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**2019 FIRST QUARTER REPORT**  
**WATER RESOURCES MONITORING**  
**BLACK BUTTE COPPER**

Prepared for:

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May 2020

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**TABLE OF CONTENTS**

LIST OF TABLES ..... ii

LIST OF FIGURES ..... iii

LIST OF APPENDICES ..... iii

1.0 INTRODUCTION ..... 1-1

2.0 WATER RESOURCES MONITORING ..... 2-1

    2.1 SURFACE WATER ..... 2-1

    2.2 SPRINGS ..... 2-2

    2.3 GROUNDWATER ..... 2-2

3.0 RESULTS ..... 3-1

    3.1 STREAMFLOW ..... 3-1

    3.2 SPRING FLOW ..... 3-2

    3.3 GROUNDWATER LEVELS ..... 3-2

    3.4 WATER QUALITY DATA ..... 3-6

    3.5 QUALITY CONTROL ..... 3-17

4.0 REFERENCES ..... 4-1

**LIST OF TABLES**

TABLE 1.    BASELINE MONITORING SITE DESCRIPTION AND  
            SUMMARY ..... 1-3

TABLE 2.    PARAMETERS, METHODS, AND DETECTION LIMITS  
            FOR SURFACE WATER MONITORING ..... 1-12

TABLE 3.    PARAMETERS, METHODS, AND DETECTION LIMITS  
            FOR GROUNDWATER MONITORING ..... 1-13

TABLE 4.    MARCH 2019 WATER LEVEL DATA SUMMARY ..... 3-3

TABLE 5.    SUMMARY OF VERTICAL HYDRAULIC GRADIENTS ..... 3-5

TABLE 6.    FIRST QUARTER 2019 SURFACE WATER QUALITY  
            SUMMARY ..... 3-7

TABLE 7.	FIRST QUARTER 2019 SPRING WATER QUALITY SUMMARY .....	3-10
TABLE 8.	FIRST QUARTER 2019 GROUNDWATER QUALITY SUMMARY .....	3-15

**LIST OF FIGURES**

FIGURE 1.	LOCATION MAP .....	1-2
FIGURE 2.	SURFACE WATER AND SPRING MONITORING SITES .....	1-9
FIGURE 3.	GROUNDWATER MONITORING SITES .....	1-10
FIGURE 4.	2019 FIRST QUARTER POTENTIOMETRIC SURFACE MAP .....	3-4

**LIST OF APPENDICES**

APPENDIX A	LABORATORY ANALYTICAL REPORT
APPENDIX B	QA/QC REPORTS

**2019 FIRST QUARTER REPORT**  
**WATER RESOURCES MONITORING**  
**BLACK BUTTE COPPER**

**1.0 INTRODUCTION**

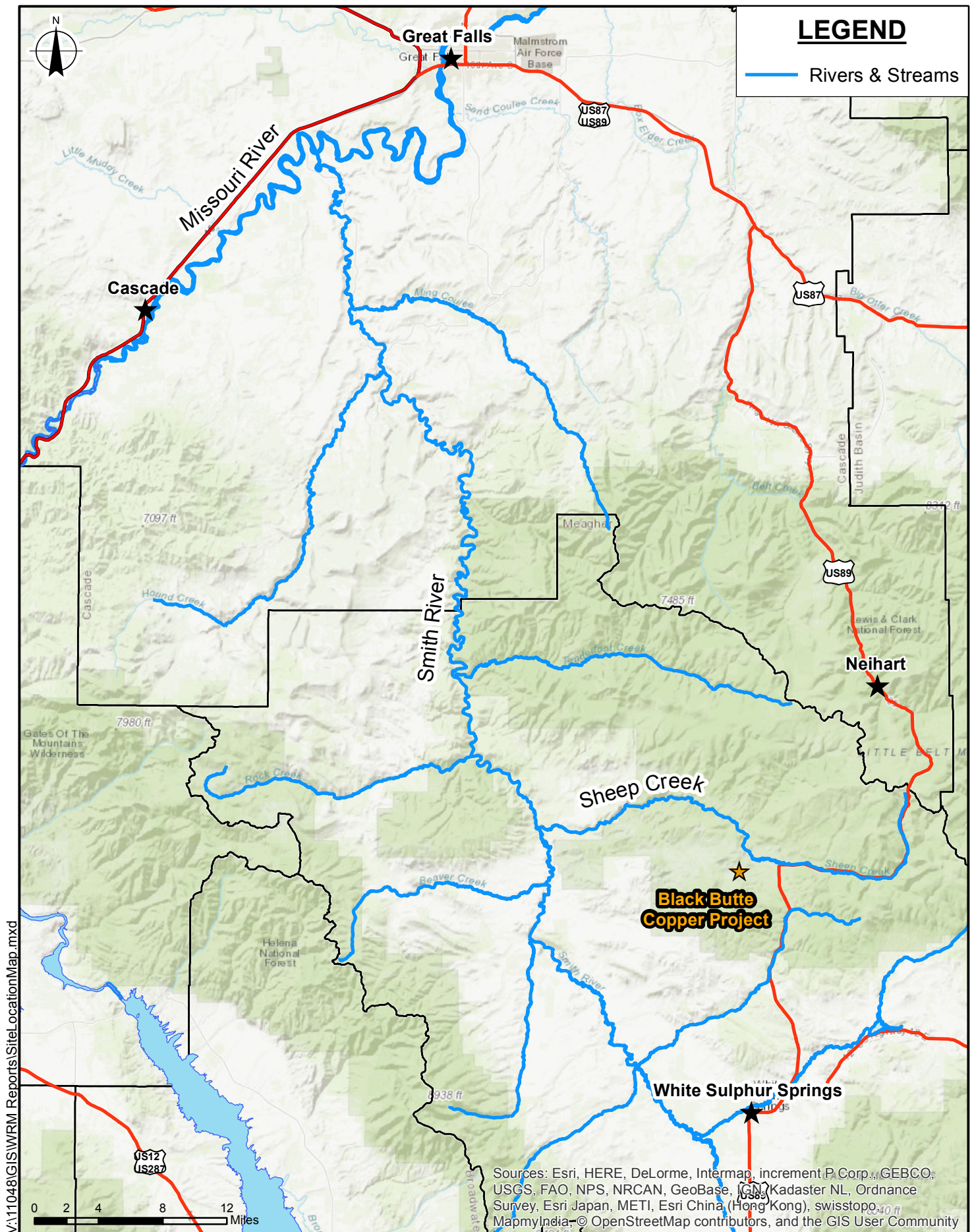
Tintina Montana, Inc., a wholly owned subsidiary of Sandfire America Resources, Inc., contracted Hydrometrics, Inc. to conduct baseline water resources monitoring for the Black Butte Copper Project (Project) during the first quarter of 2019. The Project is located 15 miles north of White Sulphur Springs, in Meagher County, Montana (Figure 1). Baseline water resources monitoring and hydrologic investigations have been conducted at the Project since 2011 (Hydrometrics, 2015). The monitoring and investigations are being conducted in support of permitting activities for the exploration and development of copper-bearing massive sulfide deposits within the lower Newland Formation.

Water resources monitoring for the Project consists of monthly, quarterly, and annual monitoring programs which are conducted in accordance with the 2016 Field Sampling and Analysis Plan (FSAP) (Hydrometrics, 2016). The water resources monitoring programs are summarized below and the location, sampling schedule, and description of each water resources monitoring site is listed in Table 1.

*Monthly Monitoring Program*

The monthly monitoring program includes monitoring at seven surface water sites, consisting of collecting flow and stage measurements (where staff gages are present), field parameters, and water quality samples from all sites; and monitoring at 12 spring sites (including four developed springs), consisting of collecting flow measurements and field parameters at all sites and water quality samples from 11 of the sites.





**Figure 1**  
**Location Map**  
**Black Butte Copper Project**  
**Meagher County, Montana**

**TABLE 1. BASELINE MONITORING SITE DESCRIPTION AND SUMMARY**

Monitoring Site	Easting (meters)	Northing (meters)	Monitoring Frequency	Flow or Water Level	Field Parameters	Lab Analysis	Location / Monitoring Well Construction
	WGS 1984 - UTM Zone 12 N						
<b>Surface Water Sites</b>							
SW-1	507148	5182710	M	X	X	X	Sheep Creek - Downgradient site; at bridge on County Road 119.
SW-2	511040	5179844	M	X	X	X	Sheep Creek - Upgradient site; Highway 89 right-of-way, approximately 0.6 miles east of county road intersection.
SW-3	506996	5180581	M	X	X	X	Unnamed tributary to Sheep Creek - at intersection of County Road 119 and USFS Road 64992.
SW-4	506308	5180114	Q	X	X	--	Unnamed tributary to Sheep Creek - approximately 0.6 miles southwest of County Road 119/USFS Road 6492 intersection.
SW-5	503914	5181465	Q	X	X	X	Unnamed tributary To Butte Creek - West of Moose Pass, where jeep trail crosses drainage.
SW-6	507919	5179536	Q	X	X	X	Unnamed tributary to Little Sheep Creek - approximately 0.25 miles south of County Road 119.
SW-8	509575	5179476	Q	X	X	--	Little Sheep Creek - Approximately 0.5 miles from Highway 89.
SW-9	503944	5179271	Q	X	X	--	Butte Creek - at USFS Road 6492 crossing.
SW-10	504665	5178322	Q	X	X	--	Butte Creek - approximately 0.7 miles upstream of SW-9.
SW-11	501951	5181021	Q	X	X	X	Butte Creek - Downgradient of confluence with Unnamed tributary to Butte Creek (west of Moose Pass).
SW-14	507876	5180008	M	X	X	X	Little Sheep Creek - Downstream of SW-8, approximately 1.0 miles from Highway 89.
SW-17	506919	5181218	M	X	X	X	Coon Creek - approximately 150 feet upstream of the confluence with Sheep Creek.
SW-18	507876	5180008	M	X	X	X	Coon Creek - head of drainage, upgradient of wetlands, south of USFS Road 6492.
USGS-SC1	514509	5179419	M	X	X	X	Approximately 2.4 miles upstream of SW-2 on Sheep Creek.

**TABLE 1. BASELINE MONITORING SITE DESCRIPTION AND SUMMARY (CONTINUED)**

Monitoring Site	Eastings (meters)	Northings (meters)	Monitoring Frequency	Flow or Water Level	Field Parameters	Lab Analysis	Location / Monitoring Well Construction
	WGS 1984 - UTM Zone 12 N						
<b>Springs</b>							
SP-1	506283.07	5180101.39	A	X	X	--	Spring/Seep on west bank of Coon Creek approximately 150 feet downgradient of surface water site SW-4.
SP-2	505833.97	5180907.34	A	X	X	--	Spring in small unnamed tributary drainage to lower Coon Creek in SESW Section 24 T12N R06E.
SP-3	506370.58	5182241.55	M	X	X	X	Spring in small unnamed tributary to Sheep Creek in NWNE Section 24 T12N R06E.
SP-4	506425.17	5180468.94	M	X	X	X	Spring at head of unnamed tributary to Coon Creek, in E2NE Section 25 T12N R06E.
SP-5	506478.82	5178985.42	M	X	X	X	Spring in upper Brush Creek drainage (formerly known as surface water SW-7 location).
SP-6	506219.58	5181027.89	M	X	X	X	Unnamed tributary drainage near mine site, located in SESW Section 24 T12N R06E.
SP-7	507693.69	5181137.92	M	X	X	X	North side of Strawberry Butte above tributary drainage to Sheep Creek.
SP-8	507995.89	5178745.24	A	X	X	--	North of unnamed tributary to Little Sheep Creek, approximately 0.75 miles south of USFS Road 6492 in SENW Section 31 T12N R07E.
SP-9	507502.03	5178577.92	A	X	X	--	North of unnamed tributary to Little Sheep Creek, approximately 0.3 miles west-southwest of SP-8 in SWNW Section 31 T12N R07E.
SP-10	506335.42	5178351.00	M	X	X	X	Headwaters of the southfork of Brush Creek, south of proposed portal, near the center of Section 36 T12N R06E.
SP-11*	506708	5181875	M	X	X	X	Hill slope east of Sheep Creek, in the SWNE Section 24 T12N R06E.
SP-12*	507098	5180685	M	X	X	X	Hay meadow area approximately 560 feet north of County Road 116 and USFS Road 6492 intersection.
SP-13*	507567	5181875	A	X	X	--	Unnamed tributary drainage of Sheep Creek, located approximately 730 feet west of SP-7 in the SESW Section 19 T12N R07E.

**TABLE 1. BASELINE MONITORING SITE DESCRIPTION AND SUMMARY (CONTINUED)**

Monitoring Site	Easting (meters)	Northing (meters)	Monitoring Frequency	Flow or Water Level	Field Parameters	Lab Analysis	Location / Monitoring Well Construction
	WGS 1984 - UTM Zone 12 N						
<b>Developed Springs</b>							
DS-1	506507.08	5178870.81	M	X	X	X	Developed spring, near surface water site SW-7 in upper drainage of Little Sheep Creek trib.
DS-2	505263.49	5180150.61	M	X	X	--	Developed seep/spring, southeast side of Black Butte upgradient of SP-1.
DS-3	505037.62	5181520.61	M	X	X	X	South of Moose Pass in Butte Creek drainage (upgradient of surface water site SW-5).
DS-4	506056.53	5181588.64	M	X	X	X	Unnamed tributary to Sheep Creek in Section 24 T12N R06E, north of mine area and southeast of Moose Pass.
DS-5	504761.45	5182484.96	A	X	X	--	Unnamed tributary to Sheep Creek, north of Moose Pass.
DS-6	504949.66	5182827.88	A	X	X	--	Unnamed tributary to Sheep Creek, north of Moose Pass and downstream of DS-5.
<b>Seeps</b>							
Seep-1	507876.19	5179570.54	A	--	X	--	Seep on tributary to Little Sheep Creek (approximately 15' west of SW-6).
Seep-2	506310.6	5180089.2	A	--	X	--	Seep on east bank of Coon Creek (approximately 150 feet downgradient of SW-4).
Seep-3	507821.16	5180537.25	A	--	X	--	Seep located on eastern side of Strawberry Butte.
Seep-4	507530.57	5182486.29	A	--	X	--	Seep on hillside in SWSW Section 18 T12N R07E.
Seep-5	507768.38	5182748.77	A	--	X	--	Seep on hillside in SESW Section 18 T12N R07E.
Seep-6	507853.49	5182587.27	A	--	X	--	Seep on hillside in SESW Section 18 T12N R07E.
Seep-7	507155.4	5182821.06	A	--	X	--	Seep on eastern side of County Road 119 approximately 200 feet north of Sheep Creek bridge at SW-1.
Seep-8	506701.44	5180381.64	A	--	X	--	Seep area on west hillside adjacent to lower Coon Creek.
Seep-9	504825.48	5182475.68	A	--	X	--	Seep in unnamed tributary to Sheep Creek North of Moose Pass (downgradient of DS-5).
Seep-10	507270.05	5179164.8	A	--	X	--	Spring in upper Brush Creek, upstream of Seep 1, in NWNW Section 31 T12N R07E.

**TABLE 1. BASELINE MONITORING SITE DESCRIPTION AND SUMMARY (CONTINUED)**

Monitoring Site	Easting (meters)	Northing (meters)	Monitoring Frequency	Flow or Water Level	Field Parameters	Lab Analysis	Location / Monitoring Well Construction		
	WGS 1984 - UTM Zone 12 N						Total Depth	Perforated / Screen Interval	Gravel / Sand Pack Interval
Monitoring Wells							feet, below ground surface		
MW-1A	506935.22	5180841.55	Q	X	X	X	38	25 - 34	25 - 34
MW-1B	506934.19	5180845.46	Q	X	X	X	98	88 - 98	88 - 98
MW-2A	506598.18	5180331.93	Q	X	X	X	62	52 - 62	47 - 62
MW-2B	506596.96	5180328.73	Q	X	X	X	80	70 - 80	65 - 80
MW-3	506484.07	5180740.22	Q	X	X	X	305	285 - 305	278 - 305
MW-4A	507201.47	5180855.43	Q	X	X	X	23	14-23	11 - 23
MW-4B	507200.12	5180858.49	Q	X	X	X	59	39-59	37-59
MW-6A	507809.18	5179492.85	Q	X	X	X	15	5-15	3-15
MW-6B	507792.76	5179490.71	Q	X	X	X	50	40-50	37-50
MW-7	507451.70	5179500.71	Q	X	X	X	50	40-50	37-50
MW-8	507036.00	5179398.31	Q	X	X	X	80	70-80	67-80
MW-9	506592.96	5180725.46	Q	X	X	X	143	108-128	98-144
MW-10	506578.57	5179215.05	Q	X	X	X	90	70-90	67-90
MW-11	506464.72	5179117.47	Q	X	X	X	70	50-70	46-70
MW-12	506412.82	5179010.38	Q	X	X	X	61	40-61	37-61
MW-13	506477.79	5178855.81	Q	X	X	X	40	20-40	17-40
MW-14	508255.63	5179376.77	Q	X	--	--	68	56-66	53-68
MW-15	508290.89	5179071.07	Q	X	--	--	80	70-80	66-80
MW-16	507036.30	5180586.21	Q	X	X	X	57	37-57	34-57
MW-17	506654.57	5180130.74	Q	X	X	X	75	55-75	54-78
MW-18	506257.38	5179707.93	Q	X	X	X	32	12-32	10-32
MW-19	506878.42	5178925.74	Q	X	X	X	28	8-28	6-28
MW-20	507426.69	5179631.58	Q	X	X	X	37.5	17.5-37.5	14.5-37.5
SC12-116*	507030.00	5180380.00	Q	X	--	--	--	--	--
SC15-184*	507047.34	5178972.53	Q	--	X	X	99	55-85	49-90
SC15-185*	506355.46	5179094.24	Q	X	X	X	99	60-80	56.3-85
SC15-194*	506014.14	5179854.92	Q	X	X	X	99	60-80	56.3-85
SC15-198*	506621.36	5179854.92	Q	X	X	X	99	60-70	51.7-74

**TABLE 1. BASELINE MONITORING SITE DESCRIPTION AND SUMMARY (CONTINUED)**

Monitoring Site	Eastings (meters)	Northing (meters)	Monitoring Frequency	Flow or Water Level	Field Parameters	Lab Analysis	Location / Monitoring Well Construction		
	WGS 1984 - UTM Zone 12 N						Total Depth	Perforated / Screen Interval	Gravel / Sand Pack Interval
<b>Test Wells</b>							feet, below ground surface		
PW-1	506301.42	5180698.40	Q	X	--	--	213	171-211	108-213
PW-2	506443.15	5180865.03	Q	X	X	X	215	132-212	121-215
PW-3	506846.43	5180479.42	Q	X	X	X	131	90-127	80-131
PW-4	506849.44	5180701.75	Q	X	X	X	242	200-239	191-242
PW-5	506490.68	5181172.77	Q	X	--	--	565	515-555	508-560
PW-6N	506477.44	5181085.67	Q	X	--	--	1358	Open Hole	1159-1358
PW-7	507122.89	5180867.59	Q	--	X	X	1350	1306-1350	1300-1350
PW-8	506846.19	5180695.53	Q	X	X	X	184	139-179	132-179
PW-9	506598.38	5180721.88	Q	X	X	X	256	216-256	208-256
PW-10	506593.55	5180721.88	Q	X	X	X	370	319-359	310-370
<b>Piezometers</b>									
PZ-01	507650.01	5180255.63	Q	X	--	--	5.3	2.3-5.3	--
PZ-02	507400.72	5180778.79	Q	X	--	--	5.3	2.3-5.3	--
PZ-03	507249.21	5180618.91	Q	X	--	--	9.3	6.3-9.3	--
PZ-04	506991.74	5181110.82	Q	X	--	--	7.7	4.7-7.7	--
PZ-05	507080.04	5181214.68	Q	X	--	--	5.4	2.4-5.4	--
PZ-07A	506258.39	5180074.65	Q	X	--	--	6	3-6	--
PZ-07B	506258.47	5180075.00	Q	X	--	--	11	8-11	--
PZ-08	507090.31	5180573.81	Q	X	--	--	12	7-12	5-12
PZ-09	507883.78	5180178.58	Q	X	--	--	10	5-10	3-10
PZ-10	506590.91	5180679.01	Q	X	--	--	11	9-11	--
PZ-11R	507031.15	5180654.89	Q	X	--	--	11	9-11	--
PZ-12	506839.49	5180509.42	Q	X	--	--	7	5-7	--
PZ-13	507793.88	5180289.38	Q	X	--	--	7.5	5-7.5	--
PZ-14	507492.91	5180412.13	Q	X	--	--	5.5	3-5.5	--
PZ-15	507193.65	5180762.85	Q	X	--	--	8.5	6-8.5	--

Notes: \*Northings and Eastings are approximate; SC12-116 is a core hole used for monitoring water level.

M: Monthly; Q: Quarterly; and A: Annual monitoring program frequency

Surface water, springs, and seep monitoring sites are shown on Figure 2; groundwater monitoring sites are shown on Figure 3.



### *Quarterly Monitoring Program*

The quarterly monitoring program includes monitoring at seven surface water sites, consisting of collecting flow and stage measurements (where staff gages are present) and field parameters at all sites and water quality samples from three of the sites; and monitoring at 25 monitoring wells, 10 test wells, and 15 piezometers, consisting of collecting static water level (SWL) measurements at all sites and field parameters water quality samples from 32 of the wells.

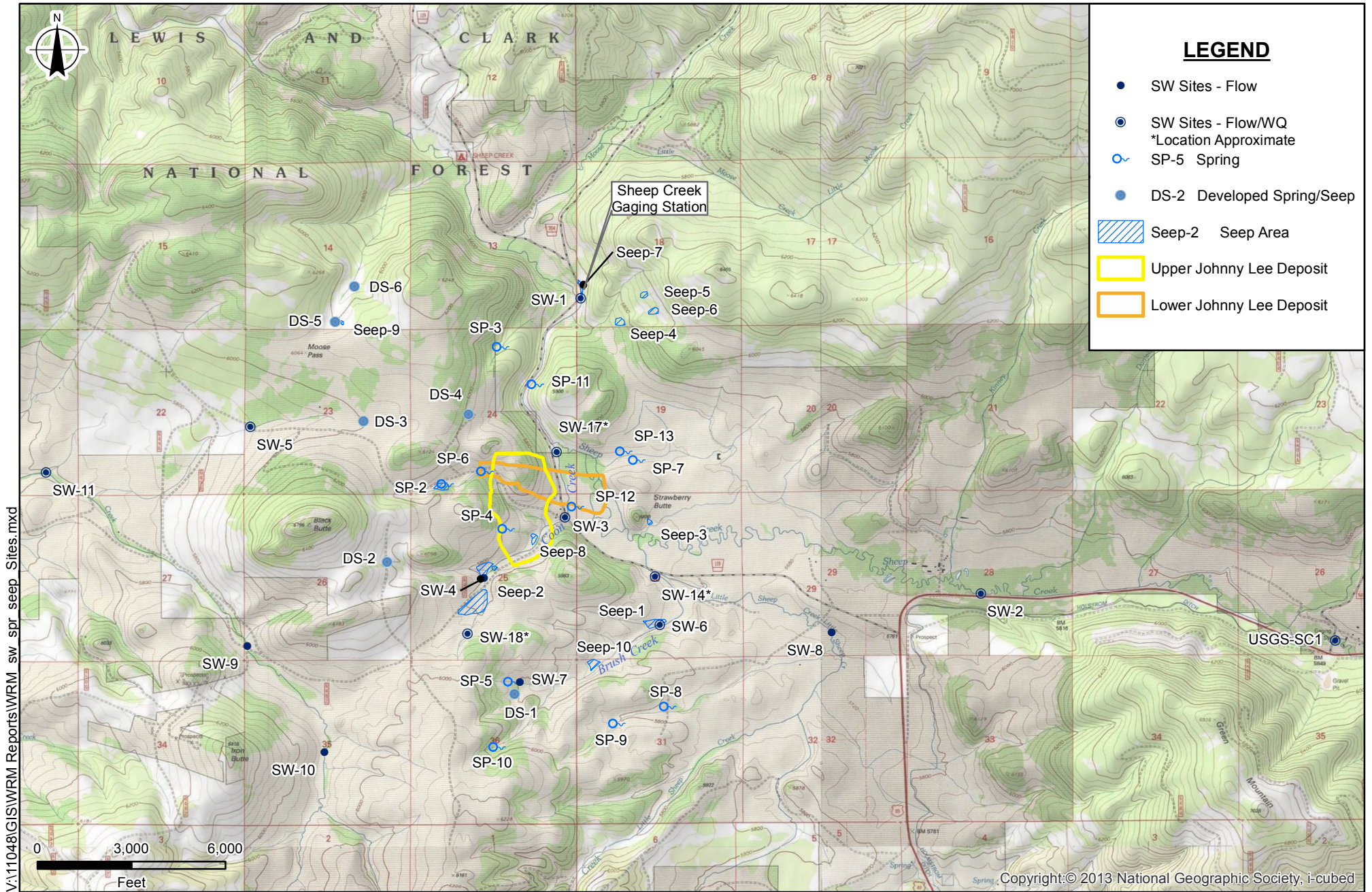
### *Annual Monitoring Program*

The annual monitoring program includes monitoring at seven spring sites (includes two developed springs), consisting of collecting flow measurements and field parameters at all sites; and monitoring at 10 seep sites, consisting of collecting field parameters at all sites.

The locations of the surface water, spring, and seep monitoring sites are shown on Figure 2 and the groundwater monitoring sites are shown on Figure 3. This report summarizes the results of the water resource monitoring programs conducted during the first quarter of 2019, including:

- Monthly monitoring in January 2019;
- Monthly monitoring in February 2019; and
- Monthly and quarterly monitoring in March 2019.





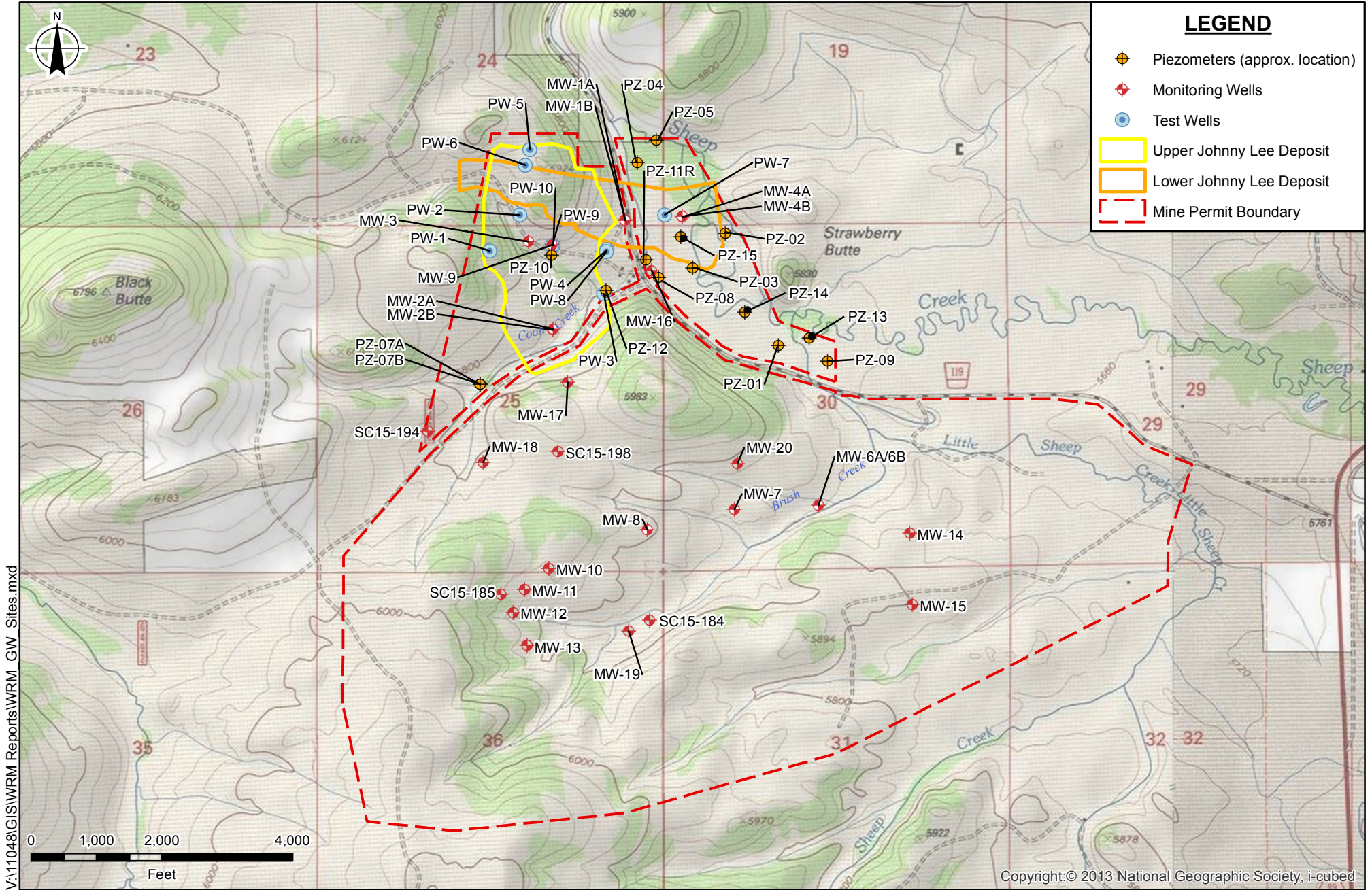
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**LEGEND**

- SW Sites - Flow
- SW Sites - Flow/WQ  
\*Location Approximate
- SP-5 Spring
- DS-2 Developed Spring/Seep
- ▨ Seep-2 Seep Area
- Upper Johnny Lee Deposit
- Lower Johnny Lee Deposit

**Figure 2**  
**Surface Water and Spring Monitoring Sites**  
**Black Butte Copper Project**  
**Meagher County, Montana**





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**Figure 3**  
**Groundwater Monitoring Sites**  
**Black Butte Copper Project**  
**Meagher County, Montana**

Water quality samples were submitted to Energy Laboratories in Helena, Montana for analysis of physical parameters, common ions, nutrients, and a comprehensive suite of trace constituents. The water quality parameters, analytical methods, and detection limits are listed in Tables 2 and 3 for surface water and groundwater, respectively. Samples collected from springs were submitted for analysis as groundwater according to the parameters, analytical methods, and detection limits in Table 3. For surface water quality samples, trace metals (with the exception of aluminum) were analyzed for the total recoverable concentration; aluminum was analyzed for the dissolved fraction. For groundwater quality samples, all trace metals were analyzed for the dissolved fraction.

**TABLE 2. PARAMETERS, METHODS, AND DETECTION LIMITS  
FOR SURFACE WATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	4
TSS	SM 2540C	4
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.003
Total Persulfate Nitrogen	A 4500-N-C	0.04
Total Phosphorus	E365.1	0.003
<b>Trace Constituents ( Total Recoverable except Aluminum [Diss]<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameters</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

Notes:

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.

**TABLE 3. PARAMETERS, METHODS, AND DETECTION LIMITS  
FOR GROUNDWATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	10
TSS	SM 2540C	10
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.01
<b>Trace Constituents (Dissolved)<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameters</b>		
Water Level	HF-SOP-10	0.01 ft
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

Notes:

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



## **2.0 WATER RESOURCES MONITORING**

### **2.1 SURFACE WATER**

Surface water monitoring was conducted in accordance with methodologies described in the FSAP, which consist of the following steps:

1. Collection of field parameters;
2. Water quality sample collection; and
3. Collection of flow and stage (where applicable) measurements.

The monthly surface water monitoring was conducted in accordance with the schedule described in Section 1.0. The monthly monitoring, conducted during the January and February 2019, included the collection of field parameter measurements and water quality samples from five sites in January and four sites in February. Frozen conditions precluded the collection of flow measurements at these sites. Surface water monitoring sites SW-3 and SW-18 were dry during the January and February monitoring events and site SW-17 was dry during the February monitoring. Duplicate samples were collected at surface water sites SW-14 in January and SW-1 in February.

The quarterly surface water monitoring (which includes the monthly monitoring sites) was conducted in March 2019 in accordance with the schedule described in Section 1.0. The quarterly monitoring included the collection of field parameters, water quality samples, and flow measurements at one site, field parameter measurements and water quality samples at seven sites, field parameter and flow measurements at one site, and field parameter measurements only at one sites; ice precluded the collection of flow measurements at all other sites in March. Surface water monitoring sites SW-4, SW-5, and SW-18 were frozen or dry during the quarterly monitoring event. A duplicate sample was collected at surface water site SW-14 in March.

## **2.2 SPRINGS**

The spring and seep monitoring was conducted in accordance with methodologies described in the FSAP, which consist of the following steps:

- Collection of field parameters;
- Water quality sample collection; and
- Collection of flow measurements.

The monthly spring monitoring was conducted in accordance with the schedule described in Section 1.0. In the first quarter of 2019, snow, ice, or dry conditions precluded the collection of flow measurements, field parameter measurements, and water quality samples at eight sites in January and February, and five sites in March. Additionally, unsafe wading conditions prevented access for monitoring site SP-11 in March. Therefore, the monthly spring monitoring included the collection of field parameter measurements and water quality samples at SP-4, SP-7, SP-11, and SP-12 in January and February; SP-4, SP-6, SP-7, SP-10, and SP-12 in March; and flow measurements at SP-4 and SP-7 in January, SP-7 in February, and SP-4, SP-6, and SP-7 in March. Duplicate samples were collected from SP-7 in January, SP-4 in February, and SP-6 in March.

## **2.3 GROUNDWATER**

The groundwater monitoring conducted in the first quarter of 2019 consisted of the measurement of SWLs and collection of field parameters and water quality samples during the quarterly monitoring event in March, according to the schedule described in Section 1.0. Supplemental water level monitoring is conducted at core hole SC12-116 and from five vibrating wire piezometers (VWP) in core holes SC19-246 (1 VWP), SC19-248 (2 VWPs), and SC19-249 (2 VWPs) for purpose of constructing the potentiometric surface for the site (Figure 4). Water quality monitoring is not conducted at the test wells when the ground is frozen or fully saturated to assure purge water does not discharge to any surface waters. Monitoring well SC15-184 and test well PW-7 are flowing artesian wells, which are shut in, and therefore SWL measurements are not collected from these sites.

The groundwater monitoring was conducted in accordance with methodologies described in the FSAP, which consist of the following steps:

1. Measurement of SWL;
2. Well purging and monitoring for field parameter stabilization; and
3. Water quality sample collection.

In March 2019, SWL measurements were collected from 27 monitoring wells, nine test wells, 12 piezometers, and five vibrating wire piezometers. Field parameter measurements and water quality samples were collected from 21 monitoring wells. Water quality monitoring was not conducted at monitoring well SC15-184, SC15-185, SC15-194, or SC15-198 in March 2019 due to snowpack and mud prohibiting access to these sites. Water quality samples and field parameter measurements were not collected from the test wells during the first quarter monitoring event due to snowpack, frozen ground conditions, and active runoff. Additionally, water quality samples, field parameter measurements, and SWL measurements were not collected from wells MW-14 and MW-15 due to the remaining dye in the wells from the Eastern underground infiltration galleries (UIG) tracer study. A duplicate sample was collected from MW-6A in March.

### 3.0 RESULTS

The water level data collected during the first quarter of 2019 are provided in Table 4 and a comparison of vertical hydraulic gradients is provided in Table 5. The field parameters and analytical results for samples collected during the first quarter of 2019 are presented in Table 6 (surface water), Table 7 (springs), and Table 8 (groundwater). The laboratory analytical data reports for these monitoring events are in Appendix A and the quality assurance/quality control (QA/QC) review summaries are in Appendix B. Below is a brief summary of the monitoring results.

#### 3.1 STREAMFLOW

Flow measurements were not collected at any of the surface water monitoring sites during January and February due to ice or dry conditions precluding accurate and representative measurements. Similarly, with the exception of two sites (SW-9 and SW-14), flow measurements were not collected at surface water sites during the quarterly monitoring in March due to frozen conditions. Frozen or dry conditions are typical at the monitoring sites during the winter months at the Project site.

##### *Sheep Creek*

Flow measurements at Sheep Creek surface water monitoring sites (SW-1, SW-2, and USGS-SC1) were not collected due to frozen conditions.

##### *Little Sheep Creek*

Flow measurements at Little Sheep Creek surface water monitoring site SW-14 were not collected in January and February due to frozen conditions. Similarly, flow measurements were not collected from SW-8 in March due to frozen conditions. The flow measurement at SW-14 in March was 1.14 cfs which is consistent with the range of previous values during late winter conditions.



### *Coon Creek*

Flow measurements at Coon Creek surface water monitoring sites (SW-3, SW-4, SW-17, and SW-18) were not collected due to frozen or dry conditions.

### *Brush Creek*

Flow measurements at the Brush Creek surface water monitoring site (SW-6) were not collected due to frozen conditions.

### *Black Butte Creek*

Flow measurements at Black Butte Creek surface water monitoring sites SW-10 and SW-11 were not collected due to frozen conditions. Additionally, flow measurements were not collected at SW-5 (tributary to Black Butte Creek) due to dry conditions. The flow measurement at SW-9 in March was 0.60 cfs.

## **3.2 SPRING FLOW**

The flow measurements collected during the first quarter of 2019 were consistent with previous values; measurements were collected from SP-4 and SP-7 in January, SP-7 in February, and DS-1, SP-4, SP-6, and SP-7 in March. The flow rate at SP-7 ranged from 15.3 gpm (January) to 8.08 gpm (February) and the flow rate at SP-4 ranged from 3.4 gpm (January) to 2.6 gpm (March). The flow measurements at DS-1 and SP-6 in March were 2.6 gpm and 0.83 gpm, respectively. Flow measurements were not collected at other springs due to ice or dry conditions.

## **3.3 GROUNDWATER LEVELS**

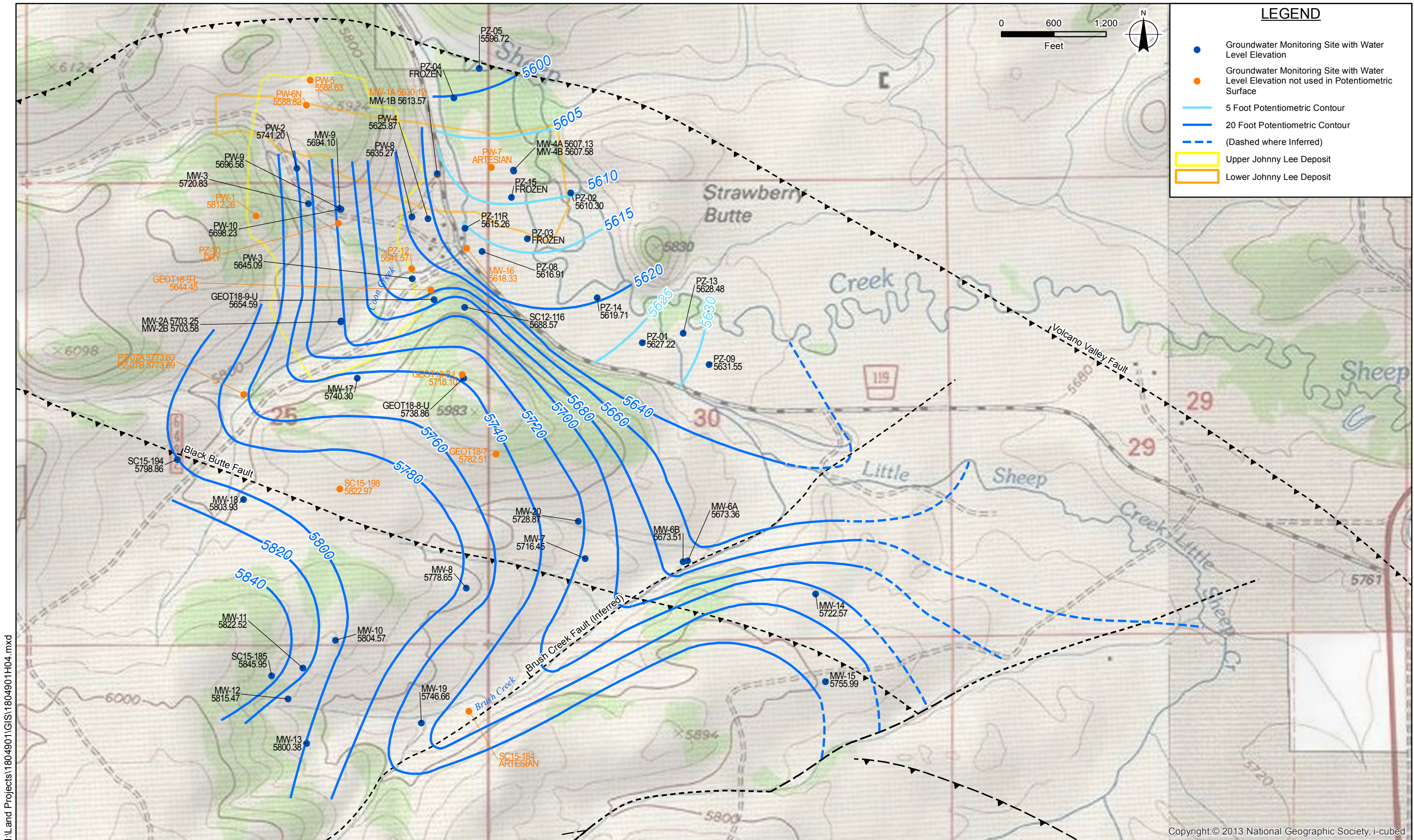
Groundwater levels measured in March 2019 were consistent with previous data collected during first quarter monitoring events. The groundwater elevations were calculated for each well and piezometer from the SWL measurements and measuring point elevations and are listed in Table 4. The groundwater elevations were used to construct the potentiometric surface map shown on Figure 4. The potentiometric data show that the overall groundwater

**TABLE 4. MARCH 2019 WATER LEVEL DATA SUMMARY**

Well Name	Eastings	Northing	Ground Surface Elev.	Measuring Point Elev.	Static Water Level	Static Water Level	Water Level Elev.
	WGS 1984 UTM Zone 12 North		NGVD 29				
	meters		(feet, amsl <sup>1</sup> )		(feet, bmp <sup>1</sup> )	(feet, bgs <sup>1</sup> )	(feet, amsl)
<b>Monitoring Wells</b>							
MW-1A	506935.22	5180841.55	5635.81	5637.73	7.61	5.69	5630.12
MW-1B	506934.19	5180845.46	5636.14	5637.90	24.33	22.57	5613.57
MW-2A	506598.18	5180331.93	5743.72	5745.31	42.06	40.47	5703.25
MW-2B	506596.96	5180328.73	5743.44	5745.53	41.95	39.86	5703.58
MW-3	506484.07	5180740.22	5760.06	5762.17	41.34	39.23	5720.83
MW-4A	507201.47	5180855.43	5610.12	5612.12	4.99	2.99	5607.13
MW-4B	507200.12	5180858.49	5610.07	5612.07	4.49	2.49	5607.58
MW-6A	507809.18	5179492.90	5680.08	5681.87	8.51	6.72	5673.36
MW-6B	507792.76	5179490.70	5683.41	5685.31	11.80	9.90	5673.51
MW-7	507451.70	5179500.70	5747.48	5749.46	33.01	31.03	5716.45
MW-8	507036.00	5179398.30	5809.10	5810.93	32.28	30.45	5778.65
MW-9	506592.96	5180725.46	5744.35	5745.80	51.71	50.25	5694.09
MW-10	506578.57	5179215.05	5882.78	5886.11	81.54	78.21	5804.57
MW-11	506464.72	5179117.47	5854.74	5857.86	35.34	32.22	5822.52
MW-12	506412.82	5179010.38	5841.51	5844.75	29.28	26.04	5815.47
MW-13	506477.79	5178855.81	5819.07	5822.48	22.10	18.69	5800.38
MW-14	508255.63	5179376.77	5761.16	5763.87	41.30	38.59	5722.57
MW-15	508290.89	5179071.07	5795.26	5797.34	41.35	39.27	5755.99
MW-16	507036.30	5180586.21	5623.73	5625.59	7.26	5.40	5618.33
MW-17	506654.57	5180130.74	5793.51	5796.06	55.76	53.21	5740.30
MW-18	506257.38	5179707.93	5819.62	5821.97	18.04	15.69	5803.93
MW-19	506878.42	5178925.74	5758.95	5761.07	14.41	12.29	5746.66
MW-20	507426.69	5179631.58	5748.75	5750.62	21.75	19.88	5728.87
SC12-116	507030.00	5180380.00	--	5793.89	105.32	--	5688.57
SC15-184	507045.30	5178968.70	5743.83	5745.56	Artesian	--	--
SC15-185	506355.52	5179091.15	5879.64	5881.72	35.77	33.69	5845.95
SC15-194	506025.67	5179847.22	5817.96	5819.82	20.96	19.10	5798.86
SC15-198	506594.08	5179743.42	5865.75	5867.60	44.63	42.78	5822.97
<b>Test Wells</b>							
PW-1	506301.42	5180698.40	5912.07	5913.74	101.48	99.81	5812.26
PW-2	506443.15	5180865.00	5793.08	5794.88	53.68	51.88	5741.20
PW-3	506846.43	5180479.42	5655.21	5657.42	12.33	10.12	5645.09
PW-4	506849.44	5180688.26	5678.13	5680.01	54.14	52.26	5625.87
PW-5	506490.68	5181172.77	5913.22	5915.49	326.86	324.59	5588.63
PW-6N	506477.44	5181085.67	5895.43	5897.40	308.58	306.61	5588.82
PW-7	507122.89	5180867.59	5609.11	5611.15	Artesian	--	--
PW-8	506846.19	5180695.53	5679.12	5680.60	45.33	43.85	5635.27
PW-9	506598.38	5180721.88	5743.59	5745.05	48.49	47.03	5696.56
PW-10	506593.55	5180721.88	5743.57	5744.84	46.62	45.34	5698.22
<b>Piezometers</b>							
PZ-01	507650.00	5180256.00	5628.69	5630.34	3.12	1.47	5627.22
PZ-02	507400.70	5180779.00	5611.81	5613.51	3.21	1.51	5610.3
PZ-03	507249.20	5180619.00	5616.08	5617.74	Frozen	--	--
PZ-04	506991.70	5181111.00	5599.34	5602.7	Frozen	--	--
PZ-05	507080.00	5181215.00	5598.16	5599.79	3.07	1.44	5596.72
PZ-07A	506258.39	5180074.65	5776.57	5777.5	3.90	2.97	5773.6
PZ-07B	506258.47	5180075.00	5776.57	5777.59	4.50	3.48	5773.09
PZ-08	507090.31	5180573.81	5618.9	5621.29	4.38	1.99	5616.91
PZ-09	507883.78	5180178.58	5634.73	5637.27	5.72	3.18	5631.55
PZ-10	506589.19	5180672.48	5723.51	5727.42	dry	--	--
PZ-11R	507031.15	5180654.89	5618.31	5622.24	6.98	3.05	5615.26
PZ-12	506844.43	5180513.76	5644.56	5646.55	4.98	2.99	5641.57
PZ-13	507793.88	5180289.38	5633.16	5637.27	8.79	4.67	5628.48
PZ-14	507492.91	5180412.13	5622.66	5625.68	5.97	2.95	5619.71
PZ-15	507193.65	5180762.85	5611.60	5614.45	Frozen	--	--
GEOT18-7	507127.93	5179860.23	5955.09	--	--	--	5782.51
GEOT18-8	507026.14	5180131.59	5972.28	--	--	--	5738.86
	507021.60	5180144.08	5972.28	--	--	--	5718.10
GEOT18-9	506923.28	5180406.49	5790.95	--	--	--	5654.59
	506911.63	5180438.52	5790.95	--	--	--	5644.45

Notes: <sup>1</sup> amsl: above mean sea level; bmp: below measuring point; bgs: below ground surface





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flow direction in the bedrock is generally towards Sheep Creek, with an eastward flow direction in the vicinity of the Johnny Lee Deposit and a northeastern flow direction in the area between Coon Creek and Brush Creek (Figure 4). The hydraulic gradients in the bedrock aquifer ranged from 0.04 to 0.07; the steepest gradient is located in the northern portion of the study area near wells MW-3 and PW-4; and the lower gradient is located in the area north of MW-8. Within the alluvial system, the gradient was evaluated from PZ-14 to PZ-05 and PZ-09 to PZ-14, which are equivalent at approximately 0.008.

Vertical hydraulic gradients were evaluated in the areas where there are paired wells and triplicate wells as shown in Figure 4. The vertical gradients calculated from water level data in the first quarter of 2019 are similar to historic data and are listed in Table 5.

**TABLE 5. SUMMARY OF VERTICAL HYDRAULIC GRADIENTS**

<b>Shallow Well</b>	<b>Deep Well</b>	<b>Location</b>	<b>Head Differential (ft)</b>	<b>Vertical Gradient (ft/ft)</b>	<b>Direction</b>
MW-1A	MW-1B	Eastern edge of the Upper Johnny Lee Deposit	16.55	-0.261	Down
MW-2A	MW-2B	Southern portion of the Upper Johnny Lee Deposit	0.33	0.018	Up
MW-4A	MW-4B	Sheep Creek alluvial valley	0.45	0.015	Up
MW-6A	MW-6B	Near Brush Creek	0.15	<0.01	ND <sup>1</sup>
PW-8	PW-4	Eastern edge of the Upper Johnny Lee Deposit	9.40	-0.155	Down
MW-9	PW-9	Central area of the Upper Johnny Lee Deposit	2.47	0.021	Up
PW-9	PW-10	Central area of the Upper Johnny Lee Deposit	1.66	0.016	Up

Notes:

<sup>1</sup> ND – vertical gradient is not discernable

### 3.4 WATER QUALITY DATA

The constituents that exceeded Numeric Water Quality Standards (DEQ, 2019) in the first quarter of 2019 were dissolved metals in groundwater, including: arsenic at MW-1B, MW-3, and MW-9; strontium at MW-3; and thallium at MW-1B, MW-2B, and MW-9 (Table 8). There were no exceedances of applicable Aquatic Life or Human Health Standards for surface water, springs, and seeps during the fourth quarter of 2019.

#### *Surface Water*

The surface water quality for the first quarter of 2019 was relatively similar at all of the surface water monitoring sites, which are characterized by the following:

- Calcium bicarbonate type water;
- Moderately hard to hard water;
- Near neutral to alkaline pH (7.65 s.u. to 8.23 s.u.) with anomalous low values described below;
- Low to moderate total dissolved solids (100 to 243 mg/L); and
- Low level detection of metals at one or more sites, including: arsenic, cadmium, copper, barium, iron, lead, manganese, mercury, strontium, uranium, zinc, and dissolved aluminum (Table 6).

The pH values measured at surface water sites in February range from 6.13 s.u. to 6.85 s.u. These data are inconsistent with prior data and appear to show effects from low temperature water, at or near the freezing point, or may reflect pH meter malfunction. Therefore, the pH data collected in February are flagged as anomalous (A) in Tables 6 and 7.

TABLE 6. FIRST QUARTER 2019 SURFACE WATER QUALITY SUMMARY

Station Name		Aquatic Life Standard Chronic*	Human Health Standard Surface water	SW-1	SW-1	SW-1	SW-1	SW-2	SW-2	SW-2	SW-3	SW-3	SW-3	SW-4	SW-5	SW-6	SW-8	SW-9	SW-10
Sample Date/Time				1/10/19 10:00	2/22/19 10:40	2/22/19 10:55	3/27/19 09:00	1/10/19 10:20	2/22/19 12:30	3/28/19 09:10	1/10/19 11:20	2/22/19 11:40	3/26/19 18:30	3/26/19 18:00	3/26/19 11:40	3/27/19 15:30	3/29/19 17:10	3/26/19 17:40	3/26/19 18:30
Field Sample ID				BBC-1901-100	BBC-1902-100	BBC-1902-101	BBC-1903-120	BBC-1901-101	BBC-1902-105	BBC-1903-129	BBC-1901-105	BBC-1902-103	BBC-1903-117	BBC-1903-116	BBC-1903-104	BBC-1903-124	BBC-1903-127	BBC-1903-114	BBC-1903-115
Laboratory				Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Hydro	Hydro	Energy Labs	HYDRO	HYDRO	Energy Labs	HYDRO	HYDRO	HYDRO
Remarks				Duplicate						No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample
Lab Sample ID		H19010185-001	H19020363-001	H19020363-002	H19030477-003	H19010185-002	H19020363-004	H19030548-005	z	z	H19030477-002	z	z	H19030548-001	z	z	z		
<b>Field Parameters</b>																			
Dissolved Oxygen	mg/L			14.32	4.58		11.47	12.02	11.09	11.06			8.93			10.38		9.93	10.32
Field pH	s.u.			7.88	6.13 A		7.86	7.74	6.38 A	8.14			8.01			7.72		7.95	8.1
Field Specific Conductivity	umhos/cm			319	333		309	311	188	322			290			137		361	238
Flow	Cubic Ft Sec			NM-ICE	NM		NM-ICE		NM-ICE	NM-ICE	NM	NF-DRY	NM-ICE	NM-ICE		NM-ICE	NM-ICE	0.6	NM-ICE
Flow	Gallons Per Min														NM-DRY				
Staff Gauge	Feet																		
Water Temperature	Deg C			-0.84	0.04		0.5	-0.92	0	0.1			2.2			0.9		1.9	0.41
<b>Physical Parameters</b>																			
pH Measurement Temp	Deg C				16.3	15.7			15.4										
pH	s.u.				8.1 H	8.1 H			8.1 H										
Total Dissolved Solids	mg/L			176 D	189 D	183 D	180 D	170 D	174 D	181 D			195 D			100 D			
Total Suspended Solids	mg/L			<4	<4	<4	4	<4	<4	4			<4			16			
<b>Major Constituents - Commons Ions</b>																			
Alkalinity as CaCO3	mg/L			180	170	170	150	170	170	160			150			65			
Calcium (DIS)	mg/L			50	51	50	43	49	50	48			37			15			
Chloride	mg/L			2	1	1	4	1	1	3			3			<1			
Fluoride	mg/L	4		0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1			0.1			<0.1			
Hardness as CaCO3	mg/L			180	183	180	156	175	176	170			168			65			
Magnesium (DIS)	mg/L			13	14	13	12	13	13	12			19			7			
Potassium (DIS)	mg/L			1	1	1	3	1	1	1			4			5			
Sodium (DIS)	mg/L			2	2	2	3	2	2	3			2			<1			
Sulfate	mg/L			7	7	7	7	7	7	7			19			3			
<b>Nutrients</b>																			
Nitrate + Nitrite as N	mg/L	10		0.12	0.12	0.12	0.09	0.1	0.1	0.07			<0.01			0.02			
Phosphorus (TOT)	mg/L			0.009	0.016	0.016	0.05	0.008	0.012	0.012			0.094			0.237			
Total Persulfate Nitrogen	mg/L			0.19	0.21	0.2	0.48	0.16	0.15	0.17			0.3			0.78			
<b>Metals - Trace Constituents</b>																			
Aluminum (DIS)	mg/L	0.087		<0.009	<0.009	<0.009	0.03	0.02	<0.009	0.033			<0.009			0.02			
Antimony (TRC)	mg/L	0.0056		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			<0.0005			<0.0005			
Arsenic (TRC)	mg/L	0.15	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001			0.001			
Barium (TRC)	mg/L	1		0.105	0.107	0.107	0.106	0.091	0.098	0.1			0.116			0.057			
Beryllium (TRC)	mg/L	0.004		<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008			<0.0008			<0.0008			
Cadmium (TRC)	mg/L	0.00026	0.005	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003			<0.00003			0.00003			
Chromium (TRC)	mg/L	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01			<0.01			
Cobalt (TRC)	mg/L			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01			<0.01			
Copper (TRC)	mg/L	0.0029	1.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002			0.002			
Iron (TRC)	mg/L	1		0.17	0.13	0.13	0.3	0.17	0.12	0.28			0.06			0.73			
Lead (TRC)	mg/L	0.00054	0.015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003			<0.0003			0.0006			
Manganese (TRC)	mg/L			0.015	0.014	0.014	0.021	0.009	0.009	0.015			<0.005			0.026			
Mercury (TRC)	ug/L			<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005			0.006			0.034			
Molybdenum (TRC)	mg/L			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002			<0.002			
Nickel (TRC)	mg/L	0.016	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001			<0.001			
Selenium (TRC)	mg/L	0.005	0.05	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			<0.0002			<0.0002			
Silver (TRC)	mg/L	0.1		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			<0.0002			<0.0002			
Strontium (TRC)	mg/L	4		0.127 D	0.128 D	0.128 D	0.113 D	0.124 D	0.128 D	0.126 D			0.0938 D			0.0476 D			
Thallium (TRC)	mg/L	0.00024		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			<0.0002			<0.0002			
Uranium (TRC)	mg/L	0.03		0.0004	0.0004	0.0004	0.0003	0.0003	0.0004	0.0004			0.0006			<0.0002			
Zinc (TRC)	mg/L	0.037	2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002			0.005			

DIS = Dissolved  
TOT = Total  
NM = Not measured  
NF-ICE = Not flowing; ice on ground  
NM-ICE = Not measured; ice prohibitive  
NF-DRY = Not flowing; Dry ground

Analyte concentration exceeds the standard for:  
Aquatic Life Standard Chronic\*  
Human Health Standard Surface water

\*Calculated @ 25mg/L Hardness - detected result; Aquatic Life Standard Chronic\*  
Source: DEQ-7 May 2017

TABLE 6. FIRST QUARTER 2019 SURFACE WATER QUALITY SUMMARY (CONTINUED)

Station Name		Aquatic Life Standard Chronic*	Human Health Standard Surface water	SW-11	SW-14	SW-14	SW-14	SW-14	SW-14	SW-17	SW-17	SW-17	SW-18	SW-18	SW-18	USGS-SC1	USGS-SC1	USGS-SC1
Sample Date/Time				3/26/19 12:30	1/10/19 11:00	1/10/19 11:15	2/22/19 12:00	3/27/19 15:55	3/27/19 16:20	1/10/19 11:45	2/22/19 11:15	3/27/19 09:35	1/10/19 11:25	2/22/19 13:15	3/26/19 14:30	1/10/19 10:40	2/22/19 12:40	3/28/19 09:45
Field Sample ID				BBC-1903-105	BBC-1901-103	BBC-1901-104	BBC-1902-104	BBC-1903-125	BBC-1903-126	BBC-1901-108	BBC-1902-102	BBC-1903-121	BBC-1901-106	BBC-1902-108	BBC-1903-109	BBC-1901-102	BBC-1902-106	BBC-1903-130
Laboratory				Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Hydro	Energy Labs	Hydro	Hydro	HYDRO	Energy Labs	Energy Labs	Energy Labs
Remarks						Duplicate			Duplicate		No Sample		No Sample	No Sample	No Sample			
Lab Sample ID		H19030477-001	H19010185-004	H19010185-005	H19020363-003	H19030548-002	H19030548-003	H19010185-007			H19030477-004				H19010185-003	H19020363-005	H19030548-006	
<b>Field Parameters</b>																		
Dissolved Oxygen	mg/L			10.92	11.28		8.24	10.41	10.41	11.38		9.87			11.74	11.07	11.21	
Field pH	s.u.			8.23	7.86		6.85 A	7.81	7.81	8.05		7.65			7.85	6.67 A	8.11	
Field Specific Conductivity	umhos/cm			343	394		364	269	269	430		420			341	263	366	
Flow	Cubic Ft Sec			NM-ICE	NM		NM-ICE	1.14		NM	NF-DRY	NM-ICE	NM	NF-DRY	NM-DRY	NM	NM-ICE	NM-ICE
Flow	Gallons Per Min																	
Staff Gauge	Feet						0.4	0.4										
Water Temperature	Deg C			0.1	-0.59		0.04	3.2	3.2	0.43		1.7			-0.83	0.01	0.1	
<b>Physical Parameters</b>																		
pH Measurement Temp	Deg C						15.4										15.8	
pH	s.u.						7.8 H										8.2 H	
Total Dissolved Solids	mg/L			215 D	219 D	229 D	229 D	157 D	162 D	235 D		243 D			188 D	195 D	196 D	
Total Suspended Solids	mg/L			6	<4	<4	<4	<4	<4	<4		<4			<4	<4	4	
<b>Major Constituents - Common Ions</b>																		
Alkalinity as CaCO3	mg/L			170	220	220	220	130	130	210		170			190	190	180	
Calcium (DIS)	mg/L			44	61	59	60	34	34	56		49			55	56	57	
Chloride	mg/L			1	2	2	2	2	2	5		11			1	1	3	
Fluoride	mg/L	4		0.2	0.2	0.2	0.2	<0.1	<0.1	0.2		0.2			<0.1	<0.1	<0.1	
Hardness as CaCO3	mg/L			193	239	230	232	134	136	246		211			196	199	199	
Magnesium (DIS)	mg/L			20	21	20	20	12	12	25		22			14	14	14	
Potassium (DIS)	mg/L			2	1	1	1	4	4	1		4			1	1	1	
Sodium (DIS)	mg/L			2	3	3	3	1	1	3		5			2	2	3	
Sulfate	mg/L			25	9	9	9	7	6	35		30			8	8	7	
<b>Nutrients</b>																		
Nitrate + Nitrite as N	mg/L	10		0.19	0.16	0.16	0.19	0.05	0.05	0.18		0.16			0.11	0.11	0.08	
Phosphorus (TOT)	mg/L			0.046	0.005	0.004	0.01	0.105	0.104	0.007		0.056			0.005	0.011	0.007	
Total Persulfate Nitrogen	mg/L			0.47	0.24	0.24	0.29	0.57	0.51	0.25		0.7			0.15	0.16	0.14	
<b>Metals - Trace Constituents</b>																		
Aluminum (DIS)	mg/L	0.087		0.014	<0.009	<0.009	<0.009	0.012	0.011	<0.009		<0.009			<0.009	<0.009	<0.009	
Antimony (TRC)	mg/L		0.0056	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005			<0.0005	<0.0005	<0.0005	
Arsenic (TRC)	mg/L	0.15	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	
Barium (TRC)	mg/L		1	0.101	0.12	0.122	0.122	0.077	0.075	0.157		0.144			0.068	0.065	0.068	
Beryllium (TRC)	mg/L		0.004	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008		<0.0008			<0.0008	<0.0008	<0.0008	
Cadmium (TRC)	mg/L	0.00026	0.005	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003		<0.00003			<0.00003	<0.00003	<0.00003	
Chromium (TRC)	mg/L		0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01			<0.01	<0.01	<0.01	
Cobalt (TRC)	mg/L			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01			<0.01	<0.01	<0.01	
Copper (TRC)	mg/L	0.0029	1.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		<0.002			<0.002	<0.002	<0.002	
Iron (TRC)	mg/L	1		0.32	<0.02	<0.02	0.04	0.13	0.14	0.07		0.26			0.11	0.13	0.19	
Lead (TRC)	mg/L	0.00054	0.015	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.0003			<0.0003	<0.0003	<0.0003	
Manganese (TRC)	mg/L			0.013	<0.005	<0.005	0.009	0.006	0.006	0.012		0.034			0.007	0.008	0.01	
Mercury (TRC)	ug/L			<0.005	<0.005	<0.005	<0.005	0.018	0.018	<0.005		0.009			<0.005	<0.005	<0.005	
Molybdenum (TRC)	mg/L			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		<0.002			<0.002	<0.002	<0.002	
Nickel (TRC)	mg/L	0.016	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	
Selenium (TRC)	mg/L	0.005	0.05	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.0002			<0.0002	<0.0002	<0.0002	
Silver (TRC)	mg/L		0.1	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.0002			<0.0002	<0.0002	<0.0002	
Strontium (TRC)	mg/L		4	0.136 D	0.124 D	0.126 D	0.125 D	0.0749 D	0.0756 D	0.146 D		0.12 D			0.148 D	0.144 D	0.148 D	
Thallium (TRC)	mg/L		0.00024	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.0002			<0.0002	<0.0002	<0.0002	
Uranium (TRC)	mg/L		0.03	0.001	0.0005	0.0006	0.0006	0.0003	0.0003	0.0007		0.0006			0.0004	0.0004	0.0005	
Zinc (TRC)	mg/L	0.037	2	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002		<0.002			<0.002	<0.002	<0.002	

DIS = Dissolved  
TOT = Total  
NM = Not measured  
NF-ICE = Not flowing; ice on ground  
NM-ICE = Not measured; ice prohibitive  
NF-DRY = Not flowing; Dry ground

**Analyte concentration exceeds the standard for:**  
Aquatic Life Standard Chronic\*  
Human Health Standard Surface water

\*Calculated @ 25mg/L Hardness - detected result; Aquatic Life Standard Chronic\*  
**Source:** DEQ-7 May 2017

### *Springs*

The water quality for the first quarter of 2019 was relatively similar at monitored sites DS-1, SP-4, SP-6, SP-7, SP-10, SP-11, and SP-12, which are characterized by the following:

- Calcium bicarbonate type water;
- Moderately hard to hard water;
- Near neutral to alkaline pH (7.1 s.u. to 8.17 s.u.);
- Low to moderate total dissolved solids (99 to 245 mg/L); and
- Low level detection of metals at one or more sites, including: dissolved aluminum, arsenic, barium, copper, iron, mercury, selenium, strontium, thallium, uranium, and zinc (Table 7).

### *Groundwater*

Groundwater quality showed some differences related to well depths and completion zones; brief descriptions of water quality are summarized below based on groups of wells sharing similar completion and water quality. The test wells were not monitored for water quality during the first quarter event due to frozen ground conditions which prohibited the disposal of purge water by land application methods described in the FSAP (Hydrometrics, 2016).

The monitoring wells MW-1A, MW-2A, MW-4A, and MW-6A are located in the shallow highly weathered bedrock or unconsolidated overburden and exhibited the following water quality characteristics:

- Calcium bicarbonate type water;
- Near neutral to slightly alkaline pH (7.4 to 7.59 s.u.);
- Low sulfate concentration (14 to 22 mg/L);
- Moderate total dissolved solids concentrations (194 mg/L to 267 mg/L); and
- Low concentrations of many dissolved metals, including: barium, strontium, and uranium at all wells; aluminum, copper, lead, selenium, and thallium at MW-1A; selenium, and thallium at MW-2A; manganese at MW-4A; and selenium at MW-6A (Table 8).



**TABLE 7. FIRST QUARTER 2019 SPRING WATER QUALITY SUMMARY**

Station Name		Human Health Standard Groundwater	DS-1	DS-1	DS-1	DS-2	DS-2	DS-2	DS-3	DS-3	DS-3	DS-4	DS-4	DS-4	SP-3	SP-3	SP-3
Sample Date/Time			1/10/19 10:15	2/22/19 15:40	3/26/19 15:05	1/10/19 15:45	2/22/19 00:00	3/26/19 17:15	1/10/19 12:00	2/22/19 00:00	3/26/19 11:30	1/10/19 12:12	2/22/19 00:00	3/26/19 10:00	1/10/19 12:20	2/22/19 00:00	3/26/19 10:45
Field Sample ID			BBC-1901-121	BBC-1902-118	BBC-1903-111	BBC-1901-119	BBC-1902-121	BBC-1903-113	BBC-1901-115	BBC-1902-114	BBC-1903-103	BBC-1901-116	BBC-1902-115	BBC-1903-101	BBC-1901-117	BBC-1902-122	BBC-1903-102
Laboratory			Hydro	Hydro	Energy Labs	Hydro	Hydro	HYDRO	Hydro	Hydro	HYDRO	Hydro	Hydro	HYDRO	Hydro	Hydro	HYDRO
Remarks			No Sample	No Sample		No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample
Lab Sample ID		z	z	H19030475-004	z	z	z	z	z	z	z	z	z	z	z	z	
<b>Field Parameters</b>																	
Dissolved Oxygen	mg/L			10.03													
Field pH	s.u.			8.17													
Field Specific Conductivity	umhos/cm			367													
Flow	Gallons Per Min		NF-DRY	NF-DRY	2.6	NM-ICE	NM	NM-ICE	NF-DRY	NF-DRY	NM-ICE	NF-DRY	NF-ICE	NM-DRY	NF-DRY	NF-ICE	NM-ICE
Water Temperature	Deg C			2.3													
<b>Physical Parameters</b>																	
pH Measurement Temp	Deg C																
pH	s.u.																
Total Dissolved Solids	mg/L			203													
Total Suspended Solids	mg/L			20													
<b>Major Constituents - Commons Ions</b>																	
Alkalinity as CaCO3	mg/L			190													
Calcium (DIS)	mg/L			51													
Chloride	mg/L			<1													
Fluoride	mg/L	4		0.1													
Hardness as CaCO3	mg/L			205													
Magnesium (DIS)	mg/L			19													
Potassium (DIS)	mg/L			<1													
Sodium (DIS)	mg/L			1													
Sulfate	mg/L			15													
<b>Nutrients</b>																	
Nitrate + Nitrite as N	mg/L	10		0.12													
<b>Metals - Trace Constituents</b>																	
Aluminum (DIS)	mg/L			<0.009													
Antimony (DIS)	mg/L	0.006		<0.0005													
Arsenic (DIS)	mg/L	0.01		<0.001													
Barium (DIS)	mg/L	1		0.059													
Beryllium (DIS)	mg/L	0.004		<0.0008													
Cadmium (DIS)	mg/L	0.005		<0.00003													
Chromium (DIS)	mg/L	0.1		<0.01													
Cobalt (DIS)	mg/L			<0.01													
Copper (DIS)	mg/L	1.3		<0.002													
Iron (DIS)	mg/L			<0.02													
Lead (DIS)	mg/L	0.015		<0.0003													
Manganese (DIS)	mg/L			<0.005													
Mercury (DIS)	ug/L			<0.005													
Molybdenum (DIS)	mg/L			<0.002													
Nickel (DIS)	mg/L	0.1		<0.001													
Selenium (DIS)	mg/L	0.05		0.0002													
Silver (DIS)	mg/L	0.1		<0.0002													
Strontium (DIS)	mg/L	4		0.104													
Thallium (DIS)	mg/L	0.002		<0.0002													
Uranium (DIS)	mg/L	0.03		0.0007													
Zinc (DIS)	mg/L	2		<0.002													

DIS = Dissolved

NM = Not measured

NF-ICE = Not flowing; ice on ground

NM-ICE = Not measured; ice prohibitive

NF-DRY = Not flowing; Dry ground

**Analyte concentration exceeds the standard for:**

Human Health Standard Groundwater

Source: DEQ-7 May 2017

**TABLE 7. FIRST QUARTER 2019 SPRING WATER QUALITY SUMMARY (CONTINUED)**

Station Name		Human Health Standard Groundwater	SP-4	SP-4	SP-4	SP-4	SP-5 (SW-7)	SP-5 (SW-7)	SP-5 (SW-7)	SP-6	SP-6	SP-6	SP-6	SP-7	SP-7	SP-7	SP-7	SP-10
Sample Date/Time			1/10/19 12:45	2/22/19 14:50	2/22/19 15:05	3/26/19 09:25	1/10/19 16:30	2/22/19 15:20	3/26/19 14:50	1/10/19 12:30	2/22/19 00:00	3/26/19 13:55	3/26/19 14:15	1/10/19 14:20	1/10/19 14:45	2/22/19 14:20	3/27/19 10:50	1/10/19 16:00
Field Sample ID			BBC-1901-109	BBC-1902-111	BBC-1902-112	BBC-1903-100	BBC-1901-122	BBC-1902-117	BBC-1903-110	BBC-1901-118	BBC-1902-113	BBC-1903-107	BBC-1903-108	BBC-1901-112	BBC-1901-113	BBC-1902-110	BBC-1903-123	BBC-1901-120
Laboratory			Energy Labs	Energy Labs	Energy Labs	Energy Labs	Hydro	Hydro	HYDRO	Hydro	Hydro	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Hydro
Remarks					Duplicate		No Sample	No Sample	No Sample	No Sample	No Sample		Duplicate		Duplicate			No Sample
Lab Sample ID		H19010186-001	H19020364-003	H19020364-004	H19030475-001	z	z	z	z	z	H19030475-002	H19030475-003	H19010186-004	H19010186-005	H19020364-002	H19030475-008	z	
<b>Field Parameters</b>																		
Dissolved Oxygen	mg/L		9.7	9.92		9.66					9.68	9.68	5.83		4.59	2.46		
Field pH	s.u.		8.14	7.86 A		8.02					8.17	8.17	7.54		7.37 A	7.1		
Field Specific Conductivity	umhos/cm		406	428		438					256	256	311		330	341		
Flow	Gallons Per Min		3.4	NM-ICE		2.6	NF-DRY	NF-DRY	NF-DRY	NM-ICE	NM-ICE	0.83		15.3	8.08	13.02	NF-DRY	
Water Temperature	Deg C		5.2	3.6		5.6					4.7	4.7	5.07		6.14	6.6		
<b>Physical Parameters</b>																		
pH Measurement Temp	Deg C			16	16.2										16.1			
pH	s.u.			7.8 H	8.0 H										7.4 H			
Total Dissolved Solids	mg/L		222	234	237	234					163	156	174	168	176	186		
Total Suspended Solids	mg/L		10	11	20	<10					<10	<10	<10	<10	<10	<10		
<b>Major Constituents - Common Ions</b>																		
Alkalinity as CaCO3	mg/L		210	200	200	200					140	140	170	170	170	170		
Calcium (DIS)	mg/L		53	53	53	50					35	35	43	43	42	45		
Chloride	mg/L		<1	<1	<1	<1					<1	<1	2	2	2	2		
Fluoride	mg/L	4	0.2	0.2	0.2	0.2					0.2	0.2	0.3	0.3	0.3	0.3		
Hardness as CaCO3	mg/L		248	246	245	231					142	141	171	170	166	175		
Magnesium (DIS)	mg/L		28	28	27	26					13	13	15	15	15	15		
Potassium (DIS)	mg/L		2	2	2	2					<1	<1	3	3	3	3		
Sodium (DIS)	mg/L		2	2	2	2					2	2	5	5	5	5		
Sulfate	mg/L		38	38	38	40					9	9	11	11	11	11		
<b>Nutrients</b>																		
Nitrate + Nitrite as N	mg/L	10	0.25	0.25	0.24	0.24					0.39	0.39	0.3	0.3	0.31	0.31		
<b>Metals - Trace Constituents</b>																		
Aluminum (DIS)	mg/L		0.013	<0.009	<0.009	<0.009					0.045	0.041	<0.009	<0.009	<0.009	<0.009		
Antimony (DIS)	mg/L	0.006	<0.0005	<0.0005	<0.0005	<0.0005					<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Arsenic (DIS)	mg/L	0.01	<0.001	<0.001	<0.001	<0.001					<0.001	<0.001	0.004	0.004	0.004	0.004		
Barium (DIS)	mg/L	1	0.114	0.114	0.114	0.113					0.188	0.186	0.113	0.114	0.116	0.115		
Beryllium (DIS)	mg/L	0.004	<0.0008	<0.0008	<0.0008	<0.0008					<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008		
Cadmium (DIS)	mg/L	0.005	<0.00003	<0.00003	<0.00003	<0.00003					<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003		
Chromium (DIS)	mg/L	0.1	<0.01	<0.01	<0.01	<0.01					<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Cobalt (DIS)	mg/L		<0.01	<0.01	<0.01	<0.01					<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Copper (DIS)	mg/L	1.3	<0.002	<0.002	<0.002	<0.002					<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		
Iron (DIS)	mg/L		0.02	<0.02	<0.02	<0.02					0.03	0.03	<0.02	<0.02	<0.02	<0.02		
Lead (DIS)	mg/L	0.015	<0.0003	<0.0003	<0.0003	<0.0003					<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		
Manganese (DIS)	mg/L		<0.005	<0.005	<0.005	<0.005					<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Mercury (DIS)	ug/L		<0.005	<0.005	<0.005	<0.005					<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Molybdenum (DIS)	mg/L		<0.002	<0.002	<0.002	<0.002					<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		
Nickel (DIS)	mg/L	0.1	<0.001	<0.001	<0.001	<0.001					<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Selenium (DIS)	mg/L	0.05	0.0004	0.0004	0.0004	0.0003					<0.0002	<0.0002	0.0004	0.0003	0.0004	0.0003		
Silver (DIS)	mg/L	0.1	<0.0002	<0.0002	<0.0002	<0.0002					<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
Strontium (DIS)	mg/L	4	0.0742	0.0753	0.0749	0.0725					0.0734	0.074	0.17	0.172	0.168	0.17		
Thallium (DIS)	mg/L	0.002	0.0004	0.0003	0.0003	0.0003					0.0005	0.0005	0.001	0.001	0.001	0.0011		
Uranium (DIS)	mg/L	0.03	0.0005	0.0005	0.0005	0.0005					0.0004	0.0004	0.0009	0.0009	0.001	0.001		
Zinc (DIS)	mg/L	2	<0.002	<0.002	<0.002	<0.002					<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		

DIS = Dissolved

NM = Not measured

NF-ICE = Not flowing; ice on ground

NM-ICE = Not measured; ice prohibitive

NF-DRY = Not flowing; Dry ground

**Analyte concentration exceeds the standard for:**

Human Health Standard Groundwat

Source: DEQ-7 May 2017

**TABLE 7. FIRST QUARTER 2019 SPRING WATER QUALITY SUMMARY (CONTINUED)**

Station Name		Human Health Standard Groundwater	SP-10	SP-10	SP-11	SP-11	SP-11	SP-12	SP-12	SP-12
Sample Date/Time			2/22/19 00:00	3/26/19 16:30	1/10/19 13:05	2/22/19 13:40	3/27/19 08:40	1/10/19 13:25	2/22/19 16:25	3/27/19 10:10
Field Sample ID			BBC-1902-116	BBC-1903-112	BBC-1901-110	BBC-1902-109	BBC-1903-119	BBC-1901-111	BBC-1902-119	BBC-1903-122
Laboratory			Hydro	Energy Labs	Energy Labs	Energy Labs	HYDRO	Energy Labs	Energy Labs	Energy Labs
Remarks			No Sample				No Sample			
Lab Sample ID		z	H19030475-005	H19010186-002	H19020364-001	z	H19010186-003	H19020364-005	H19030475-007	
<b>Field Parameters</b>										
Dissolved Oxygen	mg/L		7.73	8.36	6.09		7.78		4.18	
Field pH	s.u.		7.83	7.98	7.59 A		7.76		7.25	
Field Specific Conductivity	umhos/cm		400	180	183		421		437	
Flow	Gallons Per Min		NM-ICE	0.01	NM	NM	NM	NM	NM	
Water Temperature	Deg C		3.8	5.6	6.2		5.4		4.3	
<b>Physical Parameters</b>										
pH Measurement Temp	Deg C				16.2			16.4		
pH	s.u.				7.3 H			7.6 H		
Total Dissolved Solids	mg/L		218	99	108		235	234	245	
Total Suspended Solids	mg/L		<10	<10	10		187	78	<10	
<b>Major Constituents - Commons Ions</b>										
Alkalinity as CaCO3	mg/L		200	93	93		210	210	160	
Calcium (DIS)	mg/L		55	23	23		58	55	42	
Chloride	mg/L		<1	<1	<1		8	7	15	
Fluoride	mg/L	4	0.1	0.2	0.2		0.2	0.2	0.1	
Hardness as CaCO3	mg/L		221	93	94		249	238	180	
Magnesium (DIS)	mg/L		20	9	9		26	24	18	
Potassium (DIS)	mg/L		<1	1	1		1	1	13	
Sodium (DIS)	mg/L		2	4	3		2	2	3	
Sulfate	mg/L		16	7	7		26	25	21	
<b>Nutrients</b>										
Nitrate + Nitrite as N	mg/L	10	0.24	0.22	0.22		0.31	0.29	0.15	
<b>Metals - Trace Constituents</b>										
Aluminum (DIS)	mg/L		<0.009	0.022	0.022		<0.009	<0.009	<0.009	
Antimony (DIS)	mg/L	0.006	<0.0005	<0.0005	<0.0005		<0.0005	<0.0005	<0.0005	
Arsenic (DIS)	mg/L	0.01	<0.001	0.005	0.005		<0.001	<0.001	<0.001	
Barium (DIS)	mg/L	1	0.048	0.28	0.276		0.187	0.175	0.128	
Beryllium (DIS)	mg/L	0.004	<0.0008	<0.0008	<0.0008		<0.0008	<0.0008	<0.0008	
Cadmium (DIS)	mg/L	0.005	<0.00003	<0.00003	<0.00003		<0.00003	<0.00003	<0.00003	
Chromium (DIS)	mg/L	0.1	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	
Cobalt (DIS)	mg/L		<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	
Copper (DIS)	mg/L	1.3	<0.002	<0.002	<0.002		<0.002	<0.002	0.002	
Iron (DIS)	mg/L		<0.02	<0.02	<0.02		<0.02	<0.02	0.05	
Lead (DIS)	mg/L	0.015	<0.0003	<0.0003	<0.0003		<0.0003	<0.0003	<0.0003	
Manganese (DIS)	mg/L		<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	
Mercury (DIS)	ug/L		<0.005	<0.005	<0.005		<0.005	<0.005	0.018	
Molybdenum (DIS)	mg/L		<0.002	<0.002	<0.002		<0.002	<0.002	<0.002	
Nickel (DIS)	mg/L	0.1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	
Selenium (DIS)	mg/L	0.05	0.0003	<0.0002	<0.0002		0.0002	0.0003	<0.0002	
Silver (DIS)	mg/L	0.1	<0.0002	<0.0002	<0.0002		<0.0002	<0.0002	<0.0002	
Strontium (DIS)	mg/L	4	0.107	0.102	0.1		0.115	0.107	0.081	
Thallium (DIS)	mg/L	0.002	<0.0002	<0.0002	<0.0002		<0.0002	<0.0002	<0.0002	
Uranium (DIS)	mg/L	0.03	0.0007	0.0003	0.0003		0.0006	0.0006	0.0003	
Zinc (DIS)	mg/L	2	<0.002	<0.002	0.002		<0.002	<0.002	0.005	

DIS = Dissolved

NM = Not measured

NF-ICE = Not flowing; ice on ground

NM-ICE = Not measured; ice prohibitive

NF-DRY = Not flowing; Dry ground

**Analyte concentration exceeds the standard for:**

Human Health Standard Groundwat

**Source:** DEQ-7 May 2017

The monitoring wells MW-2B, MW-4B, MW-6B, MW-7, MW-8, MW-13, MW-16, MW-17, MW-18, MW-19, MW-20, and test well PW-3 are located in the shallow bedrock and exhibit similar water quality. A sample was not collected from PW-3 during the first quarter; however, the water quality at the monitoring wells is characterized by the following:

- Calcium-magnesium bicarbonate type water;
- Neutral to slightly alkaline pH (7.11 to 7.89 s.u.);
- Low to moderate sulfate concentrations (8 to 105 mg/L);
- Moderate total dissolved solids concentrations (160 mg/L to 371 mg/L); and
- Low concentrations of numerous dissolved metals, including: barium, strontium, and uranium at all wells; arsenic, iron, manganese, selenium, and thallium at MW-2B; aluminum, arsenic, iron, lead, manganese, molybdenum at MW-7; arsenic, iron, manganese, and molybdenum at MW-8; arsenic, iron, manganese, and zinc at MW-16; aluminum, manganese, selenium, and zinc at MW-17; selenium at MW-18; and aluminum at MW-20 (Table 8).

The concentration of thallium (0.0038 mg/L) at MW-2B exceeded the 0.002 mg/L groundwater Human Health Standards (DEQ, 2017) in March.

The monitoring wells MW-1B, MW-3, MW-9 and test wells PW-2, PW-4, PW-8, and PW-9 are completed within or near the upper sulfide zone (USZ) and exhibit similar water quality characteristics. With the exception of test wells, the water quality is characterized by the following:

- Calcium-magnesium sulfate type water;
- Slightly acidic to near neutral pH (6.42-7.19 s.u.);
- Elevated sulfate (198-226 mg/L);
- Elevated total dissolved solids concentrations (435-521 mg/L); and
- With the exceptions noted below, low concentrations of numerous dissolved metals, including: arsenic, barium, iron, manganese, strontium, and thallium at all wells; aluminum, antimony, cobalt, nickel, and zinc at MW-1B; uranium at MW-3, and lead

and uranium at MW-9. Consistent with prior data, the concentration of iron at MW-1B (20 mg/L) was elevated in comparison to the concentration at MW-3 and MW-9 (1.02 mg/L and 0.86 mg/L, respectively; Table 8).

The concentration of arsenic (0.07 mg/L) and thallium (0.0125 mg/L) at MW-1B; arsenic (0.071 mg/L) and strontium (13.6 mg/L) at MW-3; and arsenic (0.014 mg/L) and thallium (0.0027 mg/L) at MW-9 exceeded the 0.01 mg/L (arsenic), 0.002 mg/L (thallium), and 4.0 mg/L (strontium) groundwater Human Health Standards (DEQ, 2017) in March.

The monitoring wells MW-10, MW-11, and MW-12 are completed in granodiorite and exhibit similar water quality, characterized by:

- Calcium bicarbonate water type;
- Slightly alkaline pH (7.63 to 7.97);
- Low sulfate concentrations (4 to 13 mg/L);
- Moderate total dissolved solids concentrations (182 to 226 mg/L); and
- Low concentrations of numerous dissolved metals, including: barium, strontium, and uranium at all wells; aluminum and molybdenum at MW-10; and aluminum at MW-11 (Table 8).

The monitoring wells SC15-184, SC15-185, SC15-194, and SC15-198 exhibit similar water quality. SC15-184 was the only well sampled in the first quarter and is characterized by the following:

- Calcium bicarbonate type water;
- Slightly alkaline pH (7.91 s.u.);
- Low sulfate concentrations (15 mg/L);
- Moderate total dissolved solids concentrations (198 mg/L); and
- Low concentrations of dissolved metals, including: barium, selenium, strontium, and uranium (Table 8).

**TABLE 8. FIRST QUARTER 2019 GROUNDWATER QUALITY SUMMARY**

Station Name		Groundwater Human Health Standard	MW-1A	MW-1B	MW-2A	MW-2B	MW-3	MW-4A	MW-4B	MW-6A	MW-6A	MW-6B	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	
Sample Date/Time			3/26/19 12:00	3/26/19 10:55	3/26/19 09:30	3/26/19 10:00	3/25/19 15:40	3/27/19 16:50	3/27/19 16:15	3/28/19 11:35	3/28/19 11:50	3/28/19 12:00	3/28/19 10:40	3/28/19 09:50	3/25/19 17:25	3/26/19 16:45	3/26/19 15:30	3/26/19 14:25	
Field Sample ID			BBC-1903-206	BBC-1903-205	BBC-1903-203	BBC-1903-204	BBC-1903-200	BBC-1903-216	BBC-1903-215	BBC-1903-219	BBC-1903-220	BBC-1903-221	BBC-1903-218	BBC-1903-217	BBC-1903-201	BBC-1903-211	BBC-1903-210	BBC-1903-209	
Laboratory			Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
Remarks											Duplicate								
Lab Sample ID		H19030476-007	H19030476-006	H19030476-004	H19030476-005	H19030476-001	H19030547-002	H19030547-001	H19030547-005	H19030547-006	H19030547-007	H19030547-004	H19030547-003	H19030476-002	H19030476-012	H19030476-011	H19030476-010		
<b>Field Parameters</b>																			
Depth To Water	Feet		7.41	24.18	42.02	41.32	41.38	4.9	4.35	7.84		11.13	32.32	31.75	51.68	81.43	34.46	28.91	
Dissolved Oxygen	mg/L		8.94	0.07	7.6	0.2	0.11	0.24	0.36	5.34		NM	0.34	0.58	0.06	8.1	7.62	7.4	
EH	Millivolts		278.03	193.87	298.68	253.38	195.57	298.07	238.13	282.08		NM	250.69	150.64	207.06	264.41	265.45	269.74	
Field pH	s.u.		7.4	6.42	7.57	7.34	7.19	NM	7.11	7.59		NM	7.48	7.89	7.1	7.97	7.77	7.63	
Field Specific Conductivity	umhos/cm		337	627.5	388	432	782	496	443	451		NM	535	309	784	325	319	417	
Water Temperature	Deg C		6.9	7.8	7.2	7.2	9	4.3	6.3	5.4		NM	7.1	6.8	8.5	8.2	9.1	6.8	
<b>Physical Parameters</b>																			
Total Dissolved Solids	mg/L		194	435	208	237	521	267	234	246	244	249	310	160	506	187	182	226	
Total Suspended Solids	mg/L		45	37	<10	<10	<10	<10	<10	23	28	<10	41	<10	<10	33	21	<10	
<b>Major Constituents - Commons Ions</b>																			
Alkalinity as CaCO3	mg/L		170	110	190	200	220	250	220	230	230	230	230	160	240	180	170	220	
Calcium (DIS)	mg/L		44	68	46	52	77	71	62	56	57	50	60	25	91	43	48	61	
Chloride	mg/L		2	1	1	1	1	3	2	<1	<1	<1	4	<1	1	<1	<1	<1	
Fluoride	mg/L	4	0.2	0.2	0.3	0.3	0.7	0.1	0.1	0.2	0.2	0.5	0.3	0.2	0.5	0.2	<0.1	0.1	
Hardness as CaCO3	mg/L		187	316	215	244	406	258	234	243	247	227	307	158	450	183	172	237	
Magnesium (DIS)	mg/L		19	36	24	28	52	20	19	25	25	25	38	23	54	19	12	21	
Potassium (DIS)	mg/L		1	3	1	1	3	1	1	<1	<1	1	1	<1	4	2	2	<1	
Sodium (DIS)	mg/L		2	3	3	3	16	3	3	3	3	14	3	3	6	6	6	2	
Sulfate	mg/L		14	226	22	37	222	15	14	17	17	23	62	15	198	5	6	13	
<b>Nutrients</b>																			
Nitrate + Nitrite as N	mg/L	10	0.42	0.04	0.2	<0.01	<0.01	<0.01	0.07	0.1	0.1	0.07	<0.01	<0.01	<0.01	0.53	0.44	0.16	
<b>Metals - Trace Constituents</b>																			
Aluminum (DIS)	mg/L		0.022	0.017	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	0.014	<0.009	<0.009	0.019	0.01	<0.009	
Antimony (DIS)	mg/L	0.006	<0.0005	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Arsenic (DIS)	mg/L	0.01	<0.001	0.07	<0.001	0.003	0.071	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002	0.014	<0.001	<0.001	<0.001	
Barium (DIS)	mg/L	1	0.181	0.011	0.084	0.043	0.011	0.175	0.128	0.179	0.18	0.111	0.042	0.079	0.016	0.189	0.162	0.053	
Beryllium (DIS)	mg/L	0.004	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	
Cadmium (DIS)	mg/L	0.005	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	
Chromium (DIS)	mg/L	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Cobalt (DIS)	mg/L		<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Copper (DIS)	mg/L	1.3	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
Iron (DIS)	mg/L		<0.02	20	<0.02	0.02	1.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	0.1	0.86	<0.02	<0.02	<0.02	
Lead (DIS)	mg/L	0.015	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0006	<0.0003	0.0013	<0.0003	<0.0003	<0.0003	
Manganese (DIS)	mg/L		<0.005	0.075	<0.005	0.007	0.016	0.23	<0.005	<0.005	<0.005	<0.005	<0.005	0.016	0.019	0.088	<0.005	<0.005	
Mercury (DIS)	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Molybdenum (DIS)	mg/L		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	0.002	<0.002	0.005	<0.002	<0.002	
Nickel (DIS)	mg/L	0.1	<0.001	0.011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Selenium (DIS)	mg/L	0.05	0.0002	<0.0002	0.0013	0.0066	<0.0002	<0.0002	<0.0002	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Silver (DIS)	mg/L	0.1	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Strontium (DIS)	mg/L	4	0.0995	1.83	0.0925	0.0912	13.6	0.169	0.174	0.169	0.17	0.238	0.17	0.0877	1.34	0.956	0.326	0.141	
Thallium (DIS)	mg/L	0.002	0.0009	0.0125	0.0002	0.0038	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0027	<0.0002	<0.0002	<0.0002	
Uranium (DIS)	mg/L	0.03	0.001	<0.0002	0.0005	0.0023	0.0011	0.0004	0.0006	0.0007	0.0007	0.0007	0.0023	0.0008	0.001	0.0088	0.0019	0.0008	
Zinc (DIS)	mg/L	2	<0.002	0.012	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	

DIS = Dissolved

NM = Not measured

NF-ICE = Not flowing; ice on ground

NM-ICE = Not measured; ice prohibitive

NF-DRY = Not flowing; Dry ground

**Analyte concentration exceeds the standard for:**

Human Health Standard Groundwater

Source: DEQ-7 May 2017

**TABLE 8. FIRST QUARTER 2019 GROUNDWATER QUALITY SUMMARY (CONTINUED)**

Station Name		Groundwater Human Health Standard	MW-13	MW-16	MW-17	MW-18	MW-19	MW-20	SC15-184
Sample Date/Time			3/26/19 13:50	3/25/19 18:15	3/27/19 09:30	3/26/19 17:45	3/26/19 13:00	3/27/19 10:30	3/28/19 11:40
Field Sample ID			BBC-1903-208	BBC-1903-202	BBC-1903-213	BBC-1903-212	BBC-1903-207	BBC-1903-214	BBC-1903-300
Laboratory			Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
Remarks									
Lab Sample ID		H19030476-009	H19030476-003	H19030476-014	H19030476-013	H19030476-008	H19030476-015	H19030547-010	
<b>Field Parameters</b>									
Depth To Water	Feet		22.05	7.2	55.76	17.17	14.18	20.04	Artesian
Dissolved Oxygen	mg/L		7.67	0.2	4.73	7.7	8.07	9.45	7.12
EH	Millivolts		268.18	173.06	254.08	266.98	273.25	259.06	297.63
Field pH	s.u.		7.63	7.32	7.73	7.84	7.54	7.76	7.91
Field Specific Conductivity	umhos/cm		426	623	392	356	366	382	372
Water Temperature	Deg C		6.6	6.7	6.6	6	6.2	6.7	6.3
<b>Physical Parameters</b>									
Total Dissolved Solids	mg/L		227	371	214	194	203	208	198
Total Suspended Solids	mg/L		13	17	14	14	44	179	<10
<b>Major Constituents - Commons Ions</b>									
Alkalinity as CaCO3	mg/L		220	240	200	190	180	200	190
Calcium (DIS)	mg/L		63	78	44	50	52	46	38
Chloride	mg/L		<1	2	2	<1	<1	<1	<1
Fluoride	mg/L	4	0.1	0.5	0.2	<0.1	0.1	<0.1	0.2
Hardness as CaCO3	mg/L		248	365	214	208	210	209	202
Magnesium (DIS)	mg/L		22	41	25	20	20	23	26
Potassium (DIS)	mg/L		<1	3	<1	<1	<1	1	<1
Sodium (DIS)	mg/L		2	4	2	2	2	2	2
Sulfate	mg/L		17	105	10	8	14	9	15
<b>Nutrients</b>									
Nitrate + Nitrite as N	mg/L	10	0.23	<0.01	0.34	0.17	0.25	0.45	0.25
<b>Metals - Trace Constituents</b>									
Aluminum (DIS)	mg/L		<0.009	<0.009	0.016	<0.009	<0.009	0.009	<0.009
Antimony (DIS)	mg/L	0.006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (DIS)	mg/L	0.01	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	<0.001
Barium (DIS)	mg/L	1	0.056	0.017	0.253	0.083	0.081	0.178	0.092
Beryllium (DIS)	mg/L	0.004	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Cadmium (DIS)	mg/L	0.005	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Chromium (DIS)	mg/L	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt (DIS)	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper (DIS)	mg/L	1.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Iron (DIS)	mg/L		<0.02	1.36	<0.02	<0.02	<0.02	<0.02	<0.02
Lead (DIS)	mg/L	0.015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Manganese (DIS)	mg/L		<0.005	0.044	0.008	<0.005	<0.005	<0.005	<0.005
Mercury (DIS)	ug/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum (DIS)	mg/L		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel (DIS)	mg/L	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (DIS)	mg/L	0.05	<0.0002	<0.0002	0.0009	0.0003	<0.0002	<0.0002	0.001
Silver (DIS)	mg/L	0.1	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Strontium (DIS)	mg/L	4	0.101	0.332	0.114	0.1	0.13	0.0655	0.123
Thallium (DIS)	mg/L	0.002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Uranium (DIS)	mg/L	0.03	0.0006	0.0019	0.0009	0.0005	0.0007	0.0005	0.0011
Zinc (DIS)	mg/L	2	<0.002	0.005	0.006	<0.002	<0.002	<0.002	<0.002

DIS = Dissolved  
 NM = Not measured  
 NF-ICE = Not flowing; ice on ground  
 NM-ICE = Not measured; ice prohibitive  
 NF-DRY = Not flowing; Dry ground

**Analyte concentration exceeds the standard for:**

Human Health Standard Groundwat

Source: DEQ-7 May 2017

### 3.5 QUALITY CONTROL

The field quality control sample plan consists of collecting one field duplicate and one field blank sample for each source water (groundwater, surface water, and springs) and one rinsate blank for the groundwater sampling equipment during each monitoring event. Field duplicate samples are replicate samples, collected from a single sampling location, to evaluate the reproducibility (precision) of the field sampling protocols. The field blank samples are collected to evaluate potential contamination from ambient conditions during sampling, sample containers and preservatives, and laboratory processing and analysis. For the purposes of this project, field duplicates were collected by rinsing and filling two sample containers consecutively from the sampling location and preserving. The field blank samples are collected by rinsing and pouring deionized (DI) water into sample containers and preserving. The rinsate (equipment) blanks, collected for groundwater quality sample analysis, consisted of sampling DI water after being processed through decontaminated sampling equipment (including filtration equipment as appropriate), collected into sample containers and preserved. The field quality control samples are identified with a sequential sample code and are submitted blind to the same laboratory.

The data quality for the monitoring conducted in the first quarter of 2019 was evaluated using standard laboratory QC samples and field duplicates, blanks, and rinsate blanks. Field duplicates were collected at SW-14 and SP-7 in January, SW-1 and SP-4 in February, and SW-14, SP-6, and MW-6A in March 2019. Data quality reviews and QA/QC results for the first quarter are provided in Appendix B and a summary of field QC sample quality control limit exceedances are provided below. The QA/QC data did not indicate any systematic data quality issues for the first quarter of 2019.

January monitoring event:

- Field blank and duplicate control limits were not exceeded in January.



February monitoring event:

- One field blank for spring monitoring reported concentrations for dissolved iron and strontium above the project required detection limits (PRDL).
- Field duplicate control limits were not exceeded in February.

March monitoring event:

- One field blank for spring monitoring reported concentrations for dissolved nickel above the PRDL.
- Field duplicate control limits were not exceeded in March.

## 4.0 REFERENCES

- DEQ, 2017. Circular DEQ-7 Montana Numeric Water Quality Standards. Montana Department of Environmental Quality – Water Quality Planning Bureau – Water Quality Standards and Modeling Section. May 2017.
- EPA, 1983. Methods for Chemical Analysis of Water and Wastes. EPA-600/14-79-020. Revised March 1983.
- Hydrometrics, Inc., 2015. Baseline Water Resources Monitoring and Hydrogeologic Investigations Report, Tintina Resources Black Butte Project. August 2015. Revised March 2017.
- Hydrometrics, Inc., 2016. Water Resources Monitoring Field Sampling and Analysis Plan, Black Butte Copper Project. June 2016.

**APPENDIX A**

**LABORATORY ANALYTICAL REPORT**



January 21, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19010185                      Quote ID: H1216 - Surface and Groundwater Sampling  
Project Name: 18049 Black Butte Copper (SW)

Energy Laboratories Inc Helena MT received the following 7 samples for Tintina Resources Inc on 1/11/2019 for analysis.

H19010185-001	BBC-1901-100	01/10/19 10:00	01/11/19	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity Conductivity Mercury, Total Recoverable Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Dissolved Solids, Total Suspended
H19010185-002	BBC-1901-101	01/10/19 10:20	01/11/19	Surface Water	Same As Above
H19010185-003	BBC-1901-102	01/10/19 10:40	01/11/19	Surface Water	Same As Above
H19010185-004	BBC-1901-103	01/10/19 11:00	01/11/19	Surface Water	Same As Above
H19010185-005	BBC-1901-104	01/10/19 11:15	01/11/19	Surface Water	Same As Above
H19010185-006	BBC-1901-107	01/10/19 11:35	01/11/19	Surface Water	Same As Above
H19010185-007	BBC-1901-108	01/10/19 11:45	01/11/19	Surface Water	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Assistant Laboratory Manager-Helena, MT

Digitally signed by  
Amanda B. Carlson  
Date: 2019.01.21 09:25:20 -07:00



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19010185-001  
BBC-1901-100

01/21/19  
01/10/19 10:00  
01/11/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	01/11/19 12:50 / cmm
Solids, Total Dissolved TDS @ 180 C	176 mg/L	D	10	A2540 C	01/11/19 12:44 / cmm
Alkalinity, Total as CaCO3	180 mg/L		4	A2320 B	01/11/19 15:06 / SRW
Chloride	2 mg/L		1	E300.0	01/12/19 00:22 / SRW
Sulfate	7 mg/L		1	E300.0	01/12/19 00:22 / SRW
Fluoride	0.1 mg/L		0.1	4 A4500-F C	01/15/19 10:26 / SRW
Hardness as CaCO3	180 mg/L		1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.12 mg/L		0.01	E353.2	01/18/19 10:18 / kmd
Nitrogen, Total	0.19 mg/L		0.04	A4500 N-C	01/15/19 16:28 / kmd
Phosphorus, Total as P	0.009 mg/L		0.003	E365.1	01/15/19 15:38 / kmd
Aluminum	ND mg/L		0.009	E200.8	01/14/19 16:13 / sld
Calcium	50 mg/L		1	E200.7	01/14/19 19:27 / sld
Magnesium	13 mg/L		1	E200.7	01/14/19 19:27 / sld
Potassium	1 mg/L		1	E200.7	01/14/19 19:27 / sld
Sodium	2 mg/L		1	E200.7	01/14/19 19:27 / sld
Antimony	ND mg/L		0.0005	E200.8	01/16/19 14:24 / sld
Arsenic	ND mg/L		0.001	E200.8	01/16/19 14:24 / sld
Barium	0.105 mg/L		0.003	E200.8	01/16/19 14:24 / sld
Beryllium	ND mg/L		0.0008	E200.8	01/16/19 14:24 / sld
Cadmium	ND mg/L		0.00003	E200.8	01/16/19 14:24 / sld
Chromium	ND mg/L		0.01	E200.8	01/16/19 14:24 / sld
Cobalt	ND mg/L		0.01	E200.8	01/16/19 14:24 / sld
Copper	ND mg/L		0.002	E200.8	01/16/19 14:24 / sld
Iron	0.17 mg/L		0.02	E200.8	01/16/19 14:24 / sld
Lead	ND mg/L		0.0003	E200.8	01/16/19 14:24 / sld
Manganese	0.015 mg/L		0.005	E200.8	01/16/19 14:24 / sld
Mercury	ND ug/L		0.005	E245.1	01/15/19 16:28 / dck
Molybdenum	ND mg/L		0.002	E200.8	01/16/19 14:24 / sld
Nickel	ND mg/L		0.001	E200.8	01/16/19 14:24 / sld
Selenium	ND mg/L		0.0002	E200.8	01/16/19 14:24 / sld
Silver	ND mg/L		0.0002	E200.8	01/16/19 14:24 / sld
Strontium	0.127 mg/L	D	0.0003	E200.8	01/16/19 14:24 / sld
Thallium	ND mg/L		0.0002	E200.8	01/16/19 14:24 / sld
Uranium	0.0004 mg/L		0.0002	E200.8	01/16/19 14:24 / sld
Zinc	ND mg/L		0.002	E200.8	01/16/19 14:24 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19010185-002  
BBC-1901-101

01/21/19  
01/10/19 10:20  
01/11/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	01/11/19 12:50 / cmm
Solids, Total Dissolved TDS @ 180 C	170 mg/L	D	10	A2540 C	01/11/19 12:44 / cmm
Alkalinity, Total as CaCO3	170 mg/L		4	A2320 B	01/11/19 15:17 / SRW
Chloride	1 mg/L		1	E300.0	01/12/19 00:36 / SRW
Sulfate	7 mg/L		1	E300.0	01/12/19 00:36 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	01/15/19 10:29 / SRW
Hardness as CaCO3	175 mg/L		1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.10 mg/L		0.01	E353.2	01/18/19 10:22 / kmd
Nitrogen, Total	0.16 mg/L		0.04	A4500 N-C	01/15/19 16:31 / kmd
Phosphorus, Total as P	0.008 mg/L		0.003	E365.1	01/15/19 15:43 / kmd
Aluminum	0.020 mg/L		0.009	E200.8	01/14/19 16:15 / sld
Calcium	49 mg/L		1	E200.7	01/14/19 19:31 / sld
Magnesium	13 mg/L		1	E200.7	01/14/19 19:31 / sld
Potassium	1 mg/L		1	E200.7	01/14/19 19:31 / sld
Sodium	2 mg/L		1	E200.7	01/14/19 19:31 / sld
Antimony	ND mg/L		0.0005	E200.8	01/16/19 14:26 / sld
Arsenic	ND mg/L		0.001	E200.8	01/16/19 14:26 / sld
Barium	0.091 mg/L		0.003	E200.8	01/16/19 14:26 / sld
Beryllium	ND mg/L		0.0008	E200.8	01/16/19 14:26 / sld
Cadmium	ND mg/L		0.00003	E200.8	01/16/19 14:26 / sld
Chromium	ND mg/L		0.01	E200.8	01/16/19 14:26 / sld
Cobalt	ND mg/L		0.01	E200.8	01/16/19 14:26 / sld
Copper	ND mg/L		0.002	E200.8	01/16/19 14:26 / sld
Iron	0.17 mg/L		0.02	E200.8	01/16/19 14:26 / sld
Lead	ND mg/L		0.0003	E200.8	01/16/19 14:26 / sld
Manganese	0.009 mg/L		0.005	E200.8	01/16/19 14:26 / sld
Mercury	ND ug/L		0.005	E245.1	01/15/19 16:38 / dck
Molybdenum	ND mg/L		0.002	E200.8	01/16/19 14:26 / sld
Nickel	ND mg/L		0.001	E200.8	01/16/19 14:26 / sld
Selenium	ND mg/L		0.0002	E200.8	01/16/19 14:26 / sld
Silver	ND mg/L		0.0002	E200.8	01/16/19 14:26 / sld
Strontium	0.124 mg/L	D	0.0003	E200.8	01/16/19 14:26 / sld
Thallium	ND mg/L		0.0002	E200.8	01/16/19 14:26 / sld
Uranium	0.0003 mg/L		0.0002	E200.8	01/16/19 14:26 / sld
Zinc	ND mg/L		0.002	E200.8	01/16/19 14:26 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19010185-003  
BBC-1901-102

01/21/19  
01/10/19 10:40  
01/11/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	01/11/19 12:51 / cmm
Solids, Total Dissolved TDS @ 180 C	188 mg/L	D	10	A2540 C	01/11/19 12:44 / cmm
Alkalinity, Total as CaCO3	190 mg/L		4	A2320 B	01/11/19 15:23 / SRW
Chloride	1 mg/L		1	E300.0	01/12/19 00:50 / SRW
Sulfate	8 mg/L		1	E300.0	01/12/19 00:50 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	01/15/19 10:31 / SRW
Hardness as CaCO3	196 mg/L		1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.11 mg/L		0.01	E353.2	01/18/19 10:23 / kmd
Nitrogen, Total	0.15 mg/L		0.04	A4500 N-C	01/15/19 16:32 / kmd
Phosphorus, Total as P	0.005 mg/L		0.003	E365.1	01/15/19 15:55 / kmd
Aluminum	ND mg/L		0.009	E200.8	01/14/19 16:17 / sld
Calcium	55 mg/L		1	E200.7	01/14/19 19:34 / sld
Magnesium	14 mg/L		1	E200.7	01/14/19 19:34 / sld
Potassium	1 mg/L		1	E200.7	01/14/19 19:34 / sld
Sodium	2 mg/L		1	E200.7	01/14/19 19:34 / sld
Antimony	ND mg/L		0.0005	E200.8	01/16/19 14:28 / sld
Arsenic	ND mg/L		0.001	E200.8	01/16/19 14:28 / sld
Barium	0.068 mg/L		0.003	E200.8	01/16/19 14:28 / sld
Beryllium	ND mg/L		0.0008	E200.8	01/16/19 14:28 / sld
Cadmium	ND mg/L		0.00003	E200.8	01/16/19 14:28 / sld
Chromium	ND mg/L		0.01	E200.8	01/16/19 14:28 / sld
Cobalt	ND mg/L		0.01	E200.8	01/16/19 14:28 / sld
Copper	ND mg/L		0.002	E200.8	01/16/19 14:28 / sld
Iron	0.11 mg/L		0.02	E200.8	01/16/19 14:28 / sld
Lead	ND mg/L		0.0003	E200.8	01/16/19 14:28 / sld
Manganese	0.007 mg/L		0.005	E200.8	01/16/19 14:28 / sld
Mercury	ND ug/L		0.005	E245.1	01/15/19 16:41 / dck
Molybdenum	ND mg/L		0.002	E200.8	01/16/19 14:28 / sld
Nickel	ND mg/L		0.001	E200.8	01/16/19 14:28 / sld
Selenium	ND mg/L		0.0002	E200.8	01/16/19 14:28 / sld
Silver	ND mg/L		0.0002	E200.8	01/16/19 14:28 / sld
Strontium	0.148 mg/L	D	0.0003	E200.8	01/16/19 14:28 / sld
Thallium	ND mg/L		0.0002	E200.8	01/16/19 14:28 / sld
Uranium	0.0004 mg/L		0.0002	E200.8	01/16/19 14:28 / sld
Zinc	ND mg/L		0.002	E200.8	01/16/19 14:28 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19010185-004  
BBC-1901-103

01/21/19  
01/10/19 11:00  
01/11/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	01/11/19 14:27 / cmm
Solids, Total Dissolved TDS @ 180 C	219 mg/L	D	10	A2540 C	01/11/19 12:44 / cmm
Alkalinity, Total as CaCO3	220 mg/L		4	A2320 B	01/11/19 15:29 / SRW
Chloride	2 mg/L		1	E300.0	01/12/19 01:04 / SRW
Sulfate	9 mg/L		1	E300.0	01/12/19 01:04 / SRW
Fluoride	0.2 mg/L		0.1	4 A4500-F C	01/15/19 10:34 / SRW
Hardness as CaCO3	239 mg/L		1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.16 mg/L		0.01	E353.2	01/18/19 10:26 / kmd
Nitrogen, Total	0.24 mg/L		0.04	A4500 N-C	01/15/19 16:34 / kmd
Phosphorus, Total as P	0.005 mg/L		0.003	E365.1	01/15/19 15:45 / kmd
Aluminum	ND mg/L		0.009	E200.8	01/14/19 16:19 / sld
Calcium	61 mg/L		1	E200.7	01/14/19 19:38 / sld
Magnesium	21 mg/L		1	E200.7	01/14/19 19:38 / sld
Potassium	1 mg/L		1	E200.7	01/14/19 19:38 / sld
Sodium	3 mg/L		1	E200.7	01/14/19 19:38 / sld
Antimony	ND mg/L		0.0005	E200.8	01/16/19 14:30 / sld
Arsenic	ND mg/L		0.001	E200.8	01/16/19 14:30 / sld
Barium	0.120 mg/L		0.003	E200.8	01/16/19 14:30 / sld
Beryllium	ND mg/L		0.0008	E200.8	01/16/19 14:30 / sld
Cadmium	ND mg/L		0.00003	E200.8	01/16/19 14:30 / sld
Chromium	ND mg/L		0.01	E200.8	01/16/19 14:30 / sld
Cobalt	ND mg/L		0.01	E200.8	01/16/19 14:30 / sld
Copper	ND mg/L		0.002	E200.8	01/16/19 14:30 / sld
Iron	ND mg/L		0.02	E200.8	01/16/19 14:30 / sld
Lead	ND mg/L		0.0003	E200.8	01/16/19 14:30 / sld
Manganese	ND mg/L		0.005	E200.8	01/16/19 14:30 / sld
Mercury	ND ug/L		0.005	E245.1	01/15/19 16:44 / dck
Molybdenum	ND mg/L		0.002	E200.8	01/16/19 14:30 / sld
Nickel	ND mg/L		0.001	E200.8	01/16/19 14:30 / sld
Selenium	ND mg/L		0.0002	E200.8	01/16/19 14:30 / sld
Silver	ND mg/L		0.0002	E200.8	01/16/19 14:30 / sld
Strontium	0.124 mg/L	D	0.0003	E200.8	01/16/19 14:30 / sld
Thallium	ND mg/L		0.0002	E200.8	01/16/19 14:30 / sld
Uranium	0.0005 mg/L		0.0002	E200.8	01/16/19 14:30 / sld
Zinc	ND mg/L		0.002	E200.8	01/16/19 14:30 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19010185-005  
BBC-1901-104

01/21/19  
01/10/19 11:15  
01/11/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	01/11/19 12:51 / cmm
Solids, Total Dissolved TDS @ 180 C	229 mg/L	D	10	A2540 C	01/11/19 12:44 / cmm
Alkalinity, Total as CaCO3	220 mg/L		4	A2320 B	01/11/19 15:35 / SRW
Chloride	2 mg/L		1	E300.0	01/12/19 01:18 / SRW
Sulfate	9 mg/L		1	E300.0	01/12/19 01:18 / SRW
Fluoride	0.2 mg/L		0.1	4 A4500-F C	01/15/19 10:36 / SRW
Hardness as CaCO3	230 mg/L		1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.16 mg/L		0.01	E353.2	01/18/19 10:28 / kmd
Nitrogen, Total	0.24 mg/L		0.04	A4500 N-C	01/15/19 16:35 / kmd
Phosphorus, Total as P	0.004 mg/L		0.003	E365.1	01/15/19 15:56 / kmd
Aluminum	ND mg/L		0.009	E200.8	01/14/19 16:21 / sld
Calcium	59 mg/L		1	E200.7	01/14/19 19:42 / sld
Magnesium	20 mg/L		1	E200.7	01/14/19 19:42 / sld
Potassium	1 mg/L		1	E200.7	01/14/19 19:42 / sld
Sodium	3 mg/L		1	E200.7	01/14/19 19:42 / sld
Antimony	ND mg/L		0.0005	E200.8	01/16/19 14:32 / sld
Arsenic	ND mg/L		0.001	E200.8	01/16/19 14:32 / sld
Barium	0.122 mg/L		0.003	E200.8	01/16/19 14:32 / sld
Beryllium	ND mg/L		0.0008	E200.8	01/16/19 14:32 / sld
Cadmium	ND mg/L		0.00003	E200.8	01/16/19 14:32 / sld
Chromium	ND mg/L		0.01	E200.8	01/16/19 14:32 / sld
Cobalt	ND mg/L		0.01	E200.8	01/16/19 14:32 / sld
Copper	ND mg/L		0.002	E200.8	01/16/19 14:32 / sld
Iron	ND mg/L		0.02	E200.8	01/16/19 14:32 / sld
Lead	ND mg/L		0.0003	E200.8	01/16/19 14:32 / sld
Manganese	ND mg/L		0.005	E200.8	01/16/19 14:32 / sld
Mercury	ND ug/L		0.005	E245.1	01/15/19 16:47 / dck
Molybdenum	ND mg/L		0.002	E200.8	01/16/19 14:32 / sld
Nickel	ND mg/L		0.001	E200.8	01/16/19 14:32 / sld
Selenium	ND mg/L		0.0002	E200.8	01/16/19 14:32 / sld
Silver	ND mg/L		0.0002	E200.8	01/16/19 14:32 / sld
Strontium	0.126 mg/L	D	0.0003	E200.8	01/16/19 14:32 / sld
Thallium	ND mg/L		0.0002	E200.8	01/16/19 14:32 / sld
Uranium	0.0006 mg/L		0.0002	E200.8	01/16/19 14:32 / sld
Zinc	ND mg/L		0.002	E200.8	01/16/19 14:32 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19010185-006  
BBC-1901-107

01/21/19  
01/10/19 11:35  
01/11/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	01/11/19 12:52 / cmm
Solids, Total Dissolved TDS @ 180 C	ND mg/L	D	10	A2540 C	01/11/19 12:45 / cmm
Alkalinity, Total as CaCO3	ND mg/L		4	A2320 B	01/11/19 15:41 / SRW
Chloride	ND mg/L		1	E300.0	01/12/19 01:32 / SRW
Sulfate	ND mg/L		1	E300.0	01/12/19 01:32 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	01/15/19 10:38 / SRW
Hardness as CaCO3	ND mg/L		1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L		0.01	E353.2	01/18/19 10:29 / kmd
Nitrogen, Total	ND mg/L		0.04	A4500 N-C	01/15/19 16:36 / kmd
Phosphorus, Total as P	ND mg/L		0.003	E365.1	01/15/19 15:47 / kmd
Aluminum	ND mg/L		0.009	E200.8	01/14/19 16:23 / sld
Calcium	ND mg/L		1	E200.7	01/14/19 20:05 / sld
Magnesium	ND mg/L		1	E200.7	01/14/19 20:05 / sld
Potassium	ND mg/L		1	E200.7	01/14/19 20:05 / sld
Sodium	ND mg/L		1	E200.7	01/14/19 20:05 / sld
Antimony	ND mg/L		0.0005	E200.8	01/16/19 14:22 / sld
Arsenic	ND mg/L		0.001	E200.8	01/16/19 14:22 / sld
Barium	ND mg/L		0.003	E200.8	01/16/19 14:22 / sld
Beryllium	ND mg/L		0.0008	E200.8	01/16/19 14:22 / sld
Cadmium	ND mg/L		0.00003	E200.8	01/16/19 14:22 / sld
Chromium	ND mg/L		0.01	E200.8	01/16/19 14:22 / sld
Cobalt	ND mg/L		0.01	E200.8	01/16/19 14:22 / sld
Copper	ND mg/L		0.002	E200.8	01/16/19 14:22 / sld
Iron	ND mg/L		0.02	E200.8	01/16/19 14:22 / sld
Lead	ND mg/L		0.0003	E200.8	01/16/19 14:22 / sld
Manganese	ND mg/L		0.005	E200.8	01/16/19 14:22 / sld
Mercury	ND ug/L		0.005	E245.1	01/15/19 16:51 / dck
Molybdenum	ND mg/L		0.002	E200.8	01/16/19 14:22 / sld
Nickel	ND mg/L		0.001	E200.8	01/16/19 14:22 / sld
Selenium	ND mg/L		0.0002	E200.8	01/16/19 14:22 / sld
Silver	ND mg/L		0.0002	E200.8	01/16/19 14:22 / sld
Strontium	ND mg/L		0.0002	E200.7	01/16/19 14:16 / sld
Thallium	ND mg/L		0.0002	E200.8	01/16/19 14:22 / sld
Uranium	ND mg/L		0.0002	E200.8	01/16/19 14:22 / sld
Zinc	ND mg/L		0.002	E200.8	01/16/19 14:22 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19010185-007  
BBC-1901-108

01/21/19  
01/10/19 11:45  
01/11/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	01/11/19 12:52 / cmm
Solids, Total Dissolved TDS @ 180 C	235 mg/L	D	10	A2540 C	01/11/19 12:46 / cmm
Alkalinity, Total as CaCO3	210 mg/L		4	A2320 B	01/11/19 15:47 / SRW
Chloride	5 mg/L		1	E300.0	01/12/19 01:46 / SRW
Sulfate	35 mg/L		1	E300.0	01/12/19 01:46 / SRW
Fluoride	0.2 mg/L		0.1	4 A4500-F C	01/15/19 10:47 / SRW
Hardness as CaCO3	246 mg/L		1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.18 mg/L		0.01	E353.2	01/18/19 10:30 / kmd
Nitrogen, Total	0.25 mg/L		0.04	A4500 N-C	01/15/19 16:37 / kmd
Phosphorus, Total as P	0.007 mg/L		0.003	E365.1	01/15/19 15:52 / kmd
Aluminum	ND mg/L		0.009	E200.8	01/14/19 16:25 / sld
Calcium	56 mg/L		1	E200.7	01/14/19 20:09 / sld
Magnesium	25 mg/L		1	E200.7	01/14/19 20:09 / sld
Potassium	1 mg/L		1	E200.7	01/14/19 20:09 / sld
Sodium	3 mg/L		1	E200.7	01/14/19 20:09 / sld
Antimony	ND mg/L		0.0005	E200.8	01/16/19 14:34 / sld
Arsenic	ND mg/L		0.001	E200.8	01/16/19 14:34 / sld
Barium	0.157 mg/L		0.003	E200.8	01/16/19 14:34 / sld
Beryllium	ND mg/L		0.0008	E200.8	01/16/19 14:34 / sld
Cadmium	ND mg/L		0.00003	E200.8	01/16/19 14:34 / sld
Chromium	ND mg/L		0.01	E200.8	01/16/19 14:34 / sld
Cobalt	ND mg/L		0.01	E200.8	01/16/19 14:34 / sld
Copper	ND mg/L		0.002	E200.8	01/16/19 14:34 / sld
Iron	0.07 mg/L		0.02	E200.8	01/16/19 14:34 / sld
Lead	ND mg/L		0.0003	E200.8	01/16/19 14:34 / sld
Manganese	0.012 mg/L		0.005	E200.8	01/16/19 14:34 / sld
Mercury	ND ug/L		0.005	E245.1	01/15/19 16:54 / dck
Molybdenum	ND mg/L		0.002	E200.8	01/16/19 14:34 / sld
Nickel	ND mg/L		0.001	E200.8	01/16/19 14:34 / sld
Selenium	ND mg/L		0.0002	E200.8	01/16/19 14:34 / sld
Silver	ND mg/L		0.0002	E200.8	01/16/19 14:34 / sld
Strontium	0.146 mg/L	D	0.0003	E200.8	01/16/19 14:34 / sld
Thallium	ND mg/L		0.0002	E200.8	01/16/19 14:34 / sld
Uranium	0.0007 mg/L		0.0002	E200.8	01/16/19 14:34 / sld
Zinc	ND mg/L		0.002	E200.8	01/16/19 14:34 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

						Batch: R141207
	Method Blank			Run: PHSC_101-H_190111A		01/11/19 14:36
Alkalinity, Total as CaCO3	ND mg/L	2				
	Laboratory Control Sample			Run: PHSC_101-H_190111A		01/11/19 14:42
Alkalinity, Total as CaCO3	590 mg/L	4.0	98	90 110		
	Sample Duplicate			Run: PHSC_101-H_190111A		01/11/19 15:12
Alkalinity, Total as CaCO3	180 mg/L	4.0			0.1	10
	Sample Duplicate			Run: PHSC_101-H_190111A		01/11/19 16:30
Alkalinity, Total as CaCO3	170 mg/L	4.0			0.3	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

Batch: TDS190111A

	Laboratory Control Sample			Run: ACCU-124 (14410200)_19011	01/11/19 12:40
Solids, Total Dissolved TDS @ 180 C	1900 mg/L	20	95	90 110	
	Method Blank			Run: ACCU-124 (14410200)_19011	01/11/19 12:40
Solids, Total Dissolved TDS @ 180 C	ND mg/L	10			
	Sample Duplicate			Run: ACCU-124 (14410200)_19011	01/11/19 12:41
Solids, Total Dissolved TDS @ 180 C	221 mg/L	10		4.4	5
	Sample Duplicate			Run: ACCU-124 (14410200)_19011	01/11/19 12:43
Solids, Total Dissolved TDS @ 180 C	567 mg/L	10		0.2	5
	Method Blank			Run: ACCU-124 (14410200)_19011	01/11/19 12:46
Solids, Total Dissolved TDS @ 180 C	ND mg/L	10			
	Laboratory Control Sample			Run: ACCU-124 (14410200)_19011	01/11/19 12:46
Solids, Total Dissolved TDS @ 180 C	1880 mg/L	20	94	90 110	
	Sample Duplicate			Run: ACCU-124 (14410200)_19011	01/11/19 12:46
Solids, Total Dissolved TDS @ 180 C	233 mg/L	10		0.9	5



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

Batch: TSS190111A

	Method Blank				Run: ACCU-124 (14410200)_19011	01/11/19 12:50
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19011	01/11/19 12:50
Solids, Total Suspended TSS @ 105 C	104	mg/L	10	104	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19011	01/11/19 12:50
Solids, Total Suspended TSS @ 105 C	2.40	mg/L	10			5
	Sample Duplicate				Run: ACCU-124 (14410200)_19011	01/11/19 12:53
Solids, Total Suspended TSS @ 105 C	ND	mg/L	10			5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

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							Analytical Run: FIA203-HE_190115A	
	Initial Calibration Blank, Instrument Blank						01/15/19 16:02	
Nitrogen, Total	0.0103	mg/L	0.10	0	0			
	Continuing Calibration Verification Standard						01/15/19 16:22	
Nitrogen, Total	0.482	mg/L	0.10	96	90	110		
							Batch: 44434	
	Laboratory Fortified Blank			Run: FIA203-HE_190115A			01/15/19 16:04	
Nitrogen, Total	1.01	mg/L	0.10	101	90	110		
	Method Blank			Run: FIA203-HE_190115A			01/15/19 16:05	
Nitrogen, Total	ND	mg/L	0.03					
	Laboratory Control Sample			Run: FIA203-HE_190115A			01/15/19 16:06	
Nitrogen, Total	7.45	mg/L	0.30	100	90	110		
	Sample Matrix Spike			Run: FIA203-HE_190115A			01/15/19 16:29	
Nitrogen, Total	1.11	mg/L	0.10	92	90	110		
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190115A			01/15/19 16:30	
Nitrogen, Total	1.12	mg/L	0.10	92	90	110	0.2 20	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

							Analytical Run: MANTECH 2_190115A
	Initial Calibration Verification Standard						01/15/19 10:03
Fluoride	0.7	mg/L	0.1	99	90	110	
	Continuing Calibration Verification Standard						01/15/19 10:41
Fluoride	1.0	mg/L	0.1	103	90	110	
							Batch: R141293
	Method Blank				Run: MANTECH 2_190115A		01/15/19 10:08
Fluoride	0.04	mg/L	0.003				
	Sample Matrix Spike				Run: MANTECH 2_190115A		01/15/19 10:19
Fluoride	1.8	mg/L	0.1	106	85	115	
	Sample Duplicate				Run: MANTECH 2_190115A		01/15/19 10:24
Fluoride	1.4	mg/L	0.1			1.4	10
	Sample Duplicate				Run: MANTECH 2_190115A		01/15/19 10:52
Fluoride	0.2	mg/L	0.1			0.0	10





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

Analytical Run: ICP2-HE\_190114A

4 Initial Calibration Verification Standard

01/14/19 13:55

Calcium	41.6	mg/L	1.0	104	95	105
Magnesium	42.0	mg/L	1.0	105	95	105
Potassium	40.9	mg/L	1.0	102	95	105
Sodium	40.4	mg/L	1.0	101	95	105

4 Continuing Calibration Verification Standard

01/14/19 13:59

Calcium	26.1	mg/L	1.0	104	95	105
Magnesium	25.8	mg/L	1.0	103	95	105
Potassium	25.4	mg/L	1.0	101	95	105
Sodium	25.2	mg/L	1.0	101	95	105

4 Interference Check Sample A

01/14/19 14:11

Calcium	467	mg/L	1.0	93	80	120
Magnesium	519	mg/L	1.0	104	80	120
Potassium	-0.0100	mg/L	1.0		0	0
Sodium	0.0178	mg/L	1.0		0	0

4 Interference Check Sample AB

01/14/19 14:15

Calcium	470	mg/L	1.0	94	80	120
Magnesium	525	mg/L	1.0	105	80	120
Potassium	20.3	mg/L	1.0	101	80	120
Sodium	20.3	mg/L	1.0	101	80	120

4 Continuing Calibration Verification Standard

01/14/19 19:00

Calcium	26.0	mg/L	1.0	104	90	110
Magnesium	25.7	mg/L	1.0	103	90	110
Potassium	25.6	mg/L	1.0	103	90	110
Sodium	25.5	mg/L	1.0	102	90	110

4 Continuing Calibration Verification Standard

01/14/19 19:46

Calcium	25.7	mg/L	1.0	103	90	110
Magnesium	25.7	mg/L	1.0	103	90	110
Potassium	25.7	mg/L	1.0	103	90	110
Sodium	25.6	mg/L	1.0	103	90	110

Batch: R141277

4 Method Blank

Run: ICP2-HE\_190114A

01/14/19 14:26

Calcium	ND	mg/L	0.07			
Magnesium	ND	mg/L	0.01			
Potassium	ND	mg/L	0.06			
Sodium	ND	mg/L	0.02			

4 Laboratory Fortified Blank

Run: ICP2-HE\_190114A

01/14/19 14:30

Calcium	49.6	mg/L	1.0	99	85	115
Magnesium	50.3	mg/L	1.0	101	85	115
Potassium	50.1	mg/L	1.0	100	85	115

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

								Batch: R141277
	4	Laboratory Fortified Blank			Run: ICP2-HE_190114A			01/14/19 14:30
Sodium		50.2 mg/L	1.0	100	85	115		
	4	Sample Matrix Spike			Run: ICP2-HE_190114A			01/14/19 19:57
Calcium		103 mg/L	1.0	89	70	130		
Magnesium		69.9 mg/L	1.0	100	70	130		
Potassium		53.3 mg/L	1.0	104	70	130		
Sodium		55.1 mg/L	1.0	105	70	130		
	4	Sample Matrix Spike Duplicate			Run: ICP2-HE_190114A			01/14/19 20:01
Calcium		104 mg/L	1.0	91	70	130	1.1	20
Magnesium		70.4 mg/L	1.0	101	70	130	0.7	20
Potassium		54.6 mg/L	1.0	107	70	130	2.4	20
Sodium		56.4 mg/L	1.0	107	70	130	2.4	20
								Analytical Run: ICP2-HE_190116A
		Initial Calibration Verification Standard						01/16/19 11:41
Strontium		0.802 mg/L	0.10	100	95	105		
		Continuing Calibration Verification Standard						01/16/19 11:46
Strontium		2.57 mg/L	0.10	103	95	105		
		Interference Check Sample A						01/16/19 12:01
Strontium		-0.0272 mg/L	0.10		0	0		
		Interference Check Sample AB						01/16/19 12:05
Strontium		1.02 mg/L	0.10	102	80	120		
		Continuing Calibration Verification Standard						01/16/19 14:09
Strontium		2.65 mg/L	0.10	106	90	110		
								Batch: 44429
		Method Blank			Run: ICP2-HE_190116A			01/16/19 14:01
Strontium		ND mg/L	0.0002					
		Laboratory Control Sample			Run: ICP2-HE_190116A			01/16/19 14:05
Strontium		0.532 mg/L	0.010	106	85	115		
		Serial Dilution			Run: ICP2-HE_190116A			01/16/19 14:20
Strontium		0.00144 mg/L	0.010		0	0	10	N
		Sample Matrix Spike			Run: ICP2-HE_190116A			01/16/19 14:28
Strontium		0.507 mg/L	0.010	101	70	130		
		Sample Matrix Spike Duplicate			Run: ICP2-HE_190116A			01/16/19 14:32
Strontium		0.533 mg/L	0.010	107	70	130	5.1	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

							Analytical Run: ICPMS205-H_190114A
	Initial Calibration Verification Standard						01/14/19 14:33
Aluminum	0.302	mg/L	0.10	101	90	110	
	Interference Check Sample A						01/14/19 14:35
Aluminum	41.5	mg/L	0.10	104	70	130	
	Interference Check Sample AB						01/14/19 14:37
Aluminum	41.6	mg/L	0.10	104	70	130	
<hr/>							Batch: R141275
	Method Blank			Run: ICPMS205-H_190114A		01/14/19 14:52	
Aluminum	ND	mg/L	0.003				
	Laboratory Fortified Blank			Run: ICPMS205-H_190114A		01/14/19 14:54	
Aluminum	0.0510	mg/L	0.10	102	85	115	
	Sample Matrix Spike			Run: ICPMS205-H_190114A		01/14/19 16:00	
Aluminum	0.0519	mg/L	0.030	104	70	130	
	Sample Matrix Spike Duplicate			Run: ICPMS205-H_190114A		01/14/19 16:02	
Aluminum	0.0508	mg/L	0.030	102	70	130 2.2 20	
	Sample Matrix Spike			Run: ICPMS205-H_190114A		01/14/19 16:27	
Aluminum	0.0539	mg/L	0.030	98	70	130	
	Sample Matrix Spike Duplicate			Run: ICPMS205-H_190114A		01/14/19 16:29	
Aluminum	0.0549	mg/L	0.030	100	70	130 1.8 20	



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185



Analytical Run: ICPMS205-H\_190116A

19 Initial Calibration Verification Standard

01/16/19 12:30

Antimony	0.0599	mg/L	0.050	100	90	110
Arsenic	0.0596	mg/L	0.0050	99	90	110
Barium	0.0608	mg/L	0.10	101	90	110
Beryllium	0.0298	mg/L	0.0010	99	90	110
Cadmium	0.0304	mg/L	0.0010	101	90	110
Chromium	0.0606	mg/L	0.010	101	90	110
Cobalt	0.0610	mg/L	0.010	102	90	110
Copper	0.0610	mg/L	0.010	102	90	110
Iron	0.303	mg/L	0.020	101	90	110
Lead	0.0600	mg/L	0.010	100	90	110
Manganese	0.302	mg/L	0.010	101	90	110
Molybdenum	0.0601	mg/L	0.0050	100	90	110
Nickel	0.0604	mg/L	0.010	101	90	110
Selenium	0.0605	mg/L	0.0050	101	90	110
Silver	0.0300	mg/L	0.0050	100	90	110
Strontium	0.0592	mg/L	0.10	99	90	110
Thallium	0.0601	mg/L	0.10	100	90	110
Uranium	0.0581	mg/L	0.00030	97	90	110
Zinc	0.0610	mg/L	0.010	102	90	110

19 Interference Check Sample A

01/16/19 12:32

Antimony	0.000620	mg/L	0.050			
Arsenic	5.61E-05	mg/L	0.0050			
Barium	0.000245	mg/L	0.10			
Beryllium	-4.88E-05	mg/L	0.0010			
Cadmium	0.000180	mg/L	0.0010			
Chromium	0.000248	mg/L	0.010			
Cobalt	0.000281	mg/L	0.010			
Copper	0.000233	mg/L	0.010			
Iron	106	mg/L	0.020	105	70	130
Lead	0.000106	mg/L	0.010			
Manganese	0.000275	mg/L	0.010			
Molybdenum	0.856	mg/L	0.0050	107	70	130
Nickel	0.000242	mg/L	0.010			
Selenium	9.59E-05	mg/L	0.0050			
Silver	8.34E-05	mg/L	0.0050			
Strontium	0.00101	mg/L	0.10			
Thallium	7.45E-05	mg/L	0.10			
Uranium	2.80E-05	mg/L	0.00030			
Zinc	0.000242	mg/L	0.010			

19 Interference Check Sample AB

01/16/19 12:34

Antimony	0.000276	mg/L	0.050		0	0
Arsenic	0.0102	mg/L	0.0050	102	70	130

RL - Analyte reporting limit.

