silicon (Si)-Total |
|-------------------|------------|----------------------|--------------------|-----------------|--------------------|--------------------|---------------------|-------------------|-------------------|-----------------|-----------------|--------------------|----------------------|----------------------|--------------------|-----------------------|-------------------|----------------------|---------------------|---------------------|--------------------|
|                   | Units      | mg/L                 | mg/L               | mg/L            | mg/L               | mg/L               | mg/L                | mg/L              | mg/L              | mg/L            | mg/L            | mg/L               | mg/L                 | mg/L                 | mg/L               | mg/L                  | mg/L              | mg/L                 | mg/L                | mg/L                | mg/L               |
|                   | LOR        | 0.00002              | 0.00005            | 0.01            | 0.000005           | 0.05               | 0.0001              | 0.0001            | 0.0005            | 0.01            | 0.00005         | 0.001              | 0.1                  | 0.0001               | 0.000005           | 0.00005               | 0.0005            | 0.05                 | 0.1                 | 0.00005             | 0.05               |
| 15-WR-003-08JUN15 | L1624351-1 | <0.00002             | <0.00005           | 0.158           | 0.000007           | 62.1               | 0.00078             | 0.00059           | 0.00406           | 0.259           | 0.000375        | 0.0121             | 9.76                 | 0.0363               | <0.000005          | 0.00186               | 0.00079           | 0.0058               | 7.44                | 0.000573            | 1.92               |
| 15-DC-17-07JUN15  | L1624351-3 | <0.00002             | <0.00005           | 0.044           | 0.0000167          | 34.1               | 0.00235             | 0.00081           | 0.01              | 0.968           | 0.000356        | 0.0028             | 4.86                 | 0.0375               | <0.000005          | 0.000622              | 0.00174           | 0.0094               | 2.6                 | 0.000231            | 1.78               |
| 15-DC-21-07JUN15  | L1624351-4 | <0.00002             | <0.00005           | 0.048           | 0.0000234          | 56.2               | 0.0045              | 0.00141           | 0.0155            | 1.69            | 0.000439        | 0.0051             | 8.75                 | 0.0431               | <0.000005          | 0.00076               | 0.00446           | 0.0294               | 2.92                | 0.000162            | 3.23               |
| 15-DC-08-08JUN15  | L1624351-2 | <0.00002             | <0.00005           | 0.052           | 0.0000085          | 44.3               | 0.00327             | 0.00065           | 0.00889           | 0.628           | 0.000312        | 0.0031             | 5.94                 | 0.0828               | <0.000005          | 0.000863              | 0.00251           | 0.0095               | 2.92                | 0.000273            | 1.6                |

| ALS Sample ID     | ALS WO#    | Silver (Ag)-Total | Sodium (Na)-Total | Strontium (Sr)-Total | Sulfur (S)-Total | Thallium (Tl)-Total | Tin (Sn)-Total | Titanium (Ti)-Total | Uranium (U)-Total | Vanadium (V)-Total | Zinc (Zn)-Total | Zirconium (Zr)-Total | Aluminum (Al)-Dissolved | Antimony (Sb)-Dissolved | Arsenic (As)-Dissolved | Barium (Ba)-Dissolved | Beryllium (Be)-Dissolved | Bismuth (Bi)-Dissolved | Boron (B)-Dissolved | Cadmium (Cd)-Dissolved | Calcium (Ca)-Dissolved |
|-------------------|------------|-------------------|-------------------|----------------------|------------------|---------------------|----------------|---------------------|-------------------|--------------------|-----------------|----------------------|-------------------------|-------------------------|------------------------|-----------------------|--------------------------|------------------------|---------------------|------------------------|------------------------|
|                   | Units      | mg/L              | mg/L              | mg/L                 | mg/L             | mg/L                | mg/L           | mg/L                | mg/L              | mg/L               | mg/L            | mg/L                 | mg/L                    | mg/L                    | mg/L                   | mg/L                  | mg/L                     | mg/L                   | mg/L                | mg/L                   | mg/L                   |
|                   | LOR        | 0.00001           | 0.05              | 0.0002               | 0.5              | 0.00001             | 0.0001         | 0.0003              | 0.00001           | 0.0005             | 0.003           | 0.0003               | 0.001                   | 0.0001                  | 0.0001                 | 0.00005               | 0.00002                  | 0.00005                | 0.01                | 0.000005               | 0.05                   |
| 15-WR-003-08JUN15 | L1624351-1 | <0.00001          | 99.9              | 0.171                | 11.4             | <0.00001            | <0.0001        | 0.00483             | 0.000259          | 0.002              | <0.003          | <0.0003              | 0.02                    | 0.00024                 | 0.00162                | 0.0108                | <0.00002                 | <0.00005               | 0.154               | 0.0000055              | 62.2                   |
| 15-DC-17-07JUN15  | L1624351-3 | <0.00001          | 23                | 0.0637               | 3.02             | <0.00001            | <0.0001        | 0.02                | 0.000246          | 0.00297            | 0.003           | <0.0003              | 0.0402                  | 0.00022                 | 0.00112                | 0.00823               | <0.00002                 | <0.00005               | 0.041               | 0.0000135              | 35                     |
| 15-DC-21-07JUN15  | L1624351-4 | 0.000014          | 20.3              | 0.145                | 4.89             | <0.00001            | <0.0001        | 0.0332              | 0.00013           | 0.00441            | 0.0043          | <0.0003              | 0.0123                  | <0.0001                 | 0.00167                | 0.00779               | <0.00002                 | <0.00005               | 0.045               | 0.000015               | 56.8                   |
| 15-DC-08-08JUN15  | L1624351-2 | <0.00001          | 29.5              | 0.0926               | 3.76             | 0.00001             | <0.0001        | 0.0107              | 0.00029           | 0.00201            | <0.003          | <0.0003              | 0.0318                  | 0.00018                 | 0.00105                | 0.0139                | <0.00002                 | <0.00005               | 0.047               | 0.0000072              | 46.3                   |

