MEMO

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1 INTRODUCTION

WSP Canada Inc. (WSP) was retained by First Mining Gold (FMG) to conduct a metal leaching and acid rock drainage (ML/ARD) assessment for the Springpole Gold Project (the Project).

The mine plans include the use of non-potentially acid generating (NAG) mine rock for construction purposes. Baseline geochemical testing programs for the Project (including n=876 drill core samples, WSP 2025a, WSP 2025b) identified potential risks for metal leaching from NAG mine rock samples. Specifically, static testing indicated that some samples had elevated metal contents or showed metal concentrations that were greater than screening values in short term leaching tests, and elevated release rates were observed for some metals in humidity cell testing. Arsenic was the element primarily identified to be a potential risk for metal leaching.

Static testing programs provide screening level assessments to identify rock that may require specific management considerations or additional assessment. Humidity cells are standardized kinetic leaching tests that provide fundamental data to support mine planning and water quality estimates, but they can be conservative in their estimates of metal leaching as the test is designed with a high flow rate to limit the formation of secondary minerals which can modify the release of some metals through attenuation. Therefore, to further assess the metal leaching potential of NAG mine rock, a laboratory column test program specifically designed to simulate pH neutral mine rock drainage quality was initiated. Detailed mineralogical testing of selected samples utilized in the column tests was also conducted to support interpretation of the influence of sample mineralogy on metal release.

This memorandum outlines the approach, methodology, and final test results from terminated mine rock column testing and supporting detailed mineralogy testwork. These results were used to define an arsenic threshold to differentiate between arsenic leaching and non-arsenic leaching NAG rock for use in Project planning, as summarized herein.

Initial results from a field study that included samples of selected NAG drill core (<50 mg/kg As) is documented under separate cover (WSP 2025c). The field tests continue to be monitored.

2 APPROACH AND SCOPE OF WORK

The approach and testing methods utilized herein are based on the requirements described under the Ontario *Mining Act*; namely guidance found within the reference document ‘Prediction for Drainage Chemistry for Sulphidic Geologic Materials’ (MEND, 2009), which represents best practice and industry-standard approaches and methodologies for ML/ARD sampling and characterization in Canada.

The mine rock column testing program was conducted to assess neutral metal leaching of NAG rock and included the following tasks.

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- Selection of 13 mine rock samples representative of the range of arsenic, sulphur and other priority element content of Springpole mine rock with a focus on NAG rock materials.
- Design and oversight of laboratory trickle leach column tests to assess metal leaching behaviour from the selected samples.
- Completion of detailed mineralogy for a subset of five selected column samples to quantitatively assess the range of rock forming and sulphide minerals present. The assessment specifically included quantification of arsenic proportions in observed host minerals for each sample.
- Interpretation of column leaching results in the context of detailed mineralogy observations to evaluate trends in metal leaching potential of NAG mine rock and potential mineralogic controls on metal leaching.
- Development of a threshold value for arsenic leaching to support management of NAG rock including the identification of arsenic leaching and non-arsenic leaching NAG rock.

For the column tests, deionized water was passed through a selected mine rock sample. As discussed herein, the finer grain size of the sample material in the columns was interpreted to represent the source of the majority of metal release but based on the characteristics of mine rock at comparable mine sites, is estimated to represent approximately 10% of the rock mass in future stockpiles. Therefore, 1/10th of the measured column concentration represents a scaled concentration for comparison to relevant screening concentrations. Hereafter for this report, all concentrations refer to the scaled values except when described otherwise.

3 MINE ROCK COLUMN TESTING PROGRAM

Laboratory-based column tests are commonly utilized to simulate drainage quality from mine rock piles and open pits. Design and operation of these tests is generally site specific to represent local conditions as best as possible (MEND 2009). Column testing for the Project utilized trickle-leach columns where water was passed through mine rock samples at rates in the range of field leaching conditions to estimate drainage concentrations from mine rock piles.

3.1 Column Testing Program and Screening Approach

The column testing program included 13 column tests prepared with mine rock from selected drill core samples as outlined below and in Table 1. A full description of selected column samples is provided in Table A1, Appendix A. A detailed description of column operation is provided in Section 4.1.

- Thirteen column tests (COL-1 to COL-13) prepared with mine rock representing key Project lithologies began operation in December 2021 at Global ARD Testing Services Inc. (Global ARD) in Burnaby, BC. After reaching steady state leaching conditions, five of the column tests (COL-4, COL-7, COL-9, COL-12 and COL-13) were terminated after 10 weeks of testing, six of the column tests (COL-1, COL-3, COL-5, COL-8, COL-10 and COL-11) were terminated after 35 weeks of testing and two of the column tests (COL-2 and COL-6) were terminated after 45 weeks of testing.
- Column test samples were generally selected from available NAG drill core samples based on static testing results (WSP 2025a). Samples were primarily selected to cover a range of sulphur and metal contents observed for NAG mine rock samples for the Project. This included consideration for arsenic as well as other metals. A range of NP for NAG rock materials is also represented in the sample set.
- Target mass requirements for each column was approximately 7 kg to produce about a 30 cm material thickness in each column. Where individual samples had insufficient sample mass, columns were constructed as a blended composite from two carefully selected subsamples with similar reported ABA characteristics and metal contents.
- Source materials for the columns came from archived drill core reject materials from previous static testing programs. Recent drill core (2020-2021) was given priority for use in the column tests, but to cover the range of test materials required and given limited sample availability, older materials (2011-2013) were included. In order to limit the effects of any oxidation and weathering products that may

have developed during storage of the samples, each column was flushed with a series of relatively high-volume deionized water flushes following initial column setup as discussed in Section 4.1.[1]

- While arsenic was the primary element of interest for potential metal leaching, other elements including antimony, cadmium, cobalt, copper, molybdenum, lead, and selenium were also considered based on a lesser potential for leaching identified in the static testing program.
- Smaller particle sizes have a greater surface area to volume ratio that proportionally increases load release (and consequently leachate concentrations) in the test relative to field conditions. The Project column tests were prepared with drill core crushed to minus 6.4 mm, resulting in a surface area that was approximately ten times that of an equivalent mass of mine rock in the field.
- Leachate chemistry was used to calculate concentrations based on 1/10th of the measured column concentration. Measured column pH (scaling not applicable) was also included as an indicator in column leaching behaviour and water quality.
- These concentrations were compared to screening values as applicable to provide context to the observed results. It is recognized, however, that the tests are not a direct assessment of mine water quality and comparisons to screening criteria hold no regulatory significance. The screening analysis included comparison of the leachate chemistry to Ontario Provincial Water Quality Objectives (PWQO) for protection of aquatic life, including both in-place PWQO values and interim PWQO values.

3.2 Supporting Detailed Mineralogical Characterization

Supplemental detailed mineralogical testwork was conducted on five selected column samples. The purpose of the mineralogical testwork was to establish the overall mine rock mineralogy including the potential range of host minerals for arsenic and other metals, thereby providing further insight into potential processes influencing metal leaching from the samples.

The samples selected for detailed mineralogy included high to moderate arsenic content samples with varying sulphide content (Table 1) and included COL-1, COL-2, COL-3, COL-8 and COL-11. In order to enhance the metals signal in the analysis, samples with less than 500 mg/kg arsenic (COL-3, COL-8, COL-11) were additionally subjected to heavy liquid separation (HLS) to concentrate sulphides (which were expected to be the primary host of arsenic and other metals of interest).

[1] It is noted that in general evidence of stored oxidation products in older drill core was not observed in geochemical test programs for the Project (e.g., WSP 2025a)

Table 1: Summary of Laboratory Column Testing Program

Column ID	Sample ID[1]	Lithology	As [2]	Sulphur [2]	As:S Molar Ratio	AP[2]	NP[2,3]	Column Description	Key Metal Description[4]	Weeks of Data				Status
										Flow Rate[5]			Total	
			mg/kg	mg/kg		kg $CaCO_3$/t	kg $CaCO_3$/t			500 mL/wk	250 mL/wk	125 mL/wk		
COL-1	**M112105, M112103**	AND_TUF_METASEDS	985	1500	0.422	2	114	High arsenic, low sulphur	100th percentile As, 91st percentile Sb	Week 1 to 17	Week 18 to 28	Week 29 to 35	35	Terminated (Aug. 2022)
COL-2	**M112065, M112074**	AND_TUF_METASEDS	999	13650	0.035	38	383	High arsenic, typical sulphur	100th percentile As, Co, 91st percentile Sb	Week 1 to 17	Week 18 to 28	Week 29 to 45	45	Terminated (Nov. 2022)
COL-3	**W-058**	VBX	364	2500	0.068	6	82	High arsenic, low sulphur	97th percentile As, Co	Week 1 to 17	Week 18 to 28	Week 29 to 35	35	Terminated (Aug. 2022)
COL-4	W-105, W-133	TRA, AND_TUF_METASEDS	24	10050	0.001	31	114	Typical arsenic, typical sulphur	Typical Metals	Week 1 to 10	-	-	10	Terminated (Mar. 2022)
COL-5	W-070	AND_TUF_METASEDS	75	20700	0.002	64	127	Typical arsenic, typical sulphur	Typical Metals	Week 1 to 17	Week 18 to 28	Week 29 to 35	35	Terminated (Aug. 2022)
COL-6	W-027, W-264	AND_TUF_METASEDS	13	1971	0.004	4	86	Low arsenic, low sulphur	Low Metals	Week 1 to 17	Week 18 to 28	Week 29 to 45	45	Terminated (Nov. 2022)
COL-7	W-278, W-303	TRA, AND_TUF_METASEDS	129	36840	0.002	114	161	Elevated arsenic, elevated sulphur	86th percentile As	Week 1 to 10	-	-	10	Terminated (Mar. 2022)
COL-8	**M112089,** W-041	AND_TUF_METASEDS, TRA	48	1334	0.024	2	129	Typical arsenic, low sulphur	87th percentile Sb	Week 1 to 17	Week 18 to 28	Week 29 to 35	35	Terminated (Aug. 2022)
COL-9	W-117	AND_TUF_METASEDS	10	3200	0.001	9	132	Low arsenic, low sulphur	Low Metals	Week 1 to 10	-	-	10	Terminated (Mar. 2022)
COL-10	W-204	AND_TUF_METASEDS	15	5100	0.001	13	175	Low arsenic, low sulphur	98th percentile Cu	Week 1 to 17	Week 18 to 28	Week 29 to 35	35	Terminated (Aug. 2022)
COL-11	**W-221, W-198**	POR, TRA	115	19350	0.003	60	136	Elevated arsenic, typical sulphur	85th percentile As, 98th percentile Sb, 95th percentile Cd, Pb, 83rd percentile Mo	Week 1 to 17	Week 18 to 28	Week 29 to 35	35	Terminated (Aug. 2022)
COL-12	W-290, W-302	TRA	13	8150	0.001	22	191	Low arsenic, typical sulphur	Typical Metals	Week 1 to 10	-	-	10	Terminated (Mar. 2022)
COL-13	M112128, M112149	TRA	31	3950	0.004	10	129	Typical arsenic, low sulphur	91st percentile Sb	Week 1 to 10	-	-	10	Terminated (Mar. 2022)

Notes: (1) Sample ID indicates source sample ID. Two sample IDs indicate composite sample prepared from two selected source samples. **Bold Column and Sample IDs** identify individual sample or composite sample material selected for detailed mineralogy (only subsample M112089 from COL-8 was available for detailed mineralogy).
(2) Weighted concentration presented when column composed of two sub-samples.
(3) Standard Sobek NP Method.
(4) Percentile information is shown relative to ML/ARD database (694 samples).
(5) Flow rate was reduced for selected columns over time to assess equilibrium versus mass loading processes.

4 METHODOLOGY

All ML/ARD testing including the column testing was conducted at Global ARD in Burnaby, BC according to procedures outlined in MEND (2009). The column tests were set-up, operated and coordinated at Global ARD under the direction of WSP. Detailed mineralogy testing was conducted at SGS Canada Inc. (SGS) laboratories in Lakefield, Ontario with supporting electron microprobe analysis completed at Queen's University in Kingston, Ontario. The sample preparation and analytical methods are described in the following sections.

4.1 Column Operation and Analytical Schedule

The column tests were initiated in December 2021, following completion of static testing on the samples (WSP 2025a).

- The tests were prepared as trickle leach columns where water was passed through mine rock samples to estimate drainage concentrations from mine rock piles. Flow rates of water through the columns were established to be in the range of expected field leaching conditions, but also considered sample volumes required for analysis on a weekly basis.
- Each sample column was filled with a 7 kg sample of archived coarse crushed drill core sample to achieve a test material thickness of about 30 cm. Materials were selected from previous project static testing programs as described in Section 3.1. Where available individual samples were insufficient to make up the 7 kg requirement, two sub-samples were selected to have similar ABA characteristics and metals contents as possible (Table 1).
- Each individual sample (or paired composite samples) was homogenized and carefully placed into a clear cast acrylic column (6 inch inner diameter, 11.8 inch height and ¼ inch wall thickness) with a base plate, two layers of nylon mesh for filtration and a drain to a collection vessel at the base.
- Each column set-up also included an initial flushing procedure to remove any accumulated oxidation products that could influence test results. The initial flushing procedure comprised three applications of 1000 mL and two applications of 2000 mL of lab grade deionized water. Drainage from each flush was collected and analysed to confirm leaching trends and that generally stable leachate concentrations were achieved after the second 2000 mL leach cycle. Concentrations measured for the 2nd 2000 mL leach cycle were recorded as Week 0 of the test.
- Following the initial flushing period, laboratory grade deionized water was pumped and distributed to the top of each column at a controlled steady rate to achieve the specified weekly flushing volume of 500 mL/week. The 500 mL/week was selected to represent upper range leaching conditions and ensure sufficient weekly sample for a broad range of analyses. The water drained to a collection vessel at the base of the column that was emptied weekly for sampling and analysis.
- Analysis of all the leachates included general parameters (pH, conductivity, acidity, alkalinity), anions (sulphate, chloride and fluoride), dissolved phosphorus by colorimetry, Hg by CVAAS, and dissolved metals by ICP-MS (Al, Sb, As, Ba, Be, Bi, B, Ca, Cd, Cr, Co, Cu, Fe, Pb, Li, Mg, Mn, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, S, Te, Tl, Th, Sn, Ti, W, U, V, Zn, Zr). Analysis of chloride was discontinued after week 10 when very low to undetectable concentrations were confirmed.
- Weekly leaching commenced in December 2021 and continued to week 17 in April 2022 at a flow rate of 500 mL/week. Five of the thirteen columns (COL-4, COL-7, COL-9, COL-12 and COL-13) were terminated after 10 weeks (March 2022) once stable and generally low metal and arsenic leaching rates were reached in those columns.
- The eight continuing columns reached generally stable concentrations after 17 weeks. At this time the flow rate was decreased by one half (250 mL/week) after week 17 (April 2022) and then by one half (125 mL/week) again after week 28 (July 2022). The purpose of the reduced flow rate was to support the assessment of whether the release of arsenic, sulphur and metals was a loading-based process (varying with flow) or solubility-controlled process (constant with flow).
- Six of the eight columns (COL-1, COL-3, COL-5, COL-8, COL-10, COL-11) were terminated after 35 weeks (August 2022) once stable. Two column tests (COL-2 and COL-6) were continued since

metal leaching rates had not stabilized and continuing would assist in refining an arsenic threshold for metal leaching for the project. The two columns were terminated after 45 weeks (November 2022) once arsenic and other metal concentrations were stable.

4.2 Column Closedown Procedures

Column closedown procedures were adapted from industry standard methods employed for humidity cells and as described in MEND (2009). This included execution of a 24-hour bottle roll test on the column residue, and analysis of the residue by acid base accounting and element content/metals. Closedown analysis was not included for the five short duration columns that reached early steady leaching rates and were terminated after 10 weeks of testing (COL-4, COL-7, COL-9, COL-12 and COL-13).

For each column subject to closeout analysis, the contents were split in half into an upper and lower sample. A sufficient subsample split was taken from each half to conduct ABA, element content and bottle roll analysis. Additional details on the closedown data and methods are provided in the certificates of analysis in Appendix D.

4.2.1 Bottle Roll Test

A bottle roll test was conducted on the column sample residue (e.g., upper and lower) following closedown, to assess the quantity of soluble reaction products (e.g., secondary minerals) that were retained within the column during its operation. As part of the bottle roll test, the column residue was air dried following dismantling of the column, and the dried residue was agitated with deionized water (3:1 mass ratio of water to solid) for 24 hours. The resulting supernatant was analysed for general parameters and dissolved elements/metals consistent with the weekly leachate testing for the column.

The load released from the bottle roll test was calculated and scaled to the mass of the sample in each of the columns (e.g., 7 kg) for comparison to the final column weekly mass load.

4.2.2 ABA and Element Content Analysis

Post-test ABA and element content analyses were conducted on the column residues for the terminated columns, to determine the remaining acid potential, neutralization potential and element content of the samples.

Post-test results were compared to the pre-test results.

4.3 Detailed Mineralogy

4.3.1 Program Overview and Sample Preparation

Selected samples from remaining column source materials were used for detailed mineralogy analysis. Samples were chosen primarily to assesses overall sulphide mineralogy with a focus on arsenic-bearing host mineralogy. A subset of five samples were selected that covered the typical to high concentration ranges of arsenic observed and included the range of tested lithologies (Table 1).

Where necessary, materials were remixed and homogenized. Samples with arsenic content less than 500 mg/kg were subjected to an initial heavy liquid separation (HLS) to produce a “sink” and “float” fraction. The heavy (sink) fraction was expected to contain the majority of the host phases for arsenic and other sulphide-associated metals in the samples. This was conducted to ensure sufficient arsenic signal for the mineralogical analysis. Where HLS was completed only the sink fraction was analysed; however, multi-element characterization was completed on both fractions to confirm the success of arsenic concentration and also to allow a calculation of the original head sample elemental content for comparison to the original reported column characteristics.

The analytical program included multi-element geochemical characterization to confirm the selected materials were consistent with the materials placed in the columns and also to support the subsequent mineralogical analysis. Representative petrographic thin sections were prepared for each sample and subjected to QEMSCAN analysis for quantitative mineralogy of major, minor and trace constituents. Electron Microprobe Analysis (EMPA) was also included to determine trace element content of the primary arsenic-bearing sulphide minerals. Additional method descriptions are provided in the subsections below.

4.3.2 Geochemical Analysis

Geochemical analysis included whole rock analysis by borate fusion X-ray fluorescence (XRF) quantification. Arsenic was determined by a similar XRF (internal standard) method and by ICP-OES strong acid digestion. Sulphur was determined by Leco and other minor element content was determined by ICP-OES strong acid digestion.

4.3.3 Quantitative Mineralogy (QEMSCAN)

QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy) is configured to measure mineralogical variability based on chemistry at the micrometer-scale. QEMSCAN utilizes both the back-scattered electron (BSE) signal intensity, as well as an Energy Dispersive X-ray Signal (EDS) at each measurement point and makes no simplification or assumption of homogeneity based on the BSE intensity. EDS signals are used to assign mineral identities to each measurement point by comparing the EDS spectrum against a mineral species identification program (SIP) or database.

The raw data as collected by the instrument is extracted, reviewed for quality, and processed offline using the iDiscover software and reported in a standardized format. Processing includes textural and chemical refining of the data and classification into categories in order to extract appropriate mineralogical data for the program.

4.3.4 Electron Microprobe Analysis (EMPA)

EMPA (Electron Microprobe Analysis) was conducted at Queen's University in Kingston, Ontario using a JEOL JXA-8230 probe in point analysis mode with calibration to reference standards. A range of observed pyrite (FeS_2) grains in each thin section were selected at random and analysed for iron and sulphur as well as other observed minor elements (arsenic, antimony, cobalt, nickel and copper). Other selected arsenic host sulphide grains including arsenopyrite (FeAsS) and a sulpharsenide (gersdorffite-cobaltite) were also quantified for the same set of parameters.

5 RESULTS

5.1 Column Testing - Summary of Mine Rock Metal Leaching Results

Results of the mine rock column testing program are summarized below and discussed in further detail in the subsections that follow. Steady-state pH and concentrations for parameters of interest are summarized in Table B1, Appendix B. Concentrations are based on the median of the last five weeks for each flow rate and compared to PWQO and interim PWQO screening values. Some columns had concentrations of arsenic and to a lesser extent antimony above the respective PWQO or interim PWQO screening values. The rest of the parameters including the other parameters of interest were below screening values.

For reference, all weekly unscaled (raw) column test results for the mine rock samples are presented in Appendix C, Figures C-1 to C-48. Results for several parameters including beryllium, bismuth, cadmium, iron, lead, mercury, phosphorus, silver, tellurium, thorium, tin, titanium, vanadium and zirconium were generally at or near the analytical detection limit for the duration of the testing. Laboratory certificates of analysis for the column testing are presented in Appendix D.

The following subsections discuss results for elements of potential interest for metal leaching including arsenic, antimony, cadmium, cobalt, copper, lead, molybdenum and selenium and selected general parameters of interest for leaching behaviour (e.g., pH, sulphate, and phosphorus). Arsenic and antimony had leachate concentrations for at least some columns above screening values at one or more flow rates, while the rest of the noted elements were consistently below screening values.

5.1.1 Arsenic

Summary leaching results for arsenic are provided in Figure 1. The frequency distributions of solid phase arsenic content of baseline samples (WSP 2025a) and the selected column samples is also included for reference. Columns had a wide range of arsenic leachate concentrations ranging from 0.0001 mg/L for COL-7 (elevated arsenic, elevated sulphur) to approximately 0.05 mg/L for three columns including COL-1 (high arsenic, low sulphur), COL-2 (high arsenic, typical sulphur) and COL-3 (high arsenic, low sulphur). With the exception of the three highest arsenic content columns that also

exhibited the highest arsenic leachate concentrations, there was no apparent consistent relationship between arsenic concentration and arsenic leaching rate for the remainder of the columns.

Of the columns that exceeded the leachable arsenic screening limits (at one or more leaching rates) two different relationships were observed. Concentrations sometimes increased with decreasing leaching rates including COL-1 (high arsenic, low sulphur), COL-2 (high arsenic, typical sulphur) and COL-6 (low arsenic, low sulphur) while others including COL-3 (high arsenic, low sulphur) and COL-8 (typical arsenic, low sulphur) remained generally stable throughout leaching regardless of leaching rate.

5.1.2 Antimony

Antimony concentrations for most columns were below the screening value (Figure 2). One high antimony sample (COL-1, high arsenic and low sulphur) was marginally above the screening value at the two lower leaching rates. The other high antimony sample (COL-2, high arsenic, typical sulphur) was periodically above the screening value with concentrations just below the screening value at the two lowest leaching rates. The highest leachate column concentrations were generally observed in the highest antimony content samples.

5.1.3 Other Elements of Potential Interest

Other elements of potential interest included cadmium, cobalt, copper, lead, molybdenum and selenium, all of which reported concentrations below their respective PWQO or interim PWQO screening values (Table B1, Appendix B). Concentrations of these elements varied among the columns. In general, high element content columns, which are expected to comprise a small volume of the rock, produced the highest leaching rates for the majority of these elements (e.g., cadmium, copper, lead and selenium).

- Cadmium concentrations were more than two orders of magnitude below screening values for most columns with the highest concentrations observed for COL-11 which also reported 95th percentile cadmium content (Table B1, Appendix B).
- With the exception of COL-10 with 98th percentile copper content, copper concentrations were generally more than two orders of magnitude below the screening value (Table B1, Appendix B) and often at or below detection limits. Copper leachate concentrations for COL-10 ranged from 0.0002 to 0.0004 mg/L well below the screening value of 0.005 mg/L. A few columns (COL-4, COL-5 and COL-11) initially leached copper at higher concentrations but then declined to near detection limits which was attributed to flushing of stored oxidation products.
- Lead concentrations were at or below detection limits in all columns except COL-11 which also reported 95th percentile lead content (Table B1, Appendix B). Concentrations for that column ranged from 0.0001 to 0.0002 mg/L and well below the screening value of 0.001 mg/L.
- Selenium concentrations were low with all 13 columns reporting selenium concentrations well below the screening value of 0.1 mg/L. Eight of the 13 columns had selenium concentrations at or below 0.0001 mg/L (Table B1, Appendix B) and the remaining five columns had concentrations that ranged up to 0.003 mg/L (for COL-11, 77th percentile selenium). Changes in selenium release rates relative to column flow rates suggested that there was a loading-based response for selenium release.