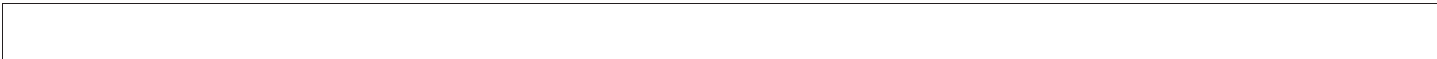
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185



Analytical Run: ICPMS205-H\_190116A

19 Interference Check Sample AB

01/16/19 12:34

Barium	0.000181	mg/L	0.10		0	0
Beryllium	-3.30E-05	mg/L	0.0010		0	0
Cadmium	0.0102	mg/L	0.0010	102	70	130
Chromium	0.0206	mg/L	0.010	103	70	130
Cobalt	0.0206	mg/L	0.010	103	70	130
Copper	0.0202	mg/L	0.010	101	70	130
Iron	104	mg/L	0.020	104	70	130
Lead	9.50E-05	mg/L	0.010		0	0
Manganese	0.0203	mg/L	0.010	101	70	130
Molybdenum	0.860	mg/L	0.0050	108	70	130
Nickel	0.0200	mg/L	0.010	100	70	130
Selenium	0.00992	mg/L	0.0050	99	70	130
Silver	0.00504	mg/L	0.0050	101	70	130
Strontium	0.000986	mg/L	0.10		0	0
Thallium	6.31E-05	mg/L	0.10		0	0
Uranium	6.15E-06	mg/L	0.00030		0	0
Zinc	0.0102	mg/L	0.010	102	70	130

19 Initial Calibration Verification Standard

01/16/19 18:32

Antimony	0.0601	mg/L	0.050	100	90	110
Arsenic	0.0599	mg/L	0.0050	100	90	110
Barium	0.0606	mg/L	0.10	101	90	110
Beryllium	0.0314	mg/L	0.0010	105	90	110
Cadmium	0.0303	mg/L	0.0010	101	90	110
Chromium	0.0604	mg/L	0.010	101	90	110
Cobalt	0.0609	mg/L	0.010	102	90	110
Copper	0.0606	mg/L	0.010	101	90	110
Iron	0.292	mg/L	0.020	97	90	110
Lead	0.0604	mg/L	0.010	101	90	110
Manganese	0.305	mg/L	0.010	102	90	110
Molybdenum	0.0596	mg/L	0.0050	99	90	110
Nickel	0.0602	mg/L	0.010	100	90	110
Selenium	0.0610	mg/L	0.0050	102	90	110
Silver	0.0299	mg/L	0.0050	100	90	110
Strontium	0.0599	mg/L	0.10	100	90	110
Thallium	0.0598	mg/L	0.10	100	90	110
Uranium	0.0585	mg/L	0.00030	98	90	110
Zinc	0.0621	mg/L	0.010	103	90	110

19 Interference Check Sample A

01/16/19 18:34

Antimony	0.000503	mg/L	0.050			
Arsenic	2.42E-05	mg/L	0.0050			
Barium	0.000260	mg/L	0.10			
Beryllium	-2.22E-05	mg/L	0.0010			

RL - Analyte reporting limit.

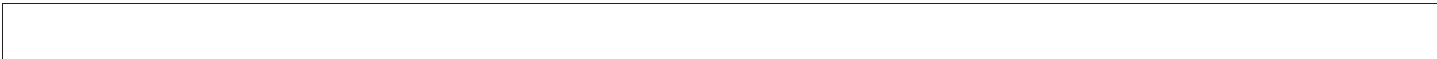
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185



Analytical Run: ICPMS205-H\_190116A

19 Interference Check Sample A

01/16/19 18:34

Cadmium	0.000182	mg/L	0.0010			
Chromium	0.000220	mg/L	0.010			
Cobalt	0.000270	mg/L	0.010			
Copper	-9.20E-05	mg/L	0.010			
Iron	101	mg/L	0.020	101	70	130
Lead	9.62E-05	mg/L	0.010			
Manganese	0.000264	mg/L	0.010			
Molybdenum	0.859	mg/L	0.0050	107	70	130
Nickel	0.000230	mg/L	0.010			
Selenium	7.66E-05	mg/L	0.0050			
Silver	0.000102	mg/L	0.0050			
Strontium	0.000996	mg/L	0.10			
Thallium	3.40E-05	mg/L	0.10			
Uranium	3.02E-05	mg/L	0.00030			
Zinc	0.000266	mg/L	0.010			

19 Interference Check Sample AB

01/16/19 18:37

Antimony	0.000209	mg/L	0.050		0	0
Arsenic	0.0104	mg/L	0.0050	104	70	130
Barium	0.000178	mg/L	0.10		0	0
Beryllium	-1.78E-05	mg/L	0.0010		0	0
Cadmium	0.0100	mg/L	0.0010	100	70	130
Chromium	0.0205	mg/L	0.010	102	70	130
Cobalt	0.0204	mg/L	0.010	102	70	130
Copper	0.0193	mg/L	0.010	97	70	130
Iron	101	mg/L	0.020	101	70	130
Lead	8.82E-05	mg/L	0.010		0	0
Manganese	0.0204	mg/L	0.010	102	70	130
Molybdenum	0.850	mg/L	0.0050	106	70	130
Nickel	0.0203	mg/L	0.010	101	70	130
Selenium	0.00978	mg/L	0.0050	98	70	130
Silver	0.00498	mg/L	0.0050	100	70	130
Strontium	0.00104	mg/L	0.10		0	0
Thallium	2.36E-05	mg/L	0.10		0	0
Uranium	6.50E-06	mg/L	0.00030		0	0
Zinc	0.0102	mg/L	0.010	102	70	130

Batch: 44429

19 Method Blank

Run: ICPMS205-H\_190116A

01/16/19 12:55

Antimony	ND	mg/L	0.0001			
Arsenic	ND	mg/L	4E-05			
Barium	ND	mg/L	9E-05			
Beryllium	ND	mg/L	6E-05			
Cadmium	ND	mg/L	3E-05			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

Batch: 44429

19 Method Blank			
Chromium	0.0001	mg/L	0.0001
Cobalt	ND	mg/L	6E-05
Copper	0.0006	mg/L	0.0002
Iron	ND	mg/L	0.004
Lead	ND	mg/L	4E-05
Manganese	ND	mg/L	0.0003
Molybdenum	ND	mg/L	2E-05
Nickel	ND	mg/L	0.0001
Selenium	ND	mg/L	5E-05
Silver	4E-05	mg/L	9E-06
Strontium	ND	mg/L	0.0003
Thallium	ND	mg/L	4E-05
Uranium	ND	mg/L	9E-06
Zinc	ND	mg/L	0.001

Run: ICPMS205-H\_190116A

19 Laboratory Control Sample			
Antimony	0.529	mg/L	0.0010
Arsenic	0.503	mg/L	0.0010
Barium	0.499	mg/L	0.050
Beryllium	0.234	mg/L	0.0010
Cadmium	0.247	mg/L	0.0010
Chromium	0.516	mg/L	0.0050
Cobalt	0.512	mg/L	0.0050
Copper	0.516	mg/L	0.0050
Iron	2.57	mg/L	0.020
Lead	0.514	mg/L	0.0010
Manganese	2.59	mg/L	0.0010
Molybdenum	0.511	mg/L	0.0010
Nickel	0.507	mg/L	0.0050
Selenium	0.486	mg/L	0.0010
Silver	0.0510	mg/L	0.0010
Strontium	0.502	mg/L	0.010
Thallium	0.510	mg/L	0.00050
Uranium	0.515	mg/L	0.00030
Zinc	0.502	mg/L	0.010

Run: ICPMS205-H\_190116A

19 Sample Matrix Spike			
Antimony	0.550	mg/L	0.0010
Arsenic	0.514	mg/L	0.0010
Barium	0.589	mg/L	0.050
Beryllium	0.242	mg/L	0.0010
Cadmium	0.257	mg/L	0.0010
Chromium	0.534	mg/L	0.0050
Cobalt	0.521	mg/L	0.0050

Run: ICPMS205-H\_190116A

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

Batch: 44429

19 Sample Matrix Spike

Run: ICPMS205-H\_190116A

01/16/19 14:36

Copper	0.529	mg/L	0.0050	106	70	130
Iron	2.73	mg/L	0.020	105	70	130
Lead	0.530	mg/L	0.0010	106	70	130
Manganese	2.64	mg/L	0.0010	105	70	130
Molybdenum	0.537	mg/L	0.0010	107	70	130
Nickel	0.505	mg/L	0.0050	101	70	130
Selenium	0.508	mg/L	0.0010	102	70	130
Silver	0.0517	mg/L	0.0010	103	70	130
Strontium	0.673	mg/L	0.010	105	70	130
Thallium	0.529	mg/L	0.00050	106	70	130
Uranium	0.533	mg/L	0.00030	106	70	130
Zinc	0.506	mg/L	0.010	101	70	130

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190116A

01/16/19 14:38

Antimony	0.512	mg/L	0.0010	102	70	130	7.2	20
Arsenic	0.475	mg/L	0.0010	95	70	130	7.9	20
Barium	0.547	mg/L	0.050	96	70	130	7.3	20
Beryllium	0.229	mg/L	0.0010	92	70	130	5.8	20
Cadmium	0.240	mg/L	0.0010	96	70	130	6.8	20
Chromium	0.489	mg/L	0.0050	98	70	130	8.8	20
Cobalt	0.481	mg/L	0.0050	96	70	130	8.1	20
Copper	0.485	mg/L	0.0050	97	70	130	8.7	20
Iron	2.50	mg/L	0.020	96	70	130	8.8	20
Lead	0.496	mg/L	0.0010	99	70	130	6.7	20
Manganese	2.44	mg/L	0.0010	97	70	130	8.0	20
Molybdenum	0.493	mg/L	0.0010	99	70	130	8.5	20
Nickel	0.465	mg/L	0.0050	93	70	130	8.3	20
Selenium	0.477	mg/L	0.0010	95	70	130	6.3	20
Silver	0.0488	mg/L	0.0010	98	70	130	5.8	20
Strontium	0.621	mg/L	0.010	95	70	130	8.0	20
Thallium	0.497	mg/L	0.00050	99	70	130	6.1	20
Uranium	0.493	mg/L	0.00030	98	70	130	7.9	20
Zinc	0.464	mg/L	0.010	93	70	130	8.6	20



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

							Analytical Run: HGCV202-H_190116A	
							01/15/19 15:59	
Initial Calibration Verification Standard								
Mercury	0.0984	ug/L	0.0050	98	90	110		
							Batch: 44425	
Method Blank							Run: HGCV202-H_190116A	
Mercury	ND	ug/L	0.0009				01/15/19 16:18	
Laboratory Control Sample							Run: HGCV202-H_190116A	
Mercury	0.0491	ug/L	0.0050	98	90	110	01/15/19 16:22	
Sample Matrix Spike							Run: HGCV202-H_190116A	
Mercury	0.0538	ug/L	0.0050	103	70	130	01/15/19 16:31	
Sample Matrix Spike Duplicate							Run: HGCV202-H_190116A	
Mercury	0.0541	ug/L	0.0050	103	70	130	0.5	20
Sample Matrix Spike							Run: HGCV202-H_190116A	
Mercury	0.0528	ug/L	0.0050	106	70	130	01/15/19 17:13	
Sample Matrix Spike Duplicate							Run: HGCV202-H_190116A	
Mercury	0.0530	ug/L	0.0050	106	70	130	0.3	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

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Analytical Run: IC METROHM\_190111A

		2 Initial Calibration Verification Standard						01/11/19 10:17
Chloride	99.3	mg/L	1.0	99	90	110		
Sulfate	394	mg/L	1.0	99	90	110		
		2 Continuing Calibration Verification Standard						01/11/19 23:12
Chloride	51.3	mg/L	1.0	103	90	110		
Sulfate	213	mg/L	1.0	107	90	110		
		2 Method Blank		Run: IC METROHM_190111A				Batch: R141226
Chloride	0.03	mg/L	0.009					01/11/19 10:03
Sulfate	ND	mg/L	0.01					
		2 Laboratory Fortified Blank		Run: IC METROHM_190111A				01/11/19 10:31
Chloride	24.5	mg/L	1.0	98	90	110		
Sulfate	101	mg/L	1.0	101	90	110		
		2 Sample Matrix Spike		Run: IC METROHM_190111A				01/11/19 22:44
Chloride	225	mg/L	1.0	94	90	110		
Sulfate	227	mg/L	1.0	100	90	110		
		2 Sample Matrix Spike Duplicate		Run: IC METROHM_190111A				01/11/19 22:58
Chloride	226	mg/L	1.0	96	90	110	0.5	20
Sulfate	229	mg/L	1.0	101	90	110	0.9	20
		2 Sample Matrix Spike		Run: IC METROHM_190111A				01/12/19 02:14
Chloride	26.2	mg/L	1.0	101	90	110		
Sulfate	138	mg/L	1.0	100	90	110		
		2 Sample Matrix Spike Duplicate		Run: IC METROHM_190111A				01/12/19 02:29
Chloride	26.1	mg/L	1.0	101	90	110	0.3	20
Sulfate	138	mg/L	1.0	100	90	110	0.2	20



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

							Analytical Run: FIA203-HE_190118A
	Initial Calibration Verification Standard						01/18/19 09:32
Nitrogen, Nitrate+Nitrite as N	0.974	mg/L	0.010	97	90	110	
	Continuing Calibration Verification Standard						01/18/19 10:07
Nitrogen, Nitrate+Nitrite as N	0.466	mg/L	0.010	93	90	110	
	Continuing Calibration Verification Standard						01/18/19 10:24
Nitrogen, Nitrate+Nitrite as N	0.459	mg/L	0.010	92	90	110	
							Batch: R141386
	Method Blank				Run: FIA203-HE_190118A		01/18/19 09:33
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				
	Laboratory Fortified Blank				Run: FIA203-HE_190118A		01/18/19 09:34
Nitrogen, Nitrate+Nitrite as N	0.966	mg/L	0.011	97	90	110	
	Sample Matrix Spike				Run: FIA203-HE_190118A		01/18/19 10:19
Nitrogen, Nitrate+Nitrite as N	1.05	mg/L	0.011	93	90	110	
	Sample Matrix Spike Duplicate				Run: FIA203-HE_190118A		01/18/19 10:20
Nitrogen, Nitrate+Nitrite as N	1.04	mg/L	0.011	92	90	110	1.0 10
	Sample Matrix Spike				Run: FIA203-HE_190118A		01/18/19 10:36
Nitrogen, Nitrate+Nitrite as N	1.24	mg/L	0.011	93	90	110	
	Sample Matrix Spike Duplicate				Run: FIA203-HE_190118A		01/18/19 10:37
Nitrogen, Nitrate+Nitrite as N	1.20	mg/L	0.011	90	90	110	2.6 10



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

01/21/19  
H19010185

							Analytical Run: FIA202-HE_190115A
Phosphorus, Total as P	Initial Calibration Blank, Instrument Blank						01/15/19 15:28
	0.00101	mg/L	0.010	0	0		
Phosphorus, Total as P	Initial Calibration Verification Standard						01/15/19 15:30
	0.243	mg/L	0.010	97	90	110	
Phosphorus, Total as P	Continuing Calibration Verification Standard						01/15/19 15:51
	0.0968	mg/L	0.010	97	90	110	
							Batch: 44433
Phosphorus, Total as P	Method Blank				Run: FIA202-HE_190115A		01/15/19 15:31
	ND	mg/L	0.002				
Phosphorus, Total as P	Laboratory Control Sample				Run: FIA202-HE_190115A		01/15/19 15:33
	0.409	mg/L	0.010	102	90	110	
Phosphorus, Total as P	Sample Matrix Spike				Run: FIA202-HE_190115A		01/15/19 15:40
	0.213	mg/L	0.010	102	90	110	
Phosphorus, Total as P	Sample Matrix Spike Duplicate				Run: FIA202-HE_190115A		01/15/19 15:42
	0.213	mg/L	0.010	102	90	110	0.0 20
Phosphorus, Total as P	Sample Matrix Spike				Run: FIA202-HE_190115A		01/15/19 15:53
	0.209	mg/L	0.010	101	90	110	
Phosphorus, Total as P	Sample Matrix Spike Duplicate				Run: FIA202-HE_190115A		01/15/19 15:54
	0.201	mg/L	0.010	97	90	110	3.6 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





# Tintina Resources Inc

# H19010185

Login completed by: Jessica C. Smith

Date Received: 1/11/2019

Reviewed by: BL2000\rtooke

Received by: TLL

Reviewed Date: 1/15/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	0.2°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

None



**TABLE 6. PARAMETERS, METHODS, AND DETECTION LIMITS  
FOR SURFACE WATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	4
TSS	SM 2540C	4
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.003
Total Persulfate Nitrogen	A 4500-N-C	0.04
Total Phosphorus	E365.1	0.003
<b>Trace Constituents (SW - Total Recoverable except Aluminum [Diss])<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameters</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



January 21, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19010186                      Quote ID: H1216 - Surface and Groundwater Sampling  
Project Name: 18049 Black Butte Copper (Springs)

Energy Laboratories Inc Helena MT received the following 6 samples for Tintina Resources Inc on 1/11/2019 for analysis.

H19010186-001	BBC-1901-109	01/10/19 12:45	01/11/19	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Mercury, Dissolved Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Mercury Digestion by E245.1 Solids, Total Dissolved Solids, Total Suspended
H19010186-002	BBC-1901-110	01/10/19 13:05	01/11/19	Groundwater	Same As Above
H19010186-003	BBC-1901-111	01/10/19 13:25	01/11/19	Groundwater	Same As Above
H19010186-004	BBC-1901-112	01/10/19 14:20	01/11/19	Groundwater	Same As Above
H19010186-005	BBC-1901-113	01/10/19 14:45	01/11/19	Groundwater	Same As Above
H19010186-006	BBC-1901-114	01/10/19 15:30	01/11/19	Groundwater	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

Digitally signed by  
Amanda B. Carlson  
Date: 2019.01.21 10:15:31 -07:00



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)  
H19010186-001  
BBC-1901-109

01/21/19  
01/10/19 12:45  
01/11/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	10 mg/L	10	A2540 D	01/11/19 12:52 / cmm
Solids, Total Dissolved TDS @ 180 C	222 mg/L	10	A2540 C	01/11/19 12:47 / cmm
Alkalinity, Total as CaCO3	210 mg/L	4	A2320 B	01/11/19 15:53 / SRW
Chloride	ND mg/L	1	E300.0	01/12/19 02:00 / SRW
Sulfate	38 mg/L	1	E300.0	01/12/19 02:00 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	01/15/19 10:49 / SRW
Hardness as CaCO3	248 mg/L	1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.25 mg/L	0.01	E353.2	01/18/19 10:31 / kmd
Aluminum	0.013 mg/L	0.009	E200.8	01/14/19 16:40 / sld
Antimony	ND mg/L	0.0005	E200.8	01/14/19 16:40 / sld
Arsenic	ND mg/L	0.001	E200.8	01/14/19 16:40 / sld
Barium	0.114 mg/L	0.003	E200.8	01/14/19 16:40 / sld
Beryllium	ND mg/L	0.0008	E200.8	01/14/19 16:40 / sld
Cadmium	ND mg/L	0.00003	E200.8	01/14/19 16:40 / sld
Calcium	53 mg/L	1	E200.7	01/14/19 20:12 / sld
Chromium	ND mg/L	0.01	E200.8	01/14/19 16:40 / sld
Cobalt	ND mg/L	0.01	E200.8	01/14/19 16:40 / sld
Copper	ND mg/L	0.002	E200.8	01/14/19 16:40 / sld
Iron	0.02 mg/L	0.02	E200.8	01/14/19 16:40 / sld
Lead	ND mg/L	0.0003	E200.8	01/14/19 16:40 / sld
Magnesium	28 mg/L	1	E200.7	01/14/19 20:12 / sld
Manganese	ND mg/L	0.005	E200.8	01/14/19 16:40 / sld
Mercury	ND ug/L	0.005	E245.1	01/15/19 17:03 / dck
Molybdenum	ND mg/L	0.002	E200.8	01/14/19 16:40 / sld
Nickel	ND mg/L	0.001	E200.8	01/14/19 16:40 / sld
Potassium	2 mg/L	1	E200.7	01/14/19 20:12 / sld
Selenium	0.0004 mg/L	0.0002	E200.8	01/14/19 16:40 / sld
Silver	ND mg/L	0.0002	E200.8	01/14/19 16:40 / sld
Sodium	2 mg/L	1	E200.7	01/14/19 20:12 / sld
Strontium	0.0742 mg/L	0.0002	E200.8	01/14/19 16:40 / sld
Thallium	0.0004 mg/L	0.0002	E200.8	01/14/19 16:40 / sld
Uranium	0.0005 mg/L	0.0002	E200.8	01/14/19 16:40 / sld
Zinc	ND mg/L	0.002	E200.8	01/14/19 16:40 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)  
H19010186-002  
BBC-1901-110

01/21/19  
01/10/19 13:05  
01/11/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	01/11/19 12:52 / cmm
Solids, Total Dissolved TDS @ 180 C	99 mg/L	10	A2540 C	01/11/19 12:47 / cmm
Alkalinity, Total as CaCO3	93 mg/L	4	A2320 B	01/11/19 16:00 / SRW
Chloride	ND mg/L	1	E300.0	01/12/19 03:25 / SRW
Sulfate	7 mg/L	1	E300.0	01/12/19 03:25 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	01/15/19 10:54 / SRW
Hardness as CaCO3	93 mg/L	1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.22 mg/L	0.01	E353.2	01/18/19 10:32 / kmd
Aluminum	0.022 mg/L	0.009	E200.8	01/14/19 16:42 / sld
Antimony	ND mg/L	0.0005	E200.8	01/14/19 16:42 / sld
Arsenic	0.005 mg/L	0.001	E200.8	01/14/19 16:42 / sld
Barium	0.280 mg/L	0.003	E200.8	01/14/19 16:42 / sld
Beryllium	ND mg/L	0.0008	E200.8	01/14/19 16:42 / sld
Cadmium	ND mg/L	0.00003	E200.8	01/14/19 16:42 / sld
Calcium	23 mg/L	1	E200.7	01/14/19 20:16 / sld
Chromium	ND mg/L	0.01	E200.8	01/14/19 16:42 / sld
Cobalt	ND mg/L	0.01	E200.8	01/14/19 16:42 / sld
Copper	ND mg/L	0.002	E200.8	01/14/19 16:42 / sld
Iron	ND mg/L	0.02	E200.8	01/14/19 16:42 / sld
Lead	ND mg/L	0.0003	E200.8	01/14/19 16:42 / sld
Magnesium	9 mg/L	1	E200.7	01/14/19 20:16 / sld
Manganese	ND mg/L	0.005	E200.8	01/14/19 16:42 / sld
Mercury	ND ug/L	0.005	E245.1	01/15/19 17:07 / dck
Molybdenum	ND mg/L	0.002	E200.8	01/14/19 16:42 / sld
Nickel	ND mg/L	0.001	E200.8	01/14/19 16:42 / sld
Potassium	1 mg/L	1	E200.7	01/14/19 20:16 / sld
Selenium	ND mg/L	0.0002	E200.8	01/14/19 16:42 / sld
Silver	ND mg/L	0.0002	E200.8	01/14/19 16:42 / sld
Sodium	4 mg/L	1	E200.7	01/14/19 20:16 / sld
Strontium	0.102 mg/L	0.0002	E200.8	01/14/19 16:42 / sld
Thallium	ND mg/L	0.0002	E200.8	01/14/19 16:42 / sld
Uranium	0.0003 mg/L	0.0002	E200.8	01/14/19 16:42 / sld
Zinc	ND mg/L	0.002	E200.8	01/14/19 16:42 / sld

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ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)  
H19010186-003  
BBC-1901-111

01/21/19  
01/10/19 13:25  
01/11/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	187 mg/L	10	A2540 D	01/11/19 12:52 / cmm
Solids, Total Dissolved TDS @ 180 C	235 mg/L	10	A2540 C	01/11/19 12:47 / cmm
Alkalinity, Total as CaCO3	210 mg/L	4	A2320 B	01/11/19 16:07 / SRW
Chloride	8 mg/L	1	E300.0	01/12/19 03:39 / SRW
Sulfate	26 mg/L	1	E300.0	01/12/19 03:39 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	01/15/19 10:58 / SRW
Hardness as CaCO3	249 mg/L	1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.31 mg/L	0.01	E353.2	01/18/19 10:33 / kmd
Aluminum	ND mg/L	0.009	E200.8	01/14/19 16:44 / sld
Antimony	ND mg/L	0.0005	E200.8	01/14/19 16:44 / sld
Arsenic	ND mg/L	0.001	E200.8	01/14/19 16:44 / sld
Barium	0.187 mg/L	0.003	E200.8	01/14/19 16:44 / sld
Beryllium	ND mg/L	0.0008	E200.8	01/14/19 16:44 / sld
Cadmium	ND mg/L	0.00003	E200.8	01/14/19 16:44 / sld
Calcium	58 mg/L	1	E200.7	01/14/19 20:20 / sld
Chromium	ND mg/L	0.01	E200.8	01/14/19 16:44 / sld
Cobalt	ND mg/L	0.01	E200.8	01/14/19 16:44 / sld
Copper	ND mg/L	0.002	E200.8	01/14/19 16:44 / sld
Iron	ND mg/L	0.02	E200.8	01/14/19 16:44 / sld
Lead	ND mg/L	0.0003	E200.8	01/14/19 16:44 / sld
Magnesium	26 mg/L	1	E200.7	01/14/19 20:20 / sld
Manganese	ND mg/L	0.005	E200.8	01/14/19 16:44 / sld
Mercury	ND ug/L	0.005	E245.1	01/15/19 17:10 / dck
Molybdenum	ND mg/L	0.002	E200.8	01/14/19 16:44 / sld
Nickel	ND mg/L	0.001	E200.8	01/14/19 16:44 / sld
Potassium	1 mg/L	1	E200.7	01/14/19 20:20 / sld
Selenium	0.0002 mg/L	0.0002	E200.8	01/14/19 16:44 / sld
Silver	ND mg/L	0.0002	E200.8	01/14/19 16:44 / sld
Sodium	2 mg/L	1	E200.7	01/14/19 20:20 / sld
Strontium	0.115 mg/L	0.0002	E200.8	01/14/19 16:44 / sld
Thallium	ND mg/L	0.0002	E200.8	01/14/19 16:44 / sld
Uranium	0.0006 mg/L	0.0002	E200.8	01/14/19 16:44 / sld
Zinc	ND mg/L	0.002	E200.8	01/14/19 16:44 / sld

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MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)  
H19010186-004  
BBC-1901-112

01/21/19  
01/10/19 14:20  
01/11/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	01/11/19 12:53 / cmm
Solids, Total Dissolved TDS @ 180 C	174 mg/L	10	A2540 C	01/11/19 12:47 / cmm
Alkalinity, Total as CaCO3	170 mg/L	4	A2320 B	01/11/19 16:15 / SRW
Chloride	2 mg/L	1	E300.0	01/12/19 03:53 / SRW
Sulfate	11 mg/L	1	E300.0	01/12/19 03:53 / SRW
Fluoride	0.3 mg/L	0.1	4 A4500-F C	01/15/19 11:01 / SRW
Hardness as CaCO3	171 mg/L	1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.30 mg/L	0.01	E353.2	01/18/19 10:35 / kmd
Aluminum	ND mg/L	0.009	E200.8	01/14/19 16:46 / sld
Antimony	ND mg/L	0.0005	E200.8	01/14/19 16:46 / sld
Arsenic	0.004 mg/L	0.001	E200.8	01/14/19 16:46 / sld
Barium	0.113 mg/L	0.003	E200.8	01/14/19 16:46 / sld
Beryllium	ND mg/L	0.0008	E200.8	01/14/19 16:46 / sld
Cadmium	ND mg/L	0.00003	E200.8	01/14/19 16:46 / sld
Calcium	43 mg/L	1	E200.7	01/14/19 20:24 / sld
Chromium	ND mg/L	0.01	E200.8	01/14/19 16:46 / sld
Cobalt	ND mg/L	0.01	E200.8	01/14/19 16:46 / sld
Copper	ND mg/L	0.002	E200.8	01/14/19 16:46 / sld
Iron	ND mg/L	0.02	E200.8	01/14/19 16:46 / sld
Lead	ND mg/L	0.0003	E200.8	01/14/19 16:46 / sld
Magnesium	15 mg/L	1	E200.7	01/14/19 20:24 / sld
Manganese	ND mg/L	0.005	E200.8	01/14/19 16:46 / sld
Mercury	ND ug/L	0.005	E245.1	01/15/19 17:20 / dck
Molybdenum	ND mg/L	0.002	E200.8	01/14/19 16:46 / sld
Nickel	ND mg/L	0.001	E200.8	01/14/19 16:46 / sld
Potassium	3 mg/L	1	E200.7	01/14/19 20:24 / sld
Selenium	0.0004 mg/L	0.0002	E200.8	01/14/19 16:46 / sld
Silver	ND mg/L	0.0002	E200.8	01/14/19 16:46 / sld
Sodium	5 mg/L	1	E200.7	01/14/19 20:24 / sld
Strontium	0.170 mg/L	0.0002	E200.8	01/14/19 16:46 / sld
Thallium	0.0010 mg/L	0.0002	E200.8	01/14/19 16:46 / sld
Uranium	0.0009 mg/L	0.0002	E200.8	01/14/19 16:46 / sld
Zinc	ND mg/L	0.002	E200.8	01/14/19 16:46 / sld

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ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)  
H19010186-005  
BBC-1901-113

01/21/19  
01/10/19 14:45  
01/11/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	01/11/19 12:53 / cmm
Solids, Total Dissolved TDS @ 180 C	168 mg/L	10	A2540 C	01/11/19 12:47 / cmm
Alkalinity, Total as CaCO3	170 mg/L	4	A2320 B	01/11/19 16:23 / SRW
Chloride	2 mg/L	1	E300.0	01/12/19 04:07 / SRW
Sulfate	11 mg/L	1	E300.0	01/12/19 04:07 / SRW
Fluoride	0.3 mg/L	0.1	4 A4500-F C	01/15/19 11:04 / SRW
Hardness as CaCO3	170 mg/L	1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	0.30 mg/L	0.01	E353.2	01/18/19 10:38 / kmd
Aluminum	ND mg/L	0.009	E200.8	01/14/19 16:48 / sld
Antimony	ND mg/L	0.0005	E200.8	01/14/19 16:48 / sld
Arsenic	0.004 mg/L	0.001	E200.8	01/14/19 16:48 / sld
Barium	0.114 mg/L	0.003	E200.8	01/14/19 16:48 / sld
Beryllium	ND mg/L	0.0008	E200.8	01/14/19 16:48 / sld
Cadmium	ND mg/L	0.00003	E200.8	01/14/19 16:48 / sld
Calcium	43 mg/L	1	E200.7	01/14/19 20:28 / sld
Chromium	ND mg/L	0.01	E200.8	01/14/19 16:48 / sld
Cobalt	ND mg/L	0.01	E200.8	01/14/19 16:48 / sld
Copper	ND mg/L	0.002	E200.8	01/14/19 16:48 / sld
Iron	ND mg/L	0.02	E200.8	01/14/19 16:48 / sld
Lead	ND mg/L	0.0003	E200.8	01/14/19 16:48 / sld
Magnesium	15 mg/L	1	E200.7	01/14/19 20:28 / sld
Manganese	ND mg/L	0.005	E200.8	01/14/19 16:48 / sld
Mercury	ND ug/L	0.005	E245.1	01/15/19 17:23 / dck
Molybdenum	ND mg/L	0.002	E200.8	01/14/19 16:48 / sld
Nickel	ND mg/L	0.001	E200.8	01/14/19 16:48 / sld
Potassium	3 mg/L	1	E200.7	01/14/19 20:28 / sld
Selenium	0.0003 mg/L	0.0002	E200.8	01/14/19 16:48 / sld
Silver	ND mg/L	0.0002	E200.8	01/14/19 16:48 / sld
Sodium	5 mg/L	1	E200.7	01/14/19 20:28 / sld
Strontium	0.172 mg/L	0.0002	E200.8	01/14/19 16:48 / sld
Thallium	0.0010 mg/L	0.0002	E200.8	01/14/19 16:48 / sld
Uranium	0.0009 mg/L	0.0002	E200.8	01/14/19 16:48 / sld
Zinc	ND mg/L	0.002	E200.8	01/14/19 16:48 / sld

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ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)  
H19010186-006  
BBC-1901-114

01/21/19  
01/10/19 15:30  
01/11/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	01/11/19 12:53 / cmm
Solids, Total Dissolved TDS @ 180 C	ND mg/L	10	A2540 C	01/11/19 12:47 / cmm
Alkalinity, Total as CaCO3	ND mg/L	4	A2320 B	01/11/19 16:38 / SRW
Chloride	ND mg/L	1	E300.0	01/12/19 04:21 / SRW
Sulfate	ND mg/L	1	E300.0	01/12/19 04:21 / SRW
Fluoride	ND mg/L	0.1	4 A4500-F C	01/15/19 11:06 / SRW
Hardness as CaCO3	ND mg/L	1	A2340 B	01/15/19 08:40 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	01/18/19 10:45 / kmd
Aluminum	ND mg/L	0.009	E200.8	01/14/19 16:50 / sld
Antimony	ND mg/L	0.0005	E200.8	01/14/19 16:50 / sld
Arsenic	ND mg/L	0.001	E200.8	01/14/19 16:50 / sld
Barium	ND mg/L	0.003	E200.8	01/14/19 16:50 / sld
Beryllium	ND mg/L	0.0008	E200.8	01/14/19 16:50 / sld
Cadmium	ND mg/L	0.00003	E200.8	01/14/19 16:50 / sld
Calcium	ND mg/L	1	E200.7	01/14/19 20:39 / sld
Chromium	ND mg/L	0.01	E200.8	01/14/19 16:50 / sld
Cobalt	ND mg/L	0.01	E200.8	01/14/19 16:50 / sld
Copper	ND mg/L	0.002	E200.8	01/14/19 16:50 / sld
Iron	ND mg/L	0.02	E200.8	01/14/19 16:50 / sld
Lead	ND mg/L	0.0003	E200.8	01/14/19 16:50 / sld
Magnesium	ND mg/L	1	E200.7	01/14/19 20:39 / sld
Manganese	ND mg/L	0.005	E200.8	01/14/19 16:50 / sld
Mercury	ND ug/L	0.005	E245.1	01/15/19 17:26 / dck
Molybdenum	ND mg/L	0.002	E200.8	01/14/19 16:50 / sld
Nickel	ND mg/L	0.001	E200.8	01/14/19 16:50 / sld
Potassium	ND mg/L	1	E200.7	01/14/19 20:39 / sld
Selenium	ND mg/L	0.0002	E200.8	01/14/19 16:50 / sld
Silver	ND mg/L	0.0002	E200.8	01/14/19 16:50 / sld
Sodium	ND mg/L	1	E200.7	01/14/19 20:39 / sld
Strontium	ND mg/L	0.0002	E200.8	01/14/19 16:50 / sld
Thallium	ND mg/L	0.0002	E200.8	01/14/19 16:50 / sld
Uranium	ND mg/L	0.0002	E200.8	01/14/19 16:50 / sld
Zinc	ND mg/L	0.002	E200.8	01/14/19 16:50 / sld

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MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

						Batch: R141207
	Method Blank			Run: PHSC_101-H_190111A		01/11/19 14:36
Alkalinity, Total as CaCO3	ND mg/L	2				
	Laboratory Control Sample			Run: PHSC_101-H_190111A		01/11/19 14:42
Alkalinity, Total as CaCO3	590 mg/L	4.0	98	90 110		
	Sample Duplicate			Run: PHSC_101-H_190111A		01/11/19 15:12
Alkalinity, Total as CaCO3	180 mg/L	4.0			0.1	10
	Sample Duplicate			Run: PHSC_101-H_190111A		01/11/19 16:30
Alkalinity, Total as CaCO3	170 mg/L	4.0			0.3	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

Batch: TDS190111A

	Method Blank			Run: ACCU-124 (14410200)_19011	01/11/19 12:46
Solids, Total Dissolved TDS @ 180 C	ND mg/L	10			
	Laboratory Control Sample			Run: ACCU-124 (14410200)_19011	01/11/19 12:46
Solids, Total Dissolved TDS @ 180 C	1880 mg/L	20	94	90 110	
	Sample Duplicate			Run: ACCU-124 (14410200)_19011	01/11/19 12:46
Solids, Total Dissolved TDS @ 180 C	233 mg/L	10		0.9	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

Batch: TSS190111A

	Method Blank				Run: ACCU-124 (14410200)_19011	01/11/19 12:50
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19011	01/11/19 12:50
Solids, Total Suspended TSS @ 105 C	104	mg/L	10	104	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19011	01/11/19 12:50
Solids, Total Suspended TSS @ 105 C	2.40	mg/L	10			5
	Sample Duplicate				Run: ACCU-124 (14410200)_19011	01/11/19 12:53
Solids, Total Suspended TSS @ 105 C	ND	mg/L	10			5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

							Analytical Run: MANTECH 2_190115A
	Initial Calibration Verification Standard						01/15/19 10:03
Fluoride	0.7	mg/L	0.1	99	90	110	
	Continuing Calibration Verification Standard						01/15/19 10:41
Fluoride	1.0	mg/L	0.1	103	90	110	
							Batch: R141293
	Method Blank			Run: MANTECH 2_190115A		01/15/19 10:08	
Fluoride	0.04	mg/L	0.003				
	Sample Matrix Spike			Run: MANTECH 2_190115A		01/15/19 10:19	
Fluoride	1.8	mg/L	0.1	106	85	115	
	Sample Duplicate			Run: MANTECH 2_190115A		01/15/19 10:24	
Fluoride	1.4	mg/L	0.1			1.4 10	
	Sample Duplicate			Run: MANTECH 2_190115A		01/15/19 10:52	
Fluoride	0.2	mg/L	0.1			0.0 10	



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

Analytical Run: ICP2-HE\_190114A

4 Initial Calibration Verification Standard							01/14/19 13:55
Calcium	41.6	mg/L	1.0	104	95	105	
Magnesium	42.0	mg/L	1.0	105	95	105	
Potassium	40.9	mg/L	1.0	102	95	105	
Sodium	40.4	mg/L	1.0	101	95	105	
4 Continuing Calibration Verification Standard							01/14/19 13:59
Calcium	26.1	mg/L	1.0	104	95	105	
Magnesium	25.8	mg/L	1.0	103	95	105	
Potassium	25.4	mg/L	1.0	101	95	105	
Sodium	25.2	mg/L	1.0	101	95	105	
4 Interference Check Sample A							01/14/19 14:11
Calcium	467	mg/L	1.0	93	80	120	
Magnesium	519	mg/L	1.0	104	80	120	
Potassium	-0.0100	mg/L	1.0		0	0	
Sodium	0.0178	mg/L	1.0		0	0	
4 Interference Check Sample AB							01/14/19 14:15
Calcium	470	mg/L	1.0	94	80	120	
Magnesium	525	mg/L	1.0	105	80	120	
Potassium	20.3	mg/L	1.0	101	80	120	
Sodium	20.3	mg/L	1.0	101	80	120	
4 Continuing Calibration Verification Standard							01/14/19 19:46
Calcium	25.7	mg/L	1.0	103	90	110	
Magnesium	25.7	mg/L	1.0	103	90	110	
Potassium	25.7	mg/L	1.0	103	90	110	
Sodium	25.6	mg/L	1.0	103	90	110	
4 Continuing Calibration Verification Standard							01/14/19 20:32
Calcium	25.8	mg/L	1.0	103	90	110	
Magnesium	26.0	mg/L	1.0	104	90	110	
Potassium	26.1	mg/L	1.0	104	90	110	
Sodium	26.1	mg/L	1.0	104	90	110	
4 Method Blank							Run: ICP2-HE_190114A 01/14/19 14:26
Calcium	ND	mg/L	0.07				
Magnesium	ND	mg/L	0.01				
Potassium	ND	mg/L	0.06				
Sodium	ND	mg/L	0.02				
4 Laboratory Fortified Blank							Run: ICP2-HE_190114A 01/14/19 14:30
Calcium	49.6	mg/L	1.0	99	85	115	
Magnesium	50.3	mg/L	1.0	101	85	115	
Potassium	50.1	mg/L	1.0	100	85	115	

Batch: R141277

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

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Batch: R141277

	4	Laboratory Fortified Blank			Run: ICP2-HE_190114A			01/14/19 14:30
Sodium		50.2 mg/L	1.0	100	85	115		
	4	Sample Matrix Spike			Run: ICP2-HE_190114A			01/14/19 19:57
Calcium		103 mg/L	1.0	89	70	130		
Magnesium		69.9 mg/L	1.0	100	70	130		
Potassium		53.3 mg/L	1.0	104	70	130		
Sodium		55.1 mg/L	1.0	105	70	130		
	4	Sample Matrix Spike Duplicate			Run: ICP2-HE_190114A			01/14/19 20:01
Calcium		104 mg/L	1.0	91	70	130	1.1	20
Magnesium		70.4 mg/L	1.0	101	70	130	0.7	20
Potassium		54.6 mg/L	1.0	107	70	130	2.4	20
Sodium		56.4 mg/L	1.0	107	70	130	2.4	20
	4	Sample Matrix Spike			Run: ICP2-HE_190114A			01/14/19 20:47
Calcium		50.2 mg/L	1.0	100	70	130		
Magnesium		52.1 mg/L	1.0	104	70	130		
Potassium		52.8 mg/L	1.0	106	70	130		
Sodium		52.6 mg/L	1.0	105	70	130		
	4	Sample Matrix Spike Duplicate			Run: ICP2-HE_190114A			01/14/19 20:51
Calcium		51.3 mg/L	1.0	103	70	130	2.1	20
Magnesium		53.5 mg/L	1.0	107	70	130	2.6	20
Potassium		52.8 mg/L	1.0	106	70	130	0.1	20
Sodium		52.5 mg/L	1.0	105	70	130	0.2	20



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186



Analytical Run: ICPMS205-H\_190114A

20 Initial Calibration Verification Standard

01/14/19 14:33

Aluminum	0.302	mg/L	0.10	101	90	110
Antimony	0.0606	mg/L	0.050	101	90	110
Arsenic	0.0605	mg/L	0.0050	101	90	110
Barium	0.0600	mg/L	0.10	100	90	110
Beryllium	0.0301	mg/L	0.0010	100	90	110
Cadmium	0.0304	mg/L	0.0010	101	90	110
Chromium	0.0610	mg/L	0.010	102	90	110
Cobalt	0.0615	mg/L	0.010	103	90	110
Copper	0.0617	mg/L	0.010	103	90	110
Iron	0.301	mg/L	0.020	100	90	110
Lead	0.0602	mg/L	0.010	100	90	110
Manganese	0.307	mg/L	0.010	102	90	110
Molybdenum	0.0599	mg/L	0.0050	100	90	110
Nickel	0.0619	mg/L	0.010	103	90	110
Selenium	0.0605	mg/L	0.0050	101	90	110
Silver	0.0302	mg/L	0.0050	101	90	110
Strontium	0.0604	mg/L	0.10	101	90	110
Thallium	0.0608	mg/L	0.10	101	90	110
Uranium	0.0589	mg/L	0.00030	98	90	110
Zinc	0.0617	mg/L	0.010	103	90	110

20 Interference Check Sample A

01/14/19 14:35

Aluminum	41.5	mg/L	0.10	104	70	130
Antimony	0.000698	mg/L	0.050			
Arsenic	3.37E-05	mg/L	0.0050			
Barium	0.000302	mg/L	0.10			
Beryllium	3.41E-06	mg/L	0.0010			
Cadmium	0.000195	mg/L	0.0010			
Chromium	0.000230	mg/L	0.010			
Cobalt	0.000265	mg/L	0.010			
Copper	0.000295	mg/L	0.010			
Iron	102	mg/L	0.020	102	70	130
Lead	0.000103	mg/L	0.010			
Manganese	0.000285	mg/L	0.010			
Molybdenum	0.868	mg/L	0.0050	108	70	130
Nickel	0.000285	mg/L	0.010			
Selenium	9.05E-05	mg/L	0.0050			
Silver	0.000104	mg/L	0.0050			
Strontium	0.000983	mg/L	0.10			
Thallium	2.94E-05	mg/L	0.10			
Uranium	2.59E-05	mg/L	0.00030			
Zinc	0.000374	mg/L	0.010			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186



Analytical Run: ICPMS205-H\_190114A

20 Interference Check Sample AB

01/14/19 14:37

Aluminum	41.6	mg/L	0.10	104	70	130
Antimony	0.000330	mg/L	0.050		0	0
Arsenic	0.00996	mg/L	0.0050	100	70	130
Barium	0.000175	mg/L	0.10		0	0
Beryllium	-5.69E-05	mg/L	0.0010		0	0
Cadmium	0.0100	mg/L	0.0010	100	70	130
Chromium	0.0197	mg/L	0.010	99	70	130
Cobalt	0.0200	mg/L	0.010	100	70	130
Copper	0.0196	mg/L	0.010	98	70	130
Iron	101	mg/L	0.020	101	70	130
Lead	9.22E-05	mg/L	0.010		0	0
Manganese	0.0197	mg/L	0.010	99	70	130
Molybdenum	0.855	mg/L	0.0050	107	70	130
Nickel	0.0195	mg/L	0.010	97	70	130
Selenium	0.00955	mg/L	0.0050	95	70	130
Silver	0.00492	mg/L	0.0050	98	70	130
Strontium	0.000965	mg/L	0.10		0	0
Thallium	1.60E-05	mg/L	0.10		0	0
Uranium	6.28E-06	mg/L	0.00030		0	0
Zinc	0.00970	mg/L	0.010	97	70	130

Batch: R141275

20 Method Blank

Run: ICPMS205-H\_190114A

01/14/19 14:52

Aluminum	ND	mg/L	0.003
Antimony	ND	mg/L	9E-05
Arsenic	ND	mg/L	4E-05
Barium	ND	mg/L	2E-05
Beryllium	ND	mg/L	0.0001
Cadmium	ND	mg/L	3E-05
Chromium	ND	mg/L	0.0002
Cobalt	ND	mg/L	9E-05
Copper	ND	mg/L	0.0001
Iron	ND	mg/L	0.002
Lead	ND	mg/L	3E-05
Manganese	ND	mg/L	0.0003
Molybdenum	ND	mg/L	2E-05
Nickel	ND	mg/L	0.0002
Selenium	ND	mg/L	2E-05
Silver	ND	mg/L	2E-05
Strontium	ND	mg/L	0.0001
Thallium	ND	mg/L	1E-05
Uranium	ND	mg/L	1E-05
Zinc	ND	mg/L	0.0003

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Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

Batch: R141275

20 Laboratory Fortified Blank				Run: ICPMS205-H_190114A			01/14/19 14:54
Aluminum	0.0510	mg/L	0.10	102	85	115	
Antimony	0.0500	mg/L	0.050	100	85	115	
Arsenic	0.0499	mg/L	0.0050	100	85	115	
Barium	0.0487	mg/L	0.10	97	85	115	
Beryllium	0.0480	mg/L	0.0010	96	85	115	
Cadmium	0.0497	mg/L	0.0010	99	85	115	
Chromium	0.0502	mg/L	0.010	100	85	115	
Cobalt	0.0506	mg/L	0.010	101	85	115	
Copper	0.0512	mg/L	0.010	102	85	115	
Iron	0.147	mg/L	0.020	98	85	115	
Lead	0.0492	mg/L	0.010	98	85	115	
Manganese	0.0497	mg/L	0.010	99	85	115	
Molybdenum	0.0486	mg/L	0.0050	97	85	115	
Nickel	0.0502	mg/L	0.010	100	85	115	
Selenium	0.0491	mg/L	0.0050	98	85	115	
Silver	0.0198	mg/L	0.0050	99	85	115	
Strontium	0.0500	mg/L	0.10	100	85	115	
Thallium	0.0497	mg/L	0.10	99	85	115	
Uranium	0.0481	mg/L	0.00030	96	85	115	
Zinc	0.0506	mg/L	0.010	101	85	115	

20 Sample Matrix Spike				Run: ICPMS205-H_190114A			01/14/19 16:27
Aluminum	0.0539	mg/L	0.030	98	70	130	
Antimony	0.0492	mg/L	0.0010	98	70	130	
Arsenic	0.0527	mg/L	0.0010	104	70	130	
Barium	0.152	mg/L	0.050	99	70	130	
Beryllium	0.0507	mg/L	0.0010	101	70	130	
Cadmium	0.0498	mg/L	0.0010	100	70	130	
Chromium	0.0497	mg/L	0.0050	99	70	130	
Cobalt	0.0501	mg/L	0.0050	100	70	130	
Copper	0.0504	mg/L	0.0050	100	70	130	
Iron	0.158	mg/L	0.020	97	70	130	
Lead	0.0496	mg/L	0.0010	99	70	130	
Manganese	0.0589	mg/L	0.0010	99	70	130	
Molybdenum	0.0486	mg/L	0.0010	97	70	130	
Nickel	0.0502	mg/L	0.0050	100	70	130	
Selenium	0.0553	mg/L	0.0010	110	70	130	
Silver	0.0196	mg/L	0.0010	98	70	130	
Strontium	0.180	mg/L	0.010	98	70	130	
Thallium	0.0501	mg/L	0.00050	100	70	130	
Uranium	0.0499	mg/L	0.00030	99	70	130	
Zinc	0.0512	mg/L	0.010	102	70	130	

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Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

Batch: R141275

20 Sample Matrix Spike Duplicate				Run: ICPMS205-H_190114A				01/14/19 16:29
Aluminum	0.0549	mg/L	0.030	100	70	130	1.8	20
Antimony	0.0495	mg/L	0.0010	99	70	130	0.5	20
Arsenic	0.0528	mg/L	0.0010	105	70	130	0.3	20
Barium	0.152	mg/L	0.050	99	70	130	0.0	20
Beryllium	0.0508	mg/L	0.0010	102	70	130	0.2	20
Cadmium	0.0501	mg/L	0.0010	100	70	130	0.7	20
Chromium	0.0500	mg/L	0.0050	100	70	130	0.5	20
Cobalt	0.0496	mg/L	0.0050	99	70	130	1.1	20
Copper	0.0503	mg/L	0.0050	100	70	130	0.3	20
Iron	0.158	mg/L	0.020	97	70	130	0.1	20
Lead	0.0491	mg/L	0.0010	98	70	130	0.9	20
Manganese	0.0586	mg/L	0.0010	98	70	130	0.5	20
Molybdenum	0.0488	mg/L	0.0010	97	70	130	0.3	20
Nickel	0.0500	mg/L	0.0050	100	70	130	0.5	20
Selenium	0.0553	mg/L	0.0010	110	70	130	0.0	20
Silver	0.0198	mg/L	0.0010	99	70	130	1.1	20
Strontium	0.179	mg/L	0.010	96	70	130	0.6	20
Thallium	0.0496	mg/L	0.00050	99	70	130	1.0	20
Uranium	0.0496	mg/L	0.00030	98	70	130	0.7	20
Zinc	0.0515	mg/L	0.010	103	70	130	0.7	20

20 Sample Matrix Spike				Run: ICPMS205-H_190114A			01/14/19 16:52
Aluminum	0.0492	mg/L	0.030	99	70	130	
Antimony	0.0494	mg/L	0.0010	99	70	130	
Arsenic	0.0560	mg/L	0.0010	105	70	130	
Barium	0.162	mg/L	0.050	99	70	130	
Beryllium	0.0502	mg/L	0.0010	100	70	130	
Cadmium	0.0498	mg/L	0.0010	100	70	130	
Chromium	0.0488	mg/L	0.0050	98	70	130	
Cobalt	0.0492	mg/L	0.0050	98	70	130	
Copper	0.0498	mg/L	0.0050	99	70	130	
Iron	0.143	mg/L	0.020	95	70	130	
Lead	0.0493	mg/L	0.0010	99	70	130	
Manganese	0.0491	mg/L	0.0010	98	70	130	
Molybdenum	0.0487	mg/L	0.0010	97	70	130	
Nickel	0.0494	mg/L	0.0050	99	70	130	
Selenium	0.0562	mg/L	0.0010	112	70	130	
Silver	0.0195	mg/L	0.0010	98	70	130	
Strontium	0.219	mg/L	0.010	99	70	130	
Thallium	0.0509	mg/L	0.00050	100	70	130	
Uranium	0.0504	mg/L	0.00030	99	70	130	
Zinc	0.0501	mg/L	0.010	100	70	130	

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ND - Not detected at the reporting limit.





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Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186



Batch: R141275

20 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190114A

01/14/19 16:54

Aluminum	0.0496	mg/L	0.030	99	70	130	0.6	20
Antimony	0.0499	mg/L	0.0010	100	70	130	1.0	20
Arsenic	0.0568	mg/L	0.0010	106	70	130	1.4	20
Barium	0.162	mg/L	0.050	99	70	130	0.1	20
Beryllium	0.0516	mg/L	0.0010	103	70	130	2.8	20
Cadmium	0.0503	mg/L	0.0010	101	70	130	1.0	20
Chromium	0.0494	mg/L	0.0050	99	70	130	1.3	20
Cobalt	0.0493	mg/L	0.0050	99	70	130	0.2	20
Copper	0.0502	mg/L	0.0050	100	70	130	0.8	20
Iron	0.143	mg/L	0.020	96	70	130	0.4	20
Lead	0.0494	mg/L	0.0010	99	70	130	0.3	20
Manganese	0.0492	mg/L	0.0010	98	70	130	0.3	20
Molybdenum	0.0490	mg/L	0.0010	98	70	130	0.8	20
Nickel	0.0498	mg/L	0.0050	100	70	130	0.9	20
Selenium	0.0574	mg/L	0.0010	114	70	130	2.1	20
Silver	0.0198	mg/L	0.0010	99	70	130	1.1	20
Strontium	0.219	mg/L	0.010	99	70	130	0.0	20
Thallium	0.0510	mg/L	0.00050	100	70	130	0.4	20
Uranium	0.0505	mg/L	0.00030	99	70	130	0.2	20
Zinc	0.0512	mg/L	0.010	102	70	130	2.2	20



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

Analytical Run: HGCV202-H\_190116A

	Initial Calibration Verification Standard						01/15/19 15:59	
Mercury	0.0984	ug/L	0.0050	98	90	110		
Batch: 44425								
	Method Blank			Run: HGCV202-H_190116A			01/15/19 16:18	
Mercury	ND	ug/L	0.0009					
	Laboratory Control Sample			Run: HGCV202-H_190116A			01/15/19 16:22	
Mercury	0.0491	ug/L	0.0050	98	90	110		
	Sample Matrix Spike			Run: HGCV202-H_190116A			01/15/19 17:13	
Mercury	0.0528	ug/L	0.0050	106	70	130		
	Sample Matrix Spike Duplicate			Run: HGCV202-H_190116A			01/15/19 17:16	
Mercury	0.0530	ug/L	0.0050	106	70	130	0.3	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

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Analytical Run: IC METROHM\_190111A

	2	Initial Calibration Verification Standard						01/11/19 10:17
Chloride		99.3 mg/L	1.0	99	90	110		
Sulfate		394 mg/L	1.0	99	90	110		
	2	Continuing Calibration Verification Standard						01/11/19 23:12
Chloride		51.3 mg/L	1.0	103	90	110		
Sulfate		213 mg/L	1.0	107	90	110		
	2	Continuing Calibration Verification Standard						01/12/19 02:43
Chloride		51.4 mg/L	1.0	103	90	110		
Sulfate		213 mg/L	1.0	107	90	110		

Batch: R141226

	2	Method Blank						Run: IC METROHM_190111A	01/11/19 10:03
Chloride		0.03 mg/L	0.009						
Sulfate		ND mg/L	0.01						
	2	Laboratory Fortified Blank						Run: IC METROHM_190111A	01/11/19 10:31
Chloride		24.5 mg/L	1.0	98	90	110			
Sulfate		101 mg/L	1.0	101	90	110			
	2	Sample Matrix Spike						Run: IC METROHM_190111A	01/12/19 02:14
Chloride		26.2 mg/L	1.0	101	90	110			
Sulfate		138 mg/L	1.0	100	90	110			
	2	Sample Matrix Spike Duplicate						Run: IC METROHM_190111A	01/12/19 02:29
Chloride		26.1 mg/L	1.0	101	90	110	0.3	20	
Sulfate		138 mg/L	1.0	100	90	110	0.2	20	
	2	Sample Matrix Spike						Run: IC METROHM_190111A	01/12/19 04:35
Chloride		25.1 mg/L	1.0	101	90	110			
Sulfate		102 mg/L	1.0	102	90	110			
	2	Sample Matrix Spike Duplicate						Run: IC METROHM_190111A	01/12/19 04:50
Chloride		25.1 mg/L	1.0	100	90	110	0.2	20	
Sulfate		102 mg/L	1.0	102	90	110	0.2	20	



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (Springs)

01/21/19  
H19010186

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							Analytical Run: FIA203-HE_190118A	
Initial Calibration Verification Standard							01/18/19 09:32	
Nitrogen, Nitrate+Nitrite as N	0.974	mg/L	0.010	97	90	110		
Continuing Calibration Verification Standard							01/18/19 10:24	
Nitrogen, Nitrate+Nitrite as N	0.459	mg/L	0.010	92	90	110		
Continuing Calibration Verification Standard							01/18/19 10:41	
Nitrogen, Nitrate+Nitrite as N	0.454	mg/L	0.010	91	90	110		
							Batch: R141386	
Method Blank							Run: FIA203-HE_190118A	
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				01/18/19 09:33	
Laboratory Fortified Blank							Run: FIA203-HE_190118A	
Nitrogen, Nitrate+Nitrite as N	0.966	mg/L	0.011	97	90	110	01/18/19 09:34	
Sample Matrix Spike							Run: FIA203-HE_190118A	
Nitrogen, Nitrate+Nitrite as N	1.24	mg/L	0.011	93	90	110	01/18/19 10:36	
Sample Matrix Spike Duplicate							Run: FIA203-HE_190118A	
Nitrogen, Nitrate+Nitrite as N	1.20	mg/L	0.011	90	90	110	2.6	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Tintina Resources Inc

# H19010186

Login completed by: Jessica C. Smith

Date Received: 1/11/2019

Reviewed by: BL2000\rtooke

Received by: TLL

Reviewed Date: 1/15/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	-0.9°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

None



**TABLE 5. PARAMETERS, METHODS, AND DETECTION LIMITS  
FOR GROUNDWATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	10
TSS	SM 2540C	10
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.01
<b>Trace Constituents (Dissolved)<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameters</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



April 03, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19020363 Quote ID: H1216 - Surface and Groundwater Sampling

Project Name: 18049 Black Butte Copper (SW)

Energy Laboratories Inc Helena MT received the following 6 samples for Tintina Resources Inc on 2/27/2019 for analysis.

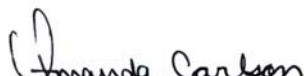
Sample ID	Client ID	Collection Date/Time	Analysis Date	Sample Type	Analysis Methods
H19020363-001	BBC-1902-100	02/22/19 10:40	02/27/19	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity Conductivity Mercury, Total Recoverable Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate pH Metals Digestion by E200.2 Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Dissolved Solids, Total Suspended
H19020363-002	BBC-1902-101	02/22/19 10:55	02/27/19	Surface Water	Same As Above
H19020363-003	BBC-1902-104	02/22/19 12:00	02/27/19	Surface Water	Same As Above
H19020363-004	BBC-1902-105	02/22/19 12:30	02/27/19	Surface Water	Same As Above
H19020363-005	BBC-1902-106	02/22/19 12:40	02/27/19	Surface Water	Same As Above
H19020363-006	BBC-1902-107	02/22/19 12:55	02/27/19	Surface Water	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



Amanda B. Carlson  
Assistant Laboratory Manager-Helena, MT

Digitally signed by  
Amanda B. Carlson  
Date: 2019.04.03 08:44:15 -06:00



Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363

04/03/19

03/07/19

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Rick Lane called requested pH on all samples. The revised report includes pH for all samples. wj 4/2/19



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-001  
BBC-1902-100

04/03/19  
03/07/19  
02/22/19 10:40  
02/27/19  
Surface Water

pH	8.1 s.u.	H	0.1	A4500-H B	02/27/19 14:01 / SRW
pH Measurement Temp	16.3 °C			A4500-H B	02/27/19 14:01 / SRW
Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	02/27/19 12:56 / cmm
Solids, Total Dissolved TDS @ 180 C	189 mg/L	D	10	A2540 C	02/27/19 12:42 / cmm
Alkalinity, Total as CaCO3	170 mg/L		4	A2320 B	02/27/19 15:19 / SRW
Chloride	1 mg/L		1	E300.0	02/28/19 12:26 / kmd
Sulfate	7 mg/L		1	E300.0	02/28/19 12:26 / kmd
Fluoride	0.1 mg/L		0.1	4 A4500-F C	02/28/19 12:57 / kmd
Hardness as CaCO3	183 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.12 mg/L		0.01	E353.2	02/28/19 12:11 / SRW
Nitrogen, Total	0.21 mg/L		0.04	A4500 N-C	02/28/19 10:16 / SRW
Phosphorus, Total as P	0.016 mg/L		0.003	E365.1	02/28/19 15:06 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 14:33 / sld
Calcium	51 mg/L		1	E200.7	02/28/19 11:39 / sld
Magnesium	14 mg/L		1	E200.7	02/28/19 11:39 / sld
Potassium	1 mg/L		1	E200.7	02/28/19 11:39 / sld
Sodium	2 mg/L		1	E200.7	02/28/19 11:39 / sld
Antimony	ND mg/L		0.0005	E200.8	03/01/19 14:46 / sld
Arsenic	ND mg/L		0.001	E200.8	03/01/19 14:46 / sld
Barium	0.107 mg/L		0.003	E200.8	03/01/19 14:46 / sld
Beryllium	ND mg/L		0.0008	E200.8	03/01/19 14:46 / sld
Cadmium	ND mg/L		0.00003	E200.8	03/01/19 14:46 / sld
Chromium	ND mg/L		0.01	E200.8	03/01/19 14:46 / sld
Cobalt	ND mg/L		0.01	E200.8	03/01/19 14:46 / sld
Copper	ND mg/L		0.002	E200.8	03/01/19 14:46 / sld
Iron	0.13 mg/L		0.02	E200.8	03/01/19 14:46 / sld
Lead	ND mg/L		0.0003	E200.8	03/01/19 14:46 / sld
Manganese	0.014 mg/L		0.005	E200.8	03/01/19 14:46 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 15:53 / ber
Molybdenum	ND mg/L		0.002	E200.8	03/01/19 14:46 / sld
Nickel	ND mg/L		0.001	E200.8	03/01/19 14:46 / sld
Selenium	ND mg/L		0.0002	E200.8	03/01/19 14:46 / sld
Silver	ND mg/L		0.0002	E200.8	03/01/19 14:46 / sld
Strontium	0.128 mg/L	D	0.0003	E200.8	03/01/19 14:46 / sld
Thallium	ND mg/L		0.0002	E200.8	03/01/19 14:46 / sld
Uranium	0.0004 mg/L		0.0002	E200.8	03/01/19 14:46 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

H - Analysis performed past recommended holding time.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-001  
BBC-1902-100

04/03/19  
03/07/19  
02/22/19 10:40  
02/27/19  
Surface Water

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Zinc	ND mg/L	0.002	E200.8	03/01/19 14:46 / sld
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RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-002  
BBC-1902-101

04/03/19  
03/07/19  
02/22/19 10:55  
02/27/19  
Surface Water

pH	8.1 s.u.	H	0.1	A4500-H B	02/27/19 14:05 / SRW
pH Measurement Temp	15.7 °C			A4500-H B	02/27/19 14:05 / SRW
Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	02/27/19 12:34 / cmm
Solids, Total Dissolved TDS @ 180 C	183 mg/L	D	10	A2540 C	02/27/19 12:42 / cmm
Alkalinity, Total as CaCO3	170 mg/L		4	A2320 B	02/27/19 15:25 / SRW
Chloride	1 mg/L		1	E300.0	02/28/19 12:41 / kmd
Sulfate	7 mg/L		1	E300.0	02/28/19 12:41 / kmd
Fluoride	0.1 mg/L		0.1	4 A4500-F C	02/28/19 13:02 / kmd
Hardness as CaCO3	180 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.12 mg/L		0.01	E353.2	02/28/19 12:12 / SRW
Nitrogen, Total	0.20 mg/L		0.04	A4500 N-C	02/28/19 10:18 / SRW
Phosphorus, Total as P	0.016 mg/L		0.003	E365.1	02/28/19 15:10 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 14:36 / sld
Calcium	50 mg/L		1	E200.7	02/28/19 11:55 / sld
Magnesium	13 mg/L		1	E200.7	02/28/19 11:55 / sld
Potassium	1 mg/L		1	E200.7	02/28/19 11:55 / sld
Sodium	2 mg/L		1	E200.7	02/28/19 11:55 / sld
Antimony	ND mg/L		0.0005	E200.8	03/01/19 14:48 / sld
Arsenic	ND mg/L		0.001	E200.8	03/01/19 14:48 / sld
Barium	0.107 mg/L		0.003	E200.8	03/01/19 14:48 / sld
Beryllium	ND mg/L		0.0008	E200.8	03/01/19 14:48 / sld
Cadmium	ND mg/L		0.00003	E200.8	03/01/19 14:48 / sld
Chromium	ND mg/L		0.01	E200.8	03/01/19 14:48 / sld
Cobalt	ND mg/L		0.01	E200.8	03/01/19 14:48 / sld
Copper	ND mg/L		0.002	E200.8	03/01/19 14:48 / sld
Iron	0.13 mg/L		0.02	E200.8	03/01/19 14:48 / sld
Lead	ND mg/L		0.0003	E200.8	03/01/19 14:48 / sld
Manganese	0.014 mg/L		0.005	E200.8	03/01/19 14:48 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 15:56 / ber
Molybdenum	ND mg/L		0.002	E200.8	03/01/19 14:48 / sld
Nickel	ND mg/L		0.001	E200.8	03/01/19 14:48 / sld
Selenium	ND mg/L		0.0002	E200.8	03/01/19 14:48 / sld
Silver	ND mg/L		0.0002	E200.8	03/01/19 14:48 / sld
Strontium	0.128 mg/L	D	0.0003	E200.8	03/01/19 14:48 / sld
Thallium	ND mg/L		0.0002	E200.8	03/01/19 14:48 / sld
Uranium	0.0004 mg/L		0.0002	E200.8	03/01/19 14:48 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

H - Analysis performed past recommended holding time.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-002  
BBC-1902-101

04/03/19  
03/07/19  
02/22/19 10:55  
02/27/19  
Surface Water

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Zinc	ND mg/L	0.002	E200.8	03/01/19 14:48 / sld
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RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-003  
BBC-1902-104

04/03/19  
03/07/19  
02/22/19 12:00  
02/27/19  
Surface Water

pH	7.8 s.u.	H	0.1	A4500-H B	02/27/19 14:08 / SRW
pH Measurement Temp	15.4 °C			A4500-H B	02/27/19 14:08 / SRW
Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	02/27/19 12:34 / cmm
Solids, Total Dissolved TDS @ 180 C	229 mg/L	D	10	A2540 C	02/27/19 12:42 / cmm
Alkalinity, Total as CaCO3	220 mg/L		4	A2320 B	02/27/19 15:38 / SRW
Chloride	2 mg/L		1	E300.0	02/28/19 12:55 / kmd
Sulfate	9 mg/L		1	E300.0	02/28/19 12:55 / kmd
Fluoride	0.2 mg/L		0.1	4 A4500-F C	02/28/19 13:05 / kmd
Hardness as CaCO3	232 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.19 mg/L		0.01	E353.2	02/28/19 12:13 / SRW
Nitrogen, Total	0.29 mg/L		0.04	A4500 N-C	02/28/19 10:19 / SRW
Phosphorus, Total as P	0.010 mg/L		0.003	E365.1	02/28/19 15:11 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 14:38 / sld
Calcium	60 mg/L		1	E200.7	02/28/19 12:00 / sld
Magnesium	20 mg/L		1	E200.7	02/28/19 12:00 / sld
Potassium	1 mg/L		1	E200.7	02/28/19 12:00 / sld
Sodium	3 mg/L		1	E200.7	02/28/19 12:00 / sld
Antimony	ND mg/L		0.0005	E200.8	03/01/19 14:50 / sld
Arsenic	ND mg/L		0.001	E200.8	03/01/19 14:50 / sld
Barium	0.122 mg/L		0.003	E200.8	03/01/19 14:50 / sld
Beryllium	ND mg/L		0.0008	E200.8	03/01/19 14:50 / sld
Cadmium	ND mg/L		0.00003	E200.8	03/01/19 14:50 / sld
Chromium	ND mg/L		0.01	E200.8	03/01/19 14:50 / sld
Cobalt	ND mg/L		0.01	E200.8	03/01/19 14:50 / sld
Copper	ND mg/L		0.002	E200.8	03/01/19 14:50 / sld
Iron	0.04 mg/L		0.02	E200.8	03/01/19 14:50 / sld
Lead	ND mg/L		0.0003	E200.8	03/01/19 14:50 / sld
Manganese	0.009 mg/L		0.005	E200.8	03/01/19 14:50 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:06 / ber
Molybdenum	ND mg/L		0.002	E200.8	03/01/19 14:50 / sld
Nickel	ND mg/L		0.001	E200.8	03/01/19 14:50 / sld
Selenium	ND mg/L		0.0002	E200.8	03/01/19 14:50 / sld
Silver	ND mg/L		0.0002	E200.8	03/01/19 14:50 / sld
Strontium	0.125 mg/L	D	0.0003	E200.8	03/01/19 14:50 / sld
Thallium	ND mg/L		0.0002	E200.8	03/01/19 14:50 / sld
Uranium	0.0006 mg/L		0.0002	E200.8	03/01/19 14:50 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

H - Analysis performed past recommended holding time.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-003  
BBC-1902-104

04/03/19  
03/07/19  
02/22/19 12:00  
02/27/19  
Surface Water

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Zinc	ND mg/L	0.002	E200.8	03/01/19 14:50 / sld
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RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-004  
BBC-1902-105

04/03/19  
03/07/19  
02/22/19 12:30  
02/27/19  
Surface Water

pH	8.1 s.u.	H	0.1	A4500-H B	02/27/19 14:10 / SRW
pH Measurement Temp	15.4 °C			A4500-H B	02/27/19 14:10 / SRW
Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	02/27/19 12:35 / cmm
Solids, Total Dissolved TDS @ 180 C	174 mg/L	D	10	A2540 C	02/27/19 12:42 / cmm
Alkalinity, Total as CaCO3	170 mg/L		4	A2320 B	02/27/19 15:46 / SRW
Chloride	1 mg/L		1	E300.0	02/28/19 13:09 / kmd
Sulfate	7 mg/L		1	E300.0	02/28/19 13:09 / kmd
Fluoride	ND mg/L		0.1	4 A4500-F C	02/28/19 13:08 / kmd
Hardness as CaCO3	176 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.10 mg/L		0.01	E353.2	02/28/19 12:15 / SRW
Nitrogen, Total	0.15 mg/L		0.04	A4500 N-C	02/28/19 10:20 / SRW
Phosphorus, Total as P	0.012 mg/L		0.003	E365.1	02/28/19 15:12 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 14:40 / sld
Calcium	50 mg/L		1	E200.7	02/28/19 12:04 / sld
Magnesium	13 mg/L		1	E200.7	02/28/19 12:04 / sld
Potassium	1 mg/L		1	E200.7	02/28/19 12:04 / sld
Sodium	2 mg/L		1	E200.7	02/28/19 12:04 / sld
Antimony	ND mg/L		0.0005	E200.8	03/01/19 14:52 / sld
Arsenic	ND mg/L		0.001	E200.8	03/01/19 14:52 / sld
Barium	0.098 mg/L		0.003	E200.8	03/01/19 14:52 / sld
Beryllium	ND mg/L		0.0008	E200.8	03/01/19 14:52 / sld
Cadmium	ND mg/L		0.00003	E200.8	03/01/19 14:52 / sld
Chromium	ND mg/L		0.01	E200.8	03/01/19 14:52 / sld
Cobalt	ND mg/L		0.01	E200.8	03/01/19 14:52 / sld
Copper	ND mg/L		0.002	E200.8	03/01/19 14:52 / sld
Iron	0.12 mg/L		0.02	E200.8	03/01/19 14:52 / sld
Lead	ND mg/L		0.0003	E200.8	03/01/19 14:52 / sld
Manganese	0.009 mg/L		0.005	E200.8	03/01/19 14:52 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:09 / ber
Molybdenum	ND mg/L		0.002	E200.8	03/01/19 14:52 / sld
Nickel	ND mg/L		0.001	E200.8	03/01/19 14:52 / sld
Selenium	ND mg/L		0.0002	E200.8	03/01/19 14:52 / sld
Silver	ND mg/L		0.0002	E200.8	03/01/19 14:52 / sld
Strontium	0.128 mg/L	D	0.0003	E200.8	03/01/19 14:52 / sld
Thallium	ND mg/L		0.0002	E200.8	03/01/19 14:52 / sld
Uranium	0.0004 mg/L		0.0002	E200.8	03/01/19 14:52 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

H - Analysis performed past recommended holding time.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-004  
BBC-1902-105

04/03/19  
03/07/19  
02/22/19 12:30  
02/27/19  
Surface Water

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Zinc	ND mg/L	0.002	E200.8	03/01/19 14:52 / sld
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RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-005  
BBC-1902-106

04/03/19  
03/07/19  
02/22/19 12:40  
02/27/19  
Surface Water

pH	8.2 s.u.	H	0.1	A4500-H B	02/27/19 14:12 / SRW
pH Measurement Temp	15.8 °C			A4500-H B	02/27/19 14:12 / SRW
Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	02/27/19 12:35 / cmm
Solids, Total Dissolved TDS @ 180 C	195 mg/L	D	10	A2540 C	02/27/19 12:42 / cmm
Alkalinity, Total as CaCO3	190 mg/L		4	A2320 B	02/27/19 15:52 / SRW
Chloride	1 mg/L		1	E300.0	02/28/19 13:23 / kmd
Sulfate	8 mg/L		1	E300.0	02/28/19 13:23 / kmd
Fluoride	ND mg/L		0.1	4 A4500-F C	02/28/19 13:11 / kmd
Hardness as CaCO3	199 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.11 mg/L		0.01	E353.2	02/28/19 12:16 / SRW
Nitrogen, Total	0.16 mg/L		0.04	A4500 N-C	02/28/19 10:21 / SRW
Phosphorus, Total as P	0.011 mg/L		0.003	E365.1	02/28/19 15:22 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 14:42 / sld
Calcium	56 mg/L		1	E200.7	02/28/19 12:08 / sld
Magnesium	14 mg/L		1	E200.7	02/28/19 12:08 / sld
Potassium	1 mg/L		1	E200.7	02/28/19 12:08 / sld
Sodium	2 mg/L		1	E200.7	02/28/19 12:08 / sld
Antimony	ND mg/L		0.0005	E200.8	03/01/19 14:54 / sld
Arsenic	ND mg/L		0.001	E200.8	03/01/19 14:54 / sld
Barium	0.065 mg/L		0.003	E200.8	03/01/19 14:54 / sld
Beryllium	ND mg/L		0.0008	E200.8	03/01/19 14:54 / sld
Cadmium	ND mg/L		0.00003	E200.8	03/01/19 14:54 / sld
Chromium	ND mg/L		0.01	E200.8	03/01/19 14:54 / sld
Cobalt	ND mg/L		0.01	E200.8	03/01/19 14:54 / sld
Copper	ND mg/L		0.002	E200.8	03/01/19 14:54 / sld
Iron	0.13 mg/L		0.02	E200.8	03/01/19 14:54 / sld
Lead	ND mg/L		0.0003	E200.8	03/01/19 14:54 / sld
Manganese	0.008 mg/L		0.005	E200.8	03/01/19 14:54 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:12 / ber
Molybdenum	ND mg/L		0.002	E200.8	03/01/19 14:54 / sld
Nickel	ND mg/L		0.001	E200.8	03/01/19 14:54 / sld
Selenium	ND mg/L		0.0002	E200.8	03/01/19 14:54 / sld
Silver	ND mg/L		0.0002	E200.8	03/01/19 14:54 / sld
Strontium	0.144 mg/L	D	0.0003	E200.8	03/01/19 14:54 / sld
Thallium	ND mg/L		0.0002	E200.8	03/01/19 14:54 / sld
Uranium	0.0004 mg/L		0.0002	E200.8	03/01/19 14:54 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

H - Analysis performed past recommended holding time.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-005  
BBC-1902-106

04/03/19  
03/07/19  
02/22/19 12:40  
02/27/19  
Surface Water

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Zinc	ND mg/L	0.002	E200.8	03/01/19 14:54 / sld
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RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-006  
BBC-1902-107

04/03/19  
03/07/19  
02/22/19 12:55  
02/27/19  
Surface Water

pH	5.7 s.u.	H	0.1	A4500-H B	02/27/19 14:14 / SRW
pH Measurement Temp	16.0 °C			A4500-H B	02/27/19 14:14 / SRW
Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	02/27/19 12:35 / cmm
Solids, Total Dissolved TDS @ 180 C	ND mg/L	D	10	A2540 C	02/27/19 12:42 / cmm
Alkalinity, Total as CaCO3	ND mg/L		4	A2320 B	02/27/19 15:58 / SRW
Chloride	ND mg/L		1	E300.0	02/28/19 13:37 / kmd
Sulfate	ND mg/L		1	E300.0	02/28/19 13:37 / kmd
Fluoride	ND mg/L		0.1	4 A4500-F C	02/28/19 13:14 / kmd
Hardness as CaCO3	ND mg/L		1	A2340 B	02/28/19 07:53 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L		0.01	E353.2	02/28/19 12:19 / SRW
Nitrogen, Total	ND mg/L		0.04	A4500 N-C	02/28/19 10:25 / SRW
Phosphorus, Total as P	ND mg/L		0.003	E365.1	02/28/19 15:21 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 14:44 / sld
Calcium	ND mg/L		1	E200.8	02/27/19 14:44 / sld
Magnesium	ND mg/L		1	E200.8	02/27/19 14:44 / sld
Potassium	ND mg/L		1	E200.8	02/27/19 14:44 / sld
Sodium	ND mg/L		1	E200.8	02/27/19 14:44 / sld
Antimony	ND mg/L		0.0005	E200.8	03/01/19 14:44 / sld
Arsenic	ND mg/L		0.001	E200.8	03/01/19 14:44 / sld
Barium	ND mg/L		0.003	E200.8	03/01/19 14:44 / sld
Beryllium	ND mg/L		0.0008	E200.8	03/01/19 14:44 / sld
Cadmium	ND mg/L		0.00003	E200.8	03/01/19 14:44 / sld
Chromium	ND mg/L		0.01	E200.8	03/01/19 14:44 / sld
Cobalt	ND mg/L		0.01	E200.8	03/01/19 14:44 / sld
Copper	ND mg/L		0.002	E200.8	03/01/19 14:44 / sld
Iron	ND mg/L		0.02	E200.8	03/01/19 14:44 / sld
Lead	ND mg/L		0.0003	E200.8	03/01/19 14:44 / sld
Manganese	ND mg/L		0.005	E200.8	03/01/19 14:44 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:16 / ber
Molybdenum	ND mg/L		0.002	E200.8	03/01/19 14:44 / sld
Nickel	ND mg/L		0.001	E200.8	03/01/19 14:44 / sld
Selenium	ND mg/L		0.0002	E200.8	03/01/19 14:44 / sld
Silver	ND mg/L		0.0002	E200.8	03/01/19 14:44 / sld
Strontium	ND mg/L		0.0002	E200.7	03/06/19 16:06 / sld
Thallium	ND mg/L		0.0002	E200.8	03/01/19 14:44 / sld
Uranium	ND mg/L		0.0002	E200.8	03/01/19 14:44 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

H - Analysis performed past recommended holding time.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19020363-006  
BBC-1902-107

04/03/19  
03/07/19  
02/22/19 12:55  
02/27/19  
Surface Water

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Zinc	ND mg/L	0.002	E200.8	03/01/19 14:44 / sld
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RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

							Batch: R142316
	Method Blank				Run: PHSC_101-H_190227A		02/27/19 15:05
Alkalinity, Total as CaCO3	ND mg/L	2					
	Laboratory Control Sample				Run: PHSC_101-H_190227A		02/27/19 15:11
Alkalinity, Total as CaCO3	600 mg/L	4.0	100	90	110		
	Sample Duplicate				Run: PHSC_101-H_190227A		02/27/19 15:32
Alkalinity, Total as CaCO3	180 mg/L	4.0				0.6	10
	Sample Duplicate				Run: PHSC_101-H_190227A		02/27/19 16:32
Alkalinity, Total as CaCO3	210 mg/L	4.0				1.5	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Batch: TDS190227A

Solids, Total Dissolved TDS @ 180 C	Method Blank	ND	mg/L	10	Run: ACCU-124 (14410200)_19022	02/27/19 09:40
Solids, Total Dissolved TDS @ 180 C	Laboratory Control Sample	1910	mg/L	20	96 90 110	Run: ACCU-124 (14410200)_19022 02/27/19 09:41
Solids, Total Dissolved TDS @ 180 C	Sample Duplicate	300	mg/L	10	2.4	Run: ACCU-124 (14410200)_19022 02/27/19 09:41
Solids, Total Dissolved TDS @ 180 C	Sample Duplicate	237	mg/L	10	0.0	Run: ACCU-124 (14410200)_19022 02/27/19 12:44



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Batch: TSS190227A

	Method Blank				Run: ACCU-124 (14410200)_19022	02/27/19 12:36
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19022	02/27/19 12:36
Solids, Total Suspended TSS @ 105 C	87.0	mg/L	10	87	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19022	02/27/19 12:37
Solids, Total Suspended TSS @ 105 C	21.0	mg/L	10		4.9	5
	Sample Duplicate				Run: ACCU-124 (14410200)_19022	02/27/19 12:55
Solids, Total Suspended TSS @ 105 C	2.40	mg/L	10			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

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							Analytical Run: FIA203-HE_190228A
	Initial Calibration Blank, Instrument Blank						02/28/19 09:24
Nitrogen, Total	-0.00820	mg/L	0.10	0	0		
	Continuing Calibration Verification Standard						02/28/19 10:06
Nitrogen, Total	0.493	mg/L	0.10	99	90	110	
	Continuing Calibration Verification Standard						02/28/19 10:22
Nitrogen, Total	0.500	mg/L	0.10	100	90	110	
							Batch: 44812
	Method Blank			Run: FIA203-HE_190228A			02/28/19 09:29
Nitrogen, Total	ND	mg/L	0.03				
	Laboratory Control Sample			Run: FIA203-HE_190228A			02/28/19 09:31
Nitrogen, Total	7.36	mg/L	0.30	99	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190228A			02/28/19 10:11
Nitrogen, Total	1.25	mg/L	0.10	97	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190228A			02/28/19 10:12
Nitrogen, Total	1.25	mg/L	0.10	97	90	110	0.2 20
	Sample Matrix Spike			Run: FIA203-HE_190228A			02/28/19 10:26
Nitrogen, Total	0.958	mg/L	0.10	96	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190228A			02/28/19 10:27
Nitrogen, Total	0.950	mg/L	0.10	95	90	110	0.8 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Analytical Run: MANTECH 2\_190228A

	Initial Calibration Verification Standard							
Fluoride	0.8	mg/L	0.1	100	90	110	02/28/19 12:47	
							Batch: R142363	
	Method Blank						Run: MANTECH 2_190228A	02/28/19 12:49
Fluoride	0.05	mg/L	0.003					
	Sample Matrix Spike						Run: MANTECH 2_190228A	02/28/19 12:54
Fluoride	1.1	mg/L	0.1	99	85	115		
	Sample Duplicate						Run: MANTECH 2_190228A	02/28/19 12:59
Fluoride	0.1	mg/L	0.1			9.5	10	
	Sample Matrix Spike						Run: MANTECH 2_190228A	02/28/19 13:34
Fluoride	1.3	mg/L	0.1	105	85	115		

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Analytical Run: PHSC\_101-H\_190227A

	Initial Calibration Verification Standard						02/27/19 08:33
pH	7.0	s.u.	0.1	100	98	102	

	Continuing Calibration Verification Standard						02/27/19 14:40
pH	7.0	s.u.	0.1	99	98	102	

	Sample Duplicate			Run: PHSC_101-H_190227A	Batch: R142316	
pH	8.1	s.u.	0.1		0.2	3

	Sample Duplicate			Run: PHSC_101-H_190227A	02/27/19 14:26	
pH	7.9	s.u.	0.1		0.1	3



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Analytical Run: ICP2-HE\_190228A

							02/28/19 10:23
4 Initial Calibration Verification Standard							
Calcium	39.6	mg/L	1.0	99	95	105	
Magnesium	39.6	mg/L	1.0	99	95	105	
Potassium	40.6	mg/L	1.0	101	95	105	
Sodium	40.5	mg/L	1.0	101	95	105	
4 Initial Calibration Verification Standard							02/28/19 10:31
Calcium	41.1	mg/L	1.0	103	95	105	
Magnesium	41.0	mg/L	1.0	103	95	105	
Potassium	39.7	mg/L	1.0	99	95	105	
Sodium	39.1	mg/L	1.0	98	95	105	
4 Continuing Calibration Verification Standard							02/28/19 10:35
Calcium	25.2	mg/L	1.0	101	95	105	
Magnesium	24.8	mg/L	1.0	99	95	105	
Potassium	24.5	mg/L	1.0	98	95	105	
Sodium	24.3	mg/L	1.0	97	95	105	
4 Interference Check Sample A							02/28/19 10:48
Calcium	501	mg/L	1.0	100	80	120	
Magnesium	557	mg/L	1.0	111	80	120	
Potassium	-0.0280	mg/L	1.0		0	0	
Sodium	0.00769	mg/L	1.0		0	0	
4 Interference Check Sample AB							02/28/19 10:53
Calcium	510	mg/L	1.0	102	80	120	
Magnesium	566	mg/L	1.0	113	80	120	
Potassium	19.7	mg/L	1.0	98	80	120	
Sodium	19.3	mg/L	1.0	97	80	120	
4 Continuing Calibration Verification Standard							02/28/19 11:26
Calcium	25.8	mg/L	1.0	103	90	110	
Magnesium	25.8	mg/L	1.0	103	90	110	
Potassium	23.6	mg/L	1.0	94	90	110	
Sodium	23.2	mg/L	1.0	93	90	110	
4 Method Blank							Run: ICP2-HE_190228A 02/28/19 11:05
Calcium	ND	mg/L	0.07				
Magnesium	ND	mg/L	0.01				
Potassium	ND	mg/L	0.06				
Sodium	ND	mg/L	0.02				
4 Laboratory Fortified Blank							Run: ICP2-HE_190228A 02/28/19 11:10
Calcium	53.5	mg/L	1.0	107	85	115	
Magnesium	55.1	mg/L	1.0	110	85	115	
Potassium	51.2	mg/L	1.0	102	85	115	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

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								Batch: R142362
	4	Laboratory Fortified Blank			Run: ICP2-HE_190228A			02/28/19 11:10
Sodium		50.6 mg/L	1.0	101	85	115		
	4	Sample Matrix Spike			Run: ICP2-HE_190228A			02/28/19 11:47
Calcium		102 mg/L	1.0	102	70	130		
Magnesium		67.5 mg/L	1.0	108	70	130		
Potassium		52.6 mg/L	1.0	103	70	130		
Sodium		53.4 mg/L	1.0	102	70	130		
	4	Sample Matrix Spike Duplicate			Run: ICP2-HE_190228A			02/28/19 11:51
Calcium		103 mg/L	1.0	105	70	130	1.4	20
Magnesium		68.1 mg/L	1.0	109	70	130	1.0	20
Potassium		53.0 mg/L	1.0	104	70	130	0.6	20
Sodium		53.5 mg/L	1.0	103	70	130	0.4	20

								Analytical Run: ICP2-HE_190306B
		Initial Calibration Verification Standard						03/06/19 15:15
Strontium		0.779 mg/L	0.10	97	95	105		
		Continuing Calibration Verification Standard						03/06/19 15:19
Strontium		2.47 mg/L	0.10	99	95	105		
		Interference Check Sample A						03/06/19 15:32
Strontium		-0.0278 mg/L	0.10		0	0		
		Interference Check Sample AB						03/06/19 15:36
Strontium		0.973 mg/L	0.10	97	80	120		

								Batch: 44814
		Method Blank			Run: ICP2-HE_190306B			03/06/19 15:58
Strontium		ND mg/L	0.0002					
		Laboratory Control Sample			Run: ICP2-HE_190306B			03/06/19 16:02
Strontium		0.474 mg/L	0.010	95	85	115		
		Serial Dilution			Run: ICP2-HE_190306B			03/06/19 16:19
Strontium		ND mg/L	0.010		0	0		10
		Sample Matrix Spike			Run: ICP2-HE_190306B			03/06/19 16:27
Strontium		0.489 mg/L	0.010	98	70	130		
		Sample Matrix Spike Duplicate			Run: ICP2-HE_190306B			03/06/19 16:31
Strontium		0.519 mg/L	0.010	104	70	130	6.0	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

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Analytical Run: ICPMS205-H\_190227B

5 Initial Calibration Verification Standard 02/27/19 13:57

Aluminum	0.304	mg/L	0.10	101	90	110
Calcium	2.92	mg/L	0.50	97	90	110
Magnesium	3.16	mg/L	0.50	105	90	110
Potassium	2.96	mg/L	0.50	99	90	110
Sodium	3.09	mg/L	0.50	103	90	110

5 Interference Check Sample A 02/27/19 13:59

Aluminum	42.7	mg/L	0.10	107	70	130
Calcium	130	mg/L	0.50	109	70	130
Magnesium	43.8	mg/L	0.50	109	70	130
Potassium	44.0	mg/L	0.50	110	70	130
Sodium	109	mg/L	0.50	109	70	130

5 Interference Check Sample AB 02/27/19 14:01

Aluminum	41.5	mg/L	0.10	104	70	130
Calcium	125	mg/L	0.50	104	70	130
Magnesium	42.7	mg/L	0.50	107	70	130
Potassium	42.0	mg/L	0.50	105	70	130
Sodium	107	mg/L	0.50	107	70	130

Batch: R142335

5 Method Blank Run: ICPMS205-H\_190227B 02/27/19 14:13

Aluminum	ND	mg/L	0.003			
Calcium	ND	mg/L	0.1			
Magnesium	ND	mg/L	0.004			
Potassium	ND	mg/L	0.010			
Sodium	ND	mg/L	0.01			

5 Laboratory Fortified Blank Run: ICPMS205-H\_190227B 02/27/19 14:15

Aluminum	0.0502	mg/L	0.10	100	85	115
Calcium	0.951	mg/L	0.50	95	85	115
Magnesium	1.02	mg/L	0.50	102	85	115
Potassium	0.967	mg/L	0.50	97	85	115
Sodium	1.01	mg/L	0.50	101	85	115

5 Sample Matrix Spike Run: ICPMS205-H\_190227B 02/27/19 14:46

Aluminum	0.0559	mg/L	0.030	98	70	130	
Calcium	113	mg/L	1.0		70	130	AE
Magnesium	27.9	mg/L	1.0		70	130	A
Potassium	24.6	mg/L	1.0		70	130	A
Sodium	232	mg/L	1.0		70	130	AE

5 Sample Matrix Spike Duplicate Run: ICPMS205-H\_190227B 02/27/19 14:48

Aluminum	0.0576	mg/L	0.030	101	70	130	3.0	20	
Calcium	114	mg/L	1.0		70	130	1.0	20	AE
Magnesium	28.8	mg/L	1.0		70	130	3.2	20	A

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Batch: R142335

5 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190227B

02/27/19 14:48

Potassium	25.1	mg/L	1.0	70	130	2.1	20	A
Sodium	241	mg/L	1.0	70	130	3.8	20	AE

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Analytical Run: ICPMS205-H\_190301B

19 Initial Calibration Verification Standard

03/01/19 13:19

Antimony	0.0580	mg/L	0.050	97	90	110
Arsenic	0.0610	mg/L	0.0050	102	90	110
Barium	0.0598	mg/L	0.10	100	90	110
Beryllium	0.0298	mg/L	0.0010	99	90	110
Cadmium	0.0304	mg/L	0.0010	102	90	110
Chromium	0.0613	mg/L	0.010	102	90	110
Cobalt	0.0619	mg/L	0.010	103	90	110
Copper	0.0618	mg/L	0.010	103	90	110
Iron	0.321	mg/L	0.020	107	90	110
Lead	0.0603	mg/L	0.010	100	90	110
Manganese	0.309	mg/L	0.010	103	90	110
Molybdenum	0.0599	mg/L	0.0050	100	90	110
Nickel	0.0616	mg/L	0.010	103	90	110
Selenium	0.0604	mg/L	0.0050	101	90	110
Silver	0.0300	mg/L	0.0050	100	90	110
Strontium	0.0608	mg/L	0.10	101	90	110
Thallium	0.0598	mg/L	0.10	100	90	110
Uranium	0.0584	mg/L	0.00030	97	90	110
Zinc	0.0620	mg/L	0.010	103	90	110

19 Interference Check Sample A

03/01/19 13:22

Antimony	0.000352	mg/L	0.050			
Arsenic	4.49E-05	mg/L	0.0050			
Barium	0.000195	mg/L	0.10			
Beryllium	7.34E-05	mg/L	0.0010			
Cadmium	0.000194	mg/L	0.0010			
Chromium	0.000214	mg/L	0.010			
Cobalt	0.000311	mg/L	0.010			
Copper	0.000606	mg/L	0.010			
Iron	106	mg/L	0.020	106	70	130
Lead	8.87E-05	mg/L	0.010			
Manganese	0.000286	mg/L	0.010			
Molybdenum	0.823	mg/L	0.0050	103	70	130
Nickel	0.000277	mg/L	0.010			
Selenium	0.000128	mg/L	0.0050			
Silver	2.82E-05	mg/L	0.0050			
Strontium	0.00105	mg/L	0.10			
Thallium	3.35E-05	mg/L	0.10			
Uranium	3.33E-05	mg/L	0.00030			
Zinc	0.000403	mg/L	0.010			

19 Interference Check Sample AB

03/01/19 13:24

Antimony	0.000204	mg/L	0.050		0	0
Arsenic	0.0105	mg/L	0.0050	105	70	130

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Analytical Run: ICPMS205-H\_190301B

19 Interference Check Sample AB

03/01/19 13:24

Barium	0.000195	mg/L	0.10		0	0
Beryllium	3.38E-05	mg/L	0.0010		0	0
Cadmium	0.0106	mg/L	0.0010	106	70	130
Chromium	0.0208	mg/L	0.010	104	70	130
Cobalt	0.0215	mg/L	0.010	107	70	130
Copper	0.0207	mg/L	0.010	103	70	130
Iron	104	mg/L	0.020	104	70	130
Lead	5.24E-05	mg/L	0.010		0	0
Manganese	0.0211	mg/L	0.010	106	70	130
Molybdenum	0.823	mg/L	0.0050	103	70	130
Nickel	0.0205	mg/L	0.010	103	70	130
Selenium	0.0103	mg/L	0.0050	103	70	130
Silver	0.00526	mg/L	0.0050	105	70	130
Strontium	0.00101	mg/L	0.10		0	0
Thallium	1.88E-05	mg/L	0.10		0	0
Uranium	1.51E-05	mg/L	0.00030		0	0
Zinc	0.0105	mg/L	0.010	105	70	130

19 Initial Calibration Verification Standard

03/01/19 13:54

Antimony	0.0585	mg/L	0.050	98	90	110
Arsenic	0.0615	mg/L	0.0050	103	90	110
Barium	0.0608	mg/L	0.10	101	90	110
Beryllium	0.0300	mg/L	0.0010	100	90	110
Cadmium	0.0309	mg/L	0.0010	103	90	110
Chromium	0.0613	mg/L	0.010	102	90	110
Cobalt	0.0618	mg/L	0.010	103	90	110
Copper	0.0616	mg/L	0.010	103	90	110
Iron	0.320	mg/L	0.020	107	90	110
Lead	0.0610	mg/L	0.010	102	90	110
Manganese	0.308	mg/L	0.010	103	90	110
Molybdenum	0.0600	mg/L	0.0050	100	90	110
Nickel	0.0619	mg/L	0.010	103	90	110
Selenium	0.0607	mg/L	0.0050	101	90	110
Silver	0.0302	mg/L	0.0050	101	90	110
Strontium	0.0608	mg/L	0.10	101	90	110
Thallium	0.0605	mg/L	0.10	101	90	110
Uranium	0.0590	mg/L	0.00030	98	90	110
Zinc	0.0637	mg/L	0.010	106	90	110

19 Interference Check Sample A

03/01/19 13:56

Antimony	0.000349	mg/L	0.050			
Arsenic	0.000139	mg/L	0.0050			
Barium	0.000202	mg/L	0.10			
Beryllium	-1.95E-05	mg/L	0.0010			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Analytical Run: ICPMS205-H\_190301B

19 Interference Check Sample A

03/01/19 13:56

Cadmium	0.000187	mg/L	0.0010			
Chromium	0.000240	mg/L	0.010			
Cobalt	0.000298	mg/L	0.010			
Copper	0.000701	mg/L	0.010			
Iron	104	mg/L	0.020	104	70	130
Lead	0.000126	mg/L	0.010			
Manganese	0.000227	mg/L	0.010			
Molybdenum	0.822	mg/L	0.0050	103	70	130
Nickel	0.000268	mg/L	0.010			
Selenium	0.000230	mg/L	0.0050			
Silver	3.05E-05	mg/L	0.0050			
Strontium	0.00102	mg/L	0.10			
Thallium	3.77E-05	mg/L	0.10			
Uranium	2.65E-05	mg/L	0.00030			
Zinc	0.000375	mg/L	0.010			

19 Interference Check Sample AB

03/01/19 13:58

Antimony	0.000193	mg/L	0.050		0	0
Arsenic	0.0104	mg/L	0.0050	104	70	130
Barium	0.000190	mg/L	0.10		0	0
Beryllium	4.81E-05	mg/L	0.0010		0	0
Cadmium	0.0105	mg/L	0.0010	105	70	130
Chromium	0.0206	mg/L	0.010	103	70	130
Cobalt	0.0208	mg/L	0.010	104	70	130
Copper	0.0206	mg/L	0.010	103	70	130
Iron	103	mg/L	0.020	103	70	130
Lead	5.93E-05	mg/L	0.010		0	0
Manganese	0.0206	mg/L	0.010	103	70	130
Molybdenum	0.811	mg/L	0.0050	101	70	130
Nickel	0.0211	mg/L	0.010	106	70	130
Selenium	0.0103	mg/L	0.0050	103	70	130
Silver	0.00523	mg/L	0.0050	105	70	130
Strontium	0.00104	mg/L	0.10		0	0
Thallium	2.52E-05	mg/L	0.10		0	0
Uranium	5.96E-06	mg/L	0.00030		0	0
Zinc	0.0100	mg/L	0.010	100	70	130

Batch: 44814

19 Method Blank

Run: ICPMS205-H\_190301B

03/01/19 14:42

Antimony	ND	mg/L	0.0001			
Arsenic	ND	mg/L	4E-05			
Barium	ND	mg/L	9E-05			
Beryllium	9E-05	mg/L	6E-05			
Cadmium	ND	mg/L	3E-05			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

Batch: 44814

19 Method Blank

Run: ICPMS205-H\_190301B

03/01/19 14:42

Chromium	ND	mg/L	0.0001
Cobalt	ND	mg/L	6E-05
Copper	ND	mg/L	0.0002
Iron	ND	mg/L	0.004
Lead	ND	mg/L	4E-05
Manganese	ND	mg/L	0.0003
Molybdenum	ND	mg/L	2E-05
Nickel	ND	mg/L	0.0001
Selenium	ND	mg/L	5E-05
Silver	ND	mg/L	9E-06
Strontium	ND	mg/L	0.0003
Thallium	ND	mg/L	4E-05
Uranium	ND	mg/L	9E-06
Zinc	ND	mg/L	0.001

19 Laboratory Control Sample

Run: ICPMS205-H\_190301B

03/01/19 14:56

Antimony	0.487	mg/L	0.0010	97	85	115
Arsenic	0.477	mg/L	0.0010	95	85	115
Barium	0.478	mg/L	0.050	96	85	115
Beryllium	0.226	mg/L	0.0010	90	85	115
Cadmium	0.236	mg/L	0.0010	94	85	115
Chromium	0.472	mg/L	0.0050	94	85	115
Cobalt	0.470	mg/L	0.0050	94	85	115
Copper	0.468	mg/L	0.0050	94	85	115
Iron	2.38	mg/L	0.020	95	85	115
Lead	0.482	mg/L	0.0010	96	85	115
Manganese	2.34	mg/L	0.0010	94	85	115
Molybdenum	0.472	mg/L	0.0010	94	85	115
Nickel	0.478	mg/L	0.0050	96	85	115
Selenium	0.464	mg/L	0.0010	93	85	115
Silver	0.0462	mg/L	0.0010	93	85	115
Strontium	0.482	mg/L	0.010	96	85	115
Thallium	0.475	mg/L	0.00050	95	85	115
Uranium	0.472	mg/L	0.00030	94	85	115
Zinc	0.476	mg/L	0.010	95	85	115

19 Sample Matrix Spike

Run: ICPMS205-H\_190301B

03/01/19 14:59

Antimony	0.491	mg/L	0.0010	98	70	130
Arsenic	0.484	mg/L	0.0010	97	70	130
Barium	0.489	mg/L	0.050	98	70	130
Beryllium	0.234	mg/L	0.0010	94	70	130
Cadmium	0.242	mg/L	0.0010	97	70	130
Chromium	0.478	mg/L	0.0050	96	70	130
Cobalt	0.476	mg/L	0.0050	95	70	130

RL - Analyte reporting limit.

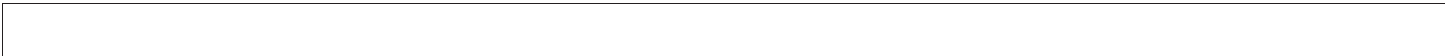
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363



Batch: 44814

19 Sample Matrix Spike

Run: ICPMS205-H\_190301B

03/01/19 14:59

Copper	0.477	mg/L	0.0050	95	70	130
Iron	2.42	mg/L	0.020	97	70	130
Lead	0.492	mg/L	0.0010	99	70	130
Manganese	2.38	mg/L	0.0010	95	70	130
Molybdenum	0.477	mg/L	0.0010	95	70	130
Nickel	0.485	mg/L	0.0050	97	70	130
Selenium	0.481	mg/L	0.0010	96	70	130
Silver	0.0479	mg/L	0.0010	96	70	130
Strontium	0.489	mg/L	0.010	98	70	130
Thallium	0.480	mg/L	0.00050	96	70	130
Uranium	0.475	mg/L	0.00030	95	70	130
Zinc	0.484	mg/L	0.010	97	70	130

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190301B

03/01/19 15:01

Antimony	0.501	mg/L	0.0010	100	70	130	2.1	20
Arsenic	0.502	mg/L	0.0010	100	70	130	3.7	20
Barium	0.518	mg/L	0.050	104	70	130	5.9	20
Beryllium	0.250	mg/L	0.0010	100	70	130	6.9	20
Cadmium	0.255	mg/L	0.0010	102	70	130	5.1	20
Chromium	0.497	mg/L	0.0050	99	70	130	3.9	20
Cobalt	0.496	mg/L	0.0050	99	70	130	4.1	20
Copper	0.495	mg/L	0.0050	99	70	130	3.7	20
Iron	2.51	mg/L	0.020	100	70	130	3.8	20
Lead	0.518	mg/L	0.0010	104	70	130	5.1	20
Manganese	2.47	mg/L	0.0010	99	70	130	4.0	20
Molybdenum	0.488	mg/L	0.0010	98	70	130	2.3	20
Nickel	0.506	mg/L	0.0050	101	70	130	4.3	20
Selenium	0.504	mg/L	0.0010	101	70	130	4.6	20
Silver	0.0500	mg/L	0.0010	100	70	130	4.3	20
Strontium	0.506	mg/L	0.010	101	70	130	3.4	20
Thallium	0.511	mg/L	0.00050	102	70	130	6.2	20
Uranium	0.479	mg/L	0.00030	96	70	130	0.9	20
Zinc	0.505	mg/L	0.010	101	70	130	4.2	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

							Analytical Run: HGCV202-H_190228A
Initial Calibration Verification Standard							02/28/19 15:35
Mercury	0.100	ug/L	0.0050	100	90	110	
							Batch: 44818
Method Blank							Run: HGCV202-H_190228A
Mercury	ND	ug/L	0.0009				02/28/19 15:47
Laboratory Control Sample							Run: HGCV202-H_190228A
Mercury	0.0530	ug/L	0.0050	106	90	110	02/28/19 15:50
Sample Matrix Spike							Run: HGCV202-H_190228A
Mercury	0.106	ug/L	0.0050	103	70	130	02/28/19 15:59
Sample Matrix Spike Duplicate							Run: HGCV202-H_190228A
Mercury	0.105	ug/L	0.0050	102	70	130	0.7 20
Sample Matrix Spike							Run: HGCV202-H_190228A
Mercury	0.108	ug/L	0.0050	104	70	130	02/28/19 16:32
Sample Matrix Spike Duplicate							Run: HGCV202-H_190228A
Mercury	0.108	ug/L	0.0050	104	70	130	0.1 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

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Analytical Run: IC METROHM\_190228A

								02/28/19 09:52
	2	Initial Calibration Verification Standard						
Chloride		99.7	mg/L	1.0	100	90	110	
Sulfate		383	mg/L	1.0	96	90	110	
								02/28/19 10:06
	2	Initial Calibration Verification Standard						
Chloride		98.5	mg/L	1.0	98	90	110	
Sulfate		390	mg/L	1.0	97	90	110	
								02/28/19 10:20
	2	Initial Calibration Verification Standard						
Chloride		96.2	mg/L	1.0	96	90	110	
Sulfate		383	mg/L	1.0	96	90	110	
								02/28/19 11:02
	2	Continuing Calibration Verification Standard						
Chloride		49.3	mg/L	1.0	99	90	110	
Sulfate		195	mg/L	1.0	98	90	110	
								Batch: R142371
	2	Method Blank						
Chloride		0.02	mg/L	0.009				
Sulfate		ND	mg/L	0.01				
								02/28/19 09:38
	2	Laboratory Fortified Blank						
Chloride		24.1	mg/L	1.0	96	90	110	
Sulfate		99.2	mg/L	1.0	99	90	110	
								02/28/19 10:34
	2	Sample Matrix Spike						
Chloride		25.1	mg/L	1.0	93	90	110	
Sulfate		101	mg/L	1.0	90	90	110	
								02/28/19 14:05
	2	Sample Matrix Spike Duplicate						
Chloride		25.3	mg/L	1.0	94	90	110	0.9
Sulfate		103	mg/L	1.0	92	90	110	1.8
								02/28/19 14:19

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

							Analytical Run: FIA203-HE_190228B
	Initial Calibration Verification Standard						02/28/19 11:59
Nitrogen, Nitrate+Nitrite as N	1.05	mg/L	0.010	105	90	110	
	Continuing Calibration Verification Standard						02/28/19 12:17
Nitrogen, Nitrate+Nitrite as N	0.479	mg/L	0.010	96	90	110	
							Batch: R142355
	Method Blank				Run: FIA203-HE_190228B		02/28/19 12:00
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				
	Laboratory Fortified Blank				Run: FIA203-HE_190228B		02/28/19 12:02
Nitrogen, Nitrate+Nitrite as N	0.910	mg/L	0.011	91	90	110	
	Sample Matrix Spike				Run: FIA203-HE_190228B		02/28/19 12:09
Nitrogen, Nitrate+Nitrite as N	1.51	mg/L	0.011	97	90	110	
	Sample Matrix Spike Duplicate				Run: FIA203-HE_190228B		02/28/19 12:10
Nitrogen, Nitrate+Nitrite as N	1.50	mg/L	0.011	96	90	110	0.7 10
	Sample Matrix Spike				Run: FIA203-HE_190228B		02/28/19 12:21
Nitrogen, Nitrate+Nitrite as N	0.848	mg/L	0.010	85	90	110	S
	Sample Matrix Spike Duplicate				Run: FIA203-HE_190228B		02/28/19 12:22
Nitrogen, Nitrate+Nitrite as N	0.853	mg/L	0.010	85	90	110	0.6 10 S

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/03/19  
03/07/19  
H19020363

							Analytical Run: FIA202-HE_190228B
Initial Calibration Verification Standard							02/28/19 14:56
Phosphorus, Total as P	0.244	mg/L	0.010	98	90	110	
Initial Calibration Blank, Instrument Blank							02/28/19 14:57
Phosphorus, Total as P	-1.12E-05	mg/L	0.010		0	0	
Continuing Calibration Verification Standard							02/28/19 15:20
Phosphorus, Total as P	0.0960	mg/L	0.010	96	90	110	
							Batch: 44822
Laboratory Control Sample							Run: FIA202-HE_190228B 02/28/19 15:00
Phosphorus, Total as P	0.420	mg/L	0.010	104	90	110	
Method Blank							Run: FIA202-HE_190228B 02/28/19 15:04
Phosphorus, Total as P	ND	mg/L	0.002				
Sample Matrix Spike							Run: FIA202-HE_190228B 02/28/19 15:07
Phosphorus, Total as P	0.224	mg/L	0.010	104	90	110	
Sample Matrix Spike Duplicate							Run: FIA202-HE_190228B 02/28/19 15:08
Phosphorus, Total as P	0.221	mg/L	0.010	103	90	110	1.5 20
Sample Matrix Spike							Run: FIA202-HE_190228B 02/28/19 15:23
Phosphorus, Total as P	0.218	mg/L	0.010	103	90	110	
Sample Matrix Spike Duplicate							Run: FIA202-HE_190228B 02/28/19 15:24
Phosphorus, Total as P	0.218	mg/L	0.010	103	90	110	0.0 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Tintina Resources Inc

# H19020363

Login completed by: Jessica C. Smith

Date Received: 2/27/2019

Reviewed by: BL2000\rtooke

Received by: RAT

Reviewed Date: 3/1/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	0.2°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

None



**TABLE 6. PARAMETERS, METHODS, AND DETECTION LIMITS FOR SURFACE WATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	4
TSS	SM 2540C	4
<b>Common Ion</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.003
Total Persulfate Nitrogen	A 4500-N-C	0.04
Total Phosphorus	E365.1	0.003
<b>Trace Constituents (SW - Total Recoverable except Aluminum [Diss]<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameter</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



April 03, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19020364 Quote ID: H1216 - Surface and Groundwater Sampling

Project Name: 18049 Black Butte Copper (GW)

Energy Laboratories Inc Helena MT received the following 6 samples for Tintina Resources Inc on 2/27/2019 for analysis.