| ALS Sample ID     | ALS WO#    | Chromium (Cr)-Dissolved | Cobalt (Co)-Dissolved | Copper (Cu)-Dissolved | Iron (Fe)-Dissolved | Lead (Pb)-Dissolved | Lithium (Li)-Dissolved | Magnesium (Mg)-Dissolved | Manganese (Mn)-Dissolved | Mercury (Hg)-Dissolved | Molybdenum (Mo)-Dissolved | Nickel (Ni)-Dissolved | Phosphorus (P)-Dissolved | Potassium (K)-Dissolved | Selenium (Se)-Dissolved | Silicon (Si)-Dissolved | Silver (Ag)-Dissolved | Sodium (Na)-Dissolved | Strontium (Sr)-Dissolved | Sulfur (S)-Dissolved | Thallium (Tl)-Dissolved |
|-------------------|------------|-------------------------|-----------------------|-----------------------|---------------------|---------------------|------------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-------------------------|-------------------------|------------------------|-----------------------|-----------------------|--------------------------|----------------------|-------------------------|
|                   | Units      | mg/L                    | mg/L                  | mg/L                  | mg/L                | mg/L                | mg/L                   | mg/L                     | mg/L                     | mg/L                   | mg/L                      | mg/L                  | mg/L                     | mg/L                    | mg/L                    | mg/L                   | mg/L                  | mg/L                  | mg/L                     | mg/L                 | mg/L                    |
|                   | LOR        | 0.0001                  | 0.0001                | 0.0002                | 0.01                | 0.00005             | 0.001                  | 0.1                      | 0.0001                   | 0.000005               | 0.00005                   | 0.0005                | 0.05                     | 0.1                     | 0.00005                 | 0.05                   | 0.00001               | 0.05                  | 0.0002                   | 0.5                  | 0.00001                 |
| 15-WR-003-08JUN15 | L1624351-1 | <0.0001                 | 0.00044               | 0.00283               | <0.01               | <0.00005            | 0.0124                 | 9.87                     | 0.0339                   | <0.000005              | 0.00164                   | <0.0005               | <0.05                    | 7.56                    | 0.000634                | 1.65                   | <0.00001              | 100                   | 0.167                    | 11.3                 | <0.00001                |
| 15-DC-17-07JUN15  | L1624351-3 | 0.00014                 | 0.00017               | 0.00712               | 0.038               | 0.000067            | 0.0024                 | 4.73                     | 0.0188                   | <0.000005              | 0.000604                  | 0.00062               | <0.05                    | 2.58                    | 0.000256                | 0.993                  | <0.00001              | 24.1                  | 0.0634                   | 3.22                 | 0.000013                |
| 15-DC-21-07JUN15  | L1624351-4 | 0.00015                 | 0.00032               | 0.0115                | 0.016               | <0.00005            | 0.0046                 | 8.27                     | 0.00452                  | <0.000005              | 0.000673                  | 0.00201               | <0.05                    | 2.98                    | 0.000161                | 2.06                   | <0.00001              | 21.2                  | 0.142                    | 5.13                 | <0.00001                |
| 15-DC-08-08JUN15  | L1624351-2 | 0.00011                 | 0.00021               | 0.00658               | 0.025               | <0.00005            | 0.0029                 | 5.84                     | 0.0636                   | <0.000005              | 0.000773                  | 0.00062               | <0.05                    | 2.96                    | 0.000268                | 1.02                   | <0.00001              | 30.4                  | 0.0906                   | 3.91                 | <0.00001                |

| ALS Sample ID     | ALS WO#    | Tin (Sn)-Dissolved | Titanium (Ti)-Dissolved | Uranium (U)-Dissolved | Vanadium (V)-Dissolved | Zinc (Zn)-Dissolved | Zirconium (Zr)-Dissolved |
|-------------------|------------|--------------------|-------------------------|-----------------------|------------------------|---------------------|--------------------------|
|                   | Units      | mg/L               | mg/L                    | mg/L                  | mg/L                   | mg/L                | mg/L                     |
|                   | LOR        | 0.0001             | 0.0003                  | 0.00001               | 0.0005                 | 0.001               | 0.0003                   |
| 15-WR-003-08JUN15 | L1624351-1 | <0.0001            | <0.0003                 | 0.000244              | 0.00132                | 0.0013              | <0.0003                  |
| 15-DC-17-07JUN15  | L1624351-3 | <0.0001            | 0.00086                 | 0.000222              | 0.00082                | 0.0012              | <0.0003                  |
| 15-DC-21-07JUN15  | L1624351-4 | <0.0001            | <0.0003                 | 0.000113              | 0.00073                | 0.0013              | <0.0003                  |
| 15-DC-08-08JUN15  | L1624351-2 | <0.0001            | <0.00090 *              | 0.000253              | 0.00076                | 0.0012              | <0.0003                  |