Higher leachable concentrations of cobalt and molybdenum did not always correspond to higher corresponding element content.

- Cobalt concentrations were below the screening value of 0.0009 mg/L (Table B1, Appendix B) and varied from 0.00001 mg/L to 0.0008 mg/L.
  - Two of the high arsenic leaching columns including COL-3 (97th percentile Co) and COL-1 exhibited the highest concentrations of cobalt.
  - The third column with elevated arsenic leaching (COL-2) had cobalt leaching at an order of magnitude lower concentration, but correspondingly more elevated nickel.
  - It is noted that nickel is always well below the applicable screening value and is not noted as an element of interest for metal leaching. However, nickel and cobalt are components of

gersdorffite ((Fe,Ni,Co)AsS) identified in these samples, and the presence of this mineral can account for the observed cobalt and nickel leaching behaviour described above.

- Molybdenum concentrations were below the screening value of 0.04 mg/L and varied among the columns (Table B1, Appendix B). The highest molybdenum concentrations were observed for COL-10 and COL-11 (the latter with 83rd percentile Mo) in the range of 0.01 to 0.02 mg/L compared to the screening value of 0.04 mg/L. These more elevated rates were observed for the lowest column flow condition (125 mL/week). Other column results were generally a magnitude or more lower than the screening value.

5.1.4 pH

Each column had pH values that varied within a narrow range from week to week. The range in pH among the columns varied from pH 7.3 to 8 for initial operations at 500 mL/week with slight declines observed after the decrease to 250 mL/week (range pH 7.2 to 7.8) and an increase observed (range pH 7.4 to 8.1) following the further decrease in flow rate to 125 mL/week. The two longest operating columns (COL-2 and COL-6) had slightly declining pH over the final 10 weeks of testing resulting in circumneutral pH (7.2 to 7.4) in the last weeks of testing. The small apparent systematic changes observed over the course of testing suggests they may be related to minor adjustments in column operation over time. The small observed changes did not appear to influence leached concentrations.

5.1.5 Sulphate

Sulphate concentrations were generally low (overall range 0.9 to 15 mg/L) and were observed to increase after each flow rate adjustment (Table B1, Appendix B). It was noted that for a given leaching rate, higher sample sulphur content did not always result in higher leached sulphate concentrations. The highest sulphate concentrations (between 10 and 15 mg/L) included COL-3 (high arsenic, low sulphur), COL-5 (typical arsenic, typical sulphur), COL-7 (elevated arsenic, elevated sulphur) and COL-10 (low arsenic, low sulphur). The elevated sulphur concentration for COL-7 was observed during the initial (500 mL/week) test period before being terminated while the other elevated sulphate leaching rates were observed during the final (125 mL/week) leaching condition.

5.1.6 Phosphorus

Phosphorus (which can compete with arsenic for sorption sites on mineral surfaces) was at or below detection limits for most columns. The three highest arsenic content columns (COL-1, COL-2 and COL-3) had slightly elevated phosphorus concentrations in leachate in early testing that subsequently declined to concentrations slightly above the analytical detection limit to at or below the detection limit after week 14 to the end of the testing. The low phosphorus concentrations may be due to low release/weathering rates, sorption to mineral surfaces or a combination of both.

5.2 Closedown Results

The termination test results of the upper and lower column samples were compared to pre-test data (ABA and element content analyses) and concentrations of the last week of testing (bottle roll extraction) of the terminated columns. The data comparison is provided in Appendix B.

ABA and element content (e.g., metals of interest) results of the terminated columns are shown in Table B2 and Table B3, Appendix B respectively. Results for both the upper and lower samples were comparable to the pre-test results.

Bottle roll concentrations shown in Table B4, Appendix B were compared to the concentrations from the last week of testing for each column and were generally consistent between the upper and lower termination results but lower than the pre-test data. When compared on the basis of equivalent weekly mass loadings the results were generally consistent between the final weekly leachate and closeout results. Results are consistent with mass loading being the primary driver in element release and concentrations rather than solubility control.

5.3 Detailed Mineralogy

Detailed mineralogy results for the five selected column samples are described in the following subsections.

5.3.1 Geochemical Analysis

All supporting geochemical analyses by SGS are compiled in Appendix D. Based on the available geochemical results for Global ARD and SGS, the elemental/metal concentrations of the head samples received by SGS are consistent with the original analyses provided by Global ARD (Table 2).

5.3.2 Quantitative Mineralogy (QEMSCAN)

Detailed QEMSCAN results for the selected samples are presented in Appendix E. The overall modal mineralogy of the samples analysed is summarized in Figure 3. The samples including the three subjected to HLS are predominantly composed of silicate minerals (e.g., quartz and sericite/muscovite). COL-1 (total sample), COL-3 (HLS Sink), COL-8 (HLS Sink, M112089) and COL-11 (HLS Sink) also contain 7 to 12 wt.% feldspar. COL-2 and COL-3 contain 10 to 15 wt. % chlorite. Clay minerals are present at 6 and 4 wt.% in COL-1 (total sample) and COL-3 (HLS Sink) respectively. Iron oxides were present at 10 and 3 wt.% in COL-3 (HLS Sink) and COL-8 (HLS Sink, M112089) respectively.

Carbonates made up 10 to 28 wt.% of the samples with calcite consistently observed at between 2 and 6 wt.% among the samples. However, ankerite or dolomite was the predominant carbonate mineral observed. Dolomite was present at 0.8% to 18 wt.% and was the predominant carbonate mineral in COL-2 (total sample).

Table 2: Comparison of SGS Head Samples to Global ARD Column Source

Column #	Column 1		Column 2		Column 3(1)		Column 8(1)(2)		Column 11(1)	
Units	mg/kg									
Element	Global ARD	SGS	Global ARD	SGS	Global ARD	SGS	Global ARD	SGS	Global ARD	SGS
S	1500	1200	13650	11400	2500	2633	1334	1658	19350	19324
As	985	930	999	840	364	456	48	99	115	120
Cd	0.07	<8.82	0.12	<8.82	0.09	<9.80	0.09	<5.51	2.96	9.92
Co	22	34	80	84	52	64	20	<55.12	15	55
Cu	44	42	34	39	68	73	39	29	47	53
Fe	58050	68821	86450	80431	96400	111986	48761	57975	31000	40963
Hg	0.02	N/A	0.03	N/A	0.01	N/A	0.03	N/A	1.15	N/A
Mo	0.97	<5.51	2.79	<5.51	2.45	<6.13	2.97	<5.51	40	43
Ni	29	35	439	605	124	139	23	32	22	38
P	1486	1440	378	393	888	839	1078	962	510	518
Pb	4.80	<22	3.80	<22	3.80	<25	4.19	26	258	317
Sb	5.15	<11	1.77	<12	1.77	<12	3.84	<33	10	<33
Se	0.20	<33	0.20	<37	0.20	<37	0.20	<33	1.45	<33
Tl	3.25	<33	2.84	<37	2.84	<37	2.83	<33	0.96	<33
W	1.18	N/A	30	N/A	30	N/A	5.64	N/A	0.63	N/A
Zn	103	137	124	<107	124	172	78	150	753	1630
U	0.57	<33	0.24	<33	0.24	<37	0.91	<55	4.87	<55

Notes: (1) Weighted calculation from analysis of HLS float and sink fractions.
(2) Represents only subsample (M112089).

Ankerite was present at 4 to 24 wt.% and was the predominant carbonate mineral in COL-1 (total sample), COL-3 (HLS Sink), COL-8 (HLS Sink, M112089) and COL-11 (HLS Sink).

The sulphide contents of the samples range from 0.5 wt.% for COL-1 (total sample) to 26 wt.% for COL-11 (HLS Sink) (Figure 3). Sulphide minerals observed include gersdorffite ((Fe,Ni,Co)AsS), arsenopyrite (FeAsS), galena (PbS), sphalerite (Fe,Zn)S, chalcopyrite ($CuFeS_2$), pyrrhotite ($Fe_{1-x}S$). Sulphide mineral proportions are summarized in Figure 4. Pyrite was the predominant sulphide mineral in all samples although arsenopyrite was approaching similar proportion to pyrite in COL-1 (total sample). The second most abundant mineral was gersdorffite in COL-2 (total sample), pyrrhotite in COL-3 (HLS Sink) and COL-8 (HLS Sink, M112089), and sphalerite in COL-11 (HLS Sink).

5.3.3 EMPA

Detailed EMPA results are presented in Appendix F. EMPA analysis included quantification of iron, cobalt, nickel, copper, arsenic and sulphur for the sulphide minerals analysed. Analysis was focused on the principal potential arsenic hosting phases identified from QEMSCAN and included pyrite, arsenopyrite and a sulpharsenide mineral. Antimony was reported for some analyses but was generally at or below detection limits when included as a measured parameter.

Analysis confirmed minor element associations for the range of the arsenic sulphide minerals. Arsenopyrite often contained minor cobalt in the less than 1 wt.% range and trace nickel. The sulpharsenide mineral (probably gersdorffite or similar) containing predominantly iron, cobalt, nickel, arsenic and sulphur. Antimony was detected above 1 wt.% in a single analysis of a nickel-rich sulpharsenide grain for COL-2.

Quantitative analysis of pyrite grains was completed for each of the column materials analysed to determine the variability in arsenic and other minor element content among the samples. Average, minimum and maximum concentrations of elements reported for pyrite in each sample are shown in Table 3. Arsenic was low (<0.1 wt.%) for COL-1 and COL-3. Slightly more elevated values were reported for COL-8 and COL-11 at averages of 0.26 and 0.13 wt.% respectively. The highest average arsenic content in pyrite was observed for COL-2 at 0.96 wt.%. Arsenic is known to substitute for sulphur (and sometimes iron) within the pyrite structure. Cobalt, nickel and copper were sometimes present in pyrite analyses at generally low concentrations.

Table 3: Summary Statistics of EMPA Analyses of Pyrite (wt. %)

Column	Number of Analyses	Statistic	Fe	Co	Ni	Cu	As	S
Column 1 (Total Sample)	11	Average	46.0	0.03	0.16	0.03	0.08	53.3
		Min	44.9	0.00	0.00	0.00	0.00	52.7
		Max	46.8	0.20	1.31	0.12	0.35	53.7
		Stdev	0.54	0.06	0.39	0.04	0.12	0.30
Column 2 (Total Sample)	36	Average	46.2	0.11	0.12	0.01	0.96	52.8
		Min	45.1	0.00	0.00	0.00	0.04	50.6
		Max	47.0	0.78	0.68	0.04	3.91	53.6
		Stdev	0.43	0.17	0.14	0.01	0.93	0.64
Column 3 (HLS Sink)	27	Average	46.1	0.09	0.32	0.07	0.09	53.1
		Min	43.1	0.00	0.00	0.00	0.00	52.0
		Max	46.9	1.40	3.78	0.56	1.39	53.8
		Stdev	0.69	0.27	0.73	0.15	0.27	0.49
COL-8 (HLS Sink, M112089)	36	Average	46.5	0.02	0.05	0.01	0.26	53.0
		Min	46.0	0.00	0.00	0.00	0.00	51.8
		Max	47.0	0.09	0.58	0.09	1.48	53.6
		Std Dev	0.24	0.02	0.10	0.02	0.43	0.45
COL-11 (HLS Sink)	35	Average	46.6	0.04	0.04	0.01	0.13	53.0
		Min	45.9	0.00	0.00	0.00	0.01	52.3
		Max	47.0	0.20	0.73	0.04	0.54	53.4
		Std Dev	0.29	0.05	0.12	0.01	0.12	0.27

6 KEY FINDINGS

6.1 Arsenic Deportment from Detailed Mineralogy

The arsenic proportion (deportment) is calculated based on the average arsenic concentrations from the EMPA data and for the QEMSCAN modals for the arsenic-bearing minerals and is summarized in Figure 5. Most (75 to 95 wt. %) of the arsenic for COL-1, COL-3 and COL-8 is present in arsenopyrite. Gersdorffite contains most of the arsenic (70 wt.%) for COL-2 and pyrite contains most the arsenic (90 wt.%) for COL-11. Though data is limited, higher arsenic concentrations and higher overall proportions appear to be present in pyrite when gersdorffite predominates over arsenopyrite in the sample.

The observed complexity in primary arsenic mineralogy is likely to have an influence on arsenic leaching. The absence of significant iron in gersdorffite has the potential to lead to greater release of arsenic from that host mineral under pH neutral drainage conditions. In contrast, pyrite and to some extent arsenopyrite, have greater potential to incorporate significant arsenic into newly formed iron oxyhydroxide surfaces under progressive oxidation of their mineral surfaces, which can potentially limit or provide further control on arsenic release.

6.2 Arsenic Leaching Observations

Column arsenic concentrations were above the interim PWQO screening value (0.005 mg/L) for five columns , including Andesite, Tuff, and Metasediments (AND_TUF_MSEDS; COL-1, COL-2, COL-6), Volcanic Breccia (VBX; COL-3), and Trachyte/Andesite, Tuff, and Metasediments (TRA, AND_TUF_MSEDS; COL-8) rock types (Table B1, Appendix B). Two AND_TUF_MSEDS (COL-1, COL-2) and one VBX (COL-3) columns had elevated arsenic content (>95 percentile), one TRA, AND_TUF_MEDS (COL-8) column had moderate arsenic content (59th percentile), and one AND_TUF_MEDS column (COL-6) had low arsenic content (20th percentile).

Observed arsenic leaching trends among the columns are complex. Overall, the total arsenic content of the rock is a poor predictor to the leached arsenic concentration (Figure 6). We note that the three highest arsenic leaching columns (COL-1, COL-2 and COL-3) have arsenic contents that are more than the 97th percentile of arsenic in Springpole mine rock and are expected to represent a very small fraction of potentially arsenic leaching rock.

The relationship between leachable arsenic concentrations and the arsenic to sulphur (As:S) ratio appears to be a better predictor of arsenic leaching potential (Figure 6), whereby samples with a higher As:S molar ratio generally leach more arsenic than samples with a lower As:S molar ratio; though, leachable arsenic concentrations still occur over a broad range. Specific reasons for the improved association of leachable arsenic with the As:S ratio is not fully understood at this time, but may be in part explained by arsenic and iron sulphide mineralogy (described in Section 6.3). Two samples (COL-6 and COL-7) had anomalous arsenic leaching both in terms of arsenic content and As:S ratio (Figure 6) and are not expected to be representative of conditions in mine rock.

6.3 Arsenic Leaching and Mineralogy

Arsenic mineralogy in the tested samples can be broken down into two end member populations. Iron poor arsenic minerals in the form of gersdorffite ((Fe,Ni,Co)AsS) and arsenic-bearing, iron-rich pyrite (FeS_2) and pyrrhotite ($Fe_{1-x}S$). The arsenic content of pyrite varies among the samples tested and also among the range of pyrite particles tested in a given sample (Table 3). Arsenopyrite (FeAsS) with equal molar proportions of iron and arsenic is somewhere in the middle. Review of the arsenic mineralogy and leachate data indicates that samples with higher proportions of arsenic-bearing minerals with low amounts of iron (e.g., gersdorffite) relative to high iron-content minerals (e.g. pyrite) tended to leach higher concentrations of arsenic. Namely the samples with the highest leachable arsenic (COL-1, COL-2, COL-3) also had the highest As:S ratio as well as high proportions of arsenic in gersdorffite and a relatively low proportion of arsenic bearing pyrite. Of the samples with detailed mineralogy, COL-11 had the lowest leachable arsenic, the lowest As:S ratio, low proportions of arsenic in gersdorffite and the highest amount of arsenic in pyrite.

The above observations support the importance of high relative abundance of arsenic sulphides (e.g., gersdorffite) in relation to iron sulphides as an indicator of potentially higher arsenic leaching rock. Although the exact mechanism is not fully understood, iron oxyhydroxides (formed on the oxidized

surfaces of pyrite and pyrrhotite) are known to have a strong affinity to absorb arsenic. Therefore, this observed relationship may be a result of the greater availability of oxidized pyrite or pyrrhotite surfaces to adsorb not only arsenic released from the pyrite, but also excess arsenic release from other adjacent arsenic sulphide minerals (arsenopyrite and gersdorffite). The presence of gersdorffite rather than arsenopyrite as the arsenic host is also likely important due to the expected incorporation of a significant fraction of arsenopyrite arsenic as iron arsenate at the oxidizing surface. The more limited iron available in gersdorffite will have much lower capacity for this process.

6.4 Arsenic Leaching Threshold for NAG Rock

Arsenic leaching appeared to be influenced by several factors as described in Section 6.2 and 6.3. The arsenic content of the test samples and the arsenic concentrations in the column leachates were compared as presented in Figure 7. Leachate concentrations were compared to iPWQO (0.005 mg/L) and PWQO (0.1 mg/L) values for arsenic. Based on this comparison:

- Samples with an arsenic content of less than 50 mg/kg had a leachable arsenic concentration of less than 0.005 mg/L.
- Several samples had arsenic concentrations near 0.1 mg/L, however, these samples represented >95th percentile arsenic content among the dataset and therefore are expected to comprise a small volume of the rock.
- This assessment included results from 11 of the 13 column tests. Results for two of the tests (COL-6 and COL-7) were determined not to be representative of conditions expected in the mine rock. This included a high arsenic solid phase, low arsenic leaching sample (COL-7) and a sample (COL-6) containing a unique As:S molar ratio not observed in other samples. Therefore, these results were removed from the data analysis.

Therefore, based on available data, an arsenic threshold of 50 mg/kg should be considered to differentiate between arsenic-leaching and non-arsenic leaching NAG rock. Field tests, currently in progress, are being routinely monitored and suggest that a higher threshold may be possible (WSP 2025c). For current purposes, 50 mg/kg will be used.

6.5 Leaching Observations – Other Metals

Antimony, cobalt, cadmium, copper, lead, molybdenum and selenium have been identified in previous studies as other possible metals of interest for metal leaching. With the exception of one antimony sample, column concentrations were below screening values for these parameters. Results presented in this study have not identified neutral leaching concerns for these elements that require management consideration.

- For antimony, the highest leachate column concentrations were generally observed in columns with higher solid phase antimony concentrations. The highest antimony concentrations (up to 0.038 mg/L) were observed in two high arsenic leaching columns that are expected to represent a small portion of Springpole mine rock. Any potential antimony leaching of concern appears to be related to a subset of mine rock that also exhibits arsenic leaching. Mineralogy generally supports the association of antimony and arsenic for these samples with periodic detections of low antimony in arsenic sulphide minerals. A single elevated antimony concentration was reported for analysis of a sulpharsenide mineral in COL-2. No antimony sulphide minerals were identified in QEMSCAN.
- Cobalt concentrations varied among the columns with the highest concentrations observed in two of the three high arsenic leaching columns, which are expected to represent a small volume of Springpole mine rock. There is no apparent relationship between cobalt content and cobalt leaching. However, like arsenic, higher cobalt leaching tends to be observed for samples containing notable gersdorffite.
- Cadmium concentrations were more than an order of magnitude lower than the screening value. The highest cadmium content sample (COL-11) was confirmed to contain elevated sphalerite ((Fe,Zn)S) which is the most likely host with cadmium substituting for zinc in the mineral. This sample also had the highest leachate concentration of cadmium at 0.00001 mg/L.
- Copper concentrations were low and at or below detection limits in most columns. Copper concentrations were slightly elevated for COL-10 (98th percentile copper) at approximately

0.00048 mg/L. Though chalcopyrite ($CuFeS_2$) was the predominant host of copper among the column samples that included detailed mineralogy, the leachable concentrations did not appear to vary with chalcopyrite content for these samples.

- Lead concentrations were at or below detection limits in all columns except COL-11 which also reported 95th percentile lead content and galena (PbS) confirmed by detailed mineralogy. Concentrations reported for COL-11 were fairly low (approaching 0.0002 mg/L) but more elevated than is generally expected for pH neutral waters.
- Molybdenum concentrations were fairly low and below or at approximately 0.001 mg/L for most columns. The highest molybdenum concentrations were observed to be more elevated for COL-10 and COL-11 (83rd percentile Mo) in the range of 0.003 to 0.016 mg/L. There is no apparent relationship between molybdenum content and leachate concentrations. The molybdenum host was not identified by detailed mineralogy due to low abundance, but molybdenite (MoS_2) is a common host that may be below the limit of detection in these samples or alternatively it may be present as a trace element in other minerals.
- Selenium concentrations were low with nine of the 13 columns having selenium concentrations below 0.0001 mg/L and generally at or near detection limits. The other five columns had detectable but fairly low selenium concentrations. Concentrations reported for COL-11 (77th percentile selenium) were more elevated at concentrations up to 0.0028 mg/L. Due to low abundance, the mineralogical host of selenium was not identified, although a trace element association with one or more sulphide minerals is assumed.

7 CONCLUSIONS

WSP provides the following conclusions based on the final results for the column testing and mineralogy program outlined in this memorandum:

- Arsenic is confirmed to require consideration for metal leaching in NAG rock while all other elements of potential interest (antimony, cobalt, copper, cadmium, lead, molybdenum, and selenium) have a low potential for metal leaching in NAG rock.
- Arsenic host mineralogy varies within the mine rock and may be present as arsenic sulphide (gersdorffite), arsenic iron sulphide (arsenopyrite) or substituting for sulphur (or iron) in pyrite.
- Arsenic leaching generally increased with increasing arsenic content although there is variability among the samples tested. The observed variability can be understood more specifically based on the As:S molar ratio and arsenic host mineralogy. Samples with higher leachable arsenic tend to have a higher As:S ratio, contain a high proportion of arsenic in the mineral gersdorffite, and have a lower iron sulphide content.
- An arsenic threshold of 50 mg/kg has been identified to differentiate between arsenic-leaching and non-arsenic leaching NAG rock.

8 REFERENCES

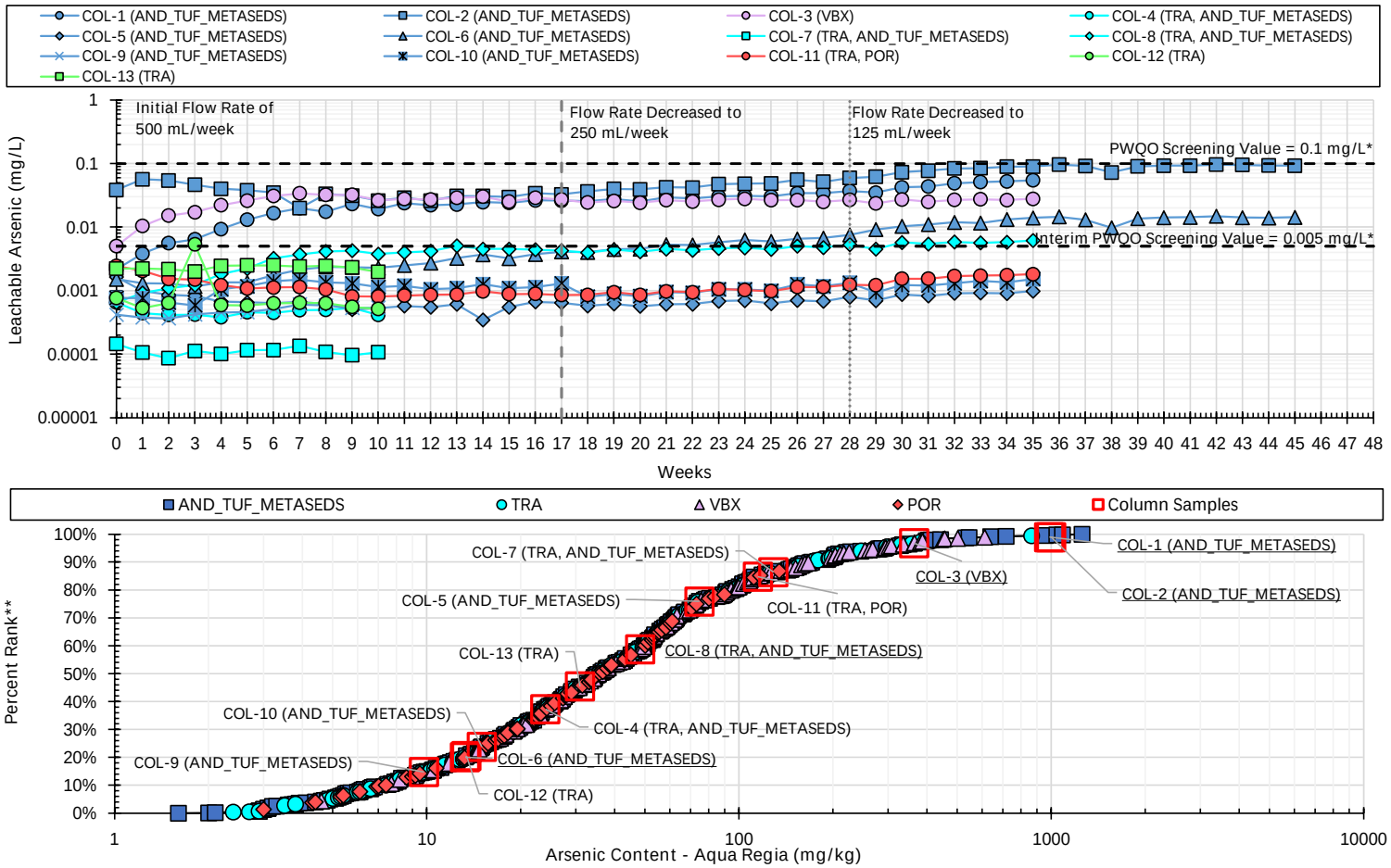
Mine Environment Neutral Drainage (MEND) 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. Natural Resources Canada. MEND Report 1.20.1.