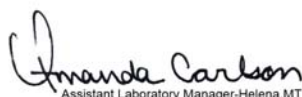
H19020364-001	BBC-1902-109	02/22/19 13:40	02/27/19	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Mercury, Dissolved Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite pH Mercury Digestion by E245.1 Solids, Total Dissolved Solids, Total Suspended
H19020364-002	BBC-1902-110	02/22/19 14:20	02/27/19	Groundwater	Same As Above
H19020364-003	BBC-1902-111	02/22/19 14:50	02/27/19	Groundwater	Same As Above
H19020364-004	BBC-1902-112	02/22/19 15:05	02/27/19	Groundwater	Same As Above
H19020364-005	BBC-1902-119	02/22/19 16:25	02/27/19	Groundwater	Same As Above
H19020364-006	BBC-1902-120	02/22/19 16:52	02/27/19	Groundwater	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

  
Assistant Laboratory Manager-Helena, MT

Digitally signed by  
Amanda B. Carlson  
Date: 2019.04.03 08:58:58 -06:00





Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19020364

04/03/19

03/11/19

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Rick Lane called requested pH on all samples. The revised report includes pH results. wj 4/2/19



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19020364-001  
BBC-1902-109

04/03/19  
03/11/19  
02/22/19 13:40  
02/27/19  
Groundwater

pH	7.3 s.u.	H	0.1	A4500-H B	02/27/19 14:17 / SRW
pH Measurement Temp	16.2 °C			A4500-H B	02/27/19 14:17 / SRW
Solids, Total Suspended TSS @ 105 C	10 mg/L		10	A2540 D	02/27/19 12:35 / cmm
Solids, Total Dissolved TDS @ 180 C	108 mg/L		10	A2540 C	02/27/19 12:43 / cmm
Alkalinity, Total as CaCO3	93 mg/L		4	A2320 B	02/27/19 16:03 / SRW
Chloride	ND mg/L		1	E300.0	02/28/19 15:44 / kmd
Sulfate	7 mg/L		1	E300.0	02/28/19 15:44 / kmd
Fluoride	0.2 mg/L		0.1	4 A4500-F C	02/28/19 13:17 / kmd
Hardness as CaCO3	94 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.22 mg/L		0.01	E353.2	02/28/19 12:23 / SRW
Aluminum	0.022 mg/L		0.009	E200.8	02/27/19 14:58 / sld
Antimony	ND mg/L		0.0005	E200.8	02/27/19 14:58 / sld
Arsenic	0.005 mg/L		0.001	E200.8	02/27/19 14:58 / sld
Barium	0.276 mg/L		0.003	E200.8	02/27/19 14:58 / sld
Beryllium	ND mg/L		0.0008	E200.8	02/27/19 14:58 / sld
Cadmium	ND mg/L		0.00003	E200.8	02/27/19 14:58 / sld
Calcium	23 mg/L		1	E200.7	02/28/19 12:12 / sld
Chromium	ND mg/L		0.01	E200.8	02/27/19 14:58 / sld
Cobalt	ND mg/L		0.01	E200.8	02/27/19 14:58 / sld
Copper	ND mg/L		0.002	E200.8	02/27/19 14:58 / sld
Iron	ND mg/L		0.02	E200.8	02/27/19 14:58 / sld
Lead	ND mg/L		0.0003	E200.8	02/27/19 14:58 / sld
Magnesium	9 mg/L		1	E200.7	02/28/19 12:12 / sld
Manganese	ND mg/L		0.005	E200.8	02/27/19 14:58 / sld
Mercury	ND ug/L		0.005	E245.1	03/07/19 11:16 / ber
Molybdenum	ND mg/L		0.002	E200.8	02/27/19 14:58 / sld
Nickel	ND mg/L		0.001	E200.8	02/27/19 14:58 / sld
Potassium	1 mg/L		1	E200.7	02/28/19 12:12 / sld
Selenium	ND mg/L		0.0002	E200.8	02/27/19 14:58 / sld
Silver	ND mg/L		0.0002	E200.8	02/27/19 14:58 / sld
Sodium	3 mg/L		1	E200.7	02/28/19 12:12 / sld
Strontium	0.100 mg/L		0.0002	E200.8	02/27/19 14:58 / sld
Thallium	ND mg/L		0.0002	E200.8	02/27/19 14:58 / sld
Uranium	0.0003 mg/L		0.0002	E200.8	02/27/19 14:58 / sld
Zinc	0.002 mg/L		0.002	E200.8	02/27/19 14:58 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19020364-002  
BBC-1902-110

04/03/19  
03/11/19  
02/22/19 14:20  
02/27/19  
Groundwater

pH	7.4 s.u.	H	0.1	A4500-H B	02/27/19 14:19 / SRW
pH Measurement Temp	16.1 °C			A4500-H B	02/27/19 14:19 / SRW
Solids, Total Suspended TSS @ 105 C	ND mg/L		10	A2540 D	02/27/19 12:36 / cmm
Solids, Total Dissolved TDS @ 180 C	176 mg/L		10	A2540 C	02/27/19 12:43 / cmm
Alkalinity, Total as CaCO3	170 mg/L		4	A2320 B	02/27/19 16:10 / SRW
Chloride	2 mg/L		1	E300.0	02/28/19 13:51 / kmd
Sulfate	11 mg/L		1	E300.0	02/28/19 13:51 / kmd
Fluoride	0.3 mg/L		0.1	4 A4500-F C	02/28/19 13:19 / kmd
Hardness as CaCO3	166 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.31 mg/L		0.01	E353.2	02/28/19 12:24 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 15:00 / sld
Antimony	ND mg/L		0.0005	E200.8	02/27/19 15:00 / sld
Arsenic	0.004 mg/L		0.001	E200.8	02/27/19 15:00 / sld
Barium	0.116 mg/L		0.003	E200.8	02/27/19 15:00 / sld
Beryllium	ND mg/L		0.0008	E200.8	02/27/19 15:00 / sld
Cadmium	ND mg/L		0.00003	E200.8	02/27/19 15:00 / sld
Calcium	42 mg/L		1	E200.7	02/28/19 12:25 / sld
Chromium	ND mg/L		0.01	E200.8	02/27/19 15:00 / sld
Cobalt	ND mg/L		0.01	E200.8	02/27/19 15:00 / sld
Copper	ND mg/L		0.002	E200.8	02/27/19 15:00 / sld
Iron	ND mg/L		0.02	E200.8	02/27/19 15:00 / sld
Lead	ND mg/L		0.0003	E200.8	02/27/19 15:00 / sld
Magnesium	15 mg/L		1	E200.7	02/28/19 12:25 / sld
Manganese	ND mg/L		0.005	E200.8	02/27/19 15:00 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:22 / ber
Molybdenum	ND mg/L		0.002	E200.8	02/27/19 15:00 / sld
Nickel	ND mg/L		0.001	E200.8	02/27/19 15:00 / sld
Potassium	3 mg/L		1	E200.7	02/28/19 12:25 / sld
Selenium	0.0004 mg/L		0.0002	E200.8	02/27/19 15:00 / sld
Silver	ND mg/L		0.0002	E200.8	02/27/19 15:00 / sld
Sodium	5 mg/L		1	E200.7	02/28/19 12:25 / sld
Strontium	0.168 mg/L		0.0002	E200.8	02/27/19 15:00 / sld
Thallium	0.0010 mg/L		0.0002	E200.8	02/27/19 15:00 / sld
Uranium	0.0010 mg/L		0.0002	E200.8	02/27/19 15:00 / sld
Zinc	ND mg/L		0.002	E200.8	02/27/19 15:00 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19020364-003  
BBC-1902-111

04/03/19  
03/11/19  
02/22/19 14:50  
02/27/19  
Groundwater

pH	7.8 s.u.	H	0.1	A4500-H B	02/27/19 14:21 / SRW
pH Measurement Temp	16.0 °C			A4500-H B	02/27/19 14:21 / SRW
Solids, Total Suspended TSS @ 105 C	11 mg/L		10	A2540 D	02/27/19 12:36 / cmm
Solids, Total Dissolved TDS @ 180 C	234 mg/L		10	A2540 C	02/27/19 12:43 / cmm
Alkalinity, Total as CaCO3	200 mg/L		4	A2320 B	02/27/19 16:18 / SRW
Chloride	ND mg/L		1	E300.0	02/28/19 15:58 / kmd
Sulfate	38 mg/L		1	E300.0	02/28/19 15:58 / kmd
Fluoride	0.2 mg/L		0.1	4 A4500-F C	02/28/19 13:21 / kmd
Hardness as CaCO3	246 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.25 mg/L		0.01	E353.2	02/28/19 12:25 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 15:02 / sld
Antimony	ND mg/L		0.0005	E200.8	02/27/19 15:02 / sld
Arsenic	ND mg/L		0.001	E200.8	02/27/19 15:02 / sld
Barium	0.114 mg/L		0.003	E200.8	02/27/19 15:02 / sld
Beryllium	ND mg/L		0.0008	E200.8	02/27/19 15:02 / sld
Cadmium	ND mg/L		0.00003	E200.8	02/27/19 15:02 / sld
Calcium	53 mg/L		1	E200.7	02/28/19 12:29 / sld
Chromium	ND mg/L		0.01	E200.8	02/27/19 15:02 / sld
Cobalt	ND mg/L		0.01	E200.8	02/27/19 15:02 / sld
Copper	ND mg/L		0.002	E200.8	02/27/19 15:02 / sld
Iron	ND mg/L		0.02	E200.8	02/27/19 15:02 / sld
Lead	ND mg/L		0.0003	E200.8	02/27/19 15:02 / sld
Magnesium	28 mg/L		1	E200.7	02/28/19 12:29 / sld
Manganese	ND mg/L		0.005	E200.8	02/27/19 15:02 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:38 / ber
Molybdenum	ND mg/L		0.002	E200.8	02/27/19 15:02 / sld
Nickel	ND mg/L		0.001	E200.8	02/27/19 15:02 / sld
Potassium	2 mg/L		1	E200.7	02/28/19 12:29 / sld
Selenium	0.0004 mg/L		0.0002	E200.8	02/27/19 15:02 / sld
Silver	ND mg/L		0.0002	E200.8	02/27/19 15:02 / sld
Sodium	2 mg/L		1	E200.7	02/28/19 12:29 / sld
Strontium	0.0753 mg/L		0.0002	E200.8	02/27/19 15:02 / sld
Thallium	0.0003 mg/L		0.0002	E200.8	02/27/19 15:02 / sld
Uranium	0.0005 mg/L		0.0002	E200.8	02/27/19 15:02 / sld
Zinc	ND mg/L		0.002	E200.8	02/27/19 15:02 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19020364-004  
BBC-1902-112

04/03/19  
03/11/19  
02/22/19 15:05  
02/27/19  
Groundwater

pH	8.0 s.u.	H	0.1	A4500-H B	02/27/19 14:24 / SRW
pH Measurement Temp	16.2 °C			A4500-H B	02/27/19 14:24 / SRW
Solids, Total Suspended TSS @ 105 C	20 mg/L		10	A2540 D	02/27/19 12:37 / cmm
Solids, Total Dissolved TDS @ 180 C	237 mg/L		10	A2540 C	02/27/19 12:43 / cmm
Alkalinity, Total as CaCO3	200 mg/L		4	A2320 B	02/27/19 16:26 / SRW
Chloride	ND mg/L		1	E300.0	02/28/19 16:12 / kmd
Sulfate	38 mg/L		1	E300.0	02/28/19 16:12 / kmd
Fluoride	0.2 mg/L		0.1	4 A4500-F C	02/28/19 13:31 / kmd
Hardness as CaCO3	245 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.24 mg/L		0.01	E353.2	02/28/19 12:27 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 15:05 / sld
Antimony	ND mg/L		0.0005	E200.8	02/27/19 15:05 / sld
Arsenic	ND mg/L		0.001	E200.8	02/27/19 15:05 / sld
Barium	0.114 mg/L		0.003	E200.8	02/27/19 15:05 / sld
Beryllium	ND mg/L		0.0008	E200.8	02/27/19 15:05 / sld
Cadmium	ND mg/L		0.00003	E200.8	02/27/19 15:05 / sld
Calcium	53 mg/L		1	E200.7	02/28/19 12:33 / sld
Chromium	ND mg/L		0.01	E200.8	02/27/19 15:05 / sld
Cobalt	ND mg/L		0.01	E200.8	02/27/19 15:05 / sld
Copper	ND mg/L		0.002	E200.8	02/27/19 15:05 / sld
Iron	ND mg/L		0.02	E200.8	02/27/19 15:05 / sld
Lead	ND mg/L		0.0003	E200.8	02/27/19 15:05 / sld
Magnesium	27 mg/L		1	E200.7	02/28/19 12:33 / sld
Manganese	ND mg/L		0.005	E200.8	02/27/19 15:05 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:41 / ber
Molybdenum	ND mg/L		0.002	E200.8	02/27/19 15:05 / sld
Nickel	ND mg/L		0.001	E200.8	02/27/19 15:05 / sld
Potassium	2 mg/L		1	E200.7	02/28/19 12:33 / sld
Selenium	0.0004 mg/L		0.0002	E200.8	02/27/19 15:05 / sld
Silver	ND mg/L		0.0002	E200.8	02/27/19 15:05 / sld
Sodium	2 mg/L		1	E200.7	02/28/19 12:33 / sld
Strontium	0.0749 mg/L		0.0002	E200.8	02/27/19 15:05 / sld
Thallium	0.0003 mg/L		0.0002	E200.8	02/27/19 15:05 / sld
Uranium	0.0005 mg/L		0.0002	E200.8	02/27/19 15:05 / sld
Zinc	ND mg/L		0.002	E200.8	02/27/19 15:05 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19020364-005  
BBC-1902-119

04/03/19  
03/11/19  
02/22/19 16:25  
02/27/19  
Groundwater

pH	7.6 s.u.	H	0.1	A4500-H B	02/27/19 14:28 / SRW
pH Measurement Temp	16.4 °C			A4500-H B	02/27/19 14:28 / SRW
Solids, Total Suspended TSS @ 105 C	78 mg/L		10	A2540 D	02/27/19 12:37 / cmm
Solids, Total Dissolved TDS @ 180 C	234 mg/L		10	A2540 C	02/27/19 12:44 / cmm
Alkalinity, Total as CaCO3	210 mg/L		4	A2320 B	02/27/19 16:39 / SRW
Chloride	7 mg/L		1	E300.0	02/28/19 16:26 / kmd
Sulfate	25 mg/L		1	E300.0	02/28/19 16:26 / kmd
Fluoride	0.2 mg/L		0.1	4 A4500-F C	02/28/19 13:36 / kmd
Hardness as CaCO3	238 mg/L		1	A2340 B	02/28/19 15:29 / sld
Nitrogen, Nitrate+Nitrite as N	0.29 mg/L		0.01	E353.2	02/28/19 12:28 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 15:07 / sld
Antimony	ND mg/L		0.0005	E200.8	02/27/19 15:07 / sld
Arsenic	ND mg/L		0.001	E200.8	02/27/19 15:07 / sld
Barium	0.175 mg/L		0.003	E200.8	02/27/19 15:07 / sld
Beryllium	ND mg/L		0.0008	E200.8	02/27/19 15:07 / sld
Cadmium	ND mg/L		0.00003	E200.8	02/27/19 15:07 / sld
Calcium	55 mg/L		1	E200.7	02/28/19 12:37 / sld
Chromium	ND mg/L		0.01	E200.8	02/27/19 15:07 / sld
Cobalt	ND mg/L		0.01	E200.8	02/27/19 15:07 / sld
Copper	ND mg/L		0.002	E200.8	02/27/19 15:07 / sld
Iron	ND mg/L		0.02	E200.8	02/27/19 15:07 / sld
Lead	ND mg/L		0.0003	E200.8	02/27/19 15:07 / sld
Magnesium	24 mg/L		1	E200.7	02/28/19 12:37 / sld
Manganese	ND mg/L		0.005	E200.8	02/27/19 15:07 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:45 / ber
Molybdenum	ND mg/L		0.002	E200.8	02/27/19 15:07 / sld
Nickel	ND mg/L		0.001	E200.8	02/27/19 15:07 / sld
Potassium	1 mg/L		1	E200.7	02/28/19 12:37 / sld
Selenium	0.0003 mg/L		0.0002	E200.8	02/27/19 15:07 / sld
Silver	ND mg/L		0.0002	E200.8	02/27/19 15:07 / sld
Sodium	2 mg/L		1	E200.7	02/28/19 12:37 / sld
Strontium	0.107 mg/L		0.0002	E200.8	02/27/19 15:07 / sld
Thallium	ND mg/L		0.0002	E200.8	02/27/19 15:07 / sld
Uranium	0.0006 mg/L		0.0002	E200.8	02/27/19 15:07 / sld
Zinc	ND mg/L		0.002	E200.8	02/27/19 15:07 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19020364-006  
BBC-1902-120

04/03/19  
03/11/19  
02/22/19 16:52  
02/27/19  
Groundwater

pH	5.7 s.u.	H	0.1	A4500-H B	02/27/19 14:30 / SRW
pH Measurement Temp	16.8 °C			A4500-H B	02/27/19 14:30 / SRW
Solids, Total Suspended TSS @ 105 C	ND mg/L		10	A2540 D	02/27/19 12:38 / cmm
Solids, Total Dissolved TDS @ 180 C	ND mg/L		10	A2540 C	02/27/19 12:44 / cmm
Alkalinity, Total as CaCO3	ND mg/L		4	A2320 B	02/27/19 16:47 / SRW
Chloride	ND mg/L		1	E300.0	02/28/19 16:40 / kmd
Sulfate	ND mg/L		1	E300.0	02/28/19 16:40 / kmd
Fluoride	ND mg/L		0.1	4 A4500-F C	02/28/19 13:41 / kmd
Hardness as CaCO3	1 mg/L		1	A2340 B	02/28/19 13:55 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L		0.01	E353.2	02/28/19 12:29 / SRW
Aluminum	ND mg/L		0.009	E200.8	02/27/19 15:09 / sld
Antimony	ND mg/L		0.0005	E200.8	02/27/19 15:09 / sld
Arsenic	ND mg/L		0.001	E200.8	02/27/19 15:09 / sld
Barium	ND mg/L		0.003	E200.8	02/27/19 15:09 / sld
Beryllium	ND mg/L		0.0008	E200.8	02/27/19 15:09 / sld
Cadmium	ND mg/L		0.00003	E200.8	02/27/19 15:09 / sld
Calcium	ND mg/L		1	E200.8	02/27/19 15:09 / sld
Chromium	ND mg/L		0.01	E200.8	02/27/19 15:09 / sld
Cobalt	ND mg/L		0.01	E200.8	02/27/19 15:09 / sld
Copper	ND mg/L		0.002	E200.8	02/27/19 15:09 / sld
Iron	0.10 mg/L		0.02	E200.8	02/27/19 15:09 / sld
Lead	ND mg/L		0.0003	E200.8	02/27/19 15:09 / sld
Magnesium	ND mg/L		1	E200.8	02/27/19 15:09 / sld
Manganese	ND mg/L		0.005	E200.8	02/27/19 15:09 / sld
Mercury	ND ug/L		0.005	E245.1	02/28/19 16:48 / ber
Molybdenum	ND mg/L		0.002	E200.8	02/27/19 15:09 / sld
Nickel	ND mg/L		0.001	E200.8	02/27/19 15:09 / sld
Potassium	ND mg/L		1	E200.8	02/27/19 15:09 / sld
Selenium	ND mg/L		0.0002	E200.8	02/27/19 15:09 / sld
Silver	ND mg/L		0.0002	E200.8	02/27/19 15:09 / sld
Sodium	ND mg/L		1	E200.8	02/27/19 15:09 / sld
Strontium	0.0003 mg/L		0.0002	E200.8	02/27/19 15:09 / sld
Thallium	ND mg/L		0.0002	E200.8	02/27/19 15:09 / sld
Uranium	ND mg/L		0.0002	E200.8	02/27/19 15:09 / sld
Zinc	ND mg/L		0.002	E200.8	02/27/19 15:09 / sld

-Iron and Strontium were confirmed by duplicate analysis.

RL - Analyte reporting limit.

QCL - Quality control limit.

H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

							Batch: R142316
	Method Blank				Run: PHSC_101-H_190227A		02/27/19 15:05
Alkalinity, Total as CaCO3	ND mg/L	2					
	Laboratory Control Sample				Run: PHSC_101-H_190227A		02/27/19 15:11
Alkalinity, Total as CaCO3	600 mg/L	4.0	100	90	110		
	Sample Duplicate				Run: PHSC_101-H_190227A		02/27/19 15:32
Alkalinity, Total as CaCO3	180 mg/L	4.0				0.6	10
	Sample Duplicate				Run: PHSC_101-H_190227A		02/27/19 16:32
Alkalinity, Total as CaCO3	210 mg/L	4.0				1.5	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Batch: TDS190227A

	Method Blank				Run: ACCU-124 (14410200)_19022	02/27/19 09:40
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	10			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19022	02/27/19 09:41
Solids, Total Dissolved TDS @ 180 C	1910	mg/L	20	96	90	110
	Sample Duplicate				Run: ACCU-124 (14410200)_19022	02/27/19 09:41
Solids, Total Dissolved TDS @ 180 C	300	mg/L	10		2.4	5
	Sample Duplicate				Run: ACCU-124 (14410200)_19022	02/27/19 12:44
Solids, Total Dissolved TDS @ 180 C	237	mg/L	10		0.0	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Batch: TSS190227A

	Method Blank				Run: ACCU-124 (14410200)_19022	02/27/19 09:46
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19022	02/27/19 09:46
Solids, Total Suspended TSS @ 105 C	98.0	mg/L	10	98	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19022	02/27/19 09:46
Solids, Total Suspended TSS @ 105 C	2.40	mg/L	10			5
	Method Blank				Run: ACCU-124 (14410200)_19022	02/27/19 12:36
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19022	02/27/19 12:36
Solids, Total Suspended TSS @ 105 C	87.0	mg/L	10	87	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19022	02/27/19 12:37
Solids, Total Suspended TSS @ 105 C	21.0	mg/L	10		4.9	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

							Analytical Run: MANTECH 2_190228A
	Initial Calibration Verification Standard						02/28/19 12:47
Fluoride	0.8	mg/L	0.1	100	90	110	
	Continuing Calibration Verification Standard						02/28/19 13:24
Fluoride	1.0	mg/L	0.1	102	90	110	
							Batch: R142363
	Method Blank			Run: MANTECH 2_190228A		02/28/19 12:49	
Fluoride	0.05	mg/L	0.003				
	Sample Matrix Spike			Run: MANTECH 2_190228A		02/28/19 13:34	
Fluoride	1.3	mg/L	0.1	105	85	115	
	Sample Duplicate			Run: MANTECH 2_190228A		02/28/19 13:39	
Fluoride	0.2	mg/L	0.1			0.0	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Analytical Run: PHSC\_101-H\_190227A

2 Initial Calibration Verification Standard

02/27/19 08:33

pH	7.0	s.u.	0.1	100	98	102
pH Measurement Temp	19.8	°C			0	0

2 Continuing Calibration Verification Standard

02/27/19 14:40

pH	7.0	s.u.	0.1	99	98	102
pH Measurement Temp	19.3	°C			0	0

Batch: R142316

2 Sample Duplicate

Run: PHSC\_101-H\_190227A

02/27/19 14:26

pH	7.9	s.u.	0.1			0.1	3
pH Measurement Temp	16.2	°C					



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Analytical Run: ICP2-HE\_190228A

							02/28/19 10:23
4 Initial Calibration Verification Standard							
Calcium	39.6	mg/L	1.0	99	95	105	
Magnesium	39.6	mg/L	1.0	99	95	105	
Potassium	40.6	mg/L	1.0	101	95	105	
Sodium	40.5	mg/L	1.0	101	95	105	
4 Initial Calibration Verification Standard							02/28/19 10:31
Calcium	41.1	mg/L	1.0	103	95	105	
Magnesium	41.0	mg/L	1.0	103	95	105	
Potassium	39.7	mg/L	1.0	99	95	105	
Sodium	39.1	mg/L	1.0	98	95	105	
4 Continuing Calibration Verification Standard							02/28/19 10:35
Calcium	25.2	mg/L	1.0	101	95	105	
Magnesium	24.8	mg/L	1.0	99	95	105	
Potassium	24.5	mg/L	1.0	98	95	105	
Sodium	24.3	mg/L	1.0	97	95	105	
4 Interference Check Sample A							02/28/19 10:48
Calcium	501	mg/L	1.0	100	80	120	
Magnesium	557	mg/L	1.0	111	80	120	
Potassium	-0.0280	mg/L	1.0		0	0	
Sodium	0.00769	mg/L	1.0		0	0	
4 Interference Check Sample AB							02/28/19 10:53
Calcium	510	mg/L	1.0	102	80	120	
Magnesium	566	mg/L	1.0	113	80	120	
Potassium	19.7	mg/L	1.0	98	80	120	
Sodium	19.3	mg/L	1.0	97	80	120	
4 Continuing Calibration Verification Standard							02/28/19 11:26
Calcium	25.8	mg/L	1.0	103	90	110	
Magnesium	25.8	mg/L	1.0	103	90	110	
Potassium	23.6	mg/L	1.0	94	90	110	
Sodium	23.2	mg/L	1.0	93	90	110	
4 Continuing Calibration Verification Standard							02/28/19 12:16
Calcium	25.6	mg/L	1.0	102	90	110	
Magnesium	25.3	mg/L	1.0	101	90	110	
Potassium	24.1	mg/L	1.0	96	90	110	
Sodium	23.8	mg/L	1.0	95	90	110	
4 Method Blank							Run: ICP2-HE_190228A 02/28/19 11:05
Calcium	ND	mg/L	0.07				
Magnesium	ND	mg/L	0.01				
Potassium	ND	mg/L	0.06				

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Batch: R142362

	4	Method Blank			Run: ICP2-HE_190228A		02/28/19 11:05		
Sodium		ND	mg/L	0.02					
	4	Laboratory Fortified Blank			Run: ICP2-HE_190228A		02/28/19 11:10		
Calcium		53.5	mg/L	1.0	107	85	115		
Magnesium		55.1	mg/L	1.0	110	85	115		
Potassium		51.2	mg/L	1.0	102	85	115		
Sodium		50.6	mg/L	1.0	101	85	115		
	4	Sample Matrix Spike			Run: ICP2-HE_190228A		02/28/19 11:47		
Calcium		102	mg/L	1.0	102	70	130		
Magnesium		67.5	mg/L	1.0	108	70	130		
Potassium		52.6	mg/L	1.0	103	70	130		
Sodium		53.4	mg/L	1.0	102	70	130		
	4	Sample Matrix Spike Duplicate			Run: ICP2-HE_190228A		02/28/19 11:51		
Calcium		103	mg/L	1.0	105	70	130	1.4	20
Magnesium		68.1	mg/L	1.0	109	70	130	1.0	20
Potassium		53.0	mg/L	1.0	104	70	130	0.6	20
Sodium		53.5	mg/L	1.0	103	70	130	0.4	20
	4	Sample Matrix Spike			Run: ICP2-HE_190228A		02/28/19 12:50		
Calcium		54.7	mg/L	1.0	108	70	130		
Magnesium		54.6	mg/L	1.0	109	70	130		
Potassium		50.5	mg/L	1.0	101	70	130		
Sodium		49.5	mg/L	1.0	99	70	130		
	4	Sample Matrix Spike Duplicate			Run: ICP2-HE_190228A		02/28/19 12:54		
Calcium		55.5	mg/L	1.0	110	70	130	1.5	20
Magnesium		55.4	mg/L	1.0	111	70	130	1.5	20
Potassium		52.3	mg/L	1.0	105	70	130	3.4	20
Sodium		51.1	mg/L	1.0	102	70	130	3.2	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Analytical Run: ICPMS205-H\_190227B

24 Initial Calibration Verification Standard

02/27/19 13:57

Aluminum	0.304	mg/L	0.10	101	90	110
Antimony	0.0578	mg/L	0.050	96	90	110
Arsenic	0.0596	mg/L	0.0050	99	90	110
Barium	0.0596	mg/L	0.10	99	90	110
Beryllium	0.0293	mg/L	0.0010	98	90	110
Cadmium	0.0300	mg/L	0.0010	100	90	110
Calcium	2.92	mg/L	0.50	97	90	110
Chromium	0.0602	mg/L	0.010	100	90	110
Cobalt	0.0599	mg/L	0.010	100	90	110
Copper	0.0604	mg/L	0.010	101	90	110
Iron	0.312	mg/L	0.020	104	90	110
Lead	0.0598	mg/L	0.010	100	90	110
Magnesium	3.16	mg/L	0.50	105	90	110
Manganese	3.300	mg/L	0.010	100	90	110
Molybdenum	0.0586	mg/L	0.0050	98	90	110
Nickel	0.0609	mg/L	0.010	101	90	110
Potassium	2.96	mg/L	0.50	99	90	110
Selenium	0.0598	mg/L	0.0050	100	90	110
Silver	0.0297	mg/L	0.0050	99	90	110
Sodium	3.09	mg/L	0.50	103	90	110
Strontium	0.0588	mg/L	0.10	98	90	110
Thallium	0.0595	mg/L	0.10	99	90	110
Uranium	0.0588	mg/L	0.00030	98	90	110
Zinc	0.0607	mg/L	0.010	101	90	110

24 Interference Check Sample A

02/27/19 13:59

Aluminum	42.7	mg/L	0.10	107	70	130
Antimony	0.000435	mg/L	0.050			
Arsenic	5.17E-05	mg/L	0.0050			
Barium	0.000235	mg/L	0.10			
Beryllium	3.32E-06	mg/L	0.0010			
Cadmium	0.000205	mg/L	0.0010			
Calcium	130	mg/L	0.50	109	70	130
Chromium	0.000247	mg/L	0.010			
Cobalt	0.000297	mg/L	0.010			
Copper	8.39E-05	mg/L	0.010			
Iron	111	mg/L	0.020	111	70	130
Lead	0.000148	mg/L	0.010			
Magnesium	43.8	mg/L	0.50	109	70	130
Manganese	0.000292	mg/L	0.010			
Molybdenum	0.859	mg/L	0.0050	107	70	130
Nickel	0.000312	mg/L	0.010			
Potassium	44.0	mg/L	0.50	110	70	130
Selenium	0.000164	mg/L	0.0050			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Analytical Run: ICPMS205-H\_190227B

24 Interference Check Sample A

02/27/19 13:59

Silver	4.49E-05	mg/L	0.0050			
Sodium	109	mg/L	0.50	109	70	130
Strontium	0.00112	mg/L	0.10			
Thallium	7.47E-05	mg/L	0.10			
Uranium	2.89E-05	mg/L	0.00030			
Zinc	0.000372	mg/L	0.010			

24 Interference Check Sample AB

02/27/19 14:01

Aluminum	41.5	mg/L	0.10	104	70	130
Antimony	0.000284	mg/L	0.050		0	0
Arsenic	0.0107	mg/L	0.0050	107	70	130
Barium	0.000185	mg/L	0.10		0	0
Beryllium	-1.33E-05	mg/L	0.0010		0	0
Cadmium	0.0110	mg/L	0.0010	110	70	130
Calcium	125	mg/L	0.50	104	70	130
Chromium	0.0215	mg/L	0.010	108	70	130
Cobalt	0.0217	mg/L	0.010	108	70	130
Copper	0.0211	mg/L	0.010	105	70	130
Iron	106	mg/L	0.020	106	70	130
Lead	0.000127	mg/L	0.010		0	0
Magnesium	42.7	mg/L	0.50	107	70	130
Manganese	0.0218	mg/L	0.010	109	70	130
Molybdenum	0.851	mg/L	0.0050	106	70	130
Nickel	0.0218	mg/L	0.010	109	70	130
Potassium	42.0	mg/L	0.50	105	70	130
Selenium	0.0106	mg/L	0.0050	106	70	130
Silver	0.00547	mg/L	0.0050	109	70	130
Sodium	107	mg/L	0.50	107	70	130
Strontium	0.00107	mg/L	0.10		0	0
Thallium	5.44E-05	mg/L	0.10		0	0
Uranium	8.23E-06	mg/L	0.00030		0	0
Zinc	0.0106	mg/L	0.010	106	70	130

Batch: R142335

24 Method Blank

Run: ICPMS205-H\_190227B

02/27/19 14:13

Aluminum	ND	mg/L	0.003			
Antimony	ND	mg/L	9E-05			
Arsenic	ND	mg/L	4E-05			
Barium	ND	mg/L	2E-05			
Beryllium	ND	mg/L	0.0001			
Cadmium	ND	mg/L	3E-05			
Calcium	ND	mg/L	0.1			
Chromium	ND	mg/L	0.0002			
Cobalt	ND	mg/L	9E-05			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Batch: R142335

24 Method Blank

Run: ICPMS205-H\_190227B

02/27/19 14:13

Copper	ND	mg/L	0.0001
Iron	0.002	mg/L	0.002
Lead	ND	mg/L	3E-05
Magnesium	ND	mg/L	0.004
Manganese	ND	mg/L	0.0003
Molybdenum	3E-05	mg/L	2E-05
Nickel	ND	mg/L	0.0002
Potassium	ND	mg/L	0.010
Selenium	2E-05	mg/L	2E-05
Silver	ND	mg/L	2E-05
Sodium	ND	mg/L	0.01
Strontium	ND	mg/L	0.0001
Thallium	ND	mg/L	1E-05
Uranium	ND	mg/L	1E-05
Zinc	ND	mg/L	0.0003

24 Laboratory Fortified Blank

Run: ICPMS205-H\_190227B

02/27/19 14:15

Aluminum	0.0502	mg/L	0.10	100	85	115
Antimony	0.0498	mg/L	0.050	100	85	115
Arsenic	0.0492	mg/L	0.0050	98	85	115
Barium	0.0487	mg/L	0.10	97	85	115
Beryllium	0.0482	mg/L	0.0010	96	85	115
Cadmium	0.0494	mg/L	0.0010	99	85	115
Calcium	0.951	mg/L	0.50	95	85	115
Chromium	0.0487	mg/L	0.010	97	85	115
Cobalt	0.0489	mg/L	0.010	98	85	115
Copper	0.0498	mg/L	0.010	100	85	115
Iron	0.154	mg/L	0.020	101	85	115
Lead	0.0486	mg/L	0.010	97	85	115
Magnesium	1.02	mg/L	0.50	102	85	115
Manganese	0.0491	mg/L	0.010	98	85	115
Molybdenum	0.0485	mg/L	0.0050	97	85	115
Nickel	0.0491	mg/L	0.010	98	85	115
Potassium	0.967	mg/L	0.50	97	85	115
Selenium	0.0488	mg/L	0.0050	98	85	115
Silver	0.0199	mg/L	0.0050	99	85	115
Sodium	1.01	mg/L	0.50	101	85	115
Strontium	0.0490	mg/L	0.10	98	85	115
Thallium	0.0488	mg/L	0.10	98	85	115
Uranium	0.0482	mg/L	0.00030	96	85	115
Zinc	0.0502	mg/L	0.010	100	85	115

24 Sample Matrix Spike

Run: ICPMS205-H\_190227B

02/27/19 14:46

Aluminum	0.0559	mg/L	0.030	98	70	130
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RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Batch: R142335

24 Sample Matrix Spike

Run: ICPMS205-H\_190227B

02/27/19 14:46

Antimony	0.0570	mg/L	0.0010	102	70	130	
Arsenic	0.0586	mg/L	0.0010	102	70	130	
Barium	0.0706	mg/L	0.050	100	70	130	
Beryllium	0.0486	mg/L	0.0010	97	70	130	
Cadmium	0.0480	mg/L	0.0010	96	70	130	
Calcium	113	mg/L	1.0		70	130	AE
Chromium	0.0486	mg/L	0.0050	97	70	130	
Cobalt	0.0750	mg/L	0.0050	95	70	130	
Copper	0.0576	mg/L	0.0050	96	70	130	
Iron	0.378	mg/L	0.020	99	70	130	
Lead	0.0500	mg/L	0.0010	100	70	130	
Magnesium	27.9	mg/L	1.0		70	130	A
Manganese	0.109	mg/L	0.0010	96	70	130	
Molybdenum	0.166	mg/L	0.0010	97	70	130	
Nickel	0.0574	mg/L	0.0050	96	70	130	
Potassium	24.6	mg/L	1.0		70	130	A
Selenium	0.0524	mg/L	0.0010	99	70	130	
Silver	0.0186	mg/L	0.0010	93	70	130	
Sodium	232	mg/L	1.0		70	130	AE
Strontium	2.96	mg/L	0.010		70	130	AE
Thallium	0.0503	mg/L	0.00050	101	70	130	
Uranium	0.0559	mg/L	0.00030	102	70	130	
Zinc	0.0479	mg/L	0.010	94	70	130	

24 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190227B

02/27/19 14:48

Aluminum	0.0576	mg/L	0.030	101	70	130	3.0	20
Antimony	0.0585	mg/L	0.0010	105	70	130	2.6	20
Arsenic	0.0598	mg/L	0.0010	104	70	130	2.0	20
Barium	0.0731	mg/L	0.050	105	70	130	3.6	20
Beryllium	0.0474	mg/L	0.0010	95	70	130	2.6	20
Cadmium	0.0495	mg/L	0.0010	99	70	130	3.3	20
Calcium	114	mg/L	1.0		70	130	1.0	20 AE
Chromium	0.0496	mg/L	0.0050	98	70	130	1.9	20
Cobalt	0.0771	mg/L	0.0050	100	70	130	2.7	20
Copper	0.0586	mg/L	0.0050	98	70	130	1.6	20
Iron	0.384	mg/L	0.020	103	70	130	1.5	20
Lead	0.0515	mg/L	0.0010	103	70	130	2.9	20
Magnesium	28.8	mg/L	1.0		70	130	3.2	20 A
Manganese	0.111	mg/L	0.0010	100	70	130	1.8	20
Molybdenum	0.171	mg/L	0.0010	107	70	130	3.1	20
Nickel	0.0587	mg/L	0.0050	99	70	130	2.2	20
Potassium	25.1	mg/L	1.0		70	130	2.1	20 A
Selenium	0.0538	mg/L	0.0010	101	70	130	2.6	20
Silver	0.0194	mg/L	0.0010	97	70	130	4.3	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Batch: R142335

24 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190227B

02/27/19 14:48

Sodium	241	mg/L	1.0	70	130	3.8	20	AE
Strontium	3.03	mg/L	0.010	70	130	2.3	20	AE
Thallium	0.0518	mg/L	0.00050	103	70	130	2.9	20
Uranium	0.0577	mg/L	0.00030	106	70	130	3.1	20
Zinc	0.0488	mg/L	0.010	96	70	130	2.0	20

24 Sample Matrix Spike

Run: ICPMS205-H\_190227B

02/27/19 15:11

Aluminum	0.0516	mg/L	0.030	103	70	130		
Antimony	0.0514	mg/L	0.0010	103	70	130		
Arsenic	0.0536	mg/L	0.0010	107	70	130		
Barium	0.161	mg/L	0.050	94	70	130		
Beryllium	0.0513	mg/L	0.0010	103	70	130		
Cadmium	0.0501	mg/L	0.0010	100	70	130		
Calcium	47.5	mg/L	1.0	70	130			A
Chromium	0.0487	mg/L	0.0050	97	70	130		
Cobalt	0.0486	mg/L	0.0050	97	70	130		
Copper	0.0493	mg/L	0.0050	98	70	130		
Iron	0.158	mg/L	0.020	101	70	130		
Lead	0.0515	mg/L	0.0010	103	70	130		
Magnesium	28.2	mg/L	1.0	70	130			A
Manganese	0.0514	mg/L	0.0010	97	70	130		
Molybdenum	0.0493	mg/L	0.0010	98	70	130		
Nickel	0.0484	mg/L	0.0050	97	70	130		
Potassium	2.42	mg/L	1.0	90	70	130		
Selenium	0.0577	mg/L	0.0010	115	70	130		
Silver	0.0198	mg/L	0.0010	99	70	130		
Sodium	3.24	mg/L	1.0	99	70	130		
Strontium	0.121	mg/L	0.010	91	70	130		
Thallium	0.0519	mg/L	0.00050	103	70	130		
Uranium	0.0520	mg/L	0.00030	103	70	130		
Zinc	0.0513	mg/L	0.010	99	70	130		

24 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190227B

02/27/19 15:13

Aluminum	0.0525	mg/L	0.030	105	70	130	1.6	20
Antimony	0.0527	mg/L	0.0010	105	70	130	2.4	20
Arsenic	0.0547	mg/L	0.0010	109	70	130	2.1	20
Barium	0.164	mg/L	0.050	100	70	130	1.8	20
Beryllium	0.0506	mg/L	0.0010	101	70	130	1.3	20
Cadmium	0.0517	mg/L	0.0010	103	70	130	3.0	20
Calcium	48.2	mg/L	1.0	70	130	1.4	20	A
Chromium	0.0501	mg/L	0.0050	100	70	130	2.9	20
Cobalt	0.0502	mg/L	0.0050	100	70	130	3.3	20
Copper	0.0500	mg/L	0.0050	100	70	130	1.5	20
Iron	0.162	mg/L	0.020	104	70	130	2.6	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

Batch: R142335

24 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190227B

02/27/19 15:13

Lead	0.0531	mg/L	0.0010	106	70	130	3.0	20	
Magnesium	28.7	mg/L	1.0		70	130	1.9	20	A
Manganese	0.0528	mg/L	0.0010	100	70	130	2.7	20	
Molybdenum	0.0507	mg/L	0.0010	101	70	130	2.8	20	
Nickel	0.0496	mg/L	0.0050	99	70	130	2.5	20	
Potassium	2.49	mg/L	1.0	96	70	130	2.8	20	
Selenium	0.0588	mg/L	0.0010	117	70	130	1.9	20	
Silver	0.0205	mg/L	0.0010	102	70	130	3.2	20	
Sodium	3.31	mg/L	1.0	106	70	130	2.3	20	
Strontium	0.124	mg/L	0.010	97	70	130	2.2	20	
Thallium	0.0536	mg/L	0.00050	107	70	130	3.1	20	
Uranium	0.0540	mg/L	0.00030	107	70	130	3.8	20	
Zinc	0.0522	mg/L	0.010	100	70	130	1.6	20	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

							Analytical Run: HGCV202-H_190228A
	Initial Calibration Verification Standard						02/28/19 15:35
Mercury	0.100	ug/L	0.0050	100	90	110	
	Continuing Calibration Verification Standard						02/28/19 16:25
Mercury	0.0970	ug/L	0.0050	97	90	110	
							Batch: 44818
	Method Blank			Run: HGCV202-H_190228A		02/28/19 15:47	
Mercury	ND	ug/L	0.0009				
	Laboratory Control Sample			Run: HGCV202-H_190228A		02/28/19 15:50	
Mercury	0.0530	ug/L	0.0050	106	90	110	
	Sample Matrix Spike			Run: HGCV202-H_190228A		02/28/19 16:32	
Mercury	0.108	ug/L	0.0050	104	70	130	
	Sample Matrix Spike Duplicate			Run: HGCV202-H_190228A		02/28/19 16:35	
Mercury	0.108	ug/L	0.0050	104	70	130 0.1 20	
							Batch: 44834
	Initial Calibration Verification Standard						03/07/19 10:41
Mercury	0.0999	ug/L	0.0050	100	90	110	
	Initial Calibration Verification Standard						03/07/19 14:26
Mercury	0.102	ug/L	0.0050	102	90	110	
							Batch: 44834
	Method Blank			Run: HGCV202-H_190307A		03/07/19 11:10	
Mercury	ND	ug/L	0.0009				
	Laboratory Control Sample			Run: HGCV202-H_190307A		03/07/19 11:21	
Mercury	0.0548	ug/L	0.0050	110	90	110	
	Sample Matrix Spike			Run: HGCV202-H_190307A		03/07/19 11:57	
Mercury	0.855	ug/L	0.010	113	70	130	
	Sample Matrix Spike Duplicate			Run: HGCV202-H_190307A		03/07/19 12:00	
Mercury	0.894	ug/L	0.010	129	70	130 4.4 20	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

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Analytical Run: IC METROHM\_190228A

		2 Initial Calibration Verification Standard						02/28/19 09:52
Chloride	99.7	mg/L	1.0	100	90	110		
Sulfate	383	mg/L	1.0	96	90	110		
		2 Initial Calibration Verification Standard						02/28/19 10:06
Chloride	98.5	mg/L	1.0	98	90	110		
Sulfate	390	mg/L	1.0	97	90	110		
		2 Initial Calibration Verification Standard						02/28/19 10:20
Chloride	96.2	mg/L	1.0	96	90	110		
Sulfate	383	mg/L	1.0	96	90	110		
		2 Continuing Calibration Verification Standard						02/28/19 11:02
Chloride	49.3	mg/L	1.0	99	90	110		
Sulfate	195	mg/L	1.0	98	90	110		
		2 Continuing Calibration Verification Standard						02/28/19 14:33
Chloride	48.3	mg/L	1.0	97	90	110		
Sulfate	189	mg/L	1.0	94	90	110		

Batch: R142371

		2 Method Blank		Run: IC METROHM_190228A				02/28/19 09:38
Chloride	0.02	mg/L	0.009					
Sulfate	ND	mg/L	0.01					
		2 Laboratory Fortified Blank		Run: IC METROHM_190228A				02/28/19 10:34
Chloride	24.1	mg/L	1.0	96	90	110		
Sulfate	99.2	mg/L	1.0	99	90	110		
		2 Sample Matrix Spike		Run: IC METROHM_190228A				02/28/19 14:05
Chloride	25.1	mg/L	1.0	93	90	110		
Sulfate	101	mg/L	1.0	90	90	110		
		2 Sample Matrix Spike Duplicate		Run: IC METROHM_190228A				02/28/19 14:19
Chloride	25.3	mg/L	1.0	94	90	110	0.9	20
Sulfate	103	mg/L	1.0	92	90	110	1.8	20
		2 Sample Matrix Spike		Run: IC METROHM_190228A				02/28/19 17:37
Chloride	39.6	mg/L	1.0	92	90	110		
Sulfate	132	mg/L	1.0	88	90	110	S	
		2 Sample Matrix Spike Duplicate		Run: IC METROHM_190228A				02/28/19 17:51
Chloride	39.6	mg/L	1.0	92	90	110	0.1	20
Sulfate	132	mg/L	1.0	89	90	110	0.6	20 S

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
03/11/19  
H19020364

							Analytical Run: FIA203-HE_190228B
	Initial Calibration Verification Standard						02/28/19 11:59
Nitrogen, Nitrate+Nitrite as N	1.05	mg/L	0.010	105	90	110	
	Continuing Calibration Verification Standard						02/28/19 12:17
Nitrogen, Nitrate+Nitrite as N	0.479	mg/L	0.010	96	90	110	
							Batch: R142355
	Method Blank			Run: FIA203-HE_190228B			02/28/19 12:00
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				
	Laboratory Fortified Blank			Run: FIA203-HE_190228B			02/28/19 12:02
Nitrogen, Nitrate+Nitrite as N	0.910	mg/L	0.011	91	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190228B			02/28/19 12:21
Nitrogen, Nitrate+Nitrite as N	0.848	mg/L	0.010	85	90	110	S
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190228B			02/28/19 12:22
Nitrogen, Nitrate+Nitrite as N	0.853	mg/L	0.010	85	90	110	0.6 10 S

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



# Tintina Resources Inc

# H19020364

Login completed by: Jessica C. Smith

Date Received: 2/27/2019

Reviewed by: BL2000\rtooke

Received by: RAT

Reviewed Date: 3/1/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	-2.3°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

None





**TABLE 5. PARAMETERS, METHODS, AND DETECTION LIMITS  
FOR GROUNDWATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	10
TSS	SM 2540C	10
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.01
<b>Trace Constituents (Dissolved)<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Hydrology</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



April 03, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19030475 Quote ID: H1216 - Surface and Groundwater Sampling

Project Name: 18049 Black Butte Copper (GW)

Energy Laboratories Inc Helena MT received the following 8 samples for Tintina Resources Inc on 3/27/2019 for analysis.

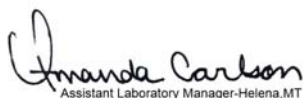
H19030475-001	BBC-1903-100	03/26/19 9:25	03/27/19	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Mercury, Dissolved Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Mercury Digestion by E245.1 Solids, Total Dissolved Solids, Total Suspended
H19030475-002	BBC-1903-107	03/26/19 13:55	03/27/19	Groundwater	Same As Above
H19030475-003	BBC-1903-108	03/26/19 14:15	03/27/19	Groundwater	Same As Above
H19030475-004	BBC-1903-111	03/26/19 15:05	03/27/19	Groundwater	Same As Above
H19030475-005	BBC-1903-112	03/26/19 16:30	03/27/19	Groundwater	Same As Above
H19030475-006	BBC-1903-118	03/27/19 7:50	03/27/19	Groundwater	Same As Above
H19030475-007	BBC-1903-122	03/27/19 10:10	03/27/19	Groundwater	Same As Above
H19030475-008	BBC-1903-123	03/27/19 10:50	03/27/19	Groundwater	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

  
Assistant Laboratory Manager-Helena, MT

Digitally signed by  
Amanda B. Carlson  
Date: 2019.04.03 11:51:15 -06:00



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19030475-001  
BBC-1903-100

04/03/19  
03/26/19 09:25  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:18 / cmm
Solids, Total Dissolved TDS @ 180 C	234 mg/L	10	A2540 C	03/28/19 12:33 / cmm
Alkalinity, Total as CaCO3	200 mg/L	4	A2320 B	03/28/19 12:42 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 11:11 / SRW
Sulfate	40 mg/L	1	E300.0	03/28/19 11:11 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	03/28/19 11:18 / SRW
Hardness as CaCO3	231 mg/L	1	A2340 B	03/28/19 13:57 / SRW
Nitrogen, Nitrate+Nitrite as N	0.24 mg/L	0.01	E353.2	04/01/19 14:58 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:13 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:13 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:13 / sld
Barium	0.113 mg/L	0.003	E200.8	03/29/19 12:13 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:13 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:13 / sld
Calcium	50 mg/L	1	E200.7	03/28/19 13:57 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:13 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:13 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:13 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 12:13 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:13 / sld
Magnesium	26 mg/L	1	E200.7	03/28/19 13:57 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:13 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 15:51 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:13 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:13 / sld
Potassium	2 mg/L	1	E200.7	03/28/19 13:57 / sld
Selenium	0.0003 mg/L	0.0002	E200.8	03/29/19 12:13 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:11 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 13:57 / sld
Strontium	0.0725 mg/L	0.0002	E200.8	03/29/19 12:13 / sld
Thallium	0.0003 mg/L	0.0002	E200.8	03/29/19 12:13 / sld
Uranium	0.0005 mg/L	0.0002	E200.8	03/29/19 12:13 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:13 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19030475-002  
BBC-1903-107

04/03/19  
03/26/19 13:55  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:19 / cmm
Solids, Total Dissolved TDS @ 180 C	163 mg/L	10	A2540 C	03/28/19 12:34 / cmm
Alkalinity, Total as CaCO3	140 mg/L	4	A2320 B	03/28/19 12:49 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 11:25 / SRW
Sulfate	9 mg/L	1	E300.0	03/28/19 11:25 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	03/28/19 11:20 / SRW
Hardness as CaCO3	142 mg/L	1	A2340 B	03/28/19 14:12 / SRW
Nitrogen, Nitrate+Nitrite as N	0.39 mg/L	0.01	E353.2	04/01/19 14:59 / kmd
Aluminum	0.045 mg/L	0.009	E200.8	03/29/19 12:15 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:15 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:15 / sld
Barium	0.188 mg/L	0.003	E200.8	03/29/19 12:15 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:15 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:15 / sld
Calcium	35 mg/L	1	E200.7	03/28/19 14:12 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:15 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:15 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:15 / sld
Iron	0.03 mg/L	0.02	E200.8	03/29/19 12:15 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:15 / sld
Magnesium	13 mg/L	1	E200.7	03/28/19 14:12 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:15 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:00 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:15 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:15 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 14:12 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 12:13 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:13 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 14:12 / sld
Strontium	0.0734 mg/L	0.0002	E200.8	03/29/19 12:15 / sld
Thallium	0.0005 mg/L	0.0002	E200.8	03/29/19 12:15 / sld
Uranium	0.0004 mg/L	0.0002	E200.8	03/29/19 12:15 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:15 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19030475-003  
BBC-1903-108

04/03/19  
03/26/19 14:15  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:19 / cmm
Solids, Total Dissolved TDS @ 180 C	156 mg/L	10	A2540 C	03/28/19 12:34 / cmm
Alkalinity, Total as CaCO3	140 mg/L	4	A2320 B	03/28/19 13:01 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 11:39 / SRW
Sulfate	9 mg/L	1	E300.0	03/28/19 11:39 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	03/28/19 11:22 / SRW
Hardness as CaCO3	141 mg/L	1	A2340 B	03/28/19 14:16 / SRW
Nitrogen, Nitrate+Nitrite as N	0.39 mg/L	0.01	E353.2	04/01/19 15:00 / kmd
Aluminum	0.041 mg/L	0.009	E200.8	03/29/19 12:17 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:17 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:17 / sld
Barium	0.186 mg/L	0.003	E200.8	03/29/19 12:17 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:17 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:17 / sld
Calcium	35 mg/L	1	E200.7	03/28/19 14:16 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:17 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:17 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:17 / sld
Iron	0.03 mg/L	0.02	E200.8	03/29/19 12:17 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:17 / sld
Magnesium	13 mg/L	1	E200.7	03/28/19 14:16 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:17 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:04 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:17 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:17 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 14:16 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 12:17 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:15 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 14:16 / sld
Strontium	0.0740 mg/L	0.0002	E200.8	03/29/19 12:17 / sld
Thallium	0.0005 mg/L	0.0002	E200.8	03/29/19 12:17 / sld
Uranium	0.0004 mg/L	0.0002	E200.8	03/29/19 12:17 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:17 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19030475-004  
BBC-1903-111

04/03/19  
03/26/19 15:05  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	20 mg/L	10	A2540 D	03/28/19 12:19 / cmm
Solids, Total Dissolved TDS @ 180 C	203 mg/L	10	A2540 C	03/28/19 12:34 / cmm
Alkalinity, Total as CaCO3	190 mg/L	4	A2320 B	03/28/19 13:08 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 11:53 / SRW
Sulfate	15 mg/L	1	E300.0	03/28/19 11:53 / SRW
Fluoride	0.1 mg/L	0.1	4 A4500-F C	03/28/19 11:24 / SRW
Hardness as CaCO3	205 mg/L	1	A2340 B	03/28/19 14:20 / SRW
Nitrogen, Nitrate+Nitrite as N	0.12 mg/L	0.01	E353.2	04/01/19 15:01 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:19 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:19 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:19 / sld
Barium	0.059 mg/L	0.003	E200.8	03/29/19 12:19 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:19 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:19 / sld
Calcium	51 mg/L	1	E200.7	03/28/19 14:20 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:19 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:19 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:19 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 12:19 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:19 / sld
Magnesium	19 mg/L	1	E200.7	03/28/19 14:20 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:19 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:13 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:19 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:19 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 14:20 / sld
Selenium	0.0002 mg/L	0.0002	E200.8	04/02/19 12:17 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:17 / sld
Sodium	1 mg/L	1	E200.7	03/28/19 14:20 / sld
Strontium	0.104 mg/L	0.0002	E200.8	03/29/19 12:19 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 12:19 / sld
Uranium	0.0007 mg/L	0.0002	E200.8	03/29/19 12:19 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:19 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19030475-005  
BBC-1903-112

04/03/19  
03/26/19 16:30  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:20 / cmm
Solids, Total Dissolved TDS @ 180 C	218 mg/L	10	A2540 C	03/28/19 12:34 / cmm
Alkalinity, Total as CaCO3	200 mg/L	4	A2320 B	03/28/19 13:14 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 12:07 / SRW
Sulfate	16 mg/L	1	E300.0	03/28/19 12:07 / SRW
Fluoride	0.1 mg/L	0.1	4 A4500-F C	03/28/19 11:27 / SRW
Hardness as CaCO3	221 mg/L	1	A2340 B	03/28/19 14:31 / SRW
Nitrogen, Nitrate+Nitrite as N	0.24 mg/L	0.01	E353.2	04/01/19 15:02 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:21 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:21 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:21 / sld
Barium	0.048 mg/L	0.003	E200.8	03/29/19 12:21 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:21 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:21 / sld
Calcium	55 mg/L	1	E200.7	03/28/19 14:31 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:21 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:21 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:21 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 12:21 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:21 / sld
Magnesium	20 mg/L	1	E200.7	03/28/19 14:31 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:21 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:17 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:21 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:21 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 14:31 / sld
Selenium	0.0003 mg/L	0.0002	E200.8	03/29/19 12:21 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:20 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 14:31 / sld
Strontium	0.107 mg/L	0.0002	E200.8	03/29/19 12:21 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 12:21 / sld
Uranium	0.0007 mg/L	0.0002	E200.8	03/29/19 12:21 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:21 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19030475-006  
BBC-1903-118

04/03/19  
03/27/19 07:50  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 13:08 / cmm
Solids, Total Dissolved TDS @ 180 C	ND mg/L	10	A2540 C	03/28/19 12:34 / cmm
Alkalinity, Total as CaCO3	ND mg/L	4	A2320 B	03/28/19 13:21 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 12:21 / SRW
Sulfate	ND mg/L	1	E300.0	03/28/19 12:21 / SRW
Fluoride	ND mg/L	0.1	4 A4500-F C	03/28/19 11:30 / SRW
Hardness as CaCO3	ND mg/L	1	A2340 B	04/02/19 14:56 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/01/19 15:04 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:24 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:24 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:24 / sld
Barium	ND mg/L	0.003	E200.8	03/29/19 12:24 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:24 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:24 / sld
Calcium	ND mg/L	1	E200.7	03/28/19 14:35 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:24 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:24 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:24 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 12:24 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:24 / sld
Magnesium	ND mg/L	1	E200.7	03/28/19 14:35 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:24 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:20 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:24 / sld
Nickel	0.002 mg/L	0.001	E200.8	03/29/19 12:24 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 14:35 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 12:24 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:22 / sld
Sodium	ND mg/L	1	E200.7	03/28/19 14:35 / sld
Strontium	ND mg/L	0.0002	E200.8	03/29/19 12:24 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 12:24 / sld
Uranium	ND mg/L	0.0002	E200.8	03/29/19 12:24 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:24 / sld

-Nickel was confirmed by duplicate analysis.

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19030475-007  
BBC-1903-122

04/03/19  
03/27/19 10:10  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:20 / cmm
Solids, Total Dissolved TDS @ 180 C	245 mg/L	10	A2540 C	03/28/19 12:34 / cmm
Alkalinity, Total as CaCO3	160 mg/L	4	A2320 B	03/28/19 13:27 / SRW
Chloride	15 mg/L	1	E300.0	03/28/19 12:35 / SRW
Sulfate	21 mg/L	1	E300.0	03/28/19 12:35 / SRW
Fluoride	0.1 mg/L	0.1	4 A4500-F C	03/28/19 11:32 / SRW
Hardness as CaCO3	180 mg/L	1	A2340 B	03/28/19 14:39 / SRW
Nitrogen, Nitrate+Nitrite as N	0.15 mg/L	0.01	E353.2	04/01/19 15:07 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:26 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:26 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:26 / sld
Barium	0.128 mg/L	0.003	E200.8	03/29/19 12:26 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:26 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:26 / sld
Calcium	42 mg/L	1	E200.7	03/28/19 14:39 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:26 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:26 / sld
Copper	0.002 mg/L	0.002	E200.8	03/29/19 12:26 / sld
Iron	0.05 mg/L	0.02	E200.8	03/29/19 12:26 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:26 / sld
Magnesium	18 mg/L	1	E200.7	03/28/19 14:39 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:26 / sld
Mercury	0.018 ug/L	0.005	E245.1	04/01/19 16:23 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:26 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:26 / sld
Potassium	13 mg/L	1	E200.7	03/28/19 14:39 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 12:26 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:36 / sld
Sodium	3 mg/L	1	E200.7	03/28/19 14:39 / sld
Strontium	0.0810 mg/L	0.0002	E200.8	03/29/19 12:26 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 12:26 / sld
Uranium	0.0003 mg/L	0.0002	E200.8	03/29/19 12:26 / sld
Zinc	0.005 mg/L	0.002	E200.8	03/29/19 12:26 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)  
H19030475-008  
BBC-1903-123

04/03/19  
03/27/19 10:50  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:20 / cmm
Solids, Total Dissolved TDS @ 180 C	186 mg/L	10	A2540 C	03/28/19 12:35 / cmm
Alkalinity, Total as CaCO3	170 mg/L	4	A2320 B	03/28/19 13:33 / SRW
Chloride	2 mg/L	1	E300.0	03/28/19 12:49 / SRW
Sulfate	11 mg/L	1	E300.0	03/28/19 12:49 / SRW
Fluoride	0.3 mg/L	0.1	4 A4500-F C	03/28/19 11:35 / SRW
Hardness as CaCO3	175 mg/L	1	A2340 B	03/28/19 14:42 / SRW
Nitrogen, Nitrate+Nitrite as N	0.31 mg/L	0.01	E353.2	04/01/19 15:11 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:28 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:28 / sld
Arsenic	0.004 mg/L	0.001	E200.8	03/29/19 12:28 / sld
Barium	0.115 mg/L	0.003	E200.8	03/29/19 12:28 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:28 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:28 / sld
Calcium	45 mg/L	1	E200.7	03/28/19 14:42 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:28 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:28 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:28 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 12:28 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:28 / sld
Magnesium	15 mg/L	1	E200.7	03/28/19 14:42 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:28 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:26 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:28 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:28 / sld
Potassium	3 mg/L	1	E200.7	03/28/19 14:42 / sld
Selenium	0.0003 mg/L	0.0002	E200.8	04/02/19 12:38 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:38 / sld
Sodium	5 mg/L	1	E200.7	03/28/19 14:42 / sld
Strontium	0.170 mg/L	0.0002	E200.8	03/29/19 12:28 / sld
Thallium	0.0011 mg/L	0.0002	E200.8	03/29/19 12:28 / sld
Uranium	0.0010 mg/L	0.0002	E200.8	03/29/19 12:28 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:28 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

						Batch: R142901
	Method Blank			Run: PHSC_101-H_190328A		03/28/19 12:26
Alkalinity, Total as CaCO3	ND mg/L	2				
	Laboratory Control Sample			Run: PHSC_101-H_190328A		03/28/19 12:32
Alkalinity, Total as CaCO3	590 mg/L	4.0	98	90 110		
	Sample Duplicate			Run: PHSC_101-H_190328A		03/28/19 12:55
Alkalinity, Total as CaCO3	140 mg/L	4.0			0.5	10
	Sample Duplicate			Run: PHSC_101-H_190328A		03/28/19 15:13
Alkalinity, Total as CaCO3	180 mg/L	4.0			0.1	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

Batch: TDS190328A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/28/19 12:33
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	10			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/28/19 12:33
Solids, Total Dissolved TDS @ 180 C	1790	mg/L	20	90	90	110
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:33
Solids, Total Dissolved TDS @ 180 C	239	mg/L	10		2.1	5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:35
Solids, Total Dissolved TDS @ 180 C	371	mg/L	10		0.0	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

Batch: TSS190328A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/28/19 12:16
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/28/19 12:17
Solids, Total Suspended TSS @ 105 C	92.0	mg/L	10	92	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:19
Solids, Total Suspended TSS @ 105 C	3.00	mg/L	10			5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:21
Solids, Total Suspended TSS @ 105 C	17.0	mg/L	10			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

							Analytical Run: MANTECH 2_190328A
	Initial Calibration Verification Standard						03/28/19 10:36
Fluoride	0.7	mg/L	0.1	93	90	110	
	Continuing Calibration Verification Standard						03/28/19 11:09
Fluoride	1.0	mg/L	0.1	97	90	110	
							Batch: R142925
	Method Blank				Run: MANTECH 2_190328A		03/28/19 10:39
Fluoride	0.04	mg/L	0.03				
	Sample Duplicate				Run: MANTECH 2_190328A		03/28/19 11:15
Fluoride	0.2	mg/L	0.1			0.0	10
	Sample Matrix Spike				Run: MANTECH 2_190328A		03/28/19 11:49
Fluoride	1.5	mg/L	0.1	97	85	115	



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

Analytical Run: ICP2-HE\_190328B

							03/28/19 12:50
4 Initial Calibration Verification Standard							
Calcium	41.4	mg/L	1.0	103	95	105	
Magnesium	41.0	mg/L	1.0	103	95	105	
Potassium	41.0	mg/L	1.0	102	95	105	
Sodium	40.7	mg/L	1.0	102	95	105	
4 Continuing Calibration Verification Standard							03/28/19 13:00
Calcium	26.0	mg/L	1.0	104	95	105	
Magnesium	25.7	mg/L	1.0	103	95	105	
Potassium	25.7	mg/L	1.0	103	95	105	
Sodium	25.7	mg/L	1.0	103	95	105	
4 Interference Check Sample A							03/28/19 13:11
Calcium	478	mg/L	1.0	96	80	120	
Magnesium	535	mg/L	1.0	107	80	120	
Potassium	0.00547	mg/L	1.0		0	0	
Sodium	0.0274	mg/L	1.0		0	0	
4 Interference Check Sample AB							03/28/19 13:15
Calcium	463	mg/L	1.0	93	80	120	
Magnesium	521	mg/L	1.0	104	80	120	
Potassium	20.7	mg/L	1.0	104	80	120	
Sodium	21.0	mg/L	1.0	105	80	120	
4 Continuing Calibration Verification Standard							03/28/19 13:38
Calcium	26.8	mg/L	1.0	107	90	110	
Magnesium	26.5	mg/L	1.0	106	90	110	
Potassium	25.8	mg/L	1.0	103	90	110	
Sodium	25.5	mg/L	1.0	102	90	110	
4 Continuing Calibration Verification Standard							03/28/19 14:23
Calcium	24.2	mg/L	1.0	97	90	110	
Magnesium	23.8	mg/L	1.0	95	90	110	
Potassium	26.7	mg/L	1.0	107	90	110	
Sodium	27.0	mg/L	1.0	108	90	110	
							Batch: R142940
4 Method Blank							Run: ICP2-HE_190328B
							03/28/19 13:27
Calcium	ND	mg/L	0.07				
Magnesium	ND	mg/L	0.01				
Potassium	ND	mg/L	0.06				
Sodium	ND	mg/L	0.02				
4 Laboratory Fortified Blank							Run: ICP2-HE_190328B
							03/28/19 13:31
Calcium	53.8	mg/L	1.0	108	85	115	
Magnesium	54.6	mg/L	1.0	109	85	115	
Potassium	53.0	mg/L	1.0	106	85	115	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

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Batch: R142940

	4 Laboratory Fortified Blank			Run: ICP2-HE_190328B	03/28/19 13:31
Sodium	52.6 mg/L	1.0	105	85 115	
	4 Sample Matrix Spike			Run: ICP2-HE_190328B	03/28/19 13:50
Calcium	104 mg/L	1.0	94	70 130	
Magnesium	107 mg/L	1.0	103	70 130	
Potassium	60.1 mg/L	1.0	111	70 130	
Sodium	84.4 mg/L	1.0	114	70 130	
	4 Sample Matrix Spike Duplicate			Run: ICP2-HE_190328B	03/28/19 13:53
Calcium	110 mg/L	1.0	104	70 130	4.7 20
Magnesium	111 mg/L	1.0	112	70 130	4.0 20
Potassium	59.1 mg/L	1.0	109	70 130	1.6 20
Sodium	82.1 mg/L	1.0	109	70 130	2.7 20
	4 Sample Matrix Spike			Run: ICP2-HE_190328B	03/28/19 14:05
Calcium	100 mg/L	1.0	101	70 130	
Magnesium	79.6 mg/L	1.0	107	70 130	
Potassium	59.6 mg/L	1.0	116	70 130	
Sodium	60.5 mg/L	1.0	116	70 130	
	4 Sample Matrix Spike Duplicate			Run: ICP2-HE_190328B	03/28/19 14:08
Calcium	102 mg/L	1.0	104	70 130	1.4 20
Magnesium	79.8 mg/L	1.0	108	70 130	0.3 20
Potassium	56.4 mg/L	1.0	109	70 130	5.6 20
Sodium	56.7 mg/L	1.0	109	70 130	6.5 20
	4 Sample Matrix Spike			Run: ICP2-HE_190328B	03/28/19 15:02
Calcium	124 mg/L	1.0	93	70 130	
Magnesium	93.2 mg/L	1.0	104	70 130	
Potassium	57.6 mg/L	1.0	110	70 130	
Sodium	58.9 mg/L	1.0	110	70 130	
	4 Sample Matrix Spike Duplicate			Run: ICP2-HE_190328B	03/28/19 15:05
Calcium	128 mg/L	1.0	100	70 130	2.6 20
Magnesium	95.6 mg/L	1.0	109	70 130	2.5 20
Potassium	59.3 mg/L	1.0	113	70 130	2.9 20
Sodium	60.3 mg/L	1.0	113	70 130	2.3 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

Analytical Run: ICPMS205-H\_190329A

19 Initial Calibration Verification Standard

03/29/19 11:20

Aluminum	0.296	mg/L	0.10	99	90	110
Antimony	0.0572	mg/L	0.050	95	90	110
Arsenic	0.0587	mg/L	0.0050	98	90	110
Barium	0.0597	mg/L	0.10	99	90	110
Beryllium	0.0309	mg/L	0.0010	103	90	110
Cadmium	0.0299	mg/L	0.0010	100	90	110
Chromium	0.0596	mg/L	0.010	99	90	110
Cobalt	0.0606	mg/L	0.010	101	90	110
Copper	0.0599	mg/L	0.010	100	90	110
Iron	0.315	mg/L	0.020	105	90	110
Lead	0.0612	mg/L	0.010	102	90	110
Manganese	0.299	mg/L	0.010	100	90	110
Molybdenum	0.0602	mg/L	0.0050	100	90	110
Nickel	0.0603	mg/L	0.010	101	90	110
Selenium	0.0605	mg/L	0.0050	101	90	110
Strontium	0.0598	mg/L	0.10	100	90	110
Thallium	0.0609	mg/L	0.10	102	90	110
Uranium	0.0594	mg/L	0.00030	99	90	110
Zinc	0.0618	mg/L	0.010	103	90	110

19 Interference Check Sample A

03/29/19 11:36

Aluminum	38.7	mg/L	0.10	97	70	130
Antimony	0.000328	mg/L	0.050			
Arsenic	9.24E-06	mg/L	0.0050			
Barium	0.000243	mg/L	0.10			
Beryllium	-1.75E-06	mg/L	0.0010			
Cadmium	0.000192	mg/L	0.0010			
Chromium	0.000228	mg/L	0.010			
Cobalt	0.000291	mg/L	0.010			
Copper	0.000266	mg/L	0.010			
Iron	103	mg/L	0.020	103	70	130
Lead	9.97E-05	mg/L	0.010			
Manganese	0.000284	mg/L	0.010			
Molybdenum	0.792	mg/L	0.0050	99	70	130
Nickel	0.000294	mg/L	0.010			
Selenium	6.63E-05	mg/L	0.0050			
Strontium	0.00110	mg/L	0.10			
Thallium	3.12E-05	mg/L	0.10			
Uranium	8.20E-06	mg/L	0.00030			
Zinc	0.000639	mg/L	0.010			

19 Interference Check Sample AB

03/29/19 11:38

Aluminum	38.2	mg/L	0.10	96	70	130
Antimony	0.000136	mg/L	0.050		0	0

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

Analytical Run: ICPMS205-H\_190329A

19 Interference Check Sample AB

03/29/19 11:38

Arsenic	0.0103	mg/L	0.0050	103	70	130
Barium	0.000201	mg/L	0.10		0	0
Beryllium	-2.69E-05	mg/L	0.0010		0	0
Cadmium	0.0103	mg/L	0.0010	103	70	130
Chromium	0.0197	mg/L	0.010	98	70	130
Cobalt	0.0205	mg/L	0.010	103	70	130
Copper	0.0198	mg/L	0.010	99	70	130
Iron	100	mg/L	0.020	100	70	130
Lead	8.66E-05	mg/L	0.010		0	0
Manganese	0.0202	mg/L	0.010	101	70	130
Molybdenum	0.771	mg/L	0.0050	96	70	130
Nickel	0.0201	mg/L	0.010	101	70	130
Selenium	0.0101	mg/L	0.0050	101	70	130
Strontium	0.000973	mg/L	0.10		0	0
Thallium	1.32E-05	mg/L	0.10		0	0
Uranium	1.36E-06	mg/L	0.00030		0	0
Zinc	0.0105	mg/L	0.010	105	70	130

Batch: R142962

19 Method Blank

Run: ICPMS205-H\_190329A

03/29/19 11:48

Aluminum	ND	mg/L	0.003			
Antimony	ND	mg/L	9E-05			
Arsenic	ND	mg/L	4E-05			
Barium	ND	mg/L	2E-05			
Beryllium	ND	mg/L	0.0001			
Cadmium	ND	mg/L	3E-05			
Chromium	ND	mg/L	0.0002			
Cobalt	ND	mg/L	9E-05			
Copper	ND	mg/L	0.0001			
Iron	ND	mg/L	0.002			
Lead	ND	mg/L	3E-05			
Manganese	ND	mg/L	0.0003			
Molybdenum	3E-05	mg/L	2E-05			
Nickel	ND	mg/L	0.0002			
Selenium	ND	mg/L	2E-05			
Strontium	ND	mg/L	0.0001			
Thallium	ND	mg/L	1E-05			
Uranium	ND	mg/L	1E-05			
Zinc	ND	mg/L	0.0003			

19 Laboratory Fortified Blank

Run: ICPMS205-H\_190329A

03/29/19 11:50

Aluminum	0.0488	mg/L	0.10	98	85	115
Antimony	0.0486	mg/L	0.050	97	85	115
Arsenic	0.0495	mg/L	0.0050	99	85	115

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

Batch: R142962

19 Laboratory Fortified Blank

Run: ICPMS205-H\_190329A

03/29/19 11:50

Barium	0.0500	mg/L	0.10	100	85	115
Beryllium	0.0473	mg/L	0.0010	95	85	115
Cadmium	0.0507	mg/L	0.0010	101	85	115
Chromium	0.0487	mg/L	0.010	97	85	115
Cobalt	0.0495	mg/L	0.010	99	85	115
Copper	0.0495	mg/L	0.010	99	85	115
Iron	0.157	mg/L	0.020	104	85	115
Lead	0.0506	mg/L	0.010	101	85	115
Manganese	0.0487	mg/L	0.010	97	85	115
Molybdenum	0.0499	mg/L	0.0050	100	85	115
Nickel	0.0501	mg/L	0.010	100	85	115
Selenium	0.0494	mg/L	0.0050	99	85	115
Strontium	0.0503	mg/L	0.10	101	85	115
Thallium	0.0505	mg/L	0.10	101	85	115
Uranium	0.0503	mg/L	0.00030	101	85	115
Zinc	0.0507	mg/L	0.010	101	85	115

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 12:30

Aluminum	0.0530	mg/L	0.030	98	70	130
Antimony	0.0468	mg/L	0.0010	94	70	130
Arsenic	0.0508	mg/L	0.0010	101	70	130
Barium	0.164	mg/L	0.050	101	70	130
Beryllium	0.0497	mg/L	0.0010	99	70	130
Cadmium	0.0500	mg/L	0.0010	100	70	130
Chromium	0.0483	mg/L	0.0050	97	70	130
Cobalt	0.0486	mg/L	0.0050	97	70	130
Copper	0.0482	mg/L	0.0050	96	70	130
Iron	0.158	mg/L	0.020	100	70	130
Lead	0.0511	mg/L	0.0010	102	70	130
Manganese	0.0506	mg/L	0.0010	98	70	130
Molybdenum	0.0499	mg/L	0.0010	99	70	130
Nickel	0.0489	mg/L	0.0050	98	70	130
Selenium	0.0540	mg/L	0.0010	107	70	130
Strontium	0.121	mg/L	0.010	98	70	130
Thallium	0.0515	mg/L	0.00050	102	70	130
Uranium	0.0513	mg/L	0.00030	102	70	130
Zinc	0.0510	mg/L	0.010	99	70	130

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190329A

03/29/19 12:32

Aluminum	0.0534	mg/L	0.030	99	70	130	0.8	20
Antimony	0.0477	mg/L	0.0010	95	70	130	1.8	20
Arsenic	0.0513	mg/L	0.0010	102	70	130	0.9	20
Barium	0.163	mg/L	0.050	100	70	130	0.2	20
Beryllium	0.0494	mg/L	0.0010	99	70	130	0.5	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

Batch: R142962

19 Sample Matrix Spike Duplicate				Run: ICPMS205-H_190329A				03/29/19 12:32
Cadmium	0.0506	mg/L	0.0010	101	70	130	1.1	20
Chromium	0.0486	mg/L	0.0050	97	70	130	0.5	20
Cobalt	0.0487	mg/L	0.0050	97	70	130	0.3	20
Copper	0.0492	mg/L	0.0050	98	70	130	2.2	20
Iron	0.160	mg/L	0.020	102	70	130	1.4	20
Lead	0.0513	mg/L	0.0010	103	70	130	0.4	20
Manganese	0.0504	mg/L	0.0010	97	70	130	0.4	20
Molybdenum	0.0502	mg/L	0.0010	100	70	130	0.5	20
Nickel	0.0489	mg/L	0.0050	98	70	130	0.1	20
Selenium	0.0549	mg/L	0.0010	109	70	130	1.7	20
Strontium	0.122	mg/L	0.010	98	70	130	0.2	20
Thallium	0.0520	mg/L	0.00050	103	70	130	1.0	20
Uranium	0.0518	mg/L	0.00030	103	70	130	1.0	20
Zinc	0.0508	mg/L	0.010	99	70	130	0.4	20

19 Sample Matrix Spike				Run: ICPMS205-H_190329A				03/29/19 15:20
Aluminum	11.3	mg/L	0.030	89	70	130		
Antimony	2.44	mg/L	0.0010	97	70	130		
Arsenic	2.25	mg/L	0.0010	90	70	130		
Barium	4.34	mg/L	0.050	90	70	130		
Beryllium	1.10	mg/L	0.0010	88	70	130		
Cadmium	1.13	mg/L	0.0010	91	70	130		
Chromium	2.21	mg/L	0.0050	88	70	130		
Cobalt	2.19	mg/L	0.0050	88	70	130		
Copper	2.18	mg/L	0.0050	87	70	130		
Iron	12.4	mg/L	0.020	79	70	130		
Lead	2.25	mg/L	0.0010	90	70	130		
Manganese	10.7	mg/L	0.0014	85	70	130		
Molybdenum	2.42	mg/L	0.0010	97	70	130		
Nickel	2.22	mg/L	0.0050	89	70	130		
Selenium	0.903	mg/L	0.0010	36	70	130		S
Strontium	2.67	mg/L	0.010	90	70	130		
Thallium	2.22	mg/L	0.00050	89	70	130		
Uranium	2.31	mg/L	0.00030	92	70	130		
Zinc	2.27	mg/L	0.010	87	70	130		

19 Sample Matrix Spike Duplicate				Run: ICPMS205-H_190329A				03/29/19 15:22
Aluminum	11.6	mg/L	0.030	91	70	130	2.8	20
Antimony	2.47	mg/L	0.0010	99	70	130	1.3	20
Arsenic	2.35	mg/L	0.0010	94	70	130	4.3	20
Barium	4.09	mg/L	0.050	80	70	130	6.0	20
Beryllium	1.15	mg/L	0.0010	92	70	130	4.6	20
Cadmium	1.17	mg/L	0.0010	93	70	130	3.1	20
Chromium	2.30	mg/L	0.0050	92	70	130	3.9	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

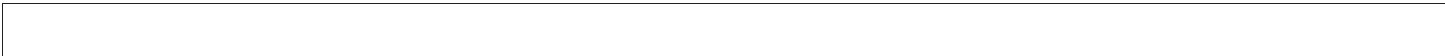
S - Spike recovery outside of advisory limits.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475



Batch: R142962

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190329A

03/29/19 15:22

Cobalt	2.27	mg/L	0.0050	91	70	130	3.7	20	
Copper	2.28	mg/L	0.0050	91	70	130	4.4	20	
Iron	12.5	mg/L	0.020	81	70	130	1.4	20	
Lead	2.41	mg/L	0.0010	96	70	130	7.0	20	
Manganese	11.1	mg/L	0.0014	89	70	130	3.5	20	
Molybdenum	2.42	mg/L	0.0010	97	70	130	0.0	20	
Nickel	2.30	mg/L	0.0050	92	70	130	3.6	20	
Selenium	0.948	mg/L	0.0010	38	70	130	4.8	20	S
Strontium	2.81	mg/L	0.010	95	70	130	5.0	20	
Thallium	2.37	mg/L	0.00050	95	70	130	6.7	20	
Uranium	2.40	mg/L	0.00030	96	70	130	3.8	20	
Zinc	2.35	mg/L	0.010	91	70	130	3.7	20	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

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Analytical Run: ICPMS205-H\_190402A

	2	Initial Calibration Verification Standard						04/02/19 11:45
Selenium		0.0596 mg/L	0.0050	99	90	110		
Silver		0.0301 mg/L	0.0050	100	90	110		
	2	Interference Check Sample A						04/02/19 11:47
Selenium		9.41E-05 mg/L	0.0050					
Silver		4.36E-05 mg/L	0.0050					
	2	Interference Check Sample AB						04/02/19 11:49
Selenium		0.0103 mg/L	0.0050	103	70	130		
Silver		0.00507 mg/L	0.0050	101	70	130		
	2	Method Blank					Run: ICPMS205-H_190402A	Batch: R143027 04/02/19 12:03
Selenium		ND mg/L	2E-05					
Silver		ND mg/L	2E-05					
	2	Laboratory Fortified Blank					Run: ICPMS205-H_190402A	04/02/19 12:05
Selenium		0.0491 mg/L	0.0050	98	85	115		
Silver		0.0198 mg/L	0.0050	99	85	115		
	2	Sample Matrix Spike					Run: ICPMS205-H_190402A	04/02/19 12:24
Selenium		0.0520 mg/L	0.0010	103	70	130		
Silver		0.0196 mg/L	0.0010	98	70	130		
	2	Sample Matrix Spike Duplicate					Run: ICPMS205-H_190402A	04/02/19 12:26
Selenium		0.0525 mg/L	0.0010	104	70	130	1.0	20
Silver		0.0196 mg/L	0.0010	98	70	130	0.3	20
	2	Sample Matrix Spike					Run: ICPMS205-H_190402A	04/02/19 12:53
Selenium		0.0540 mg/L	0.0010	108	70	130		
Silver		0.0193 mg/L	0.0010	96	70	130		
	2	Sample Matrix Spike Duplicate					Run: ICPMS205-H_190402A	04/02/19 12:55
Selenium		0.0554 mg/L	0.0010	111	70	130	2.7	20
Silver		0.0198 mg/L	0.0010	99	70	130	2.7	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

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Analytical Run: HGCV202-H\_190401A

Initial Calibration Verification Standard  
Mercury 0.102 ug/L 0.0050 102 90 110 04/01/19 15:17

Continuing Calibration Verification Standard  
Mercury 0.103 ug/L 0.0050 103 90 110 04/01/19 16:07

Batch: 45033

Method Blank Run: HGCV202-H\_190401A 04/01/19 15:44  
Mercury ND ug/L 0.002

Laboratory Control Sample Run: HGCV202-H\_190401A 04/01/19 15:48  
Mercury 0.0535 ug/L 0.0050 107 90 110

Sample Matrix Spike Run: HGCV202-H\_190401A 04/01/19 15:54  
Mercury 0.0541 ug/L 0.0050 108 70 130

Sample Matrix Spike Duplicate Run: HGCV202-H\_190401A 04/01/19 15:57  
Mercury 0.0546 ug/L 0.0050 109 70 130 0.8 20

Sample Matrix Spike Run: HGCV202-H\_190401A 04/01/19 16:52  
Mercury 0.0558 ug/L 0.0050 112 70 130

Sample Matrix Spike Duplicate Run: HGCV202-H\_190401A 04/01/19 16:55  
Mercury 0.0560 ug/L 0.0050 112 70 130 0.2 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

Analytical Run: IC METROHM\_190328A

	2	Initial Calibration Verification Standard						03/28/19 09:33
Chloride		103	mg/L	1.0	103	90	110	
Sulfate		412	mg/L	1.0	103	90	110	
	2	Continuing Calibration Verification Standard						03/28/19 10:01
Chloride		50.5	mg/L	1.0	101	90	110	
Sulfate		208	mg/L	1.0	104	90	110	
								Batch: R142938
	2	Method Blank					Run: IC METROHM_190328A	03/28/19 09:18
Chloride		ND	mg/L	0.02				
Sulfate		ND	mg/L	0.08				
	2	Laboratory Fortified Blank					Run: IC METROHM_190328A	03/28/19 09:47
Chloride		24.9	mg/L	1.0	100	90	110	
Sulfate		105	mg/L	1.0	105	90	110	
	2	Sample Matrix Spike					Run: IC METROHM_190328A	03/28/19 13:32
Chloride		26.2	mg/L	1.0	100	90	110	
Sulfate		298	mg/L	1.0	100	90	110	
	2	Sample Matrix Spike Duplicate					Run: IC METROHM_190328A	03/28/19 13:46
Chloride		26.2	mg/L	1.0	100	90	110	0.2 20
Sulfate		300	mg/L	1.0	102	90	110	0.9 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (GW)

04/03/19  
H19030475

							Analytical Run: FIA203-HE_190401D
	Initial Calibration Verification Standard						04/01/19 14:35
Nitrogen, Nitrate+Nitrite as N	0.933	mg/L	0.010	93	90	110	
	Continuing Calibration Verification Standard						04/01/19 14:48
Nitrogen, Nitrate+Nitrite as N	0.477	mg/L	0.010	95	90	110	
	Continuing Calibration Verification Standard						04/01/19 15:05
Nitrogen, Nitrate+Nitrite as N	0.478	mg/L	0.010	96	90	110	
							Batch: R142993
	Method Blank			Run: FIA203-HE_190401D			04/01/19 14:36
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				
	Laboratory Fortified Blank			Run: FIA203-HE_190401D			04/01/19 14:37
Nitrogen, Nitrate+Nitrite as N	0.960	mg/L	0.011	96	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190401D			04/01/19 14:52
Nitrogen, Nitrate+Nitrite as N	13.1	mg/L	0.11	90	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190401D			04/01/19 14:53
Nitrogen, Nitrate+Nitrite as N	12.9	mg/L	0.11	89	90	110	1.2 10 S
	Sample Matrix Spike			Run: FIA203-HE_190401D			04/01/19 15:08
Nitrogen, Nitrate+Nitrite as N	1.11	mg/L	0.011	96	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190401D			04/01/19 15:10
Nitrogen, Nitrate+Nitrite as N	1.10	mg/L	0.011	96	90	110	0.2 10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



# Tintina Resources Inc

# H19030475

Login completed by: Jessica C. Smith

Date Received: 3/27/2019

Reviewed by: BL2000\rtooke

Received by: wjj

Reviewed Date: 3/29/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	-0.3°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

None



**TABLE 5. PARAMETERS, METHODS, AND DETECTION LIMITS  
FOR GROUNDWATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	10
TSS	SM 2540C	10
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.01
<b>Trace Constituents (Dissolved)<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameters</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



April 10, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19030476 Quote ID: H1216 - Surface and Groundwater Sampling

Project Name: 18049 Black Butte Copper 1st Quarter GW Sampling

Energy Laboratories Inc Helena MT received the following 15 samples for Tintina Resources Inc on 3/27/2019 for analysis.

H19030476-001	BBC-1903-200	03/25/19 15:40	03/27/19	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Mercury, Dissolved Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Mercury Digestion by E245.1 Solids, Total Dissolved Solids, Total Suspended
H19030476-002	BBC-1903-201	03/25/19 17:25	03/27/19	Groundwater	Same As Above
H19030476-003	BBC-1903-202	03/25/19 18:15	03/27/19	Groundwater	Same As Above
H19030476-004	BBC-1903-203	03/26/19 9:30	03/27/19	Groundwater	Same As Above
H19030476-005	BBC-1903-204	03/26/19 10:00	03/27/19	Groundwater	Same As Above
H19030476-006	BBC-1903-205	03/26/19 10:55	03/27/19	Groundwater	Same As Above
H19030476-007	BBC-1903-206	03/26/19 12:00	03/27/19	Groundwater	Same As Above
H19030476-008	BBC-1903-207	03/26/19 13:00	03/27/19	Groundwater	Same As Above
H19030476-009	BBC-1903-208	03/26/19 13:50	03/27/19	Groundwater	Same As Above
H19030476-010	BBC-1903-209	03/26/19 14:25	03/27/19	Groundwater	Same As Above
H19030476-011	BBC-1903-210	03/26/19 15:30	03/27/19	Groundwater	Same As Above
H19030476-012	BBC-1903-211	03/26/19 16:45	03/27/19	Groundwater	Same As Above
H19030476-013	BBC-1903-212	03/26/19 17:45	03/27/19	Groundwater	Same As Above
H19030476-014	BBC-1903-213	03/27/19 9:30	03/27/19	Groundwater	Same As Above
H19030476-015	BBC-1903-214	03/27/19 10:30	03/27/19	Groundwater	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.



Report Approved By:

  
Assistant Laboratory Manager-Helena, MT

Digitally signed by  
Amanda B. Carlson  
Date: 2019.04.10 17:18:48 -06:00



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-001  
BBC-1903-200

04/10/19  
03/25/19 15:40  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 13:08 / cmm
Solids, Total Dissolved TDS @ 180 C	521 mg/L	10	A2540 C	03/28/19 12:35 / cmm
Alkalinity, Total as CaCO3	220 mg/L	4	A2320 B	03/28/19 13:41 / SRW
Chloride	1 mg/L	1	E300.0	03/28/19 13:04 / SRW
Sulfate	222 mg/L	1	E300.0	03/28/19 13:04 / SRW
Fluoride	0.7 mg/L	0.1	4 A4500-F C	03/28/19 11:37 / SRW
Hardness as CaCO3	406 mg/L	1	A2340 B	03/28/19 14:46 / SRW
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/01/19 15:12 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:42 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:42 / sld
Arsenic	0.071 mg/L	0.001	E200.8	03/29/19 12:42 / sld
Barium	0.011 mg/L	0.003	E200.8	03/29/19 12:42 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:42 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:42 / sld
Calcium	77 mg/L	1	E200.7	03/28/19 14:46 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:42 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:42 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:42 / sld
Iron	1.02 mg/L	0.02	E200.8	03/29/19 12:42 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:42 / sld
Magnesium	52 mg/L	1	E200.7	03/28/19 14:46 / sld
Manganese	0.016 mg/L	0.005	E200.8	03/29/19 12:42 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:29 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:42 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:42 / sld
Potassium	3 mg/L	1	E200.7	03/28/19 14:46 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 12:42 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:40 / sld
Sodium	16 mg/L	1	E200.7	03/28/19 14:46 / sld
Strontium	13.6 mg/L	0.0002	E200.7	03/28/19 14:46 / sld
Thallium	0.0004 mg/L	0.0002	E200.8	03/29/19 12:42 / sld
Uranium	0.0011 mg/L	0.0002	E200.8	03/29/19 12:42 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:42 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-002  
BBC-1903-201

04/10/19  
03/25/19 17:25  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 13:08 / cmm
Solids, Total Dissolved TDS @ 180 C	506 mg/L	10	A2540 C	03/28/19 12:35 / cmm
Alkalinity, Total as CaCO3	240 mg/L	4	A2320 B	03/28/19 13:49 / SRW
Chloride	1 mg/L	1	E300.0	03/28/19 13:18 / SRW
Sulfate	198 mg/L	1	E300.0	03/28/19 13:18 / SRW
Fluoride	0.5 mg/L	0.1	4 A4500-F C	03/28/19 11:47 / SRW
Hardness as CaCO3	450 mg/L	1	A2340 B	03/28/19 14:50 / SRW
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/01/19 15:13 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:44 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:44 / sld
Arsenic	0.014 mg/L	0.001	E200.8	03/29/19 12:44 / sld
Barium	0.016 mg/L	0.003	E200.8	03/29/19 12:44 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:44 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:44 / sld
Calcium	91 mg/L	1	E200.7	03/28/19 14:50 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:44 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:44 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:44 / sld
Iron	0.86 mg/L	0.02	E200.8	03/29/19 12:44 / sld
Lead	0.0013 mg/L	0.0003	E200.8	03/29/19 12:44 / sld
Magnesium	54 mg/L	1	E200.7	03/28/19 14:50 / sld
Manganese	0.088 mg/L	0.005	E200.8	03/29/19 12:44 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:33 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:44 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:44 / sld
Potassium	4 mg/L	1	E200.7	03/28/19 14:50 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 12:44 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:42 / sld
Sodium	6 mg/L	1	E200.7	03/28/19 14:50 / sld
Strontium	1.34 mg/L	0.0002	E200.7	03/28/19 14:50 / sld
Thallium	0.0027 mg/L	0.0002	E200.8	03/29/19 12:44 / sld
Uranium	0.0010 mg/L	0.0002	E200.8	03/29/19 12:44 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:44 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-003  
BBC-1903-202

04/10/19  
03/25/19 18:15  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	17 mg/L	10	A2540 D	03/28/19 13:09 / cmm
Solids, Total Dissolved TDS @ 180 C	371 mg/L	10	A2540 C	03/28/19 12:35 / cmm
Alkalinity, Total as CaCO3	240 mg/L	4	A2320 B	03/28/19 13:58 / SRW
Chloride	2 mg/L	1	E300.0	03/28/19 14:42 / SRW
Sulfate	105 mg/L	1	E300.0	03/28/19 14:42 / SRW
Fluoride	0.5 mg/L	0.1	4 A4500-F C	03/28/19 11:51 / SRW
Hardness as CaCO3	365 mg/L	1	A2340 B	03/28/19 14:54 / SRW
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/01/19 15:14 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:46 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:46 / sld
Arsenic	0.006 mg/L	0.001	E200.8	03/29/19 12:46 / sld
Barium	0.017 mg/L	0.003	E200.8	03/29/19 12:46 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:46 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:46 / sld
Calcium	78 mg/L	1	E200.7	03/28/19 14:54 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:46 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:46 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:46 / sld
Iron	1.36 mg/L	0.02	E200.8	03/29/19 12:46 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:46 / sld
Magnesium	41 mg/L	1	E200.7	03/28/19 14:54 / sld
Manganese	0.044 mg/L	0.005	E200.8	03/29/19 12:46 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:36 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:46 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:46 / sld
Potassium	3 mg/L	1	E200.7	03/28/19 14:54 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 12:46 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:44 / sld
Sodium	4 mg/L	1	E200.7	03/28/19 14:54 / sld
Strontium	0.332 mg/L	0.0002	E200.7	03/28/19 14:54 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 12:46 / sld
Uranium	0.0019 mg/L	0.0002	E200.8	03/29/19 12:46 / sld
Zinc	0.005 mg/L	0.002	E200.8	03/29/19 12:46 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-004  
BBC-1903-203

04/10/19  
03/26/19 09:30  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:21 / cmm
Solids, Total Dissolved TDS @ 180 C	208 mg/L	10	A2540 C	03/28/19 12:36 / cmm
Alkalinity, Total as CaCO3	190 mg/L	4	A2320 B	03/28/19 14:06 / SRW
Chloride	1 mg/L	1	E300.0	03/28/19 14:56 / SRW
Sulfate	22 mg/L	1	E300.0	03/28/19 14:56 / SRW
Fluoride	0.3 mg/L	0.1	4 A4500-F C	03/28/19 11:56 / SRW
Hardness as CaCO3	215 mg/L	1	A2340 B	03/28/19 15:17 / SRW
Nitrogen, Nitrate+Nitrite as N	0.20 mg/L	0.01	E353.2	04/01/19 15:15 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:48 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:48 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:48 / sld
Barium	0.084 mg/L	0.003	E200.8	03/29/19 12:48 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:48 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:48 / sld
Calcium	46 mg/L	1	E200.7	03/28/19 15:17 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:48 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:48 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:48 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 12:48 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:48 / sld
Magnesium	24 mg/L	1	E200.7	03/28/19 15:17 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:48 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:39 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:48 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:48 / sld
Potassium	1 mg/L	1	E200.7	03/28/19 15:17 / sld
Selenium	0.0013 mg/L	0.0002	E200.8	03/29/19 12:48 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:47 / sld
Sodium	3 mg/L	1	E200.7	03/28/19 15:17 / sld
Strontium	0.0925 mg/L	0.0002	E200.8	03/29/19 12:48 / sld
Thallium	0.0002 mg/L	0.0002	E200.8	03/29/19 12:48 / sld
Uranium	0.0005 mg/L	0.0002	E200.8	03/29/19 12:48 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:48 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-005  
BBC-1903-204

04/10/19  
03/26/19 10:00  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:21 / cmm
Solids, Total Dissolved TDS @ 180 C	237 mg/L	10	A2540 C	03/28/19 12:36 / cmm
Alkalinity, Total as CaCO3	200 mg/L	4	A2320 B	03/28/19 14:14 / SRW
Chloride	1 mg/L	1	E300.0	03/28/19 15:10 / SRW
Sulfate	37 mg/L	1	E300.0	03/28/19 15:10 / SRW
Fluoride	0.3 mg/L	0.1	4 A4500-F C	03/28/19 11:58 / SRW
Hardness as CaCO3	244 mg/L	1	A2340 B	03/28/19 15:20 / SRW
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/01/19 15:17 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:51 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:51 / sld
Arsenic	0.003 mg/L	0.001	E200.8	03/29/19 12:51 / sld
Barium	0.043 mg/L	0.003	E200.8	03/29/19 12:51 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:51 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:51 / sld
Calcium	52 mg/L	1	E200.7	03/28/19 15:20 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:51 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:51 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:51 / sld
Iron	0.02 mg/L	0.02	E200.8	03/29/19 12:51 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:51 / sld
Magnesium	28 mg/L	1	E200.7	03/28/19 15:20 / sld
Manganese	0.007 mg/L	0.005	E200.8	03/29/19 12:51 / sld
Mercury	ND ug/L	0.005	E245.1	04/01/19 16:49 / ber
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:51 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:51 / sld
Potassium	1 mg/L	1	E200.7	03/28/19 15:20 / sld
Selenium	0.0066 mg/L	0.0002	E200.8	03/29/19 12:51 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:49 / sld
Sodium	3 mg/L	1	E200.7	03/28/19 15:20 / sld
Strontium	0.0912 mg/L	0.0002	E200.8	03/29/19 12:51 / sld
Thallium	0.0038 mg/L	0.0002	E200.8	03/29/19 12:51 / sld
Uranium	0.0023 mg/L	0.0002	E200.8	03/29/19 12:51 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:51 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-006  
BBC-1903-205

04/10/19  
03/26/19 10:55  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	37 mg/L	10	A2540 D	03/28/19 12:22 / cmm
Solids, Total Dissolved TDS @ 180 C	435 mg/L	10	A2540 C	03/28/19 12:36 / cmm
Alkalinity, Total as CaCO3	110 mg/L	4	A2320 B	03/28/19 14:22 / SRW
Chloride	1 mg/L	1	E300.0	03/28/19 15:24 / SRW
Sulfate	226 mg/L	1	E300.0	03/28/19 15:24 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	03/28/19 12:00 / SRW
Hardness as CaCO3	316 mg/L	1	A2340 B	03/28/19 15:24 / SRW
Nitrogen, Nitrate+Nitrite as N	0.04 mg/L	0.01	E353.2	04/01/19 15:18 / kmd
Aluminum	0.017 mg/L	0.009	E200.8	03/29/19 12:53 / sld
Antimony	0.0008 mg/L	0.0005	E200.8	04/03/19 13:52 / sld
Arsenic	0.070 mg/L	0.001	E200.8	03/29/19 12:53 / sld
Barium	0.011 mg/L	0.003	E200.8	03/29/19 12:53 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:53 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:53 / sld
Calcium	68 mg/L	1	E200.7	03/28/19 15:24 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:53 / sld
Cobalt	0.02 mg/L	0.01	E200.8	03/29/19 12:53 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:53 / sld
Iron	20.0 mg/L	0.02	E200.7	03/28/19 15:24 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:53 / sld
Magnesium	36 mg/L	1	E200.7	03/28/19 15:24 / sld
Manganese	0.075 mg/L	0.005	E200.8	03/29/19 12:53 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 15:24 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:53 / sld
Nickel	0.011 mg/L	0.001	E200.8	03/29/19 12:53 / sld
Potassium	3 mg/L	1	E200.7	03/28/19 15:24 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 12:53 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 12:51 / sld
Sodium	3 mg/L	1	E200.7	03/28/19 15:24 / sld
Strontium	1.83 mg/L	0.0002	E200.7	04/03/19 12:42 / sld
Thallium	0.0125 mg/L	0.0002	E200.8	03/29/19 12:53 / sld
Uranium	ND mg/L	0.0002	E200.8	03/29/19 12:53 / sld
Zinc	0.012 mg/L	0.002	E200.8	03/29/19 12:53 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-007  
BBC-1903-206

04/10/19  
03/26/19 12:00  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	45 mg/L	10	A2540 D	03/28/19 12:22 / cmm
Solids, Total Dissolved TDS @ 180 C	194 mg/L	10	A2540 C	03/28/19 12:36 / cmm
Alkalinity, Total as CaCO3	170 mg/L	4	A2320 B	03/28/19 14:29 / SRW
Chloride	2 mg/L	1	E300.0	03/28/19 15:39 / SRW
Sulfate	14 mg/L	1	E300.0	03/28/19 15:39 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	03/28/19 12:03 / SRW
Hardness as CaCO3	187 mg/L	1	A2340 B	03/28/19 15:28 / SRW
Nitrogen, Nitrate+Nitrite as N	0.42 mg/L	0.01	E353.2	04/01/19 15:19 / kmd
Aluminum	0.022 mg/L	0.009	E200.8	03/29/19 12:55 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:55 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:55 / sld
Barium	0.181 mg/L	0.003	E200.8	03/29/19 12:55 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:55 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:55 / sld
Calcium	44 mg/L	1	E200.7	03/28/19 15:28 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:55 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:55 / sld
Copper	0.006 mg/L	0.002	E200.8	03/29/19 12:55 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 12:55 / sld
Lead	0.0003 mg/L	0.0003	E200.8	03/29/19 12:55 / sld
Magnesium	19 mg/L	1	E200.7	03/28/19 15:28 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:55 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 15:33 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:55 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:55 / sld
Potassium	1 mg/L	1	E200.7	03/28/19 15:28 / sld
Selenium	0.0002 mg/L	0.0002	E200.8	03/29/19 12:55 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:05 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 15:28 / sld
Strontium	0.0995 mg/L	0.0002	E200.8	03/29/19 12:55 / sld
Thallium	0.0009 mg/L	0.0002	E200.8	03/29/19 12:55 / sld
Uranium	0.0010 mg/L	0.0002	E200.8	03/29/19 12:55 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:55 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-008  
BBC-1903-207

04/10/19  
03/26/19 13:00  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	44 mg/L	10	A2540 D	03/28/19 12:22 / cmm
Solids, Total Dissolved TDS @ 180 C	203 mg/L	10	A2540 C	03/28/19 12:36 / cmm
Alkalinity, Total as CaCO3	180 mg/L	4	A2320 B	03/28/19 14:37 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 15:53 / SRW
Sulfate	14 mg/L	1	E300.0	03/28/19 15:53 / SRW
Fluoride	0.1 mg/L	0.1	4 A4500-F C	03/28/19 12:05 / SRW
Hardness as CaCO3	210 mg/L	1	A2340 B	03/28/19 15:32 / SRW
Nitrogen, Nitrate+Nitrite as N	0.25 mg/L	0.01	E353.2	04/01/19 15:20 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 12:57 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 12:57 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 12:57 / sld
Barium	0.081 mg/L	0.003	E200.8	03/29/19 12:57 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 12:57 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 12:57 / sld
Calcium	52 mg/L	1	E200.7	03/28/19 15:32 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 12:57 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 12:57 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 12:57 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 12:57 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 12:57 / sld
Magnesium	20 mg/L	1	E200.7	03/28/19 15:32 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 12:57 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 15:36 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 12:57 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 12:57 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 15:32 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 12:57 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:07 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 15:32 / sld
Strontium	0.130 mg/L	0.0002	E200.8	03/29/19 12:57 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 12:57 / sld
Uranium	0.0007 mg/L	0.0002	E200.8	03/29/19 12:57 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 12:57 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-009  
BBC-1903-208

04/10/19  
03/26/19 13:50  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	13 mg/L	10	A2540 D	03/28/19 12:22 / cmm
Solids, Total Dissolved TDS @ 180 C	227 mg/L	10	A2540 C	03/28/19 12:37 / cmm
Alkalinity, Total as CaCO3	220 mg/L	4	A2320 B	03/28/19 14:44 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 16:07 / SRW
Sulfate	17 mg/L	1	E300.0	03/28/19 16:07 / SRW
Fluoride	0.1 mg/L	0.1	4 A4500-F C	03/28/19 12:08 / SRW
Hardness as CaCO3	248 mg/L	1	A2340 B	03/28/19 15:36 / SRW
Nitrogen, Nitrate+Nitrite as N	0.23 mg/L	0.01	E353.2	04/01/19 15:24 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 13:11 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 13:11 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 13:11 / sld
Barium	0.056 mg/L	0.003	E200.8	03/29/19 13:11 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 13:11 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 13:11 / sld
Calcium	63 mg/L	1	E200.7	03/28/19 15:36 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 13:11 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 13:11 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 13:11 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 13:11 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 13:11 / sld
Magnesium	22 mg/L	1	E200.7	03/28/19 15:36 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 13:11 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 15:40 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 13:11 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 13:11 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 15:36 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 13:11 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:09 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 15:36 / sld
Strontium	0.101 mg/L	0.0002	E200.8	03/29/19 13:11 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 13:11 / sld
Uranium	0.0006 mg/L	0.0002	E200.8	03/29/19 13:11 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 13:11 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-010  
BBC-1903-209

04/10/19  
03/26/19 14:25  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/28/19 12:23 / cmm
Solids, Total Dissolved TDS @ 180 C	226 mg/L	10	A2540 C	03/28/19 12:37 / cmm
Alkalinity, Total as CaCO3	220 mg/L	4	A2320 B	03/28/19 14:52 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 16:21 / SRW
Sulfate	13 mg/L	1	E300.0	03/28/19 16:21 / SRW
Fluoride	0.1 mg/L	0.1	4 A4500-F C	03/28/19 12:10 / SRW
Hardness as CaCO3	237 mg/L	1	A2340 B	03/28/19 15:39 / SRW
Nitrogen, Nitrate+Nitrite as N	0.16 mg/L	0.01	E353.2	04/01/19 15:27 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 13:13 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 13:13 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 13:13 / sld
Barium	0.053 mg/L	0.003	E200.8	03/29/19 13:13 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 13:13 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 13:13 / sld
Calcium	61 mg/L	1	E200.7	03/28/19 15:39 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 13:13 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 13:13 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 13:13 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 13:13 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 13:13 / sld
Magnesium	21 mg/L	1	E200.7	03/28/19 15:39 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 13:13 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 15:43 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 13:13 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 13:13 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 15:39 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 13:11 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:11 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 15:39 / sld
Strontium	0.141 mg/L	0.0002	E200.8	03/29/19 13:13 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 13:13 / sld
Uranium	0.0008 mg/L	0.0002	E200.8	03/29/19 13:13 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 13:13 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-011  
BBC-1903-210

04/10/19  
03/26/19 15:30  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	21 mg/L	10	A2540 D	03/28/19 12:24 / cmm
Solids, Total Dissolved TDS @ 180 C	182 mg/L	10	A2540 C	03/28/19 12:37 / cmm
Alkalinity, Total as CaCO3	170 mg/L	4	A2320 B	03/28/19 15:00 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 16:35 / SRW
Sulfate	6 mg/L	1	E300.0	03/28/19 16:35 / SRW
Fluoride	ND mg/L	0.1	4 A4500-F C	03/28/19 12:13 / SRW
Hardness as CaCO3	172 mg/L	1	A2340 B	03/28/19 15:43 / SRW
Nitrogen, Nitrate+Nitrite as N	0.44 mg/L	0.01	E353.2	04/01/19 15:29 / kmd
Aluminum	0.010 mg/L	0.009	E200.8	03/29/19 13:15 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 13:15 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 13:15 / sld
Barium	0.162 mg/L	0.003	E200.8	03/29/19 13:15 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 13:15 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 13:15 / sld
Calcium	48 mg/L	1	E200.7	03/28/19 15:43 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 13:15 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 13:15 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 13:15 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 13:15 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 13:15 / sld
Magnesium	12 mg/L	1	E200.7	03/28/19 15:43 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 13:15 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 15:46 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 13:15 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 13:15 / sld
Potassium	2 mg/L	1	E200.7	03/28/19 15:43 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 13:15 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:13 / sld
Sodium	6 mg/L	1	E200.7	03/28/19 15:43 / sld
Strontium	0.326 mg/L	0.0002	E200.8	03/29/19 13:15 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 13:15 / sld
Uranium	0.0019 mg/L	0.0002	E200.8	03/29/19 13:15 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 13:15 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-012  
BBC-1903-211

04/10/19  
03/26/19 16:45  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	33 mg/L	10	A2540 D	03/28/19 12:24 / cmm
Solids, Total Dissolved TDS @ 180 C	187 mg/L	10	A2540 C	03/28/19 12:37 / cmm
Alkalinity, Total as CaCO3	180 mg/L	4	A2320 B	03/28/19 15:07 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 16:49 / SRW
Sulfate	5 mg/L	1	E300.0	03/28/19 16:49 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	03/28/19 12:20 / SRW
Hardness as CaCO3	183 mg/L	1	A2340 B	03/28/19 15:47 / SRW
Nitrogen, Nitrate+Nitrite as N	0.53 mg/L	0.01	E353.2	04/01/19 15:30 / kmd
Aluminum	0.019 mg/L	0.009	E200.8	03/29/19 13:17 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 13:17 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 13:17 / sld
Barium	0.189 mg/L	0.003	E200.8	03/29/19 13:17 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 13:17 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 13:17 / sld
Calcium	43 mg/L	1	E200.7	03/28/19 15:47 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 13:17 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 13:17 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 13:17 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 13:17 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 13:17 / sld
Magnesium	19 mg/L	1	E200.7	03/28/19 15:47 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 13:17 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 16:37 / dck
Molybdenum	0.005 mg/L	0.002	E200.8	03/29/19 13:17 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 13:17 / sld
Potassium	2 mg/L	1	E200.7	03/28/19 15:47 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 13:17 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:16 / sld
Sodium	6 mg/L	1	E200.7	03/28/19 15:47 / sld
Strontium	0.956 mg/L	0.0002	E200.8	03/29/19 13:17 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 13:17 / sld
Uranium	0.0088 mg/L	0.0002	E200.8	03/29/19 13:17 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 13:17 / sld

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ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-013  
BBC-1903-212

04/10/19  
03/26/19 17:45  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	14 mg/L	10	A2540 D	03/28/19 12:25 / cmm
Solids, Total Dissolved TDS @ 180 C	194 mg/L	10	A2540 C	03/28/19 12:39 / cmm
Alkalinity, Total as CaCO3	190 mg/L	4	A2320 B	03/28/19 15:34 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 18:14 / SRW
Sulfate	8 mg/L	1	E300.0	03/28/19 18:14 / SRW
Fluoride	ND mg/L	0.1	4 A4500-F C	03/28/19 12:25 / SRW
Hardness as CaCO3	208 mg/L	1	A2340 B	03/28/19 15:51 / SRW
Nitrogen, Nitrate+Nitrite as N	0.17 mg/L	0.01	E353.2	04/01/19 15:31 / kmd
Aluminum	ND mg/L	0.009	E200.8	03/29/19 13:20 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 13:20 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 13:20 / sld
Barium	0.083 mg/L	0.003	E200.8	03/29/19 13:20 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 13:20 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 13:20 / sld
Calcium	50 mg/L	1	E200.7	03/28/19 15:51 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 13:20 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 13:20 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 13:20 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 13:20 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 13:20 / sld
Magnesium	20 mg/L	1	E200.7	03/28/19 15:51 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 13:20 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 16:40 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 13:20 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 13:20 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 15:51 / sld
Selenium	0.0003 mg/L	0.0002	E200.8	03/29/19 13:20 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:18 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 15:51 / sld
Strontium	0.100 mg/L	0.0002	E200.8	03/29/19 13:20 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 13:20 / sld
Uranium	0.0005 mg/L	0.0002	E200.8	03/29/19 13:20 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 13:20 / sld

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QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-014  
BBC-1903-213

04/10/19  
03/27/19 09:30  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	14 mg/L	10	A2540 D	03/28/19 12:25 / cmm
Solids, Total Dissolved TDS @ 180 C	214 mg/L	10	A2540 C	03/28/19 12:39 / cmm
Alkalinity, Total as CaCO3	200 mg/L	4	A2320 B	03/28/19 15:40 / SRW
Chloride	2 mg/L	1	E300.0	03/28/19 18:28 / SRW
Sulfate	10 mg/L	1	E300.0	03/28/19 18:28 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	03/28/19 12:27 / SRW
Hardness as CaCO3	214 mg/L	1	A2340 B	04/02/19 14:56 / sld
Nitrogen, Nitrate+Nitrite as N	0.34 mg/L	0.01	E353.2	04/01/19 15:32 / kmd
Aluminum	0.016 mg/L	0.009	E200.8	03/29/19 13:22 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 13:22 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 13:22 / sld
Barium	0.253 mg/L	0.003	E200.8	03/29/19 13:22 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 13:22 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 13:22 / sld
Calcium	44 mg/L	1	E200.7	04/01/19 16:36 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 13:22 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 13:22 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 13:22 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 13:22 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 13:22 / sld
Magnesium	25 mg/L	1	E200.7	04/01/19 16:36 / sld
Manganese	0.008 mg/L	0.005	E200.8	03/29/19 13:22 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 16:43 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 13:22 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 13:22 / sld
Potassium	ND mg/L	1	E200.7	03/28/19 16:13 / sld
Selenium	0.0009 mg/L	0.0002	E200.8	03/29/19 13:22 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:32 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 16:13 / sld
Strontium	0.114 mg/L	0.0002	E200.8	03/29/19 13:22 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 13:22 / sld
Uranium	0.0009 mg/L	0.0002	E200.8	03/29/19 13:22 / sld
Zinc	0.006 mg/L	0.002	E200.8	03/29/19 13:22 / sld

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QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling  
H19030476-015  
BBC-1903-214

04/10/19  
03/27/19 10:30  
03/27/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	179 mg/L	10	A2540 D	03/28/19 12:25 / cmm
Solids, Total Dissolved TDS @ 180 C	208 mg/L	10	A2540 C	03/28/19 12:39 / cmm
Alkalinity, Total as CaCO3	200 mg/L	4	A2320 B	03/28/19 15:47 / SRW
Chloride	ND mg/L	1	E300.0	03/28/19 18:42 / SRW
Sulfate	9 mg/L	1	E300.0	03/28/19 18:42 / SRW
Fluoride	ND mg/L	0.1	4 A4500-F C	03/28/19 12:30 / SRW
Hardness as CaCO3	209 mg/L	1	A2340 B	04/02/19 14:56 / sld
Nitrogen, Nitrate+Nitrite as N	0.45 mg/L	0.01	E353.2	04/01/19 15:33 / kmd
Aluminum	0.009 mg/L	0.009	E200.8	03/29/19 13:24 / sld
Antimony	ND mg/L	0.0005	E200.8	03/29/19 13:24 / sld
Arsenic	ND mg/L	0.001	E200.8	03/29/19 13:24 / sld
Barium	0.178 mg/L	0.003	E200.8	03/29/19 13:24 / sld
Beryllium	ND mg/L	0.0008	E200.8	03/29/19 13:24 / sld
Cadmium	ND mg/L	0.00003	E200.8	03/29/19 13:24 / sld
Calcium	46 mg/L	1	E200.7	04/01/19 16:59 / sld
Chromium	ND mg/L	0.01	E200.8	03/29/19 13:24 / sld
Cobalt	ND mg/L	0.01	E200.8	03/29/19 13:24 / sld
Copper	ND mg/L	0.002	E200.8	03/29/19 13:24 / sld
Iron	ND mg/L	0.02	E200.8	03/29/19 13:24 / sld
Lead	ND mg/L	0.0003	E200.8	03/29/19 13:24 / sld
Magnesium	23 mg/L	1	E200.7	04/01/19 16:59 / sld
Manganese	ND mg/L	0.005	E200.8	03/29/19 13:24 / sld
Mercury	ND ug/L	0.005	E245.1	04/02/19 16:46 / dck
Molybdenum	ND mg/L	0.002	E200.8	03/29/19 13:24 / sld
Nickel	ND mg/L	0.001	E200.8	03/29/19 13:24 / sld
Potassium	1 mg/L	1	E200.7	03/28/19 16:17 / sld
Selenium	ND mg/L	0.0002	E200.8	03/29/19 13:24 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:34 / sld
Sodium	2 mg/L	1	E200.7	03/28/19 16:17 / sld
Strontium	0.0655 mg/L	0.0002	E200.8	03/29/19 13:24 / sld
Thallium	ND mg/L	0.0002	E200.8	03/29/19 13:24 / sld
Uranium	0.0005 mg/L	0.0002	E200.8	03/29/19 13:24 / sld
Zinc	ND mg/L	0.002	E200.8	03/29/19 13:24 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

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							Batch: R142901
Alkalinity, Total as CaCO3	Method Blank				Run: PHSC_101-H_190328A		03/28/19 12:26
	ND mg/L	2					
Alkalinity, Total as CaCO3	Laboratory Control Sample				Run: PHSC_101-H_190328A		03/28/19 12:32
	590 mg/L	4.0	98	90	110		
Alkalinity, Total as CaCO3	Sample Duplicate				Run: PHSC_101-H_190328A		03/28/19 12:55
	140 mg/L	4.0			0.5		10
Alkalinity, Total as CaCO3	Sample Duplicate				Run: PHSC_101-H_190328A		03/28/19 15:13
	180 mg/L	4.0			0.1		10
Alkalinity, Total as CaCO3	Method Blank				Run: PHSC_101-H_190328A		03/28/19 15:19
	ND mg/L	2					
Alkalinity, Total as CaCO3	Laboratory Control Sample				Run: PHSC_101-H_190328A		03/28/19 15:24
	590 mg/L	4.0	98	90	110		
Alkalinity, Total as CaCO3	Sample Duplicate				Run: PHSC_101-H_190328A		03/28/19 15:59
	170 mg/L	4.0			0.4		10
Alkalinity, Total as CaCO3	Sample Duplicate				Run: PHSC_101-H_190328A		03/28/19 18:36
	240 mg/L	4.0			1.5		10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

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Batch: TDS190328A

Solids, Total Dissolved TDS @ 180 C	Method Blank	ND	mg/L	10			Run: ACCU-124 (14410200)_19032	03/28/19 12:33
Solids, Total Dissolved TDS @ 180 C	Laboratory Control Sample	1790	mg/L	20	90	90	110	03/28/19 12:33
Solids, Total Dissolved TDS @ 180 C	Sample Duplicate	239	mg/L	10			Run: ACCU-124 (14410200)_19032	03/28/19 12:33
							2.1	5
Solids, Total Dissolved TDS @ 180 C	Sample Duplicate	371	mg/L	10			Run: ACCU-124 (14410200)_19032	03/28/19 12:35
							0.0	5
Solids, Total Dissolved TDS @ 180 C	Method Blank	ND	mg/L	10			Run: ACCU-124 (14410200)_19032	03/28/19 12:39
Solids, Total Dissolved TDS @ 180 C	Laboratory Control Sample	1930	mg/L	20	97	90	110	03/28/19 12:39
Solids, Total Dissolved TDS @ 180 C	Sample Duplicate	190	mg/L	10			Run: ACCU-124 (14410200)_19032	03/28/19 12:39
							2.1	5
Solids, Total Dissolved TDS @ 180 C	Sample Duplicate	23800	mg/L	200			Run: ACCU-124 (14410200)_19032	03/28/19 12:41
							0.6	5





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Batch: TSS190328A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/28/19 12:16
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/28/19 12:17
Solids, Total Suspended TSS @ 105 C	92.0	mg/L	10	92	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:19
Solids, Total Suspended TSS @ 105 C	3.00	mg/L	10			5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:21
Solids, Total Suspended TSS @ 105 C	17.0	mg/L	10			
	Method Blank				Run: ACCU-124 (14410200)_19032	03/28/19 12:24
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/28/19 12:24
Solids, Total Suspended TSS @ 105 C	90.0	mg/L	10	90	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:25
Solids, Total Suspended TSS @ 105 C	14.0	mg/L	10		0.0	5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 14:18
Solids, Total Suspended TSS @ 105 C	21.0	mg/L	10		4.9	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

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Analytical Run: MANTECH 2\_190328A

	Initial Calibration Verification Standard						03/28/19 10:36
Fluoride	0.7	mg/L	0.1	93	90	110	
	Continuing Calibration Verification Standard						03/28/19 11:09
Fluoride	1.0	mg/L	0.1	97	90	110	
	Continuing Calibration Verification Standard						03/28/19 11:39
Fluoride	1.0	mg/L	0.1	98	90	110	
	Continuing Calibration Verification Standard						03/28/19 12:15
Fluoride	1.0	mg/L	0.1	97	90	110	
<hr/>							Batch: R142925
	Method Blank				Run: MANTECH 2_190328A		03/28/19 10:39
Fluoride	0.04	mg/L	0.03				
	Sample Matrix Spike				Run: MANTECH 2_190328A		03/28/19 11:49
Fluoride	1.5	mg/L	0.1	97	85	115	
	Sample Duplicate				Run: MANTECH 2_190328A		03/28/19 11:54
Fluoride	0.5	mg/L	0.1			0.0	10
	Sample Duplicate				Run: MANTECH 2_190328A		03/28/19 12:23
Fluoride	0.2	mg/L	0.1			0.0	10
	Sample Duplicate				Run: MANTECH 2_190328A		03/28/19 12:54
Fluoride	1.8	mg/L	0.1			0.0	10
	Sample Matrix Spike				Run: MANTECH 2_190328A		03/28/19 13:01
Fluoride	1.2	mg/L	0.1	94	85	115	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Analytical Run: ICP2-HE\_190328B

6 Initial Calibration Verification Standard							03/28/19 12:50
Calcium	41.4	mg/L	1.0	103	95	105	
Iron	4.12	mg/L	0.020	103	95	105	
Magnesium	41.0	mg/L	1.0	103	95	105	
Potassium	41.0	mg/L	1.0	102	95	105	
Sodium	40.7	mg/L	1.0	102	95	105	
Strontium	0.804	mg/L	0.10	101	95	105	
6 Continuing Calibration Verification Standard							03/28/19 13:00
Calcium	26.0	mg/L	1.0	104	95	105	
Iron	2.59	mg/L	0.020	103	95	105	
Magnesium	25.7	mg/L	1.0	103	95	105	
Potassium	25.7	mg/L	1.0	103	95	105	
Sodium	25.7	mg/L	1.0	103	95	105	
Strontium	2.61	mg/L	0.10	104	95	105	
6 Interference Check Sample A							03/28/19 13:11
Calcium	478	mg/L	1.0	96	80	120	
Iron	186	mg/L	0.020	93	80	120	
Magnesium	535	mg/L	1.0	107	80	120	
Potassium	0.00547	mg/L	1.0		0	0	
Sodium	0.0274	mg/L	1.0		0	0	
Strontium	-0.0280	mg/L	0.10		0	0	
6 Interference Check Sample AB							03/28/19 13:15
Calcium	463	mg/L	1.0	93	80	120	
Iron	181	mg/L	0.020	91	80	120	
Magnesium	521	mg/L	1.0	104	80	120	
Potassium	20.7	mg/L	1.0	104	80	120	
Sodium	21.0	mg/L	1.0	105	80	120	
Strontium	1.02	mg/L	0.10	102	80	120	
6 Continuing Calibration Verification Standard							03/28/19 14:23
Calcium	24.2	mg/L	1.0	97	90	110	
Iron	2.48	mg/L	0.020	99	90	110	
Magnesium	23.8	mg/L	1.0	95	90	110	
Potassium	26.7	mg/L	1.0	107	90	110	
Sodium	27.0	mg/L	1.0	108	90	110	
Strontium	2.61	mg/L	0.10	104	90	110	
6 Continuing Calibration Verification Standard							03/28/19 15:09
Calcium	25.2	mg/L	1.0	101	90	110	
Iron	2.57	mg/L	0.020	103	90	110	
Magnesium	25.1	mg/L	1.0	100	90	110	
Potassium	25.9	mg/L	1.0	104	90	110	
Sodium	25.9	mg/L	1.0	104	90	110	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

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Analytical Run: ICP2-HE\_190328B

6 Continuing Calibration Verification Standard								03/28/19 15:09
Strontium	2.60	mg/L	0.10	104	90	110		

5 Continuing Calibration Verification Standard								03/28/19 15:55
Calcium	26.6	mg/L	1.0	107	90	110		
Iron	2.73	mg/L	0.020	109	90	110		
Magnesium	27.4	mg/L	1.0	110	90	110		
Potassium	26.6	mg/L	1.0	106	90	110		
Sodium	27.0	mg/L	1.0	108	90	110		

Batch: R142940

6 Method Blank								Run: ICP2-HE_190328B	03/28/19 13:27
Calcium	ND	mg/L	0.07						
Iron	ND	mg/L	0.01						
Magnesium	ND	mg/L	0.01						
Potassium	ND	mg/L	0.06						
Sodium	ND	mg/L	0.02						
Strontium	ND	mg/L	0.0002						

6 Laboratory Fortified Blank								Run: ICP2-HE_190328B	03/28/19 13:31
Calcium	53.8	mg/L	1.0	108	85	115			
Iron	5.38	mg/L	0.020	108	85	115			
Magnesium	54.6	mg/L	1.0	109	85	115			
Potassium	53.0	mg/L	1.0	106	85	115			
Sodium	52.6	mg/L	1.0	105	85	115			
Strontium	1.04	mg/L	0.10	104	85	115			

6 Sample Matrix Spike								Run: ICP2-HE_190328B	03/28/19 15:02
Calcium	124	mg/L	1.0	93	70	130			
Iron	6.59	mg/L	0.020	103	70	130			
Magnesium	93.2	mg/L	1.0	104	70	130			
Potassium	57.6	mg/L	1.0	110	70	130			
Sodium	58.9	mg/L	1.0	110	70	130			
Strontium	1.41	mg/L	0.010	108	70	130			

6 Sample Matrix Spike Duplicate								Run: ICP2-HE_190328B	03/28/19 15:05
Calcium	128	mg/L	1.0	100	70	130	2.6	20	
Iron	6.73	mg/L	0.020	106	70	130	2.0	20	
Magnesium	95.6	mg/L	1.0	109	70	130	2.5	20	
Potassium	59.3	mg/L	1.0	113	70	130	2.9	20	
Sodium	60.3	mg/L	1.0	113	70	130	2.3	20	
Strontium	1.42	mg/L	0.010	108	70	130	0.5	20	

6 Sample Matrix Spike								Run: ICP2-HE_190328B	03/28/19 16:06
Calcium	106	mg/L	1.0	110	70	130			
Iron	5.76	mg/L	0.020	115	70	130			
Magnesium	80.6	mg/L	1.0	122	70	130			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Batch: R142940

6 Sample Matrix Spike

Run: ICP2-HE\_190328B

03/28/19 16:06

Potassium	57.0	mg/L	1.0	112	70	130
Sodium	59.5	mg/L	1.0	114	70	130
Strontium	1.23	mg/L	0.010	113	70	130

6 Sample Matrix Spike Duplicate

Run: ICP2-HE\_190328B

03/28/19 16:10

Calcium	108	mg/L	1.0	115	70	130	2.0	20
Iron	5.90	mg/L	0.020	118	70	130	2.4	20
Magnesium	82.6	mg/L	1.0	126	70	130	2.4	20
Potassium	58.3	mg/L	1.0	115	70	130	2.3	20
Sodium	60.8	mg/L	1.0	117	70	130	2.2	20
Strontium	1.25	mg/L	0.010	114	70	130	1.3	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

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Analytical Run: ICP2-HE\_190401B

	2	Initial Calibration Verification Standard						04/01/19 15:58
Calcium		40.4 mg/L	1.0	101	95	105		
Magnesium		40.0 mg/L	1.0	100	95	105		
	2	Continuing Calibration Verification Standard						04/01/19 16:02
Calcium		25.4 mg/L	1.0	102	95	105		
Magnesium		25.0 mg/L	1.0	100	95	105		
	2	Interference Check Sample A						04/01/19 16:13
Calcium		477 mg/L	1.0	95	80	120		
Magnesium		532 mg/L	1.0	106	80	120		
	2	Interference Check Sample AB						04/01/19 16:17
Calcium		483 mg/L	1.0	97	80	120		
Magnesium		537 mg/L	1.0	107	80	120		
	2	Continuing Calibration Verification Standard						04/01/19 16:48
Calcium		25.8 mg/L	1.0	103	90	110		
Magnesium		25.5 mg/L	1.0	102	90	110		

Batch: R143000

	2	Method Blank					Run: ICP2-HE_190401B	04/01/19 16:29
Calcium		ND mg/L	0.07					
Magnesium		ND mg/L	0.01					
	2	Laboratory Fortified Blank					Run: ICP2-HE_190401B	04/01/19 16:33
Calcium		52.8 mg/L	1.0	106	85	115		
Magnesium		53.3 mg/L	1.0	107	85	115		
	2	Sample Matrix Spike					Run: ICP2-HE_190401B	04/01/19 16:44
Calcium		94.9 mg/L	1.0	101	70	130		
Magnesium		79.1 mg/L	1.0	108	70	130		
	2	Sample Matrix Spike Duplicate					Run: ICP2-HE_190401B	04/01/19 16:55
Calcium		95.1 mg/L	1.0	102	70	130	0.3	20
Magnesium		79.2 mg/L	1.0	108	70	130	0.1	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

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Analytical Run: ICP2-HE\_190403A

Strontium	Initial Calibration Verification Standard	0.789 mg/L	0.10	99	95	105	04/03/19 10:34
Strontium	Continuing Calibration Verification Standard	2.50 mg/L	0.10	100	95	105	04/03/19 10:38
Strontium	Interference Check Sample A	-0.0267 mg/L	0.10		0	0	04/03/19 10:52
Strontium	Interference Check Sample AB	1.02 mg/L	0.10	102	80	120	04/03/19 10:55
Strontium	Continuing Calibration Verification Standard	2.45 mg/L	0.10	98	90	110	04/03/19 12:11
Batch: R143076							
Strontium	Method Blank	ND mg/L	0.0002				Run: ICP2-HE_190403A 04/03/19 11:07
Strontium	Laboratory Fortified Blank	1.06 mg/L	0.10	106	85	115	Run: ICP2-HE_190403A 04/03/19 11:11
Strontium	Sample Matrix Spike	2.85 mg/L	0.010	102	70	130	Run: ICP2-HE_190403A 04/03/19 12:49
Strontium	Sample Matrix Spike Duplicate	2.81 mg/L	0.010	98	70	130	Run: ICP2-HE_190403A 04/03/19 12:53 1.6 20



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476



Analytical Run: ICPMS205-H\_190329A

19 Initial Calibration Verification Standard

03/29/19 10:32

Aluminum	0.299	mg/L	0.10	100	90	110
Antimony	0.0594	mg/L	0.050	99	90	110
Arsenic	0.0587	mg/L	0.0050	98	90	110
Barium	0.0597	mg/L	0.10	99	90	110
Beryllium	0.0295	mg/L	0.0010	98	90	110
Cadmium	0.0298	mg/L	0.0010	99	90	110
Chromium	0.0606	mg/L	0.010	101	90	110
Cobalt	0.0610	mg/L	0.010	102	90	110
Copper	0.0602	mg/L	0.010	100	90	110
Iron	0.324	mg/L	0.020	108	90	110
Lead	0.0608	mg/L	0.010	101	90	110
Manganese	0.304	mg/L	0.010	101	90	110
Molybdenum	0.0610	mg/L	0.0050	102	90	110
Nickel	0.0611	mg/L	0.010	102	90	110
Selenium	0.0601	mg/L	0.0050	100	90	110
Strontium	0.0583	mg/L	0.10	97	90	110
Thallium	0.0603	mg/L	0.10	101	90	110
Uranium	0.0591	mg/L	0.00030	99	90	110
Zinc	0.0606	mg/L	0.010	101	90	110

19 Interference Check Sample A

03/29/19 10:34

Aluminum	38.2	mg/L	0.10	95	70	130
Antimony	0.000573	mg/L	0.050			
Arsenic	4.33E-05	mg/L	0.0050			
Barium	0.000250	mg/L	0.10			
Beryllium	-5.27E-05	mg/L	0.0010			
Cadmium	0.000185	mg/L	0.0010			
Chromium	0.000231	mg/L	0.010			
Cobalt	0.000271	mg/L	0.010			
Copper	0.000310	mg/L	0.010			
Iron	103	mg/L	0.020	103	70	130
Lead	3.25E-05	mg/L	0.010			
Manganese	0.000235	mg/L	0.010			
Molybdenum	0.783	mg/L	0.0050	98	70	130
Nickel	0.000245	mg/L	0.010			
Selenium	0.000120	mg/L	0.0050			
Strontium	0.00102	mg/L	0.10			
Thallium	4.15E-05	mg/L	0.10			
Uranium	3.34E-05	mg/L	0.00030			
Zinc	0.000360	mg/L	0.010			

19 Interference Check Sample AB

03/29/19 10:36

Aluminum	37.7	mg/L	0.10	94	70	130
Antimony	0.000284	mg/L	0.050		0	0

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Analytical Run: ICPMS205-H\_190329A

19 Interference Check Sample AB

03/29/19 10:36

Arsenic	0.0105	mg/L	0.0050	105	70	130
Barium	0.000172	mg/L	0.10		0	0
Beryllium	-3.22E-05	mg/L	0.0010		0	0
Cadmium	0.0102	mg/L	0.0010	102	70	130
Chromium	0.0203	mg/L	0.010	101	70	130
Cobalt	0.0206	mg/L	0.010	103	70	130
Copper	0.0199	mg/L	0.010	100	70	130
Iron	101	mg/L	0.020	101	70	130
Lead	2.77E-05	mg/L	0.010		0	0
Manganese	0.0205	mg/L	0.010	102	70	130
Molybdenum	0.774	mg/L	0.0050	97	70	130
Nickel	0.0200	mg/L	0.010	100	70	130
Selenium	0.00991	mg/L	0.0050	99	70	130
Strontium	0.000936	mg/L	0.10		0	0
Thallium	1.78E-05	mg/L	0.10		0	0
Uranium	9.41E-06	mg/L	0.00030		0	0
Zinc	0.0104	mg/L	0.010	104	70	130

19 Initial Calibration Verification Standard

03/29/19 11:20

Aluminum	0.296	mg/L	0.10	99	90	110
Antimony	0.0572	mg/L	0.050	95	90	110
Arsenic	0.0587	mg/L	0.0050	98	90	110
Barium	0.0597	mg/L	0.10	99	90	110
Beryllium	0.0309	mg/L	0.0010	103	90	110
Cadmium	0.0299	mg/L	0.0010	100	90	110
Chromium	0.0596	mg/L	0.010	99	90	110
Cobalt	0.0606	mg/L	0.010	101	90	110
Copper	0.0599	mg/L	0.010	100	90	110
Iron	0.315	mg/L	0.020	105	90	110
Lead	0.0612	mg/L	0.010	102	90	110
Manganese	0.299	mg/L	0.010	100	90	110
Molybdenum	0.0602	mg/L	0.0050	100	90	110
Nickel	0.0603	mg/L	0.010	101	90	110
Selenium	0.0605	mg/L	0.0050	101	90	110
Strontium	0.0598	mg/L	0.10	100	90	110
Thallium	0.0609	mg/L	0.10	102	90	110
Uranium	0.0594	mg/L	0.00030	99	90	110
Zinc	0.0618	mg/L	0.010	103	90	110

19 Interference Check Sample A

03/29/19 11:36

Aluminum	38.7	mg/L	0.10	97	70	130
Antimony	0.000328	mg/L	0.050			
Arsenic	9.24E-06	mg/L	0.0050			
Barium	0.000243	mg/L	0.10			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Analytical Run: ICPMS205-H\_190329A

19 Interference Check Sample A

03/29/19 11:36

Beryllium	-1.75E-06	mg/L	0.0010			
Cadmium	0.000192	mg/L	0.0010			
Chromium	0.000228	mg/L	0.010			
Cobalt	0.000291	mg/L	0.010			
Copper	0.000266	mg/L	0.010			
Iron	103	mg/L	0.020	103	70	130
Lead	9.97E-05	mg/L	0.010			
Manganese	0.000284	mg/L	0.010			
Molybdenum	0.792	mg/L	0.0050	99	70	130
Nickel	0.000294	mg/L	0.010			
Selenium	6.63E-05	mg/L	0.0050			
Strontium	0.00110	mg/L	0.10			
Thallium	3.12E-05	mg/L	0.10			
Uranium	8.20E-06	mg/L	0.00030			
Zinc	0.000639	mg/L	0.010			

19 Interference Check Sample AB

03/29/19 11:38

Aluminum	38.2	mg/L	0.10	96	70	130
Antimony	0.000136	mg/L	0.050		0	0
Arsenic	0.0103	mg/L	0.0050	103	70	130
Barium	0.000201	mg/L	0.10		0	0
Beryllium	-2.69E-05	mg/L	0.0010		0	0
Cadmium	0.0103	mg/L	0.0010	103	70	130
Chromium	0.0197	mg/L	0.010	98	70	130
Cobalt	0.0205	mg/L	0.010	103	70	130
Copper	0.0198	mg/L	0.010	99	70	130
Iron	100	mg/L	0.020	100	70	130
Lead	8.66E-05	mg/L	0.010		0	0
Manganese	0.0202	mg/L	0.010	101	70	130
Molybdenum	0.771	mg/L	0.0050	96	70	130
Nickel	0.0201	mg/L	0.010	101	70	130
Selenium	0.0101	mg/L	0.0050	101	70	130
Strontium	0.000973	mg/L	0.10		0	0
Thallium	1.32E-05	mg/L	0.10		0	0
Uranium	1.36E-06	mg/L	0.00030		0	0
Zinc	0.0105	mg/L	0.010	105	70	130

Batch: R142962

19 Method Blank

Run: ICPMS205-H\_190329A

03/29/19 11:48

Aluminum	ND	mg/L	0.003			
Antimony	ND	mg/L	9E-05			
Arsenic	ND	mg/L	4E-05			
Barium	ND	mg/L	2E-05			
Beryllium	ND	mg/L	0.0001			

RL - Analyte reporting limit.

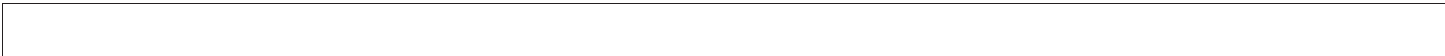
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476



Batch: R142962

19 Method Blank

Run: ICPMS205-H\_190329A

03/29/19 11:48

Cadmium	ND	mg/L	3E-05
Chromium	ND	mg/L	0.0002
Cobalt	ND	mg/L	9E-05
Copper	ND	mg/L	0.0001
Iron	ND	mg/L	0.002
Lead	ND	mg/L	3E-05
Manganese	ND	mg/L	0.0003
Molybdenum	3E-05	mg/L	2E-05
Nickel	ND	mg/L	0.0002
Selenium	ND	mg/L	2E-05
Strontium	ND	mg/L	0.0001
Thallium	ND	mg/L	1E-05
Uranium	ND	mg/L	1E-05
Zinc	ND	mg/L	0.0003

19 Laboratory Fortified Blank

Run: ICPMS205-H\_190329A

03/29/19 11:50

Aluminum	0.0488	mg/L	0.10	98	85	115
Antimony	0.0486	mg/L	0.050	97	85	115
Arsenic	0.0495	mg/L	0.0050	99	85	115
Barium	0.0500	mg/L	0.10	100	85	115
Beryllium	0.0473	mg/L	0.0010	95	85	115
Cadmium	0.0507	mg/L	0.0010	101	85	115
Chromium	0.0487	mg/L	0.010	97	85	115
Cobalt	0.0495	mg/L	0.010	99	85	115
Copper	0.0495	mg/L	0.010	99	85	115
Iron	0.157	mg/L	0.020	104	85	115
Lead	0.0506	mg/L	0.010	101	85	115
Manganese	0.0487	mg/L	0.010	97	85	115
Molybdenum	0.0499	mg/L	0.0050	100	85	115
Nickel	0.0501	mg/L	0.010	100	85	115
Selenium	0.0494	mg/L	0.0050	99	85	115
Strontium	0.0503	mg/L	0.10	101	85	115
Thallium	0.0505	mg/L	0.10	101	85	115
Uranium	0.0503	mg/L	0.00030	101	85	115
Zinc	0.0507	mg/L	0.010	101	85	115

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 12:30

Aluminum	0.0530	mg/L	0.030	98	70	130
Antimony	0.0468	mg/L	0.0010	94	70	130
Arsenic	0.0508	mg/L	0.0010	101	70	130
Barium	0.164	mg/L	0.050	101	70	130
Beryllium	0.0497	mg/L	0.0010	99	70	130
Cadmium	0.0500	mg/L	0.0010	100	70	130
Chromium	0.0483	mg/L	0.0050	97	70	130

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Batch: R142962

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 12:30

Cobalt	0.0486	mg/L	0.0050	97	70	130
Copper	0.0482	mg/L	0.0050	96	70	130
Iron	0.158	mg/L	0.020	100	70	130
Lead	0.0511	mg/L	0.0010	102	70	130
Manganese	0.0506	mg/L	0.0010	98	70	130
Molybdenum	0.0499	mg/L	0.0010	99	70	130
Nickel	0.0489	mg/L	0.0050	98	70	130
Selenium	0.0540	mg/L	0.0010	107	70	130
Strontium	0.121	mg/L	0.010	98	70	130
Thallium	0.0515	mg/L	0.00050	102	70	130
Uranium	0.0513	mg/L	0.00030	102	70	130
Zinc	0.0510	mg/L	0.010	99	70	130

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190329A

03/29/19 12:32

Aluminum	0.0534	mg/L	0.030	99	70	130	0.8	20
Antimony	0.0477	mg/L	0.0010	95	70	130	1.8	20
Arsenic	0.0513	mg/L	0.0010	102	70	130	0.9	20
Barium	0.163	mg/L	0.050	100	70	130	0.2	20
Beryllium	0.0494	mg/L	0.0010	99	70	130	0.5	20
Cadmium	0.0506	mg/L	0.0010	101	70	130	1.1	20
Chromium	0.0486	mg/L	0.0050	97	70	130	0.5	20
Cobalt	0.0487	mg/L	0.0050	97	70	130	0.3	20
Copper	0.0492	mg/L	0.0050	98	70	130	2.2	20
Iron	0.160	mg/L	0.020	102	70	130	1.4	20
Lead	0.0513	mg/L	0.0010	103	70	130	0.4	20
Manganese	0.0504	mg/L	0.0010	97	70	130	0.4	20
Molybdenum	0.0502	mg/L	0.0010	100	70	130	0.5	20
Nickel	0.0489	mg/L	0.0050	98	70	130	0.1	20
Selenium	0.0549	mg/L	0.0010	109	70	130	1.7	20
Strontium	0.122	mg/L	0.010	98	70	130	0.2	20
Thallium	0.0520	mg/L	0.00050	103	70	130	1.0	20
Uranium	0.0518	mg/L	0.00030	103	70	130	1.0	20
Zinc	0.0508	mg/L	0.010	99	70	130	0.4	20

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 12:59

Aluminum	0.0518	mg/L	0.030	95	70	130
Antimony	0.0472	mg/L	0.0010	94	70	130
Arsenic	0.0588	mg/L	0.0010	105	70	130
Barium	0.0671	mg/L	0.050	101	70	130
Beryllium	0.0494	mg/L	0.0010	99	70	130
Cadmium	0.0508	mg/L	0.0010	102	70	130
Chromium	0.0489	mg/L	0.0050	98	70	130
Cobalt	0.0489	mg/L	0.0050	97	70	130
Copper	0.0489	mg/L	0.0050	98	70	130

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Batch: R142962

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 12:59

Iron	1.48	mg/L	0.020		70	130			A
Lead	0.0518	mg/L	0.0010	103	70	130			
Manganese	0.0917	mg/L	0.0010	96	70	130			
Molybdenum	0.0502	mg/L	0.0010	99	70	130			
Nickel	0.0495	mg/L	0.0050	98	70	130			
Selenium	0.0565	mg/L	0.0010	113	70	130			
Strontium	0.370	mg/L	0.010		70	130			A
Thallium	0.0520	mg/L	0.00050	104	70	130			
Uranium	0.0536	mg/L	0.00030	104	70	130			
Zinc	0.0551	mg/L	0.010	99	70	130			

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190329A

03/29/19 13:01

Aluminum	0.0538	mg/L	0.030	99	70	130	3.8	20	
Antimony	0.0475	mg/L	0.0010	95	70	130	0.5	20	
Arsenic	0.0588	mg/L	0.0010	105	70	130	0.1	20	
Barium	0.0666	mg/L	0.050	99	70	130	0.8	20	
Beryllium	0.0499	mg/L	0.0010	100	70	130	1.0	20	
Cadmium	0.0509	mg/L	0.0010	102	70	130	0.2	20	
Chromium	0.0493	mg/L	0.0050	99	70	130	0.9	20	
Cobalt	0.0492	mg/L	0.0050	98	70	130	0.6	20	
Copper	0.0490	mg/L	0.0050	98	70	130	0.2	20	
Iron	1.49	mg/L	0.020		70	130	0.8	20	A
Lead	0.0521	mg/L	0.0010	104	70	130	0.6	20	
Manganese	0.0926	mg/L	0.0010	98	70	130	1.1	20	
Molybdenum	0.0507	mg/L	0.0010	100	70	130	1.0	20	
Nickel	0.0494	mg/L	0.0050	98	70	130	0.2	20	
Selenium	0.0575	mg/L	0.0010	115	70	130	1.7	20	
Strontium	0.372	mg/L	0.010		70	130	0.5	20	A
Thallium	0.0521	mg/L	0.00050	104	70	130	0.2	20	
Uranium	0.0536	mg/L	0.00030	103	70	130	0.1	20	
Zinc	0.0548	mg/L	0.010	99	70	130	0.5	20	

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 13:26

Aluminum	0.0593	mg/L	0.030	102	70	130			
Antimony	0.0469	mg/L	0.0010	94	70	130			
Arsenic	0.0508	mg/L	0.0010	101	70	130			
Barium	0.131	mg/L	0.050	95	70	130			
Beryllium	0.0499	mg/L	0.0010	100	70	130			
Cadmium	0.0502	mg/L	0.0010	100	70	130			
Chromium	0.0487	mg/L	0.0050	97	70	130			
Cobalt	0.0490	mg/L	0.0050	98	70	130			
Copper	0.0491	mg/L	0.0050	98	70	130			
Iron	0.158	mg/L	0.020	102	70	130			
Lead	0.0515	mg/L	0.0010	103	70	130			

RL - Analyte reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

ND - Not detected at the reporting limit.

Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Batch: R142962

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 13:26

Manganese	0.0492	mg/L	0.0010	98	70	130
Molybdenum	0.0494	mg/L	0.0010	98	70	130
Nickel	0.0492	mg/L	0.0050	98	70	130
Selenium	0.0563	mg/L	0.0010	112	70	130
Strontium	0.148	mg/L	0.010	97	70	130
Thallium	0.0519	mg/L	0.00050	104	70	130
Uranium	0.0519	mg/L	0.00030	103	70	130
Zinc	0.0510	mg/L	0.010	98	70	130

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190329A

03/29/19 13:28

Aluminum	0.0602	mg/L	0.030	104	70	130	1.6	20
Antimony	0.0472	mg/L	0.0010	94	70	130	0.8	20
Arsenic	0.0514	mg/L	0.0010	103	70	130	1.3	20
Barium	0.132	mg/L	0.050	98	70	130	0.8	20
Beryllium	0.0505	mg/L	0.0010	101	70	130	1.2	20
Cadmium	0.0508	mg/L	0.0010	102	70	130	1.1	20
Chromium	0.0492	mg/L	0.0050	98	70	130	1.0	20
Cobalt	0.0492	mg/L	0.0050	99	70	130	0.5	20
Copper	0.0499	mg/L	0.0050	100	70	130	1.7	20
Iron	0.162	mg/L	0.020	104	70	130	1.9	20
Lead	0.0521	mg/L	0.0010	104	70	130	1.2	20
Manganese	0.0496	mg/L	0.0010	99	70	130	0.7	20
Molybdenum	0.0503	mg/L	0.0010	100	70	130	1.8	20
Nickel	0.0496	mg/L	0.0050	99	70	130	0.7	20
Selenium	0.0555	mg/L	0.0010	110	70	130	1.4	20
Strontium	0.149	mg/L	0.010	98	70	130	0.4	20
Thallium	0.0520	mg/L	0.00050	104	70	130	0.3	20
Uranium	0.0525	mg/L	0.00030	104	70	130	1.2	20
Zinc	0.0515	mg/L	0.010	99	70	130	0.9	20

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 15:20

Aluminum	11.3	mg/L	0.030	89	70	130
Antimony	2.44	mg/L	0.0010	97	70	130
Arsenic	2.25	mg/L	0.0010	90	70	130
Barium	4.34	mg/L	0.050	90	70	130
Beryllium	1.10	mg/L	0.0010	88	70	130
Cadmium	1.13	mg/L	0.0010	91	70	130
Chromium	2.21	mg/L	0.0050	88	70	130
Cobalt	2.19	mg/L	0.0050	88	70	130
Copper	2.18	mg/L	0.0050	87	70	130
Iron	12.4	mg/L	0.020	79	70	130
Lead	2.25	mg/L	0.0010	90	70	130
Manganese	10.7	mg/L	0.0014	85	70	130
Molybdenum	2.42	mg/L	0.0010	97	70	130

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

Batch: R142962

19 Sample Matrix Spike

Run: ICPMS205-H\_190329A

03/29/19 15:20

Nickel	2.22	mg/L	0.0050	89	70	130		
Selenium	0.903	mg/L	0.0010	36	70	130		S
Strontium	2.67	mg/L	0.010	90	70	130		
Thallium	2.22	mg/L	0.00050	89	70	130		
Uranium	2.31	mg/L	0.00030	92	70	130		
Zinc	2.27	mg/L	0.010	87	70	130		

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190329A

03/29/19 15:22

Aluminum	11.6	mg/L	0.030	91	70	130	2.8	20
Antimony	2.47	mg/L	0.0010	99	70	130	1.3	20
Arsenic	2.35	mg/L	0.0010	94	70	130	4.3	20
Barium	4.09	mg/L	0.050	80	70	130	6.0	20
Beryllium	1.15	mg/L	0.0010	92	70	130	4.6	20
Cadmium	1.17	mg/L	0.0010	93	70	130	3.1	20
Chromium	2.30	mg/L	0.0050	92	70	130	3.9	20
Cobalt	2.27	mg/L	0.0050	91	70	130	3.7	20
Copper	2.28	mg/L	0.0050	91	70	130	4.4	20
Iron	12.5	mg/L	0.020	81	70	130	1.4	20
Lead	2.41	mg/L	0.0010	96	70	130	7.0	20
Manganese	11.1	mg/L	0.0014	89	70	130	3.5	20
Molybdenum	2.42	mg/L	0.0010	97	70	130	0.0	20
Nickel	2.30	mg/L	0.0050	92	70	130	3.6	20
Selenium	0.948	mg/L	0.0010	38	70	130	4.8	20
Strontium	2.81	mg/L	0.010	95	70	130	5.0	20
Thallium	2.37	mg/L	0.00050	95	70	130	6.7	20
Uranium	2.40	mg/L	0.00030	96	70	130	3.8	20
Zinc	2.35	mg/L	0.010	91	70	130	3.7	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

								Analytical Run: ICPMS205-H_190402A
								04/02/19 11:08
2 Initial Calibration Verification Standard								
Selenium	0.0591	mg/L	0.0050	99	90	110		
Silver	0.0298	mg/L	0.0050	100	90	110		
2 Interference Check Sample A								04/02/19 11:10
Selenium	6.55E-05	mg/L	0.0050					
Silver	3.43E-05	mg/L	0.0050					
2 Interference Check Sample AB								04/02/19 11:12
Selenium	0.00927	mg/L	0.0050	93	70	130		
Silver	0.00502	mg/L	0.0050	100	70	130		
2 Initial Calibration Verification Standard								04/02/19 11:45
Selenium	0.0596	mg/L	0.0050	99	90	110		
Silver	0.0301	mg/L	0.0050	100	90	110		
2 Interference Check Sample A								04/02/19 11:47
Selenium	9.41E-05	mg/L	0.0050					
Silver	4.36E-05	mg/L	0.0050					
2 Interference Check Sample AB								04/02/19 11:49
Selenium	0.0103	mg/L	0.0050	103	70	130		
Silver	0.00507	mg/L	0.0050	101	70	130		
								Batch: R143027
2 Method Blank								Run: ICPMS205-H_190402A
Selenium	ND	mg/L	2E-05				04/02/19 12:03	
Silver	ND	mg/L	2E-05					
2 Laboratory Fortified Blank								Run: ICPMS205-H_190402A
Selenium	0.0491	mg/L	0.0050	98	85	115	04/02/19 12:05	
Silver	0.0198	mg/L	0.0050	99	85	115		
2 Sample Matrix Spike								Run: ICPMS205-H_190402A
Selenium	0.0540	mg/L	0.0010	108	70	130	04/02/19 12:53	
Silver	0.0193	mg/L	0.0010	96	70	130		
2 Sample Matrix Spike Duplicate								Run: ICPMS205-H_190402A
Selenium	0.0554	mg/L	0.0010	111	70	130	2.7	
Silver	0.0198	mg/L	0.0010	99	70	130	2.7	
2 Sample Matrix Spike								Run: ICPMS205-H_190402A
Selenium	0.0543	mg/L	0.0010	108	70	130	04/02/19 13:20	
Silver	0.0200	mg/L	0.0010	100	70	130		
2 Sample Matrix Spike Duplicate								Run: ICPMS205-H_190402A
Selenium	0.0547	mg/L	0.0010	109	70	130	0.8	
Silver	0.0197	mg/L	0.0010	98	70	130	1.5	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

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							Analytical Run: ICPMS205-H_190403A
	Initial Calibration Verification Standard						04/03/19 13:21
Antimony	0.0569	mg/L	0.050	95	90	110	
	Interference Check Sample A						04/03/19 13:23
Antimony	0.000382	mg/L	0.050				
	Interference Check Sample AB						04/03/19 13:25
Antimony	0.000153	mg/L	0.050		0	0	
<hr/>							Batch: R143056
	Method Blank			Run: ICPMS205-H_190403A			04/03/19 13:44
Antimony	ND	mg/L	9E-05				
	Laboratory Fortified Blank			Run: ICPMS205-H_190403A			04/03/19 13:46
Antimony	0.0479	mg/L	0.050	96	85	115	
	Sample Matrix Spike			Run: ICPMS205-H_190403A			04/03/19 14:04
Antimony	0.0472	mg/L	0.0010	93	70	130	
	Sample Matrix Spike Duplicate			Run: ICPMS205-H_190403A			04/03/19 14:06
Antimony	0.0473	mg/L	0.0010	93	70	130	0.1 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

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							Analytical Run: HGCV202-H_190401A
	Initial Calibration Verification Standard						04/01/19 15:17
Mercury	0.102	ug/L	0.0050	102	90	110	
	Continuing Calibration Verification Standard						04/01/19 16:07
Mercury	0.103	ug/L	0.0050	103	90	110	
	Continuing Calibration Verification Standard						04/01/19 16:42
Mercury	0.104	ug/L	0.0050	104	90	110	
<hr/>							Batch: 45033
	Method Blank				Run: HGCV202-H_190401A		04/01/19 15:44
Mercury	ND	ug/L	0.002				
	Laboratory Control Sample				Run: HGCV202-H_190401A		04/01/19 15:48
Mercury	0.0535	ug/L	0.0050	107	90	110	
	Sample Matrix Spike				Run: HGCV202-H_190401A		04/01/19 16:52
Mercury	0.0558	ug/L	0.0050	112	70	130	
	Sample Matrix Spike Duplicate				Run: HGCV202-H_190401A		04/01/19 16:55
Mercury	0.0560	ug/L	0.0050	112	70	130	0.2 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

							Analytical Run: HGCV202-H_190402B
	Initial Calibration Verification Standard						04/02/19 14:24
Mercury	0.105	ug/L	0.0050	105	90	110	
	Continuing Calibration Verification Standard						04/02/19 15:09
Mercury	0.106	ug/L	0.0050	106	90	110	
	Continuing Calibration Verification Standard						04/02/19 16:14
Mercury	0.0986	ug/L	0.0050	99	90	110	
	Initial Calibration Verification Standard						04/02/19 17:20
Mercury	0.0983	ug/L	0.0050	98	90	110	
							Batch: 45039
	Method Blank			Run: HGCV202-H_190402B		04/02/19 15:16	
Mercury	ND	ug/L	0.002				
	Laboratory Control Sample			Run: HGCV202-H_190402B		04/02/19 15:20	
Mercury	0.0552	ug/L	0.0050	110	90	110	
	Sample Matrix Spike			Run: HGCV202-H_190402B		04/02/19 15:27	
Mercury	0.0554	ug/L	0.0050	111	70	130	
	Sample Matrix Spike Duplicate			Run: HGCV202-H_190402B		04/02/19 15:30	
Mercury	0.0558	ug/L	0.0050	112	70	130	0.7
	Sample Matrix Spike			Run: HGCV202-H_190402B		04/02/19 17:03	
Mercury	0.0631	ug/L	0.0050	107	70	130	
	Sample Matrix Spike Duplicate			Run: HGCV202-H_190402B		04/02/19 17:06	
Mercury	0.0628	ug/L	0.0050	106	70	130	0.5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

							Analytical Run: IC METROHM_190328A
2 Initial Calibration Verification Standard							03/28/19 09:33
Chloride	103	mg/L	1.0	103	90	110	
Sulfate	412	mg/L	1.0	103	90	110	
2 Continuing Calibration Verification Standard							03/28/19 10:01
Chloride	50.5	mg/L	1.0	101	90	110	
Sulfate	208	mg/L	1.0	104	90	110	
2 Continuing Calibration Verification Standard							03/28/19 14:00
Chloride	50.6	mg/L	1.0	101	90	110	
Sulfate	210	mg/L	1.0	105	90	110	
2 Continuing Calibration Verification Standard							03/28/19 17:32
Chloride	50.3	mg/L	1.0	101	90	110	
Sulfate	206	mg/L	1.0	103	90	110	
							Batch: R142938
2 Method Blank							Run: IC METROHM_190328A
Chloride	ND	mg/L	0.02				03/28/19 09:18
Sulfate	ND	mg/L	0.08				
2 Laboratory Fortified Blank							Run: IC METROHM_190328A
Chloride	24.9	mg/L	1.0	100	90	110	03/28/19 09:47
Sulfate	105	mg/L	1.0	105	90	110	
2 Sample Matrix Spike							Run: IC METROHM_190328A
Chloride	26.2	mg/L	1.0	100	90	110	03/28/19 13:32
Sulfate	298	mg/L	1.0	100	90	110	
2 Sample Matrix Spike Duplicate							Run: IC METROHM_190328A
Chloride	26.2	mg/L	1.0	100	90	110	03/28/19 13:46
Sulfate	300	mg/L	1.0	102	90	110	0.2 20
2 Sample Matrix Spike							Run: IC METROHM_190328A
Chloride	25.6	mg/L	1.0	100	90	110	03/28/19 17:04
Sulfate	107	mg/L	1.0	102	90	110	
2 Sample Matrix Spike Duplicate							Run: IC METROHM_190328A
Chloride	25.6	mg/L	1.0	100	90	110	03/28/19 17:18
Sulfate	107	mg/L	1.0	103	90	110	0.1 20
2 Sample Matrix Spike							Run: IC METROHM_190328A
Chloride	35.7	mg/L	1.0	99	90	110	03/28/19 19:53
Sulfate	129	mg/L	1.0	99	90	110	
2 Sample Matrix Spike Duplicate							Run: IC METROHM_190328A
Chloride	35.7	mg/L	1.0	99	90	110	03/28/19 20:07
Sulfate	130	mg/L	1.0	100	90	110	0.1 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper 1st Quarter GW Sampling

04/10/19  
H19030476

							Analytical Run: FIA203-HE_190401D
	Initial Calibration Verification Standard						04/01/19 14:35
Nitrogen, Nitrate+Nitrite as N	0.933	mg/L	0.010	93	90	110	
	Continuing Calibration Verification Standard						04/01/19 15:05
Nitrogen, Nitrate+Nitrite as N	0.478	mg/L	0.010	96	90	110	
	Continuing Calibration Verification Standard						04/01/19 15:21
Nitrogen, Nitrate+Nitrite as N	0.472	mg/L	0.010	94	90	110	
							Batch: R142993
	Method Blank			Run: FIA203-HE_190401D		04/01/19 14:36	
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				
	Laboratory Fortified Blank			Run: FIA203-HE_190401D		04/01/19 14:37	
Nitrogen, Nitrate+Nitrite as N	0.960	mg/L	0.011	96	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190401D		04/01/19 15:08	
Nitrogen, Nitrate+Nitrite as N	1.11	mg/L	0.011	96	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190401D		04/01/19 15:10	
Nitrogen, Nitrate+Nitrite as N	1.10	mg/L	0.011	96	90	110	0.2 10
	Sample Matrix Spike			Run: FIA203-HE_190401D		04/01/19 15:25	
Nitrogen, Nitrate+Nitrite as N	1.19	mg/L	0.011	95	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190401D		04/01/19 15:26	
Nitrogen, Nitrate+Nitrite as N	1.17	mg/L	0.011	93	90	110	1.7 10
	Sample Matrix Spike			Run: FIA203-HE_190401D		04/01/19 15:42	
Nitrogen, Nitrate+Nitrite as N	1.16	mg/L	0.011	100	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190401D		04/01/19 15:43	
Nitrogen, Nitrate+Nitrite as N	1.09	mg/L	0.011	93	90	110	6.3 10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Tintina Resources Inc

H19030476

Login completed by: Jessica C. Smith

Date Received: 3/27/2019

Reviewed by: BL2000\rtooke

Received by: wjj

Reviewed Date: 4/2/2019

Carrier name: Hand Del

Shipping container/cooler in good condition? Yes [checked] No [ ] Not Present [ ]
Custody seals intact on all shipping container(s)/cooler(s)? Yes [ ] No [ ] Not Present [checked]
Custody seals intact on all sample bottles? Yes [ ] No [ ] Not Present [checked]
Chain of custody present? Yes [checked] No [ ]
Chain of custody signed when relinquished and received? Yes [checked] No [ ]
Chain of custody agrees with sample labels? Yes [checked] No [ ]
Samples in proper container/bottle? Yes [checked] No [ ]
Sample containers intact? Yes [checked] No [ ]
Sufficient sample volume for indicated test? Yes [checked] No [ ]
All samples received within holding time? Yes [checked] No [ ]
Temp Blank received in all shipping container(s)/cooler(s)? Yes [checked] No [ ] Not Applicable [ ]
Container/Temp Blank temperature: °C See Comments
Water - VOA vials have zero headspace? Yes [ ] No [ ] No VOA vials submitted [checked]
Water - pH acceptable upon receipt? Yes [checked] No [ ] Not Applicable [ ]

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

None

CHAIN OF CUSTODY RECORD



**Hydrometrics, Inc.**

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

PROJ. NO. 18049 PROJECT NAME Blau & Ba He  
 1st Question GW Sampling

SAMPLERS: (Signature) \_\_\_\_\_

DATE TIME COMP GRAB SAMPLE NUMBER NO. OF CON-TAINERS

3/25/19 1540 X 133C-1903-200 3 X X X  
 3/25/19 1725 201  
 3/25/19 1815 202  
 3/26/19 0930 203  
 3/26/19 1000 204  
 3/26/19 1055 205  
 3/26/19 1200 206  
 3/26/19 1300 207  
 3/26/19 1350 208  
 3/26/19 1425 209  
 3/26/19 1530 209 210  
 3/26/19 1645 211  
 3/26/19 1745 212  
 3/27/19 0930 213

Commons UF / RAW  
 Nutrients UF / H<sub>2</sub>SO<sub>4</sub>  
 Diss. Metal F / HNO<sub>3</sub>  
 CN UF / NaOH  
 Total Metals UF / HNO<sub>3</sub>  
 Total Recoverable Metals UF / HNO<sub>3</sub>  
 BTEX  
 TPH

REMARKS  
 Table #5 GW

Relinquished (Signature) \_\_\_\_\_ Date / Time 3/27/19 1430 Received by (Signature) \_\_\_\_\_  
 Relinquished (Signature) \_\_\_\_\_ Date / Time 3/27/19 1628 Received by (Signature) \_\_\_\_\_

Relinquished (Signature) \_\_\_\_\_ Date / Time \_\_\_\_\_ Received for Laboratory by (Signature) \_\_\_\_\_  
 Date / Time \_\_\_\_\_

Remarks C1-18 Energy Labs 22-03 on Ice  
 PO # 311  
 T: a: i: n: e

Shipped via: Bus FedEx UPS  
 Other \_\_\_\_\_ Air Bill # \_\_\_\_\_

Enclosed:  Parameter sheet w/detection limits  
 QA / AC standard mixing instructions  Cover letter  
 Other \_\_\_\_\_

Split Samples:  Accepted  Declined  
 Signature \_\_\_\_\_

Return results & electronic copy to:  
 QA / QC Dept. at address at top of page



PROJ. NO.	PROJECT NAME	DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CON-TAINERS	Commons UF / RAW	Nutrients UF / H <sub>2</sub> SO <sub>4</sub>	Diss. Metal F / HNO <sub>3</sub>	CN UF / NaOH	Total Metals UF / HNO <sub>3</sub>	Total Recoverable Metals UF / HNO <sub>3</sub>	BTEX	TPH	REMARKS	
15049	1st Quarter GUD Sampling	3/27/19	1030	X		BBC-1903-214	3	X	X	X						Table #5 GW	
SAMPLERS: (Signature)		MLL															
Relinquished (Signature)		MLL															
Relinquished (Signature)		3/27/19 1430															
Relinquished (Signature)		3/27/19 1628															
Received by (Signature)		3/27/19 1430															
Received by (Signature)		3/27/19 1628															
Received for Laboratory by (Signature)		3/27/19 1628															
Lab		Energy Labs															
Remarks		C1-18															
Remarks		C20.3															
Remarks		ON ICE															
P.O. #		B.11															
Shipped via:		Bus															
Other																	
Air Bill #																	
REMARKS																	
REMARKS																	
REMARKS																	

Return results & electronic copy to:  
QA / QC Dept. at address at top of page

Enclosed:  Parameter sheet w/detection limits  
 QA / AC standard mixing instructions  Cover letter  
 Other

Split Samples:  
 Accepted  Declined  
 Signature \_\_\_\_\_



**TABLE 5. PARAMETERS, METHODS, AND DETECTION LIMITS  
FOR GROUNDWATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	10
TSS	SM 2540C	10
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.01
<b>Trace Constituents (Dissolved)<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameters</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



April 10, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19030477 Quote ID: H1216 - Surface and Groundwater Sampling

Project Name: 18049 Black Butte Copper (SW)

Energy Laboratories Inc Helena MT received the following 4 samples for Tintina Resources Inc on 3/27/2019 for analysis.

H19030477-001	BBC-1903-105	03/26/19 12:30	03/27/19	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity Conductivity Mercury, Total Recoverable Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Dissolved Solids, Total Suspended
H19030477-002	BBC-1903-117	03/26/19 18:30	03/27/19	Surface Water	Same As Above
H19030477-003	BBC-1903-120	03/27/19 9:00	03/27/19	Surface Water	Same As Above
H19030477-004	BBC-1903-121	03/27/19 9:35	03/27/19	Surface Water	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

Digitally signed by  
Amanda B. Carlson  
Date: 2019.04.10 17:28:20 -06:00



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19030477-001  
BBC-1903-105

04/10/19  
03/26/19 12:30  
03/27/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	6 mg/L		4	A2540 D	03/28/19 12:26 / cmm
Solids, Total Dissolved TDS @ 180 C	215 mg/L	D	10	A2540 C	03/28/19 12:40 / cmm
Alkalinity, Total as CaCO3	170 mg/L		4	A2320 B	03/28/19 15:53 / SRW
Chloride	1 mg/L		1	E300.0	03/28/19 18:57 / SRW
Sulfate	25 mg/L		1	E300.0	03/28/19 18:57 / SRW
Fluoride	0.2 mg/L		0.1	4 A4500-F C	03/28/19 12:32 / SRW
Hardness as CaCO3	193 mg/L		1	A2340 B	04/02/19 08:52 / sld
Nitrogen, Nitrate+Nitrite as N	0.19 mg/L		0.01	E353.2	04/01/19 15:35 / kmd
Nitrogen, Total	0.47 mg/L		0.04	A4500 N-C	04/01/19 10:57 / kmd
Phosphorus, Total as P	0.046 mg/L		0.003	E365.1	03/29/19 14:52 / kmd
Aluminum	0.014 mg/L		0.009	E200.8	03/29/19 13:38 / sld
Calcium	44 mg/L		1	E200.7	04/01/19 17:03 / sld
Magnesium	20 mg/L		1	E200.7	04/01/19 17:03 / sld
Potassium	2 mg/L		1	E200.7	03/28/19 16:21 / sld
Sodium	2 mg/L		1	E200.7	03/28/19 16:21 / sld
Antimony	ND mg/L		0.0005	E200.8	04/01/19 16:46 / sld
Arsenic	ND mg/L		0.001	E200.8	04/01/19 16:46 / sld
Barium	0.101 mg/L		0.003	E200.8	04/01/19 16:46 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/01/19 16:46 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/01/19 16:46 / sld
Chromium	ND mg/L		0.01	E200.8	04/01/19 16:46 / sld
Cobalt	ND mg/L		0.01	E200.8	04/01/19 16:46 / sld
Copper	ND mg/L		0.002	E200.8	04/01/19 16:46 / sld
Iron	0.32 mg/L		0.02	E200.8	04/01/19 16:46 / sld
Lead	0.0003 mg/L		0.0003	E200.8	04/01/19 16:46 / sld
Manganese	0.013 mg/L		0.005	E200.8	04/01/19 16:46 / sld
Mercury	ND ug/L		0.005	E245.1	04/04/19 11:43 / dck
Molybdenum	ND mg/L		0.002	E200.8	04/01/19 16:46 / sld
Nickel	ND mg/L		0.001	E200.8	04/01/19 16:46 / sld
Selenium	ND mg/L		0.0002	E200.8	04/01/19 16:46 / sld
Silver	ND mg/L		0.0002	E200.8	04/01/19 16:46 / sld
Strontium	0.136 mg/L	D	0.0003	E200.8	04/01/19 16:46 / sld
Thallium	ND mg/L		0.0002	E200.8	04/01/19 16:46 / sld
Uranium	0.0010 mg/L		0.0002	E200.8	04/01/19 16:46 / sld
Zinc	0.002 mg/L		0.002	E200.8	04/01/19 16:46 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19030477-002  
BBC-1903-117

04/10/19  
03/26/19 18:30  
03/27/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	03/28/19 12:26 / cmm
Solids, Total Dissolved TDS @ 180 C	195 mg/L	D	10	A2540 C	03/28/19 12:40 / cmm
Alkalinity, Total as CaCO3	150 mg/L		4	A2320 B	03/28/19 16:05 / SRW
Chloride	3 mg/L		1	E300.0	03/28/19 19:11 / SRW
Sulfate	19 mg/L		1	E300.0	03/28/19 19:11 / SRW
Fluoride	0.1 mg/L		0.1	4 A4500-F C	03/28/19 12:35 / SRW
Hardness as CaCO3	168 mg/L		1	A2340 B	04/02/19 08:52 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L		0.01	E353.2	04/01/19 15:36 / kmd
Nitrogen, Total	0.30 mg/L		0.04	A4500 N-C	04/01/19 11:01 / kmd
Phosphorus, Total as P	0.094 mg/L		0.003	E365.1	03/29/19 14:55 / kmd
Aluminum	ND mg/L		0.009	E200.8	03/29/19 13:40 / sld
Calcium	37 mg/L		1	E200.7	04/01/19 17:07 / sld
Magnesium	19 mg/L		1	E200.7	04/01/19 17:07 / sld
Potassium	4 mg/L		1	E200.7	03/28/19 16:25 / sld
Sodium	2 mg/L		1	E200.7	03/28/19 16:25 / sld
Antimony	ND mg/L		0.0005	E200.8	04/01/19 16:48 / sld
Arsenic	ND mg/L		0.001	E200.8	04/01/19 16:48 / sld
Barium	0.116 mg/L		0.003	E200.8	04/01/19 16:48 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/01/19 16:48 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/01/19 16:48 / sld
Chromium	ND mg/L		0.01	E200.8	04/01/19 16:48 / sld
Cobalt	ND mg/L		0.01	E200.8	04/01/19 16:48 / sld
Copper	ND mg/L		0.002	E200.8	04/01/19 16:48 / sld
Iron	0.06 mg/L		0.02	E200.8	04/01/19 16:48 / sld
Lead	ND mg/L		0.0003	E200.8	04/01/19 16:48 / sld
Manganese	ND mg/L		0.005	E200.8	04/01/19 16:48 / sld
Mercury	0.006 ug/L		0.005	E245.1	04/04/19 11:46 / dck
Molybdenum	ND mg/L		0.002	E200.8	04/01/19 16:48 / sld
Nickel	ND mg/L		0.001	E200.8	04/01/19 16:48 / sld
Selenium	ND mg/L		0.0002	E200.8	04/01/19 16:48 / sld
Silver	ND mg/L		0.0002	E200.8	04/01/19 16:48 / sld
Strontium	0.0938 mg/L	D	0.0003	E200.8	04/01/19 16:48 / sld
Thallium	ND mg/L		0.0002	E200.8	04/01/19 16:48 / sld
Uranium	0.0006 mg/L		0.0002	E200.8	04/01/19 16:48 / sld
Zinc	ND mg/L		0.002	E200.8	04/01/19 16:48 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19030477-003  
BBC-1903-120

04/10/19  
03/27/19 09:00  
03/27/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	4 mg/L		4	A2540 D	03/28/19 12:26 / cmm
Solids, Total Dissolved TDS @ 180 C	180 mg/L	D	10	A2540 C	03/28/19 12:40 / cmm
Alkalinity, Total as CaCO3	150 mg/L		4	A2320 B	03/28/19 16:11 / SRW
Chloride	4 mg/L		1	E300.0	03/28/19 19:25 / SRW
Sulfate	7 mg/L		1	E300.0	03/28/19 19:25 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	03/28/19 12:37 / SRW
Hardness as CaCO3	156 mg/L		1	A2340 B	04/02/19 08:52 / sld
Nitrogen, Nitrate+Nitrite as N	0.09 mg/L		0.01	E353.2	04/01/19 15:37 / kmd
Nitrogen, Total	0.48 mg/L		0.04	A4500 N-C	04/01/19 11:02 / kmd
Phosphorus, Total as P	0.050 mg/L		0.003	E365.1	03/29/19 14:56 / kmd
Aluminum	0.030 mg/L		0.009	E200.8	03/29/19 13:42 / sld
Calcium	43 mg/L		1	E200.7	04/01/19 17:11 / sld
Magnesium	12 mg/L		1	E200.7	04/01/19 17:11 / sld
Potassium	3 mg/L		1	E200.7	03/28/19 16:29 / sld
Sodium	3 mg/L		1	E200.7	03/28/19 16:29 / sld
Antimony	ND mg/L		0.0005	E200.8	04/01/19 16:50 / sld
Arsenic	ND mg/L		0.001	E200.8	04/01/19 16:50 / sld
Barium	0.106 mg/L		0.003	E200.8	04/01/19 16:50 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/01/19 16:50 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/01/19 16:50 / sld
Chromium	ND mg/L		0.01	E200.8	04/01/19 16:50 / sld
Cobalt	ND mg/L		0.01	E200.8	04/01/19 16:50 / sld
Copper	ND mg/L		0.002	E200.8	04/01/19 16:50 / sld
Iron	0.30 mg/L		0.02	E200.8	04/01/19 16:50 / sld
Lead	ND mg/L		0.0003	E200.8	04/01/19 16:50 / sld
Manganese	0.021 mg/L		0.005	E200.8	04/01/19 16:50 / sld
Mercury	0.007 ug/L		0.005	E245.1	04/04/19 11:49 / dck
Molybdenum	ND mg/L		0.002	E200.8	04/01/19 16:50 / sld
Nickel	ND mg/L		0.001	E200.8	04/01/19 16:50 / sld
Selenium	ND mg/L		0.0002	E200.8	04/01/19 16:50 / sld
Silver	ND mg/L		0.0002	E200.8	04/01/19 16:50 / sld
Strontium	0.113 mg/L	D	0.0003	E200.8	04/01/19 16:50 / sld
Thallium	ND mg/L		0.0002	E200.8	04/01/19 16:50 / sld
Uranium	0.0003 mg/L		0.0002	E200.8	04/01/19 16:50 / sld
Zinc	ND mg/L		0.002	E200.8	04/01/19 16:50 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)  
H19030477-004  
BBC-1903-121

04/10/19  
03/27/19 09:35  
03/27/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	03/28/19 12:26 / cmm
Solids, Total Dissolved TDS @ 180 C	243 mg/L	D	10	A2540 C	03/28/19 12:40 / cmm
Alkalinity, Total as CaCO3	170 mg/L		4	A2320 B	03/28/19 16:16 / SRW
Chloride	11 mg/L		1	E300.0	03/28/19 19:39 / SRW
Sulfate	30 mg/L		1	E300.0	03/28/19 19:39 / SRW
Fluoride	0.2 mg/L		0.1	4 A4500-F C	03/28/19 12:40 / SRW
Hardness as CaCO3	211 mg/L		1	A2340 B	04/02/19 08:52 / sld
Nitrogen, Nitrate+Nitrite as N	0.16 mg/L		0.01	E353.2	04/01/19 15:40 / kmd
Nitrogen, Total	0.70 mg/L		0.04	A4500 N-C	04/01/19 11:03 / kmd
Phosphorus, Total as P	0.056 mg/L		0.003	E365.1	03/29/19 14:57 / kmd
Aluminum	ND mg/L		0.009	E200.8	03/29/19 13:44 / sld
Calcium	49 mg/L		1	E200.7	04/01/19 17:14 / sld
Magnesium	22 mg/L		1	E200.7	04/01/19 17:14 / sld
Potassium	4 mg/L		1	E200.7	03/28/19 16:32 / sld
Sodium	5 mg/L		1	E200.7	03/28/19 16:32 / sld
Antimony	ND mg/L		0.0005	E200.8	04/01/19 16:52 / sld
Arsenic	ND mg/L		0.001	E200.8	04/01/19 16:52 / sld
Barium	0.144 mg/L		0.003	E200.8	04/01/19 16:52 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/01/19 16:52 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/01/19 16:52 / sld
Chromium	ND mg/L		0.01	E200.8	04/01/19 16:52 / sld
Cobalt	ND mg/L		0.01	E200.8	04/01/19 16:52 / sld
Copper	ND mg/L		0.002	E200.8	04/01/19 16:52 / sld
Iron	0.26 mg/L		0.02	E200.8	04/01/19 16:52 / sld
Lead	ND mg/L		0.0003	E200.8	04/01/19 16:52 / sld
Manganese	0.034 mg/L		0.005	E200.8	04/01/19 16:52 / sld
Mercury	0.009 ug/L		0.005	E245.1	04/04/19 11:52 / dck
Molybdenum	ND mg/L		0.002	E200.8	04/01/19 16:52 / sld
Nickel	ND mg/L		0.001	E200.8	04/01/19 16:52 / sld
Selenium	ND mg/L		0.0002	E200.8	04/01/19 16:52 / sld
Silver	ND mg/L		0.0002	E200.8	04/01/19 16:52 / sld
Strontium	0.120 mg/L	D	0.0003	E200.8	04/01/19 16:52 / sld
Thallium	ND mg/L		0.0002	E200.8	04/01/19 16:52 / sld
Uranium	0.0006 mg/L		0.0002	E200.8	04/01/19 16:52 / sld
Zinc	0.003 mg/L		0.002	E200.8	04/01/19 16:52 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

						Batch: R142901
	Method Blank			Run: PHSC_101-H_190328A		03/28/19 15:19
Alkalinity, Total as CaCO3	ND mg/L	2				
	Laboratory Control Sample			Run: PHSC_101-H_190328A		03/28/19 15:24
Alkalinity, Total as CaCO3	590 mg/L	4.0	98	90 110		
	Sample Duplicate			Run: PHSC_101-H_190328A		03/28/19 15:59
Alkalinity, Total as CaCO3	170 mg/L	4.0			0.4	10
	Sample Duplicate			Run: PHSC_101-H_190328A		03/28/19 18:36
Alkalinity, Total as CaCO3	240 mg/L	4.0			1.5	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

Batch: TDS190328A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/28/19 12:39
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	10			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/28/19 12:39
Solids, Total Dissolved TDS @ 180 C	1930	mg/L	20	97	90	110
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:39
Solids, Total Dissolved TDS @ 180 C	190	mg/L	10		2.1	5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:41
Solids, Total Dissolved TDS @ 180 C	23800	mg/L	200		0.6	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

Batch: TSS190328A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/28/19 12:24
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/28/19 12:24
Solids, Total Suspended TSS @ 105 C	90.0	mg/L	10	90	80	120
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 12:25
Solids, Total Suspended TSS @ 105 C	14.0	mg/L	10		0.0	5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/28/19 14:18
Solids, Total Suspended TSS @ 105 C	21.0	mg/L	10		4.9	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

							Analytical Run: FIA203-HE_190401A
	Initial Calibration Blank, Instrument Blank						04/01/19 10:51
Nitrogen, Total	-0.000537	mg/L	0.10	0	0		
	Continuing Calibration Verification Standard						04/01/19 10:53
Nitrogen, Total	0.498	mg/L	0.10	100	90	110	
							Batch: 45049
	Laboratory Fortified Blank			Run: FIA203-HE_190401A			04/01/19 10:54
Nitrogen, Total	1.02	mg/L	0.10	102	90	110	
	Method Blank			Run: FIA203-HE_190401A			04/01/19 10:55
Nitrogen, Total	ND	mg/L	0.03				
	Laboratory Control Sample			Run: FIA203-HE_190401A			04/01/19 10:56
Nitrogen, Total	7.90	mg/L	0.30	106	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190401A			04/01/19 10:58
Nitrogen, Total	1.39	mg/L	0.10	93	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190401A			04/01/19 11:00
Nitrogen, Total	1.38	mg/L	0.10	91	90	110	1.1 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

Analytical Run: MANTECH 2\_190328A

	Initial Calibration Verification Standard						03/28/19 10:36	
Fluoride	0.7	mg/L	0.1	93	90	110		
	Continuing Calibration Verification Standard						03/28/19 12:15	
Fluoride	1.0	mg/L	0.1	97	90	110		
	Method Blank						Run: MANTECH 2_190328A	Batch: R142925
Fluoride	0.04	mg/L	0.03				03/28/19 10:39	
	Sample Duplicate						Run: MANTECH 2_190328A	03/28/19 12:23
Fluoride	0.2	mg/L	0.1			0.0	10	
	Sample Duplicate						Run: MANTECH 2_190328A	03/28/19 12:54
Fluoride	1.8	mg/L	0.1			0.0	10	
	Sample Matrix Spike						Run: MANTECH 2_190328A	03/28/19 13:01
Fluoride	1.2	mg/L	0.1	94	85	115		



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

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Analytical Run: ICP2-HE\_190328B

	2	Initial Calibration Verification Standard						03/28/19 12:50
Potassium		41.0 mg/L	1.0	102	95	105		
Sodium		40.7 mg/L	1.0	102	95	105		
	2	Continuing Calibration Verification Standard						03/28/19 13:00
Potassium		25.7 mg/L	1.0	103	95	105		
Sodium		25.7 mg/L	1.0	103	95	105		
	2	Interference Check Sample A						03/28/19 13:11
Potassium		0.00547 mg/L	1.0		0	0		
Sodium		0.0274 mg/L	1.0		0	0		
	2	Interference Check Sample AB						03/28/19 13:15
Potassium		20.7 mg/L	1.0	104	80	120		
Sodium		21.0 mg/L	1.0	105	80	120		
	2	Continuing Calibration Verification Standard						03/28/19 15:55
Potassium		26.6 mg/L	1.0	106	90	110		
Sodium		27.0 mg/L	1.0	108	90	110		
	2	Method Blank					Run: ICP2-HE_190328B	Batch: R142940 03/28/19 13:27
Potassium		ND mg/L	0.06					
Sodium		ND mg/L	0.02					
	2	Laboratory Fortified Blank					Run: ICP2-HE_190328B	03/28/19 13:31
Potassium		53.0 mg/L	1.0	106	85	115		
Sodium		52.6 mg/L	1.0	105	85	115		
	2	Sample Matrix Spike					Run: ICP2-HE_190328B	03/28/19 16:06
Potassium		57.0 mg/L	1.0	112	70	130		
Sodium		59.5 mg/L	1.0	114	70	130		
	2	Sample Matrix Spike Duplicate					Run: ICP2-HE_190328B	03/28/19 16:10
Potassium		58.3 mg/L	1.0	115	70	130	2.3	20
Sodium		60.8 mg/L	1.0	117	70	130	2.2	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

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Analytical Run: ICP2-HE\_190401B

	2	Initial Calibration Verification Standard						04/01/19 15:58
Calcium		40.4 mg/L	1.0	101	95	105		
Magnesium		40.0 mg/L	1.0	100	95	105		
	2	Continuing Calibration Verification Standard						04/01/19 16:02
Calcium		25.4 mg/L	1.0	102	95	105		
Magnesium		25.0 mg/L	1.0	100	95	105		
	2	Interference Check Sample A						04/01/19 16:13
Calcium		477 mg/L	1.0	95	80	120		
Magnesium		532 mg/L	1.0	106	80	120		
	2	Interference Check Sample AB						04/01/19 16:17
Calcium		483 mg/L	1.0	97	80	120		
Magnesium		537 mg/L	1.0	107	80	120		
	2	Continuing Calibration Verification Standard						04/01/19 16:48
Calcium		25.8 mg/L	1.0	103	90	110		
Magnesium		25.5 mg/L	1.0	102	90	110		
	2	Continuing Calibration Verification Standard						04/01/19 22:34
Calcium		26.9 mg/L	1.0	108	90	110		
Magnesium		26.2 mg/L	1.0	105	90	110		
								Batch: R143000
	2	Method Blank					Run: ICP2-HE_190401B	04/01/19 16:29
Calcium		ND mg/L	0.07					
Magnesium		ND mg/L	0.01					
	2	Laboratory Fortified Blank					Run: ICP2-HE_190401B	04/01/19 16:33
Calcium		52.8 mg/L	1.0	106	85	115		
Magnesium		53.3 mg/L	1.0	107	85	115		
	2	Sample Matrix Spike					Run: ICP2-HE_190401B	04/01/19 16:44
Calcium		94.9 mg/L	1.0	101	70	130		
Magnesium		79.1 mg/L	1.0	108	70	130		
	2	Sample Matrix Spike Duplicate					Run: ICP2-HE_190401B	04/01/19 16:55
Calcium		95.1 mg/L	1.0	102	70	130	0.3	20
Magnesium		79.2 mg/L	1.0	108	70	130	0.1	20
	2	Sample Matrix Spike					Run: ICP2-HE_190401B	04/01/19 21:10
Calcium		90.9 mg/L	1.0	104	70	130		
Magnesium		86.0 mg/L	1.0	106	70	130		
	2	Sample Matrix Spike Duplicate					Run: ICP2-HE_190401B	04/01/19 21:14
Calcium		94.0 mg/L	1.0	110	70	130	3.3	20
Magnesium		89.2 mg/L	1.0	113	70	130	3.6	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

							Analytical Run: ICPMS205-H_190329A
	Initial Calibration Verification Standard						03/29/19 11:20
Aluminum	0.296	mg/L	0.10	99	90	110	
	Interference Check Sample A						03/29/19 11:36
Aluminum	38.7	mg/L	0.10	97	70	130	
	Interference Check Sample AB						03/29/19 11:38
Aluminum	38.2	mg/L	0.10	96	70	130	
<hr/>							
	Method Blank						Batch: R142962
Aluminum	ND	mg/L	0.003				
	Laboratory Fortified Blank						Run: ICPMS205-H_190329A 03/29/19 11:48
Aluminum	0.0488	mg/L	0.10	98	85	115	
	Sample Matrix Spike						Run: ICPMS205-H_190329A 03/29/19 11:50
Aluminum	0.0593	mg/L	0.030	102	70	130	
	Sample Matrix Spike Duplicate						Run: ICPMS205-H_190329A 03/29/19 13:26
Aluminum	0.0602	mg/L	0.030	104	70	130 1.6 20	
	Sample Matrix Spike						Run: ICPMS205-H_190329A 03/29/19 13:28
Aluminum	11.3	mg/L	0.030	89	70	130	
	Sample Matrix Spike Duplicate						Run: ICPMS205-H_190329A 03/29/19 15:20
Aluminum	11.6	mg/L	0.030	91	70	130 2.8 20	

RL - Analyte reporting limit.

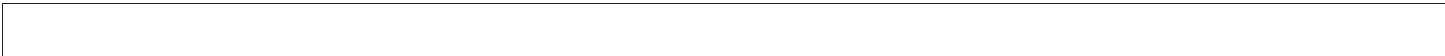
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477



Analytical Run: ICPMS205-H\_190401C

19 Initial Calibration Verification Standard

04/01/19 15:54

Antimony	0.0572	mg/L	0.050	95	90	110
Arsenic	0.0586	mg/L	0.0050	98	90	110
Barium	0.0594	mg/L	0.10	99	90	110
Beryllium	0.0297	mg/L	0.0010	99	90	110
Cadmium	0.0299	mg/L	0.0010	100	90	110
Chromium	0.0592	mg/L	0.010	99	90	110
Cobalt	0.0601	mg/L	0.010	100	90	110
Copper	0.0601	mg/L	0.010	100	90	110
Iron	0.314	mg/L	0.020	105	90	110
Lead	0.0591	mg/L	0.010	98	90	110
Manganese	0.297	mg/L	0.010	99	90	110
Molybdenum	0.0592	mg/L	0.0050	99	90	110
Nickel	0.0597	mg/L	0.010	99	90	110
Selenium	0.0594	mg/L	0.0050	99	90	110
Silver	0.0300	mg/L	0.0050	100	90	110
Strontium	0.0594	mg/L	0.10	99	90	110
Thallium	0.0591	mg/L	0.10	98	90	110
Uranium	0.0573	mg/L	0.00030	96	90	110
Zinc	0.0614	mg/L	0.010	102	90	110

19 Interference Check Sample A

04/01/19 15:56

Antimony	0.000359	mg/L	0.050			
Arsenic	-8.90E-07	mg/L	0.0050			
Barium	9.67E-05	mg/L	0.10			
Beryllium	3.01E-05	mg/L	0.0010			
Cadmium	0.000175	mg/L	0.0010			
Chromium	0.000196	mg/L	0.010			
Cobalt	0.000283	mg/L	0.010			
Copper	0.000136	mg/L	0.010			
Iron	97.9	mg/L	0.020	98	70	130
Lead	9.62E-05	mg/L	0.010			
Manganese	0.000217	mg/L	0.010			
Molybdenum	0.786	mg/L	0.0050	98	70	130
Nickel	0.000197	mg/L	0.010			
Selenium	0.000145	mg/L	0.0050			
Silver	6.34E-05	mg/L	0.0050			
Strontium	0.000932	mg/L	0.10			
Thallium	4.40E-05	mg/L	0.10			
Uranium	2.57E-05	mg/L	0.00030			
Zinc	0.000123	mg/L	0.010			

19 Interference Check Sample AB

04/01/19 15:59

Antimony	0.000197	mg/L	0.050		0	0
Arsenic	0.00987	mg/L	0.0050	99	70	130

RL - Analyte reporting limit.

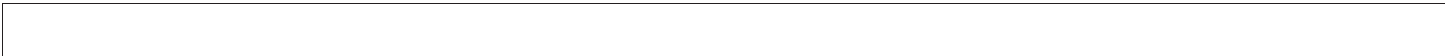
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477



Analytical Run: ICPMS205-H\_190401C

19 Interference Check Sample AB

04/01/19 15:59

Barium	0.000114	mg/L	0.10	0	0	
Beryllium	-2.89E-05	mg/L	0.0010	0	0	
Cadmium	0.0101	mg/L	0.0010	101	70	130
Chromium	0.0194	mg/L	0.010	97	70	130
Cobalt	0.0201	mg/L	0.010	101	70	130
Copper	0.0197	mg/L	0.010	98	70	130
Iron	97.5	mg/L	0.020	98	70	130
Lead	7.27E-05	mg/L	0.010	0	0	
Manganese	0.0197	mg/L	0.010	98	70	130
Molybdenum	0.772	mg/L	0.0050	97	70	130
Nickel	0.0200	mg/L	0.010	100	70	130
Selenium	0.00980	mg/L	0.0050	98	70	130
Silver	0.00491	mg/L	0.0050	98	70	130
Strontium	0.000928	mg/L	0.10	0	0	
Thallium	2.73E-05	mg/L	0.10	0	0	
Uranium	7.26E-06	mg/L	0.00030	0	0	
Zinc	0.00941	mg/L	0.010	94	70	130

Batch: 45035

19 Method Blank

Run: ICPMS205-H\_190401C

04/01/19 16:21

Antimony	ND	mg/L	0.0001
Arsenic	ND	mg/L	4E-05
Barium	ND	mg/L	9E-05
Beryllium	ND	mg/L	6E-05
Cadmium	ND	mg/L	3E-05
Chromium	0.0001	mg/L	0.0001
Cobalt	ND	mg/L	6E-05
Copper	ND	mg/L	0.0002
Iron	ND	mg/L	0.004
Lead	ND	mg/L	4E-05
Manganese	ND	mg/L	0.0003
Molybdenum	ND	mg/L	2E-05
Nickel	ND	mg/L	0.0001
Selenium	ND	mg/L	5E-05
Silver	2E-05	mg/L	9E-06
Strontium	ND	mg/L	0.0003
Thallium	ND	mg/L	4E-05
Uranium	ND	mg/L	9E-06
Zinc	ND	mg/L	0.001

19 Laboratory Control Sample

Run: ICPMS205-H\_190401C

04/01/19 16:36

Antimony	0.495	mg/L	0.0010	99	85	115
Arsenic	0.513	mg/L	0.0010	103	85	115
Barium	0.513	mg/L	0.050	103	85	115

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

Batch: 45035

19 Laboratory Control Sample

Run: ICPMS205-H\_190401C

04/01/19 16:36

Beryllium	0.246	mg/L	0.0010	98	85	115
Cadmium	0.254	mg/L	0.0010	102	85	115
Chromium	0.501	mg/L	0.0050	100	85	115
Cobalt	0.502	mg/L	0.0050	100	85	115
Copper	0.503	mg/L	0.0050	101	85	115
Iron	2.57	mg/L	0.020	103	85	115
Lead	0.498	mg/L	0.0010	100	85	115
Manganese	2.42	mg/L	0.0010	97	85	115
Molybdenum	0.477	mg/L	0.0010	95	85	115
Nickel	0.508	mg/L	0.0050	102	85	115
Selenium	0.498	mg/L	0.0010	100	85	115
Silver	0.0519	mg/L	0.0010	104	85	115
Strontium	0.514	mg/L	0.010	103	85	115
Thallium	0.500	mg/L	0.00050	100	85	115
Uranium	0.466	mg/L	0.00030	93	85	115
Zinc	0.507	mg/L	0.010	101	85	115

19 Sample Matrix Spike

Run: ICPMS205-H\_190401C

04/01/19 17:01

Antimony	0.508	mg/L	0.0010	101	70	130
Arsenic	0.511	mg/L	0.0010	100	70	130
Barium	0.508	mg/L	0.050	100	70	130
Beryllium	0.237	mg/L	0.0010	95	70	130
Cadmium	0.246	mg/L	0.0010	98	70	130
Chromium	0.478	mg/L	0.0050	95	70	130
Cobalt	0.480	mg/L	0.0050	96	70	130
Copper	0.495	mg/L	0.0050	96	70	130
Iron	3.21	mg/L	0.020	98	70	130
Lead	0.487	mg/L	0.0010	97	70	130
Manganese	2.33	mg/L	0.0010	92	70	130
Molybdenum	0.488	mg/L	0.0010	97	70	130
Nickel	0.486	mg/L	0.0050	97	70	130
Selenium	0.478	mg/L	0.0010	95	70	130
Silver	0.0494	mg/L	0.0010	99	70	130
Strontium	0.692	mg/L	0.010	100	70	130
Thallium	0.486	mg/L	0.00050	97	70	130
Uranium	0.468	mg/L	0.00030	93	70	130
Zinc	0.544	mg/L	0.010	97	70	130

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190401C

04/01/19 17:03

Antimony	0.520	mg/L	0.0010	104	70	130	2.4	20
Arsenic	0.520	mg/L	0.0010	101	70	130	1.7	20
Barium	0.519	mg/L	0.050	103	70	130	2.1	20
Beryllium	0.242	mg/L	0.0010	97	70	130	2.1	20
Cadmium	0.251	mg/L	0.0010	101	70	130	2.1	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

Batch: 45035

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190401C

04/01/19 17:03

Chromium	0.487	mg/L	0.0050	97	70	130	2.1	20
Cobalt	0.490	mg/L	0.0050	98	70	130	2.1	20
Copper	0.507	mg/L	0.0050	98	70	130	2.5	20
Iron	3.25	mg/L	0.020	99	70	130	1.3	20
Lead	0.494	mg/L	0.0010	99	70	130	1.4	20
Manganese	2.37	mg/L	0.0010	94	70	130	1.7	20
Molybdenum	0.499	mg/L	0.0010	99	70	130	2.2	20
Nickel	0.496	mg/L	0.0050	99	70	130	2.0	20
Selenium	0.499	mg/L	0.0010	100	70	130	4.3	20
Silver	0.0507	mg/L	0.0010	101	70	130	2.6	20
Strontium	0.701	mg/L	0.010	102	70	130	1.2	20
Thallium	0.493	mg/L	0.00050	99	70	130	1.3	20
Uranium	0.498	mg/L	0.00030	99	70	130	6.2	20
Zinc	0.551	mg/L	0.010	98	70	130	1.2	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

Analytical Run: HGCV202-H\_190404A

	Initial Calibration Verification Standard						04/04/19 11:11
Mercury	0.0982	ug/L	0.0050	98	90	110	
	Initial Calibration Verification Standard						04/04/19 14:27
Mercury	0.0980	ug/L	0.0050	98	90	110	
	Method Blank						Batch: 45039
Mercury	ND	ug/L	0.002				Run: HGCV202-H_190404A 04/04/19 11:36
	Laboratory Control Sample						Run: HGCV202-H_190404A 04/04/19 11:40
Mercury	0.0538	ug/L	0.0050	108	90	110	
	Sample Matrix Spike						Run: HGCV202-H_190404A 04/04/19 11:56
Mercury	0.0626	ug/L	0.0050	108	70	130	
	Sample Matrix Spike Duplicate						Run: HGCV202-H_190404A 04/04/19 11:59
Mercury	0.0626	ug/L	0.0050	108	70	130	0.0 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

Analytical Run: IC METROHM\_190328A

2 Initial Calibration Verification Standard

03/28/19 09:33

Chloride	103	mg/L	1.0	103	90	110
Sulfate	412	mg/L	1.0	103	90	110

2 Continuing Calibration Verification Standard

03/28/19 17:32

Chloride	50.3	mg/L	1.0	101	90	110
Sulfate	206	mg/L	1.0	103	90	110

Batch: R142938

2 Method Blank

Run: IC METROHM\_190328A

03/28/19 09:18

Chloride	ND	mg/L	0.02			
Sulfate	ND	mg/L	0.08			

2 Laboratory Fortified Blank

Run: IC METROHM\_190328A

03/28/19 09:47

Chloride	24.9	mg/L	1.0	100	90	110
Sulfate	105	mg/L	1.0	105	90	110

2 Sample Matrix Spike

Run: IC METROHM\_190328A

03/28/19 19:53

Chloride	35.7	mg/L	1.0	99	90	110
Sulfate	129	mg/L	1.0	99	90	110

2 Sample Matrix Spike Duplicate

Run: IC METROHM\_190328A

03/28/19 20:07

Chloride	35.7	mg/L	1.0	99	90	110	0.1	20
Sulfate	130	mg/L	1.0	100	90	110	0.9	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

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							Analytical Run: FIA203-HE_190401D
	Initial Calibration Verification Standard						04/01/19 14:35
Nitrogen, Nitrate+Nitrite as N	0.933	mg/L	0.010	93	90	110	
	Continuing Calibration Verification Standard						04/01/19 15:21
Nitrogen, Nitrate+Nitrite as N	0.472	mg/L	0.010	94	90	110	
	Continuing Calibration Verification Standard						04/01/19 15:38
Nitrogen, Nitrate+Nitrite as N	0.466	mg/L	0.010	93	90	110	
<hr/>							Batch: R142993
	Method Blank			Run: FIA203-HE_190401D			04/01/19 14:36
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				
	Laboratory Fortified Blank			Run: FIA203-HE_190401D			04/01/19 14:37
Nitrogen, Nitrate+Nitrite as N	0.960	mg/L	0.011	96	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190401D			04/01/19 15:42
Nitrogen, Nitrate+Nitrite as N	1.16	mg/L	0.011	100	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190401D			04/01/19 15:43
Nitrogen, Nitrate+Nitrite as N	1.09	mg/L	0.011	93	90	110	6.3 10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 Black Butte Copper (SW)

04/10/19  
H19030477

							Analytical Run: FIA202-HE_190329B
	Initial Calibration Verification Standard						03/29/19 14:40
Phosphorus, Total as P	0.244	mg/L	0.010	98	90	110	
	Initial Calibration Blank, Instrument Blank						03/29/19 14:42
Phosphorus, Total as P	-0.000530	mg/L	0.010		0	0	
							Batch: 45040
	Method Blank				Run: FIA202-HE_190329B		03/29/19 14:43
Phosphorus, Total as P	ND	mg/L	0.002				
	Laboratory Control Sample					Run: FIA202-HE_190329B	03/29/19 14:44
Phosphorus, Total as P	0.397	mg/L	0.010	99	90	110	
	Sample Matrix Spike					Run: FIA202-HE_190329B	03/29/19 14:53
Phosphorus, Total as P	0.250	mg/L	0.010	102	90	110	
	Sample Matrix Spike Duplicate					Run: FIA202-HE_190329B	03/29/19 14:54
Phosphorus, Total as P	0.252	mg/L	0.010	103	90	110	0.6 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Tintina Resources Inc

# H19030477

Login completed by: Jessica C. Smith

Date Received: 3/27/2019

Reviewed by: BL2000\rtooke

Received by: wjj

Reviewed Date: 3/29/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	-0.4°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The filtered metals bottle in sample set BBC-1903-121 has no time. Used time from COC. JCS 03/28/19





**TABLE 6. PARAMETERS, METHODS, AND DETECTION LIMITS  
FOR SURFACE WATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	4
TSS	SM 2540C	4
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.003
Total Persulfate Nitrogen	A 4500-N-C	0.04
Total Phosphorus	E365.1	0.003
<b>Trace Constituents (SW - Total Recoverable except Aluminum [Diss])<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameters</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



April 12, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19030547 Quote ID: H1216 - Surface and Groundwater Sampling

Project Name: 18049 1st Quarter GW Sampling

Energy Laboratories Inc Helena MT received the following 10 samples for Tintina Resources Inc on 3/29/2019 for analysis.


H19030547-001	BBC-1903-215	03/27/19 16:15	03/29/19	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Mercury, Dissolved Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Mercury Digestion by E245.1 Solids, Total Dissolved Solids, Total Suspended
H19030547-002	BBC-1903-216	03/27/19 16:50	03/29/19	Groundwater	Same As Above
H19030547-003	BBC-1903-217	03/28/19 9:50	03/29/19	Groundwater	Same As Above
H19030547-004	BBC-1903-218	03/28/19 10:40	03/29/19	Groundwater	Same As Above
H19030547-005	BBC-1903-219	03/28/19 11:35	03/29/19	Groundwater	Same As Above
H19030547-006	BBC-1903-220	03/28/19 11:50	03/29/19	Groundwater	Same As Above
H19030547-007	BBC-1903-221	03/28/19 12:00	03/29/19	Groundwater	Same As Above
H19030547-008	BBC-1903-222	03/28/19 13:10	03/29/19	Groundwater	Same As Above
H19030547-009	BBC-1903-223	03/28/19 13:45	03/29/19	Groundwater	Same As Above
H19030547-010	BBC-1903-300	03/28/19 11:40	03/29/19	Groundwater	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

  
Assistant Laboratory Manager-Helena, MT

Digitally signed by  
Amanda B. Carlson  
Date: 2019.04.12 11:34:26 -06:00



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-001  
BBC-1903-215

04/12/19  
03/27/19 16:15  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/29/19 14:09 / cmm
Solids, Total Dissolved TDS @ 180 C	234 mg/L	10	A2540 C	03/29/19 14:00 / cmm
Alkalinity, Total as CaCO3	220 mg/L	4	A2320 B	04/01/19 11:43 / SRW
Chloride	2 mg/L	1	E300.0	04/01/19 20:02 / SRW
Sulfate	14 mg/L	1	E300.0	04/01/19 20:02 / SRW
Fluoride	0.1 mg/L	0.1	4 A4500-F C	04/01/19 10:20 / SRW
Hardness as CaCO3	234 mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.07 mg/L	0.01	E353.2	04/05/19 09:50 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 13:36 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 13:36 / sld
Arsenic	ND mg/L	0.001	E200.8	04/02/19 13:36 / sld
Barium	0.128 mg/L	0.003	E200.8	04/02/19 13:36 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 13:36 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 13:36 / sld
Calcium	62 mg/L	1	E200.7	04/01/19 17:26 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 13:36 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 13:36 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 13:36 / sld
Iron	ND mg/L	0.02	E200.8	04/02/19 13:36 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 13:36 / sld
Magnesium	19 mg/L	1	E200.7	04/01/19 17:26 / sld
Manganese	ND mg/L	0.005	E200.8	04/02/19 13:36 / sld
Mercury	ND ug/L	0.005	E245.1	04/04/19 15:57 / dck
Molybdenum	ND mg/L	0.002	E200.8	04/02/19 13:36 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 13:36 / sld
Potassium	1 mg/L	1	E200.7	04/01/19 17:26 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 13:36 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:36 / sld
Sodium	3 mg/L	1	E200.7	04/01/19 17:26 / sld
Strontium	0.174 mg/L	0.0002	E200.8	04/02/19 13:36 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 13:36 / sld
Uranium	0.0006 mg/L	0.0002	E200.8	04/02/19 13:36 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 13:36 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-002  
BBC-1903-216

04/12/19  
03/27/19 16:50  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/29/19 14:10 / cmm
Solids, Total Dissolved TDS @ 180 C	267 mg/L	10	A2540 C	03/29/19 14:01 / cmm
Alkalinity, Total as CaCO3	250 mg/L	4	A2320 B	04/01/19 11:51 / SRW
Chloride	3 mg/L	1	E300.0	04/01/19 20:16 / SRW
Sulfate	15 mg/L	1	E300.0	04/01/19 20:16 / SRW
Fluoride	0.1 mg/L	0.1	4 A4500-F C	04/01/19 10:22 / SRW
Hardness as CaCO3	258 mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/05/19 09:51 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 13:38 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 13:38 / sld
Arsenic	ND mg/L	0.001	E200.8	04/02/19 13:38 / sld
Barium	0.175 mg/L	0.003	E200.8	04/02/19 13:38 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 13:38 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 13:38 / sld
Calcium	71 mg/L	1	E200.7	04/01/19 17:30 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 13:38 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 13:38 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 13:38 / sld
Iron	ND mg/L	0.02	E200.8	04/02/19 13:38 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 13:38 / sld
Magnesium	20 mg/L	1	E200.7	04/01/19 17:30 / sld
Manganese	0.230 mg/L	0.005	E200.8	04/02/19 13:38 / sld
Mercury	ND ug/L	0.005	E245.1	04/04/19 16:00 / dck
Molybdenum	ND mg/L	0.002	E200.8	04/02/19 13:38 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 13:38 / sld
Potassium	1 mg/L	1	E200.7	04/01/19 17:30 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 13:38 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:38 / sld
Sodium	3 mg/L	1	E200.7	04/01/19 17:30 / sld
Strontium	0.169 mg/L	0.0002	E200.8	04/02/19 13:38 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 13:38 / sld
Uranium	0.0004 mg/L	0.0002	E200.8	04/02/19 13:38 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 13:38 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-003  
BBC-1903-217

04/12/19  
03/28/19 09:50  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/29/19 14:10 / cmm
Solids, Total Dissolved TDS @ 180 C	160 mg/L	10	A2540 C	03/29/19 14:01 / cmm
Alkalinity, Total as CaCO3	160 mg/L	4	A2320 B	04/01/19 11:59 / SRW
Chloride	ND mg/L	1	E300.0	04/01/19 20:30 / SRW
Sulfate	15 mg/L	1	E300.0	04/01/19 20:30 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	04/01/19 10:24 / SRW
Hardness as CaCO3	158 mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/05/19 09:52 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 13:40 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 13:40 / sld
Arsenic	0.002 mg/L	0.001	E200.8	04/02/19 13:40 / sld
Barium	0.079 mg/L	0.003	E200.8	04/02/19 13:40 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 13:40 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 13:40 / sld
Calcium	25 mg/L	1	E200.7	04/01/19 17:41 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 13:40 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 13:40 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 13:40 / sld
Iron	0.10 mg/L	0.02	E200.8	04/02/19 13:40 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 13:40 / sld
Magnesium	23 mg/L	1	E200.7	04/01/19 17:41 / sld
Manganese	0.019 mg/L	0.005	E200.8	04/02/19 13:40 / sld
Mercury	ND ug/L	0.005	E245.1	04/04/19 16:04 / dck
Molybdenum	0.002 mg/L	0.002	E200.8	04/02/19 13:40 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 13:40 / sld
Potassium	ND mg/L	1	E200.7	04/01/19 17:41 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 13:40 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:40 / sld
Sodium	3 mg/L	1	E200.7	04/01/19 17:41 / sld
Strontium	0.0877 mg/L	0.0002	E200.8	04/02/19 13:40 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 13:40 / sld
Uranium	0.0008 mg/L	0.0002	E200.8	04/02/19 13:40 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 13:40 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-004  
BBC-1903-218

04/12/19  
03/28/19 10:40  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	41 mg/L	10	A2540 D	03/29/19 14:10 / cmm
Solids, Total Dissolved TDS @ 180 C	310 mg/L	10	A2540 C	03/29/19 14:01 / cmm
Alkalinity, Total as CaCO3	230 mg/L	4	A2320 B	04/01/19 12:04 / SRW
Chloride	4 mg/L	1	E300.0	04/01/19 20:45 / SRW
Sulfate	62 mg/L	1	E300.0	04/01/19 20:45 / SRW
Fluoride	0.3 mg/L	0.1	4 A4500-F C	04/01/19 10:32 / SRW
Hardness as CaCO3	307 mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/05/19 09:53 / kmd
Aluminum	0.014 mg/L	0.009	E200.8	04/02/19 13:43 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 13:43 / sld
Arsenic	0.001 mg/L	0.001	E200.8	04/02/19 13:43 / sld
Barium	0.042 mg/L	0.003	E200.8	04/02/19 13:43 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 13:43 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 13:43 / sld
Calcium	60 mg/L	1	E200.7	04/01/19 17:56 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 13:43 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 13:43 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 13:43 / sld
Iron	0.05 mg/L	0.02	E200.8	04/02/19 13:43 / sld
Lead	0.0006 mg/L	0.0003	E200.8	04/02/19 13:43 / sld
Magnesium	38 mg/L	1	E200.7	04/01/19 17:56 / sld
Manganese	0.016 mg/L	0.005	E200.8	04/02/19 13:43 / sld
Mercury	ND ug/L	0.005	E245.1	04/09/19 14:45 / ber
Molybdenum	0.004 mg/L	0.002	E200.8	04/02/19 13:43 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 13:43 / sld
Potassium	1 mg/L	1	E200.7	04/01/19 17:56 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 13:43 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:43 / sld
Sodium	3 mg/L	1	E200.7	04/01/19 17:56 / sld
Strontium	0.170 mg/L	0.0002	E200.8	04/02/19 13:43 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 13:43 / sld
Uranium	0.0023 mg/L	0.0002	E200.8	04/02/19 13:43 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 13:43 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-005  
BBC-1903-219

04/12/19  
03/28/19 11:35  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	23 mg/L	10	A2540 D	03/29/19 14:10 / cmm
Solids, Total Dissolved TDS @ 180 C	246 mg/L	10	A2540 C	03/29/19 14:01 / cmm
Alkalinity, Total as CaCO3	230 mg/L	4	A2320 B	04/01/19 12:12 / SRW
Chloride	ND mg/L	1	E300.0	04/01/19 20:59 / SRW
Sulfate	17 mg/L	1	E300.0	04/01/19 20:59 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	04/01/19 10:36 / SRW
Hardness as CaCO3	243 mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.10 mg/L	0.01	E353.2	04/05/19 09:54 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 13:45 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 13:45 / sld
Arsenic	ND mg/L	0.001	E200.8	04/02/19 13:45 / sld
Barium	0.179 mg/L	0.003	E200.8	04/02/19 13:45 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 13:45 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 13:45 / sld
Calcium	56 mg/L	1	E200.7	04/01/19 18:00 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 13:45 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 13:45 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 13:45 / sld
Iron	ND mg/L	0.02	E200.8	04/02/19 13:45 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 13:45 / sld
Magnesium	25 mg/L	1	E200.7	04/01/19 18:00 / sld
Manganese	ND mg/L	0.005	E200.8	04/02/19 13:45 / sld
Mercury	ND ug/L	0.005	E245.1	04/09/19 14:54 / ber
Molybdenum	ND mg/L	0.002	E200.8	04/02/19 13:45 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 13:45 / sld
Potassium	ND mg/L	1	E200.7	04/01/19 18:00 / sld
Selenium	0.0002 mg/L	0.0002	E200.8	04/02/19 13:45 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:45 / sld
Sodium	3 mg/L	1	E200.7	04/01/19 18:00 / sld
Strontium	0.169 mg/L	0.0002	E200.8	04/02/19 13:45 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 13:45 / sld
Uranium	0.0007 mg/L	0.0002	E200.8	04/02/19 13:45 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 13:45 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-006  
BBC-1903-220

04/12/19  
03/28/19 11:50  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	28 mg/L	10	A2540 D	03/29/19 14:11 / cmm
Solids, Total Dissolved TDS @ 180 C	244 mg/L	10	A2540 C	03/29/19 14:02 / cmm
Alkalinity, Total as CaCO3	230 mg/L	4	A2320 B	04/01/19 12:20 / SRW
Chloride	ND mg/L	1	E300.0	04/01/19 21:13 / SRW
Sulfate	17 mg/L	1	E300.0	04/01/19 21:13 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	04/01/19 10:38 / SRW
Hardness as CaCO3	247 mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.10 mg/L	0.01	E353.2	04/05/19 09:56 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 13:47 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 13:47 / sld
Arsenic	ND mg/L	0.001	E200.8	04/02/19 13:47 / sld
Barium	0.180 mg/L	0.003	E200.8	04/02/19 13:47 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 13:47 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 13:47 / sld
Calcium	57 mg/L	1	E200.7	04/01/19 18:04 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 13:47 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 13:47 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 13:47 / sld
Iron	ND mg/L	0.02	E200.8	04/02/19 13:47 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 13:47 / sld
Magnesium	25 mg/L	1	E200.7	04/01/19 18:04 / sld
Manganese	ND mg/L	0.005	E200.8	04/02/19 13:47 / sld
Mercury	ND ug/L	0.005	E245.1	04/09/19 14:58 / ber
Molybdenum	ND mg/L	0.002	E200.8	04/02/19 13:47 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 13:47 / sld
Potassium	ND mg/L	1	E200.7	04/01/19 18:04 / sld
Selenium	0.0002 mg/L	0.0002	E200.8	04/02/19 13:47 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:47 / sld
Sodium	3 mg/L	1	E200.7	04/01/19 18:04 / sld
Strontium	0.170 mg/L	0.0002	E200.8	04/02/19 13:47 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 13:47 / sld
Uranium	0.0007 mg/L	0.0002	E200.8	04/02/19 13:47 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 13:47 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-007  
BBC-1903-221

04/12/19  
03/28/19 12:00  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/29/19 14:11 / cmm
Solids, Total Dissolved TDS @ 180 C	249 mg/L	10	A2540 C	03/29/19 14:02 / cmm
Alkalinity, Total as CaCO3	230 mg/L	4	A2320 B	04/01/19 12:50 / SRW
Chloride	ND mg/L	1	E300.0	04/01/19 22:38 / SRW
Sulfate	23 mg/L	1	E300.0	04/01/19 22:38 / SRW
Fluoride	0.5 mg/L	0.1	4 A4500-F C	04/01/19 10:41 / SRW
Hardness as CaCO3	227 mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.07 mg/L	0.01	E353.2	04/05/19 09:57 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 13:49 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 13:49 / sld
Arsenic	ND mg/L	0.001	E200.8	04/02/19 13:49 / sld
Barium	0.111 mg/L	0.003	E200.8	04/02/19 13:49 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 13:49 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 13:49 / sld
Calcium	50 mg/L	1	E200.7	04/01/19 18:08 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 13:49 / sld
Cobalt	ND mg/L	0.01	E200.7	04/01/19 18:08 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 13:49 / sld
Iron	ND mg/L	0.02	E200.8	04/02/19 13:49 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 13:49 / sld
Magnesium	25 mg/L	1	E200.7	04/01/19 18:08 / sld
Manganese	ND mg/L	0.005	E200.8	04/02/19 13:49 / sld
Mercury	ND ug/L	0.005	E245.1	04/09/19 15:01 / ber
Molybdenum	ND mg/L	0.002	E200.8	04/02/19 13:49 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 13:49 / sld
Potassium	1 mg/L	1	E200.7	04/01/19 18:08 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 13:49 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:49 / sld
Sodium	14 mg/L	1	E200.7	04/01/19 18:08 / sld
Strontium	0.238 mg/L	0.0002	E200.8	04/02/19 13:49 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 13:49 / sld
Uranium	0.0007 mg/L	0.0002	E200.8	04/02/19 13:49 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 13:49 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-008  
BBC-1903-222

04/12/19  
03/28/19 13:10  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/29/19 14:11 / cmm
Solids, Total Dissolved TDS @ 180 C	ND mg/L	10	A2540 C	03/29/19 14:03 / cmm
Alkalinity, Total as CaCO3	ND mg/L	4	A2320 B	04/01/19 13:04 / SRW
Chloride	ND mg/L	1	E300.0	04/01/19 22:52 / SRW
Sulfate	ND mg/L	1	E300.0	04/01/19 22:52 / SRW
Fluoride	ND mg/L	0.1	4 A4500-F C	04/01/19 10:43 / SRW
Hardness as CaCO3	ND mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/05/19 10:00 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 13:59 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 13:59 / sld
Arsenic	ND mg/L	0.001	E200.8	04/02/19 13:59 / sld
Barium	ND mg/L	0.003	E200.8	04/02/19 13:59 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 13:59 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 13:59 / sld
Calcium	ND mg/L	1	E200.7	04/01/19 18:12 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 13:59 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 13:59 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 13:59 / sld
Iron	ND mg/L	0.02	E200.8	04/02/19 13:59 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 13:59 / sld
Magnesium	ND mg/L	1	E200.7	04/01/19 18:12 / sld
Manganese	ND mg/L	0.005	E200.8	04/02/19 13:59 / sld
Mercury	ND ug/L	0.005	E245.1	04/09/19 15:04 / ber
Molybdenum	ND mg/L	0.002	E200.8	04/02/19 13:59 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 13:59 / sld
Potassium	ND mg/L	1	E200.7	04/01/19 18:12 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 13:59 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 13:59 / sld
Sodium	ND mg/L	1	E200.7	04/01/19 18:12 / sld
Strontium	ND mg/L	0.0002	E200.8	04/02/19 13:59 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 13:59 / sld
Uranium	ND mg/L	0.0002	E200.8	04/02/19 13:59 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 13:59 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-009  
BBC-1903-223

04/12/19  
03/28/19 13:45  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/29/19 14:11 / cmm
Solids, Total Dissolved TDS @ 180 C	ND mg/L	10	A2540 C	03/29/19 14:03 / cmm
Alkalinity, Total as CaCO3	ND mg/L	4	A2320 B	04/01/19 13:09 / SRW
Chloride	ND mg/L	1	E300.0	04/01/19 23:06 / SRW
Sulfate	ND mg/L	1	E300.0	04/01/19 23:06 / SRW
Fluoride	ND mg/L	0.1	4 A4500-F C	04/01/19 10:46 / SRW
Hardness as CaCO3	ND mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L	0.01	E353.2	04/05/19 10:02 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 14:01 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 14:01 / sld
Arsenic	ND mg/L	0.001	E200.8	04/02/19 14:01 / sld
Barium	ND mg/L	0.003	E200.8	04/02/19 14:01 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 14:01 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 14:01 / sld
Calcium	ND mg/L	1	E200.7	04/01/19 18:15 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 14:01 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 14:01 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 14:01 / sld
Iron	ND mg/L	0.02	E200.8	04/02/19 14:01 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 14:01 / sld
Magnesium	ND mg/L	1	E200.7	04/01/19 18:15 / sld
Manganese	ND mg/L	0.005	E200.8	04/02/19 14:01 / sld
Mercury	ND ug/L	0.005	E245.1	04/09/19 15:07 / ber
Molybdenum	ND mg/L	0.002	E200.8	04/02/19 14:01 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 14:01 / sld
Potassium	ND mg/L	1	E200.7	04/01/19 18:15 / sld
Selenium	ND mg/L	0.0002	E200.8	04/02/19 14:01 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 14:01 / sld
Sodium	ND mg/L	1	E200.7	04/01/19 18:15 / sld
Strontium	ND mg/L	0.0002	E200.8	04/02/19 14:01 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 14:01 / sld
Uranium	ND mg/L	0.0002	E200.8	04/02/19 14:01 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 14:01 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling  
H19030547-010  
BBC-1903-300

04/12/19  
03/28/19 11:40  
03/29/19  
Groundwater

Solids, Total Suspended TSS @ 105 C	ND mg/L	10	A2540 D	03/29/19 14:11 / cmm
Solids, Total Dissolved TDS @ 180 C	198 mg/L	10	A2540 C	03/29/19 14:03 / cmm
Alkalinity, Total as CaCO3	190 mg/L	4	A2320 B	04/01/19 13:15 / SRW
Chloride	ND mg/L	1	E300.0	04/01/19 23:20 / SRW
Sulfate	15 mg/L	1	E300.0	04/01/19 23:20 / SRW
Fluoride	0.2 mg/L	0.1	4 A4500-F C	04/01/19 10:48 / SRW
Hardness as CaCO3	202 mg/L	1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.25 mg/L	0.01	E353.2	04/05/19 10:03 / kmd
Aluminum	ND mg/L	0.009	E200.8	04/02/19 14:03 / sld
Antimony	ND mg/L	0.0005	E200.8	04/02/19 14:03 / sld
Arsenic	ND mg/L	0.001	E200.8	04/02/19 14:03 / sld
Barium	0.092 mg/L	0.003	E200.8	04/02/19 14:03 / sld
Beryllium	ND mg/L	0.0008	E200.8	04/02/19 14:03 / sld
Cadmium	ND mg/L	0.00003	E200.8	04/02/19 14:03 / sld
Calcium	38 mg/L	1	E200.7	04/01/19 18:27 / sld
Chromium	ND mg/L	0.01	E200.8	04/02/19 14:03 / sld
Cobalt	ND mg/L	0.01	E200.8	04/02/19 14:03 / sld
Copper	ND mg/L	0.002	E200.8	04/02/19 14:03 / sld
Iron	ND mg/L	0.02	E200.8	04/02/19 14:03 / sld
Lead	ND mg/L	0.0003	E200.8	04/02/19 14:03 / sld
Magnesium	26 mg/L	1	E200.7	04/01/19 18:27 / sld
Manganese	ND mg/L	0.005	E200.8	04/02/19 14:03 / sld
Mercury	ND ug/L	0.005	E245.1	04/09/19 15:10 / ber
Molybdenum	ND mg/L	0.002	E200.8	04/02/19 14:03 / sld
Nickel	ND mg/L	0.001	E200.8	04/02/19 14:03 / sld
Potassium	ND mg/L	1	E200.7	04/01/19 18:27 / sld
Selenium	0.0010 mg/L	0.0002	E200.8	04/02/19 14:03 / sld
Silver	ND mg/L	0.0002	E200.8	04/02/19 14:03 / sld
Sodium	2 mg/L	1	E200.7	04/01/19 18:27 / sld
Strontium	0.123 mg/L	0.0002	E200.8	04/02/19 14:03 / sld
Thallium	ND mg/L	0.0002	E200.8	04/02/19 14:03 / sld
Uranium	0.0011 mg/L	0.0002	E200.8	04/02/19 14:03 / sld
Zinc	ND mg/L	0.002	E200.8	04/02/19 14:03 / sld

RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

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							Batch: R142960
Alkalinity, Total as CaCO3	Method Blank				Run: PHSC_101-H_190401A		04/01/19 09:41
	ND	mg/L	2				
Alkalinity, Total as CaCO3	Laboratory Control Sample				Run: PHSC_101-H_190401A		04/01/19 09:47
	580	mg/L	4.0	97	90	110	
Alkalinity, Total as CaCO3	Sample Duplicate				Run: PHSC_101-H_190401A		04/01/19 11:06
	190	mg/L	4.0			0.5	10
Alkalinity, Total as CaCO3	Sample Duplicate				Run: PHSC_101-H_190401A		04/01/19 12:27
	230	mg/L	4.0			0.8	10
Alkalinity, Total as CaCO3	Method Blank				Run: PHSC_101-H_190401A		04/01/19 12:34
	ND	mg/L	2				
Alkalinity, Total as CaCO3	Laboratory Control Sample				Run: PHSC_101-H_190401A		04/01/19 12:40
	610	mg/L	4.0	101	90	110	
Alkalinity, Total as CaCO3	Sample Duplicate				Run: PHSC_101-H_190401A		04/01/19 12:57
	230	mg/L	4.0			0.7	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

Batch: TDS190329A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/29/19 14:00
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	10			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/29/19 14:00
Solids, Total Dissolved TDS @ 180 C	1880	mg/L	20	94	90	110
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/29/19 14:01
Solids, Total Dissolved TDS @ 180 C	235	mg/L	10		0.4	5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/29/19 14:03
Solids, Total Dissolved TDS @ 180 C	101	mg/L	10		1.0	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

Batch: TSS190329A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/29/19 14:09
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/29/19 14:09
Solids, Total Suspended TSS @ 105 C	95.0	mg/L	10	95	80 120	
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/29/19 14:09
Solids, Total Suspended TSS @ 105 C	ND	mg/L	10			5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/29/19 14:12
Solids, Total Suspended TSS @ 105 C	16.8	mg/L	10		4.9	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

							Analytical Run: MANTECH 2_190401A
	Initial Calibration Verification Standard						04/01/19 09:54
Fluoride	0.7	mg/L	0.1	93	90	110	
	Continuing Calibration Verification Standard						04/01/19 10:27
Fluoride	1.0	mg/L	0.1	100	90	110	
							Batch: R142978
	Method Blank			Run: MANTECH 2_190401A		04/01/19 09:57	
Fluoride	ND	mg/L	0.03				
	Sample Matrix Spike			Run: MANTECH 2_190401A		04/01/19 10:08	
Fluoride	1.4	mg/L	0.1	98	85	115	
	Sample Duplicate			Run: MANTECH 2_190401A		04/01/19 10:34	
Fluoride	0.3	mg/L	0.1			3.8 10	
	Sample Matrix Spike			Run: MANTECH 2_190401A		04/01/19 11:04	
Fluoride	1.0	mg/L	0.1	97	85	115	
	Sample Duplicate			Run: MANTECH 2_190401A		04/01/19 11:08	
Fluoride	0.1	mg/L	0.1	10			

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

Analytical Run: ICP2-HE\_190401B

5 Initial Calibration Verification Standard							04/01/19 15:58
Calcium	40.4	mg/L	1.0	101	95	105	
Cobalt	0.806	mg/L	0.010	101	95	105	
Magnesium	40.0	mg/L	1.0	100	95	105	
Potassium	40.4	mg/L	1.0	101	95	105	
Sodium	40.4	mg/L	1.0	101	95	105	
5 Continuing Calibration Verification Standard							04/01/19 16:02
Calcium	25.4	mg/L	1.0	102	95	105	
Cobalt	2.51	mg/L	0.010	100	95	105	
Magnesium	25.0	mg/L	1.0	100	95	105	
Potassium	25.4	mg/L	1.0	102	95	105	
Sodium	25.3	mg/L	1.0	101	95	105	
5 Interference Check Sample A							04/01/19 16:13
Calcium	477	mg/L	1.0	95	80	120	
Cobalt	-0.00519	mg/L	0.021		0	0	
Magnesium	532	mg/L	1.0	106	80	120	
Potassium	-0.0211	mg/L	1.0		0	0	
Sodium	0.0108	mg/L	1.0		0	0	
5 Interference Check Sample AB							04/01/19 16:17
Calcium	483	mg/L	1.0	97	80	120	
Cobalt	0.482	mg/L	0.021	96	80	120	
Magnesium	537	mg/L	1.0	107	80	120	
Potassium	20.2	mg/L	1.0	101	80	120	
Sodium	20.1	mg/L	1.0	100	80	120	
5 Continuing Calibration Verification Standard							04/01/19 16:48
Calcium	25.8	mg/L	1.0	103	90	110	
Cobalt	2.57	mg/L	0.010	103	90	110	
Magnesium	25.5	mg/L	1.0	102	90	110	
Potassium	24.9	mg/L	1.0	100	90	110	
Sodium	24.8	mg/L	1.0	99	90	110	
5 Continuing Calibration Verification Standard							04/01/19 17:34
Calcium	25.2	mg/L	1.0	101	90	110	
Cobalt	2.51	mg/L	0.010	100	90	110	
Magnesium	25.1	mg/L	1.0	100	90	110	
Potassium	25.2	mg/L	1.0	101	90	110	
Sodium	25.2	mg/L	1.0	101	90	110	
5 Continuing Calibration Verification Standard							04/01/19 18:19
Calcium	25.4	mg/L	1.0	102	90	110	
Cobalt	2.51	mg/L	0.010	100	90	110	
Magnesium	25.3	mg/L	1.0	101	90	110	
Potassium	24.6	mg/L	1.0	98	90	110	

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

Analytical Run: ICP2-HE\_190401B

5 Continuing Calibration Verification Standard

04/01/19 18:19

Sodium	24.6	mg/L	1.0	98	90	110
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Batch: R143000

5 Method Blank

Run: ICP2-HE\_190401B

04/01/19 16:29

Calcium	ND	mg/L	0.07			
Cobalt	ND	mg/L	0.006			
Magnesium	ND	mg/L	0.01			
Potassium	ND	mg/L	0.06			
Sodium	ND	mg/L	0.02			

5 Laboratory Fortified Blank

Run: ICP2-HE\_190401B

04/01/19 16:33

Calcium	52.8	mg/L	1.0	106	85	115
Cobalt	1.06	mg/L	0.010	106	85	115
Magnesium	53.3	mg/L	1.0	107	85	115
Potassium	52.9	mg/L	1.0	106	85	115
Sodium	52.7	mg/L	1.0	105	85	115

5 Sample Matrix Spike

Run: ICP2-HE\_190401B

04/01/19 17:49

Calcium	76.1	mg/L	1.0	101	70	130
Cobalt	1.00	mg/L	0.0066	100	70	130
Magnesium	76.0	mg/L	1.0	106	70	130
Potassium	52.9	mg/L	1.0	104	70	130
Sodium	55.6	mg/L	1.0	105	70	130

5 Sample Matrix Spike Duplicate

Run: ICP2-HE\_190401B

04/01/19 17:53

Calcium	78.0	mg/L	1.0	105	70	130	2.5	20
Cobalt	1.03	mg/L	0.0066	103	70	130	2.2	20
Magnesium	78.3	mg/L	1.0	111	70	130	3.0	20
Potassium	52.0	mg/L	1.0	102	70	130	1.8	20
Sodium	54.3	mg/L	1.0	102	70	130	2.5	20

5 Sample Matrix Spike

Run: ICP2-HE\_190401B

04/01/19 18:46

Calcium	86.0	mg/L	1.0	104	70	130
Cobalt	1.05	mg/L	0.0066	105	70	130
Magnesium	66.0	mg/L	1.0	107	70	130
Potassium	55.1	mg/L	1.0	103	70	130
Sodium	52.8	mg/L	1.0	103	70	130

5 Sample Matrix Spike Duplicate

Run: ICP2-HE\_190401B

04/01/19 18:50

Calcium	86.0	mg/L	1.0	104	70	130	0.1	20
Cobalt	1.04	mg/L	0.0066	104	70	130	0.3	20
Magnesium	65.8	mg/L	1.0	107	70	130	0.3	20
Potassium	55.3	mg/L	1.0	103	70	130	0.4	20
Sodium	52.8	mg/L	1.0	103	70	130	0.1	20

RL - Analyte reporting limit.

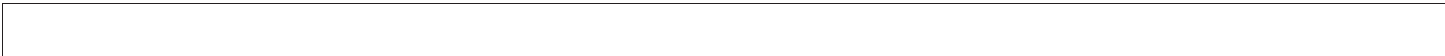
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547



Analytical Run: ICPMS205-H\_190402A

20 Initial Calibration Verification Standard

04/02/19 11:08

Aluminum	0.296	mg/L	0.10	99	90	110
Antimony	0.0573	mg/L	0.050	96	90	110
Arsenic	0.0593	mg/L	0.0050	99	90	110
Barium	0.0589	mg/L	0.10	98	90	110
Beryllium	0.0289	mg/L	0.0010	96	90	110
Cadmium	0.0298	mg/L	0.0010	99	90	110
Chromium	0.0595	mg/L	0.010	99	90	110
Cobalt	0.0608	mg/L	0.010	101	90	110
Copper	0.0595	mg/L	0.010	99	90	110
Iron	0.318	mg/L	0.020	106	90	110
Lead	0.0595	mg/L	0.010	99	90	110
Manganese	0.299	mg/L	0.010	100	90	110
Molybdenum	0.0593	mg/L	0.0050	99	90	110
Nickel	0.0599	mg/L	0.010	100	90	110
Selenium	0.0591	mg/L	0.0050	99	90	110
Silver	0.0298	mg/L	0.0050	100	90	110
Strontium	0.0596	mg/L	0.10	99	90	110
Thallium	0.0588	mg/L	0.10	98	90	110
Uranium	0.0580	mg/L	0.00030	97	90	110
Zinc	0.0616	mg/L	0.010	103	90	110

20 Interference Check Sample A

04/02/19 11:10

Aluminum	37.5	mg/L	0.10	94	70	130
Antimony	0.000347	mg/L	0.050			
Arsenic	2.69E-05	mg/L	0.0050			
Barium	0.000226	mg/L	0.10			
Beryllium	-4.52E-05	mg/L	0.0010			
Cadmium	0.000144	mg/L	0.0010			
Chromium	0.000229	mg/L	0.010			
Cobalt	0.000232	mg/L	0.010			
Copper	0.000250	mg/L	0.010			
Iron	102	mg/L	0.020	102	70	130
Lead	6.73E-05	mg/L	0.010			
Manganese	0.000293	mg/L	0.010			
Molybdenum	0.800	mg/L	0.0050	100	70	130
Nickel	0.000246	mg/L	0.010			
Selenium	6.55E-05	mg/L	0.0050			
Silver	3.43E-05	mg/L	0.0050			
Strontium	0.00104	mg/L	0.10			
Thallium	2.22E-05	mg/L	0.10			
Uranium	2.74E-05	mg/L	0.00030			
Zinc	0.000278	mg/L	0.010			

RL - Analyte reporting limit.