WSP 2025a. Static Geochemical Testing Baseline Report (Rev2). ONS2104. Prepared for First Mining Gold Corp. April 2025.

WSP 2025b. Kinetic Geochemical Testing Baseline Report – Kinetic Testing Update Q4 2024. ONS2104. Prepared for First Mining Cold Corp. April 2025.

WSP 2025c. 2024 Field Leachate Barrel Update, Springpole Gold Project. ONS2104. February 2025.

Figures



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

POR = Porphyry

Leachable arsenic exceeds the screening value for one or more flow rates for underlined column samples.

* Screening values are for qualitative assessment only and hold no regulatory significance.

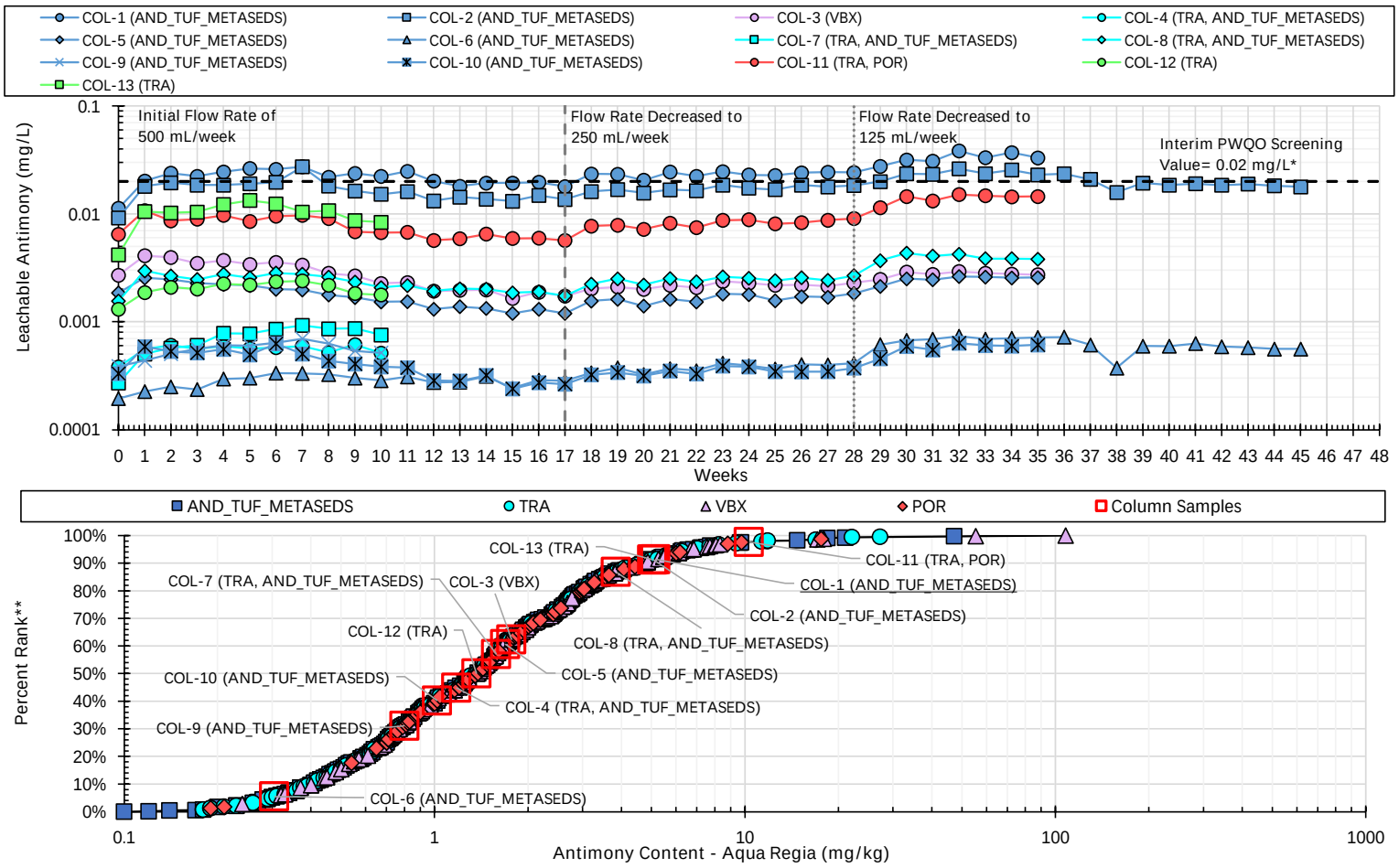
** Relative to ML/ARD database (694 samples).

Leachable Arsenic (As)

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number	1		
Project Number	ONS2104		
Date	April 2025		
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

POR = Porphyry

Leachable antimony exceeds the screening value for one or more flow rates for the underlined column sample.

* Screening values are for qualitative assessment only and hold no regulatory significance.

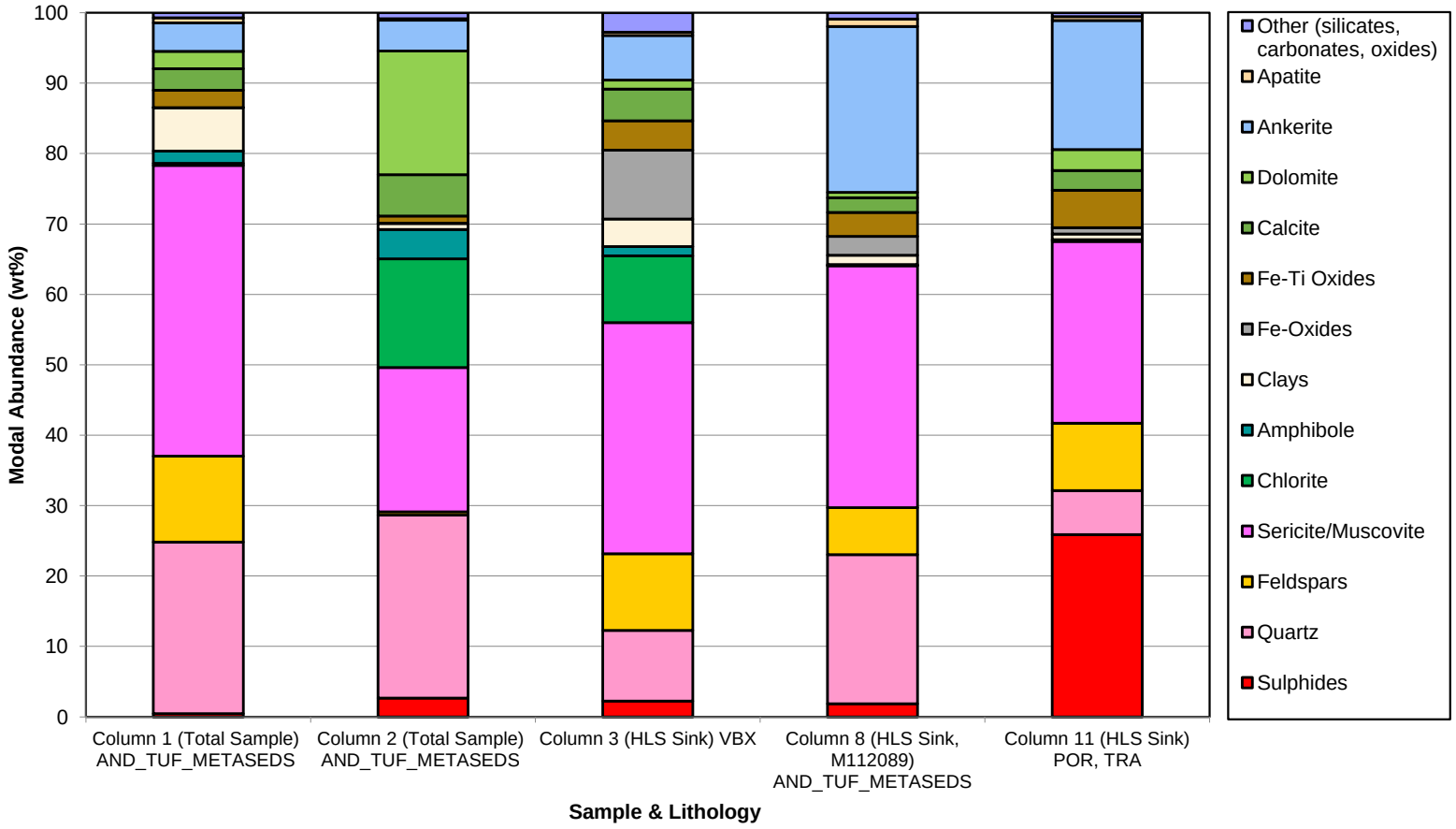
** Relative to ML/ARD database (694 samples).

Leachable Antimony (Sb)

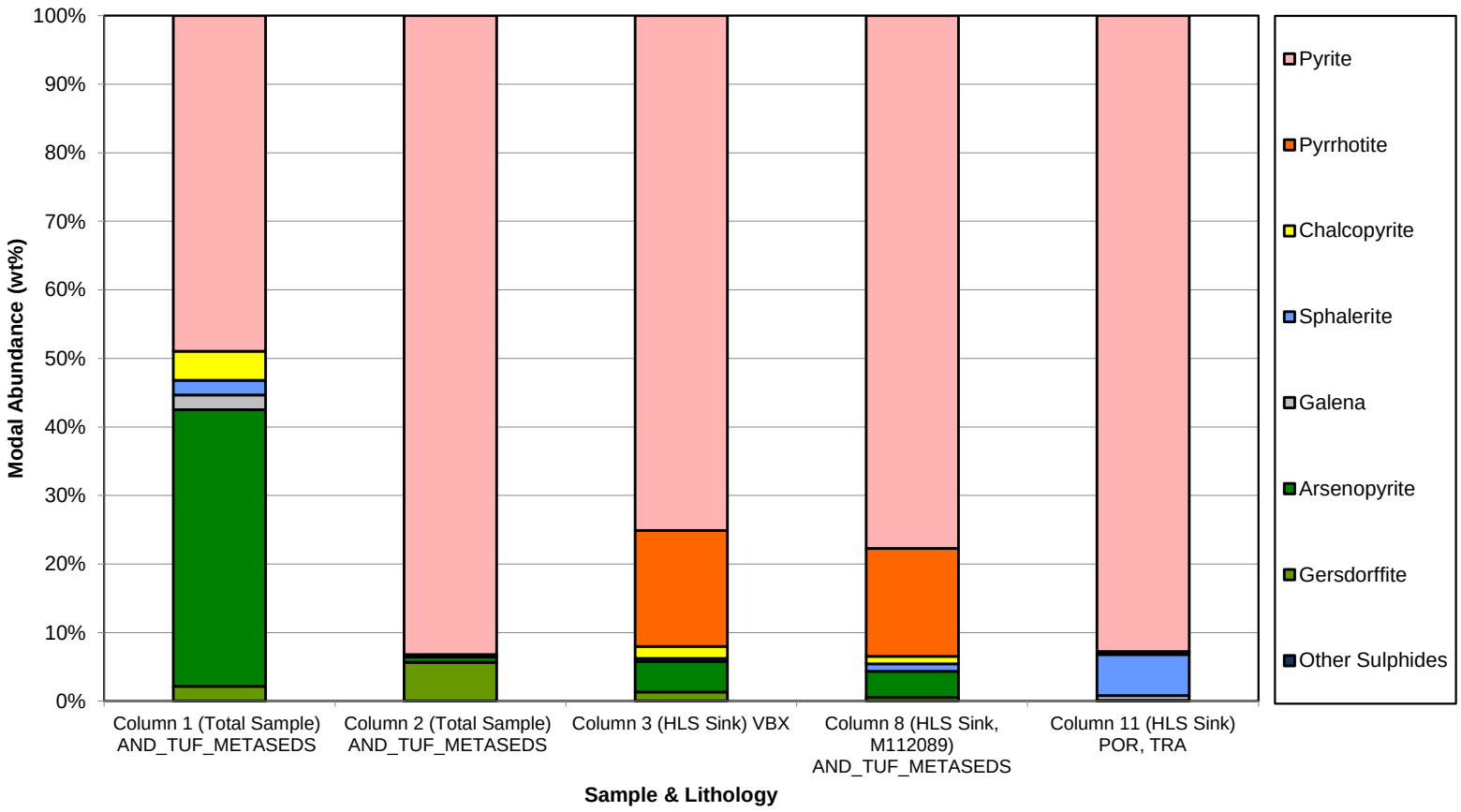
Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

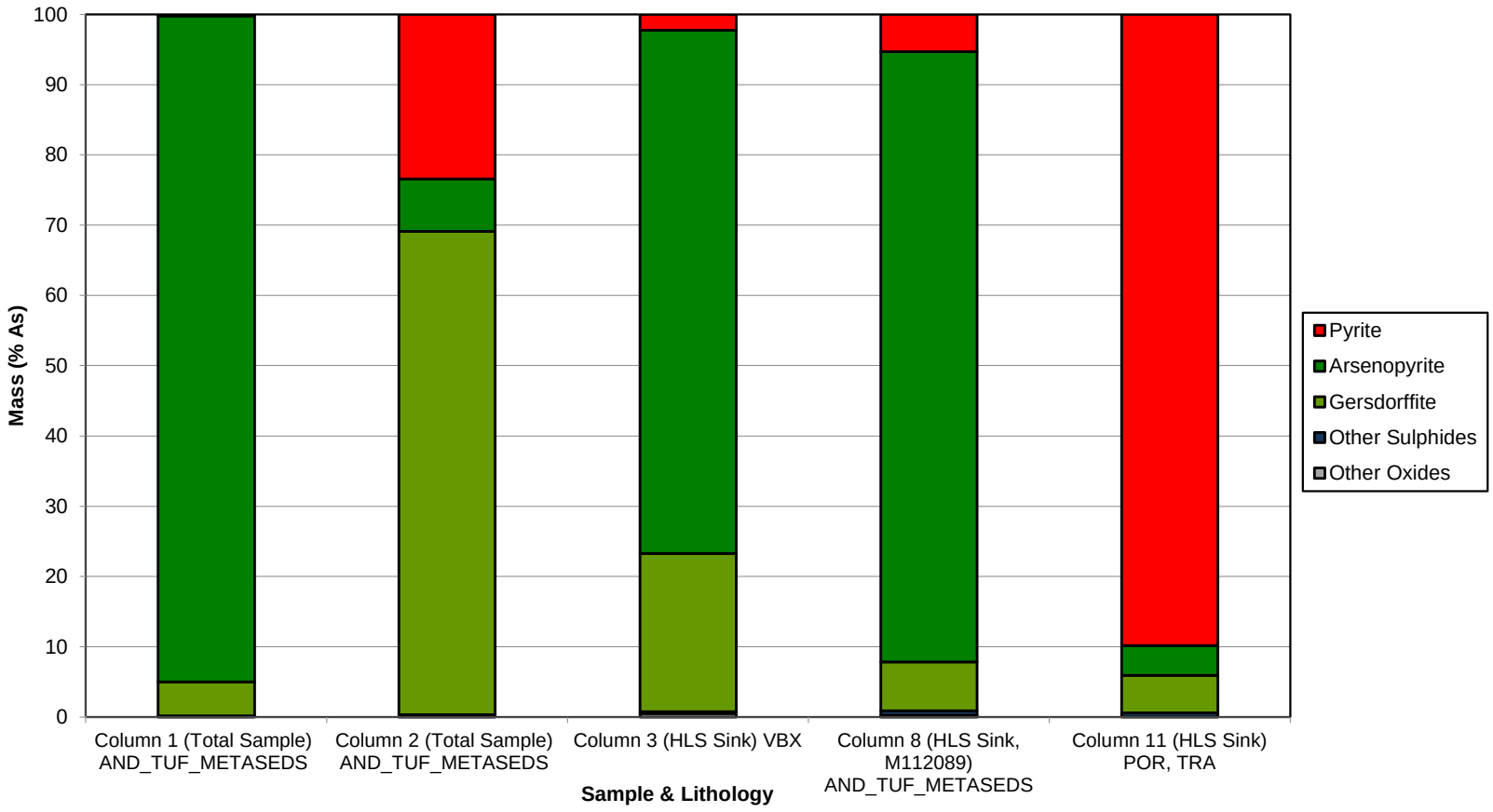
Figure Number	2		
Project Number	ONS2104		
Date	April 2025		
Drawn	MT	Reviewed By	SW



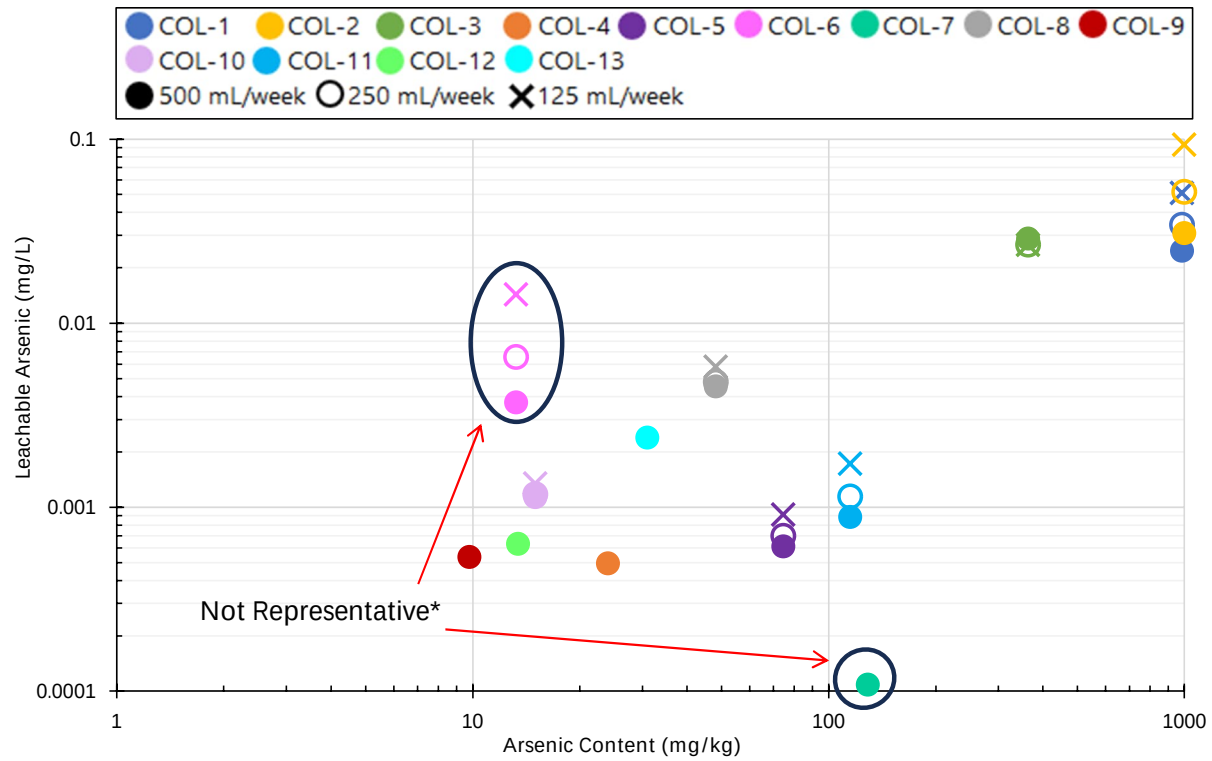
Modal Mineralogy			
Mine Rock Column Testing and Detailed Mineralogy Summary			
Springpole Gold Project			
Figure Number	3		
Project Number	ONS2104		
Date	April 2025		
Drawn	MT	Reviewed By	SW

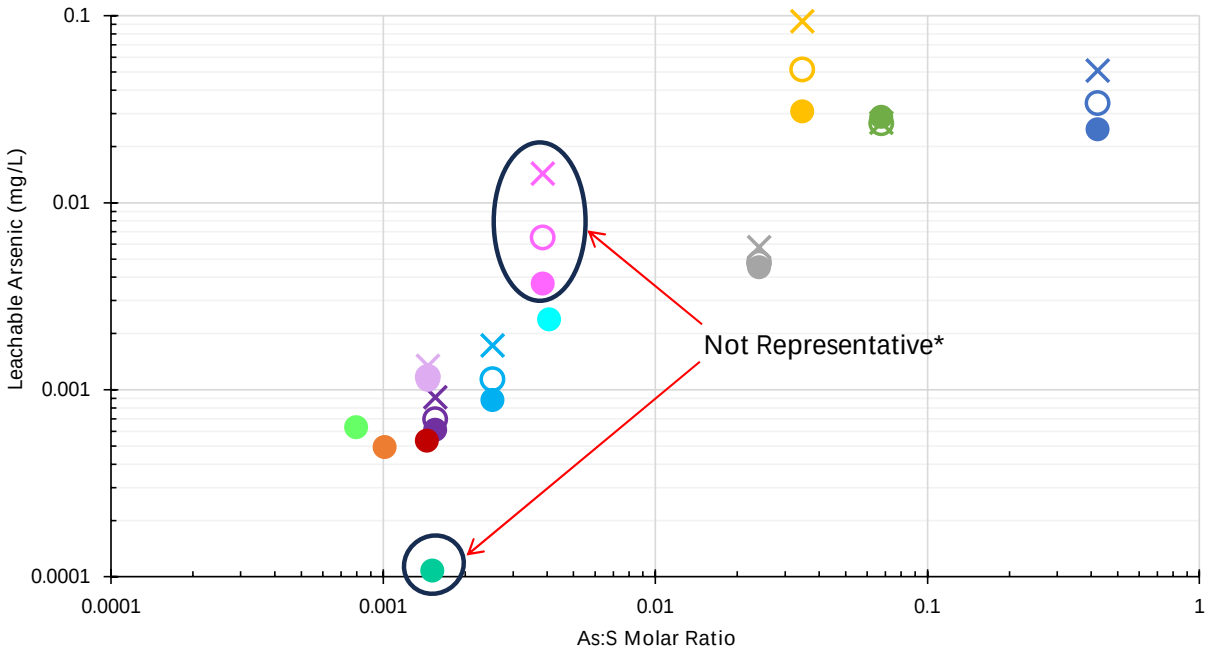


Sulphide Modal Proportions	
Mine Rock Column Testing and Detailed Mineralogy Summary	
Springpole Gold Project	
Figure Number	4
Project Number	ONS2104
Date	April 2025
Drawn: MT	Reviewed By: SW



Elemental Deportment (Mass % As)	
Mine Rock Column Testing and Detailed Mineralogy Summary	
Springpole Gold Project	
Figure Number	5
Project Number	ONS2104
Date	April 2025
Drawn: MT	Reviewed By: SW





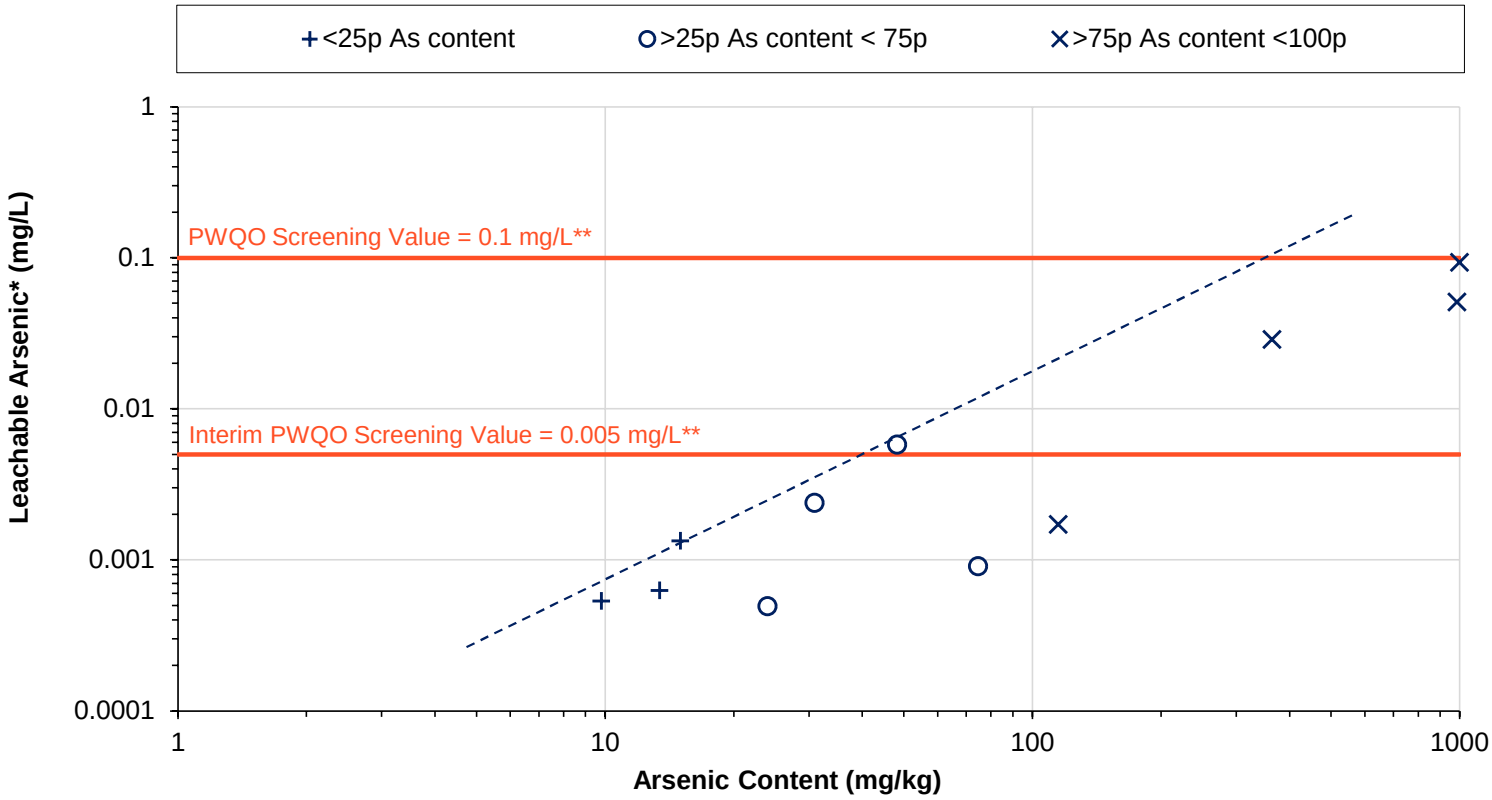
Notes
* Circled COL-6 and COL-7 are not representative of conditions expected in mine rock (see text).

Leachable As vs. As Content & As:S Molar Ratio

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		6	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes:

* Maximum steady leaching rate.

** Screening values are for qualitative assessment only and hold no regulatory significance.

Percentile information is shown relative to ML/ARD database (694 samples).

Leachable Arsenic Results for Selected Trickle Leach Column Tests

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		7	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW

Appendix A

Column Sample Descriptions

Table A1 - Column Program Summary

Column ID	Sample ID	Lithology	Zone	Drill Hole	Age of Core	Weight	As:S Molar Ratio	AP	NP	Carb NP	Carb NPR	NPR	Column Description	Weeks of Data	Status
						kg		kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO_3$/t	Carb NP/AP	NP/AP			
COL-1	M112105	AND_TUF_METASEDS	EAST-EXT	SM21-002	0	3.5	0.49	2.5	114	93	37	46	High arsenic, low sulphur	35	Terminated
	M112103					3.5	0.34	2.2	113	87	40	52			
	Mixed Sample					7	0.42	2.3	114	90	38	48			
COL-2	M112065	AND_TUF_METASEDS	EAST-EXT	SM21-001	0	3.5	0.051	24	398	382	16	17	High arsenic, typical sulphur	45	Terminated
	M112074					3.5	0.027	52	368	343	6.6	7.1			
	Mixed Sample					7	0.035	38	383	362	9.6	10			
COL-3	W-058	VBX	Camp	SP12-132	9	7	0.068	6.3	82	76	12	13	High arsenic, low sulphur	35	Terminated
COL-4	W-105	TRA	PORT	SP12-123	9	3.5	0.00035	42	10	1.7	0.04	0.24	Low arsenic, typical sulphur	10	Terminated
	W-133	AND_TUF_METASEDS		SP11-107	10	3.5	0.0024	19	218	211	11	11	Typical arsenic, typical sulphur		
	Mixed Sample	TRA, AND_TUF_METASEDS		SP12-123, SP11-107	9-10	7	0.001	31	114	106	3.5	3.7	Typical arsenic, typical sulphur		
COL-5	W-070	AND_TUF_METASEDS	PORT	SP12-123	9	7	0.002	64	127	88	1.4	2.0	Typical arsenic, typical sulphur	35	Terminated
COL-6	W-027	AND_TUF_METASEDS	PORT	SM20-001	1	3	0.0067	5.0	19	1.7	0.33	3.7	Typical arsenic, low sulphur	45	Terminated
	W-264			SGH20-009		4	0.001	3.1	137	119	38	44	Low arsenic, low sulphur		
	Mixed Sample			SM20-001, SGH20-009		7	0.0039	3.9	86	69	18	22	Low arsenic, low sulphur		
COL-7	W-278	TRA	PORT	SGH20-006	1	3.2	0.0014	101	153	109	1.1	1.5	Elevated arsenic, elevated sulphur	10	Terminated
	W-303	AND_TUF_METASEDS		SGH20-004		3.8	0.0016	124	167	132	1.1	1.3			
	Mixed Sample	TRA, AND_TUF_METASEDS		SGH20-006, SGH20-004		7	0.002	114	161	121	1.1	1.4			
COL-8	M112089	AND_TUF_METASEDS	EAST-EXT	SM21-002	0	4.1	0.03	2.2	100	70	32	46	Typical arsenic, low sulphur	35	Terminated
	W-041	TRA	PORT	SM20-002	1	2.9	0.015	2.2	170	165	75	78			
	Mixed Sample	AND_TUF_METASEDS, TRA	EAST-EXT, PORT	SM21-002, SM20-002	0-1	7	0.024	2.2	129	109	50	59			
COL-9	W-117	AND_TUF_METASEDS	PORT	SP12-120	9	7	0.001	8.8	132	110	13	15	Low arsenic, low sulphur	10	Terminated
COL-10	W-204	AND_TUF_METASEDS	PORT	SG13-203	8	7	0.001	13	175	188	15	14	Low arsenic, low sulphur	35	Terminated
COL-11	W-221	POR	PORT	SG13-205	8	3.5	0.00086	37	76	56	1.5	2.0	Typical arsenic, typical sulphur	35	Terminated
	W-198	TRA		SG13-204		3.5	0.0033	84	197	181	2.2	2.3	High arsenic, typical sulphur		
	Mixed Sample	POR, TRA		SG13-205, SG13-204		7	0.0025	60	136	118	2.0	2.3	Elevated arsenic, typical sulphur		
COL-12	W-290	TRA	PORT	SGH20-006	1	3.5	0.0012	17	201	223	13	12	Low arsenic, typical sulphur	10	Terminated
	W-302					3.5	0.00054	28	181	207	7.5	6.6			
	Mixed Sample					7	0.001	22	191	215	9.7	8.6			
COL-13	M112128	TRA	EAST-EXT	SM21-002	N/A	3.5	0.0078	5.0	162	157	31	32	Typical arsenic, low sulphur	10	Terminated
	M112149					3.5	0.0028	15	96	77	5.2	6.6	Typical arsenic, typical sulphur		
	Mixed Sample					7	0.004	9.8	129	117	12	13	Typical arsenic, low sulphur		

Notes:
Bold Column IDs indicate material tested for detailed mineralogy (only subsample M112089 from COL-8 was available for detailed mineralogy).
Percentile information is shown relative to ML/ARD database (694 samples).

Table A1 - Column Program Summary

Column ID	Sample ID	Lithology	As Content	As Percentile	Cd Content	Cd Percentile	Co Content	Co Percentile	Cu Content	Cu Percentile	Fe Content	Fe Percentile	Hg Content	Hg Percentile	Mo Content	Mo Percentile	Ni Content	Ni Percentile
			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
COL-1	M112105	AND_TUF_METASEDS	1254	100%	0.04	5%	23	34%	47	39%	62800	70%	0.02	26%	1.2	15%	28	40%
	M112103		716	99%	0.09	28%	20	27%	41	32%	53300	47%	0.021	28%	0.71	7%	30	42%
	Mixed Sample		985	100%	0.065	19%	22	31%	44	35%	58050	60%	0.021	28%	0.97	12%	29	41%
COL-2	M112065	AND_TUF_METASEDS	958	100%	0.17	52%	78	99%	38	27%	87900	97%	0.045	48%	2.1	26%	404	100%
	M112074		1041	100%	0.06	13%	82	100%	31	20%	85000	95%	0.023	31%	3.5	34%	475	100%
	Mixed Sample		999	100%	0.12	40%	80	100%	34	23%	86450	96%	0.034	41%	2.8	31%	439	100%
COL-3	W-058	VBX	364	97%	0.09	28%	52	97%	68	59%	96400	98%	0.01	10%	2.5	28%	124	97%
COL-4	W-105	TRA	11	17%	0.14	46%	36	81%	67	58%	70100	83%	0.01	10%	6.9	51%	93	90%
	W-133	AND_TUF_METASEDS	37	51%	0.07	19%	33	68%	58	48%	58600	61%	0.024	32%	3.9	37%	46	63%
	Mixed Sample	TRA, AND_TUF_METASEDS	24	37%	0.11	37%	35	76%	62	53%	64350	74%	0.017	22%	5.4	44%	70	80%
COL-5	W-070	AND_TUF_METASEDS	75	76%	0.13	43%	31	62%	43	34%	49000	37%	0.019	25%	17	68%	40	56%
COL-6	W-027	AND_TUF_METASEDS	27	40%	0.02	0%	26	42%	12	3%	57500	58%	0.021	28%	8.4	54%	43	60%
	W-264		3.1	2%	0.04	5%	26	40%	26	17%	49900	39%	0.013	15%	1.5	17%	41	58%
	Mixed Sample		13	20%	0.031	5%	26	41%	20	12%	53157	47%	0.016	22%	4.4	40%	42	58%
COL-7	W-278	TRA	108	83%	0.17	52%	24	37%	89	76%	46300	34%	0.071	61%	17	67%	32	45%
	W-303	AND_TUF_METASEDS	147	88%	0.07	19%	39	85%	49	41%	78400	92%	0.015	18%	17	67%	71	80%
	Mixed Sample	TRA, AND_TUF_METASEDS	129	86%	0.12	40%	32	66%	67	59%	63726	72%	0.041	46%	17	67%	53	70%
COL-8	M112089	AND_TUF_METASEDS	63	70%	0.08	23%	14	18%	20	11%	43500	30%	0.028	36%	3.5	35%	19	22%
	W-041	TRA	28	42%	0.1	32%	29	53%	68	59%	56200	56%	0.028	36%	2.2	27%	28	39%
	Mixed Sample	AND_TUF_METASEDS, TRA	48	59%	0.088	28%	20	27%	39	29%	48761	37%	0.028	36%	3.0	32%	23	29%
COL-9	W-117	AND_TUF_METASEDS	9.8	15%	0.18	54%	28	50%	67	58%	59000	61%	0.015	18%	3.4	34%	48	65%
COL-10	W-204	AND_TUF_METASEDS	15	24%	0.11	37%	31	62%	310	98%	70700	84%	0.047	49%	2.6	30%	44	61%
COL-11	W-221	POR	24	38%	3.3	96%	4.1	2%	20	12%	15500	9%	0.44	94%	71	88%	5.0	2%
	W-198	TRA	206	93%	2.6	94%	26	41%	74	67%	46500	35%	1.9	99%	9.2	56%	39	55%
	Mixed Sample	POR, TRA	115	85%	3.0	95%	15	20%	47	39%	31000	21%	1.2	98%	40	83%	22	26%
COL-12	W-290	TRA	16	25%	0.42	78%	27	44%	88	75%	33900	24%	0.033	40%	2.5	29%	26	34%
	W-302		11	17%	0.35	74%	33	69%	68	59%	42900	30%	0.042	46%	11	59%	146	98%
	Mixed Sample		13	21%	0.39	76%	30	57%	78	69%	38400	27%	0.038	44%	6.8	50%	86	88%
COL-13	M112128	TRA	31	45%	0.11	37%	3.8	1%	15	5%	11000	4%	0.1	70%	1.5	18%	5.3	3%
	M112149		31	46%	0.12	40%	5.1	6%	20	12%	14800	8%	0.065	58%	1.6	20%	8.8	8%
	Mixed Sample		31	46%	0.12	40%	4.5	4%	17	9%	12900	6%	0.085	66%	1.6	19%	7.1	5%

Notes:
Bold Column IDs indicate material tested for detailed mineralogy (only subsample M112089 from COL-8 was available for detailed mineralogy).
Percentile information is shown relative to ML/ARD database (694 samples).

Table A1 - Column Program Summary

Column ID	Sample ID	Lithology	P Content	P Percentile	Pb Content	Pb Percentile	Sulphur Content	S Percentile	Sb Content	Sb Percentile	Se Content	Se Percentile	Tl Content	Tl Percentile	W Content	W Percentile	Zn Content	Zn Percentile
			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
COL-1	M112105	AND_TUF_METASEDS	1416	94%	4.8	21%	1600	12%	5.0	91%	0.2	0.00%	3.5	88%	1.1	66%	106	54%
	M112103		1555	97%	4.8	21%	1400	11%	5.3	92%	0.2	0.00%	3.0	81%	1.3	73%	100	50%
	Mixed Sample		1486	96%	4.8	21%	1500	11%	5.1	91%	0.2	0.00%	3.2	85%	1.2	70%	103	52%
COL-2	M112065	AND_TUF_METASEDS	371	12%	8.2	38%	9600	42%	6.5	95%	1.1	71%	4.7	95%	0.66	46%	123	65%
	M112074		385	13%	5.9	29%	17700	60%	3.6	85%	0.3	41%	1.2	44%	0.1	3%	78	33%
	Mixed Sample		378	12%	7.1	35%	13650	53%	5.1	91%	0.7	64%	3.0	81%	0.38	25%	101	51%
COL-3	W-058	VBX	888	60%	3.8	13%	2500	15%	1.8	62%	0.2	0.00%	2.8	80%	30	100%	124	65%
COL-4	W-105	TRA	1048	73%	7.8	38%	13200	53%	0.77	30%	0.4	47%	1.2	42%	0.59	42%	99	49%
	W-133	AND_TUF_METASEDS	386	13%	2.5	5%	6900	36%	1.6	57%	0.2	0.00%	0.2	11%	9.4	95%	132	69%
	Mixed Sample	TRA, AND_TUF_METASEDS	717	41%	5.2	23%	10050	44%	1.2	45%	0.3	41%	0.7	30%	5.0	91%	116	60%
COL-5	W-070	AND_TUF_METASEDS	739	43%	22	59%	20700	66%	1.7	61%	1.3	75%	1.7	54%	0.46	31%	114	58%
COL-6	W-027	AND_TUF_METASEDS	1117	77%	4.1	16%	2200	14%	0.27	3%	0.3	41%	11	100%	0.22	11%	87	41%
	W-264		741	43%	3.4	10%	1800	13%	0.33	6%	0.2	0.00%	0.11	5%	0.13	4%	41	6%
	Mixed Sample		902	62%	3.7	12%	1971	13%	0.3	6%	0.24	41%	4.9	96%	0.17	7%	61	17%
COL-7	W-278	TRA	814	51%	32	67%	33800	83%	2.3	70%	2.0	83%	1.5	50%	0.77	52%	99	49%
	W-303	AND_TUF_METASEDS	801	49%	3.0	7%	39400	87%	1.0	39%	0.7	61%	0.12	5%	0.41	27%	53	13%
	Mixed Sample	TRA, AND_TUF_METASEDS	807	50%	16	53%	36840	85%	1.6	57%	1.3	75%	0.74	31%	0.57	41%	74	30%
COL-8	M112089	AND_TUF_METASEDS	946	66%	4.6	19%	1500	11%	5.8	93%	0.2	0.00%	2.5	73%	9.5	95%	64	21%
	W-041	TRA	1264	87%	3.6	12%	1100	9%	1.0	40%	0.2	0.00%	3.3	85%	0.12	4%	98	48%
	Mixed Sample	AND_TUF_METASEDS, TRA	1078	76%	4.2	17%	1334	11%	3.8	87%	0.2	N/A	2.8	79%	5.6	92%	78	34%
COL-9	W-117	AND_TUF_METASEDS	910	63%	6.0	29%	3200	19%	0.8	31%	0.2	0.00%	0.15	7%	1.0	64%	93	45%
COL-10	W-204	AND_TUF_METASEDS	1429	95%	4.0	15%	5100	30%	1.0	40%	0.2	0.00%	1.1	40%	1.2	70%	73	29%
COL-11	W-221	POR	298	7%	307	96%	12400	52%	8.8	97%	0.9	67%	1.2	42%	0.64	46%	660	96%
	W-198	TRA	722	41%	209	94%	26300	75%	12	98%	2.0	83%	0.71	30%	0.62	44%	845	97%
	Mixed Sample	POR, TRA	510	21%	258	95%	19350	64%	10	98%	1.5	77%	0.96	35%	0.63	44%	753	97%
COL-12	W-290	TRA	974	68%	8.0	38%	6300	35%	1.2	46%	0.3	41%	0.14	6%	2.8	85%	83	38%
	W-302		531	22%	14	50%	10000	43%	1.5	54%	1.2	73%	3.9	90%	0.41	27%	142	73%
	Mixed Sample		753	45%	11	46%	8150	39%	1.4	50%	0.75	64%	2.0	63%	1.6	77%	113	58%
COL-13	M112128	TRA	1225	85%	18	56%	2300	14%	4.4	89%	0.2	0.00%	1.1	39%	0.38	25%	42	7%
	M112149		1348	91%	22	60%	5600	32%	5.6	93%	0.2	0.00%	0.79	32%	1.3	74%	46	10%
	Mixed Sample		1287	88%	20	57%	3950	24%	5.0	91%	0.2	0.00%	0.94	35%	0.86	57%	44	8%

Notes:
Bold Column IDs indicate material tested for detailed mineralogy (only subsample M112089 from COL-8 was available for detailed mineralogy).
Percentile information is shown relative to ML/ARD database (694 samples).

Appendix B

Supplemental Tabulated Results

Table B1 - Column Concentration
Summary for Parameters of Potential Interest

Parameters	Column ID			COL-1					COL-2					COL-3					COL-4				
	Sample ID			M112105, M112103					M112065, M112074					W-058					W-105, W-133				
	PWQO Screening Value[3]	Interim PWQO Screening Value[4]	Lithology	AND_TUFF_METASEDS					AND_TUFF_METASEDS					VBX					TRA, AND_TUFF_METASEDS				
			Flushing Rate	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile
			Units	*Median Concentrations [1]*																			
pH	6.5-8.5	-	pH	7.6	7.4	7.8	-	-	7.8	7.7	7.4	-	-	7.8	7.7	7.9	-	-	7.4	-	-	-	-
Sulphate[2]	-	-	mg/L	2.0	3.9	8.0	1000	8%	2.5	4.0	5.8	12350	50%	3.2	6.2	15	2300	13%	5.1	-	-	10150	44%
Antimony	-	0.02	mg/L	0.019	**0.024**	**0.033**	5.1	91%	0.014	0.018	0.018	5.1	91%	0.0019	0.0022	0.0028	1.8	62%	0.00058	-	-	1.2	45%
Arsenic	0.1	0.005	mg/L	**0.025**	**0.034**	**0.051**	985	100%	**0.031**	**0.052**	**0.093**	999	100%	**0.029**	**0.027**	**0.027**	364	97%	0.00049	-	-	24	37%
Cadmium	0.0002	0.0001	mg/L	0.000001	0.00000089	0.0000012	0.07	19%	0.000001	0.0000004	0.0000006	0.12	40%	0.000001	0.0000005	0.000001	0.09	28%	0.0000019	-	-	0.11	37%
Cobalt	-	0.0009	mg/L	0.00037	0.00055	0.00058	22	31%	0.00004	0.00005	0.000051	80	100%	0.00061	0.00058	0.00057	52	97%	0.000072	-	-	35	76%
Copper	-	0.005	mg/L	0.000047	0.000052	0.0001	44	35%	0.00004	0.000031	0.000046	34	23%	0.00004	0.00007	0.00012	68	59%	0.00019	-	-	62	53%
Lead	0.005	0.001	mg/L	0.00002	0.000005	0.000005	4.8	21%	0.00002	0.000005	0.000005	7.1	35%	0.00002	0.000005	0.0000067	3.8	13%	0.00002	-	-	5.15	23%
Molybdenum	-	0.04	mg/L	0.00045	0.00064	0.0014	0.97	12%	0.00024	0.00043	0.00082	2.8	31%	0.00041	0.00087	0.0024	2.45	28%	0.00083	-	-	5.39	44%
Selenium	0.1	-	mg/L	0.00005	0.000024	0.000029	0.2	0%	0.00021	0.0003	0.00037	0.7	64%	0.00005	0.000071	0.00014	0.2	0%	0.00005	-	-	0.3	41%

Parameters	Column ID			COL-5					COL-6					COL-7					COL-8				
	Sample ID			W-070					W-027, W-264					W-278, W-303					M112089, W-041				
	PWQO Screening Value[3]	Interim PWQO Screening Value[4]	Lithology	AND_TUFF_METASEDS					AND_TUFF_METASEDS					TRA, AND_TUFF_METASEDS					TRA, AND_TUFF_METASEDS				
			Flushing Rate	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile
			Units	*Median Concentrations [1]*																			
pH	6.5-8.5	-	pH	7.7	7.6	7.7	-	-	7.7	7.4	7.3	-	-	7.4	-	-	-	-	7.8	7.6	7.9	-	-
Sulphate[2]	-	-	mg/L	3.0	4.9	12	20600	65%	0.90	1.7	4.0	1471	10%	12	-	-	36426	84%	1.1	2.2	5.8	859	7%
Antimony	-	0.02	mg/L	0.0013	0.0017	0.0026	1.7	61%	0.00028	0.0004	0.00058	0.3	6%	0.00086	-	-	1.6	57%	0.0019	0.0025	0.0039	3.8	87%
Arsenic	0.1	0.005	mg/L	0.00061	0.0007	0.00091	75	76%	0.0037	**0.0065**	**0.014**	13	20%	0.00011	-	-	129	86%	0.0045	0.0048	**0.0058**	48	59%
Cadmium	0.0002	0.0001	mg/L	0.000001	0.00000081	0.000002	0.13	43%	0.000001	0.00000049	0.00000054	0.03	5%	0.0000016	-	-	0.12	40%	0.000001	0.0000006	0.0000012	0.09	28%
Cobalt	-	0.0009	mg/L	0.000011	0.000014	0.000024	31	62%	0.000013	0.000022	0.000033	26	41%	0.00001	-	-	32	66%	0.000062	0.000077	0.000099	20	27%
Copper	-	0.005	mg/L	0.000047	0.000073	0.00016	43	34%	0.00004	0.000041	0.000053	20	12%	0.0001	-	-	67	59%	0.00004	0.000051	0.000097	39	29%
Lead	0.005	0.001	mg/L	0.00002	0.0000052	0.000005	22	59%	0.00002	0.000005	0.000005	3.7	12%	0.00002	-	-	16.2	53%	0.00002	0.000005	0.000005	4.2	17%
Molybdenum	-	0.04	mg/L	0.0011	0.0024	0.007	17	68%	0.00028	0.00034	0.00068	4.4	40%	0.0013	-	-	17.0	67%	0.0022	0.0023	0.0053	3.0	32%
Selenium	0.1	-	mg/L	0.00016	0.00031	0.00073	1.3	75%	0.00005	0.000022	0.000044	0.24	41%	0.0002	-	-	1.3	75%	0.00005	0.000044	0.0001	0.2	N/A

Notes:

(1) Median concentrations use the last 5 weeks of data for the specified flow rate.