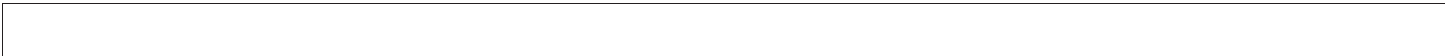
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547



Analytical Run: ICPMS205-H\_190402A

20 Interference Check Sample AB

04/02/19 11:12

Aluminum	37.6	mg/L	0.10	94	70	130
Antimony	0.000163	mg/L	0.050		0	0
Arsenic	0.0105	mg/L	0.0050	105	70	130
Barium	0.000186	mg/L	0.10		0	0
Beryllium	1.41E-05	mg/L	0.0010		0	0
Cadmium	0.0102	mg/L	0.0010	102	70	130
Chromium	0.0207	mg/L	0.010	103	70	130
Cobalt	0.0206	mg/L	0.010	103	70	130
Copper	0.0201	mg/L	0.010	100	70	130
Iron	101	mg/L	0.020	101	70	130
Lead	5.34E-05	mg/L	0.010		0	0
Manganese	0.0207	mg/L	0.010	104	70	130
Molybdenum	0.787	mg/L	0.0050	98	70	130
Nickel	0.0208	mg/L	0.010	104	70	130
Selenium	0.00927	mg/L	0.0050	93	70	130
Silver	0.00502	mg/L	0.0050	100	70	130
Strontium	0.00104	mg/L	0.10		0	0
Thallium	9.01E-06	mg/L	0.10		0	0
Uranium	8.68E-06	mg/L	0.00030		0	0
Zinc	0.0101	mg/L	0.010	101	70	130

20 Initial Calibration Verification Standard

04/02/19 11:45

Aluminum	0.295	mg/L	0.10	98	90	110
Antimony	0.0573	mg/L	0.050	96	90	110
Arsenic	0.0593	mg/L	0.0050	99	90	110
Barium	0.0586	mg/L	0.10	98	90	110
Beryllium	0.0298	mg/L	0.0010	99	90	110
Cadmium	0.0304	mg/L	0.0010	101	90	110
Chromium	0.0603	mg/L	0.010	101	90	110
Cobalt	0.0612	mg/L	0.010	102	90	110
Copper	0.0610	mg/L	0.010	102	90	110
Iron	0.321	mg/L	0.020	107	90	110
Lead	0.0598	mg/L	0.010	100	90	110
Manganese	0.301	mg/L	0.010	100	90	110
Molybdenum	0.0596	mg/L	0.0050	99	90	110
Nickel	0.0614	mg/L	0.010	102	90	110
Selenium	0.0596	mg/L	0.0050	99	90	110
Silver	0.0301	mg/L	0.0050	100	90	110
Strontium	0.0605	mg/L	0.10	101	90	110
Thallium	0.0595	mg/L	0.10	99	90	110
Uranium	0.0578	mg/L	0.00030	96	90	110
Zinc	0.0623	mg/L	0.010	104	90	110

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547



Analytical Run: ICPMS205-H\_190402A

20 Interference Check Sample A

04/02/19 11:47

Aluminum	37.3	mg/L	0.10	93	70	130
Antimony	0.000429	mg/L	0.050			
Arsenic	3.04E-05	mg/L	0.0050			
Barium	0.000160	mg/L	0.10			
Beryllium	7.65E-06	mg/L	0.0010			
Cadmium	0.000211	mg/L	0.0010			
Chromium	0.000221	mg/L	0.010			
Cobalt	0.000285	mg/L	0.010			
Copper	0.000223	mg/L	0.010			
Iron	103	mg/L	0.020	103	70	130
Lead	9.01E-05	mg/L	0.010			
Manganese	0.000326	mg/L	0.010			
Molybdenum	0.803	mg/L	0.0050	100	70	130
Nickel	0.000244	mg/L	0.010			
Selenium	9.41E-05	mg/L	0.0050			
Silver	4.36E-05	mg/L	0.0050			
Strontium	0.00111	mg/L	0.10			
Thallium	3.42E-05	mg/L	0.10			
Uranium	2.26E-05	mg/L	0.00030			
Zinc	0.000454	mg/L	0.010			

20 Interference Check Sample AB

04/02/19 11:49

Aluminum	37.2	mg/L	0.10	93	70	130
Antimony	0.000133	mg/L	0.050		0	0
Arsenic	0.0104	mg/L	0.0050	104	70	130
Barium	0.000178	mg/L	0.10		0	0
Beryllium	-1.18E-05	mg/L	0.0010		0	0
Cadmium	0.0105	mg/L	0.0010	105	70	130
Chromium	0.0206	mg/L	0.010	103	70	130
Cobalt	0.0207	mg/L	0.010	104	70	130
Copper	0.0203	mg/L	0.010	102	70	130
Iron	101	mg/L	0.020	101	70	130
Lead	7.87E-05	mg/L	0.010		0	0
Manganese	0.0204	mg/L	0.010	102	70	130
Molybdenum	0.800	mg/L	0.0050	100	70	130
Nickel	0.0204	mg/L	0.010	102	70	130
Selenium	0.0103	mg/L	0.0050	103	70	130
Silver	0.00507	mg/L	0.0050	101	70	130
Strontium	0.000990	mg/L	0.10		0	0
Thallium	2.34E-05	mg/L	0.10		0	0
Uranium	8.64E-06	mg/L	0.00030		0	0
Zinc	0.0106	mg/L	0.010	106	70	130

Batch: R143027

RL - Analyte reporting limit.

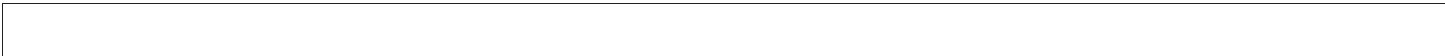
ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547



Batch: R143027

20 Method Blank

Run: ICPMS205-H\_190402A

04/02/19 12:03

Aluminum	ND	mg/L	0.003
Antimony	ND	mg/L	9E-05
Arsenic	ND	mg/L	4E-05
Barium	ND	mg/L	2E-05
Beryllium	ND	mg/L	0.0001
Cadmium	ND	mg/L	3E-05
Chromium	ND	mg/L	0.0002
Cobalt	ND	mg/L	9E-05
Copper	ND	mg/L	0.0001
Iron	ND	mg/L	0.002
Lead	ND	mg/L	3E-05
Manganese	ND	mg/L	0.0003
Molybdenum	ND	mg/L	2E-05
Nickel	ND	mg/L	0.0002
Selenium	ND	mg/L	2E-05
Silver	ND	mg/L	2E-05
Strontium	ND	mg/L	0.0001
Thallium	ND	mg/L	1E-05
Uranium	ND	mg/L	1E-05
Zinc	ND	mg/L	0.0003

20 Laboratory Fortified Blank

Run: ICPMS205-H\_190402A

04/02/19 12:05

Aluminum	0.0489	mg/L	0.10	98	85	115
Antimony	0.0469	mg/L	0.050	94	85	115
Arsenic	0.0490	mg/L	0.0050	98	85	115
Barium	0.0476	mg/L	0.10	95	85	115
Beryllium	0.0487	mg/L	0.0010	97	85	115
Cadmium	0.0497	mg/L	0.0010	99	85	115
Chromium	0.0486	mg/L	0.010	97	85	115
Cobalt	0.0493	mg/L	0.010	99	85	115
Copper	0.0498	mg/L	0.010	100	85	115
Iron	0.157	mg/L	0.020	105	85	115
Lead	0.0486	mg/L	0.010	97	85	115
Manganese	0.0483	mg/L	0.010	97	85	115
Molybdenum	0.0482	mg/L	0.0050	96	85	115
Nickel	0.0491	mg/L	0.010	98	85	115
Selenium	0.0491	mg/L	0.0050	98	85	115
Silver	0.0198	mg/L	0.0050	99	85	115
Strontium	0.0493	mg/L	0.10	99	85	115
Thallium	0.0488	mg/L	0.10	98	85	115
Uranium	0.0483	mg/L	0.00030	97	85	115
Zinc	0.0505	mg/L	0.010	101	85	115

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

Batch: R143027

20 Sample Matrix Spike

Run: ICPMS205-H\_190402A

04/02/19 13:20

Aluminum	0.0583	mg/L	0.030	103	70	130
Antimony	0.0470	mg/L	0.0010	94	70	130
Arsenic	0.0517	mg/L	0.0010	103	70	130
Barium	0.132	mg/L	0.050	99	70	130
Beryllium	0.0508	mg/L	0.0010	102	70	130
Cadmium	0.0512	mg/L	0.0010	102	70	130
Chromium	0.0496	mg/L	0.0050	99	70	130
Cobalt	0.0501	mg/L	0.0050	100	70	130
Copper	0.0500	mg/L	0.0050	100	70	130
Iron	0.162	mg/L	0.020	105	70	130
Lead	0.0503	mg/L	0.0010	101	70	130
Manganese	0.0494	mg/L	0.0010	98	70	130
Molybdenum	0.0493	mg/L	0.0010	98	70	130
Nickel	0.0495	mg/L	0.0050	98	70	130
Selenium	0.0543	mg/L	0.0010	108	70	130
Silver	0.0200	mg/L	0.0010	100	70	130
Strontium	0.155	mg/L	0.010	102	70	130
Thallium	0.0505	mg/L	0.00050	101	70	130
Uranium	0.0509	mg/L	0.00030	101	70	130
Zinc	0.0524	mg/L	0.010	102	70	130

20 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190402A

04/02/19 13:22

Aluminum	0.0552	mg/L	0.030	97	70	130	5.4	20
Antimony	0.0471	mg/L	0.0010	94	70	130	0.2	20
Arsenic	0.0504	mg/L	0.0010	100	70	130	2.7	20
Barium	0.132	mg/L	0.050	98	70	130	0.6	20
Beryllium	0.0498	mg/L	0.0010	100	70	130	2.2	20
Cadmium	0.0501	mg/L	0.0010	100	70	130	2.1	20
Chromium	0.0481	mg/L	0.0050	96	70	130	3.1	20
Cobalt	0.0490	mg/L	0.0050	98	70	130	2.2	20
Copper	0.0493	mg/L	0.0050	99	70	130	1.5	20
Iron	0.160	mg/L	0.020	104	70	130	1.1	20
Lead	0.0497	mg/L	0.0010	99	70	130	1.2	20
Manganese	0.0489	mg/L	0.0010	97	70	130	1.2	20
Molybdenum	0.0484	mg/L	0.0010	96	70	130	1.7	20
Nickel	0.0489	mg/L	0.0050	97	70	130	1.2	20
Selenium	0.0547	mg/L	0.0010	109	70	130	0.8	20
Silver	0.0197	mg/L	0.0010	98	70	130	1.5	20
Strontium	0.152	mg/L	0.010	96	70	130	1.9	20
Thallium	0.0502	mg/L	0.00050	100	70	130	0.6	20
Uranium	0.0504	mg/L	0.00030	100	70	130	0.9	20
Zinc	0.0524	mg/L	0.010	102	70	130	0.2	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547



Batch: R143027

20 Sample Matrix Spike

Run: ICPMS205-H\_190402A

04/02/19 14:18

Aluminum	0.0504	mg/L	0.030	101	70	130
Antimony	0.0471	mg/L	0.0010	94	70	130
Arsenic	0.0502	mg/L	0.0010	100	70	130
Barium	0.0497	mg/L	0.050	99	70	130
Beryllium	0.0498	mg/L	0.0010	100	70	130
Cadmium	0.0506	mg/L	0.0010	101	70	130
Chromium	0.0483	mg/L	0.0050	97	70	130
Cobalt	0.0500	mg/L	0.0050	100	70	130
Copper	0.0505	mg/L	0.0050	101	70	130
Iron	0.156	mg/L	0.020	104	70	130
Lead	0.0495	mg/L	0.0010	99	70	130
Manganese	0.0493	mg/L	0.0010	99	70	130
Molybdenum	0.0469	mg/L	0.0010	94	70	130
Nickel	0.0494	mg/L	0.0050	99	70	130
Selenium	0.0496	mg/L	0.0010	99	70	130
Silver	0.0197	mg/L	0.0010	98	70	130
Strontium	0.0522	mg/L	0.010	104	70	130
Thallium	0.0495	mg/L	0.00050	99	70	130
Uranium	0.0493	mg/L	0.00030	99	70	130
Zinc	0.0514	mg/L	0.010	103	70	130

20 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190402A

04/02/19 14:20

Aluminum	0.0513	mg/L	0.030	103	70	130	1.7	20
Antimony	0.0477	mg/L	0.0010	95	70	130	1.3	20
Arsenic	0.0493	mg/L	0.0010	99	70	130	1.8	20
Barium	0.0495	mg/L	0.050	99	70	130		20
Beryllium	0.0508	mg/L	0.0010	102	70	130	2.0	20
Cadmium	0.0507	mg/L	0.0010	101	70	130	0.2	20
Chromium	0.0481	mg/L	0.0050	96	70	130	0.4	20
Cobalt	0.0491	mg/L	0.0050	98	70	130	1.7	20
Copper	0.0495	mg/L	0.0050	99	70	130	1.9	20
Iron	0.156	mg/L	0.020	104	70	130	0.6	20
Lead	0.0494	mg/L	0.0010	99	70	130	0.2	20
Manganese	0.0486	mg/L	0.0010	97	70	130	1.3	20
Molybdenum	0.0475	mg/L	0.0010	95	70	130	1.2	20
Nickel	0.0502	mg/L	0.0050	100	70	130	1.6	20
Selenium	0.0510	mg/L	0.0010	102	70	130	2.8	20
Silver	0.0197	mg/L	0.0010	99	70	130	0.4	20
Strontium	0.0518	mg/L	0.010	104	70	130	0.8	20
Thallium	0.0497	mg/L	0.00050	99	70	130	0.3	20
Uranium	0.0490	mg/L	0.00030	98	70	130	0.7	20
Zinc	0.0513	mg/L	0.010	103	70	130	0.1	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

								Analytical Run: HGCV202-H_190404A
	Initial Calibration Verification Standard							04/04/19 11:11
Mercury	0.0982	ug/L	0.0050	98	90	110		
	Initial Calibration Verification Standard							04/04/19 14:27
Mercury	0.0980	ug/L	0.0050	98	90	110		
	Continuing Calibration Verification Standard							04/04/19 15:16
Mercury	0.0990	ug/L	0.0050	99	90	110		
								Batch: 45074
	Method Blank						Run: HGCV202-H_190404A	04/04/19 14:53
Mercury	ND	ug/L	0.002					
	Laboratory Control Sample						Run: HGCV202-H_190404A	04/04/19 14:56
Mercury	0.0547	ug/L	0.0050	109	90	110		
	Sample Matrix Spike						Run: HGCV202-H_190404A	04/04/19 16:07
Mercury	0.0547	ug/L	0.0050	109	70	130		
	Sample Matrix Spike Duplicate						Run: HGCV202-H_190404A	04/04/19 16:10
Mercury	0.0576	ug/L	0.0050	115	70	130	5.1	20
								Analytical Run: HGCV202-H_190409A
	Initial Calibration Verification Standard							04/09/19 14:19
Mercury	0.101	ug/L	0.0050	101	90	110		
								Batch: 45129
	Method Blank						Run: HGCV202-H_190409A	04/09/19 14:38
Mercury	ND	ug/L	0.002					
	Laboratory Control Sample						Run: HGCV202-H_190409A	04/09/19 14:41
Mercury	0.0535	ug/L	0.0050	107	90	110		
	Sample Matrix Spike						Run: HGCV202-H_190409A	04/09/19 14:48
Mercury	0.0560	ug/L	0.0050	112	70	130		
	Sample Matrix Spike Duplicate						Run: HGCV202-H_190409A	04/09/19 14:51
Mercury	0.0496	ug/L	0.0050	99	70	130	12	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

								Analytical Run: IC METROHM_190401A
								04/01/19 11:34
2 Initial Calibration Verification Standard								
Chloride	98.1	mg/L	1.0	98	90	110		
Sulfate	390	mg/L	1.0	97	90	110		
2 Continuing Calibration Verification Standard								04/01/19 18:23
Chloride	48.3	mg/L	1.0	97	90	110		
Sulfate	195	mg/L	1.0	97	90	110		
2 Continuing Calibration Verification Standard								04/01/19 21:55
Chloride	48.8	mg/L	1.0	98	90	110		
Sulfate	197	mg/L	1.0	99	90	110		
								Batch: R143003
2 Method Blank								Run: IC METROHM_190401A
Chloride	ND	mg/L	0.02					04/01/19 11:20
Sulfate	ND	mg/L	0.08					
2 Laboratory Fortified Blank								Run: IC METROHM_190401A
Chloride	26.0	mg/L	1.0	104	90	110		04/01/19 11:48
Sulfate	108	mg/L	1.0	108	90	110		
2 Sample Matrix Spike								Run: IC METROHM_190401A
Chloride	24.2	mg/L	1.0	94	90	110		04/01/19 21:27
Sulfate	110	mg/L	1.0	93	90	110		
2 Sample Matrix Spike Duplicate								Run: IC METROHM_190401A
Chloride	24.3	mg/L	1.0	94	90	110	0.6	04/01/19 21:41
Sulfate	112	mg/L	1.0	95	90	110	1.3	20
2 Sample Matrix Spike								Run: IC METROHM_190401A
Chloride	26.2	mg/L	1.0	92	90	110		04/02/19 00:59
Sulfate	98.8	mg/L	1.0	91	90	110		
2 Sample Matrix Spike Duplicate								Run: IC METROHM_190401A
Chloride	26.3	mg/L	1.0	92	90	110	0.3	04/02/19 01:13
Sulfate	99.7	mg/L	1.0	92	90	110	0.9	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter GW Sampling

04/12/19  
H19030547

							Analytical Run: FIA203-HE_190405A
	Initial Calibration Verification Standard						04/05/19 08:44
Nitrogen, Nitrate+Nitrite as N	0.956	mg/L	0.010	96	90	110	
	Continuing Calibration Verification Standard						04/05/19 09:41
Nitrogen, Nitrate+Nitrite as N	0.474	mg/L	0.010	95	90	110	
	Continuing Calibration Verification Standard						04/05/19 09:58
Nitrogen, Nitrate+Nitrite as N	0.467	mg/L	0.010	93	90	110	
							Batch: R143118
	Method Blank			Run: FIA203-HE_190405A		04/05/19 08:46	
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				
	Laboratory Fortified Blank			Run: FIA203-HE_190405A		04/05/19 08:47	
Nitrogen, Nitrate+Nitrite as N	0.971	mg/L	0.011	97	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190405A		04/05/19 09:47	
Nitrogen, Nitrate+Nitrite as N	0.948	mg/L	0.011	95	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190405A		04/05/19 09:48	
Nitrogen, Nitrate+Nitrite as N	0.932	mg/L	0.011	93	90	110	1.7 10
	Sample Matrix Spike			Run: FIA203-HE_190405A		04/05/19 10:04	
Nitrogen, Nitrate+Nitrite as N	1.19	mg/L	0.011	95	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190405A		04/05/19 10:05	
Nitrogen, Nitrate+Nitrite as N	1.18	mg/L	0.011	94	90	110	0.8 10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



# Tintina Resources Inc

# H19030547

Login completed by: Jessica C. Smith

Date Received: 3/29/2019

Reviewed by: BL2000\rtooke

Received by: RAT

Reviewed Date: 4/2/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	0.3°C On Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Time on sample BBC-1903-218 is 10:30 -Time on COC is 10:40. Used time from COC. JCS 03/29/19

# Hydrometrics, Inc.

3020 Bozeman Ave. • Helena, MT 59601 • (406) 443-4150

## CHAIN OF CUSTODY RECORD



PROJ. NO.	PROJECT NAME	SAMPLERS: (Signature)		DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF / RAW	Nutrients UF / H <sub>2</sub> SO <sub>4</sub>	Diss. Metal F / HNO <sub>3</sub>	CN UF / NaOH	Total Metals UF / HNO <sub>3</sub>	Total Recoverable Metals UF / HNO <sub>3</sub>	BTEX	TPH	REMARKS			
		(Signature)	(Signature)																		
18049	1st Quanten GW Sampling			3/29/19	1615	X	X	1903-215	3	X	X	X	X	X	X	X	X	X	Table # 5		
				3/29/19	1650			216													
				3/28/19	0950			217													
					1040			218													
					1135			219													
					1150			220													
					1200			221													
					1300			222													
					1345			223													
3/28/19	1140	X	X	1903-300	3	X	X	X													
Relinquished (Signature)		Received by (Signature)		Date / Time	Date / Time		Date / Time		Date / Time		Date / Time		Date / Time		Date / Time		Date / Time		Date / Time		
AZ				3/29/19 1005	3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		
Relinquished (Signature)		Received by (Signature)		Remarks		Lab		PO #		Shipped via:		FedEx		UPS							
				0.3° TB ON ICE hand del		Energy Lab		B:11 Tintim		Bus		FedEx		UPS							
Relinquished (Signature)		Received for Laboratory by (Signature)		Date / Time		Date / Time		Date / Time		Date / Time		Date / Time		Date / Time		Date / Time		Date / Time		Date / Time	
		Deborah Juhn		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005		3/29/19 1005	

Return results & electronic copy to:  
QA / QC Dept. at address at top of page

Split Samples:  
 Accepted  Declined  
 Signature

Enclosed:  Parameter sheet w/detection limits  
 QA / AC standard mixing instructions  Cover letter  
 Other

**TABLE 5. PARAMETERS, METHODS, AND DETECTION LIMITS FOR GROUNDWATER MONITORING**

Parameter	Analytical Method <sup>(1)</sup>	Project-Required Detection Limit (mg/L)
<b>Physical Parameters</b>		
TDS	SM 2540C	10
TSS	SM 2540C	10
<b>Common Ions</b>		
Alkalinity	SM 2320B	4
Sulfate	300.0	1
Chloride	300.0/SM 4500CL-B	1
Fluoride	A4500-F C	0.1
Calcium	215.1/200.7	1
Magnesium	242.1/200.7	1
Sodium	273.1/200.7	1
Potassium	258.1/200.7	1
<b>Nutrients</b>		
Nitrate+Nitrite as N	353.2	0.01
<b>Trace Constituents (Dissolved)<sup>(2)</sup></b>		
Aluminum (Al)	200.7/200.8	0.009
Antimony (Sb)	200.7/200.8	0.0005
Arsenic (As)	200.8/SM 3114B	0.001
Barium (Ba)	200.7/200.8	0.003
Beryllium (Be)	200.7/200.8	0.0008
Cadmium (Cd)	200.7/200.8	0.00003
Chromium (Cr)	200.7/200.8	0.01
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.002
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.0003
Manganese (Mn)	200.7/200.8	0.005
Mercury (Hg)	245.2/245.1/200.8/SM 3112B	0.000005
Molybdenum (Mo)	200.7/200.8	0.002
Nickel (Ni)	200.7/200.8	0.001
Selenium (Se)	200.7/200.8/SM 3114B	0.0002
Silver (Ag)	200.7/200.8	0.0002
Strontium (Sr)	200.7/200.8	0.0002
Thallium (Tl)	200.7/200.8	0.0002
Uranium	200.7/200.8	0.008
Zinc (Zn)	200.7/200.8	0.002
<b>Field Parameters</b>		
Stream Flow	HF-SOP-37/-44/-46	NA
Water Temperature	HF-SOP-20	0.1 °C
Dissolved Oxygen (DO)	HF-SOP-22	0.1 mg/L
pH	HF-SOP-20	0.1 s.u.
Specific Conductance (SC)	HF-SOP-79	1 µmhos/cm

(1) Analytical methods are from *Standard Methods for the Examination of Water and Wastewater* (SM) or EPA's *Methods for Chemical Analysis of Water and Waste* (1983).

(2) Samples to be analyzed for dissolved constituents will be field-filtered through a 0.45 µm filter.



April 12, 2019

Tintina Resources Inc  
PO Box 431  
White Sulphur Springs, MT 59645-0431

Work Order: H19030548 Quote ID: H1216 - Surface and Groundwater Sampling

Project Name: 18049 1st Quarter SW Sampling

Energy Laboratories Inc Helena MT received the following 6 samples for Tintina Resources Inc on 3/29/2019 for analysis.

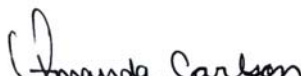
H19030548-001	BBC-1903-124	03/27/19 15:30	03/29/19	Surface Water	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Tot. Rec. Alkalinity Conductivity Mercury, Total Recoverable Fluoride Hardness Anions by Ion Chromatography Nitrogen, Nitrate + Nitrite Nitrogen, Total Persulfate Metals Digestion by E200.2 Mercury Digestion by E245.1 E365.1 Digestion, Total P Nitrogen, Total Persulfate A4500 N-C Phosphorus, Total Solids, Total Dissolved Solids, Total Suspended
H19030548-002	BBC-1903-125	03/27/19 15:55	03/29/19	Surface Water	Same As Above
H19030548-003	BBC-1903-126	03/27/19 16:20	03/29/19	Surface Water	Same As Above
H19030548-004	BBC-1903-128	03/28/19 8:25	03/29/19	Surface Water	Same As Above
H19030548-005	BBC-1903-129	03/28/19 9:10	03/29/19	Surface Water	Same As Above
H19030548-006	BBC-1903-130	03/28/19 9:45	03/29/19	Surface Water	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

  
Assistant Laboratory Manager-Helena,MT

Digitally signed by  
Amanda B. Carlson  
Date: 2019.04.12 13:41:24 -06:00



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling  
H19030548-001  
BBC-1903-124

04/12/19  
03/27/19 15:30  
03/29/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	16 mg/L		4	A2540 D	03/29/19 14:12 / cmm
Solids, Total Dissolved TDS @ 180 C	100 mg/L	D	10	A2540 C	03/29/19 14:03 / cmm
Alkalinity, Total as CaCO3	65 mg/L		4	A2320 B	04/01/19 13:21 / SRW
Chloride	ND mg/L		1	E300.0	04/01/19 23:34 / SRW
Sulfate	3 mg/L		1	E300.0	04/01/19 23:34 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	04/01/19 10:50 / SRW
Hardness as CaCO3	65 mg/L		1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.02 mg/L		0.01	E353.2	04/05/19 10:06 / kmd
Nitrogen, Total	0.78 mg/L		0.04	A4500 N-C	04/01/19 11:15 / kmd
Phosphorus, Total as P	0.237 mg/L		0.003	E365.1	04/02/19 14:01 / kmd
Aluminum	0.020 mg/L		0.009	E200.8	04/02/19 14:05 / sld
Calcium	15 mg/L		1	E200.7	04/01/19 18:31 / sld
Magnesium	7 mg/L		1	E200.7	04/01/19 18:31 / sld
Potassium	5 mg/L		1	E200.7	04/01/19 18:31 / sld
Sodium	ND mg/L		1	E200.7	04/01/19 18:31 / sld
Antimony	ND mg/L		0.0005	E200.8	04/03/19 15:57 / sld
Arsenic	0.001 mg/L		0.001	E200.8	04/03/19 15:57 / sld
Barium	0.057 mg/L		0.003	E200.8	04/03/19 15:57 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/03/19 15:57 / sld
Cadmium	0.00003 mg/L		0.00003	E200.8	04/03/19 15:57 / sld
Chromium	ND mg/L		0.01	E200.8	04/03/19 15:57 / sld
Cobalt	ND mg/L		0.01	E200.8	04/03/19 15:57 / sld
Copper	0.002 mg/L		0.002	E200.8	04/03/19 15:57 / sld
Iron	0.73 mg/L		0.02	E200.8	04/03/19 15:57 / sld
Lead	0.0006 mg/L		0.0003	E200.8	04/04/19 16:13 / sld
Manganese	0.026 mg/L		0.005	E200.8	04/03/19 15:57 / sld
Mercury	0.034 ug/L		0.005	E245.1	04/09/19 15:14 / ber
Molybdenum	ND mg/L		0.002	E200.8	04/03/19 15:57 / sld
Nickel	ND mg/L		0.001	E200.8	04/03/19 15:57 / sld
Selenium	ND mg/L		0.0002	E200.8	04/03/19 15:57 / sld
Silver	ND mg/L		0.0002	E200.8	04/04/19 16:13 / sld
Strontium	0.0476 mg/L	D	0.0003	E200.8	04/03/19 15:57 / sld
Thallium	ND mg/L		0.0002	E200.8	04/03/19 15:57 / sld
Uranium	ND mg/L		0.0002	E200.8	04/03/19 15:57 / sld
Zinc	0.005 mg/L		0.002	E200.8	04/03/19 15:57 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling  
H19030548-002  
BBC-1903-125

04/12/19  
03/27/19 15:55  
03/29/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	03/29/19 14:13 / cmm
Solids, Total Dissolved TDS @ 180 C	157 mg/L	D	10	A2540 C	03/29/19 14:04 / cmm
Alkalinity, Total as CaCO3	130 mg/L		4	A2320 B	04/01/19 13:26 / SRW
Chloride	2 mg/L		1	E300.0	04/01/19 23:48 / SRW
Sulfate	7 mg/L		1	E300.0	04/01/19 23:48 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	04/01/19 10:52 / SRW
Hardness as CaCO3	134 mg/L		1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.05 mg/L		0.01	E353.2	04/05/19 10:07 / kmd
Nitrogen, Total	0.57 mg/L		0.04	A4500 N-C	04/01/19 11:17 / kmd
Phosphorus, Total as P	0.105 mg/L		0.003	E365.1	04/02/19 14:02 / kmd
Aluminum	0.012 mg/L		0.009	E200.8	04/02/19 14:07 / sld
Calcium	34 mg/L		1	E200.7	04/01/19 18:34 / sld
Magnesium	12 mg/L		1	E200.7	04/01/19 18:34 / sld
Potassium	4 mg/L		1	E200.7	04/01/19 18:34 / sld
Sodium	1 mg/L		1	E200.7	04/01/19 18:34 / sld
Antimony	ND mg/L		0.0005	E200.8	04/03/19 15:59 / sld
Arsenic	ND mg/L		0.001	E200.8	04/03/19 15:59 / sld
Barium	0.077 mg/L		0.003	E200.8	04/03/19 15:59 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/03/19 15:59 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/03/19 15:59 / sld
Chromium	ND mg/L		0.01	E200.8	04/03/19 15:59 / sld
Cobalt	ND mg/L		0.01	E200.8	04/03/19 15:59 / sld
Copper	ND mg/L		0.002	E200.8	04/03/19 15:59 / sld
Iron	0.13 mg/L		0.02	E200.8	04/03/19 15:59 / sld
Lead	ND mg/L		0.0003	E200.8	04/03/19 15:59 / sld
Manganese	0.006 mg/L		0.005	E200.8	04/03/19 15:59 / sld
Mercury	0.018 ug/L		0.005	E245.1	04/09/19 15:29 / ber
Molybdenum	ND mg/L		0.002	E200.8	04/03/19 15:59 / sld
Nickel	ND mg/L		0.001	E200.8	04/03/19 15:59 / sld
Selenium	ND mg/L		0.0002	E200.8	04/03/19 15:59 / sld
Silver	ND mg/L		0.0002	E200.8	04/04/19 16:15 / sld
Strontium	0.0749 mg/L	D	0.0003	E200.8	04/03/19 15:59 / sld
Thallium	ND mg/L		0.0002	E200.8	04/03/19 15:59 / sld
Uranium	0.0003 mg/L		0.0002	E200.8	04/03/19 15:59 / sld
Zinc	ND mg/L		0.002	E200.8	04/03/19 15:59 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling  
H19030548-003  
BBC-1903-126

04/12/19  
03/27/19 16:20  
03/29/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	03/29/19 14:13 / cmm
Solids, Total Dissolved TDS @ 180 C	162 mg/L	D	10	A2540 C	03/29/19 14:04 / cmm
Alkalinity, Total as CaCO3	130 mg/L		4	A2320 B	04/01/19 13:31 / SRW
Chloride	2 mg/L		1	E300.0	04/02/19 00:02 / SRW
Sulfate	6 mg/L		1	E300.0	04/02/19 00:02 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	04/01/19 10:54 / SRW
Hardness as CaCO3	136 mg/L		1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.05 mg/L		0.01	E353.2	04/05/19 10:09 / kmd
Nitrogen, Total	0.51 mg/L		0.04	A4500 N-C	04/01/19 11:18 / kmd
Phosphorus, Total as P	0.104 mg/L		0.003	E365.1	04/02/19 14:04 / kmd
Aluminum	0.011 mg/L		0.009	E200.8	04/02/19 14:09 / sld
Calcium	34 mg/L		1	E200.7	04/01/19 18:38 / sld
Magnesium	12 mg/L		1	E200.7	04/01/19 18:38 / sld
Potassium	4 mg/L		1	E200.7	04/01/19 18:38 / sld
Sodium	1 mg/L		1	E200.7	04/01/19 18:38 / sld
Antimony	ND mg/L		0.0005	E200.8	04/03/19 16:01 / sld
Arsenic	ND mg/L		0.001	E200.8	04/03/19 16:01 / sld
Barium	0.075 mg/L		0.003	E200.8	04/03/19 16:01 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/03/19 16:01 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/03/19 16:01 / sld
Chromium	ND mg/L		0.01	E200.8	04/03/19 16:01 / sld
Cobalt	ND mg/L		0.01	E200.8	04/03/19 16:01 / sld
Copper	ND mg/L		0.002	E200.8	04/03/19 16:01 / sld
Iron	0.14 mg/L		0.02	E200.8	04/03/19 16:01 / sld
Lead	ND mg/L		0.0003	E200.8	04/03/19 16:01 / sld
Manganese	0.006 mg/L		0.005	E200.8	04/03/19 16:01 / sld
Mercury	0.018 ug/L		0.005	E245.1	04/09/19 15:33 / ber
Molybdenum	ND mg/L		0.002	E200.8	04/03/19 16:01 / sld
Nickel	ND mg/L		0.001	E200.8	04/03/19 16:01 / sld
Selenium	ND mg/L		0.0002	E200.8	04/03/19 16:01 / sld
Silver	ND mg/L		0.0002	E200.8	04/04/19 16:17 / sld
Strontium	0.0756 mg/L	D	0.0003	E200.8	04/03/19 16:01 / sld
Thallium	ND mg/L		0.0002	E200.8	04/03/19 16:01 / sld
Uranium	0.0003 mg/L		0.0002	E200.8	04/03/19 16:01 / sld
Zinc	0.002 mg/L		0.002	E200.8	04/03/19 16:01 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling  
H19030548-004  
BBC-1903-128

04/12/19  
03/28/19 08:25  
03/29/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	ND mg/L		4	A2540 D	03/29/19 14:13 / cmm
Solids, Total Dissolved TDS @ 180 C	ND mg/L	D	10	A2540 C	03/29/19 14:04 / cmm
Alkalinity, Total as CaCO3	ND mg/L		4	A2320 B	04/01/19 13:37 / SRW
Chloride	ND mg/L		1	E300.0	04/02/19 00:17 / SRW
Sulfate	ND mg/L		1	E300.0	04/02/19 00:17 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	04/01/19 11:02 / SRW
Hardness as CaCO3	ND mg/L		1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	ND mg/L		0.01	E353.2	04/05/19 10:10 / kmd
Nitrogen, Total	ND mg/L		0.04	A4500 N-C	04/01/19 11:19 / kmd
Phosphorus, Total as P	ND mg/L		0.003	E365.1	04/02/19 14:05 / kmd
Aluminum	ND mg/L		0.009	E200.8	04/02/19 14:12 / sld
Calcium	ND mg/L		1	E200.7	04/01/19 18:53 / sld
Magnesium	ND mg/L		1	E200.7	04/01/19 18:53 / sld
Potassium	ND mg/L		1	E200.7	04/01/19 18:53 / sld
Sodium	ND mg/L		1	E200.7	04/01/19 18:53 / sld
Antimony	ND mg/L		0.0005	E200.8	04/03/19 16:03 / sld
Arsenic	ND mg/L		0.001	E200.8	04/03/19 16:03 / sld
Barium	ND mg/L		0.003	E200.8	04/03/19 16:03 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/03/19 16:03 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/03/19 16:03 / sld
Chromium	ND mg/L		0.01	E200.8	04/03/19 16:03 / sld
Cobalt	ND mg/L		0.01	E200.8	04/03/19 16:03 / sld
Copper	ND mg/L		0.002	E200.8	04/03/19 16:03 / sld
Iron	ND mg/L		0.02	E200.8	04/03/19 16:03 / sld
Lead	ND mg/L		0.0003	E200.8	04/03/19 16:03 / sld
Manganese	ND mg/L		0.005	E200.8	04/03/19 16:03 / sld
Mercury	ND ug/L		0.005	E245.1	04/09/19 15:36 / ber
Molybdenum	ND mg/L		0.002	E200.8	04/03/19 16:03 / sld
Nickel	ND mg/L		0.001	E200.8	04/03/19 16:03 / sld
Selenium	ND mg/L		0.0002	E200.8	04/03/19 16:03 / sld
Silver	ND mg/L		0.0002	E200.8	04/04/19 16:19 / sld
Strontium	ND mg/L		0.0002	E200.7	04/02/19 13:01 / sld
Thallium	ND mg/L		0.0002	E200.8	04/03/19 16:03 / sld
Uranium	ND mg/L		0.0002	E200.8	04/03/19 16:03 / sld
Zinc	ND mg/L		0.002	E200.8	04/03/19 16:03 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling  
H19030548-005  
BBC-1903-129

04/12/19  
03/28/19 09:10  
03/29/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	4 mg/L		4	A2540 D	03/29/19 14:13 / cmm
Solids, Total Dissolved TDS @ 180 C	181 mg/L	D	10	A2540 C	03/29/19 14:04 / cmm
Alkalinity, Total as CaCO3	160 mg/L		4	A2320 B	04/01/19 13:43 / SRW
Chloride	3 mg/L		1	E300.0	04/02/19 00:31 / SRW
Sulfate	7 mg/L		1	E300.0	04/02/19 00:31 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	04/01/19 11:06 / SRW
Hardness as CaCO3	170 mg/L		1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.07 mg/L		0.01	E353.2	04/05/19 10:11 / kmd
Nitrogen, Total	0.17 mg/L		0.04	A4500 N-C	04/01/19 11:20 / kmd
Phosphorus, Total as P	0.012 mg/L		0.003	E365.1	04/02/19 14:07 / kmd
Aluminum	0.033 mg/L		0.009	E200.8	04/02/19 14:14 / sld
Calcium	48 mg/L		1	E200.7	04/01/19 18:57 / sld
Magnesium	12 mg/L		1	E200.7	04/01/19 18:57 / sld
Potassium	1 mg/L		1	E200.7	04/01/19 18:57 / sld
Sodium	3 mg/L		1	E200.7	04/01/19 18:57 / sld
Antimony	ND mg/L		0.0005	E200.8	04/03/19 16:05 / sld
Arsenic	ND mg/L		0.001	E200.8	04/03/19 16:05 / sld
Barium	0.100 mg/L		0.003	E200.8	04/03/19 16:05 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/03/19 16:05 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/03/19 16:05 / sld
Chromium	ND mg/L		0.01	E200.8	04/03/19 16:05 / sld
Cobalt	ND mg/L		0.01	E200.8	04/03/19 16:05 / sld
Copper	ND mg/L		0.002	E200.8	04/03/19 16:05 / sld
Iron	0.28 mg/L		0.02	E200.8	04/03/19 16:05 / sld
Lead	ND mg/L		0.0003	E200.8	04/03/19 16:05 / sld
Manganese	0.015 mg/L		0.005	E200.8	04/03/19 16:05 / sld
Mercury	ND ug/L		0.005	E245.1	04/09/19 15:39 / ber
Molybdenum	ND mg/L		0.002	E200.8	04/03/19 16:05 / sld
Nickel	ND mg/L		0.001	E200.8	04/03/19 16:05 / sld
Selenium	ND mg/L		0.0002	E200.8	04/03/19 16:05 / sld
Silver	ND mg/L		0.0002	E200.8	04/04/19 16:21 / sld
Strontium	0.126 mg/L	D	0.0003	E200.8	04/03/19 16:05 / sld
Thallium	ND mg/L		0.0002	E200.8	04/03/19 16:05 / sld
Uranium	0.0004 mg/L		0.0002	E200.8	04/03/19 16:05 / sld
Zinc	ND mg/L		0.002	E200.8	04/03/19 16:05 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling  
H19030548-006  
BBC-1903-130

04/12/19  
03/28/19 09:45  
03/29/19  
Surface Water

Solids, Total Suspended TSS @ 105 C	4 mg/L		4	A2540 D	03/29/19 14:14 / cmm
Solids, Total Dissolved TDS @ 180 C	196 mg/L	D	10	A2540 C	03/29/19 14:04 / cmm
Alkalinity, Total as CaCO3	180 mg/L		4	A2320 B	04/01/19 13:49 / SRW
Chloride	3 mg/L		1	E300.0	04/02/19 00:45 / SRW
Sulfate	7 mg/L		1	E300.0	04/02/19 00:45 / SRW
Fluoride	ND mg/L		0.1	4 A4500-F C	04/01/19 11:11 / SRW
Hardness as CaCO3	199 mg/L		1	A2340 B	04/03/19 08:27 / sld
Nitrogen, Nitrate+Nitrite as N	0.08 mg/L		0.01	E353.2	04/05/19 10:12 / kmd
Nitrogen, Total	0.14 mg/L		0.04	A4500 N-C	04/01/19 11:24 / kmd
Phosphorus, Total as P	0.007 mg/L		0.003	E365.1	04/02/19 14:08 / kmd
Aluminum	ND mg/L		0.009	E200.8	04/02/19 14:16 / sld
Calcium	57 mg/L		1	E200.7	04/01/19 19:01 / sld
Magnesium	14 mg/L		1	E200.7	04/01/19 19:01 / sld
Potassium	1 mg/L		1	E200.7	04/01/19 19:01 / sld
Sodium	3 mg/L		1	E200.7	04/01/19 19:01 / sld
Antimony	ND mg/L		0.0005	E200.8	04/03/19 16:07 / sld
Arsenic	ND mg/L		0.001	E200.8	04/03/19 16:07 / sld
Barium	0.068 mg/L		0.003	E200.8	04/03/19 16:07 / sld
Beryllium	ND mg/L		0.0008	E200.8	04/03/19 16:07 / sld
Cadmium	ND mg/L		0.00003	E200.8	04/03/19 16:07 / sld
Chromium	ND mg/L		0.01	E200.8	04/03/19 16:07 / sld
Cobalt	ND mg/L		0.01	E200.8	04/03/19 16:07 / sld
Copper	ND mg/L		0.002	E200.8	04/03/19 16:07 / sld
Iron	0.19 mg/L		0.02	E200.8	04/03/19 16:07 / sld
Lead	ND mg/L		0.0003	E200.8	04/03/19 16:07 / sld
Manganese	0.010 mg/L		0.005	E200.8	04/03/19 16:07 / sld
Mercury	ND ug/L		0.005	E245.1	04/09/19 15:42 / ber
Molybdenum	ND mg/L		0.002	E200.8	04/03/19 16:07 / sld
Nickel	ND mg/L		0.001	E200.8	04/03/19 16:07 / sld
Selenium	ND mg/L		0.0002	E200.8	04/03/19 16:07 / sld
Silver	ND mg/L		0.0002	E200.8	04/04/19 16:23 / sld
Strontium	0.148 mg/L	D	0.0003	E200.8	04/03/19 16:07 / sld
Thallium	ND mg/L		0.0002	E200.8	04/03/19 16:07 / sld
Uranium	0.0005 mg/L		0.0002	E200.8	04/03/19 16:07 / sld
Zinc	ND mg/L		0.002	E200.8	04/03/19 16:07 / sld

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

							Batch: R142960
	Method Blank				Run: PHSC_101-H_190401A		04/01/19 12:34
Alkalinity, Total as CaCO3	ND	mg/L	2				
	Laboratory Control Sample				Run: PHSC_101-H_190401A		04/01/19 12:40
Alkalinity, Total as CaCO3	610	mg/L	4.0	101	90	110	
	Sample Duplicate				Run: PHSC_101-H_190401A		04/01/19 12:57
Alkalinity, Total as CaCO3	230	mg/L	4.0			0.7	10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

Batch: TDS190329A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/29/19 14:00
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	10			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/29/19 14:00
Solids, Total Dissolved TDS @ 180 C	1880	mg/L	20	94	90	110
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/29/19 14:01
Solids, Total Dissolved TDS @ 180 C	235	mg/L	10		0.4	5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/29/19 14:03
Solids, Total Dissolved TDS @ 180 C	101	mg/L	10		1.0	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

Batch: TSS190329A

	Method Blank				Run: ACCU-124 (14410200)_19032	03/29/19 14:09
Solids, Total Suspended TSS @ 105 C	ND	mg/L	0.3			
	Laboratory Control Sample				Run: ACCU-124 (14410200)_19032	03/29/19 14:09
Solids, Total Suspended TSS @ 105 C	95.0	mg/L	10	95	80 120	
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/29/19 14:09
Solids, Total Suspended TSS @ 105 C	ND	mg/L	10			5
	Sample Duplicate				Run: ACCU-124 (14410200)_19032	03/29/19 14:12
Solids, Total Suspended TSS @ 105 C	16.8	mg/L	10		4.9	5

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

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							Analytical Run: FIA203-HE_190401A
	Initial Calibration Blank, Instrument Blank						04/01/19 10:51
Nitrogen, Total	-0.000537	mg/L	0.10	0	0		
	Continuing Calibration Verification Standard						04/01/19 11:07
Nitrogen, Total	0.498	mg/L	0.10	100	90	110	
							Batch: 45049
	Laboratory Fortified Blank			Run: FIA203-HE_190401A			04/01/19 10:54
Nitrogen, Total	1.02	mg/L	0.10	102	90	110	
	Method Blank			Run: FIA203-HE_190401A			04/01/19 10:55
Nitrogen, Total	ND	mg/L	0.03				
	Laboratory Control Sample			Run: FIA203-HE_190401A			04/01/19 10:56
Nitrogen, Total	7.90	mg/L	0.30	106	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190401A			04/01/19 11:21
Nitrogen, Total	1.11	mg/L	0.10	94	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190401A			04/01/19 11:23
Nitrogen, Total	1.10	mg/L	0.10	93	90	110	0.9 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

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							Analytical Run: MANTECH 2_190401A
	Initial Calibration Verification Standard						04/01/19 09:54
Fluoride	0.7	mg/L	0.1	93	90	110	
	Continuing Calibration Verification Standard						04/01/19 10:27
Fluoride	1.0	mg/L	0.1	100	90	110	
	Continuing Calibration Verification Standard						04/01/19 10:56
Fluoride	1.0	mg/L	0.1	98	90	110	
<hr/>							Batch: R142978
	Method Blank				Run: MANTECH 2_190401A		04/01/19 09:57
Fluoride	ND	mg/L	0.03				
	Sample Duplicate				Run: MANTECH 2_190401A		04/01/19 10:34
Fluoride	0.3	mg/L	0.1			3.8	10
	Sample Matrix Spike				Run: MANTECH 2_190401A		04/01/19 11:04
Fluoride	1.0	mg/L	0.1	97	85	115	
	Sample Duplicate				Run: MANTECH 2_190401A		04/01/19 11:08
Fluoride	0.1	mg/L	0.1				10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

Analytical Run: ICP2-HE\_190401B

4 Initial Calibration Verification Standard 04/01/19 15:58

Calcium	40.4	mg/L	1.0	101	95	105
Magnesium	40.0	mg/L	1.0	100	95	105
Potassium	40.4	mg/L	1.0	101	95	105
Sodium	40.4	mg/L	1.0	101	95	105

4 Continuing Calibration Verification Standard 04/01/19 16:02

Calcium	25.4	mg/L	1.0	102	95	105
Magnesium	25.0	mg/L	1.0	100	95	105
Potassium	25.4	mg/L	1.0	102	95	105
Sodium	25.3	mg/L	1.0	101	95	105

4 Interference Check Sample A 04/01/19 16:13

Calcium	477	mg/L	1.0	95	80	120
Magnesium	532	mg/L	1.0	106	80	120
Potassium	-0.0211	mg/L	1.0		0	0
Sodium	0.0108	mg/L	1.0		0	0

4 Interference Check Sample AB 04/01/19 16:17

Calcium	483	mg/L	1.0	97	80	120
Magnesium	537	mg/L	1.0	107	80	120
Potassium	20.2	mg/L	1.0	101	80	120
Sodium	20.1	mg/L	1.0	100	80	120

4 Continuing Calibration Verification Standard 04/01/19 18:19

Calcium	25.4	mg/L	1.0	102	90	110
Magnesium	25.3	mg/L	1.0	101	90	110
Potassium	24.6	mg/L	1.0	98	90	110
Sodium	24.6	mg/L	1.0	98	90	110

Batch: R143000

4 Method Blank Run: ICP2-HE\_190401B 04/01/19 16:29

Calcium	ND	mg/L	0.07			
Magnesium	ND	mg/L	0.01			
Potassium	ND	mg/L	0.06			
Sodium	ND	mg/L	0.02			

4 Laboratory Fortified Blank Run: ICP2-HE\_190401B 04/01/19 16:33

Calcium	52.8	mg/L	1.0	106	85	115
Magnesium	53.3	mg/L	1.0	107	85	115
Potassium	52.9	mg/L	1.0	106	85	115
Sodium	52.7	mg/L	1.0	105	85	115

4 Sample Matrix Spike Run: ICP2-HE\_190401B 04/01/19 18:46

Calcium	86.0	mg/L	1.0	104	70	130
Magnesium	66.0	mg/L	1.0	107	70	130
Potassium	55.1	mg/L	1.0	103	70	130

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

	Batch: R143000
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	4 Sample Matrix Spike				Run: ICP2-HE_190401B	04/01/19 18:46
Sodium	52.8 mg/L	1.0	103	70	130	
	4 Sample Matrix Spike Duplicate				Run: ICP2-HE_190401B	04/01/19 18:50
Calcium	86.0 mg/L	1.0	104	70	130	0.1 20
Magnesium	65.8 mg/L	1.0	107	70	130	0.3 20
Potassium	55.3 mg/L	1.0	103	70	130	0.4 20
Sodium	52.8 mg/L	1.0	103	70	130	0.1 20

						Analytical Run: ICP2-HE_190402A
	Initial Calibration Verification Standard					04/02/19 11:29
Strontium	0.796 mg/L	0.10	99	95	105	
	Continuing Calibration Verification Standard					04/02/19 11:33
Strontium	2.50 mg/L	0.10	100	95	105	
	Interference Check Sample A					04/02/19 11:45
Strontium	-0.0271 mg/L	0.10		0	0	
	Interference Check Sample AB					04/02/19 11:49
Strontium	0.985 mg/L	0.10	99	80	120	
	Continuing Calibration Verification Standard					04/02/19 12:20
Strontium	2.49 mg/L	0.10	99	90	110	
	Continuing Calibration Verification Standard					04/02/19 13:05
Strontium	2.50 mg/L	0.10	100	90	110	

						Batch: 45051
	Method Blank				Run: ICP2-HE_190402A	04/02/19 12:08
Strontium	ND mg/L	0.0002				
	Laboratory Control Sample				Run: ICP2-HE_190402A	04/02/19 12:12
Strontium	0.510 mg/L	0.010	102	85	115	
	Sample Matrix Spike				Run: ICP2-HE_190402A	04/02/19 12:35
Strontium	0.634 mg/L	0.010	99	70	130	
	Sample Matrix Spike Duplicate				Run: ICP2-HE_190402A	04/02/19 12:38
Strontium	0.628 mg/L	0.010	98	70	130	0.9 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

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							Analytical Run: ICPMS205-H_190402A
	Initial Calibration Verification Standard						04/02/19 11:08
Aluminum	0.296	mg/L	0.10	99	90	110	
	Interference Check Sample A						04/02/19 11:10
Aluminum	37.5	mg/L	0.10	94	70	130	
	Interference Check Sample AB						04/02/19 11:12
Aluminum	37.6	mg/L	0.10	94	70	130	
	Initial Calibration Verification Standard						04/02/19 11:45
Aluminum	0.295	mg/L	0.10	98	90	110	
	Interference Check Sample A						04/02/19 11:47
Aluminum	37.3	mg/L	0.10	93	70	130	
	Interference Check Sample AB						04/02/19 11:49
Aluminum	37.2	mg/L	0.10	93	70	130	
<hr/>							Batch: R143027
	Method Blank			Run: ICPMS205-H_190402A			04/02/19 12:03
Aluminum	ND	mg/L	0.003				
	Laboratory Fortified Blank			Run: ICPMS205-H_190402A			04/02/19 12:05
Aluminum	0.0489	mg/L	0.10	98	85	115	
	Sample Matrix Spike			Run: ICPMS205-H_190402A			04/02/19 14:18
Aluminum	0.0504	mg/L	0.030	101	70	130	
	Sample Matrix Spike Duplicate			Run: ICPMS205-H_190402A			04/02/19 14:20
Aluminum	0.0513	mg/L	0.030	103	70	130	1.7 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

Analytical Run: ICPMS205-H\_190403A

18 Initial Calibration Verification Standard

04/03/19 13:21

Antimony	0.0569	mg/L	0.050	95	90	110
Arsenic	0.0585	mg/L	0.0050	97	90	110
Barium	0.0590	mg/L	0.10	98	90	110
Beryllium	0.0301	mg/L	0.0010	100	90	110
Cadmium	0.0301	mg/L	0.0010	100	90	110
Chromium	0.0607	mg/L	0.010	101	90	110
Cobalt	0.0615	mg/L	0.010	102	90	110
Copper	0.0605	mg/L	0.010	101	90	110
Iron	0.320	mg/L	0.020	107	90	110
Lead	0.0614	mg/L	0.010	102	90	110
Manganese	0.301	mg/L	0.010	100	90	110
Molybdenum	0.0592	mg/L	0.0050	99	90	110
Nickel	0.0599	mg/L	0.010	100	90	110
Selenium	0.0599	mg/L	0.0050	100	90	110
Strontium	0.0601	mg/L	0.10	100	90	110
Thallium	0.0611	mg/L	0.10	102	90	110
Uranium	0.0596	mg/L	0.00030	99	90	110
Zinc	0.0612	mg/L	0.010	102	90	110

18 Interference Check Sample A

04/03/19 13:23

Antimony	0.000382	mg/L	0.050			
Arsenic	-1.73E-05	mg/L	0.0050			
Barium	0.000337	mg/L	0.10			
Beryllium	-8.76E-05	mg/L	0.0010			
Cadmium	0.000208	mg/L	0.0010			
Chromium	0.000232	mg/L	0.010			
Cobalt	0.000270	mg/L	0.010			
Copper	0.000317	mg/L	0.010			
Iron	104	mg/L	0.020	104	70	130
Lead	6.35E-05	mg/L	0.010			
Manganese	0.000304	mg/L	0.010			
Molybdenum	0.808	mg/L	0.0050	101	70	130
Nickel	0.000260	mg/L	0.010			
Selenium	0.000109	mg/L	0.0050			
Strontium	0.00108	mg/L	0.10			
Thallium	4.12E-05	mg/L	0.10			
Uranium	4.17E-05	mg/L	0.00030			
Zinc	0.000393	mg/L	0.010			

18 Interference Check Sample AB

04/03/19 13:25

Antimony	0.000153	mg/L	0.050		0	0
Arsenic	0.0103	mg/L	0.0050	103	70	130
Barium	0.000188	mg/L	0.10		0	0
Beryllium	-0.000180	mg/L	0.0010		0	0

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

Analytical Run: ICPMS205-H\_190403A

18 Interference Check Sample AB

04/03/19 13:25

Cadmium	0.0103	mg/L	0.0010	103	70	130
Chromium	0.0206	mg/L	0.010	103	70	130
Cobalt	0.0209	mg/L	0.010	105	70	130
Copper	0.0203	mg/L	0.010	102	70	130
Iron	102	mg/L	0.020	102	70	130
Lead	4.48E-05	mg/L	0.010		0	0
Manganese	0.0211	mg/L	0.010	105	70	130
Molybdenum	0.798	mg/L	0.0050	100	70	130
Nickel	0.0204	mg/L	0.010	102	70	130
Selenium	0.00995	mg/L	0.0050	99	70	130
Strontium	0.00101	mg/L	0.10		0	0
Thallium	2.27E-05	mg/L	0.10		0	0
Uranium	9.44E-06	mg/L	0.00030		0	0
Zinc	0.00972	mg/L	0.010	97	70	130

Batch: 45051

19 Method Blank

Run: ICPMS205-H\_190403A

04/03/19 15:38

Antimony	ND	mg/L	0.0001			
Arsenic	ND	mg/L	4E-05			
Barium	ND	mg/L	9E-05			
Beryllium	ND	mg/L	6E-05			
Cadmium	ND	mg/L	3E-05			
Chromium	0.0001	mg/L	0.0001			
Cobalt	ND	mg/L	6E-05			
Copper	ND	mg/L	0.0002			
Iron	ND	mg/L	0.004			
Lead	ND	mg/L	4E-05			
Manganese	ND	mg/L	0.0003			
Molybdenum	ND	mg/L	2E-05			
Nickel	ND	mg/L	0.0001			
Selenium	ND	mg/L	5E-05			
Silver	ND	mg/L	9E-06			
Strontium	ND	mg/L	0.0003			
Thallium	ND	mg/L	4E-05			
Uranium	ND	mg/L	9E-06			
Zinc	ND	mg/L	0.001			

19 Sample Matrix Spike

Run: ICPMS205-H\_190403A

04/03/19 15:45

Antimony	0.480	mg/L	0.0010	96	70	130
Arsenic	0.516	mg/L	0.0010	103	70	130
Barium	0.553	mg/L	0.050	102	70	130
Beryllium	0.245	mg/L	0.0010	98	70	130
Cadmium	0.256	mg/L	0.0010	102	70	130
Chromium	0.509	mg/L	0.0050	102	70	130

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

Batch: 45051

19 Sample Matrix Spike

Run: ICPMS205-H\_190403A

04/03/19 15:45

Cobalt	0.506	mg/L	0.0050	101	70	130
Copper	0.504	mg/L	0.0050	100	70	130
Iron	2.65	mg/L	0.020	102	70	130
Lead	0.514	mg/L	0.0010	103	70	130
Manganese	2.40	mg/L	0.0010	94	70	130
Molybdenum	0.478	mg/L	0.0010	95	70	130
Nickel	0.503	mg/L	0.0050	100	70	130
Selenium	0.500	mg/L	0.0010	100	70	130
Silver	0.0585	mg/L	0.0010	117	70	130
Strontium	0.650	mg/L	0.010	102	70	130
Thallium	0.507	mg/L	0.00050	101	70	130
Uranium	0.504	mg/L	0.00030	100	70	130
Zinc	0.512	mg/L	0.010	102	70	130

19 Sample Matrix Spike Duplicate

Run: ICPMS205-H\_190403A

04/03/19 15:47

Antimony	0.477	mg/L	0.0010	95	70	130	0.5	20
Arsenic	0.502	mg/L	0.0010	100	70	130	2.6	20
Barium	0.546	mg/L	0.050	101	70	130	1.3	20
Beryllium	0.242	mg/L	0.0010	97	70	130	1.5	20
Cadmium	0.251	mg/L	0.0010	101	70	130	1.9	20
Chromium	0.494	mg/L	0.0050	99	70	130	3.0	20
Cobalt	0.493	mg/L	0.0050	99	70	130	2.7	20
Copper	0.491	mg/L	0.0050	98	70	130	2.5	20
Iron	2.58	mg/L	0.020	99	70	130	2.9	20
Lead	0.509	mg/L	0.0010	102	70	130	0.9	20
Manganese	2.33	mg/L	0.0010	91	70	130	3.1	20
Molybdenum	0.469	mg/L	0.0010	93	70	130	1.8	20
Nickel	0.489	mg/L	0.0050	98	70	130	2.7	20
Selenium	0.500	mg/L	0.0010	100	70	130	0.1	20
Silver	0.0566	mg/L	0.0010	113	70	130	3.3	20
Strontium	0.636	mg/L	0.010	99	70	130	2.2	20
Thallium	0.501	mg/L	0.00050	100	70	130	1.3	20
Uranium	0.506	mg/L	0.00030	101	70	130	0.5	20
Zinc	0.498	mg/L	0.010	100	70	130	2.8	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

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Analytical Run: ICPMS205-H\_190404C

	2	Initial Calibration Verification Standard					04/04/19 13:59
Lead		0.0594 mg/L	0.010	99	90	110	
Silver		0.0300 mg/L	0.0050	100	90	110	
	2	Interference Check Sample A					04/04/19 14:01
Lead		0.000108 mg/L	0.010				
Silver		5.82E-05 mg/L	0.0050				
	2	Interference Check Sample AB					04/04/19 14:04
Lead		0.000101 mg/L	0.010		0	0	
Silver		0.00525 mg/L	0.0050	105	70	130	
	2	Initial Calibration Verification Standard					04/04/19 23:14
Lead		0.0598 mg/L	0.010	100	90	110	
Silver		0.0298 mg/L	0.0050	99	90	110	
	2	Interference Check Sample A					04/04/19 23:16
Lead		0.000115 mg/L	0.010				
Silver		5.08E-05 mg/L	0.0050				
	2	Interference Check Sample AB					04/04/19 23:18
Lead		9.39E-05 mg/L	0.010		0	0	
Silver		0.00520 mg/L	0.0050	104	70	130	
	2	Initial Calibration Verification Standard					04/05/19 01:45
Lead		0.0622 mg/L	0.010	104	90	110	
Silver		0.0287 mg/L	0.0050	96	90	110	
	2	Interference Check Sample A					04/05/19 01:47
Lead		0.000112 mg/L	0.010				
Silver		0.000169 mg/L	0.0050				
	2	Interference Check Sample AB					04/05/19 01:49
Lead		0.000106 mg/L	0.010		0	0	
Silver		0.00485 mg/L	0.0050	97	70	130	

Batch: 45051

19 Method Blank				Run: ICPMS205-H_190404C			04/04/19 16:11
Antimony		ND mg/L	0.0001				
Arsenic		ND mg/L	4E-05				
Barium		ND mg/L	9E-05				
Beryllium		ND mg/L	6E-05				
Cadmium		ND mg/L	3E-05				
Chromium	0.0001	mg/L	0.0001				
Cobalt		ND mg/L	6E-05				
Copper		ND mg/L	0.0002				
Iron		ND mg/L	0.004				
Lead		ND mg/L	4E-05				

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

Batch: 45051

19 Method Blank

Run: ICPMS205-H\_190404C

04/04/19 16:11

Manganese	ND	mg/L	0.0003
Molybdenum	ND	mg/L	2E-05
Nickel	ND	mg/L	0.0001
Selenium	ND	mg/L	5E-05
Silver	ND	mg/L	9E-06
Strontium	ND	mg/L	0.0003
Thallium	ND	mg/L	4E-05
Uranium	ND	mg/L	9E-06
Zinc	ND	mg/L	0.001

19 Laboratory Control Sample

Run: ICPMS205-H\_190404C

04/04/19 16:26

Antimony	0.502	mg/L	0.0010	100	85	115
Arsenic	0.507	mg/L	0.0010	101	85	115
Barium	0.516	mg/L	0.050	103	85	115
Beryllium	0.245	mg/L	0.0010	98	85	115
Cadmium	0.252	mg/L	0.0010	101	85	115
Chromium	0.498	mg/L	0.0050	100	85	115
Cobalt	0.497	mg/L	0.0050	99	85	115
Copper	0.494	mg/L	0.0050	99	85	115
Iron	2.51	mg/L	0.020	100	85	115
Lead	0.502	mg/L	0.0010	100	85	115
Manganese	2.34	mg/L	0.0010	94	85	115
Molybdenum	0.492	mg/L	0.0010	98	85	115
Nickel	0.496	mg/L	0.0050	99	85	115
Selenium	0.498	mg/L	0.0010	100	85	115
Silver	0.0511	mg/L	0.0010	102	85	115
Strontium	0.511	mg/L	0.010	102	85	115
Thallium	0.499	mg/L	0.00050	100	85	115
Uranium	0.466	mg/L	0.00030	93	85	115
Zinc	0.506	mg/L	0.010	101	85	115

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

							Analytical Run: HGCV202-H_190409A
	Initial Calibration Verification Standard						04/09/19 14:19
Mercury	0.101	ug/L	0.0050	101	90	110	
							Batch: 45129
	Method Blank						Run: HGCV202-H_190409A 04/09/19 14:38
Mercury	ND	ug/L	0.002				
	Laboratory Control Sample						Run: HGCV202-H_190409A 04/09/19 14:41
Mercury	0.0535	ug/L	0.0050	107	90	110	
	Sample Matrix Spike						Run: HGCV202-H_190409A 04/09/19 14:48
Mercury	0.0560	ug/L	0.0050	112	70	130	
	Sample Matrix Spike Duplicate						Run: HGCV202-H_190409A 04/09/19 14:51
Mercury	0.0496	ug/L	0.0050	99	70	130	12 20
	Sample Matrix Spike						Run: HGCV202-H_190409A 04/09/19 16:08
Mercury	0.0551	ug/L	0.0050	110	70	130	
	Sample Matrix Spike Duplicate						Run: HGCV202-H_190409A 04/09/19 16:11
Mercury	0.0530	ug/L	0.0050	106	70	130	4.0 20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

Analytical Run: IC METROHM\_190401A

2 Initial Calibration Verification Standard

04/01/19 11:34

Chloride	98.1	mg/L	1.0	98	90	110
Sulfate	390	mg/L	1.0	97	90	110

2 Continuing Calibration Verification Standard

04/01/19 21:55

Chloride	48.8	mg/L	1.0	98	90	110
Sulfate	197	mg/L	1.0	99	90	110

Batch: R143003

2 Method Blank

Run: IC METROHM\_190401A

04/01/19 11:20

Chloride	ND	mg/L	0.02
Sulfate	ND	mg/L	0.08

2 Laboratory Fortified Blank

Run: IC METROHM\_190401A

04/01/19 11:48

Chloride	26.0	mg/L	1.0	104	90	110
Sulfate	108	mg/L	1.0	108	90	110

2 Sample Matrix Spike

Run: IC METROHM\_190401A

04/02/19 00:59

Chloride	26.2	mg/L	1.0	92	90	110
Sulfate	98.8	mg/L	1.0	91	90	110

2 Sample Matrix Spike Duplicate

Run: IC METROHM\_190401A

04/02/19 01:13

Chloride	26.3	mg/L	1.0	92	90	110	0.3	20
Sulfate	99.7	mg/L	1.0	92	90	110	0.9	20

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

							Analytical Run: FIA203-HE_190405A
	Initial Calibration Verification Standard						04/05/19 08:44
Nitrogen, Nitrate+Nitrite as N	0.956	mg/L	0.010	96	90	110	
	Continuing Calibration Verification Standard						04/05/19 09:58
Nitrogen, Nitrate+Nitrite as N	0.467	mg/L	0.010	93	90	110	
							Batch: R143118
	Method Blank			Run: FIA203-HE_190405A			04/05/19 08:46
Nitrogen, Nitrate+Nitrite as N	ND	mg/L	0.009				
	Laboratory Fortified Blank			Run: FIA203-HE_190405A			04/05/19 08:47
Nitrogen, Nitrate+Nitrite as N	0.971	mg/L	0.011	97	90	110	
	Sample Matrix Spike			Run: FIA203-HE_190405A			04/05/19 10:04
Nitrogen, Nitrate+Nitrite as N	1.19	mg/L	0.011	95	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190405A			04/05/19 10:05
Nitrogen, Nitrate+Nitrite as N	1.18	mg/L	0.011	94	90	110	0.8 10
	Sample Matrix Spike			Run: FIA203-HE_190405A			04/05/19 10:21
Nitrogen, Nitrate+Nitrite as N	32.9	mg/L	0.22	91	90	110	
	Sample Matrix Spike Duplicate			Run: FIA203-HE_190405A			04/05/19 10:22
Nitrogen, Nitrate+Nitrite as N	33.0	mg/L	0.22	91	90	110	0.4 10

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Helena, MT Branch

Tintina Resources Inc  
18049 1st Quarter SW Sampling

04/12/19  
H19030548

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							Analytical Run: FIA202-HE_190402A
	Initial Calibration Verification Standard						04/02/19 13:29
Phosphorus, Total as P	0.253	mg/L	0.010	101	90	110	
	Initial Calibration Blank, Instrument Blank						04/02/19 13:35
Phosphorus, Total as P	0.000320	mg/L	0.010		0	0	
	Continuing Calibration Verification Standard						04/02/19 13:54
Phosphorus, Total as P	0.101	mg/L	0.010	101	90	110	
							Batch: 45067
	Method Blank			Run: FIA202-HE_190402A			04/02/19 13:37
Phosphorus, Total as P	ND	mg/L	0.002				
	Laboratory Control Sample			Run: FIA202-HE_190402A			04/02/19 13:39
Phosphorus, Total as P	0.409	mg/L	0.010	102	90	110	
	Sample Matrix Spike			Run: FIA202-HE_190402A			04/02/19 13:59
Phosphorus, Total as P	0.291	mg/L	0.010	112	90	110	S
	Sample Matrix Spike Duplicate			Run: FIA202-HE_190402A			04/02/19 14:00
Phosphorus, Total as P	0.290	mg/L	0.010	112	90	110	0.2 20 S

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



Tintina Resources Inc

H19030548

Login completed by: Jessica C. Smith

Date Received: 3/29/2019

Reviewed by: BL2000\rtooke

Received by: RAT

Reviewed Date: 4/2/2019

Carrier name: Hand Del

Shipping container/cooler in good condition? Yes [checked] No [ ] Not Present [ ]
Custody seals intact on all shipping container(s)/cooler(s)? Yes [ ] No [ ] Not Present [checked]
Custody seals intact on all sample bottles? Yes [ ] No [ ] Not Present [checked]
Chain of custody present? Yes [checked] No [ ]
Chain of custody signed when relinquished and received? Yes [checked] No [ ]
Chain of custody agrees with sample labels? Yes [checked] No [ ]
Samples in proper container/bottle? Yes [checked] No [ ]
Sample containers intact? Yes [checked] No [ ]
Sufficient sample volume for indicated test? Yes [checked] No [ ]
All samples received within holding time? Yes [checked] No [ ]
Temp Blank received in all shipping container(s)/cooler(s)? Yes [checked] No [ ] Not Applicable [ ]
Container/Temp Blank temperature: 0.0°C On Ice
Water - VOA vials have zero headspace? Yes [ ] No [ ] No VOA vials submitted [checked]
Water - pH acceptable upon receipt? Yes [checked] No [ ] Not Applicable [ ]

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The 500mL nutrients bottle is sample set BBC-1903-129 has no time. Used time from COC. JCS 03/29/19





**APPENDIX B**

**QA/QC REPORTS**

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**QUALITY CONTROL / QUALITY ASSURANCE  
DATA VERIFICATION REPORT**

**BLACK BUTTE COPPER  
WATER RESOURCE MONITORING**

**JANUARY 2019**

Prepared by  
**Hydrometrics, Inc.**  
3020 Bozeman Avenue  
Helena, MT 59601

MAY 2019

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## TABLE OF CONTENTS

LIST OF APPENDICES .....	II
GLOSSARY OF TERMS.....	III
1. INTRODUCTION.....	4
2. DELIVERABLES.....	4
3. FIELD QUALITY CONTROL SAMPLES.....	4
4. LABORATORY PROCEDURES.....	4
5. INITIAL OR CONTINUING CALIBRATION VERIFICATION RESULTS.....	5
6. LABORATORY BLANKS.....	5
7. MATRIX SPIKE /MATRIX SPIKE DUPLICATES (MS/MSD).....	6
8. LABORATORY CONTROL SAMPLES.....	6
9. DATA QUALITY OBJECTIVES.....	6
REFERENCES.....	8

## LIST OF APPENDICES

### APPENDIX 1: TABLES

- Table 1. Data Validation Codes and Definitions
- Table 2. Summary of Flagged Data
- Table 3. Statistical Summary

### APPENDIX 2: DATABASE SUMMARY REPORT

## GLOSSARY OF TERMS

CCB .....	Continuing Calibration Blank
CCV .....	Continuing Calibration Verification
CLP .....	Contract Laboratory Program
CRDL.....	Contract Required Detection Limit
DI í í í í	Deionized Water
FAA .....	Flame Atomic Absorption
GFAA.....	Graphite Furnace Atomic Absorption
HGAA.....	Hydride Generation Atomic Absorption
ICB.....	Initial Calibration Blank
ICP .....	Inductively Coupled Plasma
ICV .....	Initial Calibration Verification
IDL.....	Instrument Detection Limit
LCS .....	Laboratory Control Sample
MSA.....	Method of Standard Additions
PB .....	Preparation Blank
PRDL .....	Project Required Detection Limit
QAPP .....	Quality Assurance Project Plan
QC.....	Quality Control
RPD.....	Relative Percent Difference
RSD.....	Relative Standard Deviation
SOW.....	Statement of Work
TDS.....	Total Dissolved Solids

# DATA VALIDATION REPORT

## 1. INTRODUCTION

This validation applies to 23 samples collected for the Black Butte Tintina surface water and groundwater monitoring program. All sampling occurred in January 2019. All samples were submitted to Energy Laboratories in Helena, Montana and were assigned Laboratory IDs: H19010185 and H19010186. The total number of samples included: 9 groundwater and surface water samples including 2 field duplicates, 10 site observations and 2 field deionized (DI) blanks.

- Validation procedures used are generally consistent with:

(Check all that apply)

EPA CLP National Functional Guidelines for Inorganics Data Review

EPA CLP National Functional Guidelines for Organic Data Review

Montana Department of Environmental Quality, Data Validation Guidelines for Evaluating Analytical Data, Hydrometrics, September 2010

## 2. DELIVERABLES

- All laboratory document deliverables were present as specified in the CLP-Statement of Work and/or the project contract

Yes

No

- All documentation of field procedures was provided as required

Yes

No

## 3. FIELD QUALITY CONTROL SAMPLES

- Field blanks

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

DI, trip, rinsate, or any other field blanks have been carried out at the proper frequency

Yes

No

Reported results on the field blanks are less than the contract required detection limits (CRDL) or the project required detection limits (PRDL) if project detection limits have been specified

Yes

No

- Field duplicates

Field duplicates have been collected at the proper frequency

Yes

No

Field duplicate relative percent differences (RPDs) were within the required control limits (25 percent or less for water matrix and 50 percent or less for soil matrix)

Yes

No

## 4. LABORATORY PROCEDURES

- Laboratory Case Narrative Notes any non conformance issues with the analytical data

Yes

No

NA

- Samples were received by the laboratory at the proper temperature  
 Yes  
 No
- Holding times met  
 Yes  
 No
- Consistency with project requirements  
 Yes  
 No
- Sample Conditions met at Check-in  
 Yes  
 No
- Reporting units appropriate for the associated sample matrix and methods of analysis  
 Yes  
 No

- Project specified methods were used  
 Yesó see following list of methods used  
 No

**NOTES:** The following methods were used during analyses: A2540D, A2540C, A2320B, E300.0, A4500-F C, A2340B, E353.2, A4500-N C, E365.1, E200.8, and E200.7.

- Detection Limits met project required detection limits (PRDL)  
 Yesó see following notes  
 No

**NOTES:** It should be noted that total dissolved solids and strontium had a reporting limit increases due to sample matrix interference (D). TDS had a limit of 10 mg/l used not the requested 4 mg/l. Strontium had the 0.0003 mg/l reporting limit was used in place of the requested 0.0002 mg/l. In addition, a reporting limit of 0.01 mg/l was used for nitrate + nitrite as n as replacement of the 0.003 mg/l requested.

## 5. INITIAL OR CONTINUING CALIBRATION VERIFICATION RESULTS

- Initial or Continuing Calibration Verification samples were within acceptable limits  
 Yes  
 No

## 6. LABORATORY BLANKS

- **PREPARATION/METHOD BLANKS**

Preparation/Method blanks were prepared and analyzed at the required frequency

Yes  
 No

All analytes in the preparation blank were less than the CRDL (or PRDL if a project detection limit has been specified)

Yes

No

**7. MATRIX SPIKE /MATRIX SPIKE DUPLICATES (MS/MSD)**

- Matrix spike samples were analyzed at the proper frequency  
 Yes  
 No
- Matrix spike recoveries were within control limits  
 Yes  
 No
- Matrix spike RPD $\phi$ s were within control limits  
 Yes  
 No
- Matrix spike duplicate samples were analyzed at the proper frequency  
 Yes  
 No
- Matrix spike duplicate RPD $\phi$ s were within control limits  
 Yes  
 No
- Matrix spike duplicate recoveries were within the laboratory specified control limits.  
 Yes  
 No

**8. LABORATORY CONTROL SAMPLES**

- LCS Samples

Laboratory Control Samples used the correct matrix and concentrations

Yes  
 No  
 NA

Laboratory Control Samples were prepared and analyzed at the required frequency

Yes  
 No  
 NA

All analytes in the laboratory control samples were less than the control limits specified

Yes  
 No

**9. DATA QUALITY OBJECTIVES**

- Project data quality objectives (DQOs) met  
 Yes  
 No

#### Accuracy

Accuracy for this project is the degree of agreement between an analytical measurement and a reference accepted as a true value. The accuracy of a measurement system can be affected by errors introduced by field contamination, sample preservation, sample handling, sample preparation and analytical techniques. Analysis of MS/MSD samples, laboratory control spikes (LCS) or blank spikes, surrogate standards and method blanks are typically used to calculate the percent recovery for evaluating accuracy. Accuracy for this sampling event was 100 percent.

#### Precision

Precision for this project is the degree of mutual agreement between individual measurements of the same property under similar conditions. Combined field and laboratory precision is evaluated by collecting and analyzing field duplicate and then calculating the variance between the samples, typically as a relative percent difference (RPD). Laboratory analytical precision is evaluated by analyzing matrix spike/matrix spike duplicate samples and using the results to calculate an RPD. The combined precision was 100 percent for this sampling event for both laboratory and field.

#### Representativeness

Representativeness for this project is the degree to which sample data accurately and precisely represent the characteristics of a population, and variations in a parameter at a sampling point or an environmental condition that they are intended to represent. Typically representative data will be obtained through careful selection of sampling locations and analytical parameters; proper collection and handling of samples and through use and consistent application of established field and laboratory procedures. Evaluation of field and laboratory blank samples for presence of contaminants can be useful in evaluating representativeness of sample results. Both laboratory and field representativeness for this sampling event was 100 percent.

#### Completeness

The target completeness for this project is the percent of the measurements valid (not rejected). Valid data are obtained when samples are collected and analyzed in accordance with quality control procedures outlined in the SAP, and when none of the QC criteria that affect data usability are exceeded. Once data validation is complete the number of useable sample results is divided by the total number of sample results planned for the investigation to determine the percent completeness. Completeness for this sampling event was 100 percent.

#### Comparability

Comparability is the expression of the confidence with which one data set can be compared with another. Comparability of data is achieved by consistently following standard field and laboratory procedures and by using standard measurement units in reporting analytical data. This criterion was met.



## REFERENCES

- Montana Department of Environmental Quality, Data Validation Guidelines for Evaluating Analytical Data (Updated August 5, 2010)
- EPA, 2017a. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. Office of Superfund Remediation and Technology Innovation. January 2017.
- EPA, 2017b. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. Office of Superfund Remediation and Technology Innovation. January 2017.
- Hem, J.D., 1992. Study and Interpretation of the Chemical Characteristics of Natural Water, 3rd edition. US Geological Survey Water Supply Paper 2254.

## **APPENDIX 1**

### **TABLES**

**TABLE 1.**

**DATA VALIDATION CODES AND DEFINITIONS**

<u>CODE</u>	<u>DEFINITION</u>
J	-The associated numerical value is an estimated quantity because quality control criteria were not met.
U	- Blank contamination. Indicates possible high bias and / or false positive. The associated value is an estimate.
R	- Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
A	- Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code.)

**Table 2. Summary of Flagged Data**

<b>StationName</b>	<b>Sample Date</b>	<b>Field Sample Id</b>	<b>Lab Name</b>	<b>Lab Sample Id</b>	<b>Parameter Name</b>	<b>Sample Result</b>	<b>Reporting Units</b>	<b>Validation Flag</b>	<b>Exceedance Type</b>
--------------------	--------------------	------------------------	-----------------	----------------------	-----------------------	----------------------	------------------------	------------------------	------------------------

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SAMPLE NO BBC-1901-121 LAB NO: z				STATION:DS-1								
01/10/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	03/25/15-03/26/19	OBS	27	27	0.1	62.3	4.9	5.9	11.9	0.4 L	

SAMPLE NO BBC-1901-115 LAB NO: z				STATION:DS-3								
01/10/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	08/06/14-09/18/18	OBS	24	24	0.5	159.0	4.0	5.4	22.2	0.2 L	

SAMPLE NO BBC-1901-116 LAB NO: z				STATION:DS-4								
01/10/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	10/13/11-08/29/18	OBS	10	8	< 1	7.5	2.6	2.4	3.5	0.7 L	

SAMPLE NO BBC-1901-120 LAB NO: z				STATION:SP-10								
01/10/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	05/23/18-03/26/19	OBS	8	8	0.0	59.7	2.0	1.9	14.8	0.1 L	

SAMPLE NO BBC-1901-117 LAB NO: z				STATION:SP-3								
01/10/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	07/20/11-11/16/18	OBS	25	24	< 0	5.4	0.6	0.6	1.6	0.4 L	

SAMPLE NO BBC-1901-109 LAB NO: H19010186-001				STATION:SP-4								
01/10/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	9.7	07/21/11-03/26/19	O	50	50	6.7	14.0	9.8	9.7	1.4	0.1	
pH Fld (s.u.)	8.14	07/21/11-03/26/19	O	49	49	6.95	8.63	7.7	7.71	0.29	1.52	
SC Fld (umhos/cm)	406	07/21/11-03/26/19	O	50	50	162.0	481.0	420.4	434	46.9	0.3	
Flow (Gallons Per Min)	3.4	07/21/11-03/26/19	O	42	42	0.0	50.3	2.8	5.4	9.3	0.1	
Water Temp (Deg C)	5.2	07/21/11-03/26/19	O	49	49	0.1	12.2	5.6	6.5	2.2	0.2	
TDS (mg/L)	222	07/21/11-03/26/19	O	50	50	202.0	272.0	247.2	251	14	1.8	
TSS (mg/L)	10	08/28/13-03/26/19	O	47	29	5.0	890.0	21.3	12	125.7	0.1	
Tot Alk (mg/L)	210	07/21/11-03/26/19	O	50	50	190.0	210.0	201.4	200	4.5	1.9 H	
Ca (mg/L)	53	07/21/11-03/26/19	O	50	50	42.0	56.0	50.8	51	2.5	0.9	
Chloride (mg/L)	< 1	07/21/11-03/26/19	O	50	14	1.0	1.0					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

F (mg/L)	0.2	07/21/11-03/26/19	O	50	50	0.2	0.3	0.2	0.2	0	0.0	L
Tot Hard (mg/L)	248	07/21/11-03/26/19	O	50	50	208.0	255.0	236.5	238	11	1.0	
Mg (mg/L)	28	07/21/11-03/26/19	O	50	50	24.0	29.0	26.6	27	1.2	1.2	
K (mg/L)	2	07/21/11-03/26/19	O	50	50	1.0	2.0	1.9	2	0.3	0.4	H
Na (mg/L)	2	07/21/11-03/26/19	O	50	50	2.0	2.0	2.0	2	0	0.0	H
SO4 (mg/L)	38	07/21/11-03/26/19	O	50	50	10.0	45.0	35.4	38	6.6	0.4	
Nitrate + (mg/L)	0.25	07/21/11-03/26/19	O	50	50	0.18	0.35	0.25	0.25	0.03	0.01	
Al (DIS) (mg/L)	0.013	07/21/11-03/26/19	O	50	4	< 0.009	0.031					
Sb (DIS) (mg/L)	< 0.0005	07/21/11-03/26/19	O	49	0	< 0.0005	< .003					
As (DIS) (mg/L)	< 0.001	07/21/11-03/26/19	O	49	0	< 0.001	< .003					
Ba (DIS) (mg/L)	0.114	07/21/11-03/26/19	O	49	49	0.101	0.121	0.112	0.112	0.005	0.459	
Be (DIS) (mg/L)	< 0.0008	07/21/11-03/26/19	O	49	0	< 0.0008	< .001					
Cd (DIS) (mg/L)	< 0	07/21/11-03/26/19	O	49	0	< 0	< .00008					
Cr (DIS) (mg/L)	< 0.01	07/21/11-03/26/19	O	49	0	< 0	< .01					
Co (DIS) (mg/L)	< 0.01	07/21/11-03/26/19	O	49	0	< 0.01	< .01					
Cu (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	1	< 0.001	0.017					
Fe (DIS) (mg/L)	0.02	07/21/11-03/26/19	O	49	11	< 0.02	0.14					
Pb (DIS) (mg/L)	< 0.0003	07/21/11-03/26/19	O	49	0	< 0.0003	< .0005					
Mn (DIS) (mg/L)	< 0.005	07/21/11-03/26/19	O	49	23	0.004	0.038					
Hg (DIS) (ug/L)	< 0.005	07/21/11-03/26/19	O	48	1	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	0	< 0.001	< .005					
Ni (DIS) (mg/L)	< 0.001	07/21/11-03/26/19	O	49	0	< 0.001	< .01					
Se (DIS) (mg/L)	0.0004	07/21/11-03/26/19	O	49	45	< 0.0002	< .001	0.0004	0.0004	0.0001	0.1629	
Ag (DIS) (mg/L)	< 0.0002	07/21/11-03/26/19	O	49	0	< 0.0002	< .0005					
Sr (DIS) (mg/L)	0.0742	07/21/11-03/26/19	O	49	46	0.0672	< .1	0.074	0.073	0.0069	0.0308	
Tl (DIS) (mg/L)	0.0004	07/21/11-03/26/19	O	49	49	0.0002	0.0004	0.0003	0.0003	0.0001	1.0327	H
U (DIS) (mg/L)	0.0005	07/21/11-03/26/19	O	49	9	0.0004	< .008					
Zn (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	14	< 0.002	< .01					

SAMPLE NO		LAB NO:		STATION:SP-7								
01/10/19		H19010186-004										
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	5.83	03/26/15-03/27/19	O	47	47	2.3	10.98	3.72	3.54	1.62	1.3	
pH Fld (s.u.)	7.54	03/26/15-03/27/19	O	46	46	6.17	8.18	7.38	7.38	0.33	0.49	
SC Fld (umhos/cm)	311	03/26/15-03/27/19	O	47	47	196.0	354.0	320.7	330	28.8	0.3	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Flow (Gallons Per Min)	15.3	03/26/15-03/27/19	O	40	40	6.7	136.0	17.9	15.3	25.4	0.1	
Water Temp (Deg C)	5.07	03/26/15-03/27/19	O	46	46	5.07	7.4	6.5	6.62	0.63	2.26	L
TDS (mg/L)	174	03/26/15-03/27/19	O	47	47	173.0	200.0	187.1	187	6.8	1.9	
TDS (mg/L)	168	03/26/15-03/27/19	DUP	47	47	173.0	200.0	187.1	187	6.8	2.8	L
TSS (mg/L)	< 10	03/26/15-03/27/19	O	47	7	< 4	146.0					
TSS (mg/L)	< 10	03/26/15-03/27/19	DUP	47	7	< 4	146.0					
Tot Alk (mg/L)	170	03/26/15-03/27/19	O	47	47	160.0	170.0	166.3	170	4.7	0.8	H
Tot Alk (mg/L)	170	03/26/15-03/27/19	DUP	47	47	160.0	170.0	166.3	170	4.7	0.8	H
Ca (mg/L)	43	03/26/15-03/27/19	DUP	47	47	40.0	46.0	42.9	43	1.4	0.1	
Ca (mg/L)	43	03/26/15-03/27/19	O	47	47	40.0	46.0	42.9	43	1.4	0.1	
Chloride (mg/L)	2	03/26/15-03/27/19	O	47	47	1.0	2.0	1.7	2	0.3	0.8	H
Chloride (mg/L)	2	03/26/15-03/27/19	DUP	47	47	1.0	2.0	1.7	2	0.3	0.8	H
F (mg/L)	0.3	03/26/15-03/27/19	O	47	47	0.3	0.4	0.3	0.3	0	0.0	L
F (mg/L)	0.3	03/26/15-03/27/19	DUP	47	47	0.3	0.4	0.3	0.3	0	0.0	L
Tot Hard (mg/L)	170	03/26/15-03/27/19	DUP	47	47	153.0	178.0	168.1	169	5.5	0.3	
Tot Hard (mg/L)	171	03/26/15-03/27/19	O	47	47	153.0	178.0	168.1	169	5.5	0.5	
Mg (mg/L)	15	03/26/15-03/27/19	O	47	47	13.0	16.0	14.8	15	0.6	0.4	
Mg (mg/L)	15	03/26/15-03/27/19	DUP	47	47	13.0	16.0	14.8	15	0.6	0.4	
K (mg/L)	3	03/26/15-03/27/19	O	47	47	2.0	3.0	2.7	3	0.4	0.7	H
K (mg/L)	3	03/26/15-03/27/19	DUP	47	47	2.0	3.0	2.7	3	0.4	0.7	H
Na (mg/L)	5	03/26/15-03/27/19	O	47	47	4.0	5.0	4.7	5	0.5	0.6	H
Na (mg/L)	5	03/26/15-03/27/19	DUP	47	47	4.0	5.0	4.7	5	0.5	0.6	H
SO4 (mg/L)	11	03/26/15-03/27/19	O	47	47	7.0	12.0	9.6	10	1.1	1.3	
SO4 (mg/L)	11	03/26/15-03/27/19	DUP	47	47	7.0	12.0	9.6	10	1.1	1.3	
Nitrate + (mg/L)	0.3	03/26/15-03/27/19	O	47	47	0.3	0.4	0.3	0.3	0	0.0	
Nitrate + (mg/L)	0.3	03/26/15-03/27/19	DUP	47	47	0.3	0.4	0.3	0.3	0	0.0	
Al (DIS) (mg/L)	< 0.009	03/26/15-03/27/19	O	47	2	< 0.009	0.311					
Al (DIS) (mg/L)	< 0.009	03/26/15-03/27/19	DUP	47	2	< 0.009	0.311					
Sb (DIS) (mg/L)	< 0.0005	03/26/15-03/27/19	O	46	0	< 0.0005	: 0.0005					
Sb (DIS) (mg/L)	< 0.0005	03/26/15-03/27/19	DUP	46	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	0.004	03/26/15-03/27/19	DUP	46	46	0.003	0.004	0.004	0.004	0	0.0	H
As (DIS) (mg/L)	0.004	03/26/15-03/27/19	O	46	46	0.003	0.004	0.004	0.004	0	0.0	H
Ba (DIS) (mg/L)	0.114	03/26/15-03/27/19	DUP	46	46	0.1	0.122	0.112	0.112	0.005	0.469	
Ba (DIS) (mg/L)	0.113	03/26/15-03/27/19	O	46	46	0.1	0.122	0.112	0.112	0.005	0.269	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Be (DIS) (mg/L)	< 0.0008	03/26/15-03/27/19	O	46	0	< 0.0008	: 0 .0008						
Be (DIS) (mg/L)	< 0.0008	03/26/15-03/27/19	DUP	46	0	< 0.0008	: 0 .0008						
Cd (DIS) (mg/L)	< 0	03/26/15-03/27/19	O	46	0	< 0	: .00003						
Cd (DIS) (mg/L)	< 0	03/26/15-03/27/19	DUP	46	0	< 0	: .00003						
Cr (DIS) (mg/L)	< 0.01	03/26/15-03/27/19	O	46	0	< 0.01	< 0 .01						
Cr (DIS) (mg/L)	< 0.01	03/26/15-03/27/19	DUP	46	0	< 0.01	< 0 .01						
Co (DIS) (mg/L)	< 0.01	03/26/15-03/27/19	DUP	46	0	< 0.01	< 0 .01						
Co (DIS) (mg/L)	< 0.01	03/26/15-03/27/19	O	46	0	< 0.01	< 0 .01						
Cu (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	DUP	46	2	< 0.002	0.015						
Cu (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	2	< 0.002	0.015						
Fe (DIS) (mg/L)	< 0.02	03/26/15-03/27/19	O	46	4	< 0.02	0.36						
Fe (DIS) (mg/L)	< 0.02	03/26/15-03/27/19	DUP	46	4	< 0.02	0.36						
Pb (DIS) (mg/L)	< 0.0003	03/26/15-03/27/19	DUP	46	1	< 0.0003	0.0006						
Pb (DIS) (mg/L)	< 0.0003	03/26/15-03/27/19	O	46	1	< 0.0003	0.0006						
Mn (DIS) (mg/L)	< 0.005	03/26/15-03/27/19	DUP	46	1	< 0.005	< 0 .005						
Mn (DIS) (mg/L)	< 0.005	03/26/15-03/27/19	O	46	1	< 0.005	< 0 .005						
Hg (DIS) (ug/L)	< 0.005	03/26/15-03/27/19	O	46	1	< 0	< .005						
Hg (DIS) (ug/L)	< 0.005	03/26/15-03/27/19	DUP	46	1	< 0	< .005						
Mo (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	DUP	46	0	< 0.002	< 0 .002						
Mo (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	0	< 0.002	< 0 .002						
Ni (DIS) (mg/L)	< 0.001	03/26/15-03/27/19	O	46	0	< 0.001	< 0 .001						
Ni (DIS) (mg/L)	< 0.001	03/26/15-03/27/19	DUP	46	0	< 0.001	< 0 .001						
Se (DIS) (mg/L)	0.0003	03/26/15-03/27/19	DUP	46	42	0.0002	< .0004	0.0003	0.0003	0.0001	0.1408		
Se (DIS) (mg/L)	0.0004	03/26/15-03/27/19	O	46	42	0.0002	< .0004	0.0003	0.0003	0.0001	1.1408	H	
Ag (DIS) (mg/L)	< 0.0002	03/26/15-03/27/19	O	46	0	< 0.0002	: 0 .0002						
Ag (DIS) (mg/L)	< 0.0002	03/26/15-03/27/19	DUP	46	0	< 0.0002	: 0 .0002						
Sr (DIS) (mg/L)	0.17	03/26/15-03/27/19	O	46	46	0.15	0.18	0.17	0.17	0.01	0.41		
Sr (DIS) (mg/L)	0.172	03/26/15-03/27/19	DUP	46	46	0.15	0.181	0.166	0.166	0.006	1.016		
Tl (DIS) (mg/L)	0.001	03/26/15-03/27/19	DUP	46	46	0.001	0.001	0.001	0.001	0	0.0		
Tl (DIS) (mg/L)	0.001	03/26/15-03/27/19	O	46	46	0.001	0.001	0.001	0.001	0	0.0		
U (DIS) (mg/L)	0.0009	03/26/15-03/27/19	O	46	5	0.0009	< .008						
U (DIS) (mg/L)	0.0009	03/26/15-03/27/19	DUP	46	5	0.0009	< .008						
Zn (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	DUP	46	2	< 0.002	0.003						
Zn (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	2	< 0.002	0.003						

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SAMPLE NO BBC-1901-100		LAB NO: H19010185-001		STATION:SW-1								
01/10/19		COMPARISON PERIOD OF DATA		QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
PARAMETER	RESULT											
DO (mg/L)	14.32	05/24/11-03/27/19		O	74	74	3.91	15.0	10.95	10.89	1.94	1.74
pH Fld (s.u.)	7.88	05/24/11-03/27/19		O	73	73	5.3	8.71	7.82	8.03	0.66	0.09
SC Fld (umhos/cm)	319	05/24/11-03/27/19		O	74	74	176.0	363.0	286.2	311	52.4	0.6
Water Temp (Deg C)	-0.84	05/24/11-03/27/19		O	74	74	-0.97	14.5	0.48	3.35	4.77	0.28
TDS (mg/L)	176	05/24/11-03/27/19		O	71	71	107.0	227.0	169.8	180	27.1	0.2
TSS (mg/L)	< 4	05/30/12-03/27/19		O	67	25	< 4	43.0				
Tot Alk (mg/L)	180	05/24/11-03/27/19		O	71	71	87.0	200.0	153.6	170	30.3	0.9
Ca (mg/L)	50	05/24/11-03/27/19		O	71	71	23.0	55.0	42.5	46	8.6	0.9
Chloride (mg/L)	2	05/24/11-03/27/19		O	71	70	1.0	5.0	1.4	1	0.7	0.9
F (mg/L)	0.1	05/24/11-03/27/19		O	71	22	< 0.1	0.2				
Tot Hard (mg/L)	180	05/24/11-03/27/19		O	71	70	< 7	199.0	145.6	164	35	1.0
Mg (mg/L)	13	05/24/11-03/27/19		O	71	71	6.0	15.0	11.2	12	2.4	0.7
K (mg/L)	1	05/24/11-03/27/19		O	71	68	1.0	3.0	1.1	1	0.5	0.2 L
Na (mg/L)	2	05/24/11-03/27/19		O	71	71	1.0	3.0	2.2	2	0.5	0.3
SO4 (mg/L)	7	05/24/11-03/27/19		O	71	71	2.0	18.0	5.2	5	2.1	0.9
Nitrate + (mg/L)	0.12	05/24/11-03/27/19		O	71	34	< 0.01	0.15				
P (mg/L)	0.009	05/16/14-03/27/19		O	57	53	< 0.003	0.09	0.012	0.011	0.015	0.23
Total Pers (mg/L)	0.19	04/29/15-03/27/19		O	45	41	< 0	1.12	0.13	0.15	0.17	0.36
Al (DIS) (mg/L)	< 0.009	05/24/11-03/27/19		O	71	26	< 0.009	0.333				
Sb (TRC) (mg/L)	< 0.0005	05/24/11-03/27/19		O	71	0	< 0.0005	< .005				
As (TRC) (mg/L)	< 0.001	05/24/11-03/27/19		O	71	12	< 0.001	< .003				
Ba (TRC) (mg/L)	0.105	05/24/11-03/27/19		O	71	71	0.083	0.127	0.104	0.104	0.009	0.079
Be (TRC) (mg/L)	< 0.0008	05/24/11-03/27/19		O	71	0	< 0.0008	< .001				
Cd (TRC) (mg/L)	< 0	05/24/11-03/27/19		O	71	5	< 0	0.0002				
Cr (TRC) (mg/L)	< 0.01	05/24/11-03/27/19		O	71	2	< 0	< .01				
Co (TRC) (mg/L)	< 0.01	05/24/11-03/27/19		O	71	0	< 0.01	< .01				
Cu (TRC) (mg/L)	< 0.002	05/24/11-03/27/19		O	71	5	< 0.001	0.003				
Fe (TRC) (mg/L)	0.17	05/24/11-03/27/19		O	71	71	0.11	1.86	0.23	0.17	0.35	0.17
Pb (TRC) (mg/L)	< 0.0003	05/24/11-03/27/19		O	71	13	< 0.0003	0.0015				
Mn (TRC) (mg/L)	0.015	05/24/11-03/27/19		O	71	71	0.009	0.053	0.017	0.016	0.011	0.199
Hg (TRC) (ug/L)	< 0.005	05/24/11-03/27/19		O	71	11	< 0	0.007				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Mo (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	O	71	0	< 0.001	< .005					
Ni (TRC) (mg/L)	< 0.001	05/24/11-03/27/19	O	71	10	< 0.001	< .01					
Se (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	< .001					
Ag (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	< .0005					
Sr (TRC) (mg/L)	0.127	05/24/11-03/27/19	O	71	68	0.078	0.147	0.116	0.119	0.016	0.683	
Tl (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	: 0.0002					
U (TRC) (mg/L)	0.0004	05/24/11-03/27/19	O	71	12	< 0.0003	< .008					
Zn (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	O	71	24	< 0.002	< .01					

SAMPLE NO BBC-1901-101 LAB NO: H19010185-002

STATION:SW-2

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	12.02	05/24/11-03/28/19	O	74	74	6.35	16.18	11.04	10.94	1.72	0.57	
pH Fld (s.u.)	7.74	05/24/11-03/28/19	O	73	73	0.0	8.73	6.76	8.06	1.02	0.96	
SC Fld (umhos/cm)	311	05/24/11-03/28/19	O	74	74	156.0	388.0	278.9	306	53.9	0.6	
Water Temp (Deg C)	-0.92	05/24/11-03/28/19	O	74	74	-1.0	15.8	0.2	3	4.92	0.23	
TDS (mg/L)	170	05/24/11-03/28/19	O	71	71	112.0	223.0	165.5	173	25.2	0.2	
TSS (mg/L)	< 4	05/30/12-03/28/19	O	67	19	4.0	105.0					
Tot Alk (mg/L)	170	05/24/11-03/28/19	O	71	71	80.0	200.0	151.0	160	27.3	0.7	
Ca (mg/L)	49	05/24/11-03/28/19	O	71	71	21.0	58.0	42.7	46	8.1	0.8	
Chloride (mg/L)	1	05/24/11-03/28/19	O	71	69	< 1	5.0	1.3	1	0.7	0.5	L
F (mg/L)	< 0.1	05/24/11-03/28/19	O	71	1	< 0.1	0.4					
Tot Hard (mg/L)	175	05/24/11-03/28/19	O	71	70	< 7	202.0	144.5	164	32.8	0.9	
Mg (mg/L)	13	05/24/11-03/28/19	O	71	71	5.0	15.0	10.8	12	2.1	1.0	
K (mg/L)	1	05/24/11-03/28/19	O	71	66	1.0	2.0	1.0	1	0.1	0.1	L
Na (mg/L)	2	05/24/11-03/28/19	O	71	71	1.0	3.0	2.0	2	0.3	0.1	
SO4 (mg/L)	7	05/24/11-03/28/19	O	71	71	2.0	9.0	5.0	5	1.6	1.3	
Nitrate + (mg/L)	0.1	05/24/11-03/28/19	O	71	35	< 0	0.1					
P (mg/L)	0.008	05/16/14-03/28/19	O	57	49	< 0.003	0.182	0.01	0.008	0.023	0.066	
Total Pers (mg/L)	0.16	04/29/15-03/28/19	O	45	39	< 0	1.39	0.1	0.1	0.25	0.22	
Al (DIS) (mg/L)	0.02	05/24/11-03/28/19	O	71	31	< 0.01	0.39					
Sb (TRC) (mg/L)	< 0.0005	05/24/11-03/28/19	O	71	0	< 0.0005	< .005					
As (TRC) (mg/L)	< 0.001	05/24/11-03/28/19	O	71	1	< 0.001	< .003					
Ba (TRC) (mg/L)	0.091	05/24/11-03/28/19	O	71	71	0.07	0.128	0.094	0.095	0.011	0.312	
Be (TRC) (mg/L)	< 0.0008	05/24/11-03/28/19	O	71	0	< 0.0008	< .001					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Element	Concentration	Date	QC	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Cd (TRC) (mg/L)	< 0	05/24/11-03/28/19	O	71	3	< 0	< .00008				
Cr (TRC) (mg/L)	< 0.01	05/24/11-03/28/19	O	71	1	< 0	< .01				
Co (TRC) (mg/L)	< 0.01	05/24/11-03/28/19	O	71	0	< 0.01	< .01				
Cu (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	5	< 0.001	0.004				
Fe (TRC) (mg/L)	0.17	05/24/11-03/28/19	O	71	71	0.09	2.49	0.2	0.15	0.34	0.1
Pb (TRC) (mg/L)	< 0.0003	05/24/11-03/28/19	O	71	14	< 0.0003	0.0017				
Mn (TRC) (mg/L)	0.009	05/24/11-03/28/19	O	71	71	0.006	0.116	0.011	0.01	0.013	0.165
Hg (TRC) (ug/L)	< 0.005	05/24/11-03/28/19	O	71	11	< 0	< .005				
Mo (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	0	< 0.001	< .005				
Ni (TRC) (mg/L)	< 0.001	05/24/11-03/28/19	O	71	11	< 0.001	< .01				
Se (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	< .001				
Ag (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	< .0005				
Sr (TRC) (mg/L)	0.124	05/24/11-03/28/19	O	71	69	0.082	0.15	0.119	0.123	0.015	0.36
Tl (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	: 0.0002				
U (TRC) (mg/L)	0.0003	05/24/11-03/28/19	O	71	10	< 0.0003	< .008				
Zn (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	20	< 0.002	0.014				

SAMPLE NO	BBC-1901-122	LAB NO:	z	STATION:SW-7								
01/10/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	11/26/12-09/19/18	OBS	17	17	0.0	54.8	3.5	6.7	19.8	0.2 L	

SAMPLE NO	BBC-1901-102	LAB NO:	H19010185-003	STATION:USGS-SC1								
01/10/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	11.74	03/24/14-03/28/19	O	61	61	7.12	16.55	11.15	11.16	1.6	0.37	
pH Fld (s.u.)	7.85	03/24/14-03/28/19	O	60	60	6.67	8.67	7.97	8.16	0.43	0.28	
SC Fld (umhos/cm)	341	03/24/14-03/28/19	O	61	61	137.0	408.0	325.2	344	50.2	0.3	
Water Temp (Deg C)	-0.83	03/24/14-03/28/19	O	61	61	-0.98	13.1	0.33	2.8	4.18	0.28	
TDS (mg/L)	188	03/24/14-03/28/19	O	59	59	134.0	230.0	188.8	195	18.8	0.0	
TSS (mg/L)	< 4	03/24/14-03/28/19	O	59	16	< 4	38.0					
Tot Alk (mg/L)	190	03/24/14-03/28/19	O	59	59	120.0	220.0	176.3	180	20.6	0.7	
Ca (mg/L)	55	03/24/14-03/28/19	O	59	59	35.0	61.0	50.6	52	5.7	0.8	
Chloride (mg/L)	1	03/24/14-03/28/19	O	59	59	1.0	5.0	1.5	1.5	0.9	0.5 L	
F (mg/L)	< 0.1	03/24/14-03/28/19	O	59	1	< 0.1	< 0.1					
Tot Hard (mg/L)	196	03/24/14-03/28/19	O	59	58	< 7	214.0	168.3	185	29	1.0	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Parameter	Count	Period	QC	N	Min	Max	Mean	Median	SD	Other	
Mg (mg/L)	14	03/24/14-03/28/19	O	59	59	8.0	15.0	12.6	13	1.5	0.9
K (mg/L)	1	03/24/14-03/28/19	O	59	59	1.0	1.0	1.0	1	0	0.0 H
Na (mg/L)	2	03/24/14-03/28/19	O	59	59	2.0	3.0	2.1	2	0.3	0.2 L
SO4 (mg/L)	8	03/24/14-03/28/19	O	59	59	3.0	8.0	5.7	6	1.4	1.6 H
Nitrate + (mg/L)	0.11	03/24/14-03/28/19	O	59	41	< 0.01	0.13	0.03	0.03	0.04	2.0
P (mg/L)	0.005	05/16/14-03/28/19	O	56	41	0.003	0.05	0.007	0.007	0.008	0.266
Total Pers (mg/L)	0.15	04/29/15-03/28/19	O	45	35	< 0	1.1	0.08	0.09	0.16	0.42
Al (DIS) (mg/L)	< 0.009	03/24/14-03/28/19	O	59	17	< 0.009	0.189				
Sb (TRC) (mg/L)	< 0.0005	03/24/14-03/28/19	O	59	0	< 0.0005	: 0.0005				
As (TRC) (mg/L)	< 0.001	03/24/14-03/28/19	O	59	1	< 0.001	< 0.001				
Ba (TRC) (mg/L)	0.068	03/24/14-03/28/19	O	59	59	0.06	0.088	0.069	0.068	0.005	0.195
Be (TRC) (mg/L)	< 0.0008	03/24/14-03/28/19	O	59	0	< 0.0008	: 0.0008				
Cd (TRC) (mg/L)	< 0	03/24/14-03/28/19	O	59	2	< 0	0.0001				
Cr (TRC) (mg/L)	< 0.01	03/24/14-03/28/19	O	59	0	< 0.01	< .01				
Co (TRC) (mg/L)	< 0.01	03/24/14-03/28/19	O	59	0	< 0.01	< .01				
Cu (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	1	< 0.002	< 0.002				
Fe (TRC) (mg/L)	0.11	03/24/14-03/28/19	O	59	59	0.07	1.71	0.17	0.12	0.28	0.21
Pb (TRC) (mg/L)	< 0.0003	03/24/14-03/28/19	O	59	7	< 0.0003	0.0011				
Mn (TRC) (mg/L)	0.007	03/24/14-03/28/19	O	59	59	0.005	0.079	0.009	0.008	0.01	0.227
Hg (TRC) (ug/L)	< 0.005	03/24/14-03/28/19	O	59	2	< 0	< .005				
Mo (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	0	< 0.001	< .002				
Ni (TRC) (mg/L)	< 0.001	03/24/14-03/28/19	O	59	7	< 0.001	0.003				
Se (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	0	< 0.0002	< .0004				
Ag (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	1	< 0.0002	< .0004				
Sr (TRC) (mg/L)	0.148	03/24/14-03/28/19	O	59	59	0.121	0.16	0.142	0.144	0.009	0.65
Tl (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	0	< 0.0002	: 0.0002				
U (TRC) (mg/L)	0.0004	03/24/14-03/28/19	O	59	6	0.0003	< .008				
Zn (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	17	< 0.002	0.009				

SAMPLE NO	BBC-1901-107	LAB NO:	H19010185-006	STATION:DI-Blank
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
TDS (mg/L)	< 10	N/A	FB	0							
TDS (mg/L)	< 10	N/A	FB	0							
TSS (mg/L)	< 4	N/A	FB	0							

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

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## Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

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TSS (mg/L)	< 10	N/A	FB	0
Tot Alk (mg/L)	< 4	N/A	FB	0
Tot Alk (mg/L)	< 4	N/A	FB	0
Ca (mg/L)	< 1	N/A	FB	0
Ca (mg/L)	< 1	N/A	FB	0
Chloride (mg/L)	< 1	N/A	FB	0
Chloride (mg/L)	< 1	N/A	FB	0
F (mg/L)	< 0.1	N/A	FB	0
F (mg/L)	< 0.1	N/A	FB	0
Tot Hard (mg/L)	< 1	N/A	FB	0
Tot Hard (mg/L)	< 1	N/A	FB	0
Mg (mg/L)	< 1	N/A	FB	0
Mg (mg/L)	< 1	N/A	FB	0
K (mg/L)	< 1	N/A	FB	0
K (mg/L)	< 1	N/A	FB	0
Na (mg/L)	< 1	N/A	FB	0
Na (mg/L)	< 1	N/A	FB	0
SO4 (mg/L)	< 1	N/A	FB	0
SO4 (mg/L)	< 1	N/A	FB	0
Nitrate + (mg/L)	< 0.01	N/A	FB	0
Nitrate + (mg/L)	< 0.01	N/A	FB	0
P (mg/L)	< 0.003	N/A	FB	0
Total Pers (mg/L)	< 0.04	N/A	FB	0
Al (DIS) (mg/L)	< 0.009	N/A	FB	0
Al (DIS) (mg/L)	< 0.009	N/A	FB	0
Sb (DIS) (mg/L)	< 0.0005	N/A	FB	0
Sb (TRC) (mg/L)	< 0.0005	N/A	FB	0
As (TRC) (mg/L)	< 0.001	N/A	FB	0
As (DIS) (mg/L)	< 0.001	N/A	FB	0
Ba (TRC) (mg/L)	< 0.003	N/A	FB	0
Ba (DIS) (mg/L)	< 0.003	N/A	FB	0
Be (TRC) (mg/L)	< 0.0008	N/A	FB	0
Be (DIS) (mg/L)	< 0.0008	N/A	FB	0
Cd (TRC) (mg/L)	< 0	N/A	FB	0

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Cd (DIS) (mg/L)	< 0	N/A	FB	0
Cr (DIS) (mg/L)	< 0.01	N/A	FB	0
Cr (TRC) (mg/L)	< 0.01	N/A	FB	0
Co (TRC) (mg/L)	< 0.01	N/A	FB	0
Co (DIS) (mg/L)	< 0.01	N/A	FB	0
Cu (TRC) (mg/L)	< 0.002	N/A	FB	0
Cu (DIS) (mg/L)	< 0.002	N/A	FB	0
Fe (DIS) (mg/L)	< 0.02	N/A	FB	0
Fe (TRC) (mg/L)	< 0.02	N/A	FB	0
Pb (DIS) (mg/L)	< 0.0003	N/A	FB	0
Pb (TRC) (mg/L)	< 0.0003	N/A	FB	0
Mn (TRC) (mg/L)	< 0.005	N/A	FB	0
Mn (DIS) (mg/L)	< 0.005	N/A	FB	0
Hg (TRC) (ug/L)	< 0.005	N/A	FB	0
Hg (DIS) (ug/L)	< 0.005	N/A	FB	0
Mo (TRC) (mg/L)	< 0.002	N/A	FB	0
Mo (DIS) (mg/L)	< 0.002	N/A	FB	0
Ni (TRC) (mg/L)	< 0.001	N/A	FB	0
Ni (DIS) (mg/L)	< 0.001	N/A	FB	0
Se (TRC) (mg/L)	< 0.0002	N/A	FB	0
Se (DIS) (mg/L)	< 0.0002	N/A	FB	0
Ag (DIS) (mg/L)	< 0.0002	N/A	FB	0
Ag (TRC) (mg/L)	< 0.0002	N/A	FB	0
Sr (DIS) (mg/L)	< 0.0002	N/A	FB	0
Sr (TRC) (mg/L)	< 0.0002	N/A	FB	0
Tl (TRC) (mg/L)	< 0.0002	N/A	FB	0
Tl (DIS) (mg/L)	< 0.0002	N/A	FB	0
U (TRC) (mg/L)	< 0.0002	N/A	FB	0
U (DIS) (mg/L)	< 0.0002	N/A	FB	0
Zn (DIS) (mg/L)	< 0.002	N/A	FB	0
Zn (TRC) (mg/L)	< 0.002	N/A	FB	0

SAMPLE NO	BBC-1901-103	LAB NO:	H19010185-004	STATION:SW-14
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PARAMETER	01/10/19	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
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NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

DO (mg/L)	11.28	04/13/16-03/27/19	O	32	32	8.24	15.01	10.74	10.43	1.63	0.33	
pH Fld (s.u.)	7.86	04/13/16-03/27/19	O	31	31	6.07	8.48	7.91	8.05	0.46	0.1	
SC Fld (umhos/cm)	394	04/13/16-03/27/19	O	32	32	263.0	439.0	376.8	396	49.8	0.3	
Water Temp (Deg C)	-0.59	04/13/16-03/27/19	O	32	32	-0.91	14.7	2.06	5	4.63	0.57	
TDS (mg/L)	229	04/13/16-03/27/19	DUP	32	32	157.0	244.0	221.1	226.5	20.6	0.4	
TDS (mg/L)	219	04/13/16-03/27/19	O	32	32	157.0	244.0	221.1	226.5	20.6	0.1	
TSS (mg/L)	< 4	04/13/16-03/27/19	O	32	4	< 4	15.0					
TSS (mg/L)	< 4	04/13/16-03/27/19	DUP	32	4	< 4	15.0					
Tot Alk (mg/L)	220	04/13/16-03/27/19	DUP	32	32	130.0	220.0	202.7	210	24.3	0.7	H
Tot Alk (mg/L)	220	04/13/16-03/27/19	O	32	32	130.0	220.0	202.7	210	24.3	0.7	H
Ca (mg/L)	59	04/13/16-03/27/19	DUP	32	32	34.0	61.0	52.8	54.5	6.5	1.0	
Ca (mg/L)	61	04/13/16-03/27/19	O	32	32	34.0	61.0	52.8	54.5	6.5	1.3	H
Chloride (mg/L)	2	04/13/16-03/27/19	DUP	32	32	1.0	4.0	1.9	2	0.5	0.1	
Chloride (mg/L)	2	04/13/16-03/27/19	O	32	32	1.0	4.0	1.9	2	0.5	0.1	
F (mg/L)	0.2	04/13/16-03/27/19	DUP	32	31	< 0.1	0.2	0.2	0.2	0	0.0	H
F (mg/L)	0.2	04/13/16-03/27/19	O	32	31	< 0.1	0.2	0.2	0.2	0	0.0	H
Tot Hard (mg/L)	230	04/13/16-03/27/19	DUP	32	32	134.0	239.0	208.7	214.5	24.9	0.9	
Tot Hard (mg/L)	239	04/13/16-03/27/19	O	32	32	134.0	239.0	208.7	214.5	24.9	1.2	H
Mg (mg/L)	20	04/13/16-03/27/19	DUP	32	32	12.0	23.0	18.7	19	2.5	0.5	
Mg (mg/L)	21	04/13/16-03/27/19	O	32	32	12.0	23.0	18.7	19	2.5	0.9	
K (mg/L)	1	04/13/16-03/27/19	O	32	31	1.0	4.0	1.1	1	0.7	0.1	L
K (mg/L)	1	04/13/16-03/27/19	DUP	32	31	1.0	4.0	1.1	1	0.7	0.1	L
Na (mg/L)	3	04/13/16-03/27/19	O	32	32	1.0	3.0	2.5	3	0.6	0.9	H
Na (mg/L)	3	04/13/16-03/27/19	DUP	32	32	1.0	3.0	2.5	3	0.6	0.9	H
SO4 (mg/L)	9	04/13/16-03/27/19	O	32	32	6.5	19.0	9.1	8.9	2.9	0.0	
SO4 (mg/L)	9	04/13/16-03/27/19	DUP	32	32	6.5	19.0	9.1	8.9	2.9	0.0	
Nitrate + (mg/L)	0.16	04/13/16-03/27/19	O	32	31	0.01	0.27	0.07	0.09	0.08	1.16	
Nitrate + (mg/L)	0.16	04/13/16-03/27/19	DUP	32	31	0.01	0.27	0.07	0.09	0.08	1.16	
P (mg/L)	0.005	04/13/16-03/27/19	O	32	27	< 0.003	0.18	0.008	0.008	0.035	0.079	
P (mg/L)	0.004	04/13/16-03/27/19	DUP	32	27	< 0.003	0.18	0.008	0.008	0.035	0.108	
Total Pers (mg/L)	0.24	04/13/16-03/27/19	O	29	28	< 0	1.25	0.18	0.21	0.24	0.23	
Total Pers (mg/L)	0.24	04/13/16-03/27/19	DUP	29	28	< 0	1.25	0.18	0.21	0.24	0.23	
Al (DIS) (mg/L)	< 0.009	04/13/16-03/27/19	O	32	3	< 0.009	0.047					
Al (DIS) (mg/L)	< 0.009	04/13/16-03/27/19	DUP	32	3	< 0.009	0.047					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Sb (TRC) (mg/L)	< 0.0005	04/13/16-03/27/19	DUP	32	0	< 0.0005	: 0 .0005						
Sb (TRC) (mg/L)	< 0.0005	04/13/16-03/27/19	O	32	0	< 0.0005	: 0 .0005						
As (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	DUP	32	0	< 0.001	< 0 .001						
As (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	O	32	0	< 0.001	< 0 .001						
Ba (TRC) (mg/L)	0.12	04/13/16-03/27/19	O	32	32	0.08	0.13	0.11	0.12	0.01	0.93		
Ba (TRC) (mg/L)	0.122	04/13/16-03/27/19	DUP	32	32	0.077	0.13	0.111	0.116	0.014	0.807		
Be (TRC) (mg/L)	< 0.0008	04/13/16-03/27/19	DUP	32	0	< 0.0008	: 0 .0008						
Be (TRC) (mg/L)	< 0.0008	04/13/16-03/27/19	O	32	0	< 0.0008	: 0 .0008						
Cd (TRC) (mg/L)	< 0	04/13/16-03/27/19	DUP	32	2	< 0	: .00003						
Cd (TRC) (mg/L)	< 0	04/13/16-03/27/19	O	32	2	< 0	: .00003						
Cr (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	DUP	32	0	< 0.01	< 0 .01						
Cr (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	O	32	0	< 0.01	< 0 .01						
Co (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	DUP	32	0	< 0.01	< 0 .01						
Co (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	O	32	0	< 0.01	< 0 .01						
Cu (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	0	< 0.002	< 0 .002						
Cu (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	DUP	32	0	< 0.002	< 0 .002						
Fe (TRC) (mg/L)	< 0.02	04/13/16-03/27/19	O	32	29	0.02	0.43	0.06	0.06	0.08	0.44	L	
Fe (TRC) (mg/L)	< 0.02	04/13/16-03/27/19	DUP	32	29	0.02	0.43	0.06	0.06	0.08	0.44	L	
Pb (TRC) (mg/L)	< 0.0003	04/13/16-03/27/19	DUP	32	1	< 0.0003	0.0005						
Pb (TRC) (mg/L)	< 0.0003	04/13/16-03/27/19	O	32	1	< 0.0003	0.0005						
Mn (TRC) (mg/L)	< 0.005	04/13/16-03/27/19	DUP	32	6	< 0.005	0.009						
Mn (TRC) (mg/L)	< 0.005	04/13/16-03/27/19	O	32	6	< 0.005	0.009						
Hg (TRC) (ug/L)	< 0.005	04/13/16-03/27/19	DUP	32	1	< 0	0.018						
Hg (TRC) (ug/L)	< 0.005	04/13/16-03/27/19	O	32	1	< 0	0.018						
Mo (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	DUP	32	0	< 0.002	< 0 .002						
Mo (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	0	< 0.002	< 0 .002						
Ni (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	O	32	1	< 0.001	< .002						
Ni (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	DUP	32	1	< 0.001	< .002						
Se (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	1	< 0.0002	< .0004						
Se (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	DUP	32	1	< 0.0002	< .0004						
Ag (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	0	< 0.0002	: 0 .0002						
Ag (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	DUP	32	0	< 0.0002	: 0 .0002						
Sr (TRC) (mg/L)	0.124	04/13/16-03/27/19	O	32	32	0.075	0.136	0.118	0.124	0.016	0.38		
Sr (TRC) (mg/L)	0.126	04/13/16-03/27/19	DUP	32	32	0.075	0.136	0.118	0.124	0.016	0.505		

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

TI (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	0	< 0.0002 : 0 .0002
TI (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	DUP	32	0	< 0.0002 : 0 .0002
U (TRC) (mg/L)	0.0005	04/13/16-03/27/19	O	32	4	0.0003 < .008
U (TRC) (mg/L)	0.0006	04/13/16-03/27/19	DUP	32	4	0.0003 < .008
Zn (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	5	< 0.002 0.006
Zn (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	DUP	32	5	< 0.002 0.006