(2) Element content and percentile results reflect Leco total S.

(3) Bold red text and red shaded cells indicate value above the PWQO screening value.

(4) Bold red text indicates value above the interim PWQO screening value.

Screening values are for qualitative assessment only and hold no regulatory significance.

Percentile information is shown relative to ML/ARD database (694 samples).

- not applicable.

Table B1 - Column Concentration
Summary for Parameters of Potential Interest

Parameters	Column ID			COL-9					COL-10					COL-11					COL-12				
	Sample ID			W-117					W-204					W-221, W-198					W-290, W-302				
	PWQO Screening Value[3]	Interim PWQO Screening Value[4]	Lithology	AND_TUF_METASEDS					AND_TUFF_METASEDS					POR, TRA					TRA				
			Flushing Rate	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile
			Units	*Median Concentrations [1]*																			
pH	6.5-8.5	-	pH	7.5	-	-	-	-	7.7	7.5	7.8	-	-	7.6	7.4	7.7	-	-	7.7	-	-	-	-
Sulphate[2]	-	-	mg/L	1.6	-	-	2900	16%	2.5	5.5	12	4400	26%	2.4	3.9	8.3	19500	63%	3.6	-	-	7200	37%
Antimony	-	0.02	mg/L	0.00063	-	-	0.8	31%	0.00027	0.00035	0.0006	1.0	40%	0.0059	0.0088	0.015	10	98%	0.0022	-	-	1.4	50%
Arsenic	0.1	0.005	mg/L	0.00054	-	-	10	15%	0.0011	0.0012	0.0013	15	24%	0.00088	0.0011	0.0017	115	85%	0.00063	-	-	13	21%
Cadmium	0.0002	0.0001	mg/L	0.0000015	-	-	0.18	54%	0.000001	0.0000008	0.0000026	0.11	37%	0.0000049	0.0000068	0.00001	3.0	95%	0.000001	-	-	0.39	76%
Cobalt	-	0.0009	mg/L	0.00001	-	-	28	50%	0.000031	0.000021	0.000024	31	62%	0.00001	0.0000093	0.000012	15	20%	0.000015	-	-	30	57%
Copper	-	0.005	mg/L	0.000075	-	-	67	58%	0.00016	0.00021	0.00037	310	98%	0.000042	0.000072	0.00012	47	39%	0.00006	-	-	78	69%
Lead	0.005	0.001	mg/L	0.00002	-	-	6.0	29%	0.00002	0.000005	0.000005	4.0	15%	0.00016	0.00019	0.00012	258	95%	0.00002	-	-	11	46%
Molybdenum	-	0.04	mg/L	0.00091	-	-	3.44	34%	0.0029	0.0065	0.015	2.59	30%	0.0034	0.0056	0.01	40	83%	0.0015	-	-	6.8	50%
Selenium	0.1	-	mg/L	0.000085	-	-	0.2	0%	0.00005	0.000012	0.000043	0.2	0%	0.00071	0.0013	0.0027	1.5	77%	0.00039	-	-	0.75	64%

Parameters	Column ID			COL-13				
	Sample ID			M112128, M112149				
	PWQO Screening Value[3]	Interim PWQO Screening Value[4]	Lithology	TRA				
			Flushing Rate	500 mL/wk	250 mL/wk	125 mL/wk	Element Content (mg/kg)	Percentile
			Units	*Median Concentrations [1]*				
pH	6.5-8.5	-	pH	7.5	-	-	-	-
Sulphate[2]	-	-	mg/L	1.9	-	-	3250	19%
Antimony	-	0.02	mg/L	0.01	-	-	5.0	91%
Arsenic	0.1	0.005	mg/L	0.0024	-	-	31	46%
Cadmium	0.0002	0.0001	mg/L	0.000001	-	-	0.12	40%
Cobalt	-	0.0009	mg/L	0.00001	-	-	4.5	4%
Copper	-	0.005	mg/L	0.000049	-	-	17	9%
Lead	0.005	0.001	mg/L	0.00002	-	-	20	57%
Molybdenum	-	0.04	mg/L	0.0004	-	-	1.6	19%
Selenium	0.1	-	mg/L	0.00005	-	-	0.2	0%

Notes:

(1) Median concentrations use the last 5 weeks of data for the specified flow rate.

(2) Element content and percentile results reflect Leco total S.

(3) Bold red text and red shaded cells indicate value above the PWQO screening value.

(4) Bold red text indicates value above the interim PWQO screening value.

Screening values are for qualitative assessment only and hold no regulatory significance.

Percentile information is shown relative to ML/ARD database (694 samples).

- not applicable.

Table B2 - Closedown ABA Results

COL-ID	Sample ID	Status	Lithology	Paste pH	Fizz Rating	Total S[1]	Sulphate S[2]	Sulphide S[3]	Total Carbon[4]	TIC[5]	AP[6]	MPA[7]	NP[8]	Carb NP[9]	NPR[10]	Carb NPR[11]
Units				pH units	-	%	%	%	%	%	kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO_3$/t	NP/AP	Carb NP/AP
COL-1	M112105, M112103	Pre-test	AND_TUF_METASEDS	9.3	Moderate	0.10	0.025	0.075	1.5	1.1	2.3	3.1	114	90	48	38
		Post-test (Upper)		9.3	Moderate	0.12	0.030	0.090	1.8	1.2	2.8	3.8	114	101	40	36
		Post-test (Lower)		9.3	Moderate	0.14	0.030	0.11	1.7	1.4	3.4	4.4	120	116	35	34
COL-2	M112065, M112074	Pre-test	AND_TUF_METASEDS	9.1	Moderate	1.2	0.030	1.2	4.5	4.3	38	39	383	362	10	9.6
		Post-test (Upper)		8.6	Moderate	1.5	0.030	1.5	4.2	4.1	46	47	347	341	7.6	7.5
		Post-test (Lower)		8.8	Moderate	1.2	0.020	1.2	4.3	4.3	36	37	344	355	9.5	9.8
COL-3	W-058	Pre-test	VBX	9.4	Moderate	0.23	0.030	0.20	1.1	0.91	6.3	7.2	82	76	13	12
		Post-test (Upper)		8.9	Strong	0.26	0.040	0.22	1.2	0.87	6.9	8.1	64	73	9.3	11
		Post-test (Lower)		8.8	Strong	0.30	0.040	0.26	1.3	1.2	8.1	9.4	90	97	11	12
COL-4	W-105, W-133	Pre-test	TRA, AND_TUF_METASEDS	8.5	None/Strong	1.0	0.030	0.99	1.5	1.3	31	32	114	106	3.7	3.5
		Post-test (Upper)		First set terminated (no request for closedown data)												
		Post-test (Lower)														
COL-5	W-070	Pre-test	AND_TUF_METASEDS	9.2	Strong	2.1	0.010	2.1	1.4	1.1	64	64	82	88	1.3	1.4
		Post-test (Upper)		9.1	Strong	1.9	0.030	1.9	1.4	1.3	58	59	121	104	2.1	1.8
		Post-test (Lower)		9.1	Strong	2.1	0.030	2.1	1.4	1.2	65	66	123	100	1.9	1.5
COL-6	W-027, W-264	Pre-test	AND_TUF_METASEDS	9.1	None/Strong	0.15	0.02	0.13	0.88	0.83	3.9	4.6	86	69	22	18
		Post-test (Upper)		8.8	Strong	0.17	0.020	0.15	0.89	0.68	4.7	5.3	55	57	12	12
		Post-test (Lower)		8.8	Strong	0.15	0.010	0.14	0.66	0.41	4.4	4.7	43	34	9.8	7.8
COL-7	W-278, W-303	Pre-test	TRA, AND_TUF_METASEDS	8.5	Moderate/Strong	3.6	0.010	3.6	2.0	1.5	114	114	161	121	1.4	1.1
		Post-test (Upper)		First set terminated (no request for closedown data)												
		Post-test (Lower)														
COL-8	M112089, W-041	Pre-test	AND_TUF_METASEDS, TRA	9.3	Moderate	0.086	0.016	0.070	1.7	1.3	2.2	2.7	129	109	59	50
		Post-test (Upper)		9.2	Strong	0.12	0.030	0.090	1.8	1.6	2.8	3.8	130	137	46	49
		Post-test (Lower)		9.1	Strong	0.11	0.030	0.080	1.8	1.7	2.5	3.4	129	139	52	56
COL-9	W-117	Pre-test	AND_TUF_METASEDS	9.0	Strong	0.29	0.010	0.28	1.4	1.3	8.8	9.1	82	110	9.4	13
		Post-test (Upper)		First set terminated (no request for closedown data)												
		Post-test (Lower)														
COL-10	W-204	Pre-test	AND_TUF_METASEDS	9.1	Moderate	0.44	0.030	0.41	2.5	2.3	13	14	82	188	6.4	15
		Post-test (Upper)		9.0	Strong	0.52	0.030	0.49	2.7	1.9	15	16	190	162	12	11
		Post-test (Lower)		9.3	Strong	0.43	0.040	0.39	2.6	2.1	12	13	195	172	16	14
COL-11	W-221, W-198	Pre-test	POR, TRA	8.9	Strong	2.0	0.015	1.9	1.8	1.4	60	61	136	118	2.3	2.0
		Post-test (Upper)		8.9	Strong	2.1	0.020	2.1	1.9	1.5	66	66	144	122	2.2	1.9
		Post-test (Lower)		9.0	Strong	1.9	0.020	1.9	1.7	1.5	59	60	127	122	2.2	2.1
COL-12	W-290, W-302	Pre-test	TRA	9.3	Moderate/Strong	0.72	0.010	0.71	2.8	2.6	22	23	114	215	5.2	9.7
		Post-test (Upper)		First set terminated (no request for closedown data)												
		Post-test (Lower)														
COL-13	M112128, M112149	Pre-test	TRA	8.9	Moderate/Strong	0.33	0.010	0.32	1.6	1.4	10	10	129	117	20	18
		Post-test (Upper)		First set teriminated (no request for closedown data)												
		Post-test (Lower)														

Notes:

(1) Total sulphur determined by Leco analyzer

(2) Sulphate sulphur determined by HCl leach

(3) Sulphide sulphur determined by difference (Total sulphur - Sulphate sulphur)

(4) Total carbon determined by Leco analyzer

(5) Total inorganic carbon determined by HCl leach and CO_2 coulometry

*(6) Acid potential calculated as 31.25*Sulphide S*

*(7) Maximum potenital acidity calculated as 31.25*Total S*

(8) Standard Sobek neutralization potential

*(9) Carbonate neutralization potential, calculated as TIC*10*100/12.01*

(10) Neutralization potential ratio calculated as NP/AP

(11) Carbonate neutralization potential ratio calculated as Carb NP/AP

Table B3 - Closedown Element Content Results (Aqua Regia Digestion)

COL-ID	Sample ID	Status	Lithology	Arsenic (As)	Antimony (Sb)	Cadmium (Cd)	Cobalt (Co)	Copper (Cu)
Units				ppm	ppm	ppm	ppm	ppm
COL-1	M112105, M112103	Pre-test	AND_TUF_METASEDS	985	5.1	0.065	22	44
		Post-test (Upper)		882	2.3	0.080	19	40
		Post-test (Lower)		1066	2.3	0.080	21	45
COL-2	M112065, M112074	Pre-test	AND_TUF_METASEDS	999	5.1	0.12	80	34
		Post-test (Upper)		900	2.7	0.11	87	40
		Post-test (Lower)		855	2.5	0.10	80	37
COL-3	W-058	Pre-test	VBX	364	1.8	0.090	52	68
		Post-test (Upper)		436	1.1	0.090	38	57
		Post-test (Lower)		528	1.1	0.090	41	69
COL-4	W-105, W-133	Pre-test	TRA, AND_TUF_METASEDS	24	1.2	0.11	35	62
		Post-test (Upper)		First set terminated (no request for closedown data)				
		Post-test (Lower)						
COL-5	W-070	Pre-test	AND_TUF_METASEDS	75	1.7	0.13	31	43
		Post-test (Upper)		69	0.86	0.14	25	46
		Post-test (Lower)		73	0.89	0.15	27	41
COL-6	W-027, W-264	Pre-test	AND_TUF_METASEDS	13	0.30	0.031	26	20
		Post-test (Upper)		17	0.40	0.030	27	23
		Post-test (Lower)		16	0.37	0.030	27	19
COL-7	W-278, W-303	Pre-test	TRA, AND_TUF_METASEDS	129	1.6	0.12	32	67
		Post-test (Upper)		First set terminated (no request for closedown data)				
		Post-test (Lower)						
COL-8	M112089, W-041	Pre-test	AND_TUF_METASEDS, TRA	48	3.8	0.088	20	39
		Post-test (Upper)		60	1.9	0.070	18	38
		Post-test (Lower)		68	1.9	0.090	19	38
COL-9	W-117	Pre-test	AND_TUF_METASEDS	9.8	0.8	0.18	28	67
		Post-test (Upper)		First set terminated (no request for closedown data)				
		Post-test (Lower)						
COL-10	W-204	Pre-test	AND_TUF_METASEDS	15	1.0	0.11	31	310
		Post-test (Upper)		18	0.66	0.12	28	212
		Post-test (Lower)		16	0.53	0.13	26	217
COL-11	W-221, W-198	Pre-test	POR, TRA	115	10	3.0	15	47
		Post-test (Upper)		126	8.9	2.5	15	50
		Post-test (Lower)		112	9.6	2.6	13	45
COL-12	W-290, W-302	Pre-test	TRA	13	1.4	0.39	30	78
		Post-test (Upper)		First set terminated (no request for closedown data)				
		Post-test (Lower)						
COL-13	M112128, M112149	Pre-test	TRA	31	5.0	0.12	4.5	17
		Post-test (Upper)		First set terminated (no request for closedown data)				
		Post-test (Lower)						

Table B3 - Closedown Element Content Results (Aqua Regia Digestion)

COL-ID	Sample ID	Status	Lead (Pb)	Molybdenum (Mo)	Selenium (Se)
		Units	ppm	ppm	ppm
COL-1	M112105, M112103	Pre-test	4.8	0.97	0.20
		Post-test (Upper)	5.2	0.84	<0.20
		Post-test (Lower)	5.1	0.87	<0.20
COL-2	M112065, M112074	Pre-test	7.1	2.8	0.70
		Post-test (Upper)	7.1	4.9	0.50
		Post-test (Lower)	7.5	2.4	0.70
COL-3	W-058	Pre-test	3.8	2.5	0.20
		Post-test (Upper)	3.2	3.0	<0.20
		Post-test (Lower)	3.5	3.2	<0.20
COL-4	W-105, W-133	Pre-test	5.2	5.4	0.30
		Post-test (Upper)	First set terminated (no request for closedown data)		
		Post-test (Lower)			
COL-5	W-070	Pre-test	22	17	1.3
		Post-test (Upper)	23	14	1.1
		Post-test (Lower)	29	15	1.3
COL-6	W-027, W-264	Pre-test	3.7	4.4	0.24
		Post-test (Upper)	3.5	3.5	<0.20
		Post-test (Lower)	3.1	5.0	<0.20
COL-7	W-278, W-303	Pre-test	16	17	1.3
		Post-test (Upper)	First set terminated (no request for closedown data)		
		Post-test (Lower)			
COL-8	M112089, W-041	Pre-test	4.2	3.0	0.20
		Post-test (Upper)	3.7	2.2	<0.20
		Post-test (Lower)	3.9	2.6	<0.20
COL-9	W-117	Pre-test	6.0	3.4	0.20
		Post-test (Upper)	First set terminated (no request for closedown data)		
		Post-test (Lower)			
COL-10	W-204	Pre-test	4.0	2.6	0.20
		Post-test (Upper)	4.0	3.6	<0.20
		Post-test (Lower)	3.8	3.5	<0.20
COL-11	W-221, W-198	Pre-test	258	40	1.5
		Post-test (Upper)	195	38	1.3
		Post-test (Lower)	232	53	1.2
COL-12	W-290, W-302	Pre-test	11	6.8	0.75
		Post-test (Upper)	First set terminated (no request for closedown data)		
		Post-test (Lower)			
COL-13	M112128, M112149	Pre-test	20	1.6	0.20
		Post-test (Upper)	First set terminated (no request for closedown data)		
		Post-test (Lower)			

Table B4 - Closedown Bottle Roll Extraction Results

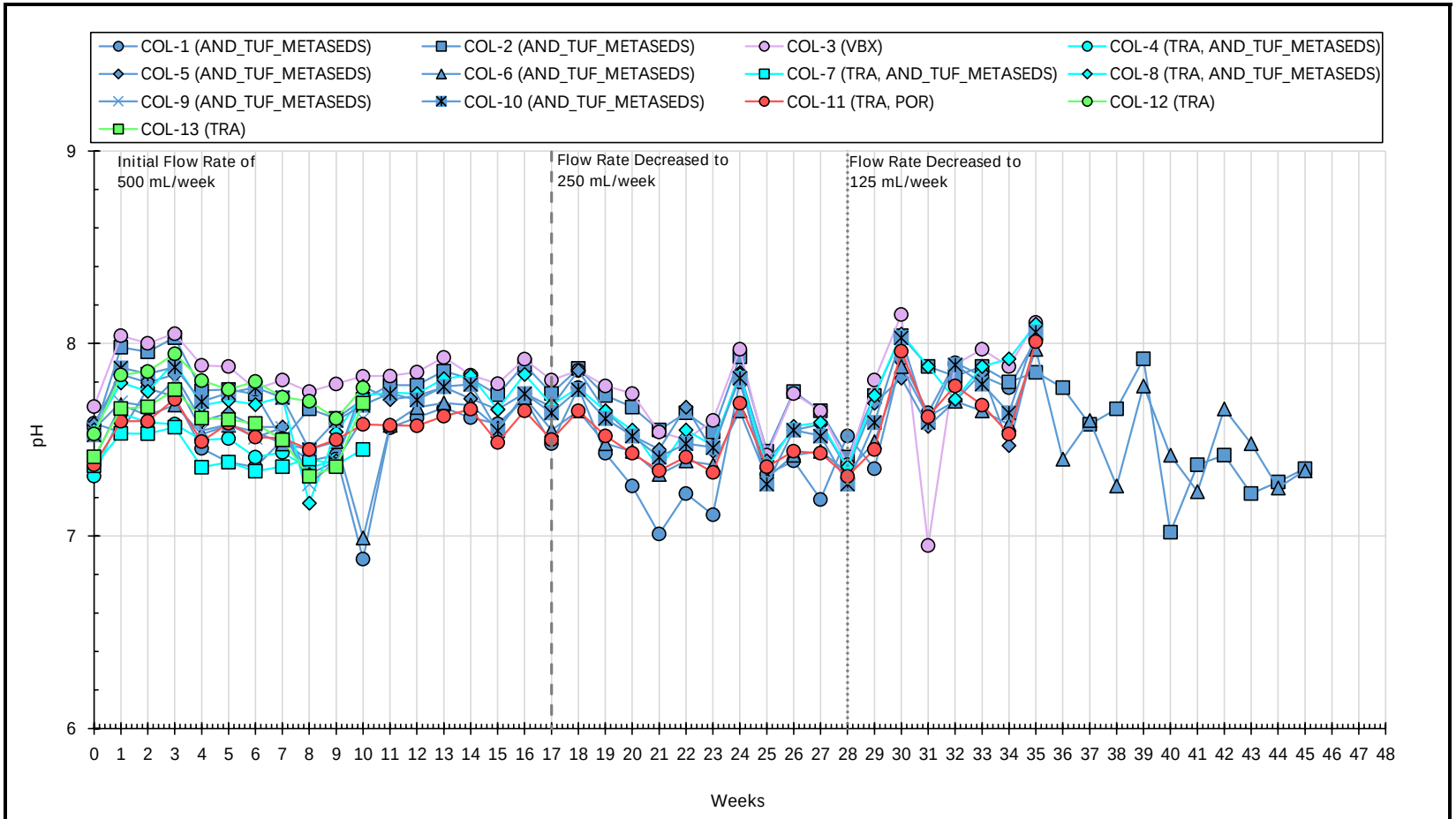
COL-ID	Sample ID	Status	Lithology	Concentrations							
				Arsenic Dissolved	Antimony Dissolved	Cadmium Dissolved	Cobalt Dissolved	Copper Dissolved	Lead Dissolved	Molybdenum Dissolved	Selenium Dissolved
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COL-1	M112105, M112103	Last week of testing	AND_TUF_METASEDS	0.54	0.33	0.000015	0.0058	0.0010	0.000085	0.015	0.00042
		Post-test (Upper)		0.074	0.010	0.0000034	0.00047	0.00048	<0.000050	0.00038	<0.00010
		Post-test (Lower)		0.12	0.017	0.0000060	0.0012	0.00094	<0.000050	0.00071	<0.00010
COL-2	M112065, M112074	Last week of testing	AND_TUF_METASEDS	0.93	0.18	0.0000060	0.00052	0.00046	0.000050	0.0073	0.0033
		Post-test (Upper)		0.21	0.017	0.0000027	0.000086	0.00023	<0.000050	0.00023	0.00017
		Post-test (Lower)		0.16	0.016	0.0000035	0.00011	0.00027	<0.000050	0.00023	0.00023
COL-3	W-058	Last week of testing	VBX	0.28	0.027	0.0000090	0.0057	0.0012	0.000067	0.024	0.0012
		Post-test (Upper)		0.033	0.0011	0.0000031	0.00042	0.00033	<0.000050	0.00052	<0.00010
		Post-test (Lower)		0.032	0.0012	0.0000023	0.00057	0.00052	<0.000050	0.00075	<0.00010
COL-4	W-105, W-133	Last week of testing	TRA, AND_TUF_METASEDS	0.0041	0.0051	0.000010	0.00052	0.0014	0.00020	0.0070	0.00050
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									
COL-5	W-070	Last week of testing	AND_TUF_METASEDS	0.0098	0.026	0.000026	0.00024	0.0016	0.00012	0.070	0.0072
		Post-test (Upper)		0.0048	0.0011	0.0000061	0.000041	0.00047	0.000051	0.0020	0.00049
		Post-test (Lower)		0.0055	0.0015	0.0000065	0.000041	0.00071	0.000062	0.0030	0.00072
COL-6	W-027, W-264	Last week of testing	AND_TUF_METASEDS	0.14	0.0056	0.0000091	0.00034	0.00030	0.000050	0.0059	0.00042
		Post-test (Upper)		0.040	0.00066	0.0000027	0.000081	0.00034	<0.000050	0.00016	0.00016
		Post-test (Lower)		0.053	0.00069	0.0000040	0.00011	0.00041	<0.000050	0.00022	0.00014
COL-7	W-278, W-303	Last week of testing	TRA, AND_TUF_METASEDS	0.0011	0.0076	0.000016	0.00012	0.00055	0.00020	0.012	0.0015
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									
COL-8	M112089, W-041	Last week of testing	AND_TUF_METASEDS, TRA	0.062	0.038	0.000011	0.00098	0.00078	0.000056	0.051	0.0011
		Post-test (Upper)		0.029	0.0017	<0.0000020	0.00024	0.00037	<0.000050	0.0013	0.00012
		Post-test (Lower)		0.033	0.0024	0.0000027	0.00030	0.00044	<0.000050	0.0020	0.00013
COL-9	W-117	Last week of testing	AND_TUF_METASEDS	0.0054	0.0052	0.000010	0.00010	0.00075	0.00020	0.0068	0.00060
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									
COL-10	W-204	Last week of testing	AND_TUF_METASEDS	0.015	0.0061	0.000026	0.00024	0.0035	0.000050	0.16	0.00044
		Post-test (Upper)		0.012	0.00044	<0.0000020	0.00013	0.0013	<0.000050	0.0060	<0.00010
		Post-test (Lower)		0.015	0.00045	<0.0000020	0.00012	0.0015	<0.000050	0.0037	<0.00010
COL-11	W-221, W-198	Last week of testing	POR, TRA	0.018	0.15	0.00011	0.00011	0.0012	0.0012	0.097	0.028
		Post-test (Upper)		0.0082	0.013	0.000068	0.000032	0.00055	0.0021	0.012	0.0049
		Post-test (Lower)		0.0090	0.012	0.00011	0.000033	0.00072	0.0035	0.0094	0.0053
COL-12	W-290, W-302	Last week of testing	TRA	0.0052	0.018	0.000010	0.00014	0.00056	0.00020	0.011	0.0034
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									
COL-13	M112128, M112149	Last week of testing	TRA	0.020	0.084	0.000010	0.00010	0.00057	0.00020	0.0032	0.00050
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									

Table B4 - Closedown Bottle Roll Extraction Results

COL-ID	Sample ID	Status	Lithology	Loadings							
				Arsenic Dissolved	Antimony Dissolved	Cadmium Dissolved	Cobalt Dissolved	Copper Dissolved	Lead Dissolved	Molybdenum Dissolved	Selenium Dissolved
Units				mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day
COL-1	M112105, M112103	Last week of testing	AND_TUF_METASEDS	0.30	0.046	0.000014	0.0025	0.0021	0.00015	0.0019	0.00031
		Post-test (Upper)		0.22	0.031	0.000010	0.0014	0.0014	0.00015	0.0011	0.00030
		Post-test (Lower)		0.36	0.050	0.000018	0.0035	0.0028	0.00015	0.0021	0.00030
COL-2	M112065, M112074	Last week of testing	AND_TUF_METASEDS	0.57	0.053	0.0000094	0.00031	0.00076	0.00015	0.00081	0.00066
		Post-test (Upper)		0.63	0.051	0.0000081	0.00026	0.00069	0.00015	0.00068	0.00051
		Post-test (Lower)		0.47	0.049	0.000011	0.00034	0.00081	0.00015	0.00069	0.00069
COL-3	W-058	Last week of testing	VBX	0.10	0.0040	0.0000083	0.0016	0.0013	0.00015	0.0023	0.00032
		Post-test (Upper)		0.099	0.0034	0.0000093	0.0013	0.00099	0.00015	0.0016	0.00030
		Post-test (Lower)		0.095	0.0037	0.0000069	0.0017	0.0016	0.00015	0.0022	0.00030
COL-4	W-105, W-133	Last week of testing	TRA, AND_TUF_METASEDS	0.00030	0.00037	0.00000071	0.000037	0.00010	0.000014	0.00050	0.000036
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									
COL-5	W-070	Last week of testing	AND_TUF_METASEDS	0.016	0.0045	0.000019	0.00013	0.0018	0.00017	0.0086	0.0019
		Post-test (Upper)		0.014	0.0034	0.000018	0.00012	0.0014	0.00015	0.0059	0.0015
		Post-test (Lower)		0.017	0.0046	0.00002	0.00012	0.0021	0.00019	0.0089	0.0022
COL-6	W-027, W-264	Last week of testing	AND_TUF_METASEDS	0.14	0.0021	0.000010	0.00029	0.0011	0.00015	0.00069	0.00046
		Post-test (Upper)		0.12	0.0020	0.0000081	0.00024	0.0010	0.00015	0.00049	0.00048
		Post-test (Lower)		0.16	0.0021	0.000012	0.00033	0.0012	0.00015	0.00067	0.00042
COL-7	W-278, W-303	Last week of testing	TRA, AND_TUF_METASEDS	0.000076	0.00054	0.0000011	0.0000086	0.000039	0.000014	0.00085	0.00011
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									
COL-8	M112089, W-041	Last week of testing	AND_TUF_METASEDS, TRA	0.094	0.0069	0.0000072	0.00082	0.0012	0.00015	0.0058	0.00039
		Post-test (Upper)		0.086	0.0050	0.0000060	0.00071	0.0011	0.00015	0.0040	0.00036
		Post-test (Lower)		0.099	0.0073	0.0000081	0.00090	0.0013	0.00015	0.0059	0.00039
COL-9	W-117	Last week of testing	AND_TUF_METASEDS	0.00038	0.00037	0.00000071	0.0000071	0.000054	0.000014	0.00048	0.000043
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									
COL-10	W-204	Last week of testing	AND_TUF_METASEDS	0.041	0.0014	0.0000065	0.00037	0.0043	0.00015	0.017	0.00031
		Post-test (Upper)		0.036	0.0013	0.0000060	0.00038	0.0038	0.00015	0.018	0.00030
		Post-test (Lower)		0.046	0.0013	0.0000060	0.00036	0.0046	0.00015	0.011	0.00030
COL-11	W-221, W-198	Last week of testing	POR, TRA	0.026	0.040	0.00027	0.000099	0.0019	0.0084	0.034	0.016
		Post-test (Upper)		0.024	0.038	0.00020	0.000095	0.0017	0.0062	0.037	0.015
		Post-test (Lower)		0.027	0.036	0.00033	0.000098	0.0022	0.011	0.028	0.016
COL-12	W-290, W-302	Last week of testing	TRA	0.00037	0.0013	0.00000071	0.000010	0.000040	0.000014	0.00081	0.00024
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									
COL-13	M112128, M112149	Last week of testing	TRA	0.0014	0.0060	0.00000071	0.0000071	0.000041	0.000014	0.00023	0.000036
		Post-test (Upper)		First set terminated (no request for closedown data)							
		Post-test (Lower)									

Appendix C

Unscaled Column Sample Test Results



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

POR = Porphyry

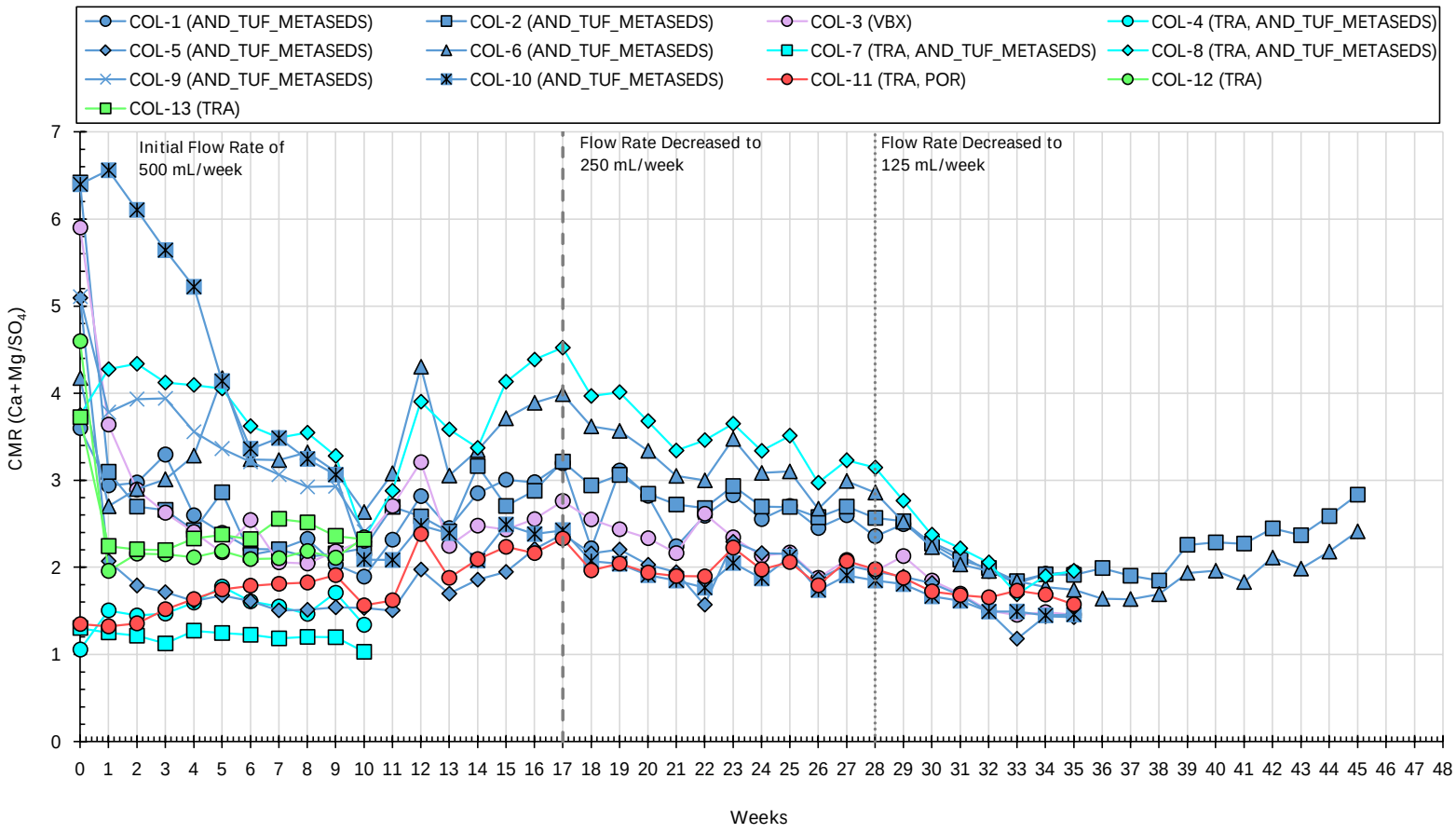
wsp

pH

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-1	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

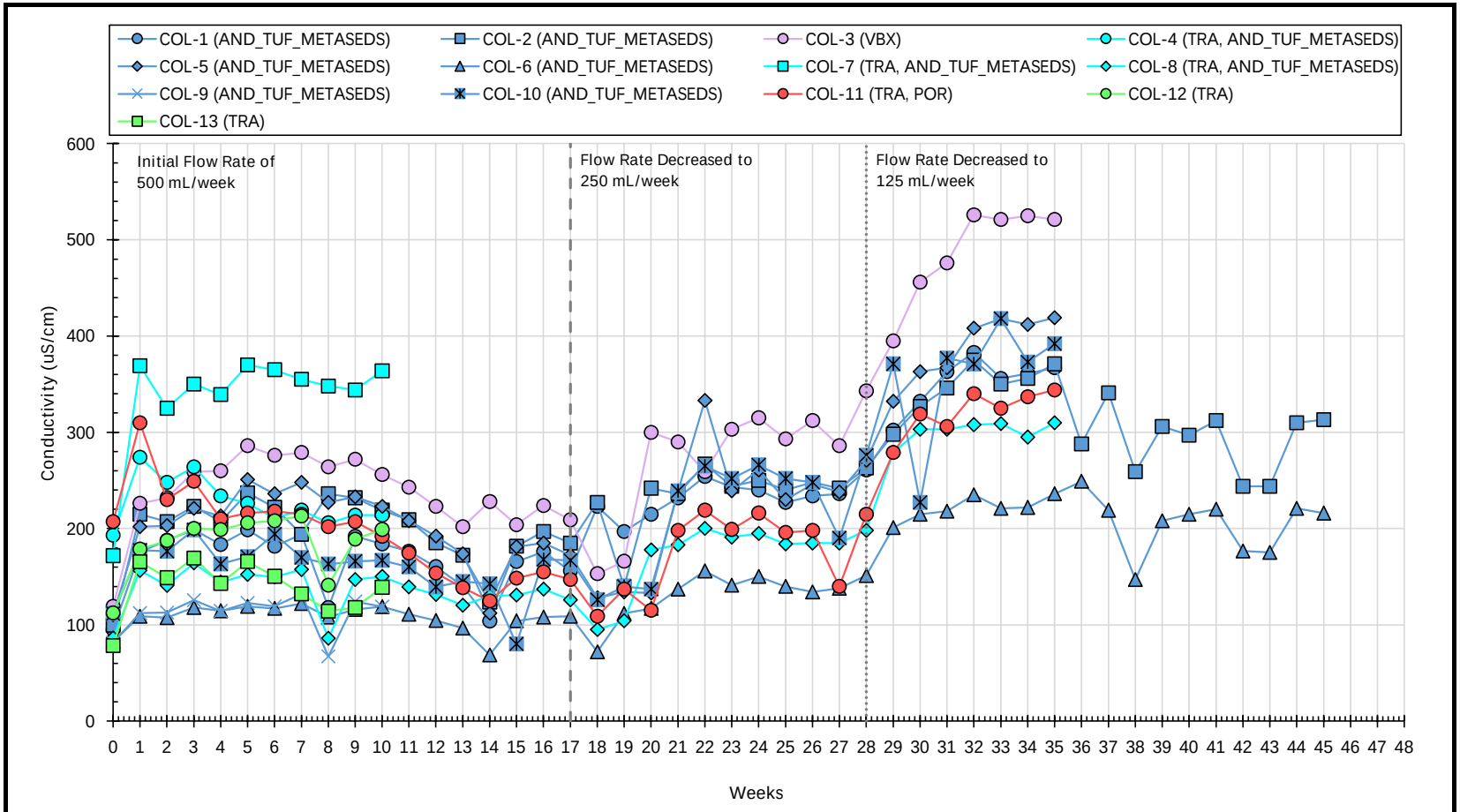
POR = Porphyry

Carbonate Molar Ratio (CMR)

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-2	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

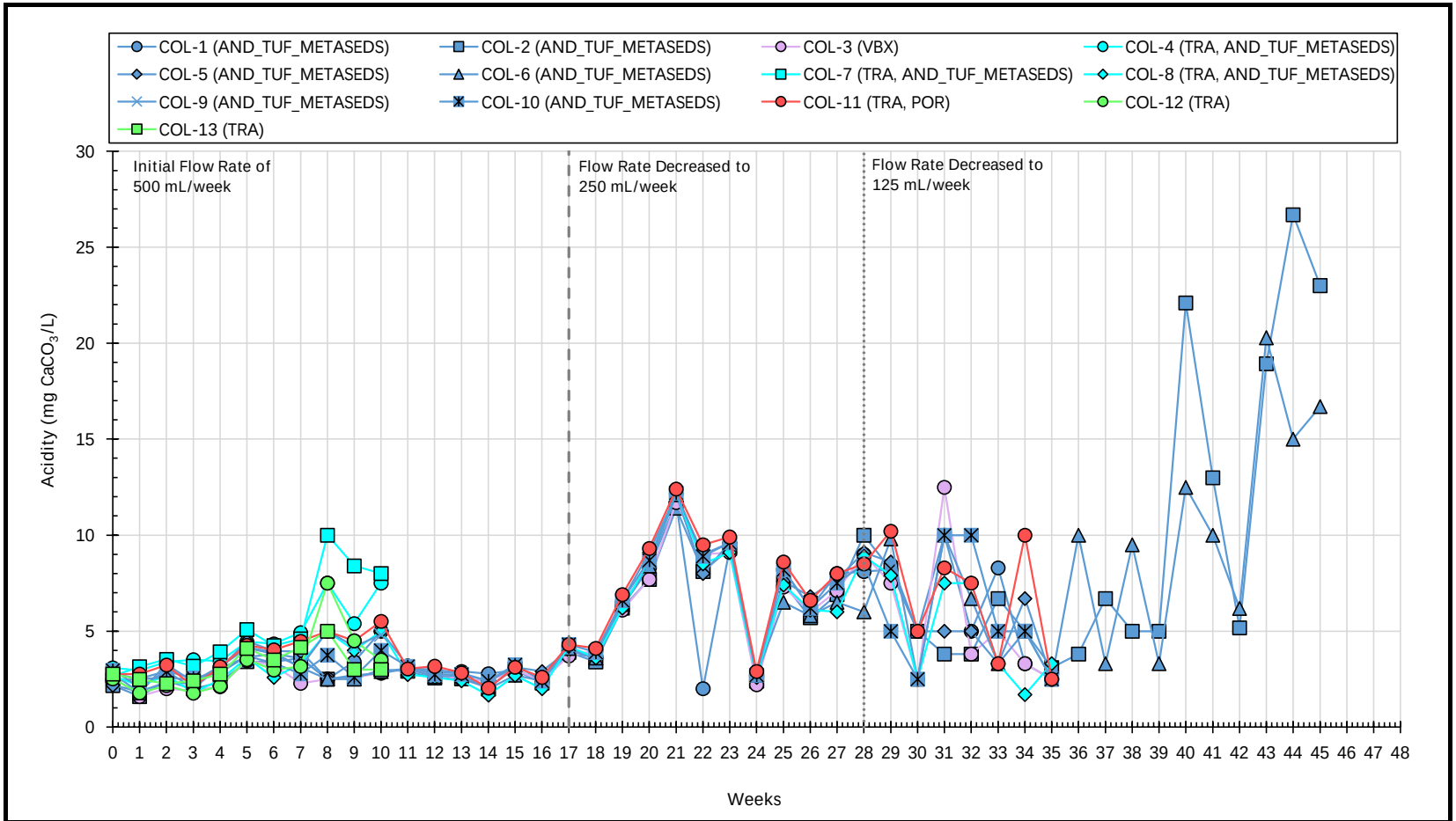
POR = Porphyry

Conductivity

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-3	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

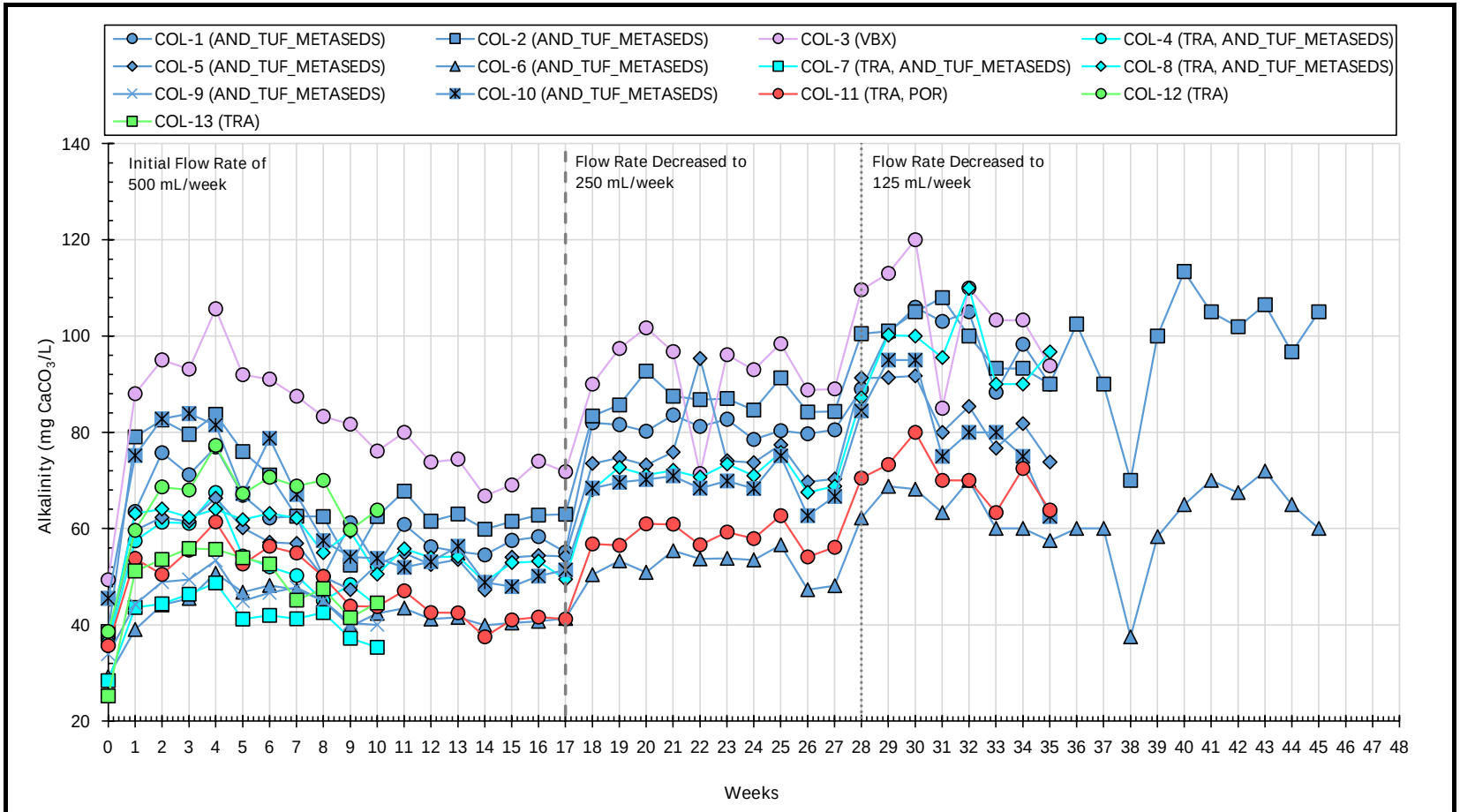
POR = Porphyry

Acidity to pH 8.3

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-4	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