SAMPLE NO	BBC-1901-108	LAB NO:	H19010185-007	STATION:SW-17
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	11.38	01/17/18-03/27/19	O	13	13	9.32	11.38	10.41	10.56	0.66	1.46 H
pH Fld (s.u.)	8.05	01/17/18-03/27/19	O	13	13	7.47	8.41	8.03	8.06	0.27	0.08
SC Fld (umhos/cm)	430	01/17/18-03/27/19	O	13	13	319.0	487.0	428.3	436	38.4	0.0
Water Temp (Deg C)	0.43	01/17/18-03/27/19	O	13	13	0.02	13.3	1.51	2.9	4.73	0.23
TDS (mg/L)	235	01/17/18-03/27/19	O	14	14	197.0	299.0	252.2	253.5	22.5	0.8
TSS (mg/L)	< 4	01/17/18-03/27/19	O	14	5	< 4	14.0				
Tot Alk (mg/L)	210	01/17/18-03/27/19	O	14	14	150.0	210.0	200.5	210	16.8	0.6 H
Ca (mg/L)	56	01/17/18-03/27/19	O	14	14	44.0	63.0	54.4	56	4.7	0.3
Chloride (mg/L)	5	01/17/18-03/27/19	O	14	14	3.0	11.0	4.3	4	2	0.3
F (mg/L)	0.2	01/17/18-03/27/19	O	14	14	0.1	0.2	0.2	0.2	0	0.0 H
Tot Hard (mg/L)	246	01/17/18-03/27/19	O	14	14	167.0	262.0	232.0	240.5	21.8	0.6
Mg (mg/L)	25	01/17/18-03/27/19	O	14	14	14.0	25.0	23.3	25	2.8	0.6 H
K (mg/L)	1	01/17/18-03/27/19	O	14	12	1.0	4.0	1.1	1	0.7	0.1 L
Na (mg/L)	3	01/17/18-03/27/19	O	14	14	2.0	5.0	2.4	2	0.8	0.8
SO4 (mg/L)	35	01/17/18-03/27/19	O	14	14	12.0	44.0	28.8	33.5	7.4	0.8
Nitrate + (mg/L)	0.18	01/17/18-03/27/19	O	14	13	< 0.01	0.19	0.08	0.11	0.06	1.67
P (mg/L)	0.007	01/17/18-03/27/19	O	14	14	0.004	0.088	0.013	0.013	0.022	0.29
Total Pers (mg/L)	0.25	04/12/18-03/27/19	O	11	11	0.12	0.7	0.24	0.24	0.15	0.07
Al (DIS) (mg/L)	< 0.009	01/17/18-03/27/19	O	14	1	< 0.009	0.016				
Sb (TRC) (mg/L)	< 0.0005	01/17/18-03/27/19	O	14	0	< 0.0005 : 0 .0005					
As (TRC) (mg/L)	< 0.001	01/17/18-03/27/19	O	14	0	< 0.001 < 0 .001					
Ba (TRC) (mg/L)	0.157	01/17/18-03/27/19	O	14	14	0.108	0.168	0.149	0.152	0.013	0.625
Be (TRC) (mg/L)	< 0.0008	01/17/18-03/27/19	O	14	0	< 0.0008 : 0 .0008					
Cd (TRC) (mg/L)	< 0	01/17/18-03/27/19	O	14	1	< 0 0.0002					
Cr (TRC) (mg/L)	< 0.01	01/17/18-03/27/19	O	14	0	< 0.01 < 0 .01					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Co (TRC) (mg/L)	< 0.01	01/17/18-03/27/19	O	14	0	< 0.01	< 0.01					
Cu (TRC) (mg/L)	< 0.002	01/17/18-03/27/19	O	14	0	< 0.002	< 0.002					
Fe (TRC) (mg/L)	0.07	01/17/18-03/27/19	O	14	14	0.07	0.36	0.15	0.15	0.08	0.94	L
Pb (TRC) (mg/L)	< 0.0003	01/17/18-03/27/19	O	14	1	< 0.0003	: 0.0003					
Mn (TRC) (mg/L)	0.012	01/17/18-03/27/19	O	14	14	0.008	0.051	0.021	0.026	0.013	0.666	
Hg (TRC) (ug/L)	< 0.005	01/17/18-03/27/19	O	14	1	< 0	0.009					
Mo (TRC) (mg/L)	< 0.002	01/17/18-03/27/19	O	14	0	< 0.002	< 0.002					
Ni (TRC) (mg/L)	< 0.001	01/17/18-03/27/19	O	14	0	< 0.001	< .002					
Se (TRC) (mg/L)	< 0.0002	01/17/18-03/27/19	O	14	0	< 0.0002	: 0.0002					
Ag (TRC) (mg/L)	< 0.0002	01/17/18-03/27/19	O	14	0	< 0.0002	: 0.0002					
Sr (TRC) (mg/L)	0.146	01/17/18-03/27/19	O	14	14	0.115	0.164	0.144	0.147	0.014	0.123	
Tl (TRC) (mg/L)	< 0.0002	01/17/18-03/27/19	O	14	4	< 0.0002	: 0.0002					
U (TRC) (mg/L)	0.0007	01/17/18-03/27/19	O	14	3	0.0006	< .008					
Zn (TRC) (mg/L)	< 0.002	01/17/18-03/27/19	O	14	8	< 0.002	0.008	0.003	0.003	0.002	0.409	L

SAMPLE NO BBC-1901-110 LAB NO: H19010186-002

STATION:SP-11

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	8.36	04/18/18-02/22/19	O	10	10	6.09	8.36	7.2	7.12	0.69	1.68	H
pH Fld (s.u.)	7.98	04/18/18-02/22/19	O	10	10	6.28	7.98	7.42	7.65	0.56	0.99	H
SC Fld (umhos/cm)	180	04/18/18-02/22/19	O	10	10	171.0	195.0	184.6	185	8.4	0.6	
Water Temp (Deg C)	5.6	04/18/18-02/22/19	O	10	10	5.6	7.4	6.3	6.3	0.5	1.5	L
TDS (mg/L)	99	04/18/18-02/22/19	O	10	10	99.0	133.0	115.9	115.5	11.2	1.5	L
TSS (mg/L)	< 10	04/18/18-02/22/19	O	10	1	10.0	10.0					
Tot Alk (mg/L)	93	04/18/18-02/22/19	O	10	10	82.0	95.0	91.3	92.5	3.8	0.4	
Ca (mg/L)	23	04/18/18-02/22/19	O	10	10	21.0	24.0	22.8	23	0.9	0.2	
Chloride (mg/L)	< 1	04/18/18-02/22/19	O	10	0	< 1	< 1					
F (mg/L)	0.2	04/18/18-02/22/19	O	10	10	0.1	0.2	0.2	0.2	0	0.0	H
Tot Hard (mg/L)	93	04/18/18-02/22/19	O	10	10	81.0	95.0	90.9	92.5	4.2	0.5	
Mg (mg/L)	9	04/18/18-02/22/19	O	10	10	7.0	9.0	8.2	8	0.6	1.4	H
K (mg/L)	1	04/18/18-02/22/19	O	10	10	1.0	2.0	1.1	1	0.3	0.2	L
Na (mg/L)	4	04/18/18-02/22/19	O	10	10	3.0	4.0	3.6	4	0.5	0.9	H
SO4 (mg/L)	7	04/18/18-02/22/19	O	10	10	5.0	8.0	6.7	7	0.9	0.3	
Nitrate + (mg/L)	0.22	04/18/18-02/22/19	O	10	10	0.22	0.31	0.25	0.25	0.03	0.96	L
Al (DIS) (mg/L)	0.022	04/18/18-02/22/19	O	10	10	0.017	0.479	0.04	0.022	0.147	0.123	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Sb (DIS) (mg/L)	< 0.0005	04/18/18-02/22/19	O	10	0	< 0.0005	0.0005					
As (DIS) (mg/L)	0.005	04/18/18-02/22/19	O	10	10	0.005	0.008	0.006	0.005	0.001	0.697	L
Ba (DIS) (mg/L)	0.28	04/18/18-02/22/19	O	10	10	0.27	0.31	0.28	0.28	0.01	0.46	
Be (DIS) (mg/L)	< 0.0008	04/18/18-02/22/19	O	10	0	< 0.0008	0.0008					
Cd (DIS) (mg/L)	< 0	04/18/18-02/22/19	O	10	0	< 0	0.0003					
Cr (DIS) (mg/L)	< 0.01	04/18/18-02/22/19	O	10	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	04/18/18-02/22/19	O	10	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	04/18/18-02/22/19	O	10	1	< 0.002	0.003					
Fe (DIS) (mg/L)	< 0.02	04/18/18-02/22/19	O	10	4	< 0.02	0.17					
Pb (DIS) (mg/L)	< 0.0003	04/18/18-02/22/19	O	10	0	< 0.0003	0.0003					
Mn (DIS) (mg/L)	< 0.005	04/18/18-02/22/19	O	10	0	< 0.005	< 0.005					
Hg (DIS) (ug/L)	< 0.005	04/18/18-02/22/19	O	10	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	04/18/18-02/22/19	O	10	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	04/18/18-02/22/19	O	10	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	< 0.0002	04/18/18-02/22/19	O	10	0	< 0.0002	0.0002					
Ag (DIS) (mg/L)	< 0.0002	04/18/18-02/22/19	O	10	0	< 0.0002	0.0002					
Sr (DIS) (mg/L)	0.102	04/18/18-02/22/19	O	10	10	0.086	0.104	0.1	0.101	0.005	0.468	
Tl (DIS) (mg/L)	< 0.0002	04/18/18-02/22/19	O	10	0	< 0.0002	0.0002					
U (DIS) (mg/L)	0.0003	04/18/18-02/22/19	O	10	3	0.0003	< .008					
Zn (DIS) (mg/L)	< 0.002	04/18/18-02/22/19	O	10	3	0.002	0.004					

SAMPLE NO	BBC-1901-111	LAB NO:	H19010186-003	STATION:SP-12
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	7.78	04/18/18-03/27/19	O	10	10	3.32	8.8	5.92	6.29	2.01	0.93
pH Fld (s.u.)	7.76	04/18/18-03/27/19	O	10	10	6.76	7.95	7.49	7.62	0.35	0.76
SC Fld (umhos/cm)	421	04/18/18-03/27/19	O	10	10	421.0	473.0	441.9	437	16.5	1.3 L
Water Temp (Deg C)	5.4	04/18/18-03/27/19	O	10	10	4.3	7.3	6.0	6.2	0.9	0.7
TDS (mg/L)	235	04/18/18-03/27/19	O	11	11	234.0	262.0	247.0	248	9.3	1.3
TSS (mg/L)	187	04/18/18-03/27/19	O	11	6	< 10	187.0	23.5	22	53.2	3.1 *H
Tot Alk (mg/L)	210	04/18/18-03/27/19	O	11	11	160.0	220.0	200.2	210	16.4	0.6
Ca (mg/L)	58	04/18/18-03/27/19	O	11	11	42.0	61.0	54.2	55	4.8	0.8
Chloride (mg/L)	8	04/18/18-03/27/19	O	11	11	5.0	15.0	7.8	8	2.7	0.1
F (mg/L)	0.2	04/18/18-03/27/19	O	11	11	0.1	0.2	0.2	0.2	0	0.0 H
Tot Hard (mg/L)	249	04/18/18-03/27/19	O	11	11	180.0	258.0	231.7	238	20.2	0.9

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Mg (mg/L)	26	04/18/18-03/27/19	O	11	11	18.0	26.0	23.4	24	2.2	1.2	H
K (mg/L)	1	04/18/18-03/27/19	O	11	11	1.0	13.0	1.4	1	3.6	0.1	L
Na (mg/L)	2	04/18/18-03/27/19	O	11	11	2.0	3.0	2.2	2	0.5	0.5	L
SO4 (mg/L)	26	04/18/18-03/27/19	O	11	11	21.0	28.0	24.1	24	2.5	0.8	
Nitrate + (mg/L)	0.31	04/18/18-03/27/19	O	11	11	0.15	0.69	0.37	0.33	0.16	0.35	
Al (DIS) (mg/L)	< 0.009	04/18/18-03/27/19	O	11	1	< 0.009	0.014					
Sb (DIS) (mg/L)	< 0.0005	04/18/18-03/27/19	O	11	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	< 0.001	04/18/18-03/27/19	O	11	0	< 0.001	< 0.001					
Ba (DIS) (mg/L)	0.187	04/18/18-03/27/19	O	11	11	0.128	0.192	0.174	0.176	0.018	0.728	
Be (DIS) (mg/L)	< 0.0008	04/18/18-03/27/19	O	11	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	04/18/18-03/27/19	O	11	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	04/18/18-03/27/19	O	11	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	04/18/18-03/27/19	O	11	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	04/18/18-03/27/19	O	11	1	0.002	0.002					
Fe (DIS) (mg/L)	< 0.02	04/18/18-03/27/19	O	11	4	< 0.02	0.06					
Pb (DIS) (mg/L)	< 0.0003	04/18/18-03/27/19	O	11	0	< 0.0003	: 0.0003					
Mn (DIS) (mg/L)	< 0.005	04/18/18-03/27/19	O	11	0	< 0.005	< 0.005					
Hg (DIS) (ug/L)	< 0.005	04/18/18-03/27/19	O	11	1	< 0	0.018					
Mo (DIS) (mg/L)	< 0.002	04/18/18-03/27/19	O	11	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	04/18/18-03/27/19	O	11	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	0.0002	04/18/18-03/27/19	O	11	9	< 0.0002	0.0003	0.0002	0.0002	0	0.0	L
Ag (DIS) (mg/L)	< 0.0002	04/18/18-03/27/19	O	11	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.115	04/18/18-03/27/19	O	11	11	0.081	0.115	0.106	0.107	0.01	0.899	H
Tl (DIS) (mg/L)	< 0.0002	04/18/18-03/27/19	O	11	0	< 0.0002	: 0.0002					
U (DIS) (mg/L)	0.0006	04/18/18-03/27/19	O	11	5	0.0003	< .008					
Zn (DIS) (mg/L)	< 0.002	04/18/18-03/27/19	O	11	4	< 0.002	0.005					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

**APPENDIX 2**  
**DATABASE**

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:57:41 AM

Sample Type:	Station (Site)	DI-Blank	DI-Blank	DS-1	DS-2	DS-3	DS-4
Water	Sample Date	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019
	Sample Time	11:35:00 AM	3:30:00 PM	10:15:00 AM	3:45:00 PM	12:00:00 PM	12:12:00 PM
	Lab	Energy Labs	Energy Labs	Hydro	Hydro	Hydro	Hydro
	Lab Number	H19010185-006	H19010186-006	z	z	z	z
	Sample Number	BBC-1901-107	BBC-1901-114	BBC-1901-121	BBC-1901-119	BBC-1901-115	BBC-1901-116
	Remarks						

## Field Parameters Multiple Units

Dissolved Oxygen				
Field pH				
Field Specific Conductivity				
Flow				
Flow			NF-DRY	NM-ICE
Water Temperature			NF-DRY	NF-DRY

## Physical Parameters mg/L

Total Dissolved Solids	<10	<10
Total Suspended Solids	<4	<10

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3	<4	<4
Calcium (DIS)	<1	<1
Chloride	<1	<1
Fluoride	<0.1	<0.1
Hardness as CaCO3	<1	<1
Magnesium (DIS)	<1	<1
Potassium (DIS)	<1	<1
Sodium (DIS)	<1	<1
Sulfate	<1	<1

## Nutrients mg/L

Nitrate + Nitrite as N	<0.01	<0.01
Phosphorus (TOT)	<0.003	
Total Persulfate Nitrogen	<0.04	

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)	<0.009	<0.009
Antimony (DIS)		<0.0005
Antimony (TRC)	<0.0005	
Arsenic (DIS)		<0.001
Arsenic (TRC)	<0.001	
Barium (DIS)		<0.003
Barium (TRC)	<0.003	
Beryllium (DIS)		<0.0008
Beryllium (TRC)	<0.0008	
Cadmium (DIS)		<0.00003
Cadmium (TRC)	<0.00003	
Chromium (DIS)		<0.01
Chromium (TRC)	<0.01	
Cobalt (DIS)		<0.01
Cobalt (TRC)	<0.01	

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:57:41 AM

Sample Type:	Station (Site)	DI-Blank	DI-Blank	DS-1	DS-2	DS-3	DS-4
Water	Sample Date	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019
	Sample Time	11:35:00 AM	3:30:00 PM	10:15:00 AM	3:45:00 PM	12:00:00 PM	12:12:00 PM
	Lab	Energy Labs	Energy Labs	Hydro	Hydro	Hydro	Hydro
	Lab Number	H19010185-006	H19010186-006	z	z	z	z
	Sample Number	BBC-1901-107	BBC-1901-114	BBC-1901-121	BBC-1901-119	BBC-1901-115	BBC-1901-116
	Remarks						

## Metals - Trace Constituents Multiple Units

Copper (DIS)	<0.002
Copper (TRC)	<0.002
Iron (DIS)	<0.02
Iron (TRC)	<0.02
Lead (DIS)	<0.0003
Lead (TRC)	<0.0003
Manganese (DIS)	<0.005
Manganese (TRC)	<0.005
Mercury (DIS)	<0.005
Mercury (TRC)	<0.005
Molybdenum (DIS)	<0.002
Molybdenum (TRC)	<0.002
Nickel (DIS)	<0.001
Nickel (TRC)	<0.001
Selenium (DIS)	<0.0002
Selenium (TRC)	<0.0002
Silver (DIS)	<0.0002
Silver (TRC)	<0.0002
Strontium (DIS)	<0.0002
Strontium (TRC)	<0.0002
Thallium (DIS)	<0.0002
Thallium (TRC)	<0.0002
Uranium (DIS)	<0.0002
Uranium (TRC)	<0.0002
Zinc (DIS)	<0.002
Zinc (TRC)	<0.002

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:57:41 AM

Sample Type:	Station (Site)	SP-10	SP-11	SP-12	SP-3	SP-4	SP-6
Water	Sample Date	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019
	Sample Time	4:00:00 PM	1:05:00 PM	1:25:00 PM	12:20:00 PM	12:45:00 PM	12:30:00 PM
	Lab	Hydro	Energy Labs	Energy Labs	Hydro	Energy Labs	Hydro
	Lab Number	z H19010186-002	H19010186-003		z H19010186-001		z
	Sample Number	BBC-1901-120	BBC-1901-110	BBC-1901-111	BBC-1901-117	BBC-1901-109	BBC-1901-118
	Remarks						

## Field Parameters Multiple Units

Dissolved Oxygen		8.36	7.78		9.7	
Field pH		7.98	7.76		8.14	
Field Specific Conductivity		180	421		406	
Flow						
Flow	NF-DRY	NM	NM	NF-DRY	3.4	NM-ICE
Water Temperature		5.6	5.4		5.2	

## Physical Parameters mg/L

Total Dissolved Solids		99	235		222	
Total Suspended Solids		<10	187		10	

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3		93	210		210	
Calcium (DIS)		23	58		53	
Chloride		<1	8		<1	
Fluoride		0.2	0.2		0.2	
Hardness as CaCO3		93	249		248	
Magnesium (DIS)		9	26		28	
Potassium (DIS)		1	1		2	
Sodium (DIS)		4	2		2	
Sulfate		7	26		38	

## Nutrients mg/L

Nitrate + Nitrite as N		0.22	0.31		0.25	
Phosphorus (TOT)						
Total Persulfate Nitrogen						

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)		0.022	<0.009		0.013	
Antimony (DIS)		<0.0005	<0.0005		<0.0005	
Antimony (TRC)						
Arsenic (DIS)		0.005	<0.001		<0.001	
Arsenic (TRC)						
Barium (DIS)		0.28	0.187		0.114	
Barium (TRC)						
Beryllium (DIS)		<0.0008	<0.0008		<0.0008	
Beryllium (TRC)						
Cadmium (DIS)		<0.00003	<0.00003		<0.00003	
Cadmium (TRC)						
Chromium (DIS)		<0.01	<0.01		<0.01	
Chromium (TRC)						
Cobalt (DIS)		<0.01	<0.01		<0.01	
Cobalt (TRC)						



# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:57:41 AM

Sample Type:	Station (Site)	SP-10	SP-11	SP-12	SP-3	SP-4	SP-6
Water	Sample Date	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019
	Sample Time	4:00:00 PM	1:05:00 PM	1:25:00 PM	12:20:00 PM	12:45:00 PM	12:30:00 PM
	Lab	Hydro	Energy Labs	Energy Labs	Hydro	Energy Labs	Hydro
	Lab Number	z H19010186-002	H19010186-003		z H19010186-001		z
	Sample Number	BBC-1901-120	BBC-1901-110	BBC-1901-111	BBC-1901-117	BBC-1901-109	BBC-1901-118
	Remarks						

## Metals - Trace Constituents Multiple Units

Copper (DIS)	<0.002	<0.002	<0.002
Copper (TRC)			
Iron (DIS)	<0.02	<0.02	0.02
Iron (TRC)			
Lead (DIS)	<0.0003	<0.0003	<0.0003
Lead (TRC)			
Manganese (DIS)	<0.005	<0.005	<0.005
Manganese (TRC)			
Mercury (DIS)	<0.005	<0.005	<0.005
Mercury (TRC)			
Molybdenum (DIS)	<0.002	<0.002	<0.002
Molybdenum (TRC)			
Nickel (DIS)	<0.001	<0.001	<0.001
Nickel (TRC)			
Selenium (DIS)	<0.0002	0.0002	0.0004
Selenium (TRC)			
Silver (DIS)	<0.0002	<0.0002	<0.0002
Silver (TRC)			
Strontium (DIS)	0.102	0.115	0.0742
Strontium (TRC)			
Thallium (DIS)	<0.0002	<0.0002	0.0004
Thallium (TRC)			
Uranium (DIS)	0.0003	0.0006	0.0005
Uranium (TRC)			
Zinc (DIS)	<0.002	<0.002	<0.002
Zinc (TRC)			

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:57:41 AM

Sample Type:	Station (Site)	SP-7	SP-7	SW-1	SW-14	SW-14	SW-17
Water	Sample Date	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019
	Sample Time	2:20:00 PM	2:45:00 PM	10:00:00 AM	11:00:00 AM	11:15:00 AM	11:45:00 AM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19010186-004	H19010186-005	H19010185-001	H19010185-004	H19010185-005	H19010185-007
	Sample Number	BBC-1901-112	BBC-1901-113	BBC-1901-100	BBC-1901-103	BBC-1901-104	BBC-1901-108
	Remarks		DUPLICATE			DUPLICATE	

Field Parameters	Multiple Units					
Dissolved Oxygen	5.83		14.32	11.28		11.38
Field pH	7.54		7.88	7.86		8.05
Field Specific Conductivity	311		319	394		430
Flow			NM-ICE	NM		NM
Flow	15.3					
Water Temperature	5.07		-0.84	-0.59		0.43

Physical Parameters	mg/L					
Total Dissolved Solids	174	168	176 D	219 D	229 D	235 D
Total Suspended Solids	<10	<10	<4	<4	<4	<4

Major Constituents - Commons Ions	mg/L					
Alkalinity as CaCO3	170	170	180	220	220	210
Calcium (DIS)	43	43	50	61	59	56
Chloride	2	2	2	2	2	5
Fluoride	0.3	0.3	0.1	0.2	0.2	0.2
Hardness as CaCO3	171	170	180	239	230	246
Magnesium (DIS)	15	15	13	21	20	25
Potassium (DIS)	3	3	1	1	1	1
Sodium (DIS)	5	5	2	3	3	3
Sulfate	11	11	7	9	9	35

Nutrients	mg/L					
Nitrate + Nitrite as N	0.3	0.3	0.12	0.16	0.16	0.18
Phosphorus (TOT)			0.009	0.005	0.004	0.007
Total Persulfate Nitrogen			0.19	0.24	0.24	0.25

Metals - Trace Constituents	Multiple Units					
Aluminum (DIS)	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
Antimony (DIS)	<0.0005	<0.0005				
Antimony (TRC)			<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (DIS)	0.004	0.004				
Arsenic (TRC)			<0.001	<0.001	<0.001	<0.001
Barium (DIS)	0.113	0.114				
Barium (TRC)			0.105	0.12	0.122	0.157
Beryllium (DIS)	<0.0008	<0.0008				
Beryllium (TRC)			<0.0008	<0.0008	<0.0008	<0.0008
Cadmium (DIS)	<0.00003	<0.00003				
Cadmium (TRC)			<0.00003	<0.00003	<0.00003	<0.00003
Chromium (DIS)	<0.01	<0.01				
Chromium (TRC)			<0.01	<0.01	<0.01	<0.01
Cobalt (DIS)	<0.01	<0.01				
Cobalt (TRC)			<0.01	<0.01	<0.01	<0.01

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:57:41 AM

Sample Type:	Station (Site)	SP-7	SP-7	SW-1	SW-14	SW-14	SW-17
Water	Sample Date	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019
	Sample Time	2:20:00 PM	2:45:00 PM	10:00:00 AM	11:00:00 AM	11:15:00 AM	11:45:00 AM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19010186-004	H19010186-005	H19010185-001	H19010185-004	H19010185-005	H19010185-007
	Sample Number	BBC-1901-112	BBC-1901-113	BBC-1901-100	BBC-1901-103	BBC-1901-104	BBC-1901-108
	Remarks		DUPLICATE			DUPLICATE	

Metals - Trace Constituents	Multiple Units						
Copper (DIS)	<0.002	<0.002					
Copper (TRC)			<0.002	<0.002	<0.002	<0.002	<0.002
Iron (DIS)	<0.02	<0.02					
Iron (TRC)			0.17	<0.02	<0.02	<0.02	0.07
Lead (DIS)	<0.0003	<0.0003					
Lead (TRC)			<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Manganese (DIS)	<0.005	<0.005					
Manganese (TRC)			0.015	<0.005	<0.005	<0.005	0.012
Mercury (DIS)	<0.005	<0.005					
Mercury (TRC)			<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum (DIS)	<0.002	<0.002					
Molybdenum (TRC)			<0.002	<0.002	<0.002	<0.002	<0.002
Nickel (DIS)	<0.001	<0.001					
Nickel (TRC)			<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (DIS)	0.0004	0.0003					
Selenium (TRC)			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Silver (DIS)	<0.0002	<0.0002					
Silver (TRC)			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Strontium (DIS)	0.17	0.172					
Strontium (TRC)			0.127 D	0.124 D	0.126 D	0.126 D	0.146 D
Thallium (DIS)	0.001	0.001					
Thallium (TRC)			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Uranium (DIS)	0.0009	0.0009					
Uranium (TRC)			0.0004	0.0005	0.0006	0.0006	0.0007
Zinc (DIS)	<0.002	<0.002					
Zinc (TRC)			<0.002	<0.002	<0.002	<0.002	<0.002

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:57:41 AM

Sample Type:	Station (Site)	SW-18	SW-2	SW-3	SW-7	USGS-SC1
Water	Sample Date	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019
	Sample Time	11:25:00 AM	10:20:00 AM	11:20:00 AM	4:30:00 PM	10:40:00 AM
	Lab	Hydro	Energy Labs	Hydro	Hydro	Energy Labs
	Lab Number	z	H19010185-002	z	z	H19010185-003
	Sample Number	BBC-1901-106	BBC-1901-101	BBC-1901-105	BBC-1901-122	BBC-1901-102
	Remarks					

## Field Parameters Multiple Units

Dissolved Oxygen		12.02		11.74
Field pH		7.74		7.85
Field Specific Conductivity		311		341
Flow	NM		NM	
Flow				NF-DRY
Water Temperature		-0.92		-0.83

## Physical Parameters mg/L

Total Dissolved Solids		170 D		188 D
Total Suspended Solids		<4		<4

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3		170		190
Calcium (DIS)		49		55
Chloride		1		1
Fluoride		<0.1		<0.1
Hardness as CaCO3		175		196
Magnesium (DIS)		13		14
Potassium (DIS)		1		1
Sodium (DIS)		2		2
Sulfate		7		8

## Nutrients mg/L

Nitrate + Nitrite as N		0.1		0.11
Phosphorus (TOT)		0.008		0.005
Total Persulfate Nitrogen		0.16		0.15

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)		0.02		<0.009
Antimony (DIS)				
Antimony (TRC)		<0.0005		<0.0005
Arsenic (DIS)				
Arsenic (TRC)		<0.001		<0.001
Barium (DIS)				
Barium (TRC)		0.091		0.068
Beryllium (DIS)				
Beryllium (TRC)		<0.0008		<0.0008
Cadmium (DIS)				
Cadmium (TRC)		<0.00003		<0.00003
Chromium (DIS)				
Chromium (TRC)		<0.01		<0.01
Cobalt (DIS)				
Cobalt (TRC)		<0.01		<0.01

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:57:41 AM

Sample Type:	Station (Site)	SW-18	SW-2	SW-3	SW-7	USGS-SC1
Water	Sample Date	1/10/2019	1/10/2019	1/10/2019	1/10/2019	1/10/2019
	Sample Time	11:25:00 AM	10:20:00 AM	11:20:00 AM	4:30:00 PM	10:40:00 AM
	Lab	Hydro	Energy Labs	Hydro	Hydro	Energy Labs
	Lab Number	z H19010185-002		z	z	H19010185-003
	Sample Number	BBC-1901-106	BBC-1901-101	BBC-1901-105	BBC-1901-122	BBC-1901-102
	Remarks					

## Metals - Trace Constituents Multiple Units

Copper (DIS)		
Copper (TRC)	<0.002	<0.002
Iron (DIS)		
Iron (TRC)	0.17	0.11
Lead (DIS)		
Lead (TRC)	<0.0003	<0.0003
Manganese (DIS)		
Manganese (TRC)	0.009	0.007
Mercury (DIS)		
Mercury (TRC)	<0.005	<0.005
Molybdenum (DIS)		
Molybdenum (TRC)	<0.002	<0.002
Nickel (DIS)		
Nickel (TRC)	<0.001	<0.001
Selenium (DIS)		
Selenium (TRC)	<0.0002	<0.0002
Silver (DIS)		
Silver (TRC)	<0.0002	<0.0002
Strontium (DIS)		
Strontium (TRC)	0.124 D	0.148 D
Thallium (DIS)		
Thallium (TRC)	<0.0002	<0.0002
Uranium (DIS)		
Uranium (TRC)	0.0003	0.0004
Zinc (DIS)		
Zinc (TRC)	<0.002	<0.002

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**QUALITY CONTROL / QUALITY ASSURANCE  
DATA VERIFICATION REPORT**

**BLACK BUTTE COPPER  
WATER RESOURCE MONITORING**

**FEBRUARY 2019**

Prepared by  
**Hydrometrics, Inc.**  
3020 Bozeman Avenue  
Helena, MT 59601

MAY 2019

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## TABLE OF CONTENTS

<b>LIST OF APPENDICES .....</b>	<b>II</b>
<b>GLOSSARY OF TERMS.....</b>	<b>III</b>
<b>1. INTRODUCTION.....</b>	<b>4</b>
<b>2. DELIVERABLES.....</b>	<b>4</b>
<b>3. FIELD QUALITY CONTROL SAMPLES.....</b>	<b>4</b>
<b>4. LABORATORY PROCEDURES.....</b>	<b>5</b>
<b>5. INITIAL OR CONTINUING CALIBRATION VERIFICATION RESULTS.....</b>	<b>5</b>
<b>6. LABORATORY BLANKS.....</b>	<b>5</b>
<b>7. MATRIX SPIKE /MATRIX SPIKE DUPLICATES (MS/MSD).....</b>	<b>6</b>
<b>8. LABORATORY CONTROL SAMPLES.....</b>	<b>6</b>
<b>9. DATA QUALITY OBJECTIVES.....</b>	<b>7</b>
<b>REFERENCES.....</b>	<b>9</b>

## LIST OF APPENDICES

### APPENDIX 1: TABLES

- Table 1. Data Validation Codes and Definitions**
- Table 2. Summary of Flagged Data**
- Table 3. Statistical Summary**

### APPENDIX 2: DATABASE SUMMARY REPORT

## GLOSSARY OF TERMS

CCB .....	Continuing Calibration Blank
CCV .....	Continuing Calibration Verification
CLP .....	Contract Laboratory Program
CRDL.....	Contract Required Detection Limit
DI í í í í	Deionized Water
FAA .....	Flame Atomic Absorption
GFAA.....	Graphite Furnace Atomic Absorption
HGAA.....	Hydride Generation Atomic Absorption
ICB.....	Initial Calibration Blank
ICP .....	Inductively Coupled Plasma
ICV .....	Initial Calibration Verification
IDL.....	Instrument Detection Limit
LCS .....	Laboratory Control Sample
MSA.....	Method of Standard Additions
PB .....	Preparation Blank
PRDL .....	Project Required Detection Limit
QAPP .....	Quality Assurance Project Plan
QC.....	Quality Control
RPD.....	Relative Percent Difference
RSD.....	Relative Standard Deviation
SOW.....	Statement of Work
TDS.....	Total Dissolved Solids



## DATA VALIDATION REPORT

### 1. INTRODUCTION

This validation applies to 23 samples collected for the Black Butte Tintina surface water and groundwater monitoring program. All sampling occurred in February 2019. All samples were submitted to Energy Laboratories in Helena, Montana and were assigned Laboratory IDs: H19020363 and H19020364. The total number of samples included: 8 groundwater and surface water samples including 2 field duplicates, 11 site observations and 2 field deionized (DI) blanks.

- Validation procedures used are generally consistent with:  
(Check all that apply)
  - EPA CLP National Functional Guidelines for Inorganics Data Review
  - EPA CLP National Functional Guidelines for Organic Data Review
  - Montana Department of Environmental Quality, Data Validation Guidelines for Evaluating Analytical Data, Hydrometrics, September 2010

### 2. DELIVERABLES

- All laboratory document deliverables were present as specified in the CLP-Statement of Work and/or the project contract
  - Yes
  - No
- All documentation of field procedures was provided as required
  - Yes ó see following notes
  - No

**NOTES:** It was noted that the pH meter malfunctioned during the sampling event. All Field pH values were noted as being anomalous (A).

### 3. FIELD QUALITY CONTROL SAMPLES

- Field blanks
 

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

DI, trip, rinsate, or any other field blanks have been carried out at the proper frequency

  - Yes
  - No

Reported results on the field blanks are less than the contract required detection limits (CRDL) or the project required detection limits (PRDL) if project detection limits have been specified

  - Yes
  - No ó see following table

Date	Parameter	Result (mg/L)	Reporting Limit (mg/L)	# Flags
2/22/19	Iron (DIS)	0.1	<0.02	0
	Selenium (DIS)	0.0003	<0.0002	5

**Flagging:** U

- Field duplicates
 

Field duplicates have been collected at the proper frequency

  - Yes
  - No

Field duplicate relative percent differences (RPDs) were within the required control limits (25 percent or less for water matrix and 50 percent or less for soil matrix)

Yes  
 No

#### 4. LABORATORY PROCEDURES

- Laboratory Case Narrative Notes any non conformance issues with the analytical data

Yes  
 No  
 NA

- Samples were received by the laboratory at the proper temperature

Yes  
 No

- Holding times met

Yes  
 No

- Consistency with project requirements

Yes  
 No

- Sample Conditions met at Check-in

Yes  
 No

- Reporting units appropriate for the associated sample matrix and methods of analysis

Yes  
 No

- Project specified methods were used

Yes see following list of methods used  
 No

**NOTES:** The following methods were used during analyses: A2540D, A2540C, A2320B, E300.0, A4500-F C, A2340B, E353.2, A4500-N C, E365.1, E200.8, and E200.7.

- Detection Limits met project required detection limits (PRDL)

Yes see following notes  
 No

**NOTES:** It should be noted that total dissolved solids and strontium had a reporting limit increases due to sample matrix interference (D). TDS had a limit of 10 mg/l used not the requested 4 mg/l. Strontium had the 0.0003 mg/l reporting limit was used in place of the requested 0.0002 mg/l. In addition, a reporting limit of 0.01 mg/l was used for nitrate + nitrite as n as replacement of the 0.003 mg/l requested.

#### 5. INITIAL OR CONTINUING CALIBRATION VERIFICATION RESULTS

- Initial or Continuing Calibration Verification samples were within acceptable limits

Yes  
 No

#### 6. LABORATORY BLANKS

- **PREPARATION/METHOD BLANKS**

Preparation/Method blanks were prepared and analyzed at the required frequency

Yes  
 No

All analytes in the preparation blank were less than the CRDL (or PRDL if a project detection limit has been specified)

Yes  
 No

**7. MATRIX SPIKE /MATRIX SPIKE DUPLICATES (MS/MSD)**

- Matrix spike samples were analyzed at the proper frequency

Yes  
 No

- Matrix spike recoveries were within control limits

Yes  
 No ó see following table

QC Sample ID	Parameter	% REC	Lab Flag	Lab Advisory Limits (% REC)
H19020363-006DMS	Nitrate + Nitrite as N	85	S	90-110
H19020370-001AMS	Sulfate	88	S	90-110

S ó Spike recovery outside of recovery limits

- Matrix spike RPD $\phi$ s were within control limits

Yes  
 No

- Matrix spike duplicate samples were analyzed at the proper frequency

Yes  
 No

- Matrix spike duplicate RPD $\phi$ s were within control limits

Yes  
 No

- Matrix spike duplicate recoveries were within the laboratory specified control limits.

Yes  
 No ó see following table

QC Sample ID	Parameter	% REC	Lab Flag	Lab Advisory Limits (% REC)
H19020363-006DMSD	Nitrate + Nitrite as N	85	S	90-110
H19020370-001AMSD	Sulfate	89	S	90-110

S ó Spike recovery outside of recovery limits

**8. LABORATORY CONTROL SAMPLES**

- LCS Samples

Laboratory Control Samples used the correct matrix and concentrations

Yes  
 No  
 NA

Laboratory Control Samples were prepared and analyzed at the required frequency

Yes  
 No  
 NA

All analytes in the laboratory control samples were less than the control limits specified

Yes  
 No

## 9. DATA QUALITY OBJECTIVES

- Project data quality objectives (DQOs) met

Yes  
 No

### Accuracy

Accuracy for this project is the degree of agreement between an analytical measurement and a reference accepted as a true value. The accuracy of a measurement system can be affected by errors introduced by field contamination, sample preservation, sample handling, sample preparation and analytical techniques. Analysis of MS/MSD samples, laboratory control spikes (LCS) or blank spikes, surrogate standards and method blanks are typically used to calculate the percent recovery for evaluating accuracy. Accuracy for this sampling event was 99 percent.

### Precision

Precision for this project is the degree of mutual agreement between individual measurements of the same property under similar conditions. Combined field and laboratory precision is evaluated by collecting and analyzing field duplicate and then calculating the variance between the samples, typically as a relative percent difference (RPD). Laboratory analytical precision is evaluated by analyzing matrix spike/matrix spike duplicate samples and using the results to calculate an RPD. The combined precision was 99 percent for this sampling event for both laboratory and field.

### Representativeness

Representativeness for this project is the degree to which sample data accurately and precisely represent the characteristics of a population, and variations in a parameter at a sampling point or an environmental condition that they are intended to represent. Typically representative data will be obtained through careful selection of sampling locations and analytical parameters; proper collection and handling of samples and through use and consistent application of established field and laboratory procedures. Evaluation of field and laboratory blank samples for presence of contaminants can be useful in evaluating representativeness of sample results. Both laboratory and field representativeness for this sampling event was 100 percent.

### Completeness

The target completeness for this project is the percent of the measurements valid (not rejected). Valid data are obtained when samples are collected and analyzed in accordance with quality

control procedures outlined in the SAP, and when none of the QC criteria that affect data usability are exceeded. Once data validation is complete the number of useable sample results is divided by the total number of sample results planned for the investigation to determine the percent completeness. Completeness for this sampling event was 100 percent.

Comparability

Comparability is the expression of the confidence with which one data set can be compared with another. Comparability of data is achieved by consistently following standard field and laboratory procedures and by using standard measurement units in reporting analytical data. This criterion was met.

## REFERENCES

- Montana Department of Environmental Quality, Data Validation Guidelines for Evaluating Analytical Data (Updated August 5, 2010)
- EPA, 2017a. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. Office of Superfund Remediation and Technology Innovation. January 2017.
- EPA, 2017b. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. Office of Superfund Remediation and Technology Innovation. January 2017.
- Hem, J.D., 1992. Study and Interpretation of the Chemical Characteristics of Natural Water, 3rd edition. US Geological Survey Water Supply Paper 2254.

## **APPENDIX 1**

### **TABLES**

**TABLE 1.**

**DATA VALIDATION CODES AND DEFINITIONS**

<u>CODE</u>	<u>DEFINITION</u>
J	-The associated numerical value is an estimated quantity because quality control criteria were not met.
U	- Blank contamination. Indicates possible high bias and / or false positive. The associated value is an estimate.
R	- Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
A	- Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code.)



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SAMPLE NO BBC-1902-118 LAB NO: z				STATION:DS-1								
02/22/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	03/25/15-03/26/19	OBS	27	27	0.1	62.3	4.9	5.9	11.9	0.4	L

SAMPLE NO BBC-1902-114 LAB NO: z				STATION:DS-3								
02/22/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	08/06/14-09/18/18	OBS	24	24	0.5	159.0	4.0	5.4	22.2	0.2	L

SAMPLE NO BBC-1902-115 LAB NO: z				STATION:DS-4								
02/22/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	10/13/11-08/29/18	OBS	10	8	< 1	7.5	2.6	2.4	3.5	0.7	L

SAMPLE NO BBC-1902-122 LAB NO: z				STATION:SP-3								
02/22/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	07/20/11-11/16/18	OBS	25	24	< 0	5.4	0.6	0.6	1.6	0.4	L

SAMPLE NO BBC-1902-111 LAB NO: H19020364-003				STATION:SP-4								
02/22/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	9.92	07/21/11-03/26/19	O	50	50	6.7	13.95	9.82	9.7	1.37	0.07	
pH Fld (s.u.)	7.86	07/21/11-03/26/19	O	49	49	6.95	8.63	7.7	7.71	0.29	0.56	
SC Fld (umhos/cm)	428	07/21/11-03/26/19	O	50	50	162.0	481.0	420.4	434	46.9	0.2	
Water Temp (Deg C)	3.6	07/21/11-03/26/19	O	49	49	0.1	12.2	5.6	6.5	2.2	0.9	
phTemp (Deg C)	16.2	02/22/19	DUP	1	1	16.0	16.0	16.0	16	0.1	2.0	H
phTemp (Deg C)	16	02/22/19	O	1	1	16.0	16.0	16.0	16	0.1	0.0	H
pH (s.u.)	8	02/22/19	DUP	1	1	7.8	7.8	7.8	7.8	0.1	2.0	H
pH (s.u.)	7.8	02/22/19	O	1	1	7.8	7.8	7.8	7.8	0.1	0.0	H
TDS (mg/L)	234	07/21/11-03/26/19	O	50	50	202.0	272.0	247.2	251	14	0.9	
TDS (mg/L)	237	07/21/11-03/26/19	DUP	50	50	202.0	272.0	247.2	251	14	0.7	
TSS (mg/L)	11	08/28/13-03/26/19	O	47	29	5.0	890.0	21.3	12	125.7	0.1	
TSS (mg/L)	20	08/28/13-03/26/19	DUP	47	29	5.0	890.0	21.3	12	125.7	0.0	
Tot Alk (mg/L)	200	07/21/11-03/26/19	O	50	50	190.0	210.0	201.4	200	4.5	0.3	
Tot Alk (mg/L)	200	07/21/11-03/26/19	DUP	50	50	190.0	210.0	201.4	200	4.5	0.3	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Ca (mg/L)	53	07/21/11-03/26/19	O	50	50	42.0	56.0	50.8	51	2.5	0.9	
Ca (mg/L)	53	07/21/11-03/26/19	DUP	50	50	42.0	56.0	50.8	51	2.5	0.9	
Chloride (mg/L)	< 1	07/21/11-03/26/19	O	50	14	1.0	1.0					
Chloride (mg/L)	< 1	07/21/11-03/26/19	DUP	50	14	1.0	1.0					
F (mg/L)	0.2	07/21/11-03/26/19	O	50	50	0.2	0.3	0.2	0.2	0	0.0	L
F (mg/L)	0.2	07/21/11-03/26/19	DUP	50	50	0.2	0.3	0.2	0.2	0	0.0	L
Tot Hard (mg/L)	246	07/21/11-03/26/19	O	50	50	208.0	255.0	236.5	238	11	0.9	
Tot Hard (mg/L)	245	07/21/11-03/26/19	DUP	50	50	208.0	255.0	236.5	238	11	0.8	
Mg (mg/L)	28	07/21/11-03/26/19	O	50	50	24.0	29.0	26.6	27	1.2	1.2	
Mg (mg/L)	27	07/21/11-03/26/19	DUP	50	50	24.0	29.0	26.6	27	1.2	0.3	
K (mg/L)	2	07/21/11-03/26/19	DUP	50	50	1.0	2.0	1.9	2	0.3	0.4	H
K (mg/L)	2	07/21/11-03/26/19	O	50	50	1.0	2.0	1.9	2	0.3	0.4	H
Na (mg/L)	2	07/21/11-03/26/19	DUP	50	50	2.0	2.0	2.0	2	0	0.0	H
Na (mg/L)	2	07/21/11-03/26/19	O	50	50	2.0	2.0	2.0	2	0	0.0	H
SO4 (mg/L)	38	07/21/11-03/26/19	DUP	50	50	10.0	45.0	35.4	38	6.6	0.4	
SO4 (mg/L)	38	07/21/11-03/26/19	O	50	50	10.0	45.0	35.4	38	6.6	0.4	
Nitrate + (mg/L)	0.24	07/21/11-03/26/19	DUP	50	50	0.18	0.35	0.25	0.25	0.03	0.35	
Nitrate + (mg/L)	0.25	07/21/11-03/26/19	O	50	50	0.18	0.35	0.25	0.25	0.03	0.01	
Al (DIS) (mg/L)	< 0.009	07/21/11-03/26/19	O	50	4	< 0.009	0.031					
Al (DIS) (mg/L)	< 0.009	07/21/11-03/26/19	DUP	50	4	< 0.009	0.031					
Sb (DIS) (mg/L)	< 0.0005	07/21/11-03/26/19	O	49	0	< 0.0005	< .003					
Sb (DIS) (mg/L)	< 0.0005	07/21/11-03/26/19	DUP	49	0	< 0.0005	< .003					
As (DIS) (mg/L)	< 0.001	07/21/11-03/26/19	DUP	49	0	< 0.001	< .003					
As (DIS) (mg/L)	< 0.001	07/21/11-03/26/19	O	49	0	< 0.001	< .003					
Ba (DIS) (mg/L)	0.114	07/21/11-03/26/19	O	49	49	0.101	0.121	0.112	0.112	0.005	0.459	
Ba (DIS) (mg/L)	0.114	07/21/11-03/26/19	DUP	49	49	0.101	0.121	0.112	0.112	0.005	0.459	
Be (DIS) (mg/L)	< 0.0008	07/21/11-03/26/19	O	49	0	< 0.0008	< .001					
Be (DIS) (mg/L)	< 0.0008	07/21/11-03/26/19	DUP	49	0	< 0.0008	< .001					
Cd (DIS) (mg/L)	< 0	07/21/11-03/26/19	DUP	49	0	< 0	< .00008					
Cd (DIS) (mg/L)	< 0	07/21/11-03/26/19	O	49	0	< 0	< .00008					
Cr (DIS) (mg/L)	< 0.01	07/21/11-03/26/19	DUP	49	0	< 0	< .01					
Cr (DIS) (mg/L)	< 0.01	07/21/11-03/26/19	O	49	0	< 0	< .01					
Co (DIS) (mg/L)	< 0.01	07/21/11-03/26/19	DUP	49	0	< 0.01	< .01					
Co (DIS) (mg/L)	< 0.01	07/21/11-03/26/19	O	49	0	< 0.01	< .01					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Cu (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	1	< 0.001	0.017				
Cu (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	DUP	49	1	< 0.001	0.017				
Fe (DIS) (mg/L)	< 0.02	07/21/11-03/26/19	DUP	49	11	< 0.02	0.14				
Fe (DIS) (mg/L)	< 0.02	07/21/11-03/26/19	O	49	11	< 0.02	0.14				
Pb (DIS) (mg/L)	< 0.0003	07/21/11-03/26/19	DUP	49	0	< 0.0003	< .0005				
Pb (DIS) (mg/L)	< 0.0003	07/21/11-03/26/19	O	49	0	< 0.0003	< .0005				
Mn (DIS) (mg/L)	< 0.005	07/21/11-03/26/19	O	49	23	0.004	0.038				
Mn (DIS) (mg/L)	< 0.005	07/21/11-03/26/19	DUP	49	23	0.004	0.038				
Hg (DIS) (ug/L)	< 0.005	07/21/11-03/26/19	DUP	48	1	< 0	< .005				
Hg (DIS) (ug/L)	< 0.005	07/21/11-03/26/19	O	48	1	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	0	< 0.001	< .005				
Mo (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	DUP	49	0	< 0.001	< .005				
Ni (DIS) (mg/L)	< 0.001	07/21/11-03/26/19	O	49	0	< 0.001	< .01				
Ni (DIS) (mg/L)	< 0.001	07/21/11-03/26/19	DUP	49	0	< 0.001	< .01				
Se (DIS) (mg/L)	0.0004	07/21/11-03/26/19	O	49	45	< 0.0002	< .001	0.0004	0.0004	0.0001	0.1629
Se (DIS) (mg/L)	0.0004	07/21/11-03/26/19	DUP	49	45	< 0.0002	< .001	0.0004	0.0004	0.0001	0.1629
Ag (DIS) (mg/L)	< 0.0002	07/21/11-03/26/19	DUP	49	0	< 0.0002	< .0005				
Ag (DIS) (mg/L)	< 0.0002	07/21/11-03/26/19	O	49	0	< 0.0002	< .0005				
Sr (DIS) (mg/L)	0.0749	07/21/11-03/26/19	DUP	49	46	0.0672	< .1	0.074	0.073	0.0069	0.1322
Sr (DIS) (mg/L)	0.0753	07/21/11-03/26/19	O	49	46	0.0672	< .1	0.074	0.073	0.0069	0.1902
Tl (DIS) (mg/L)	0.0003	07/21/11-03/26/19	O	49	49	0.0002	0.0004	0.0003	0.0003	0.0001	0.0327
Tl (DIS) (mg/L)	0.0003	07/21/11-03/26/19	DUP	49	49	0.0002	0.0004	0.0003	0.0003	0.0001	0.0327
U (DIS) (mg/L)	0.0005	07/21/11-03/26/19	O	49	9	0.0004	< .008				
U (DIS) (mg/L)	0.0005	07/21/11-03/26/19	DUP	49	9	0.0004	< .008				
Zn (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	14	< 0.002	< .01				
Zn (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	DUP	49	14	< 0.002	< .01				

SAMPLE NO		LAB NO:		STATION:SP-7								
02/22/19		H19020364-002										
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	4.59	03/26/15-03/27/19	O	47	47	2.3	10.98	3.72	3.54	1.62	0.54	
pH Fld (s.u.)	7.37	03/26/15-03/27/19	O	46	46	6.17	8.18	7.38	7.38	0.33	0.03	
SC Fld (umhos/cm)	330	03/26/15-03/27/19	O	47	47	196.0	354.0	320.7	330	28.8	0.3	
Water Temp (Deg C)	6.14	03/26/15-03/27/19	O	46	46	5.07	7.4	6.5	6.62	0.63	0.56	
phTemp (Deg C)	16.1	02/22/19	O	1	1	16.1	16.1	16.1	16.1	0	0.0 H	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

pH (s.u.)	7.4	02/22/19	O	1	1	7.4	7.4	7.4	7.4	0	0.0	H
TDS (mg/L)	176	03/26/15-03/27/19	O	47	47	173.0	200.0	187.1	187	6.8	1.6	
TSS (mg/L)	< 10	03/26/15-03/27/19	O	47	7	< 4	146.0					
Tot Alk (mg/L)	170	03/26/15-03/27/19	O	47	47	160.0	170.0	166.3	170	4.7	0.8	H
Ca (mg/L)	42	03/26/15-03/27/19	O	47	47	40.0	46.0	42.9	43	1.4	0.7	
Chloride (mg/L)	2	03/26/15-03/27/19	O	47	47	1.0	2.0	1.7	2	0.3	0.8	H
F (mg/L)	0.3	03/26/15-03/27/19	O	47	47	0.3	0.4	0.3	0.3	0	0.0	L
Tot Hard (mg/L)	166	03/26/15-03/27/19	O	47	47	153.0	178.0	168.1	169	5.5	0.4	
Mg (mg/L)	15	03/26/15-03/27/19	O	47	47	13.0	16.0	14.8	15	0.6	0.4	
K (mg/L)	3	03/26/15-03/27/19	O	47	47	2.0	3.0	2.7	3	0.4	0.7	H
Na (mg/L)	5	03/26/15-03/27/19	O	47	47	4.0	5.0	4.7	5	0.5	0.6	H
SO4 (mg/L)	11	03/26/15-03/27/19	O	47	47	7.0	12.0	9.6	10	1.1	1.3	
Nitrate + (mg/L)	0.31	03/26/15-03/27/19	O	47	47	0.27	0.41	0.31	0.31	0.02	0.04	
Al (DIS) (mg/L)	< 0.009	03/26/15-03/27/19	O	47	2	< 0.009	0.311					
Sb (DIS) (mg/L)	< 0.0005	03/26/15-03/27/19	O	46	0	< 0.0005	0.0005					
As (DIS) (mg/L)	0.004	03/26/15-03/27/19	O	46	46	0.003	0.004	0.004	0.004	0	0.0	H
Ba (DIS) (mg/L)	0.116	03/26/15-03/27/19	O	46	46	0.1	0.122	0.112	0.112	0.005	0.869	
Be (DIS) (mg/L)	< 0.0008	03/26/15-03/27/19	O	46	0	< 0.0008	0.0008					
Cd (DIS) (mg/L)	< 0	03/26/15-03/27/19	O	46	0	< 0	0.0003					
Cr (DIS) (mg/L)	< 0.01	03/26/15-03/27/19	O	46	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	03/26/15-03/27/19	O	46	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	2	< 0.002	0.015					
Fe (DIS) (mg/L)	< 0.02	03/26/15-03/27/19	O	46	4	< 0.02	0.36					
Pb (DIS) (mg/L)	< 0.0003	03/26/15-03/27/19	O	46	1	< 0.0003	0.0006					
Mn (DIS) (mg/L)	< 0.005	03/26/15-03/27/19	O	46	1	< 0.005	< 0.005					
Hg (DIS) (ug/L)	< 0.005	03/26/15-03/27/19	O	46	1	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	03/26/15-03/27/19	O	46	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	0.0004	03/26/15-03/27/19	O	46	42	0.0002	< .0004	0.0003	0.0003	0.0001	1.1408	H
Ag (DIS) (mg/L)	< 0.0002	03/26/15-03/27/19	O	46	0	< 0.0002	0.0002					
Sr (DIS) (mg/L)	0.168	03/26/15-03/27/19	O	46	46	0.15	0.181	0.166	0.166	0.006	0.349	
Tl (DIS) (mg/L)	0.001	03/26/15-03/27/19	O	46	46	0.001	0.001	0.001	0.001	0	0.0	
U (DIS) (mg/L)	0.001	03/26/15-03/27/19	O	46	5	0.001	< .008					
Zn (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	2	< 0.002	0.003					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SAMPLE NO BBC-1902-100		LAB NO: H19020363-001		STATION:SW-1								
02/22/19		COMPARISON PERIOD OF DATA		QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
PARAMETER	RESULT											
DO (mg/L)	4.58	05/24/11-03/27/19		O	74	74	3.91	15.0	10.95	10.89	1.94	3.29 *
pH Fld (s.u.)	6.13	05/24/11-03/27/19		O	73	73	5.3	8.71	7.82	8.03	0.66	2.56
SC Fld (umhos/cm)	333	05/24/11-03/27/19		O	74	74	176.0	363.0	286.2	311	52.4	0.9
Water Temp (Deg C)	0.04	05/24/11-03/27/19		O	74	74	-0.97	14.5	0.48	3.35	4.77	0.09
phTemp (Deg C)	15.7	02/22/19		DUP	1	1	16.3	16.3	16.3	16.3	0.4	1.5 L
phTemp (Deg C)	16.3	02/22/19		O	1	1	16.3	16.3	16.3	16.3	0.4	0.0 H
pH (s.u.)	8.1	02/22/19		DUP	1	1	8.1	8.1	8.1	8.1	0	0.0 H
pH (s.u.)	8.1	02/22/19		O	1	1	8.1	8.1	8.1	8.1	0	0.0 H
TDS (mg/L)	183	05/24/11-03/27/19		DUP	71	71	107.0	227.0	169.8	180	27.1	0.5
TDS (mg/L)	189	05/24/11-03/27/19		O	71	71	107.0	227.0	169.8	180	27.1	0.7
TSS (mg/L)	< 4	05/30/12-03/27/19		DUP	67	25	< 4	43.0				
TSS (mg/L)	< 4	05/30/12-03/27/19		O	67	25	< 4	43.0				
Tot Alk (mg/L)	170	05/24/11-03/27/19		DUP	71	71	87.0	200.0	153.6	170	30.3	0.5
Tot Alk (mg/L)	170	05/24/11-03/27/19		O	71	71	87.0	200.0	153.6	170	30.3	0.5
Ca (mg/L)	51	05/24/11-03/27/19		O	71	71	23.0	55.0	42.5	46	8.6	1.0
Ca (mg/L)	50	05/24/11-03/27/19		DUP	71	71	23.0	55.0	42.5	46	8.6	0.9
Chloride (mg/L)	1	05/24/11-03/27/19		DUP	71	70	1.0	5.0	1.4	1	0.7	0.5 L
Chloride (mg/L)	1	05/24/11-03/27/19		O	71	70	1.0	5.0	1.4	1	0.7	0.5 L
F (mg/L)	0.1	05/24/11-03/27/19		DUP	71	22	< 0.1	0.2				
F (mg/L)	0.1	05/24/11-03/27/19		O	71	22	< 0.1	0.2				
Tot Hard (mg/L)	183	05/24/11-03/27/19		O	71	70	< 7	199.0	145.6	164	35	1.1
Tot Hard (mg/L)	180	05/24/11-03/27/19		DUP	71	70	< 7	199.0	145.6	164	35	1.0
Mg (mg/L)	14	05/24/11-03/27/19		O	71	71	6.0	15.0	11.2	12	2.4	1.2
Mg (mg/L)	13	05/24/11-03/27/19		DUP	71	71	6.0	15.0	11.2	12	2.4	0.7
K (mg/L)	1	05/24/11-03/27/19		DUP	71	68	1.0	3.0	1.1	1	0.5	0.2 L
K (mg/L)	1	05/24/11-03/27/19		O	71	68	1.0	3.0	1.1	1	0.5	0.2 L
Na (mg/L)	2	05/24/11-03/27/19		DUP	71	71	1.0	3.0	2.2	2	0.5	0.3
Na (mg/L)	2	05/24/11-03/27/19		O	71	71	1.0	3.0	2.2	2	0.5	0.3
SO4 (mg/L)	7	05/24/11-03/27/19		DUP	71	71	2.0	18.0	5.2	5	2.1	0.9
SO4 (mg/L)	7	05/24/11-03/27/19		O	71	71	2.0	18.0	5.2	5	2.1	0.9
Nitrate + (mg/L)	0.12	05/24/11-03/27/19		DUP	71	34	< 0.01	0.15				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Nitrate + (mg/L)	0.12	05/24/11-03/27/19	O	71	34	< 0.01	0.15				
P (mg/L)	0.016	05/16/14-03/27/19	DUP	57	53	< 0.003	0.09	0.012	0.011	0.015	0.237
P (mg/L)	0.016	05/16/14-03/27/19	O	57	53	< 0.003	0.09	0.012	0.011	0.015	0.237
Total Pers (mg/L)	0.2	04/29/15-03/27/19	DUP	45	41	< 0	1.1	0.1	0.2	0.2	0.4
Total Pers (mg/L)	0.21	04/29/15-03/27/19	O	45	41	< 0	1.12	0.13	0.15	0.17	0.48
Al (DIS) (mg/L)	< 0.009	05/24/11-03/27/19	DUP	71	26	< 0.009	0.333				
Al (DIS) (mg/L)	< 0.009	05/24/11-03/27/19	O	71	26	< 0.009	0.333				
Sb (TRC) (mg/L)	< 0.0005	05/24/11-03/27/19	O	71	0	< 0.0005	< .005				
Sb (TRC) (mg/L)	< 0.0005	05/24/11-03/27/19	DUP	71	0	< 0.0005	< .005				
As (TRC) (mg/L)	< 0.001	05/24/11-03/27/19	DUP	71	12	< 0.001	< .003				
As (TRC) (mg/L)	< 0.001	05/24/11-03/27/19	O	71	12	< 0.001	< .003				
Ba (TRC) (mg/L)	0.107	05/24/11-03/27/19	DUP	71	71	0.083	0.127	0.104	0.104	0.009	0.301
Ba (TRC) (mg/L)	0.107	05/24/11-03/27/19	O	71	71	0.083	0.127	0.104	0.104	0.009	0.301
Be (TRC) (mg/L)	< 0.0008	05/24/11-03/27/19	DUP	71	0	< 0.0008	< .001				
Be (TRC) (mg/L)	< 0.0008	05/24/11-03/27/19	O	71	0	< 0.0008	< .001				
Cd (TRC) (mg/L)	< 0	05/24/11-03/27/19	O	71	5	< 0	0.0002				
Cd (TRC) (mg/L)	< 0	05/24/11-03/27/19	DUP	71	5	< 0	0.0002				
Cr (TRC) (mg/L)	< 0.01	05/24/11-03/27/19	O	71	2	< 0	< .01				
Cr (TRC) (mg/L)	< 0.01	05/24/11-03/27/19	DUP	71	2	< 0	< .01				
Co (TRC) (mg/L)	< 0.01	05/24/11-03/27/19	O	71	0	< 0.01	< .01				
Co (TRC) (mg/L)	< 0.01	05/24/11-03/27/19	DUP	71	0	< 0.01	< .01				
Cu (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	O	71	5	< 0.001	0.003				
Cu (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	DUP	71	5	< 0.001	0.003				
Fe (TRC) (mg/L)	0.13	05/24/11-03/27/19	O	71	71	0.11	1.86	0.23	0.17	0.35	0.28
Fe (TRC) (mg/L)	0.13	05/24/11-03/27/19	DUP	71	71	0.11	1.86	0.23	0.17	0.35	0.28
Pb (TRC) (mg/L)	< 0.0003	05/24/11-03/27/19	O	71	13	< 0.0003	0.0015				
Pb (TRC) (mg/L)	< 0.0003	05/24/11-03/27/19	DUP	71	13	< 0.0003	0.0015				
Mn (TRC) (mg/L)	0.014	05/24/11-03/27/19	O	71	71	0.009	0.053	0.017	0.016	0.011	0.29
Mn (TRC) (mg/L)	0.014	05/24/11-03/27/19	DUP	71	71	0.009	0.053	0.017	0.016	0.011	0.29
Hg (TRC) (ug/L)	< 0.005	05/24/11-03/27/19	DUP	71	11	< 0	0.007				
Hg (TRC) (ug/L)	< 0.005	05/24/11-03/27/19	O	71	11	< 0	0.007				
Mo (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	DUP	71	0	< 0.001	< .005				
Mo (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	O	71	0	< 0.001	< .005				
Ni (TRC) (mg/L)	< 0.001	05/24/11-03/27/19	DUP	71	10	< 0.001	< .01				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Ni (TRC) (mg/L)	< 0.001	05/24/11-03/27/19	O	71	10	< 0.001	< .01				
Se (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	< .001				
Se (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	DUP	71	0	< 0.0002	< .001				
Ag (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	DUP	71	0	< 0.0002	< .0005				
Ag (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	< .0005				
Sr (TRC) (mg/L)	0.128	05/24/11-03/27/19	O	71	68	0.078	0.147	0.116	0.119	0.016	0.746
Sr (TRC) (mg/L)	0.128	05/24/11-03/27/19	DUP	71	68	0.078	0.147	0.116	0.119	0.016	0.746
Tl (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	DUP	71	0	< 0.0002	: 0 .0002				
Tl (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	: 0 .0002				
U (TRC) (mg/L)	0.0004	05/24/11-03/27/19	DUP	71	12	< 0.0003	< .008				
U (TRC) (mg/L)	0.0004	05/24/11-03/27/19	O	71	12	< 0.0003	< .008				
Zn (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	O	71	24	< 0.002	< .01				
Zn (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	DUP	71	24	< 0.002	< .01				

SAMPLE NO BBC-1902-105		LAB NO: H19020363-004		STATION:SW-2							
02/22/19											
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	11.09	05/24/11-03/28/19	O	74	74	6.35	16.18	11.04	10.94	1.72	0.03
pH Fld (s.u.)	6.38	05/24/11-03/28/19	O	73	73	0.0	8.73	6.76	8.06	1.02	0.38
SC Fld (umhos/cm)	188	05/24/11-03/28/19	O	74	74	156.0	388.0	278.9	306	53.9	1.7
Water Temp (Deg C)	0	05/24/11-03/28/19	O	74	74	-1.0	15.8	0.2	3	4.9	0.0
pHTemp (Deg C)	15.4	02/22/19	O	1	1	15.4	15.4	15.4	15.4	0	0.0 H
pH (s.u.)	8.1	02/22/19	O	1	1	8.1	8.1	8.1	8.1	0	0.0 H
TDS (mg/L)	174	05/24/11-03/28/19	O	71	71	112.0	223.0	165.5	173	25.2	0.3
TSS (mg/L)	< 4	05/30/12-03/28/19	O	67	19	4.0	105.0				
Tot Alk (mg/L)	170	05/24/11-03/28/19	O	71	71	80.0	200.0	151.0	160	27.3	0.7
Ca (mg/L)	50	05/24/11-03/28/19	O	71	71	21.0	58.0	42.7	46	8.1	0.9
Chloride (mg/L)	1	05/24/11-03/28/19	O	71	69	< 1	5.0	1.3	1	0.7	0.5 L
F (mg/L)	< 0.1	05/24/11-03/28/19	O	71	1	< 0.1	0.4				
Tot Hard (mg/L)	176	05/24/11-03/28/19	O	71	70	< 7	202.0	144.5	164	32.8	1.0
Mg (mg/L)	13	05/24/11-03/28/19	O	71	71	5.0	15.0	10.8	12	2.1	1.0
K (mg/L)	1	05/24/11-03/28/19	O	71	66	1.0	2.0	1.0	1	0.1	0.1 L
Na (mg/L)	2	05/24/11-03/28/19	O	71	71	1.0	3.0	2.0	2	0.3	0.1
SO4 (mg/L)	7	05/24/11-03/28/19	O	71	71	2.0	9.0	5.0	5	1.6	1.3
Nitrate + (mg/L)	0.1	05/24/11-03/28/19	O	71	35	< 0	0.1				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

P (mg/L)	0.012	05/16/14-03/28/19	O	57	49	< 0.003	0.182	0.01	0.008	0.023	0.108
Total Pers (mg/L)	0.15	04/29/15-03/28/19	O	45	39	< 0	1.39	0.1	0.1	0.25	0.18
Al (DIS) (mg/L)	< 0.009	05/24/11-03/28/19	O	71	31	< 0.009	0.39				
Sb (TRC) (mg/L)	< 0.0005	05/24/11-03/28/19	O	71	0	< 0.0005	< .005				
As (TRC) (mg/L)	< 0.001	05/24/11-03/28/19	O	71	1	< 0.001	< .003				
Ba (TRC) (mg/L)	0.098	05/24/11-03/28/19	O	71	71	0.07	0.128	0.094	0.095	0.011	0.324
Be (TRC) (mg/L)	< 0.0008	05/24/11-03/28/19	O	71	0	< 0.0008	< .001				
Cd (TRC) (mg/L)	< 0	05/24/11-03/28/19	O	71	3	< 0	< .00008				
Cr (TRC) (mg/L)	< 0.01	05/24/11-03/28/19	O	71	1	< 0	< .01				
Co (TRC) (mg/L)	< 0.01	05/24/11-03/28/19	O	71	0	< 0.01	< .01				
Cu (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	5	< 0.001	0.004				
Fe (TRC) (mg/L)	0.12	05/24/11-03/28/19	O	71	71	0.09	2.49	0.2	0.15	0.34	0.24
Pb (TRC) (mg/L)	< 0.0003	05/24/11-03/28/19	O	71	14	< 0.0003	0.0017				
Mn (TRC) (mg/L)	0.009	05/24/11-03/28/19	O	71	71	0.006	0.116	0.011	0.01	0.013	0.165
Hg (TRC) (ug/L)	< 0.005	05/24/11-03/28/19	O	71	11	< 0	< .005				
Mo (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	0	< 0.001	< .005				
Ni (TRC) (mg/L)	< 0.001	05/24/11-03/28/19	O	71	11	< 0.001	< .01				
Se (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	< .001				
Ag (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	< .0005				
Sr (TRC) (mg/L)	0.128	05/24/11-03/28/19	O	71	69	0.082	0.15	0.119	0.123	0.015	0.626
Tl (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	: 0 .0002				
U (TRC) (mg/L)	0.0004	05/24/11-03/28/19	O	71	10	< 0.0003	< .008				
Zn (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	20	< 0.002	0.014				

SAMPLE NO BBC-1902-103 LAB NO: z

STATION:SW-3

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Flow (Cubic Ft Sec)	0	05/24/11-10/23/18	OBS	25	25	0.0	4.9	0.2	0.1	0.9	0.2 L

SAMPLE NO BBC-1902-106 LAB NO: H19020363-005

STATION:USGS-SC1

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	11.07	03/24/14-03/28/19	O	61	61	7.12	16.55	11.15	11.16	1.6	0.05
pH Fld (s.u.)	6.67	03/24/14-03/28/19	O	60	60	6.67	8.67	7.97	8.16	0.43	3.02 *L
SC Fld (umhos/cm)	263	03/24/14-03/28/19	O	61	61	137.0	408.0	325.2	344	50.2	1.2
Water Temp (Deg C)	0.01	03/24/14-03/28/19	O	61	61	-0.98	13.1	0.33	2.8	4.18	0.08

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

phTemp (Deg C)	15.8	02/22/19	O	1	1	15.8	15.8	15.8	15.8	0	0.0	H
pH (s.u.)	8.2	02/22/19	O	1	1	8.2	8.2	8.2	8.2	0	0.0	H
TDS (mg/L)	195	03/24/14-03/28/19	O	59	59	134.0	230.0	188.8	195	18.8	0.3	
TSS (mg/L)	< 4	03/24/14-03/28/19	O	59	16	< 4	38.0					
Tot Alk (mg/L)	190	03/24/14-03/28/19	O	59	59	120.0	220.0	176.3	180	20.6	0.7	
Ca (mg/L)	56	03/24/14-03/28/19	O	59	59	35.0	61.0	50.6	52	5.7	1.0	
Chloride (mg/L)	1	03/24/14-03/28/19	O	59	59	1.0	5.0	1.5	1.5	0.9	0.5	L
F (mg/L)	< 0.1	03/24/14-03/28/19	O	59	1	< 0.1	< 0.1					
Tot Hard (mg/L)	199	03/24/14-03/28/19	O	59	58	< 7	214.0	168.3	185	29	1.1	
Mg (mg/L)	14	03/24/14-03/28/19	O	59	59	8.0	15.0	12.6	13	1.5	0.9	
K (mg/L)	1	03/24/14-03/28/19	O	59	59	1.0	1.0	1.0	1	0	0.0	H
Na (mg/L)	2	03/24/14-03/28/19	O	59	59	2.0	3.0	2.1	2	0.3	0.2	L
SO4 (mg/L)	8	03/24/14-03/28/19	O	59	59	3.0	8.0	5.7	6	1.4	1.6	H
Nitrate + (mg/L)	0.11	03/24/14-03/28/19	O	59	41	< 0.01	0.13	0.03	0.03	0.04	2.0	
P (mg/L)	0.011	05/16/14-03/28/19	O	56	41	0.003	0.05	0.007	0.007	0.008	0.484	
Total Pers (mg/L)	0.16	04/29/15-03/28/19	O	45	35	< 0	1.1	0.08	0.09	0.16	0.48	
Al (DIS) (mg/L)	< 0.009	03/24/14-03/28/19	O	59	17	< 0.009	0.189					
Sb (TRC) (mg/L)	< 0.0005	03/24/14-03/28/19	O	59	0	< 0.0005	: 0.0005					
As (TRC) (mg/L)	< 0.001	03/24/14-03/28/19	O	59	1	< 0.001	< 0.001					
Ba (TRC) (mg/L)	0.065	03/24/14-03/28/19	O	59	59	0.06	0.088	0.069	0.068	0.005	0.795	
Be (TRC) (mg/L)	< 0.0008	03/24/14-03/28/19	O	59	0	< 0.0008	: 0.0008					
Cd (TRC) (mg/L)	< 0	03/24/14-03/28/19	O	59	2	< 0	0.0001					
Cr (TRC) (mg/L)	< 0.01	03/24/14-03/28/19	O	59	0	< 0.01	< .01					
Co (TRC) (mg/L)	< 0.01	03/24/14-03/28/19	O	59	0	< 0.01	< .01					
Cu (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	1	< 0.002	< 0.002					
Fe (TRC) (mg/L)	0.13	03/24/14-03/28/19	O	59	59	0.07	1.71	0.17	0.12	0.28	0.14	
Pb (TRC) (mg/L)	< 0.0003	03/24/14-03/28/19	O	59	7	< 0.0003	0.0011					
Mn (TRC) (mg/L)	0.008	03/24/14-03/28/19	O	59	59	0.005	0.079	0.009	0.008	0.01	0.127	
Hg (TRC) (ug/L)	< 0.005	03/24/14-03/28/19	O	59	2	< 0	< .005					
Mo (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	0	< 0.001	< .002					
Ni (TRC) (mg/L)	< 0.001	03/24/14-03/28/19	O	59	7	< 0.001	0.003					
Se (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	0	< 0.0002	< .0004					
Ag (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	1	< 0.0002	< .0004					
Sr (TRC) (mg/L)	0.144	03/24/14-03/28/19	O	59	59	0.121	0.16	0.142	0.144	0.009	0.206	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

TI (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	0	< 0.0002	: 0 .0002
U (TRC) (mg/L)	0.0004	03/24/14-03/28/19	O	59	6	0.0003	< .008
Zn (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	17	< 0.002	0.009

SAMPLE NO	BBC-1902-117	LAB NO:	z	STATION:SP-5
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Flow (Gallons Per Min)	0	08/28/18-10/23/18	OBS	2	2	0.6	0.9	0.8	0.8	0.5	1.5 L

SAMPLE NO	BBC-1902-120	LAB NO:	H19020364-006	STATION:DI-Blank
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
phTemp (Deg C)	16.8	N/A	FB	0							
phTemp (Deg C)	16	N/A	FB	0							
pH (s.u.)	5.7	N/A	FB	0							
pH (s.u.)	5.7	N/A	FB	0							
TDS (mg/L)	< 10	N/A	FB	0							
TDS (mg/L)	< 10	N/A	FB	0							
TSS (mg/L)	< 10	N/A	FB	0							
TSS (mg/L)	< 4	N/A	FB	0							
Tot Alk (mg/L)	< 4	N/A	FB	0							
Tot Alk (mg/L)	< 4	N/A	FB	0							
Ca (mg/L)	< 1	N/A	FB	0							
Ca (mg/L)	< 1	N/A	FB	0							
Chloride (mg/L)	< 1	N/A	FB	0							
Chloride (mg/L)	< 1	N/A	FB	0							
F (mg/L)	< 0.1	N/A	FB	0							
F (mg/L)	< 0.1	N/A	FB	0							
Tot Hard (mg/L)	< 1	N/A	FB	0							
Tot Hard (mg/L)	1	N/A	FB	0							
Mg (mg/L)	< 1	N/A	FB	0							
Mg (mg/L)	< 1	N/A	FB	0							
K (mg/L)	< 1	N/A	FB	0							
K (mg/L)	< 1	N/A	FB	0							
Na (mg/L)	< 1	N/A	FB	0							
Na (mg/L)	< 1	N/A	FB	0							

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

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## Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

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SO4 (mg/L)	< 1	N/A	FB	0
SO4 (mg/L)	< 1	N/A	FB	0
Nitrate + (mg/L)	< 0.01	N/A	FB	0
Nitrate + (mg/L)	< 0.01	N/A	FB	0
P (mg/L)	< 0.003	N/A	FB	0
Total Pers (mg/L)	< 0.04	N/A	FB	0
Al (DIS) (mg/L)	< 0.009	N/A	FB	0
Al (DIS) (mg/L)	< 0.009	N/A	FB	0
Sb (TRC) (mg/L)	< 0.0005	N/A	FB	0
Sb (DIS) (mg/L)	< 0.0005	N/A	FB	0
As (TRC) (mg/L)	< 0.001	N/A	FB	0
As (DIS) (mg/L)	< 0.001	N/A	FB	0
Ba (TRC) (mg/L)	< 0.003	N/A	FB	0
Ba (DIS) (mg/L)	< 0.003	N/A	FB	0
Be (DIS) (mg/L)	< 0.0008	N/A	FB	0
Be (TRC) (mg/L)	< 0.0008	N/A	FB	0
Cd (DIS) (mg/L)	< 0	N/A	FB	0
Cd (TRC) (mg/L)	< 0	N/A	FB	0
Cr (TRC) (mg/L)	< 0.01	N/A	FB	0
Cr (DIS) (mg/L)	< 0.01	N/A	FB	0
Co (DIS) (mg/L)	< 0.01	N/A	FB	0
Co (TRC) (mg/L)	< 0.01	N/A	FB	0
Cu (TRC) (mg/L)	< 0.002	N/A	FB	0
Cu (DIS) (mg/L)	< 0.002	N/A	FB	0
Fe (TRC) (mg/L)	< 0.02	N/A	FB	0
Fe (DIS) (mg/L)	0.1	N/A	FB	0
Pb (TRC) (mg/L)	< 0.0003	N/A	FB	0
Pb (DIS) (mg/L)	< 0.0003	N/A	FB	0
Mn (DIS) (mg/L)	< 0.005	N/A	FB	0
Mn (TRC) (mg/L)	< 0.005	N/A	FB	0
Hg (DIS) (ug/L)	< 0.005	N/A	FB	0
Hg (TRC) (ug/L)	< 0.005	N/A	FB	0
Mo (DIS) (mg/L)	< 0.002	N/A	FB	0
Mo (TRC) (mg/L)	< 0.002	N/A	FB	0

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Ni (TRC) (mg/L)	< 0.001	N/A	FB	0
Ni (DIS) (mg/L)	< 0.001	N/A	FB	0
Se (DIS) (mg/L)	< 0.0002	N/A	FB	0
Se (TRC) (mg/L)	< 0.0002	N/A	FB	0
Ag (TRC) (mg/L)	< 0.0002	N/A	FB	0
Ag (DIS) (mg/L)	< 0.0002	N/A	FB	0
Sr (DIS) (mg/L)	0.0003	N/A	FB	0
Sr (TRC) (mg/L)	< 0.0002	N/A	FB	0
Tl (TRC) (mg/L)	< 0.0002	N/A	FB	0
Tl (DIS) (mg/L)	< 0.0002	N/A	FB	0
U (DIS) (mg/L)	< 0.0002	N/A	FB	0
U (TRC) (mg/L)	< 0.0002	N/A	FB	0
Zn (DIS) (mg/L)	< 0.002	N/A	FB	0
Zn (TRC) (mg/L)	< 0.002	N/A	FB	0

SAMPLE NO	BBC-1902-104	LAB NO:	H19020363-003	STATION:SW-14
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	8.24	04/13/16-03/27/19	O	32	32	8.24	15.01	10.74	10.43	1.63	1.53	L
pH Fld (s.u.)	6.85	04/13/16-03/27/19	O	31	31	6.07	8.48	7.91	8.05	0.46	2.3	
SC Fld (umhos/cm)	364	04/13/16-03/27/19	O	32	32	263.0	439.0	376.8	396	49.8	0.3	
Water Temp (Deg C)	0.04	04/13/16-03/27/19	O	32	32	-0.91	14.7	2.06	5	4.63	0.44	
pHTemp (Deg C)	15.4	02/22/19	O	1	1	15.4	15.4	15.4	15.4	0	0.0	H
pH (s.u.)	7.8	02/22/19	O	1	1	7.8	7.8	7.8	7.8	0	0.0	H
TDS (mg/L)	229	04/13/16-03/27/19	O	32	32	157.0	244.0	221.1	226.5	20.6	0.4	
TSS (mg/L)	< 4	04/13/16-03/27/19	O	32	4	< 4	15.0					
Tot Alk (mg/L)	220	04/13/16-03/27/19	O	32	32	130.0	220.0	202.7	210	24.3	0.7	H
Ca (mg/L)	60	04/13/16-03/27/19	O	32	32	34.0	61.0	52.8	54.5	6.5	1.1	
Chloride (mg/L)	2	04/13/16-03/27/19	O	32	32	1.0	4.0	1.9	2	0.5	0.1	
F (mg/L)	0.2	04/13/16-03/27/19	O	32	31	< 0.1	0.2	0.2	0.2	0	0.0	H
Tot Hard (mg/L)	232	04/13/16-03/27/19	O	32	32	134.0	239.0	208.7	214.5	24.9	0.9	
Mg (mg/L)	20	04/13/16-03/27/19	O	32	32	12.0	23.0	18.7	19	2.5	0.5	
K (mg/L)	1	04/13/16-03/27/19	O	32	31	1.0	4.0	1.1	1	0.7	0.1	L
Na (mg/L)	3	04/13/16-03/27/19	O	32	32	1.0	3.0	2.5	3	0.6	0.9	H
SO4 (mg/L)	9	04/13/16-03/27/19	O	32	32	6.5	19.0	9.1	8.9	2.9	0.0	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Nitrate + (mg/L)	0.19	04/13/16-03/27/19	O	32	31	0.01	0.27	0.07	0.09	0.08	1.54
P (mg/L)	0.01	04/13/16-03/27/19	O	32	27	< 0	0.18	0.01	0.01	0.03	0.07
Total Pers (mg/L)	0.29	04/13/16-03/27/19	O	29	28	< 0	1.25	0.18	0.21	0.24	0.44
Al (DIS) (mg/L)	< 0.009	04/13/16-03/27/19	O	32	3	< 0.009	0.047				
Sb (TRC) (mg/L)	< 0.0005	04/13/16-03/27/19	O	32	0	< 0.0005	: 0 .0005				
As (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	O	32	0	< 0.001	< 0 .001				
Ba (TRC) (mg/L)	0.122	04/13/16-03/27/19	O	32	32	0.077	0.13	0.111	0.116	0.014	0.807
Be (TRC) (mg/L)	< 0.0008	04/13/16-03/27/19	O	32	0	< 0.0008	: 0 .0008				
Cd (TRC) (mg/L)	< 0	04/13/16-03/27/19	O	32	2	< 0	: .00003				
Cr (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	O	32	0	< 0.01	< 0 .01				
Co (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	O	32	0	< 0.01	< 0 .01				
Cu (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	0	< 0.002	< 0 .002				
Fe (TRC) (mg/L)	0.04	04/13/16-03/27/19	O	32	29	0.02	0.43	0.06	0.06	0.08	0.19
Pb (TRC) (mg/L)	< 0.0003	04/13/16-03/27/19	O	32	1	< 0.0003	0.0005				
Mn (TRC) (mg/L)	0.009	04/13/16-03/27/19	O	32	6	< 0.005	0.009				
Hg (TRC) (ug/L)	< 0.005	04/13/16-03/27/19	O	32	1	< 0	0.018				
Mo (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	0	< 0.002	< 0 .002				
Ni (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	O	32	1	< 0.001	< .002				
Se (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	1	< 0.0002	< .0004				
Ag (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	0	< 0.0002	: 0 .0002				
Sr (TRC) (mg/L)	0.125	04/13/16-03/27/19	O	32	32	0.075	0.136	0.118	0.124	0.016	0.442
Tl (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	0	< 0.0002	: 0 .0002				
U (TRC) (mg/L)	0.0006	04/13/16-03/27/19	O	32	4	0.0003	< .008				
Zn (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	5	< 0.002	0.006				

SAMPLE NO BBC-1902-102		LAB NO: z		STATION:SW-17								
02/22/19		COMPARISON PERIOD OF DATA		QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
PARAMETER	RESULT	PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Cubic Ft Sec)	0	01/17/18-10/23/18	OBS	8	8	0.0	1.8	0.0	0.2	0.5	0.1	L

SAMPLE NO BBC-1902-108		LAB NO: z		STATION:SW-18								
02/22/19		COMPARISON PERIOD OF DATA		QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
PARAMETER	RESULT	PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Cubic Ft Sec)	0	N/A	OBS	0								

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SAMPLE NO BBC-1902-109		LAB NO: H19020364-001		STATION:SP-11								
02/22/19		COMPARISON PERIOD OF DATA		QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
PARAMETER	RESULT											
DO (mg/L)	6.09	04/18/18-02/22/19		O	10	10	6.09	8.36	7.2	7.12	0.69	1.61 L
pH Fld (s.u.)	7.59	04/18/18-02/22/19		O	10	10	6.28	7.98	7.42	7.65	0.56	0.3
SC Fld (umhos/cm)	183	04/18/18-02/22/19		O	10	10	171.0	195.0	184.6	185	8.4	0.2
Water Temp (Deg C)	6.2	04/18/18-02/22/19		O	10	10	5.6	7.4	6.3	6.3	0.5	0.3
phTemp (Deg C)	16.2	02/22/19		O	1	1	16.2	16.2	16.2	16.2	0	0.0 H
pH (s.u.)	7.3	02/22/19		O	1	1	7.3	7.3	7.3	7.3	0	0.0 H
TDS (mg/L)	108	04/18/18-02/22/19		O	10	10	99.0	133.0	115.9	115.5	11.2	0.7
TSS (mg/L)	10	04/18/18-02/22/19		O	10	1	10.0	10.0				
Tot Alk (mg/L)	93	04/18/18-02/22/19		O	10	10	82.0	95.0	91.3	92.5	3.8	0.4
Ca (mg/L)	23	04/18/18-02/22/19		O	10	10	21.0	24.0	22.8	23	0.9	0.2
Chloride (mg/L)	< 1	04/18/18-02/22/19		O	10	0	< 1	< 1				
F (mg/L)	0.2	04/18/18-02/22/19		O	10	10	0.1	0.2	0.2	0.2	0	0.0 H
Tot Hard (mg/L)	94	04/18/18-02/22/19		O	10	10	81.0	95.0	90.9	92.5	4.2	0.7
Mg (mg/L)	9	04/18/18-02/22/19		O	10	10	7.0	9.0	8.2	8	0.6	1.4 H
K (mg/L)	1	04/18/18-02/22/19		O	10	10	1.0	2.0	1.1	1	0.3	0.2 L
Na (mg/L)	3	04/18/18-02/22/19		O	10	10	3.0	4.0	3.6	4	0.5	1.1 L
SO4 (mg/L)	7	04/18/18-02/22/19		O	10	10	5.0	8.0	6.7	7	0.9	0.3
Nitrate + (mg/L)	0.22	04/18/18-02/22/19		O	10	10	0.22	0.31	0.25	0.25	0.03	0.96 L
Al (DIS) (mg/L)	0.022	04/18/18-02/22/19		O	10	10	0.017	0.479	0.04	0.022	0.147	0.123
Sb (DIS) (mg/L)	< 0.0005	04/18/18-02/22/19		O	10	0	< 0.0005	: 0.0005				
As (DIS) (mg/L)	0.005	04/18/18-02/22/19		O	10	10	0.005	0.008	0.006	0.005	0.001	0.697 L
Ba (DIS) (mg/L)	0.276	04/18/18-02/22/19		O	10	10	0.265	0.313	0.285	0.284	0.012	0.714
Be (DIS) (mg/L)	< 0.0008	04/18/18-02/22/19		O	10	0	< 0.0008	: 0.0008				
Cd (DIS) (mg/L)	< 0	04/18/18-02/22/19		O	10	0	< 0	: .00003				
Cr (DIS) (mg/L)	< 0.01	04/18/18-02/22/19		O	10	0	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	04/18/18-02/22/19		O	10	0	< 0.01	< 0.01				
Cu (DIS) (mg/L)	< 0.002	04/18/18-02/22/19		O	10	1	< 0.002	0.003				
Fe (DIS) (mg/L)	< 0.02	04/18/18-02/22/19		O	10	4	< 0.02	0.17				
Pb (DIS) (mg/L)	< 0.0003	04/18/18-02/22/19		O	10	0	< 0.0003	: 0.0003				
Mn (DIS) (mg/L)	< 0.005	04/18/18-02/22/19		O	10	0	< 0.005	< 0.005				
Hg (DIS) (ug/L)	< 0.005	04/18/18-02/22/19		O	10	0	< 0	< .005				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

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# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Mo (DIS) (mg/L)	< 0.002	04/18/18-02/22/19	O	10	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	04/18/18-02/22/19	O	10	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	< 0.0002	04/18/18-02/22/19	O	10	0	< 0.0002	: 0.0002					
Ag (DIS) (mg/L)	< 0.0002	04/18/18-02/22/19	O	10	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.1	04/18/18-02/22/19	O	10	10	0.1	0.1	0.1	0.1	0	0.0	
Tl (DIS) (mg/L)	< 0.0002	04/18/18-02/22/19	O	10	0	< 0.0002	: 0.0002					
U (DIS) (mg/L)	0.0003	04/18/18-02/22/19	O	10	3	0.0003	< .008					
Zn (DIS) (mg/L)	0.002	04/18/18-02/22/19	O	10	3	0.002	0.004					

SAMPLE NO BBC-1902-119 LAB NO: H19020364-005

STATION:SP-12

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
02/22/19												
pHTemp (Deg C)	16.4	02/22/19	O	1	1	16.4	16.4	16.4	16.4	0	0.0	H
pH (s.u.)	7.6	02/22/19	O	1	1	7.6	7.6	7.6	7.6	0	0.0	H
TDS (mg/L)	234	04/18/18-03/27/19	O	11	11	234.0	262.0	247.0	248	9.3	1.4	L
TSS (mg/L)	78	04/18/18-03/27/19	O	11	6	< 10	187.0	23.5	22	53.2	1.0	
Tot Alk (mg/L)	210	04/18/18-03/27/19	O	11	11	160.0	220.0	200.2	210	16.4	0.6	
Ca (mg/L)	55	04/18/18-03/27/19	O	11	11	42.0	61.0	54.2	55	4.8	0.2	
Chloride (mg/L)	7	04/18/18-03/27/19	O	11	11	5.0	15.0	7.8	8	2.7	0.3	
F (mg/L)	0.2	04/18/18-03/27/19	O	11	11	0.1	0.2	0.2	0.2	0	0.0	H
Tot Hard (mg/L)	238	04/18/18-03/27/19	O	11	11	180.0	258.0	231.7	238	20.2	0.3	
Mg (mg/L)	24	04/18/18-03/27/19	O	11	11	18.0	26.0	23.4	24	2.2	0.3	
K (mg/L)	1	04/18/18-03/27/19	O	11	11	1.0	13.0	1.4	1	3.6	0.1	L
Na (mg/L)	2	04/18/18-03/27/19	O	11	11	2.0	3.0	2.2	2	0.5	0.5	L
SO4 (mg/L)	25	04/18/18-03/27/19	O	11	11	21.0	28.0	24.1	24	2.5	0.4	
Nitrate + (mg/L)	0.29	04/18/18-03/27/19	O	11	11	0.15	0.69	0.37	0.33	0.16	0.47	
Al (DIS) (mg/L)	< 0.009	04/18/18-03/27/19	O	11	1	< 0.009	0.014					
Sb (DIS) (mg/L)	< 0.0005	04/18/18-03/27/19	O	11	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	< 0.001	04/18/18-03/27/19	O	11	0	< 0.001	< 0.001					
Ba (DIS) (mg/L)	0.175	04/18/18-03/27/19	O	11	11	0.128	0.192	0.174	0.176	0.018	0.061	
Be (DIS) (mg/L)	< 0.0008	04/18/18-03/27/19	O	11	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	04/18/18-03/27/19	O	11	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	04/18/18-03/27/19	O	11	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	04/18/18-03/27/19	O	11	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	04/18/18-03/27/19	O	11	1	0.002	0.002					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Fe (DIS) (mg/L)	< 0.02	04/18/18-03/27/19	O	11	4	< 0.02	0.06				
Pb (DIS) (mg/L)	< 0.0003	04/18/18-03/27/19	O	11	0	< 0.0003	: 0.0003				
Mn (DIS) (mg/L)	< 0.005	04/18/18-03/27/19	O	11	0	< 0.005	< 0.005				
Hg (DIS) (ug/L)	< 0.005	04/18/18-03/27/19	O	11	1	< 0	0.018				
Mo (DIS) (mg/L)	< 0.002	04/18/18-03/27/19	O	11	0	< 0.002	< 0.002				
Ni (DIS) (mg/L)	< 0.001	04/18/18-03/27/19	O	11	0	< 0.001	< 0.001				
Se (DIS) (mg/L)	0.0003	04/18/18-03/27/19	O	11	9	< 0.0002	0.0003	0.0002	0.0002	0	0.0 H
Ag (DIS) (mg/L)	< 0.0002	04/18/18-03/27/19	O	11	0	< 0.0002	: 0.0002				
Sr (DIS) (mg/L)	0.107	04/18/18-03/27/19	O	11	11	0.081	0.115	0.106	0.107	0.01	0.099
Tl (DIS) (mg/L)	< 0.0002	04/18/18-03/27/19	O	11	0	< 0.0002	: 0.0002				
U (DIS) (mg/L)	0.0006	04/18/18-03/27/19	O	11	5	0.0003	< .008				
Zn (DIS) (mg/L)	< 0.002	04/18/18-03/27/19	O	11	4	< 0.002	0.005				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



**APPENDIX 2**  
**DATABASE**

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 1:59:12 PM

Sample Type:	Station (Site)	DI-Blank	DI-Blank	DS-1	DS-2	DS-3	DS-4
Water	Sample Date	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019
	Sample Time	12:55:00 PM	4:52:00 PM	3:40:00 PM			
	Lab	Energy Labs	Energy Labs	Hydro	Hydro	Hydro	Hydro
	Lab Number	H19020363-006	H19020364-006	z	z	z	z
	Sample Number	BBC-1902-107	BBC-1902-120	BBC-1902-118	BBC-1902-121	BBC-1902-114	BBC-1902-115
	Remarks						

## Field Parameters Multiple Units

Dissolved Oxygen				
Field pH				
Field Specific Conductivity				
Flow				
Flow			NF-DRY	NM
Water Temperature				NF-DRY
				NF-ICE

## Physical Parameters Multiple Units

pH Measurement Temp	16	16.8
pH	5.7 H	5.7 H
Total Dissolved Solids	<10	<10
Total Suspended Solids	<4	<10

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3	<4	<4
Calcium (DIS)	<1	<1
Chloride	<1	<1
Fluoride	<0.1	<0.1
Hardness as CaCO3	<1	1
Magnesium (DIS)	<1	<1
Potassium (DIS)	<1	<1
Sodium (DIS)	<1	<1
Sulfate	<1	<1

## Nutrients mg/L

Nitrate + Nitrite as N	<0.01	<0.01
Phosphorus (TOT)	<0.003	
Total Persulfate Nitrogen	<0.04	

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)	<0.009	<0.009
Antimony (DIS)		<0.0005
Antimony (TRC)	<0.0005	
Arsenic (DIS)		<0.001
Arsenic (TRC)	<0.001	
Barium (DIS)		<0.003
Barium (TRC)	<0.003	
Beryllium (DIS)		<0.0008
Beryllium (TRC)	<0.0008	
Cadmium (DIS)		<0.00003
Cadmium (TRC)	<0.00003	
Chromium (DIS)		<0.01
Chromium (TRC)	<0.01	

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 1:59:12 PM

Sample Type:	Station (Site)	DI-Blank	DI-Blank	DS-1	DS-2	DS-3	DS-4
Water	Sample Date	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019
	Sample Time	12:55:00 PM	4:52:00 PM	3:40:00 PM			
	Lab	Energy Labs	Energy Labs	Hydro	Hydro	Hydro	Hydro
	Lab Number	H19020363-006	H19020364-006	z	z	z	z
	Sample Number	BBC-1902-107	BBC-1902-120	BBC-1902-118	BBC-1902-121	BBC-1902-114	BBC-1902-115
	Remarks						

## Metals - Trace Constituents Multiple Units

Cobalt (DIS)	<0.01
Cobalt (TRC)	<0.01
Copper (DIS)	<0.002
Copper (TRC)	<0.002
Iron (DIS)	0.1
Iron (TRC)	<0.02
Lead (DIS)	<0.0003
Lead (TRC)	<0.0003
Manganese (DIS)	<0.005
Manganese (TRC)	<0.005
Mercury (DIS)	<0.005
Mercury (TRC)	<0.005
Molybdenum (DIS)	<0.002
Molybdenum (TRC)	<0.002
Nickel (DIS)	<0.001
Nickel (TRC)	<0.001
Selenium (DIS)	<0.0002
Selenium (TRC)	<0.0002
Silver (DIS)	<0.0002
Silver (TRC)	<0.0002
Strontium (DIS)	0.0003
Strontium (TRC)	<0.0002
Thallium (DIS)	<0.0002
Thallium (TRC)	<0.0002
Uranium (DIS)	<0.0002
Uranium (TRC)	<0.0002
Zinc (DIS)	<0.002
Zinc (TRC)	<0.002

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 1:59:12 PM

Sample Type:	Station (Site)	SP-10	SP-11	SP-12	SP-3	SP-4	SP-4
Water	Sample Date	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019
	Sample Time		1:40:00 PM	4:25:00 PM		2:50:00 PM	3:05:00 PM
	Lab	Hydro	Energy Labs	Energy Labs	Hydro	Energy Labs	Energy Labs
	Lab Number	z H19020364-001	H19020364-001		z H19020364-003	H19020364-004	
	Sample Number	BBC-1902-116	BBC-1902-109	BBC-1902-119	BBC-1902-122	BBC-1902-111	BBC-1902-112
	Remarks						DUPLICATE

## Field Parameters Multiple Units

Dissolved Oxygen		6.09		9.92
Field pH		7.59 A		7.86 A
Field Specific Conductivity		183		428
Flow				
Flow	NM-ICE	NM	NM-ICE	NF-ICE
Water Temperature		6.2		3.6

## Physical Parameters Multiple Units

pH Measurement Temp		16.2	16.4	16	16.2
pH		7.3 H	7.6 H	7.8 H	8.0 H
Total Dissolved Solids		108	234	234	237
Total Suspended Solids		10	78	11	20

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3		93	210	200	200
Calcium (DIS)		23	55	53	53
Chloride		<1	7	<1	<1
Fluoride		0.2	0.2	0.2	0.2
Hardness as CaCO3		94	238	246	245
Magnesium (DIS)		9	24	28	27
Potassium (DIS)		1	1	2	2
Sodium (DIS)		3	2	2	2
Sulfate		7	25	38	38

## Nutrients mg/L

Nitrate + Nitrite as N		0.22	0.29	0.25	0.24
Phosphorus (TOT)					
Total Persulfate Nitrogen					

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)		0.022	<0.009	<0.009	<0.009
Antimony (DIS)		<0.0005	<0.0005	<0.0005	<0.0005
Antimony (TRC)					
Arsenic (DIS)		0.005	<0.001	<0.001	<0.001
Arsenic (TRC)					
Barium (DIS)		0.276	0.175	0.114	0.114
Barium (TRC)					
Beryllium (DIS)		<0.0008	<0.0008	<0.0008	<0.0008
Beryllium (TRC)					
Cadmium (DIS)		<0.00003	<0.00003	<0.00003	<0.00003
Cadmium (TRC)					
Chromium (DIS)		<0.01	<0.01	<0.01	<0.01
Chromium (TRC)					

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 1:59:12 PM

Sample Type:	Station (Site)	SP-10	SP-11	SP-12	SP-3	SP-4	SP-4
Water	Sample Date	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019
	Sample Time		1:40:00 PM	4:25:00 PM		2:50:00 PM	3:05:00 PM
	Lab	Hydro	Energy Labs	Energy Labs	Hydro	Energy Labs	Energy Labs
	Lab Number	z H19020364-001	H19020364-001	H19020364-005	z H19020364-003	H19020364-003	H19020364-004
	Sample Number	BBC-1902-116	BBC-1902-109	BBC-1902-119	BBC-1902-122	BBC-1902-111	BBC-1902-112
	Remarks						DUPLICATE

Metals - Trace Constituents		Multiple Units			
	Cobalt (DIS)	<0.01	<0.01	<0.01	<0.01
	Cobalt (TRC)				
	Copper (DIS)	<0.002	<0.002	<0.002	<0.002
	Copper (TRC)				
	Iron (DIS)	<0.02	<0.02	<0.02	<0.02
	Iron (TRC)				
	Lead (DIS)	<0.0003	<0.0003	<0.0003	<0.0003
	Lead (TRC)				
	Manganese (DIS)	<0.005	<0.005	<0.005	<0.005
	Manganese (TRC)				
	Mercury (DIS)	<0.005	<0.005	<0.005	<0.005
	Mercury (TRC)				
	Molybdenum (DIS)	<0.002	<0.002	<0.002	<0.002
	Molybdenum (TRC)				
	Nickel (DIS)	<0.001	<0.001	<0.001	<0.001
	Nickel (TRC)				
	Selenium (DIS)	<0.0002	0.0003	0.0004	0.0004
	Selenium (TRC)				
	Silver (DIS)	<0.0002	<0.0002	<0.0002	<0.0002
	Silver (TRC)				
	Strontium (DIS)	0.1	0.107	0.0753	0.0749
	Strontium (TRC)				
	Thallium (DIS)	<0.0002	<0.0002	0.0003	0.0003
	Thallium (TRC)				
	Uranium (DIS)	0.0003	0.0006	0.0005	0.0005
	Uranium (TRC)				
	Zinc (DIS)	0.002	<0.002	<0.002	<0.002
	Zinc (TRC)				

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 1:59:12 PM

Sample Type:	Station (Site)	SP-5	SP-6	SP-7	SW-1	SW-1	SW-14
Water	Sample Date	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019
	Sample Time	3:20:00 PM		2:20:00 PM	10:40:00 AM	10:55:00 AM	12:00:00 PM
	Lab	Hydro	Hydro	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	z	z	H19020364-002	H19020363-001	H19020363-002	H19020363-003
	Sample Number	BBC-1902-117	BBC-1902-113	BBC-1902-110	BBC-1902-100	BBC-1902-101	BBC-1902-104
	Remarks					DUPLICATE	

## Field Parameters Multiple Units

Dissolved Oxygen			4.59	4.58		8.24
Field pH			7.37 A	6.13 A		6.85 A
Field Specific Conductivity			330	333		364
Flow				NM		NM-ICE
Flow	NF-DRY	NM-ICE		NM		
Water Temperature			6.14	0.04		0.04

## Physical Parameters Multiple Units

pH Measurement Temp			16.1	16.3	15.7	15.4
pH			7.4 H	8.1 H	8.1 H	7.8 H
Total Dissolved Solids			176	189 D	183 D	229 D
Total Suspended Solids			<10	<4	<4	<4

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3			170	170	170	220
Calcium (DIS)			42	51	50	60
Chloride			2	1	1	2
Fluoride			0.3	0.1	0.1	0.2
Hardness as CaCO3			166	183	180	232
Magnesium (DIS)			15	14	13	20
Potassium (DIS)			3	1	1	1
Sodium (DIS)			5	2	2	3
Sulfate			11	7	7	9

## Nutrients mg/L

Nitrate + Nitrite as N			0.31	0.12	0.12	0.19
Phosphorus (TOT)				0.016	0.016	0.01
Total Persulfate Nitrogen				0.21	0.2	0.29

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)			<0.009	<0.009	<0.009	<0.009
Antimony (DIS)			<0.0005			
Antimony (TRC)				<0.0005	<0.0005	<0.0005
Arsenic (DIS)			0.004			
Arsenic (TRC)				<0.001	<0.001	<0.001
Barium (DIS)			0.116			
Barium (TRC)				0.107	0.107	0.122
Beryllium (DIS)			<0.0008			
Beryllium (TRC)				<0.0008	<0.0008	<0.0008
Cadmium (DIS)			<0.00003			
Cadmium (TRC)				<0.00003	<0.00003	<0.00003
Chromium (DIS)			<0.01			
Chromium (TRC)				<0.01	<0.01	<0.01

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 1:59:12 PM

Sample Type:	Station (Site)	SP-5	SP-6	SP-7	SW-1	SW-1	SW-14
Water	Sample Date	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019
	Sample Time	3:20:00 PM		2:20:00 PM	10:40:00 AM	10:55:00 AM	12:00:00 PM
	Lab	Hydro	Hydro	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	z	z	H19020364-002	H19020363-001	H19020363-002	H19020363-003
	Sample Number	BBC-1902-117	BBC-1902-113	BBC-1902-110	BBC-1902-100	BBC-1902-101	BBC-1902-104
	Remarks					DUPLICATE	

## Metals - Trace Constituents Multiple Units

Cobalt (DIS)	<0.01		
Cobalt (TRC)		<0.01	<0.01
Copper (DIS)	<0.002		
Copper (TRC)		<0.002	<0.002
Iron (DIS)	<0.02		
Iron (TRC)		0.13	0.13
Lead (DIS)	<0.0003		
Lead (TRC)		<0.0003	<0.0003
Manganese (DIS)	<0.005		
Manganese (TRC)		0.014	0.014
Mercury (DIS)	<0.005		
Mercury (TRC)		<0.005	<0.005
Molybdenum (DIS)	<0.002		
Molybdenum (TRC)		<0.002	<0.002
Nickel (DIS)	<0.001		
Nickel (TRC)		<0.001	<0.001
Selenium (DIS)	0.0004		
Selenium (TRC)		<0.0002	<0.0002
Silver (DIS)	<0.0002		
Silver (TRC)		<0.0002	<0.0002
Strontium (DIS)	0.168		
Strontium (TRC)		0.128 D	0.128 D
Thallium (DIS)	0.001		
Thallium (TRC)		<0.0002	<0.0002
Uranium (DIS)	0.001		
Uranium (TRC)		0.0004	0.0004
Zinc (DIS)	<0.002		
Zinc (TRC)		<0.002	<0.002

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 1:59:12 PM

Sample Type:	Station (Site)	SW-17	SW-18	SW-2	SW-3	USGS-SC1
Water	Sample Date	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019
	Sample Time	11:15:00 AM	1:15:00 PM	12:30:00 PM	11:40:00 AM	12:40:00 PM
	Lab	Hydro	Hydro	Energy Labs	Hydro	Energy Labs
	Lab Number	z	z	H19020363-004	z	H19020363-005
	Sample Number	BBC-1902-102	BBC-1902-108	BBC-1902-105	BBC-1902-103	BBC-1902-106
	Remarks					

Field Parameters		Multiple Units				
Dissolved Oxygen				11.09		11.07
Field pH				6.38 A		6.67 A
Field Specific Conductivity				188		263
Flow	NF-DRY	NF-DRY	NM-ICE	NF-DRY	NM-ICE	
Water Temperature				0		0.01

Physical Parameters		Multiple Units				
pH Measurement Temp				15.4		15.8
pH				8.1 H		8.2 H
Total Dissolved Solids				174 D		195 D
Total Suspended Solids				<4		<4

Major Constituents - Commons Ions		mg/L				
Alkalinity as CaCO3				170		190
Calcium (DIS)				50		56
Chloride				1		1
Fluoride				<0.1		<0.1
Hardness as CaCO3				176		199
Magnesium (DIS)				13		14
Potassium (DIS)				1		1
Sodium (DIS)				2		2
Sulfate				7		8

Nutrients		mg/L				
Nitrate + Nitrite as N				0.1		0.11
Phosphorus (TOT)				0.012		0.011
Total Persulfate Nitrogen				0.15		0.16

Metals - Trace Constituents		Multiple Units				
Aluminum (DIS)				<0.009		<0.009
Antimony (DIS)						
Antimony (TRC)				<0.0005		<0.0005
Arsenic (DIS)						
Arsenic (TRC)				<0.001		<0.001
Barium (DIS)						
Barium (TRC)				0.098		0.065
Beryllium (DIS)						
Beryllium (TRC)				<0.0008		<0.0008
Cadmium (DIS)						
Cadmium (TRC)				<0.00003		<0.00003
Chromium (DIS)						
Chromium (TRC)				<0.01		<0.01



# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 1:59:12 PM

Sample Type:	Station (Site)	SW-17	SW-18	SW-2	SW-3	USGS-SC1
Water	Sample Date	2/22/2019	2/22/2019	2/22/2019	2/22/2019	2/22/2019
	Sample Time	11:15:00 AM	1:15:00 PM	12:30:00 PM	11:40:00 AM	12:40:00 PM
	Lab	Hydro	Hydro	Energy Labs	Hydro	Energy Labs
	Lab Number	z	z	H19020363-004	z	H19020363-005
	Sample Number	BBC-1902-102	BBC-1902-108	BBC-1902-105	BBC-1902-103	BBC-1902-106
	Remarks					

## Metals - Trace Constituents Multiple Units

Cobalt (DIS)		
Cobalt (TRC)	<0.01	<0.01
Copper (DIS)		
Copper (TRC)	<0.002	<0.002
Iron (DIS)		
Iron (TRC)	0.12	0.13
Lead (DIS)		
Lead (TRC)	<0.0003	<0.0003
Manganese (DIS)		
Manganese (TRC)	0.009	0.008
Mercury (DIS)		
Mercury (TRC)	<0.005	<0.005
Molybdenum (DIS)		
Molybdenum (TRC)	<0.002	<0.002
Nickel (DIS)		
Nickel (TRC)	<0.001	<0.001
Selenium (DIS)		
Selenium (TRC)	<0.0002	<0.0002
Silver (DIS)		
Silver (TRC)	<0.0002	<0.0002
Strontium (DIS)		
Strontium (TRC)	0.128 D	0.144 D
Thallium (DIS)		
Thallium (TRC)	<0.0002	<0.0002
Uranium (DIS)		
Uranium (TRC)	0.0004	0.0004
Zinc (DIS)		
Zinc (TRC)	<0.002	<0.002

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**QUALITY CONTROL / QUALITY ASSURANCE  
DATA VERIFICATION REPORT**

**BLACK BUTTE COPPER  
WATER RESOURCE MONITORING**

**MARCH 2019**

Prepared by  
**Hydrometrics, Inc.**  
3020 Bozeman Avenue  
Helena, MT 59601

MAY 2019

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## TABLE OF CONTENTS

<b>LIST OF APPENDICES .....</b>	<b>II</b>
<b>GLOSSARY OF TERMS.....</b>	<b>III</b>
<b>1. INTRODUCTION.....</b>	<b>4</b>
<b>2. DELIVERABLES.....</b>	<b>4</b>
<b>3. FIELD QUALITY CONTROL SAMPLES.....</b>	<b>4</b>
<b>4. LABORATORY PROCEDURES.....</b>	<b>4</b>
<b>5. INITIAL OR CONTINUING CALIBRATION VERIFICATION RESULTS.....</b>	<b>5</b>
<b>6. LABORATORY BLANKS.....</b>	<b>5</b>
<b>7. MATRIX SPIKE /MATRIX SPIKE DUPLICATES (MS/MSD).....</b>	<b>6</b>
<b>8. LABORATORY CONTROL SAMPLES.....</b>	<b>6</b>
<b>9. DATA QUALITY OBJECTIVES.....</b>	<b>7</b>
<b>REFERENCES.....</b>	<b>9</b>

## LIST OF APPENDICES

### APPENDIX 1: TABLES

- Table 1. Data Validation Codes and Definitions**
- Table 2. Summary of Flagged Data**
- Table 3. Statistical Summary**

### APPENDIX 2: DATABASE SUMMARY REPORT

## GLOSSARY OF TERMS

CCB .....	Continuing Calibration Blank
CCV .....	Continuing Calibration Verification
CLP .....	Contract Laboratory Program
CRDL.....	Contract Required Detection Limit
DI í í í í	Deionized Water
FAA .....	Flame Atomic Absorption
GFAA.....	Graphite Furnace Atomic Absorption
HGAA.....	Hydride Generation Atomic Absorption
ICB.....	Initial Calibration Blank
ICP .....	Inductively Coupled Plasma
ICV .....	Initial Calibration Verification
IDL.....	Instrument Detection Limit
LCS .....	Laboratory Control Sample
MSA.....	Method of Standard Additions
PB .....	Preparation Blank
PRDL .....	Project Required Detection Limit
QAPP .....	Quality Assurance Project Plan
QC.....	Quality Control
RPD.....	Relative Percent Difference
RSD.....	Relative Standard Deviation
SOW.....	Statement of Work
TDS.....	Total Dissolved Solids

## DATA VALIDATION REPORT

### 1. INTRODUCTION

This validation applies to 56 samples collected for the Black Butte Tintina surface water and groundwater monitoring program. All sampling occurred in March 2019. All samples were submitted to Energy Laboratories in Helena, Montana and were assigned Laboratory IDs: H19030475, H19030477, H19030548, H19030476 and H19030547. The total number of samples included: 36 groundwater and surface water samples including 3 field duplicates, and 4 field deionized (DI and Rinsate) blanks.

- Validation procedures used are generally consistent with:

(Check all that apply)

EPA CLP National Functional Guidelines for Inorganics Data Review

EPA CLP National Functional Guidelines for Organic Data Review

Montana Department of Environmental Quality, Data Validation Guidelines for Evaluating Analytical Data, Hydrometrics, September 2010

### 2. DELIVERABLES

- All laboratory document deliverables were present as specified in the CLP-Statement of Work and/or the project contract

Yes

No

- All documentation of field procedures was provided as required

Yes

No

### 3. FIELD QUALITY CONTROL SAMPLES

- Field blanks

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

DI, trip, rinsate, or any other field blanks have been carried out at the proper frequency

Yes

No

Reported results on the field blanks are less than the contract required detection limits (CRDL) or the project required detection limits (PRDL) if project detection limits have been specified

Yes

No ó see following table

Date	Parameter	Result (mg/L)	Reporting Limit (mg/L)	# Flags
3/27/19	Nickel (DIS)	0.002	<0.001	6

Flagging: U

- Field duplicates

Field duplicates have been collected at the proper frequency

Yes

No

Field duplicate relative percent differences (RPDs) were within the required control limits (25 percent or less for water matrix and 50 percent or less for soil matrix)

Yes

No

**4. LABORATORY PROCEDURES**

- Laboratory Case Narrative Notes any non conformance issues with the analytical data  
 Yes  
 No  
 NA

- Samples were received by the laboratory at the proper temperature  
 Yes  
 No

- Holding times met  
 Yes  
 No

- Consistency with project requirements  
 Yes  
 No

- Sample Conditions met at Check-in  
 Yes see following notes  
 No

**NOTES:** In the Energy Laboratory sample check in for H19030477, H19030548 and H19030547 sample delivery groups it was noted that specific sample bottles contained different times than noted on the chain of custody; the time from the COCs were used for each sample.

- Reporting units appropriate for the associated sample matrix and methods of analysis  
 Yes  
 No

- Project specified methods were used  
 Yes see following list of methods used  
 No

**NOTES:** The following methods were used during analyses: A2540D, A2540C, A2320B, E300.0, A4500-F C, A2340B, E353.2, A4500-N C, E365.1, E200.8, and E200.7.

- Detection Limits met project required detection limits (PRDL)  
 Yes see following notes  
 No

**NOTES:** It should be noted that total dissolved solids and strontium had a reporting limit increases due to sample matrix interference (D). TDS had a limit of 10 mg/l used not the requested 4 mg/l. Strontium had the 0.0003 mg/l reporting limit was used in place of the requested 0.0002 mg/l. In addition, a reporting limit of 0.01 mg/l was used for nitrate + nitrite as n as replacement of the 0.003 mg/l requested.

**5. INITIAL OR CONTINUING CALIBRATION VERIFICATION RESULTS**

- Initial or Continuing Calibration Verification samples were within acceptable limits  
 Yes  
 No

**6. LABORATORY BLANKS**

- **PREPARATION/METHOD BLANKS**

Preparation/Method blanks were prepared and analyzed at the required frequency

Yes

No

All analytes in the preparation blank were less than the CRDL (or PRDL if a project detection limit has been specified)

Yes

No

**7. MATRIX SPIKE /MATRIX SPIKE DUPLICATES (MS/MSD)**

- Matrix spike samples were analyzed at the proper frequency

Yes

No

- Matrix spike recoveries were within control limits

Yes

No ó see following table

QC Sample ID	Parameter	% REC	Lab Flag	Lab Advisory Limits (% REC)
H19030356-001CMS3	Selenium	36	S	70-130
H19030546-005DMS	Total Phosphorus	112	S	90-110

S ó Spike recovery outside of recovery limits

- Matrix spike RPDs were within control limits

Yes

No

- Matrix spike duplicate samples were analyzed at the proper frequency

Yes

No

- Matrix spike duplicate RPDs were within control limits

Yes

No

- Matrix spike duplicate recoveries were within the laboratory specified control limits.

Yes

No ó see following table

QC Sample ID	Parameter	% REC	Lab Flag	Lab Advisory Limits (% REC)
H19030356-001CMS3D	Selenium	38	S	70-130
H19030466-001AMSD	Nitrate + Nitrite as N	89	S	90-110
H19030546-005DMSD	Total Phosphorus	112	S	90-110

S ó Spike recovery outside of recovery limits

**8. LABORATORY CONTROL SAMPLES**

- LCS Samples

Laboratory Control Samples used the correct matrix and concentrations

- Yes
- No
- NA

Laboratory Control Samples were prepared and analyzed at the required frequency

- Yes
- No
- NA

All analytes in the laboratory control samples were less than the control limits specified

- Yes
- No

## 9. DATA QUALITY OBJECTIVES

- Project data quality objectives (DQOs) met

- Yes
- No

### Accuracy

Accuracy for this project is the degree of agreement between an analytical measurement and a reference accepted as a true value. The accuracy of a measurement system can be affected by errors introduced by field contamination, sample preservation, sample handling, sample preparation and analytical techniques. Analysis of MS/MSD samples, laboratory control spikes (LCS) or blank spikes, surrogate standards and method blanks are typically used to calculate the percent recovery for evaluating accuracy. Accuracy for this sampling event was 99 percent.

### Precision

Precision for this project is the degree of mutual agreement between individual measurements of the same property under similar conditions. Combined field and laboratory precision is evaluated by collecting and analyzing field duplicate and then calculating the variance between the samples, typically as a relative percent difference (RPD). Laboratory analytical precision is evaluated by analyzing matrix spike/matrix spike duplicate samples and using the results to calculate an RPD. The combined precision was 99 percent for this sampling event for both laboratory and field.

### Representativeness

Representativeness for this project is the degree to which sample data accurately and precisely represent the characteristics of a population, and variations in a parameter at a sampling point or an environmental condition that they are intended to represent. Typically representative data will be obtained through careful selection of sampling locations and analytical parameters; proper collection and handling of samples and through use and consistent application of established field and laboratory procedures. Evaluation of field and laboratory blank samples for presence of contaminants can be useful in evaluating representativeness of sample results. Both laboratory and field representativeness for this sampling event was 100 percent.

### Completeness

The target completeness for this project is the percent of the measurements valid (not rejected). Valid data are obtained when samples are collected and analyzed in accordance with quality



control procedures outlined in the SAP, and when none of the QC criteria that affect data usability are exceeded. Once data validation is complete the number of useable sample results is divided by the total number of sample results planned for the investigation to determine the percent completeness. Completeness for this sampling event was 100 percent.

#### Comparability

Comparability is the expression of the confidence with which one data set can be compared with another. Comparability of data is achieved by consistently following standard field and laboratory procedures and by using standard measurement units in reporting analytical data. This criterion was met.

## REFERENCES

- Montana Department of Environmental Quality, Data Validation Guidelines for Evaluating Analytical Data (Updated August 5, 2010)
- EPA, 2017a. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. Office of Superfund Remediation and Technology Innovation. January 2017.
- EPA, 2017b. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-540-R-2017-001. Office of Superfund Remediation and Technology Innovation. January 2017.
- Hem, J.D., 1992. Study and Interpretation of the Chemical Characteristics of Natural Water, 3rd edition. US Geological Survey Water Supply Paper 2254.

## **APPENDIX 1**

### **TABLES**

**TABLE 1.**

**DATA VALIDATION CODES AND DEFINITIONS**

<u>CODE</u>	<u>DEFINITION</u>
J	-The associated numerical value is an estimated quantity because quality control criteria were not met.
U	- Blank contamination. Indicates possible high bias and / or false positive. The associated value is an estimate.
R	- Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
A	- Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code.)

**Table 2. Summary of Flagged Data**

<b>StationName</b>	<b>Sample Date</b>	<b>Field Sample Id</b>	<b>Lab Name</b>	<b>Lab Sample Id</b>	<b>Parameter Name</b>	<b>Sample Result</b>	<b>Reporting Units</b>	<b>Validation Flag</b>	<b>Exceedance Type</b>
MW-17	3/27/2019 9:30	BBC-1903-213	Energy Labs	H19030476-014	Nickel (DIS)	<0.001	mg/L	U	Blank Exceedance
MW-20	3/27/2019 10:30	BBC-1903-214	Energy Labs	H19030476-015	Nickel (DIS)	<0.001	mg/L	U	Blank Exceedance
MW-4A	3/27/2019 16:50	BBC-1903-216	Energy Labs	H19030547-002	Nickel (DIS)	<0.001	mg/L	U	Blank Exceedance
MW-4B	3/27/2019 16:15	BBC-1903-215	Energy Labs	H19030547-001	Nickel (DIS)	<0.001	mg/L	U	Blank Exceedance
SP-12	3/27/2019 10:10	BBC-1903-122	Energy Labs	H19030475-007	Nickel (DIS)	<0.001	mg/L	U	Blank Exceedance
SP-7	3/27/2019 10:50	BBC-1903-123	Energy Labs	H19030475-008	Nickel (DIS)	<0.001	mg/L	U	Blank Exceedance

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SAMPLE NO BBC-1903-111		LAB NO: H19030475-004		STATION:DS-1								
03/26/19		COMPARISON PERIOD OF DATA		QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
PARAMETER	RESULT											
DO (mg/L)	10.03	03/25/15-03/26/19		O	31	31	8.15	13.4	9.67	9.5	1.26	0.28
pH Fld (s.u.)	8.17	03/25/15-03/26/19		O	30	30	7.36	8.56	7.78	7.78	0.29	1.33
SC Fld (umhos/cm)	367	03/25/15-03/26/19		O	31	31	337.0	698.7	418.8	418	52.3	1.0
Flow (Gallons Per Min)	2.6	03/25/15-03/26/19		O	27	27	0.1	62.3	4.9	5.9	11.9	0.2
Water Temp (Deg C)	2.3	03/25/15-03/26/19		O	31	31	0.5	18.3	5.2	6.6	3.7	0.8
TDS (mg/L)	203	03/25/15-03/26/19		O	31	31	203.0	245.0	229.8	231	10.5	2.6 L
TSS (mg/L)	20	03/25/15-03/26/19		O	31	11	< 10	1130.0				
Tot Alk (mg/L)	190	03/25/15-03/26/19		O	31	31	180.0	220.0	214.0	220	9.2	2.6
Ca (mg/L)	51	03/25/15-03/26/19		O	31	31	46.0	62.0	56.5	57	2.9	1.9
Chloride (mg/L)	< 1	03/25/15-03/26/19		O	31	0	< 1	< 1				
F (mg/L)	0.1	03/25/15-03/26/19		O	31	29	0.1	0.1	0.1	0.1	0	0.0 H
Tot Hard (mg/L)	205	03/25/15-03/26/19		O	31	31	185.0	249.0	227.8	229	12.2	1.9
Mg (mg/L)	19	03/25/15-03/26/19		O	31	31	17.0	23.0	21.1	21	1.3	1.6
K (mg/L)	< 1	03/25/15-03/26/19		O	31	0	< 1	< 1				
Na (mg/L)	1	03/25/15-03/26/19		O	31	31	1.0	2.0	1.8	2	0.4	2.1 L
SO4 (mg/L)	15	03/25/15-03/26/19		O	31	31	11.0	18.0	14.7	15	1.7	0.2
Nitrate + (mg/L)	0.12	03/25/15-03/26/19		O	31	31	0.03	0.26	0.17	0.19	0.06	0.89
Al (DIS) (mg/L)	< 0.009	03/25/15-03/26/19		O	31	1	< 0.009	0.024				
Sb (DIS) (mg/L)	< 0.0005	03/25/15-03/26/19		O	30	0	< 0.0005	: 0.0005				
As (DIS) (mg/L)	< 0.001	03/25/15-03/26/19		O	30	0	< 0.001	< 0.001				
Ba (DIS) (mg/L)	0.059	03/25/15-03/26/19		O	30	30	0.041	0.074	0.051	0.049	0.007	1.119
Be (DIS) (mg/L)	< 0.0008	03/25/15-03/26/19		O	30	0	< 0.0008	: 0.0008				
Cd (DIS) (mg/L)	< 0	03/25/15-03/26/19		O	30	0	< 0	: .00003				
Cr (DIS) (mg/L)	< 0.01	03/25/15-03/26/19		O	30	0	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	03/25/15-03/26/19		O	30	0	< 0.01	< 0.01				
Cu (DIS) (mg/L)	< 0.002	03/25/15-03/26/19		O	30	1	< 0.002	0.007				
Fe (DIS) (mg/L)	< 0.02	03/25/15-03/26/19		O	30	2	< 0.02	0.06				
Pb (DIS) (mg/L)	< 0.0003	03/25/15-03/26/19		O	30	0	< 0.0003	: 0.0003				
Mn (DIS) (mg/L)	< 0.005	03/25/15-03/26/19		O	30	0	< 0.005	< 0.005				
Hg (DIS) (ug/L)	< 0.005	03/25/15-03/26/19		O	29	0	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	03/25/15-03/26/19		O	30	0	< 0.002	< 0.002				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Ni (DIS) (mg/L)	< 0.001	03/25/15-03/26/19	O	30	0	< 0.001	< 0.001				
Se (DIS) (mg/L)	0.0002	03/25/15-03/26/19	O	30	9	< 0.0002	: 0.0002				
Ag (DIS) (mg/L)	< 0.0002	03/25/15-03/26/19	O	30	0	< 0.0002	: 0.0002				
Sr (DIS) (mg/L)	0.104	03/25/15-03/26/19	O	30	30	0.085	0.119	0.107	0.106	0.007	0.396
Tl (DIS) (mg/L)	< 0.0002	03/25/15-03/26/19	O	30	0	< 0.0002	: 0.0002				
U (DIS) (mg/L)	0.0007	03/25/15-03/26/19	O	30	2	0.0007	< .008				
Zn (DIS) (mg/L)	< 0.002	03/25/15-03/26/19	O	30	23	< 0.002	0.03	0.006	0.007	0.008	0.506 L

SAMPLE NO BBC-1903-206 LAB NO: H19030476-007

STATION: MW-1A

PARAMETER	03/26/19 RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	7.41	08/26/11-03/26/19	O	31	31	2.29	9.82	6.4	7.34	1.97	0.51
DO (mg/L)	8.94	08/26/11-03/26/19	O	30	30	5.35	17.56	9.83	9.62	2.35	0.38
EH (Millivolts)	278.03	03/21/18-03/26/19	O	5	5	260.77	305.7	283.23	280.7	16.86	0.31
pH Fld (s.u.)	7.4	08/26/11-03/26/19	O	31	31	6.6	7.7	7.3	7.3	0.2	0.7
SC Fld (umhos/cm)	337	08/26/11-03/26/19	O	31	31	311.0	356.0	340.6	342.6	10.1	0.4
Water Temp (Deg C)	6.9	08/26/11-03/26/19	O	31	31	5.9	7.8	6.9	6.9	0.4	0.1
TDS (mg/L)	194	08/26/11-03/26/19	O	31	31	176.0	209.0	191.9	194	7.6	0.3
TSS (mg/L)	45	03/21/13-03/26/19	O	24	23	10.0	1380.0	75.1	64	341	0.1
Tot Alk (mg/L)	170	08/26/11-03/26/19	O	31	31	160.0	190.0	173.1	170	6	0.5
Ca (mg/L)	44	08/26/11-03/26/19	O	31	31	38.0	45.0	42.1	42	1.8	1.1
Chloride (mg/L)	2	08/26/11-03/26/19	O	31	29	1.0	2.0	1.1	1	0.3	3.0 H
F (mg/L)	0.2	08/26/11-03/26/19	O	31	31	0.2	0.3	0.2	0.2	0	0.0 L
Tot Hard (mg/L)	187	08/26/11-03/26/19	O	31	31	157.0	191.0	178.6	179	8.5	1.0
Mg (mg/L)	19	08/26/11-03/26/19	O	31	31	15.0	21.0	17.9	18	1.1	1.0
K (mg/L)	1	08/26/11-03/26/19	O	31	24	1.0	6.0	1.1	1	0.9	0.1 L
Na (mg/L)	2	08/26/11-03/26/19	O	31	31	2.0	11.0	2.7	2	2.5	0.3 L
SO4 (mg/L)	14	08/26/11-03/26/19	O	31	31	8.0	14.0	10.8	12	1.9	1.7 H
Nitrate + (mg/L)	0.42	08/26/11-03/26/19	O	31	31	0.18	0.53	0.42	0.44	0.06	0.02
Al (DIS) (mg/L)	0.022	08/26/11-03/26/19	O	31	29	< 0.009	33.8	0.104	0.057	6.037	0.014
Sb (DIS) (mg/L)	< 0.0005	08/26/11-03/26/19	O	31	1	< 0.0005	< .003				
As (DIS) (mg/L)	< 0.001	08/26/11-03/26/19	O	31	1	< 0.001	0.015				
Ba (DIS) (mg/L)	0.181	08/26/11-03/26/19	O	31	31	0.125	1.12	0.187	0.166	0.209	0.031
Be (DIS) (mg/L)	< 0.0008	08/26/11-03/26/19	O	31	1	< 0.0008	< .001				
Cd (DIS) (mg/L)	< 0	08/26/11-03/26/19	O	31	4	< 0	0.0001				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Cr (DIS) (mg/L)	< 0.01	08/26/11-03/26/19	O	31	2	< 0	< .01					
Co (DIS) (mg/L)	< 0.01	08/26/11-03/26/19	O	31	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	0.006	08/26/11-03/26/19	O	31	31	0.002	0.129	0.008	0.007	0.028	0.059	
Fe (DIS) (mg/L)	< 0.02	08/26/11-03/26/19	O	31	22	< 0.02	26.5	0.07	0.04	4.74	0.01	L
Pb (DIS) (mg/L)	0.0003	08/26/11-03/26/19	O	31	23	< 0.0003	0.157	0.001	0.0006	0.0297	0.0248	L
Mn (DIS) (mg/L)	< 0.005	08/26/11-03/26/19	O	31	6	< 0.001	0.096					
Hg (DIS) (ug/L)	< 0.005	08/26/11-03/26/19	O	31	3	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	08/26/11-03/26/19	O	31	0	< 0.001	< .005					
Ni (DIS) (mg/L)	< 0.001	08/26/11-03/26/19	O	31	2	< 0.001	< .01					
Se (DIS) (mg/L)	0.0002	08/26/11-03/26/19	O	31	10	< 0.0002	< .001					
Ag (DIS) (mg/L)	< 0.0002	08/26/11-03/26/19	O	31	0	< 0.0002	< .0005					
Sr (DIS) (mg/L)	0.0995	08/26/11-03/26/19	O	31	31	0.0949	0.12	0.102	0.1	0.0062	0.4077	
Tl (DIS) (mg/L)	0.0009	08/26/11-03/26/19	O	31	31	0.0003	0.0048	0.0008	0.0008	0.0008	0.1301	
U (DIS) (mg/L)	0.001	08/26/11-03/26/19	O	31	9	0.001	< .008					
Zn (DIS) (mg/L)	< 0.002	08/26/11-03/26/19	O	31	10	< 0.002	0.04					

SAMPLE NO BBC-1903-205 LAB NO: H19030476-006

STATION:MW-1B

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Depth to W (Feet)	24.18	08/26/11-03/26/19	O	30	30	20.93	24.85	22.87	22.96	0.97	1.35	
DO (mg/L)	0.07	08/26/11-03/26/19	O	30	30	0.01	2.81	0.25	0.25	0.54	0.34	
EH (Millivolts)	193.87	03/21/18-03/26/19	O	5	5	193.87	238.21	212.83	210.66	16.17	1.17	L
pH Fld (s.u.)	6.42	08/26/11-03/26/19	O	31	31	6.02	6.51	6.29	6.32	0.13	1.01	
SC Fld (umhos/cm)	627.5	08/26/11-03/26/19	O	31	31	556.0	661.0	603.5	604.5	23.8	1.0	
Water Temp (Deg C)	7.8	08/26/11-03/26/19	O	31	31	6.5	8.8	7.5	7.6	0.6	0.4	
TDS (mg/L)	435	08/26/11-03/26/19	O	31	31	338.0	436.0	410.4	411	25	1.0	
TSS (mg/L)	37	03/21/13-03/26/19	O	24	14	< 10	402.0	22.4	18	78	0.2	
Tot Alk (mg/L)	110	08/26/11-03/26/19	O	31	31	49.0	110.0	82.8	84	12.4	2.2	H
Ca (mg/L)	68	08/26/11-03/26/19	O	31	31	51.0	68.0	58.5	59	3.1	3.1	*H
Chloride (mg/L)	1	08/26/11-03/26/19	O	31	27	< 1	3.0	1.1	1	0.4	0.3	L
F (mg/L)	0.2	08/26/11-03/26/19	O	31	31	0.2	0.3	0.2	0.2	0	0.0	L
Tot Hard (mg/L)	316	08/26/11-03/26/19	O	31	31	234.0	316.0	271.6	275	15.4	2.9	H
Mg (mg/L)	36	08/26/11-03/26/19	O	31	31	26.0	36.0	30.6	31	1.9	2.9	H
K (mg/L)	3	08/26/11-03/26/19	O	31	31	3.0	3.0	3.0	3	0	0.0	H
Na (mg/L)	3	08/26/11-03/26/19	O	31	31	3.0	7.0	3.7	4	1	0.7	L

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

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# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SO4 (mg/L)	226	08/26/11-03/26/19	O	31	31	200.0	247.0	222.1	222	11.6	0.3
Nitrate + (mg/L)	0.04	08/26/11-03/26/19	O	31	18	< 0.01	0.6	0.03	0.03	0.1	0.12
Al (DIS) (mg/L)	0.017	08/26/11-03/26/19	O	31	11	< 0.009	0.059				
Sb (DIS) (mg/L)	0.0008	08/26/11-03/26/19	O	31	22	< 0.0005	< .003	0.0009	0.0007	0.0009	0.063
As (DIS) (mg/L)	0.07	08/26/11-03/26/19	O	31	31	0.05	0.07	0.06	0.06	0	0.0
Ba (DIS) (mg/L)	0.011	08/26/11-03/26/19	O	31	31	0.011	0.023	0.014	0.013	0.003	0.838 L
Be (DIS) (mg/L)	< 0.0008	08/26/11-03/26/19	O	31	0	< 0.0008	< .001				
Cd (DIS) (mg/L)	< 0	08/26/11-03/26/19	O	31	0	< 0	< .00008				
Cr (DIS) (mg/L)	< 0.01	08/26/11-03/26/19	O	31	0	< 0	< .01				
Co (DIS) (mg/L)	0.02	08/26/11-03/26/19	O	31	31	0.02	0.03	0.03	0.03	0	0.0 L
Cu (DIS) (mg/L)	< 0.002	08/26/11-03/26/19	O	31	1	< 0.001	0.005				
Fe (DIS) (mg/L)	20	08/26/11-03/26/19	O	31	31	17.7	27.1	21.3	20.4	2.5	0.5
Pb (DIS) (mg/L)	< 0.0003	08/26/11-03/26/19	O	31	8	< 0.0003	0.0026				
Mn (DIS) (mg/L)	0.075	08/26/11-03/26/19	O	31	31	0.075	0.122	0.085	0.084	0.01	1.033 L
Hg (DIS) (ug/L)	< 0.005	08/26/11-03/26/19	O	31	2	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	08/26/11-03/26/19	O	31	0	< 0.001	< .005				
Ni (DIS) (mg/L)	0.011	08/26/11-03/26/19	O	31	31	0.01	0.012	0.011	0.011	0.001	0.266
Se (DIS) (mg/L)	< 0.0002	08/26/11-03/26/19	O	31	0	< 0.0002	< .001				
Ag (DIS) (mg/L)	< 0.0002	08/26/11-03/26/19	O	31	0	< 0.0002	< .0005				
Sr (DIS) (mg/L)	1.83	08/26/11-03/26/19	O	31	31	1.4	1.83	1.62	1.61	0.09	2.36 H
Tl (DIS) (mg/L)	0.0125	08/26/11-03/26/19	O	31	31	0.0104	0.0154	0.0125	0.0125	0.001	0.0485
U (DIS) (mg/L)	< 0.0002	08/26/11-03/26/19	O	31	0	< 0.0002	< .008				
Zn (DIS) (mg/L)	0.012	08/26/11-03/26/19	O	31	31	0.012	0.033	0.016	0.015	0.005	0.835 L

SAMPLE NO	BBC-1903-203	LAB NO:	H19030476-004	STATION:	MW-2A
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	42.02	11/30/11-03/26/19	O	29	29	40.81	43.18	42.18	42.2	0.39	0.42
DO (mg/L)	7.6	11/30/11-03/26/19	O	29	29	4.3	13.0	7.2	7.5	1.8	0.2
EH (Millivolts)	298.68	03/20/18-03/26/19	O	5	5	255.99	298.68	276.58	278.55	17.78	1.24 H
pH Fld (s.u.)	7.57	11/30/11-03/26/19	O	29	29	7.07	7.57	7.3	7.3	0.13	2.05 H
SC Fld (umhos/cm)	388	11/30/11-03/26/19	O	29	29	353.0	412.3	381.5	382	12.1	0.5
Water Temp (Deg C)	7.2	11/30/11-03/26/19	O	29	29	6.3	8.1	7.1	7.2	0.5	0.3
TDS (mg/L)	208	11/30/11-03/26/19	O	29	29	191.0	279.0	209.9	209	14.3	0.1
TSS (mg/L)	< 10	03/21/13-03/26/19	O	23	6	5.0	14.0				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Tot Alk (mg/L)	190	11/30/11-03/26/19	O	29	29	180.0	220.0	191.5	190	8.7	0.2	
Ca (mg/L)	46	11/30/11-03/26/19	O	29	29	40.0	56.0	43.5	43	2.6	1.0	
Chloride (mg/L)	1	11/30/11-03/26/19	O	29	28	1.0	2.0	1.3	1	0.5	0.5	L
F (mg/L)	0.3	11/30/11-03/26/19	O	29	29	0.3	0.4	0.3	0.3	0.1	0.4	L
Tot Hard (mg/L)	215	11/30/11-03/26/19	O	29	29	190.0	268.0	204.9	202	13.1	0.8	
Mg (mg/L)	24	11/30/11-03/26/19	O	29	29	22.0	31.0	23.3	23	1.6	0.4	
K (mg/L)	1	11/30/11-03/26/19	O	29	29	1.0	2.0	1.0	1	0.2	0.1	L
Na (mg/L)	3	11/30/11-03/26/19	O	29	29	2.0	3.0	2.6	3	0.5	0.9	H
SO4 (mg/L)	22	11/30/11-03/26/19	O	29	29	15.0	51.0	19.4	20	6.3	0.4	
Nitrate + (mg/L)	0.2	11/30/11-03/26/19	O	29	28	< 0	0.2	0.2	0.2	0	0.0	
Al (DIS) (mg/L)	< 0.009	11/30/11-03/26/19	O	29	1	< 0.009	0.05					
Sb (DIS) (mg/L)	< 0.0005	11/30/11-03/26/19	O	29	0	< 0.0005	< .003					
As (DIS) (mg/L)	< 0.001	11/30/11-03/26/19	O	29	2	< 0.001	0.003					
Ba (DIS) (mg/L)	0.084	11/30/11-03/26/19	O	29	29	0.04	0.097	0.081	0.083	0.009	0.343	
Be (DIS) (mg/L)	< 0.0008	11/30/11-03/26/19	O	29	0	< 0.0008	< .001					
Cd (DIS) (mg/L)	< 0	11/30/11-03/26/19	O	29	0	< 0	< .00008					
Cr (DIS) (mg/L)	< 0.01	11/30/11-03/26/19	O	29	0	< 0	< .01					
Co (DIS) (mg/L)	< 0.01	11/30/11-03/26/19	O	29	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	11/30/11-03/26/19	O	29	1	< 0.001	< .002					
Fe (DIS) (mg/L)	< 0.02	11/30/11-03/26/19	O	29	4	< 0.02	0.18					
Pb (DIS) (mg/L)	< 0.0003	11/30/11-03/26/19	O	29	2	< 0.0003	0.0009					
Mn (DIS) (mg/L)	< 0.005	11/30/11-03/26/19	O	29	5	< 0.005	0.235					
Hg (DIS) (ug/L)	< 0.005	11/30/11-03/26/19	O	29	2	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	11/30/11-03/26/19	O	29	0	< 0.002	< .005					
Ni (DIS) (mg/L)	< 0.001	11/30/11-03/26/19	O	29	0	< 0.001	< .01					
Se (DIS) (mg/L)	0.0013	11/30/11-03/26/19	O	29	23	< 0.0002	0.0065	0.0009	0.001	0.0011	0.3819	
Ag (DIS) (mg/L)	< 0.0002	11/30/11-03/26/19	O	29	0	< 0.0002	< .0005					
Sr (DIS) (mg/L)	0.0925	11/30/11-03/26/19	O	29	25	0.0836	0.108	0.0928	0.0915	0.0052	0.0571	
Tl (DIS) (mg/L)	0.0002	11/30/11-03/26/19	O	29	27	0.0002	0.0037	0.0003	0.0003	0.0007	0.1517	L
U (DIS) (mg/L)	0.0005	11/30/11-03/26/19	O	29	7	0.0004	< .008					
Zn (DIS) (mg/L)	< 0.002	11/30/11-03/26/19	O	29	0	< 0.002	< .01					

SAMPLE NO BBC-1903-204 LAB NO: H19030476-005

STATION:MW-2B

03/26/19

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
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NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Depth to W (Feet)	41.32	11/30/11-03/26/19	O	29	29	40.77	43.14	42.0	42.04	0.43	1.57	
DO (mg/L)	0.2	11/30/11-03/26/19	O	29	29	0.1	10.3	0.4	0.4	1.8	0.1	
EH (Millivolts)	253.38	03/20/18-03/26/19	O	5	5	230.66	270.57	253.19	253.38	18.8	0.01	
pH Fld (s.u.)	7.34	11/30/11-03/26/19	O	29	29	6.98	7.51	7.26	7.29	0.11	0.76	
SC Fld (umhos/cm)	432	11/30/11-03/26/19	O	29	29	192.0	525.0	445.6	455	56.3	0.2	
Water Temp (Deg C)	7.2	11/30/11-03/26/19	O	29	29	3.0	7.9	6.9	7.2	0.9	0.4	
TDS (mg/L)	237	11/30/11-03/26/19	O	29	29	208.0	292.0	254.8	251	17.3	1.0	
TSS (mg/L)	< 10	03/21/13-03/26/19	O	23	1	< 4	17.0					
Tot Alk (mg/L)	200	11/30/11-03/26/19	O	29	29	180.0	260.0	215.0	210	15	1.0	
Ca (mg/L)	52	11/30/11-03/26/19	O	29	29	43.0	58.0	52.6	53	3	0.2	
Chloride (mg/L)	1	11/30/11-03/26/19	O	29	22	1.0	2.0	1.1	1	0.4	0.3	L
F (mg/L)	0.3	11/30/11-03/26/19	O	29	29	0.3	0.4	0.4	0.4	0	0.0	L
Tot Hard (mg/L)	244	11/30/11-03/26/19	O	29	29	202.0	280.0	250.8	252	15.3	0.4	
Mg (mg/L)	28	11/30/11-03/26/19	O	29	29	23.0	33.0	29.0	29	2	0.5	
K (mg/L)	1	11/30/11-03/26/19	O	29	29	1.0	2.0	1.7	2	0.4	1.6	L
Na (mg/L)	3	11/30/11-03/26/19	O	29	29	2.0	3.0	3.0	3	0.2	0.2	H
SO4 (mg/L)	37	11/30/11-03/26/19	O	29	29	23.0	51.0	39.5	39	5.1	0.5	
Nitrate + (mg/L)	< 0.01	11/30/11-03/26/19	O	29	1	< 0.01	< .5					
Al (DIS) (mg/L)	< 0.009	11/30/11-03/26/19	O	29	1	< 0.009	< .03					
Sb (DIS) (mg/L)	< 0.0005	11/30/11-03/26/19	O	29	0	< 0.0005	< .003					
As (DIS) (mg/L)	0.003	11/30/11-03/26/19	O	29	27	< 0.001	0.018	0.003	0.003	0.003	0.124	
Ba (DIS) (mg/L)	0.043	11/30/11-03/26/19	O	29	29	0.028	0.082	0.042	0.042	0.008	0.126	
Be (DIS) (mg/L)	< 0.0008	11/30/11-03/26/19	O	29	0	< 0.0008	< .001					
Cd (DIS) (mg/L)	< 0	11/30/11-03/26/19	O	29	0	< 0	< .00008					
Cr (DIS) (mg/L)	< 0.01	11/30/11-03/26/19	O	29	0	< 0	< .01					
Co (DIS) (mg/L)	< 0.01	11/30/11-03/26/19	O	29	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	11/30/11-03/26/19	O	29	0	< 0.001	< .002					
Fe (DIS) (mg/L)	0.02	11/30/11-03/26/19	O	29	29	0.02	1.08	0.06	0.04	0.19	0.21	L
Pb (DIS) (mg/L)	< 0.0003	11/30/11-03/26/19	O	29	0	< 0.0003	< .0005					
Mn (DIS) (mg/L)	0.007	11/30/11-03/26/19	O	29	28	< 0.005	0.026	0.011	0.011	0.005	0.779	
Hg (DIS) (ug/L)	< 0.005	11/30/11-03/26/19	O	29	1	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	11/30/11-03/26/19	O	29	0	< 0.002	< .005					
Ni (DIS) (mg/L)	< 0.001	11/30/11-03/26/19	O	29	0	< 0.001	< .01					
Se (DIS) (mg/L)	0.0066	11/30/11-03/26/19	O	29	24	0.0002	0.0066	0.0014	0.001	0.0018	2.9065	H

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Ag (DIS) (mg/L)	< 0.0002	11/30/11-03/26/19	O	29	0	< 0.0002	< .0005				
Sr (DIS) (mg/L)	0.0912	11/30/11-03/26/19	O	29	28	0.0903	0.106	0.0981	0.1	0.0043	1.6059
Tl (DIS) (mg/L)	0.0038	11/30/11-03/26/19	O	29	29	0.0003	0.004	0.0032	0.0036	0.0007	0.8137
U (DIS) (mg/L)	0.0023	11/30/11-03/26/19	O	29	7	0.002	< .008				
Zn (DIS) (mg/L)	< 0.002	11/30/11-03/26/19	O	29	0	< 0.002	< .01				

SAMPLE NO	BBC-1903-200	LAB NO:	H19030476-001	STATION:	MW-3
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PARAMETER	03/25/19 RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	41.38	11/30/11-03/25/19	O	29	29	26.23	46.13	38.42	41.11	5.55	0.53
DO (mg/L)	0.11	11/30/11-03/25/19	O	29	29	0.0	2.09	0.15	0.22	0.43	0.09
EH (Millivolts)	195.57	03/19/18-03/25/19	O	5	5	152.22	222.03	185.65	192.54	26.12	0.38
pH Fld (s.u.)	7.19	11/30/11-03/25/19	O	29	29	6.77	7.31	7.08	7.08	0.11	0.96
SC Fld (umhos/cm)	782	11/30/11-03/25/19	O	29	29	727.0	883.0	823.6	830	37.3	1.1
Water Temp (Deg C)	9	11/30/11-03/25/19	O	29	29	8.1	10.3	9.3	9.4	0.6	0.5
TDS (mg/L)	521	11/30/11-03/25/19	O	29	29	521.0	607.0	568.3	571	25.9	1.8 L
TSS (mg/L)	< 10	06/03/13-03/25/19	O	23	0	< 4	< 10				
Tot Alk (mg/L)	220	11/30/11-03/25/19	O	29	29	210.0	230.0	216.8	220	5.3	0.6
Ca (mg/L)	77	11/30/11-03/25/19	O	29	29	67.0	124.0	81.0	80	9.7	0.4
Chloride (mg/L)	1	11/30/11-03/25/19	O	29	29	1.0	2.0	1.2	1	0.4	0.4 L
F (mg/L)	0.7	11/30/11-03/25/19	O	29	29	0.6	0.8	0.7	0.8	0.1	0.5
Tot Hard (mg/L)	406	11/30/11-03/25/19	O	29	29	361.0	523.0	419.1	422	31.1	0.4
Mg (mg/L)	52	11/30/11-03/25/19	O	29	29	47.0	58.0	52.8	53	2.9	0.3
K (mg/L)	3	11/30/11-03/25/19	O	29	29	3.0	4.0	3.2	3	0.4	0.5 L
Na (mg/L)	16	11/30/11-03/25/19	O	29	29	14.0	18.0	15.9	16	0.9	0.1
SO4 (mg/L)	222	11/30/11-03/25/19	O	29	29	213.0	280.0	249.1	258	23.1	1.2
Nitrate + (mg/L)	< 0.01	11/30/11-03/25/19	O	29	3	< 0.01	0.02				
Al (DIS) (mg/L)	< 0.009	11/30/11-03/25/19	O	29	0	< 0.009	< .03				
Sb (DIS) (mg/L)	< 0.0005	11/30/11-03/25/19	O	29	0	< 0.0005	< .003				
As (DIS) (mg/L)	0.071	11/30/11-03/25/19	O	29	29	0.062	0.08	0.068	0.068	0.004	0.703
Ba (DIS) (mg/L)	0.011	11/30/11-03/25/19	O	29	29	0.01	0.014	0.011	0.011	0.001	0.134
Be (DIS) (mg/L)	< 0.0008	11/30/11-03/25/19	O	29	0	< 0.0008	< .001				
Cd (DIS) (mg/L)	< 0	11/30/11-03/25/19	O	29	0	< 0	< .00008				
Cr (DIS) (mg/L)	< 0.01	11/30/11-03/25/19	O	29	0	< 0	< .01				
Co (DIS) (mg/L)	< 0.01	11/30/11-03/25/19	O	29	0	< 0.01	< 0.01				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Cu (DIS) (mg/L)	< 0.002	11/30/11-03/25/19	O	29	0	< 0.001	< .002				
Fe (DIS) (mg/L)	1.02	11/30/11-03/25/19	O	29	29	1.0	1.23	1.09	1.05	0.08	0.93
Pb (DIS) (mg/L)	< 0.0003	11/30/11-03/25/19	O	29	0	< 0.0003	< .0005				
Mn (DIS) (mg/L)	0.016	11/30/11-03/25/19	O	29	29	0.016	0.035	0.023	0.022	0.005	1.385 L
Hg (DIS) (ug/L)	< 0.005	11/30/11-03/25/19	O	29	1	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	11/30/11-03/25/19	O	29	1	0.001	< .005				
Ni (DIS) (mg/L)	< 0.001	11/30/11-03/25/19	O	29	8	< 0.001	< .01				
Se (DIS) (mg/L)	< 0.0002	11/30/11-03/25/19	O	29	0	< 0.0002	< .001				
Ag (DIS) (mg/L)	< 0.0002	11/30/11-03/25/19	O	29	0	< 0.0002	< .0005				
Sr (DIS) (mg/L)	13.6	11/30/11-03/25/19	O	29	29	12.6	16.2	14.1	14	0.9	0.5
Tl (DIS) (mg/L)	0.0004	11/30/11-03/25/19	O	29	29	0.0003	0.0006	0.0004	0.0004	0.0001	0.0457
U (DIS) (mg/L)	0.0011	11/30/11-03/25/19	O	29	8	0.001	< .008				
Zn (DIS) (mg/L)	< 0.002	11/30/11-03/25/19	O	29	2	< 0.002	< .01				

SAMPLE NO BBC-1903-216		LAB NO: H19030547-002		STATION:MW-4A								
03/27/19		COMPARISON PERIOD OF DATA		QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	4.9	05/31/12-03/27/19	O	27	27	3.4	6.0	4.8	4.9	0.6	0.1	
DO (mg/L)	0.24	05/31/12-03/27/19	O	27	26	< 0.01	3.57	0.45	0.6	0.87	0.24	
EH (Millivolts)	298.07	03/21/18-03/27/19	O	5	5	-380.47	298.07	12.83	230.31	38.76	7.36 *H	
SC Fld (umhos/cm)	496	05/31/12-03/27/19	O	27	27	481.0	551.0	510.0	511	18.7	0.7	
Water Temp (Deg C)	4.3	05/31/12-03/27/19	O	27	27	4.3	8.8	6.1	6.8	1.5	1.2 L	
TDS (mg/L)	267	05/31/12-03/27/19	O	27	27	267.0	311.0	286.6	285	10.8	1.8 L	
TSS (mg/L)	< 10	03/21/13-03/27/19	O	23	1	< 4	23.0					
Tot Alk (mg/L)	250	05/31/12-03/27/19	O	27	27	250.0	290.0	266.8	270	11.2	1.5 L	
Ca (mg/L)	71	05/31/12-03/27/19	O	27	27	70.0	80.0	76.2	76	2.8	1.8	
Chloride (mg/L)	3	05/31/12-03/27/19	O	27	27	2.0	4.0	2.5	2.6	0.6	0.9	
F (mg/L)	0.1	05/31/12-03/27/19	O	27	27	0.1	0.2	0.1	0.1	0.1	0.3 L	
Tot Hard (mg/L)	258	05/31/12-03/27/19	O	27	27	253.0	292.0	276.6	279	10.2	1.8	
Mg (mg/L)	20	05/31/12-03/27/19	O	27	27	19.0	23.0	21.0	21	0.9	1.1	
K (mg/L)	1	05/31/12-03/27/19	O	27	27	1.0	2.0	1.3	1	0.5	0.5 L	
Na (mg/L)	3	05/31/12-03/27/19	O	27	27	2.0	3.0	2.9	3	0.3	0.4 H	
SO4 (mg/L)	15	05/31/12-03/27/19	O	27	27	8.0	21.0	13.7	13	3.2	0.4	
Nitrate + (mg/L)	< 0.01	05/31/12-03/27/19	O	27	2	< 0.01	0.02					
Al (DIS) (mg/L)	< 0.009	05/31/12-03/27/19	O	27	3	< 0.009	0.087					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Sb (DIS) (mg/L)	< 0.0005	05/31/12-03/27/19	O	27	0	< 0.0005	< .003					
As (DIS) (mg/L)	< 0.001	05/31/12-03/27/19	O	27	0	< 0.001	< .003					
Ba (DIS) (mg/L)	0.175	05/31/12-03/27/19	O	27	27	0.17	0.203	0.184	0.185	0.007	1.239	
Be (DIS) (mg/L)	< 0.0008	05/31/12-03/27/19	O	27	0	< 0.0008	< .001					
Cd (DIS) (mg/L)	< 0	05/31/12-03/27/19	O	27	0	< 0	< .00008					
Cr (DIS) (mg/L)	< 0.01	05/31/12-03/27/19	O	27	0	< 0	< .01					
Co (DIS) (mg/L)	< 0.01	05/31/12-03/27/19	O	27	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	05/31/12-03/27/19	O	27	0	< 0.001	< .002					
Fe (DIS) (mg/L)	< 0.02	05/31/12-03/27/19	O	27	20	0.02	0.16	0.03	0.03	0.03	0.39	L
Pb (DIS) (mg/L)	< 0.0003	05/31/12-03/27/19	O	27	1	< 0.0003	0.0005					
Mn (DIS) (mg/L)	0.23	05/31/12-03/27/19	O	27	27	0.06	0.33	0.2	0.2	0.06	0.57	
Hg (DIS) (ug/L)	< 0.005	05/31/12-03/27/19	O	27	1	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	05/31/12-03/27/19	O	27	0	< 0.001	< .005					
Ni (DIS) (mg/L)	< 0.001	05/31/12-03/27/19	O	27	0	< 0.001	< .01					
Se (DIS) (mg/L)	< 0.0002	05/31/12-03/27/19	O	27	0	< 0.0002	< .001					
Ag (DIS) (mg/L)	< 0.0002	05/31/12-03/27/19	O	27	0	< 0.0002	< .0005					
Sr (DIS) (mg/L)	0.169	05/31/12-03/27/19	O	27	27	0.163	0.2	0.172	0.17	0.009	0.319	
Tl (DIS) (mg/L)	< 0.0002	05/31/12-03/27/19	O	27	1	< 0.0002	0.0003					
U (DIS) (mg/L)	0.0004	05/31/12-03/27/19	O	27	6	0.0004	< .008					
Zn (DIS) (mg/L)	< 0.002	05/31/12-03/27/19	O	27	1	< 0.002	< .01					

SAMPLE NO		LAB NO:		STATION:MW-4B								
03/27/19		H19030547-001										
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Depth to W (Feet)	4.35	05/31/12-03/27/19	O	27	27	3.02	7.26	4.44	4.45	0.74	0.12	
DO (mg/L)	0.36	05/31/12-03/27/19	O	27	27	0.03	3.39	0.3	0.28	0.71	0.08	
EH (Millivolts)	238.13	03/21/18-03/27/19	O	5	5	161.51	347.68	220.65	233.45	75.03	0.23	
pH Fld (s.u.)	7.11	05/31/12-03/27/19	O	27	27	6.84	7.76	7.44	7.49	0.22	1.48	
SC Fld (umhos/cm)	443	05/31/12-03/27/19	O	27	27	419.0	510.0	456.8	454	22	0.6	
Water Temp (Deg C)	6.3	05/31/12-03/27/19	O	27	27	5.3	7.0	6.2	6.2	0.4	0.3	
TDS (mg/L)	234	05/31/12-03/27/19	O	27	27	231.0	275.0	250.1	249	12.7	1.3	
TSS (mg/L)	< 10	03/21/13-03/27/19	O	23	0	< 4	< 10					
Tot Alk (mg/L)	220	05/31/12-03/27/19	O	27	27	220.0	270.0	238.1	240	14.8	1.2	L
Ca (mg/L)	62	05/31/12-03/27/19	O	27	27	58.0	70.0	64.7	65	3.4	0.8	
Chloride (mg/L)	2	05/31/12-03/27/19	O	27	27	1.0	2.0	1.7	2	0.4	0.7	H

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

F (mg/L)	0.1	05/31/12-03/27/19	O	27	27	0.1	0.2	0.1	0.1	0	0.0	L
Tot Hard (mg/L)	234	05/31/12-03/27/19	O	27	27	167.0	265.0	241.5	243	19	0.4	
Mg (mg/L)	19	05/31/12-03/27/19	O	27	27	18.0	23.0	20.5	20	1.2	1.3	
K (mg/L)	1	05/31/12-03/27/19	O	27	27	1.0	2.0	1.1	1	0.4	0.3	L
Na (mg/L)	3	05/31/12-03/27/19	O	27	27	2.0	3.0	2.2	2	0.4	2.0	H
SO4 (mg/L)	14	05/31/12-03/27/19	O	27	27	11.0	26.0	14.2	13	3.3	0.1	
Nitrate + (mg/L)	0.07	05/31/12-03/27/19	O	27	21	< 0.01	0.07	0.03	0.04	0.02	1.95	H
Al (DIS) (mg/L)	< 0.009	05/31/12-03/27/19	O	27	1	< 0.009	< .03					
Sb (DIS) (mg/L)	< 0.0005	05/31/12-03/27/19	O	27	0	< 0.0005	< .003					
As (DIS) (mg/L)	< 0.001	05/31/12-03/27/19	O	27	0	< 0.001	< .003					
Ba (DIS) (mg/L)	0.128	05/31/12-03/27/19	O	27	27	0.117	0.147	0.128	0.127	0.007	0.069	
Be (DIS) (mg/L)	< 0.0008	05/31/12-03/27/19	O	27	0	< 0.0008	< .001					
Cd (DIS) (mg/L)	< 0	05/31/12-03/27/19	O	27	0	< 0	< .00008					
Cr (DIS) (mg/L)	< 0.01	05/31/12-03/27/19	O	27	0	< 0	< .01					
Co (DIS) (mg/L)	< 0.01	05/31/12-03/27/19	O	27	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	05/31/12-03/27/19	O	27	0	< 0.001	< .002					
Fe (DIS) (mg/L)	< 0.02	05/31/12-03/27/19	O	27	0	< 0.02	< .03					
Pb (DIS) (mg/L)	< 0.0003	05/31/12-03/27/19	O	27	0	< 0.0003	< .0005					
Mn (DIS) (mg/L)	< 0.005	05/31/12-03/27/19	O	27	2	0.002	0.006					
Hg (DIS) (ug/L)	< 0.005	05/31/12-03/27/19	O	27	1	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	05/31/12-03/27/19	O	27	0	< 0.001	< .005					
Ni (DIS) (mg/L)	< 0.001	05/31/12-03/27/19	O	27	0	< 0.001	< .01					
Se (DIS) (mg/L)	< 0.0002	05/31/12-03/27/19	O	27	0	< 0.0002	< .02					
Ag (DIS) (mg/L)	< 0.0002	05/31/12-03/27/19	O	27	0	< 0.0002	< .0005					
Sr (DIS) (mg/L)	0.174	05/31/12-03/27/19	O	27	27	0.161	0.2	0.175	0.172	0.01	0.076	
Tl (DIS) (mg/L)	< 0.0002	05/31/12-03/27/19	O	27	3	< 0.0002	0.0004					
U (DIS) (mg/L)	0.0006	05/31/12-03/27/19	O	27	6	0.0006	< .008					
Zn (DIS) (mg/L)	< 0.002	05/31/12-03/27/19	O	27	0	< 0.002	< .01					

SAMPLE NO		LAB NO:		STATION:MW-6A								
03/28/19		H19030547-005										
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Depth to W (Feet)	7.84	11/06/13-03/28/19	O	21	21	6.34	9.73	8.32	8.45	1.52	0.31	
DO (mg/L)	5.34	11/06/13-03/28/19	O	21	21	3.07	8.09	5.39	5.53	1.31	0.04	
EH (Millivolts)	282.08	03/20/18-03/28/19	O	5	5	240.46	416.95	307.82	282.08	70.02	0.37	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

pH Fld (s.u.)	7.59	11/06/13-03/28/19	O	21	21	6.61	7.64	7.44	7.49	0.26	0.59
SC Fld (umhos/cm)	451	11/06/13-03/28/19	O	21	21	409.0	489.0	438.4	435	22.1	0.6
Water Temp (Deg C)	5.4	11/06/13-03/28/19	O	21	21	4.9	8.1	6.5	6.4	1	1.1
TDS (mg/L)	244	11/06/13-03/28/19	DUP	21	21	227.0	266.0	245.4	246	9	0.2
TDS (mg/L)	246	11/06/13-03/28/19	O	21	21	227.0	266.0	245.4	246	9	0.1
TSS (mg/L)	23	03/25/14-03/28/19	O	19	13	< 10	193.0	28.1	19	57.6	0.1
TSS (mg/L)	28	03/25/14-03/28/19	DUP	19	13	< 10	193.0	28.1	19	57.6	0.0
Tot Alk (mg/L)	230	11/06/13-03/28/19	O	21	21	210.0	250.0	231.1	230	12.5	0.1
Tot Alk (mg/L)	230	11/06/13-03/28/19	DUP	21	21	210.0	250.0	231.1	230	12.5	0.1
Ca (mg/L)	57	11/06/13-03/28/19	DUP	21	21	52.0	61.0	56.0	56	3	0.3
Ca (mg/L)	56	11/06/13-03/28/19	O	21	21	52.0	61.0	56.0	56	3	0.0
Chloride (mg/L)	< 1	11/06/13-03/28/19	DUP	21	11	1.0	1.0	1.0	1	0	0.0 H
Chloride (mg/L)	< 1	11/06/13-03/28/19	O	21	11	1.0	1.0	1.0	1	0	0.0 H
F (mg/L)	0.2	11/06/13-03/28/19	DUP	21	21	0.2	0.2	0.2	0.2	0	0.0 H
F (mg/L)	0.2	11/06/13-03/28/19	O	21	21	0.2	0.2	0.2	0.2	0	0.0 H
Tot Hard (mg/L)	243	11/06/13-03/28/19	O	21	21	224.0	264.0	242.9	243	12.8	0.0
Tot Hard (mg/L)	247	11/06/13-03/28/19	DUP	21	21	224.0	264.0	242.9	243	12.8	0.3
Mg (mg/L)	25	11/06/13-03/28/19	O	21	21	23.0	27.0	25.1	25	1.3	0.0
Mg (mg/L)	25	11/06/13-03/28/19	DUP	21	21	23.0	27.0	25.1	25	1.3	0.0
K (mg/L)	< 1	11/06/13-03/28/19	O	21	1	< 1	< 1				
K (mg/L)	< 1	11/06/13-03/28/19	DUP	21	1	< 1	< 1				
Na (mg/L)	3	11/06/13-03/28/19	O	21	21	3.0	3.0	3.0	3	0	0.0 H
Na (mg/L)	3	11/06/13-03/28/19	DUP	21	21	3.0	3.0	3.0	3	0	0.0 H
SO4 (mg/L)	17	11/06/13-03/28/19	O	21	20	< 1	18.0	12.7	15	3.8	1.1
SO4 (mg/L)	17	11/06/13-03/28/19	DUP	21	20	< 1	18.0	12.7	15	3.8	1.1
Nitrate + (mg/L)	0.1	11/06/13-03/28/19	O	21	21	0.1	0.2	0.1	0.1	0	0.0
Nitrate + (mg/L)	0.1	11/06/13-03/28/19	DUP	21	21	0.1	0.2	0.1	0.1	0	0.0
Al (DIS) (mg/L)	< 0.009	11/06/13-03/28/19	DUP	21	5	< 0.009	1.55				
Al (DIS) (mg/L)	< 0.009	11/06/13-03/28/19	O	21	5	< 0.009	1.55				
Sb (DIS) (mg/L)	< 0.0005	11/06/13-03/28/19	O	21	0	< 0.0005	: 0 .0005				
Sb (DIS) (mg/L)	< 0.0005	11/06/13-03/28/19	DUP	21	0	< 0.0005	: 0 .0005				
As (DIS) (mg/L)	< 0.001	11/06/13-03/28/19	O	21	0	< 0.001	< 0 .001				
As (DIS) (mg/L)	< 0.001	11/06/13-03/28/19	DUP	21	0	< 0.001	< 0 .001				
Ba (DIS) (mg/L)	0.18	11/06/13-03/28/19	DUP	21	21	0.16	0.19	0.18	0.18	0.01	0.14

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Ba (DIS) (mg/L)	0.179	11/06/13-03/28/19	O	21	21	0.16	0.194	0.179	0.179	0.01	0.043
Be (DIS) (mg/L)	< 0.0008	11/06/13-03/28/19	O	21	0	< 0.0008 : 0 .0008					
Be (DIS) (mg/L)	< 0.0008	11/06/13-03/28/19	DUP	21	0	< 0.0008 : 0 .0008					
Cd (DIS) (mg/L)	< 0	11/06/13-03/28/19	DUP	21	1	< 0	0.0001				
Cd (DIS) (mg/L)	< 0	11/06/13-03/28/19	O	21	1	< 0	0.0001				
Cr (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	DUP	21	0	< 0.01	< 0.01				
Cr (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	O	21	0	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	O	21	0	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	DUP	21	0	< 0.01	< 0.01				
Cu (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	DUP	21	0	< 0.002	< 0.002				
Cu (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	0	< 0.002	< 0.002				
Fe (DIS) (mg/L)	< 0.02	11/06/13-03/28/19	O	21	2	< 0.02	0.7				
Fe (DIS) (mg/L)	< 0.02	11/06/13-03/28/19	DUP	21	2	< 0.02	0.7				
Pb (DIS) (mg/L)	< 0.0003	11/06/13-03/28/19	O	21	1	< 0.0003	0.0009				
Pb (DIS) (mg/L)	< 0.0003	11/06/13-03/28/19	DUP	21	1	< 0.0003	0.0009				
Mn (DIS) (mg/L)	< 0.005	11/06/13-03/28/19	O	21	1	< 0.001	0.007				
Mn (DIS) (mg/L)	< 0.005	11/06/13-03/28/19	DUP	21	1	< 0.001	0.007				
Hg (DIS) (ug/L)	< 0.005	11/06/13-03/28/19	DUP	21	0	< 0	< .005				
Hg (DIS) (ug/L)	< 0.005	11/06/13-03/28/19	O	21	0	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	0	< 0.001	< .002				
Mo (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	DUP	21	0	< 0.001	< .002				
Ni (DIS) (mg/L)	< 0.001	11/06/13-03/28/19	DUP	21	2	< 0.001	0.002				
Ni (DIS) (mg/L)	< 0.001	11/06/13-03/28/19	O	21	2	< 0.001	0.002				
Se (DIS) (mg/L)	0.0002	11/06/13-03/28/19	DUP	21	9	< 0.0002	< .0004				
Se (DIS) (mg/L)	0.0002	11/06/13-03/28/19	O	21	9	< 0.0002	< .0004				
Ag (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	0	< 0.0002	: 0 .0002				
Ag (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	DUP	21	0	< 0.0002	: 0 .0002				
Sr (DIS) (mg/L)	0.169	11/06/13-03/28/19	O	21	21	0.149	0.175	0.163	0.163	0.008	0.696
Sr (DIS) (mg/L)	0.17	11/06/13-03/28/19	DUP	21	21	0.15	0.18	0.16	0.16	0.01	0.66
Tl (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	DUP	21	0	< 0.0002 : 0 .0002					
Tl (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	0	< 0.0002 : 0 .0002					
U (DIS) (mg/L)	0.0007	11/06/13-03/28/19	O	21	3	0.0006	< .008				
U (DIS) (mg/L)	0.0007	11/06/13-03/28/19	DUP	21	3	0.0006	< .008				
Zn (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	2	< 0.002	0.005				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Zn (DIS) (mg/L) < 0.002 11/06/13-03/28/19 DUP 21 2 < 0.002 0.005

SAMPLE NO	BBC-1903-221	LAB NO:	H19030547-007	STATION:	MW-6B
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PARAMETER	03/28/19 RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	11.13	11/06/13-03/28/19	O	21	21	10.0	12.95	11.69	11.76	1.46	0.38
EH (Millivolts)	1928.33	03/20/18-03/28/19	O	5	5	246.03	1928.33	434.22	306.96	728.69	2.05 H
TDS (mg/L)	249	11/06/13-03/28/19	O	21	21	236.0	272.0	254.5	253	8.9	0.6
TSS (mg/L)	< 10	03/25/14-03/28/19	O	19	14	< 10	1260.0	25.3	15	285.6	0.1 L
Tot Alk (mg/L)	230	11/06/13-03/28/19	O	21	21	220.0	240.0	229.4	230	6.9	0.1
Ca (mg/L)	50	11/06/13-03/28/19	O	21	21	43.0	51.0	48.0	48	2.1	0.9
Chloride (mg/L)	< 1	11/06/13-03/28/19	O	21	10	1.0	2.0				
F (mg/L)	0.5	11/06/13-03/28/19	O	21	21	0.5	0.8	0.6	0.6	0.1	1.0 L
Tot Hard (mg/L)	227	11/06/13-03/28/19	O	21	21	202.0	230.0	218.2	219	9	1.0
Mg (mg/L)	25	11/06/13-03/28/19	O	21	21	22.0	26.0	23.9	24	1.1	1.0
K (mg/L)	1	11/06/13-03/28/19	O	21	21	1.0	2.0	1.0	1	0.3	0.1 L
Na (mg/L)	14	11/06/13-03/28/19	O	21	21	9.0	21.0	16.4	17	2.8	0.9
SO4 (mg/L)	23	11/06/13-03/28/19	O	21	21	16.0	29.0	22.0	23	3.5	0.3
Nitrate + (mg/L)	0.07	11/06/13-03/28/19	O	21	21	0.06	0.14	0.09	0.08	0.03	0.56
Al (DIS) (mg/L)	< 0.009	11/06/13-03/28/19	O	21	7	< 0.009	0.275				
Sb (DIS) (mg/L)	< 0.0005	11/06/13-03/28/19	O	21	0	< 0.0005	: 0.0005				
As (DIS) (mg/L)	< 0.001	11/06/13-03/28/19	O	21	0	< 0.001	< 0.001				
Ba (DIS) (mg/L)	0.111	11/06/13-03/28/19	O	21	21	0.084	0.12	0.102	0.102	0.009	1.032
Be (DIS) (mg/L)	< 0.0008	11/06/13-03/28/19	O	21	0	< 0.0008	: 0.0008				
Cd (DIS) (mg/L)	< 0	11/06/13-03/28/19	O	21	0	< 0	: .00003				
Cr (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	O	21	0	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	O	21	0	< 0.01	< 0.01				
Cu (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	0	< 0.002	< 0.002				
Fe (DIS) (mg/L)	< 0.02	11/06/13-03/28/19	O	21	3	< 0.02	0.15				
Pb (DIS) (mg/L)	< 0.0003	11/06/13-03/28/19	O	21	1	< 0.0003	: 0.0003				
Mn (DIS) (mg/L)	< 0.005	11/06/13-03/28/19	O	21	19	< 0.005	0.064	0.012	0.013	0.014	0.529 L
Hg (DIS) (ug/L)	< 0.005	11/06/13-03/28/19	O	21	0	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	2	0.001	< .002				
Ni (DIS) (mg/L)	< 0.001	11/06/13-03/28/19	O	21	0	< 0.001	< 0.001				
Se (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	3	< 0.0002	< .0004				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Ag (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	0	< 0.0002 : 0 .0002					
Sr (DIS) (mg/L)	0.238	11/06/13-03/28/19	O	21	21	0.181	0.258	0.231	0.237	0.023	0.312
Tl (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	0	< 0.0002 : 0 .0002					
U (DIS) (mg/L)	0.0007	11/06/13-03/28/19	O	21	3	0.0007	< .008				
Zn (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	1	< 0.002 < 0 .002					

SAMPLE NO	BBC-1903-218	LAB NO:	H19030547-004	STATION:	MW-7
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Depth to W (Feet)	32.32	11/06/13-03/28/19	O	21	21	30.92	33.49	32.03	32.1	1.31	0.22	
DO (mg/L)	0.34	11/06/13-03/28/19	O	21	21	0.07	2.4	0.6	0.69	0.65	0.4	
EH (Millivolts)	250.69	03/20/18-03/28/19	O	5	5	193.2	250.69	218.97	211.01	25.91	1.22	H
pH Fld (s.u.)	7.48	11/06/13-03/28/19	O	21	21	6.83	7.61	7.45	7.52	0.18	0.15	
SC Fld (umhos/cm)	535	11/06/13-03/28/19	O	21	21	490.0	582.0	538.1	540	24.2	0.1	
Water Temp (Deg C)	7.1	11/06/13-03/28/19	O	21	21	6.3	8.8	7.6	7.7	0.6	0.8	
TDS (mg/L)	310	11/06/13-03/28/19	O	21	21	304.0	348.0	318.6	314	12.2	0.7	
TSS (mg/L)	41	03/25/14-03/28/19	O	19	16	< 10	1440.0	77.4	96	337.9	0.1	
Tot Alk (mg/L)	230	11/06/13-03/28/19	O	21	21	220.0	280.0	236.7	230	16.4	0.4	
Ca (mg/L)	60	11/06/13-03/28/19	O	21	21	54.0	63.0	58.3	58	2.6	0.7	
Chloride (mg/L)	4	11/06/13-03/28/19	O	21	21	3.0	5.0	3.9	4	0.5	0.3	
F (mg/L)	0.3	11/06/13-03/28/19	O	21	21	0.3	0.7	0.3	0.3	0.1	0.2	L
Tot Hard (mg/L)	307	11/06/13-03/28/19	O	21	21	279.0	322.0	300.2	301	11.7	0.6	
Mg (mg/L)	38	11/06/13-03/28/19	O	21	21	35.0	40.0	37.5	38	1.5	0.3	
K (mg/L)	1	11/06/13-03/28/19	O	21	21	1.0	3.0	1.1	1	0.5	0.2	L
Na (mg/L)	3	11/06/13-03/28/19	O	21	21	2.0	4.0	2.9	3	0.5	0.3	
SO4 (mg/L)	62	11/06/13-03/28/19	O	21	21	54.0	84.0	66.1	65	7.9	0.5	
Nitrate + (mg/L)	< 0.01	11/06/13-03/28/19	O	21	3	< 0.01	0.05					
Al (DIS) (mg/L)	0.014	11/06/13-03/28/19	O	21	14	0.009	0.097	0.018	0.013	0.034	0.119	
Sb (DIS) (mg/L)	< 0.0005	11/06/13-03/28/19	O	21	2	< 0.0005	0.0094					
As (DIS) (mg/L)	0.001	11/06/13-03/28/19	O	21	21	0.001	0.003	0.002	0.002	0	0.0	L
Ba (DIS) (mg/L)	0.042	11/06/13-03/28/19	O	21	21	0.04	0.066	0.046	0.044	0.007	0.557	
Be (DIS) (mg/L)	< 0.0008	11/06/13-03/28/19	O	21	0	< 0.0008 : 0 .0008						
Cd (DIS) (mg/L)	< 0	11/06/13-03/28/19	O	21	1	< 0	0.0					
Cr (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	O	21	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	O	21	0	< 0.01	< 0.01					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Cu (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	0	< 0.002	< 0.002				
Fe (DIS) (mg/L)	0.05	11/06/13-03/28/19	O	21	20	0.02	0.22	0.05	0.05	0.07	0.01
Pb (DIS) (mg/L)	0.0006	11/06/13-03/28/19	O	21	10	< 0.0003	0.0037				
Mn (DIS) (mg/L)	0.016	11/06/13-03/28/19	O	21	21	0.013	0.369	0.041	0.033	0.075	0.333
Hg (DIS) (ug/L)	< 0.005	11/06/13-03/28/19	O	21	1	< 0	< .005				
Mo (DIS) (mg/L)	0.004	11/06/13-03/28/19	O	21	17	0.002	0.012	0.003	0.002	0.002	0.743
Ni (DIS) (mg/L)	< 0.001	11/06/13-03/28/19	O	21	1	< 0.001	< 0.001				
Se (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	1	< 0.0002	0.0005				
Ag (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	0	< 0.0002	: 0.0002				
Sr (DIS) (mg/L)	0.17	11/06/13-03/28/19	O	21	21	0.16	0.21	0.17	0.17	0.01	0.16
Tl (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	0	< 0.0002	: 0.0002				
U (DIS) (mg/L)	0.0023	11/06/13-03/28/19	O	21	3	0.0022	< .008				
Zn (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	2	< 0.002	0.005				

SAMPLE NO BBC-1903-217		LAB NO: H19030547-003		STATION:MW-8							
03/28/19											
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	31.75	11/06/13-03/28/19	O	21	21	27.55	32.74	30.48	30.72	1.76	0.72
DO (mg/L)	0.58	11/06/13-03/28/19	O	21	21	0.01	1.3	0.18	0.21	0.33	1.21
EH (Millivolts)	150.64	03/20/18-03/28/19	O	5	5	117.06	150.64	128.71	124.66	12.54	1.75 H
pH Fld (s.u.)	7.89	11/06/13-03/28/19	O	21	21	7.46	8.08	7.89	7.96	0.18	0.02
SC Fld (umhos/cm)	309	11/06/13-03/28/19	O	21	21	280.0	330.0	307.1	309	12.6	0.1
Water Temp (Deg C)	6.8	11/06/13-03/28/19	O	21	21	6.0	7.3	7.0	7.1	0.4	0.4
TDS (mg/L)	160	11/06/13-03/28/19	O	21	21	153.0	171.0	163.4	163	4	0.8
TSS (mg/L)	< 10	03/25/14-03/28/19	O	19	7	< 4	65.0				
Tot Alk (mg/L)	160	11/06/13-03/28/19	O	21	21	150.0	170.0	155.1	150	6.6	0.7
Ca (mg/L)	25	11/06/13-03/28/19	O	21	21	24.0	29.0	26.4	27	1.1	1.3
Chloride (mg/L)	< 1	11/06/13-03/28/19	O	21	0	< 1	< 1				
F (mg/L)	0.2	11/06/13-03/28/19	O	21	21	0.2	0.3	0.2	0.2	0	0.0 L
Tot Hard (mg/L)	158	11/06/13-03/28/19	O	21	21	153.0	173.0	163.1	165	4.7	1.1
Mg (mg/L)	23	11/06/13-03/28/19	O	21	21	22.0	25.0	23.6	24	0.8	0.7
K (mg/L)	< 1	11/06/13-03/28/19	O	21	2	< 1	< 1				
Na (mg/L)	3	11/06/13-03/28/19	O	21	21	3.0	6.0	3.1	3	0.6	0.2 L
SO4 (mg/L)	15	11/06/13-03/28/19	O	21	21	11.0	16.0	14.0	14	1.6	0.7
Nitrate + (mg/L)	< 0.01	11/06/13-03/28/19	O	21	1	< 0.01	< 0.01				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Al (DIS) (mg/L)	< 0.009	11/06/13-03/28/19	O	21	5	< 0.009	0.036					
Sb (DIS) (mg/L)	< 0.0005	11/06/13-03/28/19	O	21	6	< 0.0005	0.0179					
As (DIS) (mg/L)	0.002	11/06/13-03/28/19	O	21	21	0.002	0.004	0.002	0.002	0.001	0.233	L
Ba (DIS) (mg/L)	0.079	11/06/13-03/28/19	O	21	21	0.066	0.08	0.075	0.075	0.003	1.345	
Be (DIS) (mg/L)	< 0.0008	11/06/13-03/28/19	O	21	0	< 0.0008	: 0 .0008					
Cd (DIS) (mg/L)	< 0	11/06/13-03/28/19	O	21	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	O	21	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	11/06/13-03/28/19	O	21	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	0.1	11/06/13-03/28/19	O	21	21	0.0	0.1	0.1	0.1	0	0.0	
Pb (DIS) (mg/L)	< 0.0003	11/06/13-03/28/19	O	21	0	< 0.0003	: 0 .0003					
Mn (DIS) (mg/L)	0.019	11/06/13-03/28/19	O	21	21	0.013	0.255	0.035	0.03	0.05	0.317	
Hg (DIS) (ug/L)	< 0.005	11/06/13-03/28/19	O	21	0	< 0	< .005					
Mo (DIS) (mg/L)	0.002	11/06/13-03/28/19	O	21	14	< 0.002	0.015	0.003	0.002	0.003	0.206	L
Ni (DIS) (mg/L)	< 0.001	11/06/13-03/28/19	O	21	1	< 0.001	< 0.001					
Se (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	2	< 0.0002	0.0328					
Ag (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	0	< 0.0002	: 0 .0002					
Sr (DIS) (mg/L)	0.0877	11/06/13-03/28/19	O	21	21	0.0751	0.0984	0.0869	0.0873	0.0039	0.1999	
Tl (DIS) (mg/L)	< 0.0002	11/06/13-03/28/19	O	21	0	< 0.0002	: 0 .0002					
U (DIS) (mg/L)	0.0008	11/06/13-03/28/19	O	21	3	0.0007	< .008					
Zn (DIS) (mg/L)	< 0.002	11/06/13-03/28/19	O	21	2	< 0.002	0.003					

SAMPLE NO BBC-1903-201 LAB NO: H19030476-002

STATION:MW-9

03/25/19	PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
	Depth to W (Feet)	51.68	11/24/14-03/25/19	O	18	18	46.89	52.22	50.58	50.84	1.18	0.93
	DO (mg/L)	0.06	11/24/14-03/25/19	O	18	18	0.02	1.25	0.16	0.13	0.41	0.25
	EH (Millivolts)	207.06	03/19/18-03/25/19	O	5	5	172.8	227.53	198.21	195.02	20.13	0.44
	pH Fld (s.u.)	7.1	11/24/14-03/25/19	O	18	18	6.7	7.2	7.0	7.1	0.1	0.7
	SC Fld (umhos/cm)	784	11/24/14-03/25/19	O	18	18	470.0	826.0	757.5	782	77.6	0.3
	Water Temp (Deg C)	8.5	11/24/14-03/25/19	O	18	18	6.8	9.4	8.4	8.6	0.7	0.1
	TDS (mg/L)	506	11/24/14-03/25/19	O	18	18	501.0	548.0	524.7	527.5	10.7	1.7
	TSS (mg/L)	< 10	03/24/15-03/25/19	O	17	1	< 4	51.0				
	Tot Alk (mg/L)	240	11/24/14-03/25/19	O	18	18	230.0	250.0	242.7	240	5.5	0.5
	Ca (mg/L)	91	11/24/14-03/25/19	O	18	18	79.0	91.0	87.8	88	3	1.1 H

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Chloride (mg/L)	1	11/24/14-03/25/19	O	18	18	1.0	2.0	1.1	1	0.2	0.3	L
F (mg/L)	0.5	11/24/14-03/25/19	O	18	18	0.5	0.6	0.6	0.6	0	0.0	L
Tot Hard (mg/L)	450	11/24/14-03/25/19	O	18	18	389.0	454.0	430.0	432	18.1	1.1	
Mg (mg/L)	54	11/24/14-03/25/19	O	18	18	46.0	55.0	51.4	51.5	2.2	1.2	
K (mg/L)	4	11/24/14-03/25/19	O	18	18	4.0	5.0	4.1	4	0.3	0.3	L
Na (mg/L)	6	11/24/14-03/25/19	O	18	18	5.0	6.0	5.3	5	0.5	1.4	H
SO4 (mg/L)	198	11/24/14-03/25/19	O	18	18	190.0	216.0	202.5	201	7.4	0.6	
Nitrate + (mg/L)	< 0.01	11/24/14-03/25/19	O	18	2	< 0.01	0.02					
Al (DIS) (mg/L)	< 0.009	11/24/14-03/25/19	O	18	3	< 0.009	0.042					
Sb (DIS) (mg/L)	< 0.0005	11/24/14-03/25/19	O	18	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	0.014	11/24/14-03/25/19	O	18	18	0.012	0.015	0.013	0.013	0.001	1.038	
Ba (DIS) (mg/L)	0.016	11/24/14-03/25/19	O	18	18	0.012	0.021	0.015	0.014	0.002	0.742	
Be (DIS) (mg/L)	< 0.0008	11/24/14-03/25/19	O	18	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	11/24/14-03/25/19	O	18	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	11/24/14-03/25/19	O	18	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	11/24/14-03/25/19	O	18	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	11/24/14-03/25/19	O	18	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	0.86	11/24/14-03/25/19	O	18	18	0.78	0.9	0.83	0.84	0.03	0.9	
Pb (DIS) (mg/L)	0.0013	11/24/14-03/25/19	O	18	15	< 0.0003	0.012	0.0018	0.0025	0.003	0.1582	
Mn (DIS) (mg/L)	0.088	11/24/14-03/25/19	O	18	18	0.088	0.129	0.096	0.093	0.01	0.781	L
Hg (DIS) (ug/L)	< 0.005	11/24/14-03/25/19	O	18	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	11/24/14-03/25/19	O	18	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	11/24/14-03/25/19	O	18	8	0.001	0.001					
Se (DIS) (mg/L)	< 0.0002	11/24/14-03/25/19	O	18	0	< 0.0002	< .0004					
Ag (DIS) (mg/L)	< 0.0002	11/24/14-03/25/19	O	18	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	1.34	11/24/14-03/25/19	O	18	18	1.08	1.53	1.23	1.23	0.12	0.9	
Tl (DIS) (mg/L)	0.0027	11/24/14-03/25/19	O	18	18	0.0027	0.0045	0.0036	0.0037	0.0004	2.3395	L
U (DIS) (mg/L)	0.001	11/24/14-03/25/19	O	18	2	0.001	< .008					
Zn (DIS) (mg/L)	< 0.002	11/24/14-03/25/19	O	18	9	< 0.002	0.004					

SAMPLE NO		BBC-1903-300	LAB NO:		H19030547-010		STATION:SC15-184					
03/28/19		COMPARISON		QC	# OF	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S	
PARAMETER	RESULT	PERIOD OF DATA	Code	N	DET						FROM MEAN	
DO (mg/L)	7.12	08/04/15-03/28/19	O	9	9	4.58	8.34	6.25	6.35	1.19	0.73	
EH (Millivolts)	297.63	06/13/18-03/28/19	O	4	4	247.81	386.41	308.35	307.41	57.42	0.19	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

pH Fld (s.u.)	7.91	08/04/15-03/28/19	O	9	9	7.32	8.01	7.83	7.91	0.21	0.36	
SC Fld (umhos/cm)	372	08/04/15-03/28/19	O	9	9	333.0	380.0	364.0	367	13.9	0.6	
Water Temp (Deg C)	6.3	08/04/15-03/28/19	O	9	9	5.8	6.8	6.3	6.5	0.3	0.1	
TDS (mg/L)	198	08/04/15-03/28/19	O	9	9	194.0	214.0	199.7	198	6.3	0.3	
TSS (mg/L)	< 10	08/04/15-03/28/19	O	9	1	< 10	110.0					
Tot Alk (mg/L)	190	08/04/15-03/28/19	O	9	9	180.0	190.0	187.7	190	4.2	0.5	H
Ca (mg/L)	38	08/04/15-03/28/19	O	9	9	36.0	40.0	38.1	38	1.5	0.1	
Chloride (mg/L)	< 1	08/04/15-03/28/19	O	9	0	< 1	< 1					
F (mg/L)	0.2	08/04/15-03/28/19	O	9	9	0.2	0.2	0.2	0.2	0	0.0	H
Tot Hard (mg/L)	202	08/04/15-03/28/19	O	9	9	192.0	215.0	202.8	202	7.9	0.1	
Mg (mg/L)	26	08/04/15-03/28/19	O	9	9	25.0	28.0	26.1	26	0.9	0.1	
K (mg/L)	< 1	08/04/15-03/28/19	O	9	0	< 1	< 1					
Na (mg/L)	2	08/04/15-03/28/19	O	9	9	2.0	2.0	2.0	2	0	0.0	H
SO4 (mg/L)	15	08/04/15-03/28/19	O	9	9	11.0	16.0	13.8	14	2.2	0.6	
Nitrate + (mg/L)	0.25	08/04/15-03/28/19	O	9	9	0.24	0.3	0.26	0.25	0.02	0.3	
Al (DIS) (mg/L)	< 0.009	08/04/15-03/28/19	O	9	3	< 0.009	0.059					
Sb (DIS) (mg/L)	< 0.0005	08/04/15-03/28/19	O	9	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	< 0.001	08/04/15-03/28/19	O	9	0	< 0.001	< 0.001					
Ba (DIS) (mg/L)	0.092	08/04/15-03/28/19	O	9	9	0.083	0.092	0.088	0.089	0.004	1.015	H
Be (DIS) (mg/L)	< 0.0008	08/04/15-03/28/19	O	9	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	08/04/15-03/28/19	O	9	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	08/04/15-03/28/19	O	9	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	08/04/15-03/28/19	O	9	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	08/04/15-03/28/19	O	9	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	< 0.02	08/04/15-03/28/19	O	9	3	< 0.02	0.05					
Pb (DIS) (mg/L)	< 0.0003	08/04/15-03/28/19	O	9	0	< 0.0003	: 0.0003					
Mn (DIS) (mg/L)	< 0.005	08/04/15-03/28/19	O	9	0	< 0.005	< 0.005					
Hg (DIS) (ug/L)	< 0.005	08/04/15-03/28/19	O	9	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	08/04/15-03/28/19	O	9	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	08/04/15-03/28/19	O	9	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	0.001	08/04/15-03/28/19	O	9	9	0.001	0.001	0.001	0.001	0	0.0	
Ag (DIS) (mg/L)	< 0.0002	08/04/15-03/28/19	O	9	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.123	08/04/15-03/28/19	O	9	9	0.105	0.123	0.117	0.118	0.007	0.893	H
Tl (DIS) (mg/L)	< 0.0002	08/04/15-03/28/19	O	9	0	< 0.0002	: 0.0002					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

U (DIS) (mg/L)	0.0011	08/04/15-03/28/19	O	9	2	0.001	< .008					
Zn (DIS) (mg/L)	< 0.002	08/04/15-03/28/19	O	9	5	< 0.002	0.008	0.003	0.003	0.003	0.416	L

SAMPLE NO BBC-1903-301		LAB NO: z		STATION:SC15-185								
03/28/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Depth to W (Feet)	35.52	08/04/15-11/15/18	OBS	13	13	23.4	37.21	31.08	30.97	3.73	1.19	

SAMPLE NO BBC-1903-112		LAB NO: H19030475-005		STATION:SP-10								
03/26/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	7.73	05/23/18-03/26/19	O	9	9	6.76	8.93	7.91	8	1.1	0.17	
pH Fld (s.u.)	7.83	05/23/18-03/26/19	O	9	9	6.92	8.09	7.54	7.55	0.3	0.96	
SC Fld (umhos/cm)	400	05/23/18-03/26/19	O	9	9	305.0	434.0	396.9	419	33.4	0.1	
Flow (Gallons Per Min)	0.01	05/23/18-03/26/19	O	8	8	0.01	59.69	2.04	1.92	14.82	0.14	L
Water Temp (Deg C)	3.8	05/23/18-03/26/19	O	9	9	3.8	8.1	6.4	6.9	2.5	1.0	L
TDS (mg/L)	218	05/23/18-03/26/19	O	9	9	203.0	234.0	223.8	229	11.8	0.5	
TSS (mg/L)	< 10	05/23/18-03/26/19	O	9	3	< 10	68.0					
Tot Alk (mg/L)	200	05/23/18-03/26/19	O	9	9	180.0	220.0	209.6	220	13.7	0.7	
Ca (mg/L)	55	05/23/18-03/26/19	O	9	9	49.0	61.0	56.3	56	3.6	0.4	
Chloride (mg/L)	< 1	05/23/18-03/26/19	O	9	0	< 1	< 1					
F (mg/L)	0.1	05/23/18-03/26/19	O	9	9	0.1	0.1	0.1	0.1	0	0.0	H
Tot Hard (mg/L)	221	05/23/18-03/26/19	O	9	9	193.0	245.0	224.2	221	15.3	0.2	
Mg (mg/L)	20	05/23/18-03/26/19	O	9	9	17.0	22.0	20.2	20	1.5	0.1	
K (mg/L)	< 1	05/23/18-03/26/19	O	9	5	< 1	< 1	1.0	1	0	0.0	H
Na (mg/L)	2	05/23/18-03/26/19	O	9	9	2.0	2.0	2.0	2	0	0.0	H
SO4 (mg/L)	16	05/23/18-03/26/19	O	9	9	8.0	17.0	13.5	14	3.2	0.8	
Nitrate + (mg/L)	0.24	05/23/18-03/26/19	O	9	9	0.16	0.28	0.22	0.24	0.04	0.39	
Al (DIS) (mg/L)	< 0.009	05/23/18-03/26/19	O	9	0	< 0.009	< 0.009					
Sb (DIS) (mg/L)	< 0.0005	05/23/18-03/26/19	O	9	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	< 0.001	05/23/18-03/26/19	O	9	0	< 0.001	< 0.001					
Ba (DIS) (mg/L)	0.048	05/23/18-03/26/19	O	9	9	0.04	0.056	0.05	0.053	0.005	0.488	
Be (DIS) (mg/L)	< 0.0008	05/23/18-03/26/19	O	9	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	05/23/18-03/26/19	O	9	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	05/23/18-03/26/19	O	9	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	05/23/18-03/26/19	O	9	0	< 0.01	< 0.01					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Cu (DIS) (mg/L)	< 0.002	05/23/18-03/26/19	O	9	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	< 0.02	05/23/18-03/26/19	O	9	0	< 0.02	< 0.02					
Pb (DIS) (mg/L)	< 0.0003	05/23/18-03/26/19	O	9	0	< 0.0003	: 0.0003					
Mn (DIS) (mg/L)	< 0.005	05/23/18-03/26/19	O	9	3	< 0.005	0.024					
Hg (DIS) (ug/L)	< 0.005	05/23/18-03/26/19	O	9	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	05/23/18-03/26/19	O	9	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	05/23/18-03/26/19	O	9	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	0.0003	05/23/18-03/26/19	O	9	7	< 0.0002	0.0003	0.0003	0.0003	0.0001	0.3793	H
Ag (DIS) (mg/L)	< 0.0002	05/23/18-03/26/19	O	9	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.107	05/23/18-03/26/19	O	9	9	0.095	0.122	0.111	0.113	0.008	0.509	
Tl (DIS) (mg/L)	< 0.0002	05/23/18-03/26/19	O	9	0	< 0.0002	: 0.0002					
U (DIS) (mg/L)	0.0007	05/23/18-03/26/19	O	9	3	0.0007	< .008					
Zn (DIS) (mg/L)	< 0.002	05/23/18-03/26/19	O	9	0	< 0.002	< 0.002					

SAMPLE NO BBC-1903-100		LAB NO: H19030475-001		STATION:SP-4								
03/26/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	9.66	07/21/11-03/26/19	O	50	50	6.7	13.95	9.82	9.7	1.37	0.12	
pH Fld (s.u.)	8.02	07/21/11-03/26/19	O	49	49	6.95	8.63	7.7	7.71	0.29	1.11	
SC Fld (umhos/cm)	438	07/21/11-03/26/19	O	50	50	162.0	481.0	420.4	434	46.9	0.4	
Flow (Gallons Per Min)	2.6	07/21/11-03/26/19	O	42	42	0.0	50.3	2.8	5.4	9.3	0.0	
Water Temp (Deg C)	5.6	07/21/11-03/26/19	O	49	49	0.1	12.2	5.6	6.5	2.2	0.0	
TDS (mg/L)	234	07/21/11-03/26/19	O	50	50	202.0	272.0	247.2	251	14	0.9	
TSS (mg/L)	< 10	08/28/13-03/26/19	O	47	29	5.0	890.0	21.3	12	125.7	0.1	
Tot Alk (mg/L)	200	07/21/11-03/26/19	O	50	50	190.0	210.0	201.4	200	4.5	0.3	
Ca (mg/L)	50	07/21/11-03/26/19	O	50	50	42.0	56.0	50.8	51	2.5	0.3	
Chloride (mg/L)	< 1	07/21/11-03/26/19	O	50	14	1.0	1.0					
F (mg/L)	0.2	07/21/11-03/26/19	O	50	50	0.2	0.3	0.2	0.2	0	0.0	L
Tot Hard (mg/L)	231	07/21/11-03/26/19	O	50	50	208.0	255.0	236.5	238	11	0.5	
Mg (mg/L)	26	07/21/11-03/26/19	O	50	50	24.0	29.0	26.6	27	1.2	0.5	
K (mg/L)	2	07/21/11-03/26/19	O	50	50	1.0	2.0	1.9	2	0.3	0.4	H
Na (mg/L)	2	07/21/11-03/26/19	O	50	50	2.0	2.0	2.0	2	0	0.0	H
SO4 (mg/L)	40	07/21/11-03/26/19	O	50	50	10.0	45.0	35.4	38	6.6	0.7	
Nitrate + (mg/L)	0.24	07/21/11-03/26/19	O	50	50	0.18	0.35	0.25	0.25	0.03	0.35	
Al (DIS) (mg/L)	< 0.009	07/21/11-03/26/19	O	50	4	< 0.009	0.031					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Sb (DIS) (mg/L)	< 0.0005	07/21/11-03/26/19	O	49	0	< 0.0005	< .003				
As (DIS) (mg/L)	< 0.001	07/21/11-03/26/19	O	49	0	< 0.001	< .003				
Ba (DIS) (mg/L)	0.113	07/21/11-03/26/19	O	49	49	0.101	0.121	0.112	0.112	0.005	0.259
Be (DIS) (mg/L)	< 0.0008	07/21/11-03/26/19	O	49	0	< 0.0008	< .001				
Cd (DIS) (mg/L)	< 0	07/21/11-03/26/19	O	49	0	< 0	< .00008				
Cr (DIS) (mg/L)	< 0.01	07/21/11-03/26/19	O	49	0	< 0	< .01				
Co (DIS) (mg/L)	< 0.01	07/21/11-03/26/19	O	49	0	< 0.01	< .01				
Cu (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	1	< 0.001	0.017				
Fe (DIS) (mg/L)	< 0.02	07/21/11-03/26/19	O	49	11	< 0.02	0.14				
Pb (DIS) (mg/L)	< 0.0003	07/21/11-03/26/19	O	49	0	< 0.0003	< .0005				
Mn (DIS) (mg/L)	< 0.005	07/21/11-03/26/19	O	49	23	0.004	0.038				
Hg (DIS) (ug/L)	< 0.005	07/21/11-03/26/19	O	48	1	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	0	< 0.001	< .005				
Ni (DIS) (mg/L)	< 0.001	07/21/11-03/26/19	O	49	0	< 0.001	< .01				
Se (DIS) (mg/L)	0.0003	07/21/11-03/26/19	O	49	45	< 0.0002	< .001	0.0004	0.0004	0.0001	1.1629
Ag (DIS) (mg/L)	< 0.0002	07/21/11-03/26/19	O	49	0	< 0.0002	< .0005				
Sr (DIS) (mg/L)	0.0725	07/21/11-03/26/19	O	49	46	0.0672	< .1	0.074	0.073	0.0069	0.2156
Tl (DIS) (mg/L)	0.0003	07/21/11-03/26/19	O	49	49	0.0002	0.0004	0.0003	0.0003	0.0001	0.0327
U (DIS) (mg/L)	0.0005	07/21/11-03/26/19	O	49	9	0.0004	< .008				
Zn (DIS) (mg/L)	< 0.002	07/21/11-03/26/19	O	49	14	< 0.002	< .01				

SAMPLE NO		BBC-1903-107		LAB NO:		H19030475-002		STATION:SP-6				
03/26/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	9.68	10/12/11-03/26/19	O	43	43	6.7	282.0	10.56	9.68	40.16	0.02	
DO (mg/L)	9.68	10/12/11-03/26/19	DUP	43	43	6.7	282.0	10.56	9.68	40.16	0.02	
pH Fld (s.u.)	8.17	10/12/11-03/26/19	O	42	42	5.81	8.72	7.31	7.44	0.66	1.3	
pH Fld (s.u.)	8.17	10/12/11-03/26/19	DUP	42	42	5.81	8.72	7.31	7.44	0.66	1.3	
SC Fld (umhos/cm)	256	10/12/11-03/26/19	DUP	43	43	241.0	327.0	268.8	269	14.6	0.9	
SC Fld (umhos/cm)	256	10/12/11-03/26/19	O	43	43	241.0	327.0	268.8	269	14.6	0.9	
Flow (Gallons Per Min)	0.83	10/12/11-03/26/19	O	41	33	0.27	3.23	1.0	1	0.81	0.21	
Water Temp (Deg C)	4.7	10/12/11-03/26/19	O	42	42	4.4	10.3	7.1	7.6	1.5	1.6	
Water Temp (Deg C)	4.7	10/12/11-03/26/19	DUP	42	42	4.4	10.3	7.1	7.6	1.5	1.6	
TDS (mg/L)	163	10/12/11-03/26/19	O	43	43	145.0	188.0	161.2	161	7.9	0.2	
TDS (mg/L)	156	10/12/11-03/26/19	DUP	43	43	145.0	188.0	161.2	161	7.9	0.7	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

TSS (mg/L)	< 10	08/28/13-03/26/19	O	41	13	< 4	216.0					
TSS (mg/L)	< 10	08/28/13-03/26/19	DUP	41	13	< 4	216.0					
Tot Alk (mg/L)	140	10/12/11-03/26/19	O	43	43	120.0	160.0	134.7	130	6.9	0.8	
Tot Alk (mg/L)	140	10/12/11-03/26/19	DUP	43	43	120.0	160.0	134.7	130	6.9	0.8	
Ca (mg/L)	35	10/12/11-03/26/19	DUP	43	43	32.0	38.0	35.0	35	1.4	0.0	
Ca (mg/L)	35	10/12/11-03/26/19	O	43	43	32.0	38.0	35.0	35	1.4	0.0	
Chloride (mg/L)	< 1	10/12/11-03/26/19	O	43	10	< 1	2.0					
Chloride (mg/L)	< 1	10/12/11-03/26/19	DUP	43	10	< 1	2.0					
F (mg/L)	0.2	10/12/11-03/26/19	O	43	43	0.1	0.2	0.2	0.2	0	0.0	H
F (mg/L)	0.2	10/12/11-03/26/19	DUP	43	43	0.1	0.2	0.2	0.2	0	0.0	H
Tot Hard (mg/L)	142	10/12/11-03/26/19	O	43	43	129.0	160.0	140.8	141	6.4	0.2	
Tot Hard (mg/L)	141	10/12/11-03/26/19	DUP	43	43	129.0	160.0	140.8	141	6.4	0.0	
Mg (mg/L)	13	10/12/11-03/26/19	O	43	43	12.0	16.0	12.9	13	0.9	0.1	
Mg (mg/L)	13	10/12/11-03/26/19	DUP	43	43	12.0	16.0	12.9	13	0.9	0.1	
K (mg/L)	< 1	10/12/11-03/26/19	DUP	43	8	< 1	< 1					
K (mg/L)	< 1	10/12/11-03/26/19	O	43	8	< 1	< 1					
Na (mg/L)	2	10/12/11-03/26/19	DUP	43	43	2.0	2.0	2.0	2	0	0.0	H
Na (mg/L)	2	10/12/11-03/26/19	O	43	43	2.0	2.0	2.0	2	0	0.0	H
SO4 (mg/L)	9	10/12/11-03/26/19	DUP	43	43	7.0	12.0	8.9	9.1	1.5	0.0	
SO4 (mg/L)	9	10/12/11-03/26/19	O	43	43	7.0	12.0	8.9	9.1	1.5	0.0	
Nitrate + (mg/L)	0.39	10/12/11-03/26/19	DUP	43	43	0.31	0.68	0.38	0.37	0.07	0.08	
Nitrate + (mg/L)	0.39	10/12/11-03/26/19	O	43	43	0.31	0.68	0.38	0.37	0.07	0.08	
Al (DIS) (mg/L)	0.041	10/12/11-03/26/19	DUP	43	20	0.004	0.16					
Al (DIS) (mg/L)	0.045	10/12/11-03/26/19	O	43	20	0.004	0.16					
Sb (DIS) (mg/L)	< 0.0005	10/12/11-03/26/19	DUP	42	0	< 0.0005	< .003					
Sb (DIS) (mg/L)	< 0.0005	10/12/11-03/26/19	O	42	0	< 0.0005	< .003					
As (DIS) (mg/L)	< 0.001	10/12/11-03/26/19	DUP	42	0	< 0.001	< .003					
As (DIS) (mg/L)	< 0.001	10/12/11-03/26/19	O	42	0	< 0.001	< .003					
Ba (DIS) (mg/L)	0.186	10/12/11-03/26/19	DUP	42	42	0.168	0.217	0.191	0.191	0.009	0.529	
Ba (DIS) (mg/L)	0.188	10/12/11-03/26/19	O	42	42	0.168	0.217	0.191	0.191	0.009	0.307	
Be (DIS) (mg/L)	< 0.0008	10/12/11-03/26/19	DUP	42	0	< 0.0008	< .001					
Be (DIS) (mg/L)	< 0.0008	10/12/11-03/26/19	O	42	0	< 0.0008	< .001					
Cd (DIS) (mg/L)	< 0	10/12/11-03/26/19	DUP	42	0	< 0	< .00008					
Cd (DIS) (mg/L)	< 0	10/12/11-03/26/19	O	42	0	< 0	< .00008					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Cr (DIS) (mg/L)	< 0.01	10/12/11-03/26/19	O	42	0	< 0	< .01				
Cr (DIS) (mg/L)	< 0.01	10/12/11-03/26/19	DUP	42	0	< 0	< .01				
Co (DIS) (mg/L)	< 0.01	10/12/11-03/26/19	DUP	42	0	< 0.01	< .01				
Co (DIS) (mg/L)	< 0.01	10/12/11-03/26/19	O	42	0	< 0.01	< .01				
Cu (DIS) (mg/L)	< 0.002	10/12/11-03/26/19	DUP	42	0	< 0.001	< .002				
Cu (DIS) (mg/L)	< 0.002	10/12/11-03/26/19	O	42	0	< 0.001	< .002				
Fe (DIS) (mg/L)	0.03	10/12/11-03/26/19	DUP	42	15	< 0.02	0.19				
Fe (DIS) (mg/L)	0.03	10/12/11-03/26/19	O	42	15	< 0.02	0.19				
Pb (DIS) (mg/L)	< 0.0003	10/12/11-03/26/19	O	42	1	< 0.0003	< .0005				
Pb (DIS) (mg/L)	< 0.0003	10/12/11-03/26/19	DUP	42	1	< 0.0003	< .0005				
Mn (DIS) (mg/L)	< 0.005	10/12/11-03/26/19	DUP	42	7	< 0.001	0.102				
Mn (DIS) (mg/L)	< 0.005	10/12/11-03/26/19	O	42	7	< 0.001	0.102				
Hg (DIS) (ug/L)	< 0.005	10/12/11-03/26/19	O	41	1	< 0	< .005				
Hg (DIS) (ug/L)	< 0.005	10/12/11-03/26/19	DUP	41	1	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	10/12/11-03/26/19	O	42	0	< 0.001	< .005				
Mo (DIS) (mg/L)	< 0.002	10/12/11-03/26/19	DUP	42	0	< 0.001	< .005				
Ni (DIS) (mg/L)	< 0.001	10/12/11-03/26/19	O	42	1	< 0.001	< .01				
Ni (DIS) (mg/L)	< 0.001	10/12/11-03/26/19	DUP	42	1	< 0.001	< .01				
Se (DIS) (mg/L)	< 0.0002	10/12/11-03/26/19	DUP	42	12	< 0.0002	< .001				
Se (DIS) (mg/L)	< 0.0002	10/12/11-03/26/19	O	42	12	< 0.0002	< .001				
Ag (DIS) (mg/L)	< 0.0002	10/12/11-03/26/19	DUP	42	0	< 0.0002	< .0005				
Ag (DIS) (mg/L)	< 0.0002	10/12/11-03/26/19	O	42	0	< 0.0002	< .0005				
Sr (DIS) (mg/L)	0.074	10/12/11-03/26/19	DUP	42	40	0.065	< .1	0.073	0.073	0.006	0.118
Sr (DIS) (mg/L)	0.0734	10/12/11-03/26/19	O	42	40	0.0654	< .1	0.0733	0.0729	0.0063	0.0169
Tl (DIS) (mg/L)	0.0005	10/12/11-03/26/19	O	42	42	0.0004	0.0007	0.0005	0.0005	0.0001	0.0109
Tl (DIS) (mg/L)	0.0005	10/12/11-03/26/19	DUP	42	42	0.0004	0.0007	0.0005	0.0005	0.0001	0.0109
U (DIS) (mg/L)	0.0004	10/12/11-03/26/19	DUP	42	12	< 0.0003	< .008				
U (DIS) (mg/L)	0.0004	10/12/11-03/26/19	O	42	12	< 0.0003	< .008				
Zn (DIS) (mg/L)	< 0.002	10/12/11-03/26/19	O	42	7	0.001	< .01				
Zn (DIS) (mg/L)	< 0.002	10/12/11-03/26/19	DUP	42	7	0.001	< .01				

SAMPLE NO		LAB NO:		STATION:SP-7							
03/27/19		H19030475-008									
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	2.46	03/26/15-03/27/19	O	47	47	2.3	10.98	3.72	3.54	1.62	0.78

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

pH Fld (s.u.)	7.1	03/26/15-03/27/19	O	46	46	6.2	8.2	7.4	7.4	0.3	0.9
SC Fld (umhos/cm)	341	03/26/15-03/27/19	O	47	47	196.0	354.0	320.7	330	28.8	0.7
Flow (Gallons Per Min)	13.02	03/26/15-03/27/19	O	40	40	6.7	136.0	17.9	15.3	25.39	0.19
Water Temp (Deg C)	6.6	03/26/15-03/27/19	O	46	46	5.1	7.4	6.5	6.6	0.6	0.2
TDS (mg/L)	186	03/26/15-03/27/19	O	47	47	173.0	200.0	187.1	187	6.8	0.2
TSS (mg/L)	< 10	03/26/15-03/27/19	O	47	7	< 4	146.0				
Tot Alk (mg/L)	170	03/26/15-03/27/19	O	47	47	160.0	170.0	166.3	170	4.7	0.8 H
Ca (mg/L)	45	03/26/15-03/27/19	O	47	47	40.0	46.0	42.9	43	1.4	1.5
Chloride (mg/L)	2	03/26/15-03/27/19	O	47	47	1.0	2.0	1.7	2	0.3	0.8 H
F (mg/L)	0.3	03/26/15-03/27/19	O	47	47	0.3	0.4	0.3	0.3	0	0.0 L
Tot Hard (mg/L)	175	03/26/15-03/27/19	O	47	47	153.0	178.0	168.1	169	5.5	1.3
Mg (mg/L)	15	03/26/15-03/27/19	O	47	47	13.0	16.0	14.8	15	0.6	0.4
K (mg/L)	3	03/26/15-03/27/19	O	47	47	2.0	3.0	2.7	3	0.4	0.7 H
Na (mg/L)	5	03/26/15-03/27/19	O	47	47	4.0	5.0	4.7	5	0.5	0.6 H
SO4 (mg/L)	11	03/26/15-03/27/19	O	47	47	7.0	12.0	9.6	10	1.1	1.3
Nitrate + (mg/L)	0.31	03/26/15-03/27/19	O	47	47	0.27	0.41	0.31	0.31	0.02	0.04
Al (DIS) (mg/L)	< 0.009	03/26/15-03/27/19	O	47	2	< 0.009	0.311				
Sb (DIS) (mg/L)	< 0.0005	03/26/15-03/27/19	O	46	0	< 0.0005	: 0.0005				
As (DIS) (mg/L)	0.004	03/26/15-03/27/19	O	46	46	0.003	0.004	0.004	0.004	0	0.0 H
Ba (DIS) (mg/L)	0.115	03/26/15-03/27/19	O	46	46	0.1	0.122	0.112	0.112	0.005	0.669
Be (DIS) (mg/L)	< 0.0008	03/26/15-03/27/19	O	46	0	< 0.0008	: 0.0008				
Cd (DIS) (mg/L)	< 0	03/26/15-03/27/19	O	46	0	< 0	: .00003				
Cr (DIS) (mg/L)	< 0.01	03/26/15-03/27/19	O	46	0	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	03/26/15-03/27/19	O	46	0	< 0.01	< 0.01				
Cu (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	2	< 0.002	0.015				
Fe (DIS) (mg/L)	< 0.02	03/26/15-03/27/19	O	46	4	< 0.02	0.36				
Pb (DIS) (mg/L)	< 0.0003	03/26/15-03/27/19	O	46	1	< 0.0003	0.0006				
Mn (DIS) (mg/L)	< 0.005	03/26/15-03/27/19	O	46	1	< 0.005	< 0.005				
Hg (DIS) (ug/L)	< 0.005	03/26/15-03/27/19	O	46	1	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	0	< 0.002	< 0.002				
Ni (DIS) (mg/L)	< 0.001	03/26/15-03/27/19	O	46	0	< 0.001	< 0.001				
Se (DIS) (mg/L)	0.0003	03/26/15-03/27/19	O	46	42	0.0002	< .0004	0.0003	0.0003	0.0001	0.1408
Ag (DIS) (mg/L)	< 0.0002	03/26/15-03/27/19	O	46	0	< 0.0002	: 0.0002				
Sr (DIS) (mg/L)	0.17	03/26/15-03/27/19	O	46	46	0.15	0.18	0.17	0.17	0.01	0.41

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

TI (DIS) (mg/L)	0.0011	03/26/15-03/27/19	O	46	46	0.0007	0.0011	0.001	0.001	0.0001	1.3357	H
U (DIS) (mg/L)	0.001	03/26/15-03/27/19	O	46	5	0.001	< .008					
Zn (DIS) (mg/L)	< 0.002	03/26/15-03/27/19	O	46	2	< 0.002	0.003					

SAMPLE NO BBC-1903-120 LAB NO: H19030477-003

STATION:SW-1

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	11.47	05/24/11-03/27/19	O	74	74	3.91	15.0	10.95	10.89	1.94	0.27
pH Fld (s.u.)	7.86	05/24/11-03/27/19	O	73	73	5.3	8.71	7.82	8.03	0.66	0.06
SC Fld (umhos/cm)	309	05/24/11-03/27/19	O	74	74	176.0	363.0	286.2	311	52.4	0.4
Water Temp (Deg C)	0.5	05/24/11-03/27/19	O	74	74	-1.0	14.5	0.5	3.4	4.8	0.0
TDS (mg/L)	180	05/24/11-03/27/19	O	71	71	107.0	227.0	169.8	180	27.1	0.4
TSS (mg/L)	4	05/30/12-03/27/19	O	67	25	< 4	43.0				
Tot Alk (mg/L)	150	05/24/11-03/27/19	O	71	71	87.0	200.0	153.6	170	30.3	0.1
Ca (mg/L)	43	05/24/11-03/27/19	O	71	71	23.0	55.0	42.5	46	8.6	0.1
Chloride (mg/L)	4	05/24/11-03/27/19	O	71	70	1.0	5.0	1.4	1	0.7	3.8 *
F (mg/L)	< 0.1	05/24/11-03/27/19	O	71	22	< 0.1	0.2				
Tot Hard (mg/L)	156	05/24/11-03/27/19	O	71	70	< 7	199.0	145.6	164	35	0.3
Mg (mg/L)	12	05/24/11-03/27/19	O	71	71	6.0	15.0	11.2	12	2.4	0.3
K (mg/L)	3	05/24/11-03/27/19	O	71	68	1.0	3.0	1.1	1	0.5	3.8 *H
Na (mg/L)	3	05/24/11-03/27/19	O	71	71	1.0	3.0	2.2	2	0.5	1.7 H
SO4 (mg/L)	7	05/24/11-03/27/19	O	71	71	2.0	18.0	5.2	5	2.1	0.9
Nitrate + (mg/L)	0.09	05/24/11-03/27/19	O	71	34	< 0.01	0.15				
P (mg/L)	0.05	05/16/14-03/27/19	O	57	53	< 0	0.09	0.01	0.01	0.02	1.88
Total Pers (mg/L)	0.48	04/29/15-03/27/19	O	45	41	< 0	1.12	0.13	0.15	0.17	2.07
Al (DIS) (mg/L)	0.03	05/24/11-03/27/19	O	71	26	< 0.01	0.33				
Sb (TRC) (mg/L)	< 0.0005	05/24/11-03/27/19	O	71	0	< 0.0005	< .005				
As (TRC) (mg/L)	< 0.001	05/24/11-03/27/19	O	71	12	< 0.001	< .003				
Ba (TRC) (mg/L)	0.106	05/24/11-03/27/19	O	71	71	0.083	0.127	0.104	0.104	0.009	0.19
Be (TRC) (mg/L)	< 0.0008	05/24/11-03/27/19	O	71	0	< 0.0008	< .001				
Cd (TRC) (mg/L)	< 0	05/24/11-03/27/19	O	71	5	< 0	0.0002				
Cr (TRC) (mg/L)	< 0.01	05/24/11-03/27/19	O	71	2	< 0	< .01				
Co (TRC) (mg/L)	< 0.01	05/24/11-03/27/19	O	71	0	< 0.01	< .01				
Cu (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	O	71	5	< 0.001	0.003				
Fe (TRC) (mg/L)	0.3	05/24/11-03/27/19	O	71	71	0.1	1.9	0.2	0.2	0.4	0.2

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Pb (TRC) (mg/L)	< 0.0003	05/24/11-03/27/19	O	71	13	< 0.0003	0.0015				
Mn (TRC) (mg/L)	0.021	05/24/11-03/27/19	O	71	71	0.009	0.053	0.017	0.016	0.011	0.346
Hg (TRC) (ug/L)	0.007	05/24/11-03/27/19	O	71	11	< 0	0.007				
Mo (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	O	71	0	< 0.001	< .005				
Ni (TRC) (mg/L)	< 0.001	05/24/11-03/27/19	O	71	10	< 0.001	< .01				
Se (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	< .001				
Ag (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	< .0005				
Sr (TRC) (mg/L)	0.113	05/24/11-03/27/19	O	71	68	0.078	0.147	0.116	0.119	0.016	0.192
Tl (TRC) (mg/L)	< 0.0002	05/24/11-03/27/19	O	71	0	< 0.0002	: 0 .0002				
U (TRC) (mg/L)	0.0003	05/24/11-03/27/19	O	71	12	< 0.0003	< .008				
Zn (TRC) (mg/L)	< 0.002	05/24/11-03/27/19	O	71	24	< 0.002	< .01				

SAMPLE NO BBC-1903-115 LAB NO: z

STATION:SW-10

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	10.32	06/24/15-11/17/15	OBS	2	2	8.74	11.02	9.81	9.88	2.29	0.22
pH Fld (s.u.)	8.1	06/24/15-11/17/15	OBS	2	2	8.4	8.5	8.5	8.5	0.5	0.7 L
SC Fld (umhos/cm)	238	06/24/15-11/17/15	OBS	2	2	413.0	419.0	416.0	416	39.7	4.5 *L
Water Temp (Deg C)	0.41	06/24/15-11/17/15	OBS	2	2	0.02	13.9	0.53	6.96	6.38	0.02

SAMPLE NO BBC-1903-105 LAB NO: H19030477-001

STATION:SW-11

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	10.92	05/25/11-03/26/19	O	32	32	7.03	15.4	10.91	11.2	1.88	0.01
pH Fld (s.u.)	8.23	05/25/11-03/26/19	O	32	32	7.45	8.69	8.2	8.23	0.29	0.09
SC Fld (umhos/cm)	343	05/25/11-03/26/19	O	32	32	312.0	497.0	399.9	406.5	42.3	1.3
Water Temp (Deg C)	0.1	05/25/11-03/26/19	O	32	32	-0.4	16.3	0.6	4.6	5.6	0.1
TDS (mg/L)	215	05/25/11-03/26/19	O	32	32	166.0	282.0	228.9	233.5	24.5	0.6
TSS (mg/L)	6	05/29/12-03/26/19	O	28	12	< 4	68.0				
Tot Alk (mg/L)	170	05/25/11-03/26/19	O	32	32	160.0	250.0	202.4	210	20.4	1.6
Ca (mg/L)	44	05/25/11-03/26/19	O	32	32	36.0	60.0	49.5	51.5	5.8	1.0
Chloride (mg/L)	1	05/25/11-03/26/19	O	32	25	< 1	2.0	1.2	1	0.4	0.4 L
F (mg/L)	0.2	05/25/11-03/26/19	O	32	32	0.1	0.2	0.2	0.2	0	0.0 H
Tot Hard (mg/L)	193	05/25/11-03/26/19	O	32	32	156.0	267.0	215.9	225.5	26.9	0.9
Mg (mg/L)	20	05/25/11-03/26/19	O	32	32	16.0	29.0	22.4	23.5	3.2	0.7
K (mg/L)	2	05/25/11-03/26/19	O	32	30	1.0	2.0	1.1	1	0.3	3.0 *H

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Na (mg/L)	2	05/25/11-03/26/19	O	32	32	2.0	3.0	2.5	3	0.5	1.1	L
SO4 (mg/L)	25	05/25/11-03/26/19	O	32	32	9.0	46.0	19.5	20.5	7.9	0.7	
Nitrate + (mg/L)	0.19	05/25/11-03/26/19	O	32	29	0.01	0.24	0.06	0.06	0.07	1.9	
P (mg/L)	0.046	06/10/14-03/26/19	O	21	21	0.009	0.06	0.024	0.024	0.014	1.599	
Total Pers (mg/L)	0.47	06/24/15-03/26/19	O	16	16	0.09	0.51	0.21	0.2	0.12	2.16	
Al (DIS) (mg/L)	0.014	05/25/11-03/26/19	O	32	7	< 0.009	1.36					
Sb (TRC) (mg/L)	< 0.0005	05/25/11-03/26/19	O	31	0	< 0.0005	< .005					
As (TRC) (mg/L)	< 0.001	05/25/11-03/26/19	O	31	2	< 0.001	< .003					
Ba (TRC) (mg/L)	0.101	05/25/11-03/26/19	O	31	31	0.09	0.13	0.104	0.103	0.01	0.313	
Be (TRC) (mg/L)	< 0.0008	05/25/11-03/26/19	O	31	0	< 0.0008	< .001					
Cd (TRC) (mg/L)	< 0	05/25/11-03/26/19	O	31	3	< 0	< .00008					
Cr (TRC) (mg/L)	< 0.01	05/25/11-03/26/19	O	31	0	< 0	< .01					
Co (TRC) (mg/L)	< 0.01	05/25/11-03/26/19	O	31	0	< 0.01	< .01					
Cu (TRC) (mg/L)	< 0.002	05/25/11-03/26/19	O	31	5	0.001	0.003					
Fe (TRC) (mg/L)	0.32	05/25/11-03/26/19	O	31	31	0.04	2.1	0.23	0.25	0.43	0.21	
Pb (TRC) (mg/L)	0.0003	05/25/11-03/26/19	O	31	10	< 0.0003	0.0031					
Mn (TRC) (mg/L)	0.013	05/25/11-03/26/19	O	31	20	< 0.005	0.076	0.01	0.007	0.016	0.178	
Hg (TRC) (ug/L)	< 0.005	05/25/11-03/26/19	O	31	4	< 0	< .005					
Mo (TRC) (mg/L)	< 0.002	05/25/11-03/26/19	O	31	0	< 0.001	< .005					
Ni (TRC) (mg/L)	< 0.001	05/25/11-03/26/19	O	31	3	< 0.001	< .01					
Se (TRC) (mg/L)	< 0.0002	05/25/11-03/26/19	O	31	4	< 0.0002	< .001					
Ag (TRC) (mg/L)	< 0.0002	05/25/11-03/26/19	O	31	0	< 0.0002	< .0005					
Sr (TRC) (mg/L)	0.136	05/25/11-03/26/19	O	31	31	0.1	0.2	0.167	0.17	0.024	1.287	
Tl (TRC) (mg/L)	< 0.0002	05/25/11-03/26/19	O	31	0	< 0.0002	: 0 .0002					
U (TRC) (mg/L)	0.001	05/25/11-03/26/19	O	31	10	0.001	< .008					
Zn (TRC) (mg/L)	0.002	05/25/11-03/26/19	O	31	18	< 0.002	0.016	0.004	0.003	0.004	0.562	L

SAMPLE NO		LAB NO:		STATION:SW-2								
03/28/19		H19030548-005										
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	11.06	05/24/11-03/28/19	O	74	74	6.35	16.18	11.04	10.94	1.72	0.01	
pH Fld (s.u.)	8.14	05/24/11-03/28/19	O	73	73	0.0	8.73	6.76	8.06	1.02	1.35	
SC Fld (umhos/cm)	322	05/24/11-03/28/19	O	74	74	156.0	388.0	278.9	306	53.9	0.8	
Water Temp (Deg C)	0.1	05/24/11-03/28/19	O	74	74	-1.0	15.8	0.2	3	4.9	0.0	
TDS (mg/L)	181	05/24/11-03/28/19	O	71	71	112.0	223.0	165.5	173	25.2	0.6	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

TSS (mg/L)	4	05/30/12-03/28/19	O	67	19	4.0	105.0					
Tot Alk (mg/L)	160	05/24/11-03/28/19	O	71	71	80.0	200.0	151.0	160	27.3	0.3	
Ca (mg/L)	48	05/24/11-03/28/19	O	71	71	21.0	58.0	42.7	46	8.1	0.7	
Chloride (mg/L)	3	05/24/11-03/28/19	O	71	69	< 1	5.0	1.3	1	0.7	2.4	
F (mg/L)	< 0.1	05/24/11-03/28/19	O	71	1	< 0.1	0.4					
Tot Hard (mg/L)	170	05/24/11-03/28/19	O	71	70	< 7	202.0	144.5	164	32.8	0.8	
Mg (mg/L)	12	05/24/11-03/28/19	O	71	71	5.0	15.0	10.8	12	2.1	0.6	
K (mg/L)	1	05/24/11-03/28/19	O	71	66	1.0	2.0	1.0	1	0.1	0.1	L
Na (mg/L)	3	05/24/11-03/28/19	O	71	71	1.0	3.0	2.0	2	0.3	3.5	*H
SO4 (mg/L)	7	05/24/11-03/28/19	O	71	71	2.0	9.0	5.0	5	1.6	1.3	
Nitrate + (mg/L)	0.07	05/24/11-03/28/19	O	71	35	< 0.01	0.12					
P (mg/L)	0.012	05/16/14-03/28/19	O	57	49	< 0.003	0.182	0.01	0.008	0.023	0.108	
Total Pers (mg/L)	0.17	04/29/15-03/28/19	O	45	39	< 0	1.39	0.1	0.1	0.25	0.26	
Al (DIS) (mg/L)	0.033	05/24/11-03/28/19	O	71	31	< 0.009	0.39					
Sb (TRC) (mg/L)	< 0.0005	05/24/11-03/28/19	O	71	0	< 0.0005	< .005					
As (TRC) (mg/L)	< 0.001	05/24/11-03/28/19	O	71	1	< 0.001	< .003					
Ba (TRC) (mg/L)	0.1	05/24/11-03/28/19	O	71	71	0.1	0.1	0.1	0.1	0	0.0	
Be (TRC) (mg/L)	< 0.0008	05/24/11-03/28/19	O	71	0	< 0.0008	< .001					
Cd (TRC) (mg/L)	< 0	05/24/11-03/28/19	O	71	3	< 0	< .00008					
Cr (TRC) (mg/L)	< 0.01	05/24/11-03/28/19	O	71	1	< 0	< .01					
Co (TRC) (mg/L)	< 0.01	05/24/11-03/28/19	O	71	0	< 0.01	< .01					
Cu (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	5	< 0.001	0.004					
Fe (TRC) (mg/L)	0.28	05/24/11-03/28/19	O	71	71	0.09	2.49	0.2	0.15	0.34	0.23	
Pb (TRC) (mg/L)	< 0.0003	05/24/11-03/28/19	O	71	14	< 0.0003	0.0017					
Mn (TRC) (mg/L)	0.015	05/24/11-03/28/19	O	71	71	0.006	0.116	0.011	0.01	0.013	0.296	
Hg (TRC) (ug/L)	< 0.005	05/24/11-03/28/19	O	71	11	< 0	< .005					
Mo (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	0	< 0.001	< .005					
Ni (TRC) (mg/L)	< 0.001	05/24/11-03/28/19	O	71	11	< 0.001	< .01					
Se (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	< .001					
Ag (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	< .0005					
Sr (TRC) (mg/L)	0.126	05/24/11-03/28/19	O	71	69	0.082	0.15	0.119	0.123	0.015	0.493	
Tl (TRC) (mg/L)	< 0.0002	05/24/11-03/28/19	O	71	0	< 0.0002	: 0 .0002					
U (TRC) (mg/L)	0.0004	05/24/11-03/28/19	O	71	10	< 0.0003	< .008					
Zn (TRC) (mg/L)	< 0.002	05/24/11-03/28/19	O	71	20	< 0.002	0.014					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SAMPLE NO BBC-1903-117		LAB NO: H19030477-002		STATION:SW-3								
03/26/19		COMPARISON PERIOD OF DATA		QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
PARAMETER	RESULT											
DO (mg/L)	8.93	05/24/11-03/26/19		O	30	30	5.95	12.87	9.91	9.85	1.56	0.63
pH Fld (s.u.)	8.01	05/24/11-03/26/19		O	30	30	7.92	8.7	8.27	8.28	0.17	1.51
SC Fld (umhos/cm)	290	05/24/11-03/26/19		O	30	30	269.0	423.0	373.6	388.5	37.7	2.2
Water Temp (Deg C)	2.2	05/24/11-03/26/19		O	30	30	0.0	14.5	2.9	8.4	4.8	0.1
TDS (mg/L)	195	05/24/11-03/26/19		O	29	29	152.0	255.0	216.4	221	17.4	1.2
TSS (mg/L)	< 4	05/30/12-03/26/19		O	26	10	< 4	14.0				
Tot Alk (mg/L)	150	05/24/11-03/26/19		O	29	29	150.0	210.0	194.8	200	14.8	3.0 *L
Ca (mg/L)	37	05/24/11-03/26/19		O	29	29	31.0	52.0	45.6	47	4.2	2.1
Chloride (mg/L)	3	05/24/11-03/26/19		O	29	27	1.0	3.0	1.5	1.9	0.6	2.5 H
F (mg/L)	0.1	05/24/11-03/26/19		O	29	29	0.1	0.2	0.2	0.2	0	0.0 L
Tot Hard (mg/L)	168	05/24/11-03/26/19		O	29	29	139.0	234.0	205.4	215	19.8	1.9
Mg (mg/L)	19	05/24/11-03/26/19		O	29	29	15.0	25.0	22.3	23	2.3	1.4
K (mg/L)	4	05/24/11-03/26/19		O	29	24	1.0	4.0	1.1	1	0.5	5.9 *H
Na (mg/L)	2	05/24/11-03/26/19		O	29	29	2.0	2.0	2.0	2	0	0.0 H
SO4 (mg/L)	19	05/24/11-03/26/19		O	29	29	5.0	26.0	15.7	17	5.2	0.6
Nitrate + (mg/L)	< 0.01	05/24/11-03/26/19		O	29	24	< 0.01	0.12	0.04	0.05	0.03	0.92 L
P (mg/L)	0.094	06/10/14-03/26/19		O	20	19	0.004	0.094	0.013	0.014	0.017	4.738 *H
Total Pers (mg/L)	0.3	06/24/15-03/26/19		O	17	16	< 0	0.6	0.1	0.1	0.1	1.6
Al (DIS) (mg/L)	< 0.009	05/24/11-03/26/19		O	29	4	< 0.009	0.07				
Sb (TRC) (mg/L)	< 0.0005	05/24/11-03/26/19		O	29	0	< 0.0005	< .005				
As (TRC) (mg/L)	< 0.001	05/24/11-03/26/19		O	29	0	< 0.001	< .003				
Ba (TRC) (mg/L)	0.116	05/24/11-03/26/19		O	29	29	0.116	0.176	0.148	0.152	0.015	2.116 L
Be (TRC) (mg/L)	< 0.0008	05/24/11-03/26/19		O	29	0	< 0.0008	< .001				
Cd (TRC) (mg/L)	< 0	05/24/11-03/26/19		O	29	0	< 0	< .00008				
Cr (TRC) (mg/L)	< 0.01	05/24/11-03/26/19		O	29	0	< 0	< .01				
Co (TRC) (mg/L)	< 0.01	05/24/11-03/26/19		O	29	0	< 0.01	< .01				
Cu (TRC) (mg/L)	< 0.002	05/24/11-03/26/19		O	29	4	0.001	0.003				
Fe (TRC) (mg/L)	0.06	05/24/11-03/26/19		O	29	29	0.04	1.08	0.15	0.15	0.22	0.4
Pb (TRC) (mg/L)	< 0.0003	05/24/11-03/26/19		O	29	15	< 0.0003	0.0031	0.0005	0.0003	0.0006	0.2766 L
Mn (TRC) (mg/L)	< 0.005	05/24/11-03/26/19		O	29	11	< 0.005	0.2				
Hg (TRC) (ug/L)	0.006	05/24/11-03/26/19		O	29	3	< 0	0.006				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Mo (TRC) (mg/L)	< 0.002	05/24/11-03/26/19	O	29	0	< 0.001	< .005					
Ni (TRC) (mg/L)	< 0.001	05/24/11-03/26/19	O	29	0	< 0.001	< .01					
Se (TRC) (mg/L)	< 0.0002	05/24/11-03/26/19	O	29	3	< 0.0002	< .001					
Ag (TRC) (mg/L)	< 0.0002	05/24/11-03/26/19	O	29	0	< 0.0002	< .0005					
Sr (TRC) (mg/L)	0.0938	05/24/11-03/26/19	O	29	26	0.0838	0.123	0.1061	0.105	0.0098	1.2514	
Tl (TRC) (mg/L)	< 0.0002	05/24/11-03/26/19	O	29	3	< 0.0002	0.0004					
U (TRC) (mg/L)	0.0006	05/24/11-03/26/19	O	29	9	0.0005	< .008					
Zn (TRC) (mg/L)	< 0.002	05/24/11-03/26/19	O	29	16	< 0.002	0.033	0.004	0.003	0.006	0.28	L

SAMPLE NO BBC-1903-124 LAB NO: H19030548-001

STATION:SW-6

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	10.38	05/25/11-03/27/19	O	30	30	5.82	14.18	9.75	10.01	1.81	0.35
pH Fld (s.u.)	7.72	05/25/11-03/27/19	O	30	30	6.67	8.68	7.99	8.1	0.44	0.61
SC Fld (umhos/cm)	137	05/25/11-03/27/19	O	30	30	137.0	433.0	374.9	396	56.2	4.2 *L
Water Temp (Deg C)	0.9	05/25/11-03/27/19	O	30	30	0.0	18.3	1.9	6.5	5.9	0.2
TDS (mg/L)	100	05/25/11-03/27/19	O	30	30	100.0	254.0	216.1	223.5	27.2	4.3 *L
TSS (mg/L)	16	05/30/12-03/27/19	O	26	20	4.0	107.0	12.8	10	29.5	0.1
Tot Alk (mg/L)	65	05/25/11-03/27/19	O	30	30	65.0	240.0	202.7	215	31	4.4 *L
Ca (mg/L)	15	05/25/11-03/27/19	O	30	30	15.0	54.0	47.2	50	7.7	4.2 *L
Chloride (mg/L)	< 1	05/25/11-03/27/19	O	30	7	< 1	2.0				
F (mg/L)	< 0.1	05/25/11-03/27/19	O	30	27	0.1	0.2	0.2	0.2	0	0.0 L
Tot Hard (mg/L)	65	05/25/11-03/27/19	O	30	30	65.0	239.0	202.8	216.5	33.8	4.1 *L
Mg (mg/L)	7	05/25/11-03/27/19	O	30	30	7.0	26.0	20.7	22	3.6	3.8 *L
K (mg/L)	5	05/25/11-03/27/19	O	30	17	1.0	5.0	1.1	1	0.8	4.8 *H
Na (mg/L)	< 1	05/25/11-03/27/19	O	30	29	< 1	3.0	2.8	3	0.4	4.4 *L
SO4 (mg/L)	3	05/25/11-03/27/19	O	30	30	3.0	34.0	10.7	11	5.3	1.4 L
Nitrate + (mg/L)	0.02	05/25/11-03/27/19	O	30	27	< 0.01	0.11	0.04	0.05	0.03	0.71
P (mg/L)	0.237	06/11/14-03/27/19	O	19	19	0.01	0.237	0.023	0.02	0.047	4.55 *H
Total Pers (mg/L)	0.78	06/24/15-03/27/19	O	14	14	0.1	0.78	0.2	0.18	0.18	3.22 *H
Al (DIS) (mg/L)	0.02	05/25/11-03/27/19	O	30	2	< 0.01	< .03				
Sb (TRC) (mg/L)	< 0.0005	05/25/11-03/27/19	O	30	0	< 0.0005	< .005				
As (TRC) (mg/L)	0.001	05/25/11-03/27/19	O	30	2	< 0.001	< .003				
Ba (TRC) (mg/L)	0.057	05/25/11-03/27/19	O	30	30	0.057	0.247	0.127	0.131	0.029	2.416 L
Be (TRC) (mg/L)	< 0.0008	05/25/11-03/27/19	O	30	0	< 0.0008	< .001				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Cd (TRC) (mg/L)	0.00003	05/25/11-03/27/19	O	30	4	< 0	0.0001				
Cr (TRC) (mg/L)	< 0.01	05/25/11-03/27/19	O	30	0	< 0	< .01				
Co (TRC) (mg/L)	< 0.01	05/25/11-03/27/19	O	30	0	< 0.01	< .01				
Cu (TRC) (mg/L)	0.002	05/25/11-03/27/19	O	30	3	< 0.001	0.003				
Fe (TRC) (mg/L)	0.73	05/25/11-03/27/19	O	30	30	0.05	3.04	0.36	0.37	0.7	0.53
Pb (TRC) (mg/L)	0.0006	05/25/11-03/27/19	O	30	12	< 0.0003	0.003				
Mn (TRC) (mg/L)	0.026	05/25/11-03/27/19	O	30	28	< 0.005	0.098	0.017	0.018	0.022	0.389
Hg (TRC) (ug/L)	0.034	05/25/11-03/27/19	O	30	4	< 0	0.034				
Mo (TRC) (mg/L)	< 0.002	05/25/11-03/27/19	O	30	0	< 0.001	< .005				
Ni (TRC) (mg/L)	< 0.001	05/25/11-03/27/19	O	30	3	< 0.001	< .01				
Se (TRC) (mg/L)	< 0.0002	05/25/11-03/27/19	O	30	8	< 0.0002	< .001				
Ag (TRC) (mg/L)	< 0.0002	05/25/11-03/27/19	O	30	0	< 0.0002	< .0005				
Sr (TRC) (mg/L)	0.0476	05/25/11-03/27/19	O	30	30	0.0476	0.329	0.1573	0.1705	0.0437	2.5094 L
Tl (TRC) (mg/L)	< 0.0002	05/25/11-03/27/19	O	30	0	< 0.0002	: 0 .0002				
U (TRC) (mg/L)	< 0.0002	05/25/11-03/27/19	O	30	10	< 0.0002	< .008				
Zn (TRC) (mg/L)	0.005	05/25/11-03/27/19	O	30	14	< 0.002	0.03				

SAMPLE NO BBC-1903-110		LAB NO: z		STATION:SW-7								
03/26/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Flow (Gallons Per Min)	0	11/26/12-09/19/18	OBS	17	17	0.0	54.8	3.5	6.7	19.8	0.2 L	

SAMPLE NO BBC-1903-114		LAB NO: z		STATION:SW-9								
03/26/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	9.93	N/A	OBS	0								
pH Fld (s.u.)	7.95	N/A	OBS	0								
SC Fld (umhos/cm)	361	N/A	OBS	0								
Flow (Cubic Ft Sec)	0.6	N/A	OBS	0								
Water Temp (Deg C)	1.9	N/A	OBS	0								