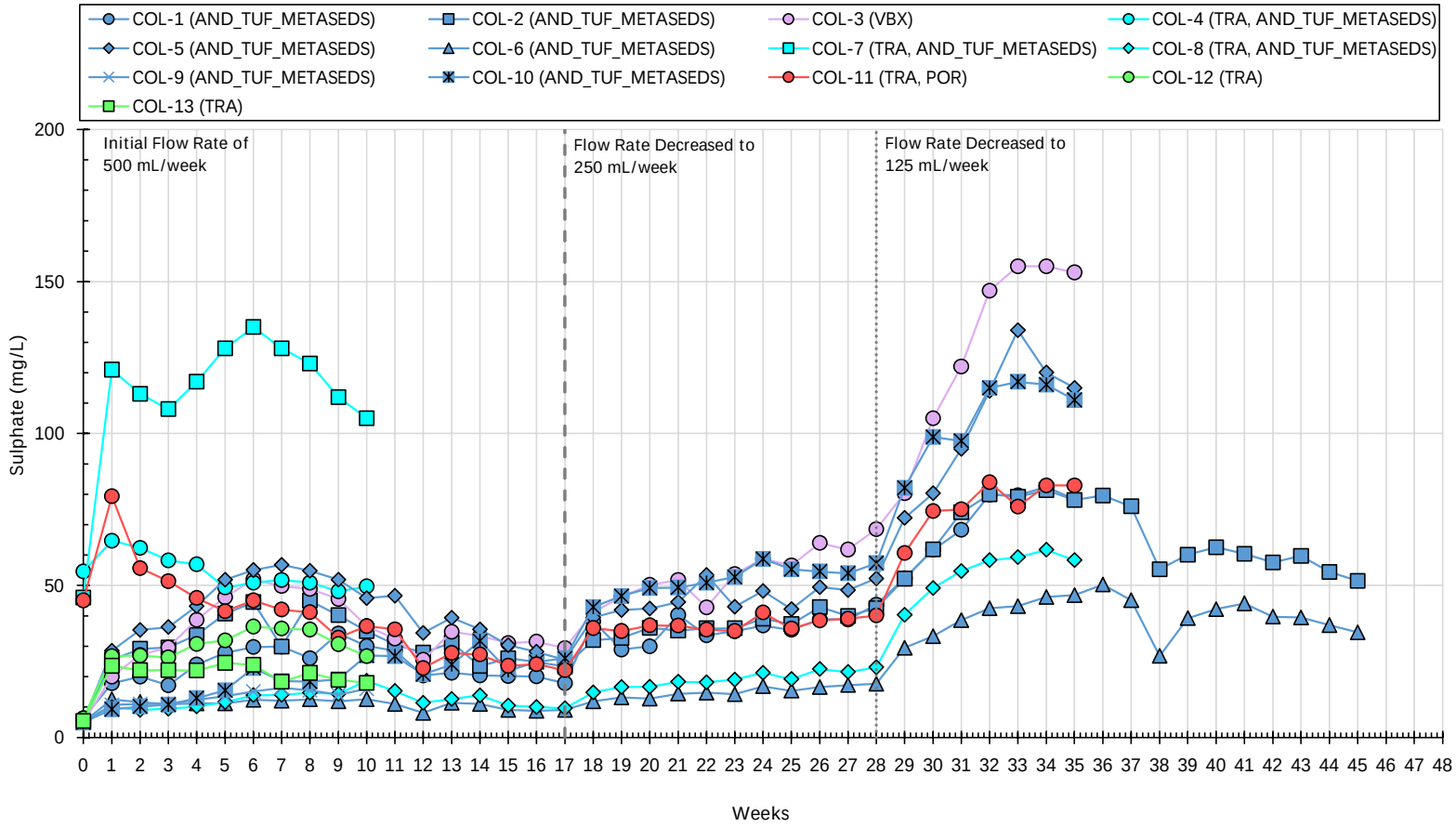
POR = Porphyry

Alkalinity to pH 4.5

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-5	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

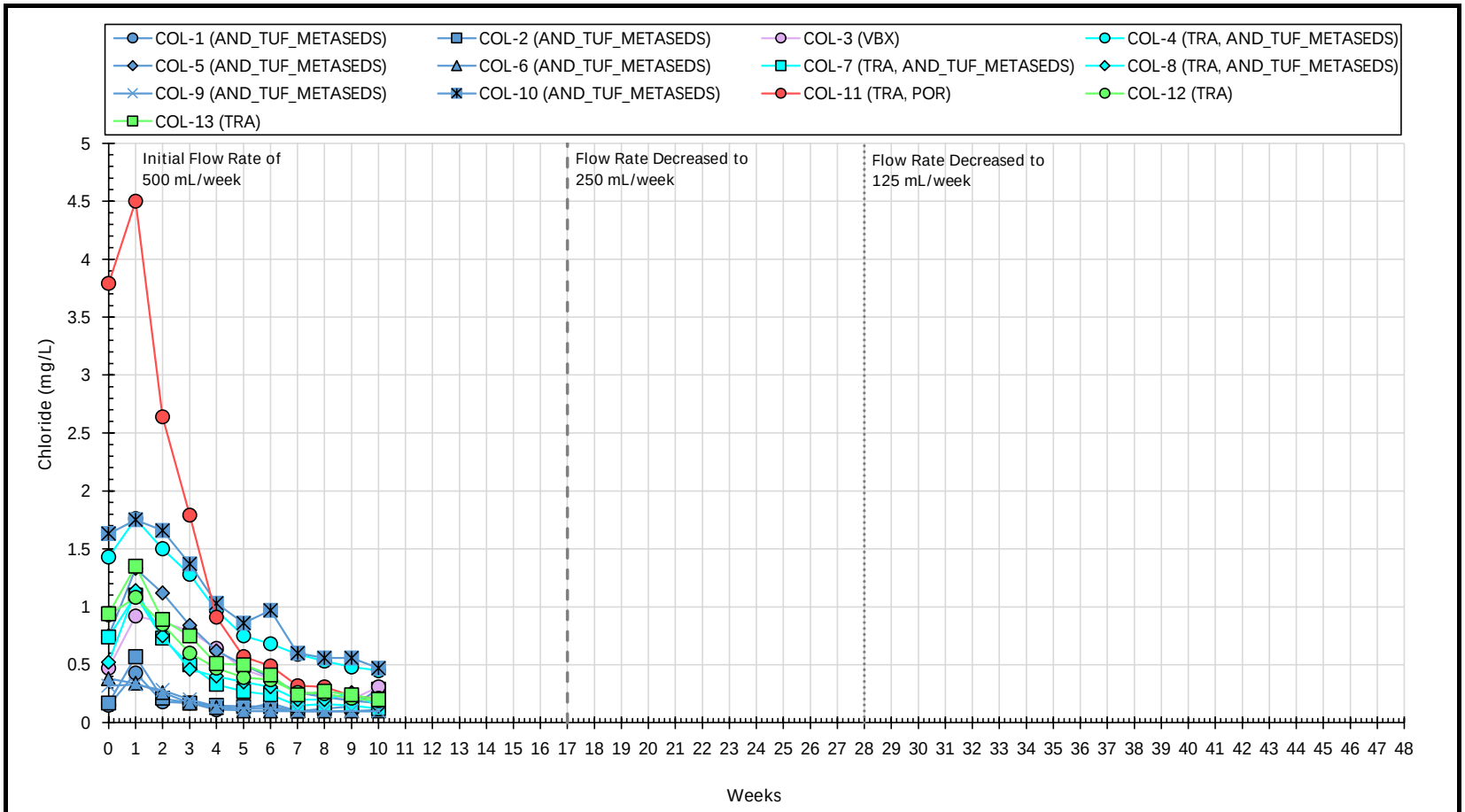
POR = Porphyry

Sulphate

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number	C-6		
Project Number	ONS2104		
Date	April 2025		
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

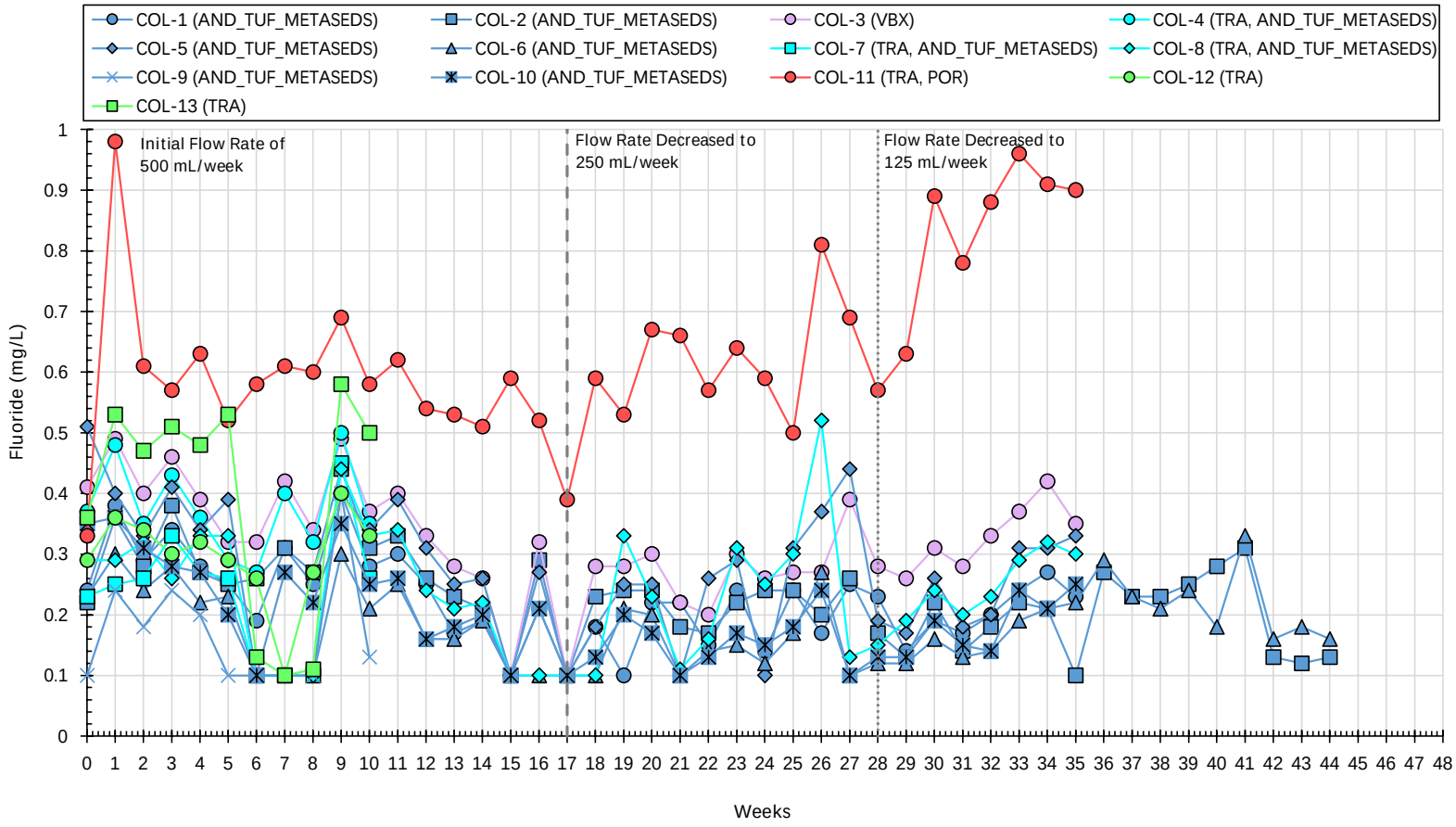
POR = Porphyry

Dissolved Chloride

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-7	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

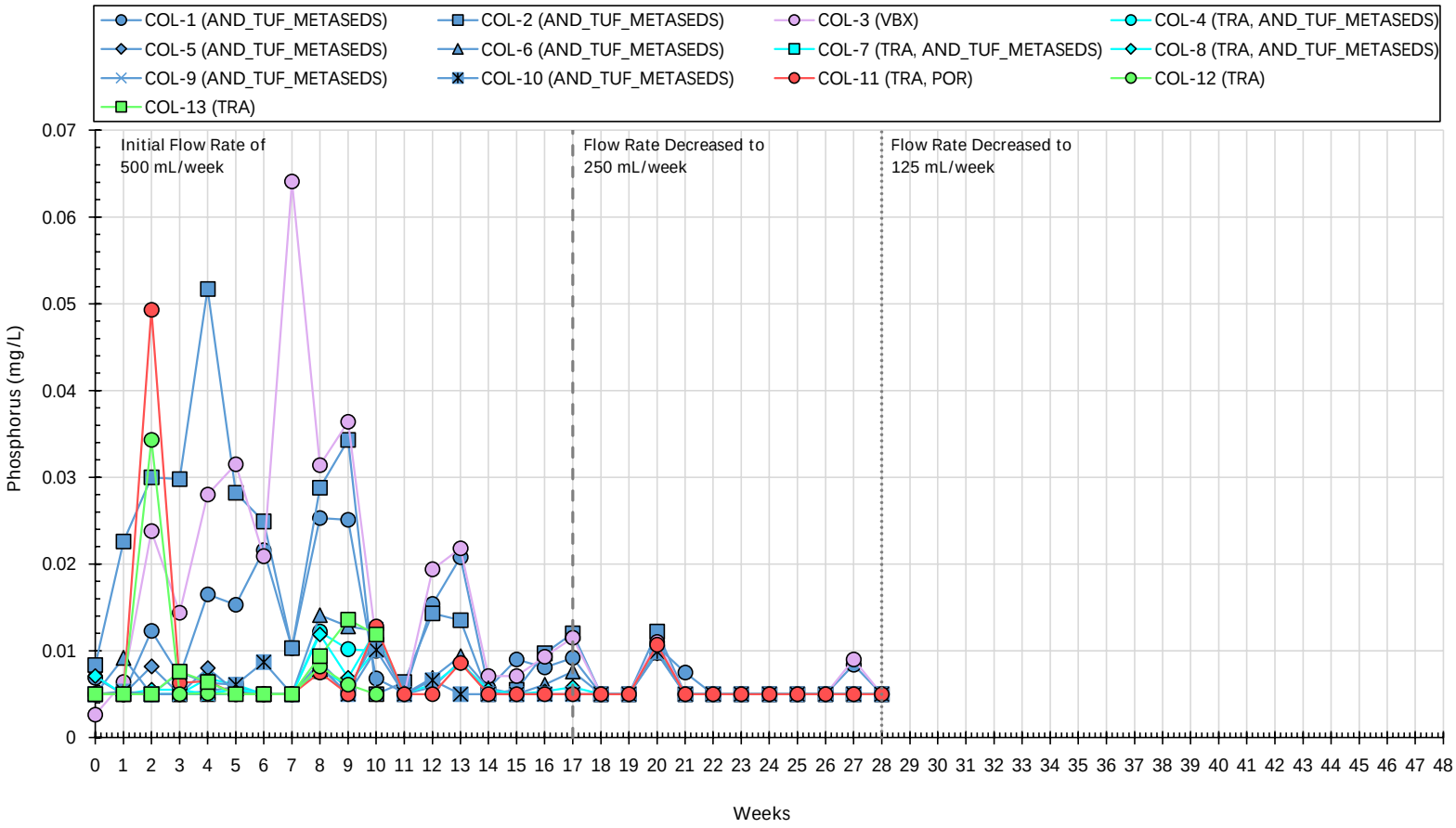
POR = Porphyry

Dissolved Fluoride

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number	C-8		
Project Number	ONS2104		
Date	April 2025		
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

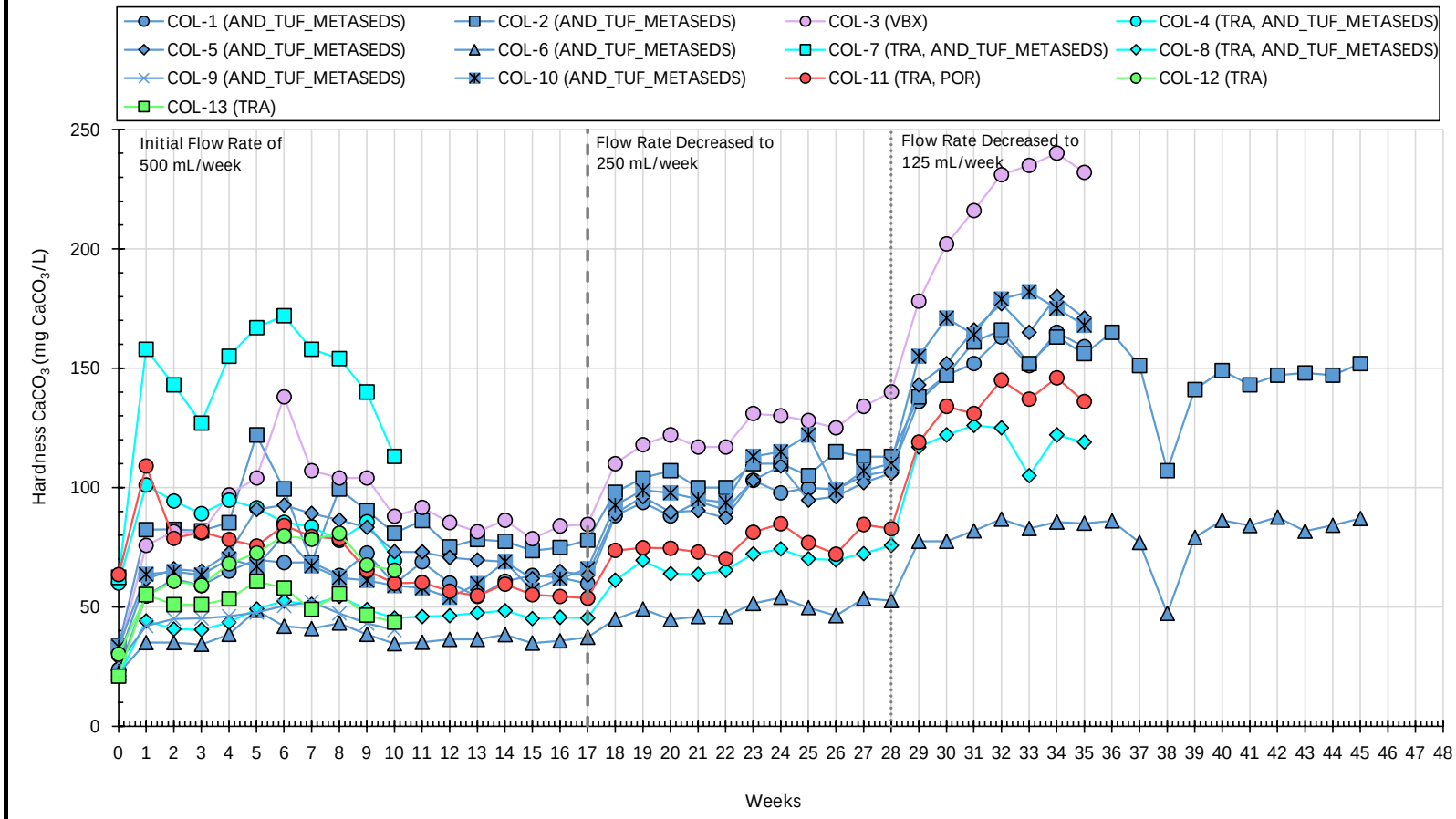
POR = Porphyry

Phosphorous (P) - Colorimetry

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number	C-9		
Project Number	ONS2104		
Date	April 2025		
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

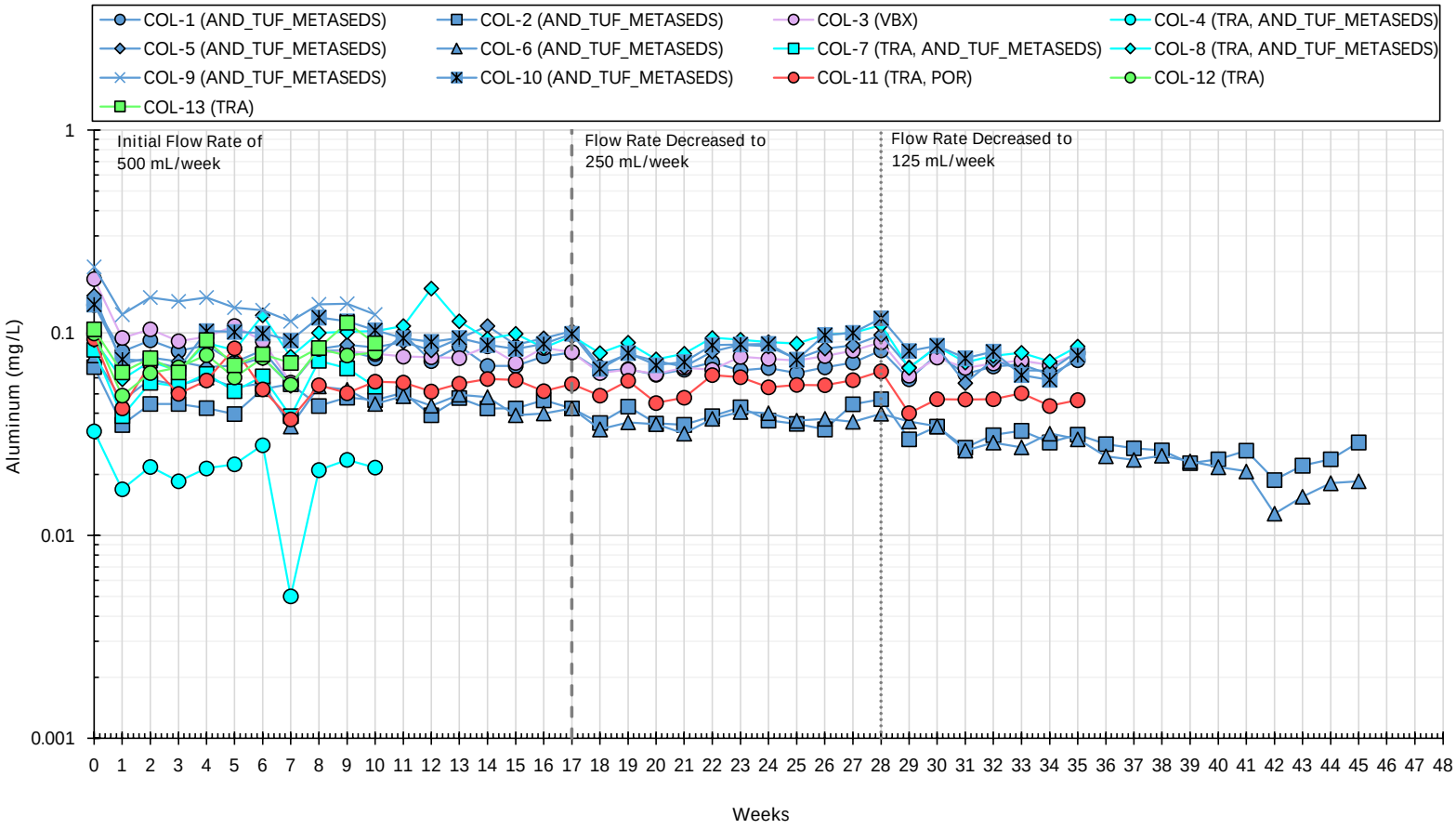
POR = Porphyry

Hardness CaCO3

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-10	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

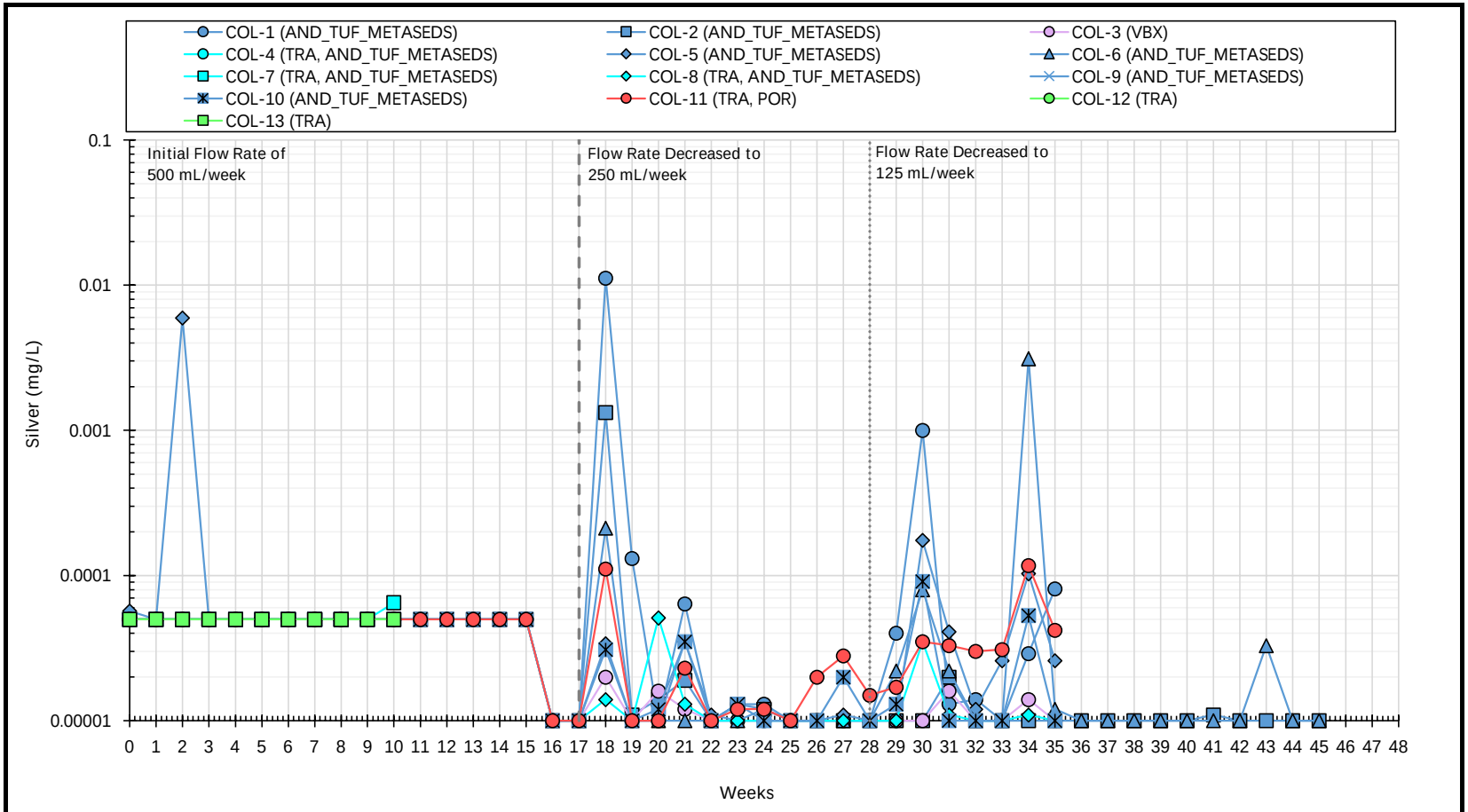
POR = Porphyry

Dissolved Aluminum (Al) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-11	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