SAMPLE NO BBC-1903-130		LAB NO: H19030548-006		STATION:USGS-SC1								
03/28/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
DO (mg/L)	11.21	03/24/14-03/28/19	O	61	61	7.12	16.55	11.15	11.16	1.6	0.04	
pH Fld (s.u.)	8.11	03/24/14-03/28/19	O	60	60	6.67	8.67	7.97	8.16	0.43	0.32	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SC Fld (umhos/cm)	366	03/24/14-03/28/19	O	61	61	137.0	408.0	325.2	344	50.2	0.8
Water Temp (Deg C)	0.1	03/24/14-03/28/19	O	61	61	-1.0	13.1	0.3	2.8	4.2	0.1
TDS (mg/L)	196	03/24/14-03/28/19	O	59	59	134.0	230.0	188.8	195	18.8	0.4
TSS (mg/L)	4	03/24/14-03/28/19	O	59	16	< 4	38.0				
Tot Alk (mg/L)	180	03/24/14-03/28/19	O	59	59	120.0	220.0	176.3	180	20.6	0.2
Ca (mg/L)	57	03/24/14-03/28/19	O	59	59	35.0	61.0	50.6	52	5.7	1.1
Chloride (mg/L)	3	03/24/14-03/28/19	O	59	59	1.0	5.0	1.5	1.5	0.9	1.7
F (mg/L)	< 0.1	03/24/14-03/28/19	O	59	1	< 0.1	< 0.1				
Tot Hard (mg/L)	199	03/24/14-03/28/19	O	59	58	< 7	214.0	168.3	185	29	1.1
Mg (mg/L)	14	03/24/14-03/28/19	O	59	59	8.0	15.0	12.6	13	1.5	0.9
K (mg/L)	1	03/24/14-03/28/19	O	59	59	1.0	1.0	1.0	1	0	0.0 H
Na (mg/L)	3	03/24/14-03/28/19	O	59	59	2.0	3.0	2.1	2	0.3	3.1 *H
SO4 (mg/L)	7	03/24/14-03/28/19	O	59	59	3.0	8.0	5.7	6	1.4	0.9
Nitrate + (mg/L)	0.08	03/24/14-03/28/19	O	59	41	< 0.01	0.13	0.03	0.03	0.04	1.25
P (mg/L)	0.007	05/16/14-03/28/19	O	56	41	0.003	0.05	0.007	0.007	0.008	0.016
Total Pers (mg/L)	0.14	04/29/15-03/28/19	O	45	35	< 0	1.1	0.08	0.09	0.16	0.36
Al (DIS) (mg/L)	< 0.009	03/24/14-03/28/19	O	59	17	< 0.009	0.189				
Sb (TRC) (mg/L)	< 0.0005	03/24/14-03/28/19	O	59	0	< 0.0005	: 0.0005				
As (TRC) (mg/L)	< 0.001	03/24/14-03/28/19	O	59	1	< 0.001	< 0.001				
Ba (TRC) (mg/L)	0.068	03/24/14-03/28/19	O	59	59	0.06	0.088	0.069	0.068	0.005	0.195
Be (TRC) (mg/L)	< 0.0008	03/24/14-03/28/19	O	59	0	< 0.0008	: 0.0008				
Cd (TRC) (mg/L)	< 0	03/24/14-03/28/19	O	59	2	< 0	0.0001				
Cr (TRC) (mg/L)	< 0.01	03/24/14-03/28/19	O	59	0	< 0.01	< .01				
Co (TRC) (mg/L)	< 0.01	03/24/14-03/28/19	O	59	0	< 0.01	< .01				
Cu (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	1	< 0.002	< 0.002				
Fe (TRC) (mg/L)	0.19	03/24/14-03/28/19	O	59	59	0.07	1.71	0.17	0.12	0.28	0.08
Pb (TRC) (mg/L)	< 0.0003	03/24/14-03/28/19	O	59	7	< 0.0003	0.0011				
Mn (TRC) (mg/L)	0.01	03/24/14-03/28/19	O	59	59	0.01	0.08	0.01	0.01	0.01	0.07
Hg (TRC) (ug/L)	< 0.005	03/24/14-03/28/19	O	59	2	< 0	< .005				
Mo (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	0	< 0.001	< .002				
Ni (TRC) (mg/L)	< 0.001	03/24/14-03/28/19	O	59	7	< 0.001	0.003				
Se (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	0	< 0.0002	< .0004				
Ag (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	1	< 0.0002	< .0004				
Sr (TRC) (mg/L)	0.148	03/24/14-03/28/19	O	59	59	0.121	0.16	0.142	0.144	0.009	0.65

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All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

TI (TRC) (mg/L)	< 0.0002	03/24/14-03/28/19	O	59	0	< 0.0002 : 0 .0002
U (TRC) (mg/L)	0.0005	03/24/14-03/28/19	O	59	6	0.0003 < .008
Zn (TRC) (mg/L)	< 0.002	03/24/14-03/28/19	O	59	17	< 0.002 0.009

SAMPLE NO	BBC-1903-222	LAB NO:	H19030547-008	STATION:DI-Blank
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
TDS (mg/L)	< 10	N/A	FB	0							
TDS (mg/L)	< 10	N/A	FB	0							
TDS (mg/L)	< 10	N/A	FB	0							
TSS (mg/L)	< 10	N/A	FB	0							
TSS (mg/L)	< 10	N/A	FB	0							
TSS (mg/L)	< 4	N/A	FB	0							
Tot Alk (mg/L)	< 4	N/A	FB	0							
Tot Alk (mg/L)	< 4	N/A	FB	0							
Tot Alk (mg/L)	< 4	N/A	FB	0							
Ca (mg/L)	< 1	N/A	FB	0							
Ca (mg/L)	< 1	N/A	FB	0							
Ca (mg/L)	< 1	N/A	FB	0							
Chloride (mg/L)	< 1	N/A	FB	0							
Chloride (mg/L)	< 1	N/A	FB	0							
Chloride (mg/L)	< 1	N/A	FB	0							
F (mg/L)	< 0.1	N/A	FB	0							
F (mg/L)	< 0.1	N/A	FB	0							
F (mg/L)	< 0.1	N/A	FB	0							
Tot Hard (mg/L)	< 1	N/A	FB	0							
Tot Hard (mg/L)	< 1	N/A	FB	0							
Tot Hard (mg/L)	< 1	N/A	FB	0							
Mg (mg/L)	< 1	N/A	FB	0							
Mg (mg/L)	< 1	N/A	FB	0							
Mg (mg/L)	< 1	N/A	FB	0							
K (mg/L)	< 1	N/A	FB	0							
K (mg/L)	< 1	N/A	FB	0							
K (mg/L)	< 1	N/A	FB	0							
Na (mg/L)	< 1	N/A	FB	0							

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

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## Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

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Na (mg/L)	< 1	N/A	FB	0
Na (mg/L)	< 1	N/A	FB	0
SO4 (mg/L)	< 1	N/A	FB	0
SO4 (mg/L)	< 1	N/A	FB	0
SO4 (mg/L)	< 1	N/A	FB	0
Nitrate + (mg/L)	< 0.01	N/A	FB	0
Nitrate + (mg/L)	< 0.01	N/A	FB	0
Nitrate + (mg/L)	< 0.01	N/A	FB	0
P (mg/L)	< 0.003	N/A	FB	0
Total Pers (mg/L)	< 0.04	N/A	FB	0
Al (DIS) (mg/L)	< 0.009	N/A	FB	0
Al (DIS) (mg/L)	< 0.009	N/A	FB	0
Al (DIS) (mg/L)	< 0.009	N/A	FB	0
Sb (DIS) (mg/L)	< 0.0005	N/A	FB	0
Sb (TRC) (mg/L)	< 0.0005	N/A	FB	0
Sb (DIS) (mg/L)	< 0.0005	N/A	FB	0
As (TRC) (mg/L)	< 0.001	N/A	FB	0
As (DIS) (mg/L)	< 0.001	N/A	FB	0
As (DIS) (mg/L)	< 0.001	N/A	FB	0
Ba (DIS) (mg/L)	< 0.003	N/A	FB	0
Ba (DIS) (mg/L)	< 0.003	N/A	FB	0
Ba (TRC) (mg/L)	< 0.003	N/A	FB	0
Be (TRC) (mg/L)	< 0.0008	N/A	FB	0
Be (DIS) (mg/L)	< 0.0008	N/A	FB	0
Be (DIS) (mg/L)	< 0.0008	N/A	FB	0
Cd (DIS) (mg/L)	< 0	N/A	FB	0
Cd (TRC) (mg/L)	< 0	N/A	FB	0
Cd (DIS) (mg/L)	< 0	N/A	FB	0
Cr (DIS) (mg/L)	< 0.01	N/A	FB	0
Cr (DIS) (mg/L)	< 0.01	N/A	FB	0
Cr (TRC) (mg/L)	< 0.01	N/A	FB	0
Co (TRC) (mg/L)	< 0.01	N/A	FB	0
Co (DIS) (mg/L)	< 0.01	N/A	FB	0
Co (DIS) (mg/L)	< 0.01	N/A	FB	0

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

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## Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

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Cu (TRC) (mg/L)	< 0.002	N/A	FB	0
Cu (DIS) (mg/L)	< 0.002	N/A	FB	0
Cu (DIS) (mg/L)	< 0.002	N/A	FB	0
Fe (TRC) (mg/L)	< 0.02	N/A	FB	0
Fe (DIS) (mg/L)	< 0.02	N/A	FB	0
Fe (DIS) (mg/L)	< 0.02	N/A	FB	0
Pb (TRC) (mg/L)	< 0.0003	N/A	FB	0
Pb (DIS) (mg/L)	< 0.0003	N/A	FB	0
Pb (DIS) (mg/L)	< 0.0003	N/A	FB	0
Mn (TRC) (mg/L)	< 0.005	N/A	FB	0
Mn (DIS) (mg/L)	< 0.005	N/A	FB	0
Mn (DIS) (mg/L)	< 0.005	N/A	FB	0
Hg (TRC) (ug/L)	< 0.005	N/A	FB	0
Hg (DIS) (ug/L)	< 0.005	N/A	FB	0
Hg (DIS) (ug/L)	< 0.005	N/A	FB	0
Mo (TRC) (mg/L)	< 0.002	N/A	FB	0
Mo (DIS) (mg/L)	< 0.002	N/A	FB	0
Mo (DIS) (mg/L)	< 0.002	N/A	FB	0
Ni (TRC) (mg/L)	< 0.001	N/A	FB	0
Ni (DIS) (mg/L)	< 0.001	N/A	FB	0
Ni (DIS) (mg/L)	0.002	N/A	FB	0
Se (TRC) (mg/L)	< 0.0002	N/A	FB	0
Se (DIS) (mg/L)	< 0.0002	N/A	FB	0
Se (DIS) (mg/L)	< 0.0002	N/A	FB	0
Ag (TRC) (mg/L)	< 0.0002	N/A	FB	0
Ag (DIS) (mg/L)	< 0.0002	N/A	FB	0
Ag (DIS) (mg/L)	< 0.0002	N/A	FB	0
Sr (DIS) (mg/L)	< 0.0002	N/A	FB	0
Sr (DIS) (mg/L)	< 0.0002	N/A	FB	0
Sr (TRC) (mg/L)	< 0.0002	N/A	FB	0
Tl (DIS) (mg/L)	< 0.0002	N/A	FB	0
Tl (TRC) (mg/L)	< 0.0002	N/A	FB	0
Tl (DIS) (mg/L)	< 0.0002	N/A	FB	0
U (DIS) (mg/L)	< 0.0002	N/A	FB	0

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

U (DIS) (mg/L)	< 0.0002	N/A	FB	0
U (TRC) (mg/L)	< 0.0002	N/A	FB	0
Zn (TRC) (mg/L)	< 0.002	N/A	FB	0
Zn (DIS) (mg/L)	< 0.002	N/A	FB	0
Zn (DIS) (mg/L)	< 0.002	N/A	FB	0

SAMPLE NO	BBC-1903-211	LAB NO:	H19030476-012	STATION:MW-10
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	81.43	03/29/16-03/26/19	O	13	13	64.92	82.88	75.56	77.27	5.37	1.09
DO (mg/L)	8.1	03/29/16-03/26/19	O	13	13	5.0	9.8	7.2	7.5	1.5	0.6
EH (Millivolts)	264.41	03/21/18-03/26/19	O	5	5	253.68	297.43	276.58	276.25	18.7	0.65
pH Fld (s.u.)	7.97	03/29/16-03/26/19	O	13	13	7.56	8.04	7.84	7.87	0.16	0.82
SC Fld (umhos/cm)	325	03/29/16-03/26/19	O	13	13	314.0	364.0	334.0	337	13.9	0.6
Water Temp (Deg C)	8.2	03/29/16-03/26/19	O	13	13	5.9	9.7	7.8	8.1	1.1	0.4
TDS (mg/L)	187	03/29/16-03/26/19	O	13	13	174.0	244.0	194.3	190	17.3	0.4
TSS (mg/L)	33	03/29/16-03/26/19	O	13	12	< 10	2830.0	100.1	130	758.9	0.1
Tot Alk (mg/L)	180	03/29/16-03/26/19	O	13	13	170.0	210.0	179.8	180	10	0.0
Ca (mg/L)	43	03/29/16-03/26/19	O	13	13	35.0	46.0	39.8	39	3.8	0.9
Chloride (mg/L)	< 1	03/29/16-03/26/19	O	13	3	< 1	4.0				
F (mg/L)	0.2	03/29/16-03/26/19	O	13	13	0.2	0.5	0.3	0.3	0.1	0.9 L
Tot Hard (mg/L)	183	03/29/16-03/26/19	O	13	13	156.0	185.0	170.0	167	10.5	1.2
Mg (mg/L)	19	03/29/16-03/26/19	O	13	13	16.0	19.0	17.2	17	0.8	2.2 H
K (mg/L)	2	03/29/16-03/26/19	O	13	13	2.0	7.0	2.8	3	1.4	0.6 L
Na (mg/L)	6	03/29/16-03/26/19	O	13	13	6.0	11.0	7.1	7	1.8	0.6 L
SO4 (mg/L)	5	03/29/16-03/26/19	O	13	13	3.0	8.0	4.8	4.7	1.5	0.1
Nitrate + (mg/L)	0.53	03/29/16-03/26/19	O	13	13	0.46	0.62	0.53	0.53	0.04	0.05
Al (DIS) (mg/L)	0.019	03/29/16-03/26/19	O	13	13	0.009	3.66	0.085	0.031	1.108	0.059
Sb (DIS) (mg/L)	< 0.0005	03/29/16-03/26/19	O	13	1	< 0.0005	0.0132				
As (DIS) (mg/L)	< 0.001	03/29/16-03/26/19	O	13	1	< 0.001	< 0.001				
Ba (DIS) (mg/L)	0.189	03/29/16-03/26/19	O	13	13	0.135	0.211	0.179	0.189	0.025	0.418
Be (DIS) (mg/L)	< 0.0008	03/29/16-03/26/19	O	13	0	< 0.0008	: 0.0008				
Cd (DIS) (mg/L)	< 0	03/29/16-03/26/19	O	13	1	< 0	0.0001				
Cr (DIS) (mg/L)	< 0.01	03/29/16-03/26/19	O	13	1	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	03/29/16-03/26/19	O	13	0	< 0.01	< 0.01				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Cu (DIS) (mg/L)	< 0.002	03/29/16-03/26/19	O	13	2	< 0.002	0.01					
Fe (DIS) (mg/L)	< 0.02	03/29/16-03/26/19	O	13	7	< 0.02	3.58	0.09	0.03	1.07	0.06	L
Pb (DIS) (mg/L)	< 0.0003	03/29/16-03/26/19	O	13	4	< 0.0003	0.0021					
Mn (DIS) (mg/L)	< 0.005	03/29/16-03/26/19	O	13	8	< 0.005	0.168	0.015	0.005	0.049	0.2	L
Hg (DIS) (ug/L)	< 0.005	03/29/16-03/26/19	O	13	1	< 0	< .005					
Mo (DIS) (mg/L)	0.005	03/29/16-03/26/19	O	13	13	0.004	0.012	0.007	0.007	0.002	0.825	
Ni (DIS) (mg/L)	< 0.001	03/29/16-03/26/19	O	13	11	< 0.001	0.009	0.002	0.002	0.002	0.473	L
Se (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	5	< 0.0002	< .0004					
Ag (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	0	< 0.0002	: 0 .0002					
Sr (DIS) (mg/L)	0.956	03/29/16-03/26/19	O	13	13	0.796	1.35	1.081	1.03	0.175	0.715	
Tl (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	0	< 0.0002	: 0 .0002					
U (DIS) (mg/L)	0.0088	03/29/16-03/26/19	O	13	11	0.006	0.02	0.0119	0.015	0.0047	0.6597	
Zn (DIS) (mg/L)	< 0.002	03/29/16-03/26/19	O	13	5	< 0.002	0.015					

SAMPLE NO BBC-1903-210		LAB NO: H19030476-011		STATION:MW-11								
03/26/19												
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Depth to W (Feet)	34.46	03/29/16-03/26/19	O	13	13	23.38	37.08	32.15	33.63	3.68	0.63	
DO (mg/L)	7.62	03/29/16-03/26/19	O	13	13	5.09	9.1	7.27	7.62	1.16	0.3	
EH (Millivolts)	265.45	03/20/18-03/26/19	O	5	5	255.64	293.82	271.53	265.45	15.16	0.4	
pH Fld (s.u.)	7.77	03/29/16-03/26/19	O	13	13	7.4	7.77	7.65	7.7	0.11	1.1 H	
SC Fld (umhos/cm)	319	03/29/16-03/26/19	O	13	13	295.0	393.0	321.4	319	26	0.1	
Water Temp (Deg C)	9.1	03/29/16-03/26/19	O	13	13	6.7	9.1	7.7	7.8	0.6	2.3 H	
TDS (mg/L)	182	03/29/16-03/26/19	O	13	13	171.0	238.0	184.8	181	16	0.2	
TSS (mg/L)	21	03/29/16-03/26/19	O	13	12	< 10	501.0	60.7	58	161	0.2	
Tot Alk (mg/L)	170	03/29/16-03/26/19	O	13	13	160.0	180.0	166.8	170	7.4	0.4	
Ca (mg/L)	48	03/29/16-03/26/19	O	13	13	40.0	48.0	43.1	44	2.2	2.2 H	
Chloride (mg/L)	< 1	03/29/16-03/26/19	O	13	1	< 1	2.0					
F (mg/L)	< 0.1	03/29/16-03/26/19	O	13	8	< 0.1	< 0.1	0.1	0.1	0	0.0 H	
Tot Hard (mg/L)	172	03/29/16-03/26/19	O	13	13	148.0	172.0	158.4	161	6.5	2.1 H	
Mg (mg/L)	12	03/29/16-03/26/19	O	13	13	11.0	15.0	12.2	12	1.2	0.1	
K (mg/L)	2	03/29/16-03/26/19	O	13	13	2.0	2.0	2.0	2	0	0.0 H	
Na (mg/L)	6	03/29/16-03/26/19	O	13	13	4.0	21.0	6.7	6	4.3	0.2	
SO4 (mg/L)	6	03/29/16-03/26/19	O	13	13	4.0	31.0	6.7	5	7.1	0.1	
Nitrate + (mg/L)	0.44	03/29/16-03/26/19	O	13	13	0.37	0.53	0.44	0.44	0.05	0.01	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Element (mg/L)	Result	Comparison Period	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Al (DIS)	0.01	03/29/16-03/26/19	O	13	10	< 0.01	1.5	0.04	0.03	0.42	0.08
Sb (DIS)	< 0.0005	03/29/16-03/26/19	O	13	0	< 0.0005	: 0 .0005				
As (DIS)	< 0.001	03/29/16-03/26/19	O	13	0	< 0.001	< 0 .001				
Ba (DIS)	0.162	03/29/16-03/26/19	O	13	13	0.126	0.183	0.153	0.154	0.013	0.685
Be (DIS)	< 0.0008	03/29/16-03/26/19	O	13	0	< 0.0008	: 0 .0008				
Cd (DIS)	< 0	03/29/16-03/26/19	O	13	0	< 0	: .00003				
Cr (DIS)	< 0.01	03/29/16-03/26/19	O	13	0	< 0.01	< 0 .01				
Co (DIS)	< 0.01	03/29/16-03/26/19	O	13	0	< 0.01	< 0 .01				
Cu (DIS)	< 0.002	03/29/16-03/26/19	O	13	0	< 0.002	< 0 .002				
Fe (DIS)	< 0.02	03/29/16-03/26/19	O	13	5	< 0.02	1.6				
Pb (DIS)	< 0.0003	03/29/16-03/26/19	O	13	2	< 0.0003	0.0013				
Mn (DIS)	< 0.005	03/29/16-03/26/19	O	13	3	< 0.005	0.063				
Hg (DIS) (ug/L)	< 0.005	03/29/16-03/26/19	O	13	0	< 0	< .005				
Mo (DIS)	< 0.002	03/29/16-03/26/19	O	13	0	< 0.002	< 0 .002				
Ni (DIS)	< 0.001	03/29/16-03/26/19	O	13	5	< 0.001	0.003				
Se (DIS)	< 0.0002	03/29/16-03/26/19	O	13	0	< 0.0002	< .0004				
Ag (DIS)	< 0.0002	03/29/16-03/26/19	O	13	0	< 0.0002	: 0 .0002				
Sr (DIS)	0.326	03/29/16-03/26/19	O	13	13	0.261	1.37	0.556	0.639	0.381	0.604
Tl (DIS)	< 0.0002	03/29/16-03/26/19	O	13	0	< 0.0002	: 0 .0002				
U (DIS)	0.0019	03/29/16-03/26/19	O	13	2	0.0016	< .008				
Zn (DIS)	< 0.002	03/29/16-03/26/19	O	13	1	< 0.002	0.004				

SAMPLE NO BBC-1903-209		LAB NO: H19030476-010		STATION:MW-12								
PARAMETER	03/26/19 RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Depth to W (Feet)	28.91	03/29/16-03/26/19	O	13	13	21.19	31.17	26.88	27.45	2.84	0.71	
DO (mg/L)	7.4	03/29/16-03/26/19	O	13	13	6.3	9.9	8.2	8.1	1.2	0.7	
EH (Millivolts)	269.74	03/20/18-03/26/19	O	5	5	265.01	304.8	285.73	288.61	18.36	0.87	
pH Fld (s.u.)	7.63	03/29/16-03/26/19	O	13	13	7.17	7.63	7.5	7.56	0.15	0.85 H	
SC Fld (umhos/cm)	417	03/29/16-03/26/19	O	13	13	385.0	437.0	410.7	414	15.6	0.4	
Water Temp (Deg C)	6.8	03/29/16-03/26/19	O	13	13	5.4	7.0	6.4	6.4	0.4	1.1	
TDS (mg/L)	226	03/29/16-03/26/19	O	13	13	215.0	233.0	223.6	224	5.2	0.5	
TSS (mg/L)	< 10	03/29/16-03/26/19	O	13	2	< 4	26.0					
Tot Alk (mg/L)	220	03/29/16-03/26/19	O	13	13	200.0	220.0	213.0	210	5.9	1.2 H	
Ca (mg/L)	61	03/29/16-03/26/19	O	13	13	55.0	62.0	58.6	58	1.8	1.3	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Chloride (mg/L)	< 1	03/29/16-03/26/19	O	13	0	< 1	< 1				
F (mg/L)	0.1	03/29/16-03/26/19	O	13	13	0.1	0.1	0.1	0.1	0	0.0 H
Tot Hard (mg/L)	237	03/29/16-03/26/19	O	13	13	212.0	239.0	226.0	223	7	1.6
Mg (mg/L)	21	03/29/16-03/26/19	O	13	13	18.0	21.0	19.3	19	0.7	2.4 H
K (mg/L)	< 1	03/29/16-03/26/19	O	13	0	< 1	< 1				
Na (mg/L)	2	03/29/16-03/26/19	O	13	13	2.0	2.0	2.0	2	0	0.0 H
SO4 (mg/L)	13	03/29/16-03/26/19	O	13	13	10.0	13.0	11.6	12	1	1.4 H
Nitrate + (mg/L)	0.16	03/29/16-03/26/19	O	13	13	0.15	0.19	0.16	0.16	0.01	0.49
Al (DIS) (mg/L)	< 0.009	03/29/16-03/26/19	O	13	1	< 0.009	0.014				
Sb (DIS) (mg/L)	< 0.0005	03/29/16-03/26/19	O	13	0	< 0.0005	: 0.0005				
As (DIS) (mg/L)	< 0.001	03/29/16-03/26/19	O	13	0	< 0.001	< 0.001				
Ba (DIS) (mg/L)	0.053	03/29/16-03/26/19	O	13	13	0.048	0.055	0.052	0.052	0.002	0.636
Be (DIS) (mg/L)	< 0.0008	03/29/16-03/26/19	O	13	0	< 0.0008	: 0.0008				
Cd (DIS) (mg/L)	< 0	03/29/16-03/26/19	O	13	0	< 0	: .00003				
Cr (DIS) (mg/L)	< 0.01	03/29/16-03/26/19	O	13	0	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	03/29/16-03/26/19	O	13	0	< 0.01	< 0.01				
Cu (DIS) (mg/L)	< 0.002	03/29/16-03/26/19	O	13	0	< 0.002	< 0.002				
Fe (DIS) (mg/L)	< 0.02	03/29/16-03/26/19	O	13	0	< 0.02	< 0.02				
Pb (DIS) (mg/L)	< 0.0003	03/29/16-03/26/19	O	13	0	< 0.0003	: 0.0003				
Mn (DIS) (mg/L)	< 0.005	03/29/16-03/26/19	O	13	0	< 0.005	< 0.005				
Hg (DIS) (ug/L)	< 0.005	03/29/16-03/26/19	O	13	0	< 0	< .005				
Mo (DIS) (mg/L)	< 0.002	03/29/16-03/26/19	O	13	0	< 0.002	< 0.002				
Ni (DIS) (mg/L)	< 0.001	03/29/16-03/26/19	O	13	0	< 0.001	< 0.001				
Se (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	1	< 0.0002	< .0004				
Ag (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	0	< 0.0002	: 0.0002				
Sr (DIS) (mg/L)	0.141	03/29/16-03/26/19	O	13	13	0.139	0.149	0.142	0.141	0.003	0.376
Tl (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	0	< 0.0002	: 0.0002				
U (DIS) (mg/L)	0.0008	03/29/16-03/26/19	O	13	2	0.0008	< .008				
Zn (DIS) (mg/L)	< 0.002	03/29/16-03/26/19	O	13	0	< 0.002	< 0.002				

SAMPLE NO BBC-1903-208 LAB NO: H19030476-009

STATION:MW-13

03/26/19	COMPARISON	QC	# OF								
PARAMETER	RESULT	PERIOD OF DATA	Code	N	DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	22.05	03/29/16-03/26/19	O	13	13	16.68	22.5	20.68	21.22	1.66	0.82
DO (mg/L)	7.67	03/29/16-03/26/19	O	13	13	6.32	9.05	7.49	7.64	0.84	0.22

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

EH (Millivolts)	268.18	03/20/18-03/26/19	O	5	5	268.18	302.18	286.08	289.71	15.3	1.17	L
pH Fld (s.u.)	7.63	03/29/16-03/26/19	O	13	13	6.26	7.68	7.37	7.57	0.42	0.62	
SC Fld (umhos/cm)	426	03/29/16-03/26/19	O	13	13	392.0	458.7	426.4	426	19	0.0	
Water Temp (Deg C)	6.6	03/29/16-03/26/19	O	13	13	5.8	7.0	6.4	6.6	0.4	0.4	
TDS (mg/L)	227	03/29/16-03/26/19	O	13	13	224.0	248.0	233.0	231	6.8	0.9	
TSS (mg/L)	13	03/29/16-03/26/19	O	13	10	< 10	319.0	23.1	14	85.3	0.1	
Tot Alk (mg/L)	220	03/29/16-03/26/19	O	13	13	210.0	220.0	216.9	220	4.7	0.7	H
Ca (mg/L)	63	03/29/16-03/26/19	O	13	13	57.0	63.0	60.4	61	1.9	1.3	H
Chloride (mg/L)	< 1	03/29/16-03/26/19	O	13	1	< 1	< 1					
F (mg/L)	0.1	03/29/16-03/26/19	O	13	12	0.1	0.1	0.1	0.1	0	0.0	H
Tot Hard (mg/L)	248	03/29/16-03/26/19	O	13	13	226.0	248.0	237.0	239	6.6	1.7	H
Mg (mg/L)	22	03/29/16-03/26/19	O	13	13	20.0	22.0	20.9	21	0.6	1.8	H
K (mg/L)	< 1	03/29/16-03/26/19	O	13	0	< 1	< 1					
Na (mg/L)	2	03/29/16-03/26/19	O	13	13	1.0	2.0	1.3	1	0.5	1.4	H
SO4 (mg/L)	17	03/29/16-03/26/19	O	13	13	12.0	18.0	15.5	16	1.5	1.0	
Nitrate + (mg/L)	0.23	03/29/16-03/26/19	O	13	13	0.17	0.27	0.2	0.19	0.03	0.98	
Al (DIS) (mg/L)	< 0.009	03/29/16-03/26/19	O	13	6	< 0.009	0.158					
Sb (DIS) (mg/L)	< 0.0005	03/29/16-03/26/19	O	13	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	< 0.001	03/29/16-03/26/19	O	13	0	< 0.001	< 0.001					
Ba (DIS) (mg/L)	0.056	03/29/16-03/26/19	O	13	13	0.054	0.059	0.056	0.056	0.001	0.014	
Be (DIS) (mg/L)	< 0.0008	03/29/16-03/26/19	O	13	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	03/29/16-03/26/19	O	13	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	03/29/16-03/26/19	O	13	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	03/29/16-03/26/19	O	13	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	03/29/16-03/26/19	O	13	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	< 0.02	03/29/16-03/26/19	O	13	2	< 0.02	0.15					
Pb (DIS) (mg/L)	< 0.0003	03/29/16-03/26/19	O	13	1	< 0.0003	0.0004					
Mn (DIS) (mg/L)	< 0.005	03/29/16-03/26/19	O	13	2	< 0.005	0.01					
Hg (DIS) (ug/L)	< 0.005	03/29/16-03/26/19	O	13	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	03/29/16-03/26/19	O	13	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	03/29/16-03/26/19	O	13	1	< 0.001	< 0.001					
Se (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	5	< 0.0002	< .0004					
Ag (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.101	03/29/16-03/26/19	O	13	13	0.099	0.109	0.102	0.102	0.003	0.483	

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

TI (DIS) (mg/L)	< 0.0002	03/29/16-03/26/19	O	13	1	< 0.0002	0.0003
U (DIS) (mg/L)	0.0006	03/29/16-03/26/19	O	13	2	0.0005	< .008
Zn (DIS) (mg/L)	< 0.002	03/29/16-03/26/19	O	13	1	< 0.002	< 0.002

SAMPLE NO BBC-1903-126 LAB NO: H19030548-003

STATION:SW-14

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	10.41	04/13/16-03/27/19	DUP	32	32	8.24	15.01	10.74	10.43	1.63	0.2
DO (mg/L)	10.41	04/13/16-03/27/19	O	32	32	8.24	15.01	10.74	10.43	1.63	0.2
pH Fld (s.u.)	7.81	04/13/16-03/27/19	O	31	31	6.07	8.48	7.91	8.05	0.46	0.21
pH Fld (s.u.)	7.81	04/13/16-03/27/19	DUP	31	31	6.07	8.48	7.91	8.05	0.46	0.21
SC Fld (umhos/cm)	269	04/13/16-03/27/19	O	32	32	263.0	439.0	376.8	396	49.8	2.2
SC Fld (umhos/cm)	269	04/13/16-03/27/19	DUP	32	32	263.0	439.0	376.8	396	49.8	2.2
Flow (Cubic Ft Sec)	1.14	04/13/16-03/27/19	O	26	26	0.0	11.75	0.31	0.97	3.07	0.27
Gauge (Feet)	0.4	04/13/16-03/27/19	DUP	18	18	0.3	0.7	0.4	0.5	0.1	0.5
Gauge (Feet)	0.4	04/13/16-03/27/19	O	18	18	0.3	0.7	0.4	0.5	0.1	0.5
Water Temp (Deg C)	3.2	04/13/16-03/27/19	DUP	32	32	-0.9	14.7	2.1	5	4.6	0.2
Water Temp (Deg C)	3.2	04/13/16-03/27/19	O	32	32	-0.9	14.7	2.1	5	4.6	0.2
TDS (mg/L)	157	04/13/16-03/27/19	O	32	32	157.0	244.0	221.1	226.5	20.6	3.1 *L
TDS (mg/L)	162	04/13/16-03/27/19	DUP	32	32	157.0	244.0	221.1	226.5	20.6	2.9
TSS (mg/L)	< 4	04/13/16-03/27/19	O	32	4	< 4	15.0				
TSS (mg/L)	< 4	04/13/16-03/27/19	DUP	32	4	< 4	15.0				
Tot Alk (mg/L)	130	04/13/16-03/27/19	O	32	32	130.0	220.0	202.7	210	24.3	3.0 L
Tot Alk (mg/L)	130	04/13/16-03/27/19	DUP	32	32	130.0	220.0	202.7	210	24.3	3.0 L
Ca (mg/L)	34	04/13/16-03/27/19	O	32	32	34.0	61.0	52.8	54.5	6.5	2.9 L
Ca (mg/L)	34	04/13/16-03/27/19	DUP	32	32	34.0	61.0	52.8	54.5	6.5	2.9 L
Chloride (mg/L)	2	04/13/16-03/27/19	O	32	32	1.0	4.0	1.9	2	0.5	0.1
Chloride (mg/L)	2	04/13/16-03/27/19	DUP	32	32	1.0	4.0	1.9	2	0.5	0.1
F (mg/L)	< 0.1	04/13/16-03/27/19	O	32	31	< 0.1	0.2	0.2	0.2	0	0.0 L
F (mg/L)	< 0.1	04/13/16-03/27/19	DUP	32	31	< 0.1	0.2	0.2	0.2	0	0.0 L
Tot Hard (mg/L)	134	04/13/16-03/27/19	O	32	32	134.0	239.0	208.7	214.5	24.9	3.0 L
Tot Hard (mg/L)	136	04/13/16-03/27/19	DUP	32	32	134.0	239.0	208.7	214.5	24.9	2.9
Mg (mg/L)	12	04/13/16-03/27/19	O	32	32	12.0	23.0	18.7	19	2.5	2.7 L
Mg (mg/L)	12	04/13/16-03/27/19	DUP	32	32	12.0	23.0	18.7	19	2.5	2.7 L
K (mg/L)	4	04/13/16-03/27/19	O	32	31	1.0	4.0	1.1	1	0.7	4.2 *H

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

K (mg/L)	4	04/13/16-03/27/19	DUP	32	31	1.0	4.0	1.1	1	0.7	4.2	*H
Na (mg/L)	1	04/13/16-03/27/19	O	32	32	1.0	3.0	2.5	3	0.6	2.5	L
Na (mg/L)	1	04/13/16-03/27/19	DUP	32	32	1.0	3.0	2.5	3	0.6	2.5	L
SO4 (mg/L)	7	04/13/16-03/27/19	O	32	32	6.5	19.0	9.1	8.9	2.9	0.7	
SO4 (mg/L)	6	04/13/16-03/27/19	DUP	32	32	6.5	19.0	9.1	8.9	2.9	1.1	L
Nitrate + (mg/L)	0.05	04/13/16-03/27/19	O	32	31	0.01	0.27	0.07	0.09	0.08	0.21	
Nitrate + (mg/L)	0.05	04/13/16-03/27/19	DUP	32	31	0.01	0.27	0.07	0.09	0.08	0.21	
P (mg/L)	0.104	04/13/16-03/27/19	DUP	32	27	< 0.003	0.18	0.008	0.008	0.035	2.749	
P (mg/L)	0.105	04/13/16-03/27/19	O	32	27	< 0.003	0.18	0.008	0.008	0.035	2.778	
Total Pers (mg/L)	0.57	04/13/16-03/27/19	O	29	28	< 0	1.25	0.18	0.21	0.24	1.61	
Total Pers (mg/L)	0.51	04/13/16-03/27/19	DUP	29	28	< 0	1.25	0.18	0.21	0.24	1.36	
Al (DIS) (mg/L)	0.012	04/13/16-03/27/19	O	32	3	< 0.009	0.047					
Al (DIS) (mg/L)	0.011	04/13/16-03/27/19	DUP	32	3	< 0.009	0.047					
Sb (TRC) (mg/L)	< 0.0005	04/13/16-03/27/19	DUP	32	0	< 0.0005	: 0.0005					
Sb (TRC) (mg/L)	< 0.0005	04/13/16-03/27/19	O	32	0	< 0.0005	: 0.0005					
As (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	DUP	32	0	< 0.001	< 0.001					
As (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	O	32	0	< 0.001	< 0.001					
Ba (TRC) (mg/L)	0.075	04/13/16-03/27/19	DUP	32	32	0.077	0.13	0.111	0.116	0.014	2.55	L
Ba (TRC) (mg/L)	0.077	04/13/16-03/27/19	O	32	32	0.077	0.13	0.111	0.116	0.014	2.407	L
Be (TRC) (mg/L)	< 0.0008	04/13/16-03/27/19	O	32	0	< 0.0008	: 0.0008					
Be (TRC) (mg/L)	< 0.0008	04/13/16-03/27/19	DUP	32	0	< 0.0008	: 0.0008					
Cd (TRC) (mg/L)	< 0	04/13/16-03/27/19	DUP	32	2	< 0	: .00003					
Cd (TRC) (mg/L)	< 0	04/13/16-03/27/19	O	32	2	< 0	: .00003					
Cr (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	O	32	0	< 0.01	< 0.01					
Cr (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	DUP	32	0	< 0.01	< 0.01					
Co (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	O	32	0	< 0.01	< 0.01					
Co (TRC) (mg/L)	< 0.01	04/13/16-03/27/19	DUP	32	0	< 0.01	< 0.01					
Cu (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	DUP	32	0	< 0.002	< 0.002					
Cu (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	0	< 0.002	< 0.002					
Fe (TRC) (mg/L)	0.14	04/13/16-03/27/19	DUP	32	29	0.02	0.43	0.06	0.06	0.08	1.06	
Fe (TRC) (mg/L)	0.13	04/13/16-03/27/19	O	32	29	0.02	0.43	0.06	0.06	0.08	0.94	
Pb (TRC) (mg/L)	< 0.0003	04/13/16-03/27/19	DUP	32	1	< 0.0003	0.0005					
Pb (TRC) (mg/L)	< 0.0003	04/13/16-03/27/19	O	32	1	< 0.0003	0.0005					
Mn (TRC) (mg/L)	0.006	04/13/16-03/27/19	O	32	6	< 0.005	0.009					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Mn (TRC) (mg/L)	0.006	04/13/16-03/27/19	DUP	32	6	< 0.005	0.009						
Hg (TRC) (ug/L)	0.018	04/13/16-03/27/19	O	32	1	< 0	0.018						
Hg (TRC) (ug/L)	0.018	04/13/16-03/27/19	DUP	32	1	< 0	0.018						
Mo (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	DUP	32	0	< 0.002	< 0.002						
Mo (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	0	< 0.002	< 0.002						
Ni (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	DUP	32	1	< 0.001	< .002						
Ni (TRC) (mg/L)	< 0.001	04/13/16-03/27/19	O	32	1	< 0.001	< .002						
Se (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	1	< 0.0002	< .0004						
Se (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	DUP	32	1	< 0.0002	< .0004						
Ag (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	DUP	32	0	< 0.0002	: 0.0002						
Ag (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	0	< 0.0002	: 0.0002						
Sr (TRC) (mg/L)	0.0756	04/13/16-03/27/19	DUP	32	32	0.0749	0.136	0.1179	0.124	0.0159	2.662		
Sr (TRC) (mg/L)	0.0749	04/13/16-03/27/19	O	32	32	0.0749	0.136	0.1179	0.124	0.0159	2.706	L	
Tl (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	O	32	0	< 0.0002	: 0.0002						
Tl (TRC) (mg/L)	< 0.0002	04/13/16-03/27/19	DUP	32	0	< 0.0002	: 0.0002						
U (TRC) (mg/L)	0.0003	04/13/16-03/27/19	DUP	32	4	0.0003	< .008						
U (TRC) (mg/L)	0.0003	04/13/16-03/27/19	O	32	4	0.0003	< .008						
Zn (TRC) (mg/L)	0.002	04/13/16-03/27/19	DUP	32	5	< 0.002	0.006						
Zn (TRC) (mg/L)	< 0.002	04/13/16-03/27/19	O	32	5	< 0.002	0.006						

SAMPLE NO	BBC-1903-223	LAB NO:	H19030547-009	STATION:RINSATE BLANK									
03/28/19													
PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN		
TDS (mg/L)	< 10	N/A	FB	0									
TSS (mg/L)	< 10	N/A	FB	0									
Tot Alk (mg/L)	< 4	N/A	FB	0									
Ca (mg/L)	< 1	N/A	FB	0									
Chloride (mg/L)	< 1	N/A	FB	0									
F (mg/L)	< 0.1	N/A	FB	0									
Tot Hard (mg/L)	< 1	N/A	FB	0									
Mg (mg/L)	< 1	N/A	FB	0									
K (mg/L)	< 1	N/A	FB	0									
Na (mg/L)	< 1	N/A	FB	0									
SO4 (mg/L)	< 1	N/A	FB	0									
Nitrate + (mg/L)	< 0.01	N/A	FB	0									

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Al (DIS) (mg/L)	< 0.009	N/A	FB	0
Sb (DIS) (mg/L)	< 0.0005	N/A	FB	0
As (DIS) (mg/L)	< 0.001	N/A	FB	0
Ba (DIS) (mg/L)	< 0.003	N/A	FB	0
Be (DIS) (mg/L)	< 0.0008	N/A	FB	0
Cd (DIS) (mg/L)	< 0	N/A	FB	0
Cr (DIS) (mg/L)	< 0.01	N/A	FB	0
Co (DIS) (mg/L)	< 0.01	N/A	FB	0
Cu (DIS) (mg/L)	< 0.002	N/A	FB	0
Fe (DIS) (mg/L)	< 0.02	N/A	FB	0
Pb (DIS) (mg/L)	< 0.0003	N/A	FB	0
Mn (DIS) (mg/L)	< 0.005	N/A	FB	0
Hg (DIS) (ug/L)	< 0.005	N/A	FB	0
Mo (DIS) (mg/L)	< 0.002	N/A	FB	0
Ni (DIS) (mg/L)	< 0.001	N/A	FB	0
Se (DIS) (mg/L)	< 0.0002	N/A	FB	0
Ag (DIS) (mg/L)	< 0.0002	N/A	FB	0
Sr (DIS) (mg/L)	< 0.0002	N/A	FB	0
Tl (DIS) (mg/L)	< 0.0002	N/A	FB	0
U (DIS) (mg/L)	< 0.0002	N/A	FB	0
Zn (DIS) (mg/L)	< 0.002	N/A	FB	0

SAMPLE NO	BBC-1903-121	LAB NO:	H19030477-004	STATION:SW-17
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PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	9.87	01/17/18-03/27/19	O	13	13	9.32	11.38	10.41	10.56	0.66	0.82
pH Fld (s.u.)	7.65	01/17/18-03/27/19	O	13	13	7.47	8.41	8.03	8.06	0.27	1.4
SC Fld (umhos/cm)	420	01/17/18-03/27/19	O	13	13	319.0	487.0	428.3	436	38.4	0.2
Water Temp (Deg C)	1.7	01/17/18-03/27/19	O	13	13	0.0	13.3	1.5	2.9	4.7	0.0
TDS (mg/L)	243	01/17/18-03/27/19	O	14	14	197.0	299.0	252.2	253.5	22.5	0.4
TSS (mg/L)	< 4	01/17/18-03/27/19	O	14	5	< 4	14.0				
Tot Alk (mg/L)	170	01/17/18-03/27/19	O	14	14	150.0	210.0	200.5	210	16.8	1.8
Ca (mg/L)	49	01/17/18-03/27/19	O	14	14	44.0	63.0	54.4	56	4.7	1.2
Chloride (mg/L)	11	01/17/18-03/27/19	O	14	14	3.0	11.0	4.3	4	2	3.3 *H
F (mg/L)	0.2	01/17/18-03/27/19	O	14	14	0.1	0.2	0.2	0.2	0	0.0 H

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Tot Hard (mg/L)	211	01/17/18-03/27/19	O	14	14	167.0	262.0	232.0	240.5	21.8	1.0
Mg (mg/L)	22	01/17/18-03/27/19	O	14	14	14.0	25.0	23.3	25	2.8	0.5
K (mg/L)	4	01/17/18-03/27/19	O	14	12	1.0	4.0	1.1	1	0.7	4.1 *H
Na (mg/L)	5	01/17/18-03/27/19	O	14	14	2.0	5.0	2.4	2	0.8	3.3 *H
SO4 (mg/L)	30	01/17/18-03/27/19	O	14	14	12.0	44.0	28.8	33.5	7.4	0.2
Nitrate + (mg/L)	0.16	01/17/18-03/27/19	O	14	13	< 0.01	0.19	0.08	0.11	0.06	1.33
P (mg/L)	0.056	01/17/18-03/27/19	O	14	14	0.004	0.088	0.013	0.013	0.022	1.937
Total Pers (mg/L)	0.7	04/12/18-03/27/19	O	11	11	0.1	0.7	0.2	0.2	0.2	2.3 H
Al (DIS) (mg/L)	< 0.009	01/17/18-03/27/19	O	14	1	< 0.009	0.016				
Sb (TRC) (mg/L)	< 0.0005	01/17/18-03/27/19	O	14	0	< 0.0005	: 0.0005				
As (TRC) (mg/L)	< 0.001	01/17/18-03/27/19	O	14	0	< 0.001	< 0.001				
Ba (TRC) (mg/L)	0.144	01/17/18-03/27/19	O	14	14	0.108	0.168	0.149	0.152	0.013	0.375
Be (TRC) (mg/L)	< 0.0008	01/17/18-03/27/19	O	14	0	< 0.0008	: 0.0008				
Cd (TRC) (mg/L)	< 0	01/17/18-03/27/19	O	14	1	< 0	0.0002				
Cr (TRC) (mg/L)	< 0.01	01/17/18-03/27/19	O	14	0	< 0.01	< 0.01				
Co (TRC) (mg/L)	< 0.01	01/17/18-03/27/19	O	14	0	< 0.01	< 0.01				
Cu (TRC) (mg/L)	< 0.002	01/17/18-03/27/19	O	14	0	< 0.002	< 0.002				
Fe (TRC) (mg/L)	0.26	01/17/18-03/27/19	O	14	14	0.07	0.36	0.15	0.15	0.08	1.43
Pb (TRC) (mg/L)	< 0.0003	01/17/18-03/27/19	O	14	1	< 0.0003	: 0.0003				
Mn (TRC) (mg/L)	0.034	01/17/18-03/27/19	O	14	14	0.008	0.051	0.021	0.026	0.013	1.026
Hg (TRC) (ug/L)	0.009	01/17/18-03/27/19	O	14	1	< 0	0.009				
Mo (TRC) (mg/L)	< 0.002	01/17/18-03/27/19	O	14	0	< 0.002	< 0.002				
Ni (TRC) (mg/L)	< 0.001	01/17/18-03/27/19	O	14	0	< 0.001	< .002				
Se (TRC) (mg/L)	< 0.0002	01/17/18-03/27/19	O	14	0	< 0.0002	: 0.0002				
Ag (TRC) (mg/L)	< 0.0002	01/17/18-03/27/19	O	14	0	< 0.0002	: 0.0002				
Sr (TRC) (mg/L)	0.12	01/17/18-03/27/19	O	14	14	0.12	0.16	0.14	0.15	0.01	2.43
Tl (TRC) (mg/L)	< 0.0002	01/17/18-03/27/19	O	14	4	< 0.0002	: 0.0002				
U (TRC) (mg/L)	0.0006	01/17/18-03/27/19	O	14	3	0.0006	< .008				
Zn (TRC) (mg/L)	0.003	01/17/18-03/27/19	O	14	8	< 0.002	0.008	0.003	0.003	0.002	0.091

SAMPLE NO		BBC-1903-202	LAB NO:		H19030476-003		STATION:MW-16				
03/25/19		COMPARISON		QC	# OF	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S
PARAMETER	RESULT	PERIOD OF DATA	Code	N	DET						FROM MEAN
Depth to W (Feet)	7.2	01/24/18-03/25/19	O	6	6	5.4	8.8	7.5	8	1.3	0.3
DO (mg/L)	0.2	01/24/18-03/25/19	O	6	6	0.0	0.3	0.1	0.2	0.1	0.8

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

EH (Millivolts)	173.06	03/21/18-03/25/19	O	5	5	161.88	187.23	175.24	173.06	10.16	0.21	
pH Fld (s.u.)	7.32	01/24/18-03/25/19	O	6	6	7.14	7.33	7.28	7.3	0.06	0.7	
SC Fld (umhos/cm)	623	01/24/18-03/25/19	O	6	6	568.0	653.0	621.2	623.5	27.9	0.1	
Water Temp (Deg C)	6.7	01/24/18-03/25/19	O	6	6	6.6	6.9	6.7	6.7	0.1	0.2	
TDS (mg/L)	371	01/24/18-03/25/19	O	6	6	329.0	395.0	374.2	382	21.9	0.1	
TSS (mg/L)	17	01/24/18-03/25/19	O	6	5	< 10	82.0	22.3	18	26.6	0.2	
Tot Alk (mg/L)	240	01/24/18-03/25/19	O	6	6	220.0	250.0	241.4	245	11.1	0.1	
Ca (mg/L)	78	01/24/18-03/25/19	O	6	6	67.0	78.0	74.2	76	4.5	0.8	H
Chloride (mg/L)	2	01/24/18-03/25/19	O	6	6	1.0	2.0	1.3	1	0.5	1.5	H
F (mg/L)	0.5	01/24/18-03/25/19	O	6	6	0.5	0.5	0.5	0.5	0	0.0	H
Tot Hard (mg/L)	365	01/24/18-03/25/19	O	6	6	326.0	368.0	349.8	354.5	18.8	0.8	
Mg (mg/L)	41	01/24/18-03/25/19	O	6	6	38.0	42.0	40.0	40.5	1.9	0.5	
K (mg/L)	3	01/24/18-03/25/19	O	6	6	3.0	3.0	3.0	3	0	0.0	H
Na (mg/L)	4	01/24/18-03/25/19	O	6	6	4.0	4.0	4.0	4	0	0.0	H
SO4 (mg/L)	105	01/24/18-03/25/19	O	6	6	72.0	107.0	98.7	104.5	12.5	0.5	
Nitrate + (mg/L)	< 0.01	01/24/18-03/25/19	O	6	1	< 0.01	< 0.01					
Al (DIS) (mg/L)	< 0.009	01/24/18-03/25/19	O	6	4	< 0.009	0.208	0.023	0.013	0.073	0.197	L
Sb (DIS) (mg/L)	< 0.0005	01/24/18-03/25/19	O	6	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	0.006	01/24/18-03/25/19	O	6	6	0.005	0.006	0.006	0.006	0	0.0	H
Ba (DIS) (mg/L)	0.017	01/24/18-03/25/19	O	6	6	0.017	0.026	0.021	0.02	0.003	1.309	L
Be (DIS) (mg/L)	< 0.0008	01/24/18-03/25/19	O	6	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	01/24/18-03/25/19	O	6	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	01/24/18-03/25/19	O	6	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	01/24/18-03/25/19	O	6	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	01/24/18-03/25/19	O	6	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	1.36	01/24/18-03/25/19	O	6	6	0.91	1.57	1.3	1.36	0.22	0.26	
Pb (DIS) (mg/L)	< 0.0003	01/24/18-03/25/19	O	6	2	< 0.0003	0.0004					
Mn (DIS) (mg/L)	0.044	01/24/18-03/25/19	O	6	6	0.044	0.058	0.049	0.047	0.006	0.892	L
Hg (DIS) (ug/L)	< 0.005	01/24/18-03/25/19	O	6	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	01/24/18-03/25/19	O	6	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	01/24/18-03/25/19	O	6	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	< 0.0002	01/24/18-03/25/19	O	6	1	< 0.0002	: 0.0002					
Ag (DIS) (mg/L)	< 0.0002	01/24/18-03/25/19	O	6	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.332	01/24/18-03/25/19	O	6	6	0.285	0.332	0.312	0.319	0.02	0.997	H

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

TI (DIS) (mg/L)	< 0.0002	01/24/18-03/25/19	O	6	0	< 0.0002 : 0 .0002					
U (DIS) (mg/L)	0.0019	01/24/18-03/25/19	O	6	2	0.0019 < .008					
Zn (DIS) (mg/L)	0.005	01/24/18-03/25/19	O	6	6	0.005 0.022	0.008	0.006	0.007	0.46	L

SAMPLE NO BBC-1903-213 LAB NO: H19030476-014

STATION:MW-17

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
03/27/19											
Depth to W (Feet)	55.76	06/14/18-03/27/19	O	4	4	44.91	55.76	50.59	51.16	6	0.86 H
DO (mg/L)	4.73	06/14/18-03/27/19	O	4	4	4.73	6.6	5.8	6.03	1.34	0.8 L
EH (Millivolts)	254.08	06/14/18-03/27/19	O	4	4	241.75	285.01	259.85	257.26	18.2	0.32
pH Fld (s.u.)	7.73	06/14/18-03/27/19	O	4	4	7.65	7.75	7.71	7.73	0.13	0.12
SC Fld (umhos/cm)	392	06/14/18-03/27/19	O	4	4	380.0	392.0	385.7	385.5	117.8	0.1 H
Water Temp (Deg C)	6.6	06/14/18-03/27/19	O	4	4	6.2	7.4	6.8	6.8	0.5	0.4
TDS (mg/L)	214	06/14/18-03/27/19	O	4	4	198.0	214.0	209.1	212.5	7.5	0.6 H
TSS (mg/L)	14	06/14/18-03/27/19	O	4	1	< 10	14.0				
Tot Alk (mg/L)	200	06/14/18-03/27/19	O	4	4	200.0	200.0	200.0	200	0	0.0 H
Ca (mg/L)	44	06/14/18-03/27/19	O	4	4	44.0	45.0	44.7	45	0.5	1.5 L
Chloride (mg/L)	2	06/14/18-03/27/19	O	4	4	2.0	2.0	2.0	2	0	0.0 H
F (mg/L)	0.2	06/14/18-03/27/19	O	4	4	0.2	0.3	0.3	0.3	0	0.0 L
Tot Hard (mg/L)	214	06/14/18-03/27/19	O	4	4	212.0	214.0	213.2	213.5	1	0.8 H
Mg (mg/L)	25	06/14/18-03/27/19	O	4	4	24.0	25.0	24.7	25	0.5	0.5 H
K (mg/L)	< 1	06/14/18-03/27/19	O	4	0	< 1	< 1				
Na (mg/L)	2	06/14/18-03/27/19	O	4	4	2.0	2.0	2.0	2	0	0.0 H
SO4 (mg/L)	10	06/14/18-03/27/19	O	4	4	8.0	10.0	8.7	8.5	1	1.3 H
Nitrate + (mg/L)	0.34	06/14/18-03/27/19	O	4	4	0.34	0.5	0.44	0.47	0.07	1.39 L
Al (DIS) (mg/L)	0.016	06/14/18-03/27/19	O	4	2	< 0.009	0.039				
Sb (DIS) (mg/L)	< 0.0005	06/14/18-03/27/19	O	4	0	< 0.0005 : 0 .0005					
As (DIS) (mg/L)	< 0.001	06/14/18-03/27/19	O	4	0	< 0.001 < 0 .001					
Ba (DIS) (mg/L)	0.253	06/14/18-03/27/19	O	4	4	0.253	0.423	0.292	0.26	0.083	0.466 L
Be (DIS) (mg/L)	< 0.0008	06/14/18-03/27/19	O	4	0	< 0.0008 : 0 .0008					
Cd (DIS) (mg/L)	< 0	06/14/18-03/27/19	O	4	0	< 0 : .00003					
Cr (DIS) (mg/L)	< 0.01	06/14/18-03/27/19	O	4	0	< 0.01 < 0 .01					
Co (DIS) (mg/L)	< 0.01	06/14/18-03/27/19	O	4	0	< 0.01 < 0 .01					
Cu (DIS) (mg/L)	< 0.002	06/14/18-03/27/19	O	4	0	< 0.002 < 0 .002					
Fe (DIS) (mg/L)	< 0.02	06/14/18-03/27/19	O	4	1	< 0.02	0.07				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Pb (DIS) (mg/L)	< 0.0003	06/14/18-03/27/19	O	4	1	< 0.0003	0.001						
Mn (DIS) (mg/L)	0.008	06/14/18-03/27/19	O	4	2	< 0.005	0.021						
Hg (DIS) (ug/L)	< 0.005	06/14/18-03/27/19	O	4	0	< 0	< .005						
Mo (DIS) (mg/L)	< 0.002	06/14/18-03/27/19	O	4	0	< 0.002	< 0 .002						
Ni (DIS) (mg/L)	< 0.001	06/14/18-03/27/19	O	4	1	< 0.001	0.002						
Se (DIS) (mg/L)	0.0009	06/14/18-03/27/19	O	4	4	0.0009	0.0014	0.0011	0.0011	0.0002	1.056	L	
Ag (DIS) (mg/L)	< 0.0002	06/14/18-03/27/19	O	4	0	< 0.0002	: 0 .0002						
Sr (DIS) (mg/L)	0.114	06/14/18-03/27/19	O	4	4	0.11	0.143	0.119	0.113	0.016	0.315		
Tl (DIS) (mg/L)	< 0.0002	06/14/18-03/27/19	O	4	0	< 0.0002	: 0 .0002						
U (DIS) (mg/L)	0.0009	06/14/18-03/27/19	O	4	2	0.0008	< .008						
Zn (DIS) (mg/L)	0.006	06/14/18-03/27/19	O	4	4	0.006	0.011	0.007	0.006	0.002	0.491	L	

SAMPLE NO BBC-1903-212 LAB NO: H19030476-013

STATION:MW-18

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
03/26/19											
Depth to W (Feet)	17.17	01/24/18-03/26/19	O	6	6	10.13	19.47	16.13	17.02	3.07	0.34
DO (mg/L)	7.7	01/24/18-03/26/19	O	6	6	7.7	8.6	8.2	8.4	0.4	1.3 L
EH (Millivolts)	266.98	03/21/18-03/26/19	O	5	5	249.14	282.39	271.25	278.83	13.89	0.31
pH Fld (s.u.)	7.84	01/24/18-03/26/19	O	6	6	7.16	7.84	7.68	7.77	0.26	0.62 H
SC Fld (umhos/cm)	356	01/24/18-03/26/19	O	6	6	355.0	375.0	365.9	368.5	8.8	1.1
Water Temp (Deg C)	6	01/24/18-03/26/19	O	6	6	4.9	7.4	6.4	6.7	1	0.4
TDS (mg/L)	194	01/24/18-03/26/19	O	6	6	194.0	220.0	205.5	204.5	8.7	1.3 L
TSS (mg/L)	14	01/24/18-03/26/19	O	6	4	< 10	71.0	23.7	26	22.6	0.4
Tot Alk (mg/L)	190	01/24/18-03/26/19	O	6	6	190.0	200.0	193.3	190	4.9	0.7 L
Ca (mg/L)	50	01/24/18-03/26/19	O	6	6	45.0	51.0	48.8	49.5	2	0.6
Chloride (mg/L)	< 1	01/24/18-03/26/19	O	6	0	< 1	< 1				
F (mg/L)	< 0.1	01/24/18-03/26/19	O	6	1	< 0.1	< 0 .1				
Tot Hard (mg/L)	208	01/24/18-03/26/19	O	6	6	190.0	210.0	201.9	202.5	6.8	0.9
Mg (mg/L)	20	01/24/18-03/26/19	O	6	6	19.0	20.0	19.5	19.5	0.5	1.0 H
K (mg/L)	< 1	01/24/18-03/26/19	O	6	0	< 1	< 1				
Na (mg/L)	2	01/24/18-03/26/19	O	6	6	2.0	2.0	2.0	2	0	0.0 H
SO4 (mg/L)	8	01/24/18-03/26/19	O	6	6	5.0	8.0	7.4	8	1.1	0.5 H
Nitrate + (mg/L)	0.17	01/24/18-03/26/19	O	6	6	0.17	0.22	0.19	0.18	0.02	0.79 L
Al (DIS) (mg/L)	< 0.009	01/24/18-03/26/19	O	6	3	< 0.009	0.061				
Sb (DIS) (mg/L)	< 0.0005	01/24/18-03/26/19	O	6	0	< 0.0005	: 0 .0005				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

As (DIS) (mg/L)	< 0.001	01/24/18-03/26/19	O	6	0	< 0.001	< 0.001					
Ba (DIS) (mg/L)	0.083	01/24/18-03/26/19	O	6	6	0.083	0.104	0.096	0.095	0.007	1.794	L
Be (DIS) (mg/L)	< 0.0008	01/24/18-03/26/19	O	6	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	01/24/18-03/26/19	O	6	1	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	01/24/18-03/26/19	O	6	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	01/24/18-03/26/19	O	6	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	01/24/18-03/26/19	O	6	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	< 0.02	01/24/18-03/26/19	O	6	2	< 0.02	0.08					
Pb (DIS) (mg/L)	< 0.0003	01/24/18-03/26/19	O	6	2	< 0.0003	0.0006					
Mn (DIS) (mg/L)	< 0.005	01/24/18-03/26/19	O	6	2	< 0.005	0.009					
Hg (DIS) (ug/L)	< 0.005	01/24/18-03/26/19	O	6	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	01/24/18-03/26/19	O	6	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	01/24/18-03/26/19	O	6	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	0.0003	01/24/18-03/26/19	O	6	6	0.0002	0.0004	0.0003	0.0003	0.0001	0.0583	
Ag (DIS) (mg/L)	< 0.0002	01/24/18-03/26/19	O	6	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.1	01/24/18-03/26/19	O	6	6	0.1	0.1	0.1	0.1	0	0.0	
Tl (DIS) (mg/L)	< 0.0002	01/24/18-03/26/19	O	6	0	< 0.0002	: 0.0002					
U (DIS) (mg/L)	0.0005	01/24/18-03/26/19	O	6	2	0.0005	< .008					
Zn (DIS) (mg/L)	< 0.002	01/24/18-03/26/19	O	6	1	< 0.002	< 0.002					

SAMPLE NO BBC-1903-207 LAB NO: H19030476-008

STATION: MW-19

PARAMETER	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN	
Depth to W (Feet)	14.18	01/24/18-03/26/19	O	6	6	8.51	15.54	13.28	14.15	2.36	0.38	
DO (mg/L)	8.07	01/24/18-03/26/19	O	6	6	6.69	8.07	7.2	7.11	0.49	1.77	H
EH (Millivolts)	273.25	03/20/18-03/26/19	O	5	5	251.79	340.72	286.17	278.5	33.29	0.39	
pH Fld (s.u.)	7.54	01/24/18-03/26/19	O	6	6	7.47	7.79	7.57	7.54	0.11	0.25	
SC Fld (umhos/cm)	366	01/24/18-03/26/19	O	6	6	352.0	417.0	387.8	394	25.4	0.9	
Water Temp (Deg C)	6.2	01/24/18-03/26/19	O	6	6	6.2	8.1	7.0	7	0.7	1.2	L
TDS (mg/L)	203	01/24/18-03/26/19	O	6	6	203.0	234.0	219.3	220.5	11.6	1.4	L
TSS (mg/L)	44	01/24/18-03/26/19	O	6	5	< 10	44.0	22.5	25	12.1	1.8	H
Tot Alk (mg/L)	180	01/24/18-03/26/19	O	6	6	180.0	210.0	199.7	205	11.5	1.7	L
Ca (mg/L)	52	01/24/18-03/26/19	O	6	6	51.0	57.0	54.5	55.5	2.3	1.1	
Chloride (mg/L)	< 1	01/24/18-03/26/19	O	6	1	< 1	< 1					
F (mg/L)	0.1	01/24/18-03/26/19	O	6	6	0.1	0.1	0.1	0.1	0	0.0	H

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Tot Hard (mg/L)	210	01/24/18-03/26/19	O	6	6	210.0	230.0	221.0	224.5	8.8	1.3	L
Mg (mg/L)	20	01/24/18-03/26/19	O	6	6	20.0	22.0	20.7	20.5	0.8	0.8	L
K (mg/L)	< 1	01/24/18-03/26/19	O	6	0	< 1	< 1					
Na (mg/L)	2	01/24/18-03/26/19	O	6	6	2.0	3.0	2.3	2	0.5	0.6	L
SO4 (mg/L)	14	01/24/18-03/26/19	O	6	6	11.0	16.0	14.1	14.5	1.7	0.0	
Nitrate + (mg/L)	0.25	01/24/18-03/26/19	O	6	6	0.18	0.48	0.24	0.23	0.11	0.05	
Al (DIS) (mg/L)	< 0.009	01/24/18-03/26/19	O	6	4	< 0.009	0.054	0.016	0.014	0.016	0.41	L
Sb (DIS) (mg/L)	< 0.0005	01/24/18-03/26/19	O	6	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	< 0.001	01/24/18-03/26/19	O	6	0	< 0.001	< 0.001					
Ba (DIS) (mg/L)	0.081	01/24/18-03/26/19	O	6	6	0.079	0.095	0.089	0.092	0.007	1.085	
Be (DIS) (mg/L)	< 0.0008	01/24/18-03/26/19	O	6	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	01/24/18-03/26/19	O	6	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	01/24/18-03/26/19	O	6	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	01/24/18-03/26/19	O	6	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	01/24/18-03/26/19	O	6	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	< 0.02	01/24/18-03/26/19	O	6	2	< 0.02	0.06					
Pb (DIS) (mg/L)	< 0.0003	01/24/18-03/26/19	O	6	0	< 0.0003	: 0.0003					
Mn (DIS) (mg/L)	< 0.005	01/24/18-03/26/19	O	6	1	< 0.005	0.008					
Hg (DIS) (ug/L)	< 0.005	01/24/18-03/26/19	O	6	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	01/24/18-03/26/19	O	6	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	01/24/18-03/26/19	O	6	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	< 0.0002	01/24/18-03/26/19	O	6	0	< 0.0002	: 0.0002					
Ag (DIS) (mg/L)	< 0.0002	01/24/18-03/26/19	O	6	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.13	01/24/18-03/26/19	O	6	6	0.13	0.16	0.15	0.15	0.01	1.8	L
Tl (DIS) (mg/L)	< 0.0002	01/24/18-03/26/19	O	6	0	< 0.0002	: 0.0002					
U (DIS) (mg/L)	0.0007	01/24/18-03/26/19	O	6	2	0.0007	< .008					
Zn (DIS) (mg/L)	< 0.002	01/24/18-03/26/19	O	6	0	< 0.002	< 0.002					

SAMPLE NO BBC-1903-214 LAB NO: H19030476-015

STATION: MW-20

PARAMETER	03/27/19 RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Depth to W (Feet)	20.04	01/24/18-03/27/19	O	6	6	18.12	25.93	22.08	21.98	2.81	0.72
DO (mg/L)	9.45	01/24/18-03/27/19	O	6	6	7.06	9.51	8.58	9.21	1.12	0.77
EH (Millivolts)	259.06	03/20/18-03/27/19	O	5	5	244.47	278.77	264.09	267.21	13.25	0.38
pH Fld (s.u.)	7.76	01/24/18-03/27/19	O	6	6	7.4	7.79	7.68	7.75	0.15	0.51

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

SC Fld (umhos/cm)	382	01/24/18-03/27/19	O	6	6	380.0	410.0	392.3	391	12.5	0.8	
Water Temp (Deg C)	6.7	01/24/18-03/27/19	O	6	6	6.7	8.1	7.5	7.7	0.5	1.6	L
TDS (mg/L)	208	01/24/18-03/27/19	O	6	6	198.0	225.0	213.0	215.5	9.2	0.5	
TSS (mg/L)	179	01/24/18-03/27/19	O	6	6	64.0	603.0	218.6	208.5	207.6	0.2	
Tot Alk (mg/L)	200	01/24/18-03/27/19	O	6	6	200.0	290.0	227.4	210	39.5	0.7	L
Ca (mg/L)	46	01/24/18-03/27/19	O	6	6	43.0	51.0	47.6	48	2.9	0.5	
Chloride (mg/L)	< 1	01/24/18-03/27/19	O	6	0	< 1	< 1					
F (mg/L)	< 0.1	01/24/18-03/27/19	O	6	2	< 0.1	< 0.1					
Tot Hard (mg/L)	209	01/24/18-03/27/19	O	6	6	200.0	229.0	215.5	217	10.4	0.6	
Mg (mg/L)	23	01/24/18-03/27/19	O	6	6	22.0	25.0	23.3	23	1	0.3	
K (mg/L)	1	01/24/18-03/27/19	O	6	4	1.0	1.0	1.0	1	0	0.0	H
Na (mg/L)	2	01/24/18-03/27/19	O	6	6	1.0	2.0	1.3	1	0.5	1.5	H
SO4 (mg/L)	9	01/24/18-03/27/19	O	6	6	7.0	10.0	9.1	9.5	1.2	0.1	
Nitrate + (mg/L)	0.45	01/24/18-03/27/19	O	6	6	0.28	0.45	0.34	0.34	0.07	1.53	H
Al (DIS) (mg/L)	0.009	01/24/18-03/27/19	O	6	3	0.009	0.045					
Sb (DIS) (mg/L)	< 0.0005	01/24/18-03/27/19	O	6	0	< 0.0005	: 0.0005					
As (DIS) (mg/L)	< 0.001	01/24/18-03/27/19	O	6	0	< 0.001	< 0.001					
Ba (DIS) (mg/L)	0.178	01/24/18-03/27/19	O	6	6	0.175	0.207	0.192	0.198	0.013	1.099	
Be (DIS) (mg/L)	< 0.0008	01/24/18-03/27/19	O	6	0	< 0.0008	: 0.0008					
Cd (DIS) (mg/L)	< 0	01/24/18-03/27/19	O	6	0	< 0	: .00003					
Cr (DIS) (mg/L)	< 0.01	01/24/18-03/27/19	O	6	0	< 0.01	< 0.01					
Co (DIS) (mg/L)	< 0.01	01/24/18-03/27/19	O	6	0	< 0.01	< 0.01					
Cu (DIS) (mg/L)	< 0.002	01/24/18-03/27/19	O	6	0	< 0.002	< 0.002					
Fe (DIS) (mg/L)	< 0.02	01/24/18-03/27/19	O	6	2	< 0.02	0.04					
Pb (DIS) (mg/L)	< 0.0003	01/24/18-03/27/19	O	6	0	< 0.0003	: 0.0003					
Mn (DIS) (mg/L)	< 0.005	01/24/18-03/27/19	O	6	0	< 0.005	< 0.005					
Hg (DIS) (ug/L)	< 0.005	01/24/18-03/27/19	O	6	0	< 0	< .005					
Mo (DIS) (mg/L)	< 0.002	01/24/18-03/27/19	O	6	0	< 0.002	< 0.002					
Ni (DIS) (mg/L)	< 0.001	01/24/18-03/27/19	O	6	3	< 0.001	< 0.001					
Se (DIS) (mg/L)	< 0.0002	01/24/18-03/27/19	O	6	5	< 0.0002	0.0003	0.0002	0.0002	0.0001	0.2894	L
Ag (DIS) (mg/L)	< 0.0002	01/24/18-03/27/19	O	6	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.0655	01/24/18-03/27/19	O	6	6	0.0655	0.078	0.0712	0.0718	0.0046	1.2487	L
Tl (DIS) (mg/L)	< 0.0002	01/24/18-03/27/19	O	6	0	< 0.0002	: 0.0002					
U (DIS) (mg/L)	0.0005	01/24/18-03/27/19	O	6	2	0.0005	< .008					

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.



# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Zn (DIS) (mg/L) < 0.002 01/24/18-03/27/19 O 6 1 < 0.002 0.004

SAMPLE NO	BBC-1903-122	LAB NO:	H19030475-007	STATION:SP-12
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PARAMETER	03/27/19 RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
DO (mg/L)	4.18	04/18/18-03/27/19	O	10	10	3.32	8.8	5.92	6.29	2.01	0.86
pH Fld (s.u.)	7.25	04/18/18-03/27/19	O	10	10	6.76	7.95	7.49	7.62	0.35	0.7
SC Fld (umhos/cm)	437	04/18/18-03/27/19	O	10	10	421.0	473.0	441.9	437	16.5	0.3
Water Temp (Deg C)	4.3	04/18/18-03/27/19	O	10	10	4.3	7.3	6.0	6.2	0.9	1.9 L
TDS (mg/L)	245	04/18/18-03/27/19	O	11	11	234.0	262.0	247.0	248	9.3	0.2
TSS (mg/L)	< 10	04/18/18-03/27/19	O	11	6	< 10	187.0	23.5	22	53.2	0.3 L
Tot Alk (mg/L)	160	04/18/18-03/27/19	O	11	11	160.0	220.0	200.2	210	16.4	2.5 L
Ca (mg/L)	42	04/18/18-03/27/19	O	11	11	42.0	61.0	54.2	55	4.8	2.6 L
Chloride (mg/L)	15	04/18/18-03/27/19	O	11	11	5.0	15.0	7.8	8	2.7	2.6 H
F (mg/L)	0.1	04/18/18-03/27/19	O	11	11	0.1	0.2	0.2	0.2	0	0.0 L
Tot Hard (mg/L)	180	04/18/18-03/27/19	O	11	11	180.0	258.0	231.7	238	20.2	2.6 L
Mg (mg/L)	18	04/18/18-03/27/19	O	11	11	18.0	26.0	23.4	24	2.2	2.5 L
K (mg/L)	13	04/18/18-03/27/19	O	11	11	1.0	13.0	1.4	1	3.6	3.2 *H
Na (mg/L)	3	04/18/18-03/27/19	O	11	11	2.0	3.0	2.2	2	0.5	1.5 H
SO4 (mg/L)	21	04/18/18-03/27/19	O	11	11	21.0	28.0	24.1	24	2.5	1.2 L
Nitrate + (mg/L)	0.15	04/18/18-03/27/19	O	11	11	0.15	0.69	0.37	0.33	0.16	1.35 L
Al (DIS) (mg/L)	< 0.009	04/18/18-03/27/19	O	11	1	< 0.009	0.014				
Sb (DIS) (mg/L)	< 0.0005	04/18/18-03/27/19	O	11	0	< 0.0005	: 0.0005				
As (DIS) (mg/L)	< 0.001	04/18/18-03/27/19	O	11	0	< 0.001	< 0.001				
Ba (DIS) (mg/L)	0.128	04/18/18-03/27/19	O	11	11	0.128	0.192	0.174	0.176	0.018	2.55 L
Be (DIS) (mg/L)	< 0.0008	04/18/18-03/27/19	O	11	0	< 0.0008	: 0.0008				
Cd (DIS) (mg/L)	< 0	04/18/18-03/27/19	O	11	0	< 0	: .00003				
Cr (DIS) (mg/L)	< 0.01	04/18/18-03/27/19	O	11	0	< 0.01	< 0.01				
Co (DIS) (mg/L)	< 0.01	04/18/18-03/27/19	O	11	0	< 0.01	< 0.01				
Cu (DIS) (mg/L)	0.002	04/18/18-03/27/19	O	11	1	0.002	0.002				
Fe (DIS) (mg/L)	0.05	04/18/18-03/27/19	O	11	4	< 0.02	0.06				
Pb (DIS) (mg/L)	< 0.0003	04/18/18-03/27/19	O	11	0	< 0.0003	: 0.0003				
Mn (DIS) (mg/L)	< 0.005	04/18/18-03/27/19	O	11	0	< 0.005	< 0.005				
Hg (DIS) (ug/L)	0.018	04/18/18-03/27/19	O	11	1	< 0	0.018				
Mo (DIS) (mg/L)	< 0.002	04/18/18-03/27/19	O	11	0	< 0.002	< 0.002				

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

# Black Butte Mine Data Comparison Summary

Report Date: May 8, 2019

Ni (DIS) (mg/L)	< 0.001	04/18/18-03/27/19	O	11	0	< 0.001	< 0.001					
Se (DIS) (mg/L)	< 0.0002	04/18/18-03/27/19	O	11	9	< 0.0002	0.0003	0.0002	0.0002	0	0.0	L
Ag (DIS) (mg/L)	< 0.0002	04/18/18-03/27/19	O	11	0	< 0.0002	: 0.0002					
Sr (DIS) (mg/L)	0.081	04/18/18-03/27/19	O	11	11	0.081	0.115	0.106	0.107	0.01	2.501	L
Tl (DIS) (mg/L)	< 0.0002	04/18/18-03/27/19	O	11	0	< 0.0002	: 0.0002					
U (DIS) (mg/L)	0.0003	04/18/18-03/27/19	O	11	5	0.0003	< .008					
Zn (DIS) (mg/L)	0.005	04/18/18-03/27/19	O	11	4	< 0.002	0.005					

SAMPLE NO BBC-1903-106 LAB NO: z

STATION:DS-7

PARAMETER	03/26/19	RESULT	COMPARISON PERIOD OF DATA	QC Code	N	# OF DET	MIN	MAX	MEAN	MEDIAN	SD	# OF SD'S FROM MEAN
Flow (Gallons Per Min)		4.12	N/A	OBS	0							

NOTES: All quantities in mg/L (Water) or mg/kg (Soil) unless noted. All results laboratory unless field (FLD) or calculated (CALC). N: Number of samples in comparison data set; # OF DET: Number of samples in data set above detection limit; SD: is Standard Deviation. \*: Value Equals or Exceeds 3 SD. H: Latest result is highest in data set; L: Latest result is lowest in data set. 50% of data set must be above lab detection limit before mean, median and SD are calculated.

All QC data were included in statistics. Flagged data were included in statistics. The detection limit was used in calculations.

**APPENDIX 2**  
**DATABASE**

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	DI-Blank	DI-Blank	DI-Blank	DS-1	DS-2	DS-3
Water	Sample Date	3/27/2019	3/28/2019	3/28/2019	3/26/2019	3/26/2019	3/26/2019
	Sample Time	7:50:00 AM	8:25:00 AM	1:10:00 PM	3:05:00 PM	5:15:00 PM	11:30:00 AM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	HYDRO	HYDRO
	Lab Number	H19030475-006	H19030548-004	H19030547-008	H19030475-004	z	z
	Sample Number	BBC-1903-118	BBC-1903-128	BBC-1903-222	BBC-1903-111	BBC-1903-113	BBC-1903-103
	Remarks						

## Field Parameters Multiple Units

Depth To Water				
Dissolved Oxygen				10.03
EH				
Field pH				8.17
Field Specific Conductivity				367
Flow				
Flow				2.6
Staff Gauge				NM-ICE
Water Temperature				2.3

## Physical Parameters mg/L

Total Dissolved Solids	<10	<10	<10	203
Total Suspended Solids	<10	<4	<10	20

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3	<4	<4	<4	190
Calcium (DIS)	<1	<1	<1	51
Chloride	<1	<1	<1	<1
Fluoride	<0.1	<0.1	<0.1	0.1
Hardness as CaCO3	<1	<1	<1	205
Magnesium (DIS)	<1	<1	<1	19
Potassium (DIS)	<1	<1	<1	<1
Sodium (DIS)	<1	<1	<1	1
Sulfate	<1	<1	<1	15

## Nutrients mg/L

Nitrate + Nitrite as N	<0.01	<0.01	<0.01	0.12
Phosphorus (TOT)		<0.003		
Total Persulfate Nitrogen		<0.04		

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)	<0.009	<0.009	<0.009	<0.009
Antimony (DIS)	<0.0005		<0.0005	<0.0005
Antimony (TRC)		<0.0005		
Arsenic (DIS)	<0.001		<0.001	<0.001
Arsenic (TRC)		<0.001		
Barium (DIS)	<0.003		<0.003	0.059
Barium (TRC)		<0.003		
Beryllium (DIS)	<0.0008		<0.0008	<0.0008
Beryllium (TRC)		<0.0008		
Cadmium (DIS)	<0.00003		<0.00003	<0.00003
Cadmium (TRC)		<0.00003		
Chromium (DIS)	<0.01		<0.01	<0.01

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	DI-Blank	DI-Blank	DI-Blank	DS-1	DS-2	DS-3
Water	Sample Date	3/27/2019	3/28/2019	3/28/2019	3/26/2019	3/26/2019	3/26/2019
	Sample Time	7:50:00 AM	8:25:00 AM	1:10:00 PM	3:05:00 PM	5:15:00 PM	11:30:00 AM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	HYDRO	HYDRO
	Lab Number	H19030475-006	H19030548-004	H19030547-008	H19030475-004	z	z
	Sample Number	BBC-1903-118	BBC-1903-128	BBC-1903-222	BBC-1903-111	BBC-1903-113	BBC-1903-103
	Remarks						

## Metals - Trace Constituents Multiple Units

Chromium (TRC)		<0.01		
Cobalt (DIS)	<0.01		<0.01	<0.01
Cobalt (TRC)		<0.01		
Copper (DIS)	<0.002		<0.002	<0.002
Copper (TRC)		<0.002		
Iron (DIS)	<0.02		<0.02	<0.02
Iron (TRC)		<0.02		
Lead (DIS)	<0.0003		<0.0003	<0.0003
Lead (TRC)		<0.0003		
Manganese (DIS)	<0.005		<0.005	<0.005
Manganese (TRC)		<0.005		
Mercury (DIS)	<0.005		<0.005	<0.005
Mercury (TRC)		<0.005		
Molybdenum (DIS)	<0.002		<0.002	<0.002
Molybdenum (TRC)		<0.002		
Nickel (DIS)	0.002		<0.001	<0.001
Nickel (TRC)		<0.001		
Selenium (DIS)	<0.0002		<0.0002	0.0002
Selenium (TRC)		<0.0002		
Silver (DIS)	<0.0002		<0.0002	<0.0002
Silver (TRC)		<0.0002		
Strontium (DIS)	<0.0002		<0.0002	0.104
Strontium (TRC)		<0.0002		
Thallium (DIS)	<0.0002		<0.0002	<0.0002
Thallium (TRC)		<0.0002		
Uranium (DIS)	<0.0002		<0.0002	0.0007
Uranium (TRC)		<0.0002		
Zinc (DIS)	<0.002		<0.002	<0.002
Zinc (TRC)		<0.002		

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	DS-4	DS-7	Holmstrom Ditch	MW-10	MW-11	MW-12
Water	Sample Date	3/26/2019	3/26/2019	3/28/2019	3/26/2019	3/26/2019	3/26/2019
	Sample Time	10:00:00 AM	1:30:00 PM	10:00:00 AM	4:45:00 PM	3:30:00 PM	2:25:00 PM
	Lab	HYDRO	HYDRO	Hydro	Energy Labs	Energy Labs	Energy Labs
	Lab Number	z	z	z	H19030476-012	H19030476-011	H19030476-010
	Sample Number	BBC-1903-101	BBC-1903-106	BBC-1903-131	BBC-1903-211	BBC-1903-210	BBC-1903-209
	Remarks						

## Field Parameters Multiple Units

Depth To Water		81.43	34.46	28.91
Dissolved Oxygen		8.1	7.62	7.4
EH		264.41	265.45	269.74
Field pH		7.97	7.77	7.63
Field Specific Conductivity		325	319	417
Flow				
Flow	NM-DRY	4.12	NM	
Staff Gauge				
Water Temperature		8.2	9.1	6.8

## Physical Parameters mg/L

Total Dissolved Solids		187	182	226
Total Suspended Solids		33	21	<10

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3		180	170	220
Calcium (DIS)		43	48	61
Chloride		<1	<1	<1
Fluoride		0.2	<0.1	0.1
Hardness as CaCO3		183	172	237
Magnesium (DIS)		19	12	21
Potassium (DIS)		2	2	<1
Sodium (DIS)		6	6	2
Sulfate		5	6	13

## Nutrients mg/L

Nitrate + Nitrite as N		0.53	0.44	0.16
Phosphorus (TOT)				
Total Persulfate Nitrogen				

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)		0.019	0.01	<0.009
Antimony (DIS)		<0.0005	<0.0005	<0.0005
Antimony (TRC)				
Arsenic (DIS)		<0.001	<0.001	<0.001
Arsenic (TRC)				
Barium (DIS)		0.189	0.162	0.053
Barium (TRC)				
Beryllium (DIS)		<0.0008	<0.0008	<0.0008
Beryllium (TRC)				
Cadmium (DIS)		<0.00003	<0.00003	<0.00003
Cadmium (TRC)				
Chromium (DIS)		<0.01	<0.01	<0.01

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	DS-4	DS-7	Holmstrom Ditch	MW-10	MW-11	MW-12
Water	Sample Date	3/26/2019	3/26/2019	3/28/2019	3/26/2019	3/26/2019	3/26/2019
	Sample Time	10:00:00 AM	1:30:00 PM	10:00:00 AM	4:45:00 PM	3:30:00 PM	2:25:00 PM
	Lab	HYDRO	HYDRO	Hydro	Energy Labs	Energy Labs	Energy Labs
	Lab Number	z	z	z	H19030476-012	H19030476-011	H19030476-010
	Sample Number	BBC-1903-101	BBC-1903-106	BBC-1903-131	BBC-1903-211	BBC-1903-210	BBC-1903-209
	Remarks						

## Metals - Trace Constituents Multiple Units

Chromium (TRC)			
Cobalt (DIS)	<0.01	<0.01	<0.01
Cobalt (TRC)			
Copper (DIS)	<0.002	<0.002	<0.002
Copper (TRC)			
Iron (DIS)	<0.02	<0.02	<0.02
Iron (TRC)			
Lead (DIS)	<0.0003	<0.0003	<0.0003
Lead (TRC)			
Manganese (DIS)	<0.005	<0.005	<0.005
Manganese (TRC)			
Mercury (DIS)	<0.005	<0.005	<0.005
Mercury (TRC)			
Molybdenum (DIS)	0.005	<0.002	<0.002
Molybdenum (TRC)			
Nickel (DIS)	<0.001	<0.001	<0.001
Nickel (TRC)			
Selenium (DIS)	<0.0002	<0.0002	<0.0002
Selenium (TRC)			
Silver (DIS)	<0.0002	<0.0002	<0.0002
Silver (TRC)			
Strontium (DIS)	0.956	0.326	0.141
Strontium (TRC)			
Thallium (DIS)	<0.0002	<0.0002	<0.0002
Thallium (TRC)			
Uranium (DIS)	0.0088	0.0019	0.0008
Uranium (TRC)			
Zinc (DIS)	<0.002	<0.002	<0.002
Zinc (TRC)			

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	MW-13	MW-16	MW-17	MW-18	MW-19	MW-1A
Water	Sample Date	3/26/2019	3/25/2019	3/27/2019	3/26/2019	3/26/2019	3/26/2019
	Sample Time	1:50:00 PM	6:15:00 PM	9:30:00 AM	5:45:00 PM	1:00:00 PM	12:00:00 PM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030476-009	H19030476-003	H19030476-014	H19030476-013	H19030476-008	H19030476-007
	Sample Number	BBC-1903-208	BBC-1903-202	BBC-1903-213	BBC-1903-212	BBC-1903-207	BBC-1903-206
	Remarks						

Field Parameters	Multiple Units						
Depth To Water	22.05	7.2	55.76	17.17	14.18	7.41	
Dissolved Oxygen	7.67	0.2	4.73	7.7	8.07	8.94	
EH	268.18	173.06	254.08	266.98	273.25	278.03	
Field pH	7.63	7.32	7.73	7.84	7.54	7.4	
Field Specific Conductivity	426	623	392	356	366	337	
Flow							
Flow							
Staff Gauge							
Water Temperature	6.6	6.7	6.6	6	6.2	6.9	

Physical Parameters	mg/L						
Total Dissolved Solids	227	371	214	194	203	194	
Total Suspended Solids	13	17	14	14	44	45	

Major Constituents - Commons Ions	mg/L						
Alkalinity as CaCO3	220	240	200	190	180	170	
Calcium (DIS)	63	78	44	50	52	44	
Chloride	<1	2	2	<1	<1	2	
Fluoride	0.1	0.5	0.2	<0.1	0.1	0.2	
Hardness as CaCO3	248	365	214	208	210	187	
Magnesium (DIS)	22	41	25	20	20	19	
Potassium (DIS)	<1	3	<1	<1	<1	1	
Sodium (DIS)	2	4	2	2	2	2	
Sulfate	17	105	10	8	14	14	

Nutrients	mg/L						
Nitrate + Nitrite as N	0.23	<0.01	0.34	0.17	0.25	0.42	
Phosphorus (TOT)							
Total Persulfate Nitrogen							

Metals - Trace Constituents	Multiple Units						
Aluminum (DIS)	<0.009	<0.009	0.016	<0.009	<0.009	0.022	
Antimony (DIS)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Antimony (TRC)							
Arsenic (DIS)	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	
Arsenic (TRC)							
Barium (DIS)	0.056	0.017	0.253	0.083	0.081	0.181	
Barium (TRC)							
Beryllium (DIS)	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	
Beryllium (TRC)							
Cadmium (DIS)	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	
Cadmium (TRC)							
Chromium (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	



# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	MW-13	MW-16	MW-17	MW-18	MW-19	MW-1A
Water	Sample Date	3/26/2019	3/25/2019	3/27/2019	3/26/2019	3/26/2019	3/26/2019
	Sample Time	1:50:00 PM	6:15:00 PM	9:30:00 AM	5:45:00 PM	1:00:00 PM	12:00:00 PM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030476-009	H19030476-003	H19030476-014	H19030476-013	H19030476-008	H19030476-007
	Sample Number	BBC-1903-208	BBC-1903-202	BBC-1903-213	BBC-1903-212	BBC-1903-207	BBC-1903-206
	Remarks						

Metals - Trace Constituents	Multiple Units					
Chromium (TRC)						
Cobalt (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt (TRC)						
Copper (DIS)	<0.002	<0.002	<0.002	<0.002	<0.002	0.006
Copper (TRC)						
Iron (DIS)	<0.02	1.36	<0.02	<0.02	<0.02	<0.02
Iron (TRC)						
Lead (DIS)	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0003
Lead (TRC)						
Manganese (DIS)	<0.005	0.044	0.008	<0.005	<0.005	<0.005
Manganese (TRC)						
Mercury (DIS)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Mercury (TRC)						
Molybdenum (DIS)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Molybdenum (TRC)						
Nickel (DIS)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel (TRC)						
Selenium (DIS)	<0.0002	<0.0002	0.0009	0.0003	<0.0002	0.0002
Selenium (TRC)						
Silver (DIS)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Silver (TRC)						
Strontium (DIS)	0.101	0.332	0.114	0.1	0.13	0.0995
Strontium (TRC)						
Thallium (DIS)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0009
Thallium (TRC)						
Uranium (DIS)	0.0006	0.0019	0.0009	0.0005	0.0007	0.001
Uranium (TRC)						
Zinc (DIS)	<0.002	0.005	0.006	<0.002	<0.002	<0.002
Zinc (TRC)						

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	MW-1B	MW-20	MW-2A	MW-2B	MW-3	MW-4A
Water	Sample Date	3/26/2019	3/27/2019	3/26/2019	3/26/2019	3/25/2019	3/27/2019
	Sample Time	10:55:00 AM	10:30:00 AM	9:30:00 AM	10:00:00 AM	3:40:00 PM	4:50:00 PM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030476-006	H19030476-015	H19030476-004	H19030476-005	H19030476-001	H19030547-002
	Sample Number	BBC-1903-205	BBC-1903-214	BBC-1903-203	BBC-1903-204	BBC-1903-200	BBC-1903-216
	Remarks						

Field Parameters	Multiple Units						
Depth To Water	24.18	20.04	42.02	41.32	41.38	4.9	
Dissolved Oxygen	0.07	9.45	7.6	0.2	0.11	0.24	
EH	193.87	259.06	298.68	253.38	195.57	298.07	
Field pH	6.42	7.76	7.57	7.34	7.19	NM	
Field Specific Conductivity	627.5	382	388	432	782	496	
Flow							
Flow							
Staff Gauge							
Water Temperature	7.8	6.7	7.2	7.2	9	4.3	

Physical Parameters	mg/L						
Total Dissolved Solids	435	208	208	237	521	267	
Total Suspended Solids	37	179	<10	<10	<10	<10	

Major Constituents - Commons Ions	mg/L						
Alkalinity as CaCO3	110	200	190	200	220	250	
Calcium (DIS)	68	46	46	52	77	71	
Chloride	1	<1	1	1	1	3	
Fluoride	0.2	<0.1	0.3	0.3	0.7	0.1	
Hardness as CaCO3	316	209	215	244	406	258	
Magnesium (DIS)	36	23	24	28	52	20	
Potassium (DIS)	3	1	1	1	3	1	
Sodium (DIS)	3	2	3	3	16	3	
Sulfate	226	9	22	37	222	15	

Nutrients	mg/L						
Nitrate + Nitrite as N	0.04	0.45	0.2	<0.01	<0.01	<0.01	
Phosphorus (TOT)							
Total Persulfate Nitrogen							

Metals - Trace Constituents	Multiple Units						
Aluminum (DIS)	0.017	0.009	<0.009	<0.009	<0.009	<0.009	
Antimony (DIS)	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Antimony (TRC)							
Arsenic (DIS)	0.07	<0.001	<0.001	0.003	0.071	<0.001	
Arsenic (TRC)							
Barium (DIS)	0.011	0.178	0.084	0.043	0.011	0.175	
Barium (TRC)							
Beryllium (DIS)	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	
Beryllium (TRC)							
Cadmium (DIS)	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	
Cadmium (TRC)							
Chromium (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	MW-1B	MW-20	MW-2A	MW-2B	MW-3	MW-4A
Water	Sample Date	3/26/2019	3/27/2019	3/26/2019	3/26/2019	3/25/2019	3/27/2019
	Sample Time	10:55:00 AM	10:30:00 AM	9:30:00 AM	10:00:00 AM	3:40:00 PM	4:50:00 PM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030476-006	H19030476-015	H19030476-004	H19030476-005	H19030476-001	H19030547-002
	Sample Number	BBC-1903-205	BBC-1903-214	BBC-1903-203	BBC-1903-204	BBC-1903-200	BBC-1903-216
	Remarks						

## Metals - Trace Constituents Multiple Units

Constituent	MW-1B	MW-20	MW-2A	MW-2B	MW-3	MW-4A
Chromium (TRC)						
Cobalt (DIS)	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt (TRC)						
Copper (DIS)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Copper (TRC)						
Iron (DIS)	20	<0.02	<0.02	0.02	1.02	<0.02
Iron (TRC)						
Lead (DIS)	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Lead (TRC)						
Manganese (DIS)	0.075	<0.005	<0.005	0.007	0.016	0.23
Manganese (TRC)						
Mercury (DIS)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Mercury (TRC)						
Molybdenum (DIS)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Molybdenum (TRC)						
Nickel (DIS)	0.011	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel (TRC)						
Selenium (DIS)	<0.0002	<0.0002	0.0013	0.0066	<0.0002	<0.0002
Selenium (TRC)						
Silver (DIS)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Silver (TRC)						
Strontium (DIS)	1.83	0.0655	0.0925	0.0912	13.6	0.169
Strontium (TRC)						
Thallium (DIS)	0.0125	<0.0002	0.0002	0.0038	0.0004	<0.0002
Thallium (TRC)						
Uranium (DIS)	<0.0002	0.0005	0.0005	0.0023	0.0011	0.0004
Uranium (TRC)						
Zinc (DIS)	0.012	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc (TRC)						

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	MW-4B	MW-6A	MW-6A	MW-6B	MW-7	MW-8
Water	Sample Date	3/27/2019	3/28/2019	3/28/2019	3/28/2019	3/28/2019	3/28/2019
	Sample Time	4:15:00 PM	11:35:00 AM	11:50:00 AM	12:00:00 PM	10:40:00 AM	9:50:00 AM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030547-001	H19030547-005	H19030547-006	H19030547-007	H19030547-004	H19030547-003
	Sample Number	BBC-1903-215	BBC-1903-219	BBC-1903-220	BBC-1903-221	BBC-1903-218	BBC-1903-217
	Remarks						

Field Parameters	Multiple Units					
Depth To Water	4.35	7.84		11.13	32.32	31.75
Dissolved Oxygen	0.36	5.34		NM	0.34	0.58
EH	238.13	282.08		NM	250.69	150.64
Field pH	7.11	7.59		NM	7.48	7.89
Field Specific Conductivity	443	451		NM	535	309
Flow						
Flow						
Staff Gauge						
Water Temperature	6.3	5.4		NM	7.1	6.8

Physical Parameters	mg/L					
Total Dissolved Solids	234	246	244	249	310	160
Total Suspended Solids	<10	23	28	<10	41	<10

Major Constituents - Commons Ions	mg/L					
Alkalinity as CaCO3	220	230	230	230	230	160
Calcium (DIS)	62	56	57	50	60	25
Chloride	2	<1	<1	<1	4	<1
Fluoride	0.1	0.2	0.2	0.5	0.3	0.2
Hardness as CaCO3	234	243	247	227	307	158
Magnesium (DIS)	19	25	25	25	38	23
Potassium (DIS)	1	<1	<1	1	1	<1
Sodium (DIS)	3	3	3	14	3	3
Sulfate	14	17	17	23	62	15

Nutrients	mg/L					
Nitrate + Nitrite as N	0.07	0.1	0.1	0.07	<0.01	<0.01
Phosphorus (TOT)						
Total Persulfate Nitrogen						

Metals - Trace Constituents	Multiple Units					
Aluminum (DIS)	<0.009	<0.009	<0.009	<0.009	0.014	<0.009
Antimony (DIS)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Antimony (TRC)						
Arsenic (DIS)	<0.001	<0.001	<0.001	<0.001	0.001	0.002
Arsenic (TRC)						
Barium (DIS)	0.128	0.179	0.18	0.111	0.042	0.079
Barium (TRC)						
Beryllium (DIS)	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Beryllium (TRC)						
Cadmium (DIS)	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Cadmium (TRC)						
Chromium (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	MW-4B	MW-6A	MW-6A	MW-6B	MW-7	MW-8
Water	Sample Date	3/27/2019	3/28/2019	3/28/2019	3/28/2019	3/28/2019	3/28/2019
	Sample Time	4:15:00 PM	11:35:00 AM	11:50:00 AM	12:00:00 PM	10:40:00 AM	9:50:00 AM
	Lab	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030547-001	H19030547-005	H19030547-006	H19030547-007	H19030547-004	H19030547-003
	Sample Number	BBC-1903-215	BBC-1903-219	BBC-1903-220	BBC-1903-221	BBC-1903-218	BBC-1903-217
	Remarks						

Metals - Trace Constituents	Multiple Units						
Chromium (TRC)							
Cobalt (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt (TRC)							
Copper (DIS)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Copper (TRC)							
Iron (DIS)	<0.02	<0.02	<0.02	<0.02	0.05	0.1	
Iron (TRC)							
Lead (DIS)	<0.0003	<0.0003	<0.0003	<0.0003	0.0006	<0.0003	
Lead (TRC)							
Manganese (DIS)	<0.005	<0.005	<0.005	<0.005	0.016	0.019	
Manganese (TRC)							
Mercury (DIS)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Mercury (TRC)							
Molybdenum (DIS)	<0.002	<0.002	<0.002	<0.002	0.004	0.002	
Molybdenum (TRC)							
Nickel (DIS)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel (TRC)							
Selenium (DIS)	<0.0002	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Selenium (TRC)							
Silver (DIS)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Silver (TRC)							
Strontium (DIS)	0.174	0.169	0.17	0.238	0.17	0.0877	
Strontium (TRC)							
Thallium (DIS)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Thallium (TRC)							
Uranium (DIS)	0.0006	0.0007	0.0007	0.0007	0.0023	0.0008	
Uranium (TRC)							
Zinc (DIS)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Zinc (TRC)							

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	MW-9RINSATE BLANK	SC15-184	SC15-185	SP-10	SP-11	
Water	Sample Date	3/25/2019	3/28/2019	3/28/2019	3/28/2019	3/26/2019	3/27/2019
	Sample Time	5:25:00 PM	1:45:00 PM	11:40:00 AM	12:00:00 PM	4:30:00 PM	8:40:00 AM
	Lab	Energy Labs	Energy Labs	Energy Labs	Hydro	Energy Labs	HYDRO
	Lab Number	H19030476-002	H19030547-009	H19030547-010	z H19030475-005		z
	Sample Number	BBC-1903-201	BBC-1903-223	BBC-1903-300	BBC-1903-301	BBC-1903-112	BBC-1903-119
	Remarks						

Field Parameters	Multiple Units	
Depth To Water	51.68	Artesian 35.52
Dissolved Oxygen	0.06	7.12
EH	207.06	297.63
Field pH	7.1	7.91
Field Specific Conductivity	784	372
Flow		
Flow		0.01
Staff Gauge		
Water Temperature	8.5	6.3

Physical Parameters	mg/L	
Total Dissolved Solids	506	<10
Total Suspended Solids	<10	<10

Major Constituents - Commons Ions	mg/L	
Alkalinity as CaCO3	240	<4
Calcium (DIS)	91	<1
Chloride	1	<1
Fluoride	0.5	<0.1
Hardness as CaCO3	450	<1
Magnesium (DIS)	54	<1
Potassium (DIS)	4	<1
Sodium (DIS)	6	<1
Sulfate	198	<1

Nutrients	mg/L	
Nitrate + Nitrite as N	<0.01	<0.01
Phosphorus (TOT)		0.25
Total Persulfate Nitrogen		0.24

Metals - Trace Constituents	Multiple Units	
Aluminum (DIS)	<0.009	<0.009
Antimony (DIS)	<0.0005	<0.0005
Antimony (TRC)		
Arsenic (DIS)	0.014	<0.001
Arsenic (TRC)		
Barium (DIS)	0.016	<0.003
Barium (TRC)		0.092
Beryllium (DIS)	<0.0008	<0.0008
Beryllium (TRC)		
Cadmium (DIS)	<0.00003	<0.00003
Cadmium (TRC)		
Chromium (DIS)	<0.01	<0.01

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	MW-9RINSATE BLANK	SC15-184	SC15-185	SP-10	SP-11	
Water	Sample Date	3/25/2019	3/28/2019	3/28/2019	3/28/2019	3/26/2019	3/27/2019
	Sample Time	5:25:00 PM	1:45:00 PM	11:40:00 AM	12:00:00 PM	4:30:00 PM	8:40:00 AM
	Lab	Energy Labs	Energy Labs	Energy Labs	Hydro	Energy Labs	HYDRO
	Lab Number	H19030476-002	H19030547-009	H19030547-010	z	H19030475-005	z
	Sample Number	BBC-1903-201	BBC-1903-223	BBC-1903-300	BBC-1903-301	BBC-1903-112	BBC-1903-119
	Remarks						

## Metals - Trace Constituents Multiple Units

Chromium (TRC)				
Cobalt (DIS)	<0.01	<0.01	<0.01	<0.01
Cobalt (TRC)				
Copper (DIS)	<0.002	<0.002	<0.002	<0.002
Copper (TRC)				
Iron (DIS)	0.86	<0.02	<0.02	<0.02
Iron (TRC)				
Lead (DIS)	0.0013	<0.0003	<0.0003	<0.0003
Lead (TRC)				
Manganese (DIS)	0.088	<0.005	<0.005	<0.005
Manganese (TRC)				
Mercury (DIS)	<0.005	<0.005	<0.005	<0.005
Mercury (TRC)				
Molybdenum (DIS)	<0.002	<0.002	<0.002	<0.002
Molybdenum (TRC)				
Nickel (DIS)	<0.001	<0.001	<0.001	<0.001
Nickel (TRC)				
Selenium (DIS)	<0.0002	<0.0002	0.001	0.0003
Selenium (TRC)				
Silver (DIS)	<0.0002	<0.0002	<0.0002	<0.0002
Silver (TRC)				
Strontium (DIS)	1.34	<0.0002	0.123	0.107
Strontium (TRC)				
Thallium (DIS)	0.0027	<0.0002	<0.0002	<0.0002
Thallium (TRC)				
Uranium (DIS)	0.001	<0.0002	0.0011	0.0007
Uranium (TRC)				
Zinc (DIS)	<0.002	<0.002	<0.002	<0.002
Zinc (TRC)				

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	SP-12	SP-3	SP-4	SP-6	SP-6	SP-7
Water	Sample Date	3/27/2019	3/26/2019	3/26/2019	3/26/2019	3/26/2019	3/27/2019
	Sample Time	10:10:00 AM	10:45:00 AM	9:25:00 AM	1:55:00 PM	2:15:00 PM	10:50:00 AM
	Lab	Energy Labs	HYDRO	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030475-007	z	H19030475-001	H19030475-002	H19030475-003	H19030475-008
	Sample Number	BBC-1903-122	BBC-1903-102	BBC-1903-100	BBC-1903-107	BBC-1903-108	BBC-1903-123
	Remarks					DUPLICATE	

## Field Parameters Multiple Units

Depth To Water							
Dissolved Oxygen	4.18		9.66	9.68	9.68		2.46
EH							
Field pH	7.25		8.02	8.17	8.17		7.1
Field Specific Conductivity	437		438	256	256		341
Flow							
Flow	NM	NM-ICE	2.6	0.83			13.02
Staff Gauge							
Water Temperature	4.3		5.6	4.7	4.7		6.6

## Physical Parameters mg/L

Total Dissolved Solids	245		234	163	156		186
Total Suspended Solids	<10		<10	<10	<10		<10

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3	160		200	140	140		170
Calcium (DIS)	42		50	35	35		45
Chloride	15		<1	<1	<1		2
Fluoride	0.1		0.2	0.2	0.2		0.3
Hardness as CaCO3	180		231	142	141		175
Magnesium (DIS)	18		26	13	13		15
Potassium (DIS)	13		2	<1	<1		3
Sodium (DIS)	3		2	2	2		5
Sulfate	21		40	9	9		11

## Nutrients mg/L

Nitrate + Nitrite as N	0.15		0.24	0.39	0.39		0.31
Phosphorus (TOT)							
Total Persulfate Nitrogen							

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)	<0.009		<0.009	0.045	0.041		<0.009
Antimony (DIS)	<0.0005		<0.0005	<0.0005	<0.0005		<0.0005
Antimony (TRC)							
Arsenic (DIS)	<0.001		<0.001	<0.001	<0.001		0.004
Arsenic (TRC)							
Barium (DIS)	0.128		0.113	0.188	0.186		0.115
Barium (TRC)							
Beryllium (DIS)	<0.0008		<0.0008	<0.0008	<0.0008		<0.0008
Beryllium (TRC)							
Cadmium (DIS)	<0.00003		<0.00003	<0.00003	<0.00003		<0.00003
Cadmium (TRC)							
Chromium (DIS)	<0.01		<0.01	<0.01	<0.01		<0.01



# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	SP-12	SP-3	SP-4	SP-6	SP-6	SP-7
Water	Sample Date	3/27/2019	3/26/2019	3/26/2019	3/26/2019	3/26/2019	3/27/2019
	Sample Time	10:10:00 AM	10:45:00 AM	9:25:00 AM	1:55:00 PM	2:15:00 PM	10:50:00 AM
	Lab	Energy Labs	HYDRO	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030475-007	z	H19030475-001	H19030475-002	H19030475-003	H19030475-008
	Sample Number	BBC-1903-122	BBC-1903-102	BBC-1903-100	BBC-1903-107	BBC-1903-108	BBC-1903-123
	Remarks					DUPLICATE	

Metals - Trace Constituents	Multiple Units				
Chromium (TRC)					
Cobalt (DIS)	<0.01		<0.01	<0.01	<0.01
Cobalt (TRC)					
Copper (DIS)	0.002		<0.002	<0.002	<0.002
Copper (TRC)					
Iron (DIS)	0.05		<0.02	0.03	0.03
Iron (TRC)					
Lead (DIS)	<0.0003		<0.0003	<0.0003	<0.0003
Lead (TRC)					
Manganese (DIS)	<0.005		<0.005	<0.005	<0.005
Manganese (TRC)					
Mercury (DIS)	0.018		<0.005	<0.005	<0.005
Mercury (TRC)					
Molybdenum (DIS)	<0.002		<0.002	<0.002	<0.002
Molybdenum (TRC)					
Nickel (DIS)	<0.001		<0.001	<0.001	<0.001
Nickel (TRC)					
Selenium (DIS)	<0.0002		0.0003	<0.0002	<0.0002
Selenium (TRC)					
Silver (DIS)	<0.0002		<0.0002	<0.0002	<0.0002
Silver (TRC)					
Strontium (DIS)	0.081		0.0725	0.0734	0.074
Strontium (TRC)					
Thallium (DIS)	<0.0002		0.0003	0.0005	0.0005
Thallium (TRC)					
Uranium (DIS)	0.0003		0.0005	0.0004	0.0004
Uranium (TRC)					
Zinc (DIS)	0.005		<0.002	<0.002	<0.002
Zinc (TRC)					

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	SW-1	SW-10	SW-11	SW-14	SW-14	SW-17
Water	Sample Date	3/27/2019	3/26/2019	3/26/2019	3/27/2019	3/27/2019	3/27/2019
	Sample Time	9:00:00 AM	6:30:00 PM	12:30:00 PM	3:55:00 PM	4:20:00 PM	9:35:00 AM
	Lab	Energy Labs	HYDRO	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030477-003	z	H19030477-001	H19030548-002	H19030548-003	H19030477-004
	Sample Number	BBC-1903-120	BBC-1903-115	BBC-1903-105	BBC-1903-125	BBC-1903-126	BBC-1903-121
	Remarks					DUPLICATE	

## Field Parameters Multiple Units

Depth To Water							
Dissolved Oxygen	11.47	10.32	10.92	10.41	10.41	9.87	
EH							
Field pH	7.86	8.1	8.23	7.81	7.81	7.65	
Field Specific Conductivity	309	238	343	269	269	420	
Flow	NM-ICE	NM-ICE	NM-ICE	1.14		NM-ICE	
Flow							
Staff Gauge				0.4	0.4		
Water Temperature	0.5	0.41	0.1	3.2	3.2	1.7	

## Physical Parameters mg/L

Total Dissolved Solids	180 D		215 D	157 D	162 D	243 D
Total Suspended Solids	4		6	<4	<4	<4

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3	150		170	130	130	170
Calcium (DIS)	43		44	34	34	49
Chloride	4		1	2	2	11
Fluoride	<0.1		0.2	<0.1	<0.1	0.2
Hardness as CaCO3	156		193	134	136	211
Magnesium (DIS)	12		20	12	12	22
Potassium (DIS)	3		2	4	4	4
Sodium (DIS)	3		2	1	1	5
Sulfate	7		25	7	6	30

## Nutrients mg/L

Nitrate + Nitrite as N	0.09		0.19	0.05	0.05	0.16
Phosphorus (TOT)	0.05		0.046	0.105	0.104	0.056
Total Persulfate Nitrogen	0.48		0.47	0.57	0.51	0.7

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)	0.03		0.014	0.012	0.011	<0.009
Antimony (DIS)						
Antimony (TRC)	<0.0005		<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (DIS)						
Arsenic (TRC)	<0.001		<0.001	<0.001	<0.001	<0.001
Barium (DIS)						
Barium (TRC)	0.106		0.101	0.077	0.075	0.144
Beryllium (DIS)						
Beryllium (TRC)	<0.0008		<0.0008	<0.0008	<0.0008	<0.0008
Cadmium (DIS)						
Cadmium (TRC)	<0.00003		<0.00003	<0.00003	<0.00003	<0.00003
Chromium (DIS)						

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	SW-1	SW-10	SW-11	SW-14	SW-14	SW-17
Water	Sample Date	3/27/2019	3/26/2019	3/26/2019	3/27/2019	3/27/2019	3/27/2019
	Sample Time	9:00:00 AM	6:30:00 PM	12:30:00 PM	3:55:00 PM	4:20:00 PM	9:35:00 AM
	Lab	Energy Labs	HYDRO	Energy Labs	Energy Labs	Energy Labs	Energy Labs
	Lab Number	H19030477-003	z	H19030477-001	H19030548-002	H19030548-003	H19030477-004
	Sample Number	BBC-1903-120	BBC-1903-115	BBC-1903-105	BBC-1903-125	BBC-1903-126	BBC-1903-121
	Remarks					DUPLICATE	

Metals - Trace Constituents	Multiple Units				
Chromium (TRC)	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt (DIS)					
Cobalt (TRC)	<0.01	<0.01	<0.01	<0.01	<0.01
Copper (DIS)					
Copper (TRC)	<0.002	<0.002	<0.002	<0.002	<0.002
Iron (DIS)					
Iron (TRC)	0.3	0.32	0.13	0.14	0.26
Lead (DIS)					
Lead (TRC)	<0.0003	0.0003	<0.0003	<0.0003	<0.0003
Manganese (DIS)					
Manganese (TRC)	0.021	0.013	0.006	0.006	0.034
Mercury (DIS)					
Mercury (TRC)	0.007	<0.005	0.018	0.018	0.009
Molybdenum (DIS)					
Molybdenum (TRC)	<0.002	<0.002	<0.002	<0.002	<0.002
Nickel (DIS)					
Nickel (TRC)	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (DIS)					
Selenium (TRC)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Silver (DIS)					
Silver (TRC)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Strontium (DIS)					
Strontium (TRC)	0.113 D	0.136 D	0.0749 D	0.0756 D	0.12 D
Thallium (DIS)					
Thallium (TRC)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Uranium (DIS)					
Uranium (TRC)	0.0003	0.001	0.0003	0.0003	0.0006
Zinc (DIS)					
Zinc (TRC)	<0.002	0.002	<0.002	0.002	0.003

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	SW-18	SW-2	SW-3	SW-4	SW-5	SW-6
Water	Sample Date	3/26/2019	3/28/2019	3/26/2019	3/26/2019	3/26/2019	3/27/2019
	Sample Time	2:30:00 PM	9:10:00 AM	6:30:00 PM	6:00:00 PM	11:40:00 AM	3:30:00 PM
	Lab	HYDRO	Energy Labs	Energy Labs	HYDRO	HYDRO	Energy Labs
	Lab Number	z H19030548-005	H19030477-002	z	z	H19030548-001	
	Sample Number	BBC-1903-109	BBC-1903-129	BBC-1903-117	BBC-1903-116	BBC-1903-104	BBC-1903-124
	Remarks						

## Field Parameters Multiple Units

Depth To Water							
Dissolved Oxygen			11.06	8.93			10.38
EH							
Field pH			8.14	8.01			7.72
Field Specific Conductivity			322	290			137
Flow	NM-DRY		NM-ICE	NM-ICE	NM-ICE		NM-ICE
Flow						NM-DRY	
Staff Gauge							
Water Temperature			0.1	2.2			0.9

## Physical Parameters mg/L

Total Dissolved Solids		181 D	195 D	100 D
Total Suspended Solids		4	<4	16

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3		160	150	65
Calcium (DIS)		48	37	15
Chloride		3	3	<1
Fluoride		<0.1	0.1	<0.1
Hardness as CaCO3		170	168	65
Magnesium (DIS)		12	19	7
Potassium (DIS)		1	4	5
Sodium (DIS)		3	2	<1
Sulfate		7	19	3

## Nutrients mg/L

Nitrate + Nitrite as N		0.07	<0.01	0.02
Phosphorus (TOT)		0.012	0.094	0.237
Total Persulfate Nitrogen		0.17	0.3	0.78

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)		0.033	<0.009	0.02
Antimony (DIS)				
Antimony (TRC)		<0.0005	<0.0005	<0.0005
Arsenic (DIS)				
Arsenic (TRC)		<0.001	<0.001	0.001
Barium (DIS)				
Barium (TRC)		0.1	0.116	0.057
Beryllium (DIS)				
Beryllium (TRC)		<0.0008	<0.0008	<0.0008
Cadmium (DIS)				
Cadmium (TRC)		<0.00003	<0.00003	0.00003
Chromium (DIS)				

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	SW-18	SW-2	SW-3	SW-4	SW-5	SW-6
Water	Sample Date	3/26/2019	3/28/2019	3/26/2019	3/26/2019	3/26/2019	3/27/2019
	Sample Time	2:30:00 PM	9:10:00 AM	6:30:00 PM	6:00:00 PM	11:40:00 AM	3:30:00 PM
	Lab	HYDRO	Energy Labs	Energy Labs	HYDRO	HYDRO	Energy Labs
	Lab Number	z H19030548-005	H19030477-002	z	z	H19030548-001	
	Sample Number	BBC-1903-109	BBC-1903-129	BBC-1903-117	BBC-1903-116	BBC-1903-104	BBC-1903-124
	Remarks						

## Metals - Trace Constituents Multiple Units

Chromium (TRC)	<0.01	<0.01	<0.01
Cobalt (DIS)			
Cobalt (TRC)	<0.01	<0.01	<0.01
Copper (DIS)			
Copper (TRC)	<0.002	<0.002	0.002
Iron (DIS)			
Iron (TRC)	0.28	0.06	0.73
Lead (DIS)			
Lead (TRC)	<0.0003	<0.0003	0.0006
Manganese (DIS)			
Manganese (TRC)	0.015	<0.005	0.026
Mercury (DIS)			
Mercury (TRC)	<0.005	0.006	0.034
Molybdenum (DIS)			
Molybdenum (TRC)	<0.002	<0.002	<0.002
Nickel (DIS)			
Nickel (TRC)	<0.001	<0.001	<0.001
Selenium (DIS)			
Selenium (TRC)	<0.0002	<0.0002	<0.0002
Silver (DIS)			
Silver (TRC)	<0.0002	<0.0002	<0.0002
Strontium (DIS)			
Strontium (TRC)	0.126 D	0.0938 D	0.0476 D
Thallium (DIS)			
Thallium (TRC)	<0.0002	<0.0002	<0.0002
Uranium (DIS)			
Uranium (TRC)	0.0004	0.0006	<0.0002
Zinc (DIS)			
Zinc (TRC)	<0.002	<0.002	0.005

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	SW-7	SW-8	SW-9	USGS-SC1
Water	Sample Date	3/26/2019	3/29/2019	3/26/2019	3/28/2019
	Sample Time	2:50:00 PM	5:10:00 PM	5:40:00 PM	9:45:00 AM
	Lab	HYDRO	HYDRO	HYDRO	Energy Labs
	Lab Number	z	z	z	H19030548-006
	Sample Number	BBC-1903-110	BBC-1903-127	BBC-1903-114	BBC-1903-130
	Remarks				

## Field Parameters Multiple Units

Depth To Water				
Dissolved Oxygen			9.93	11.21
EH				
Field pH			7.95	8.11
Field Specific Conductivity			361	366
Flow		NM-ICE	0.6	NM-ICE
Flow	NF-DRY			
Staff Gauge				
Water Temperature			1.9	0.1

## Physical Parameters mg/L

Total Dissolved Solids	196 D
Total Suspended Solids	4

## Major Constituents - Commons Ions mg/L

Alkalinity as CaCO3	180
Calcium (DIS)	57
Chloride	3
Fluoride	<0.1
Hardness as CaCO3	199
Magnesium (DIS)	14
Potassium (DIS)	1
Sodium (DIS)	3
Sulfate	7

## Nutrients mg/L

Nitrate + Nitrite as N	0.08
Phosphorus (TOT)	0.007
Total Persulfate Nitrogen	0.14

## Metals - Trace Constituents Multiple Units

Aluminum (DIS)	<0.009
Antimony (DIS)	
Antimony (TRC)	<0.0005
Arsenic (DIS)	
Arsenic (TRC)	<0.001
Barium (DIS)	
Barium (TRC)	0.068
Beryllium (DIS)	
Beryllium (TRC)	<0.0008
Cadmium (DIS)	
Cadmium (TRC)	<0.00003
Chromium (DIS)	

# Analyses Summary Report

Site Name: Black Butte Mi

5/8/2019 11:05:06 AM

Sample Type:	Station (Site)	SW-7	SW-8	SW-9	USGS-SC1
Water	Sample Date	3/26/2019	3/29/2019	3/26/2019	3/28/2019
	Sample Time	2:50:00 PM	5:10:00 PM	5:40:00 PM	9:45:00 AM
	Lab	HYDRO	HYDRO	HYDRO	Energy Labs
	Lab Number	z	z	z	H19030548-006
	Sample Number	BBC-1903-110	BBC-1903-127	BBC-1903-114	BBC-1903-130
	Remarks				

## Metals - Trace Constituents Multiple Units

Chromium (TRC)	<0.01
Cobalt (DIS)	
Cobalt (TRC)	<0.01
Copper (DIS)	
Copper (TRC)	<0.002
Iron (DIS)	
Iron (TRC)	0.19
Lead (DIS)	
Lead (TRC)	<0.0003
Manganese (DIS)	
Manganese (TRC)	0.01
Mercury (DIS)	
Mercury (TRC)	<0.005
Molybdenum (DIS)	
Molybdenum (TRC)	<0.002
Nickel (DIS)	
Nickel (TRC)	<0.001
Selenium (DIS)	
Selenium (TRC)	<0.0002
Silver (DIS)	
Silver (TRC)	<0.0002
Strontium (DIS)	
Strontium (TRC)	0.148 D
Thallium (DIS)	
Thallium (TRC)	<0.0002
Uranium (DIS)	
Uranium (TRC)	0.0005
Zinc (DIS)	
Zinc (TRC)	<0.002