POR = Porphyry

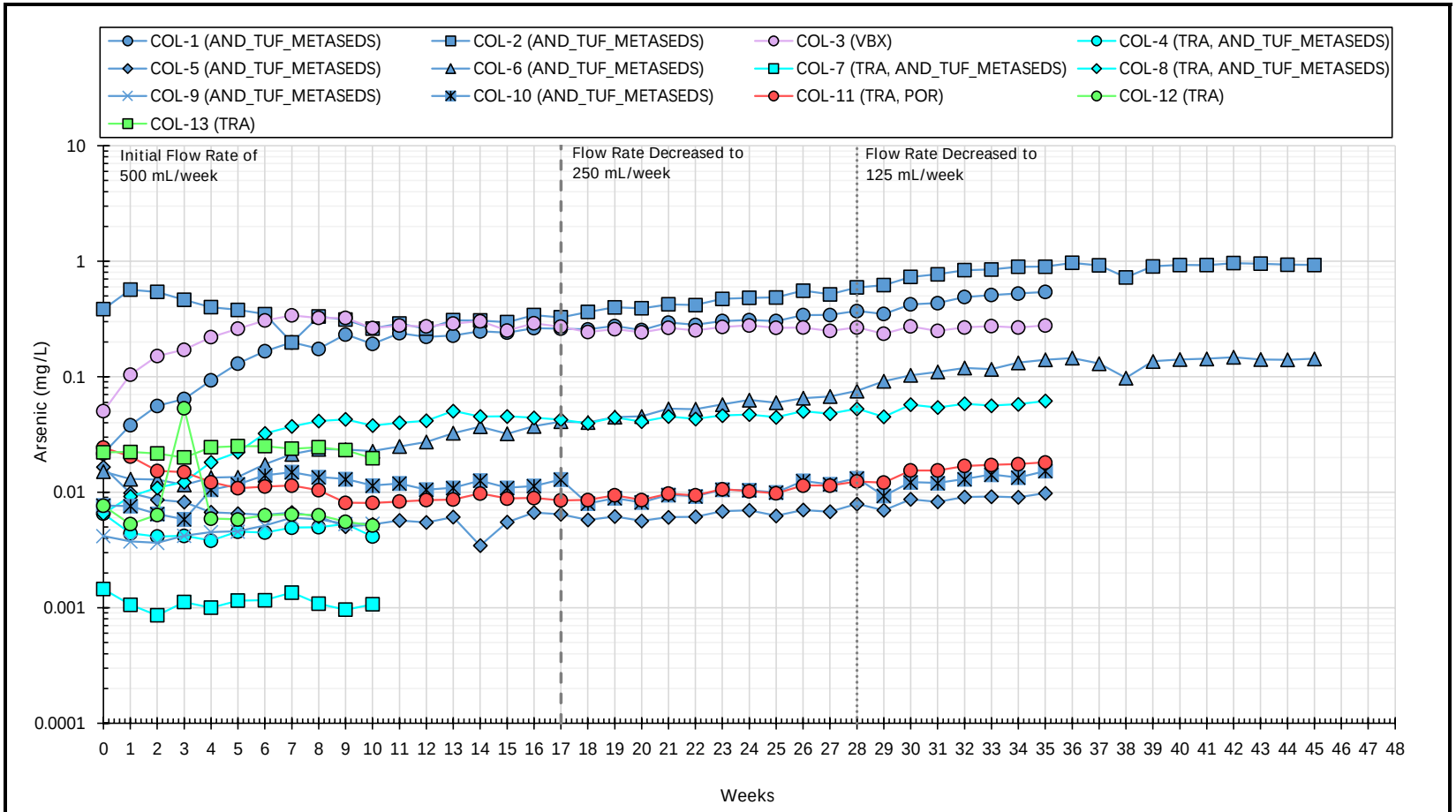
wsp

Dissolved Silver (Ag) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-12	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

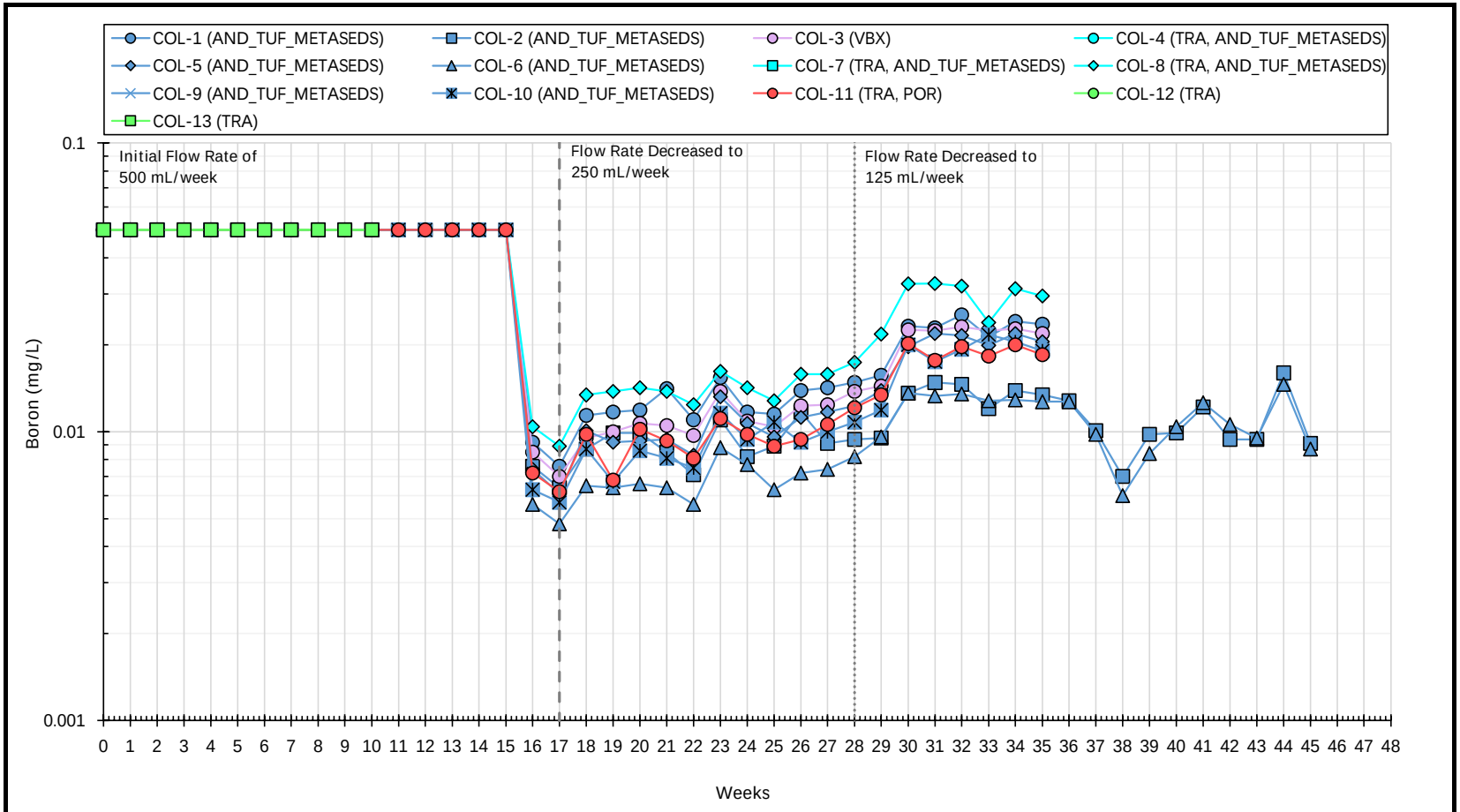
POR = Porphyry

Dissolved Arsenic (As) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-13	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

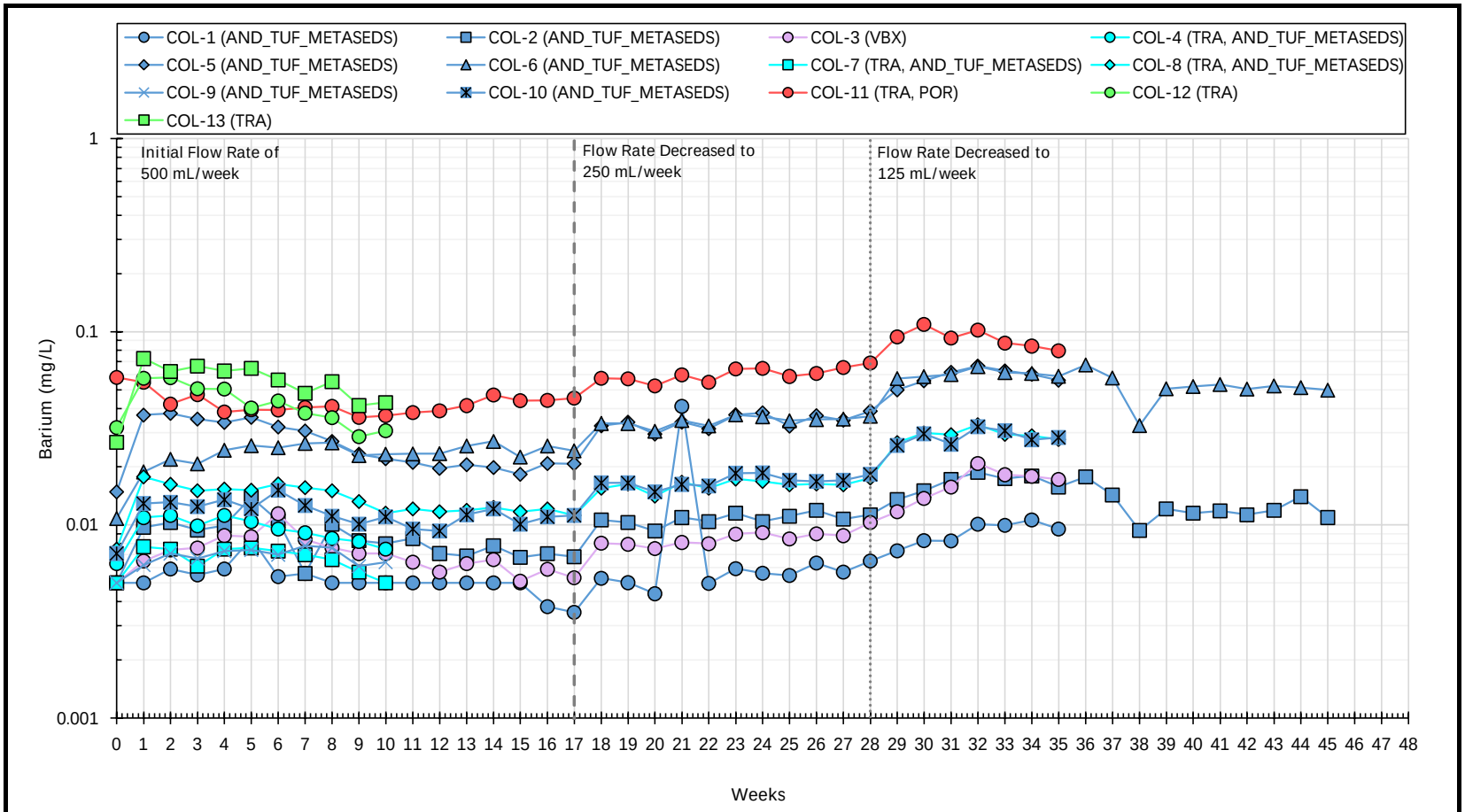
POR = Porphyry

Dissolved Boron (B) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-14	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

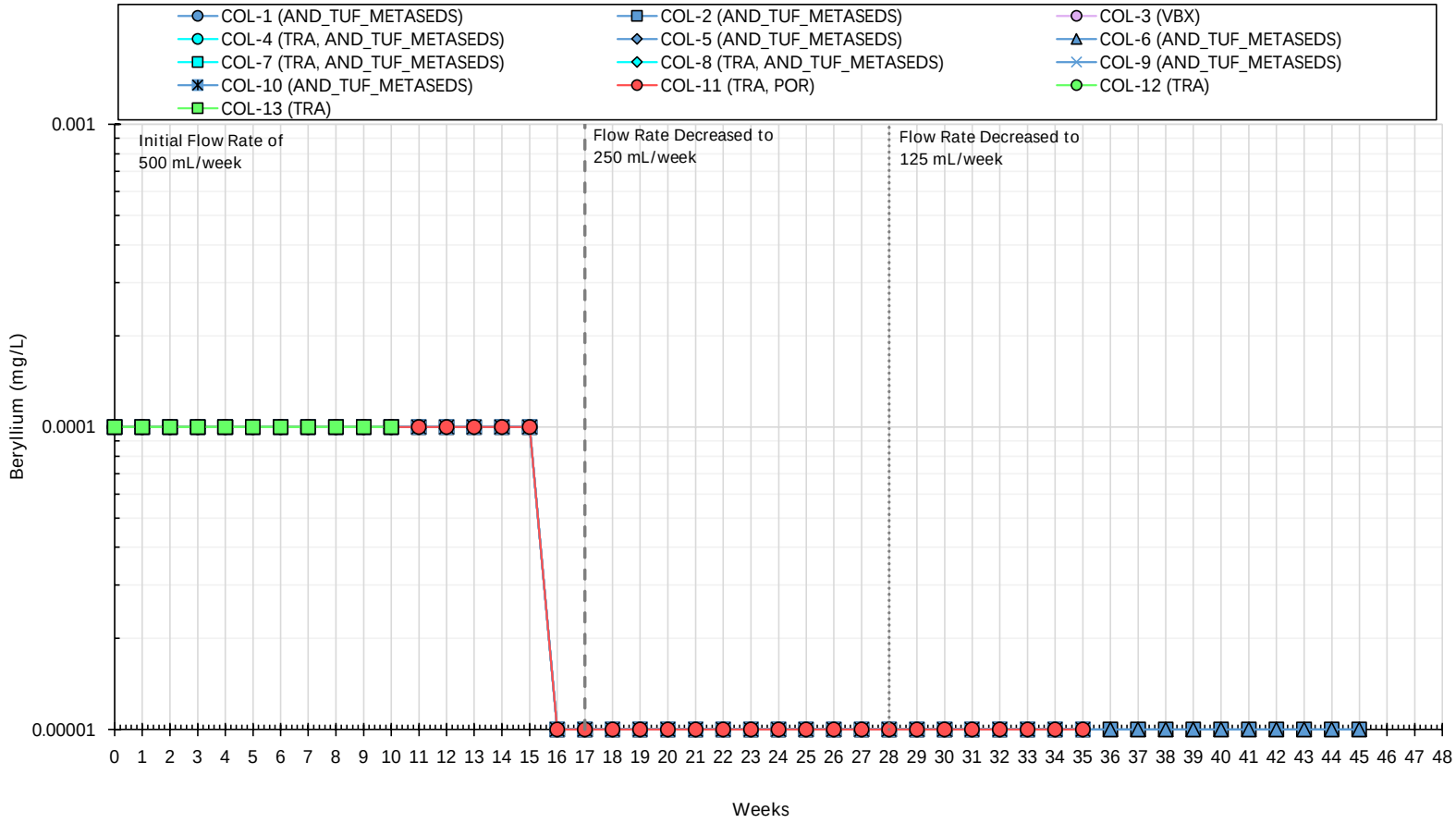
POR = Porphyry

Dissolved Barium (Ba) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-15	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

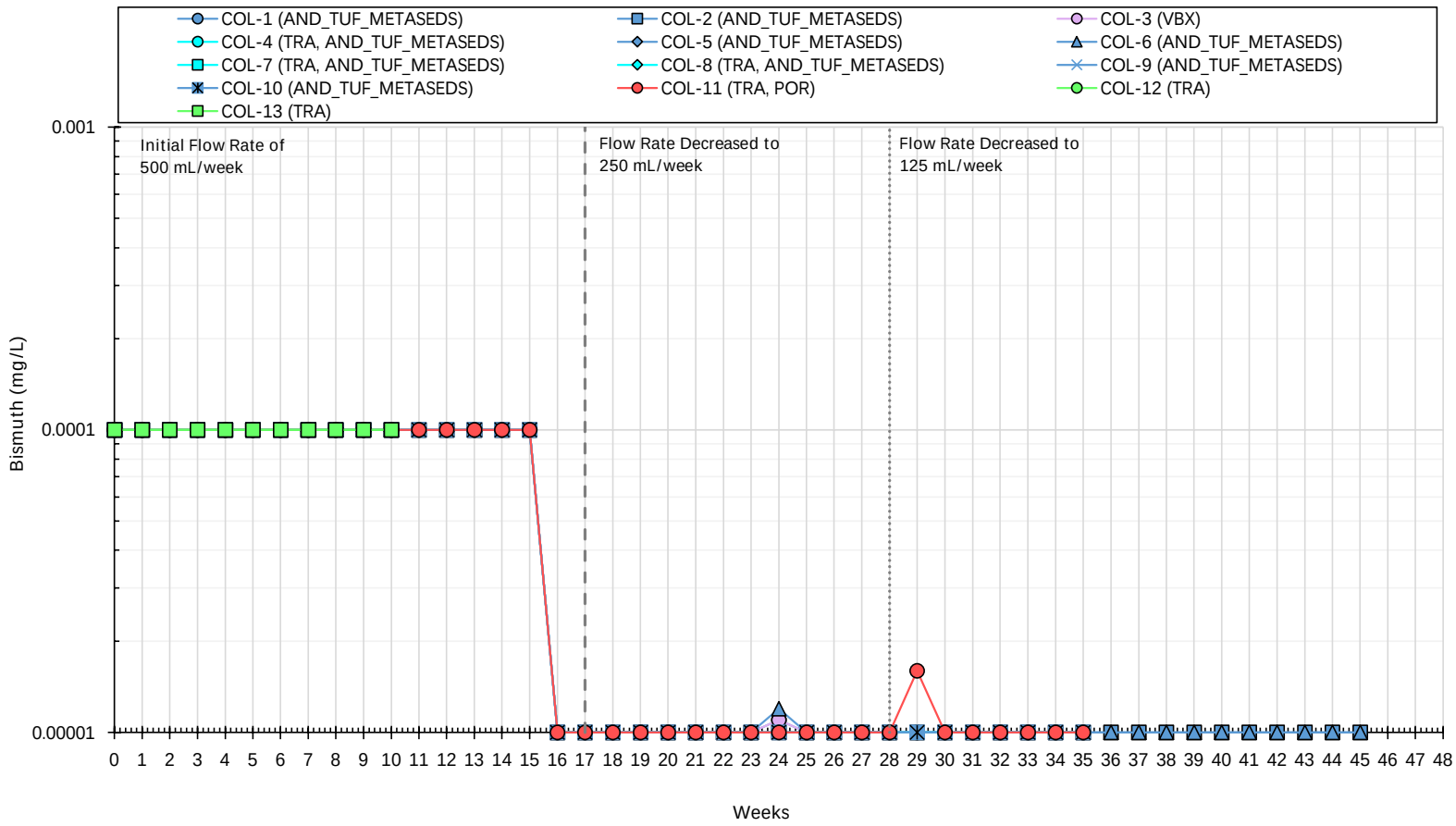
POR = Porphyry

Dissolved Beryllium (Be) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-16	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

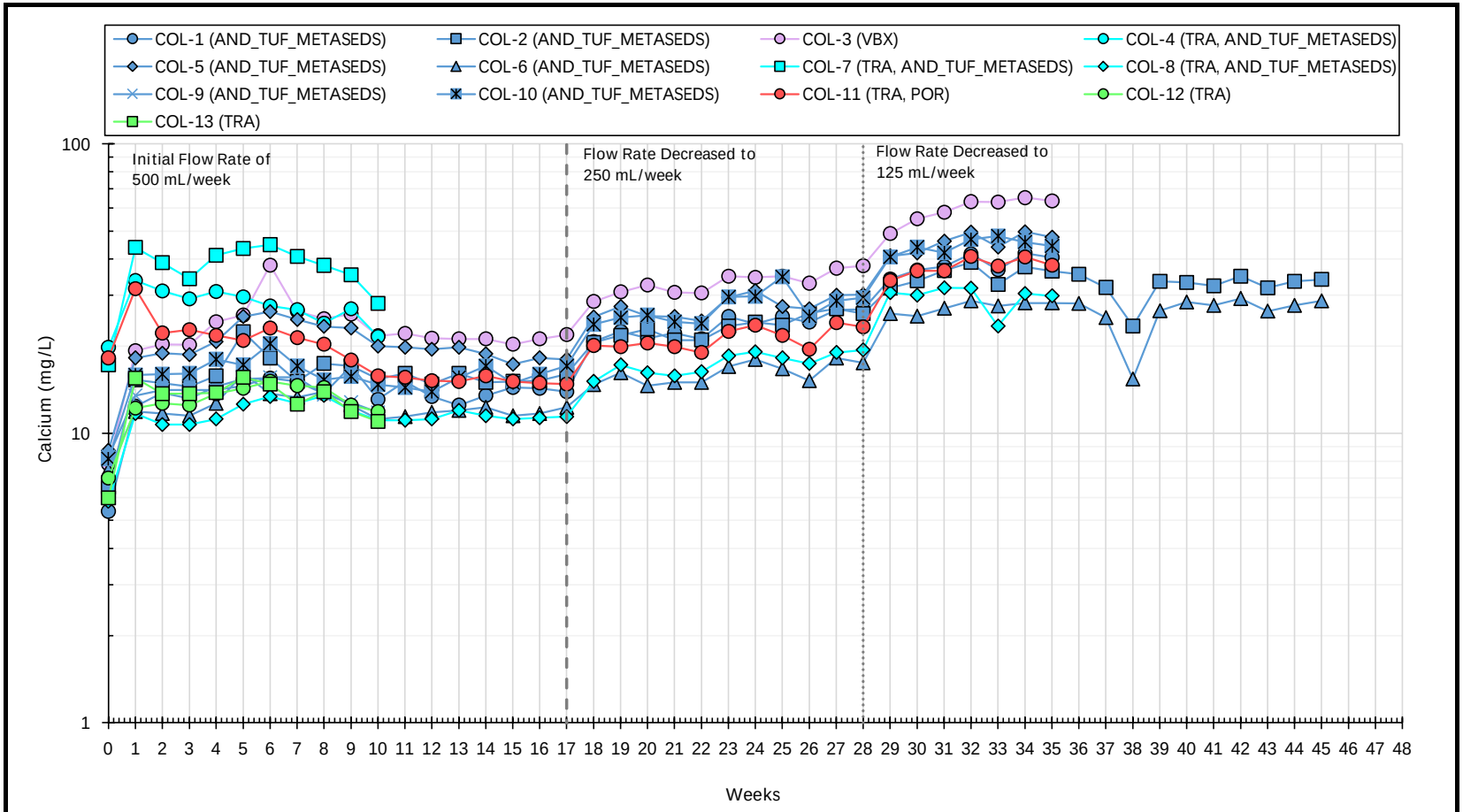
POR = Porphyry

Dissolved Bismuth (Bi) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-17	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

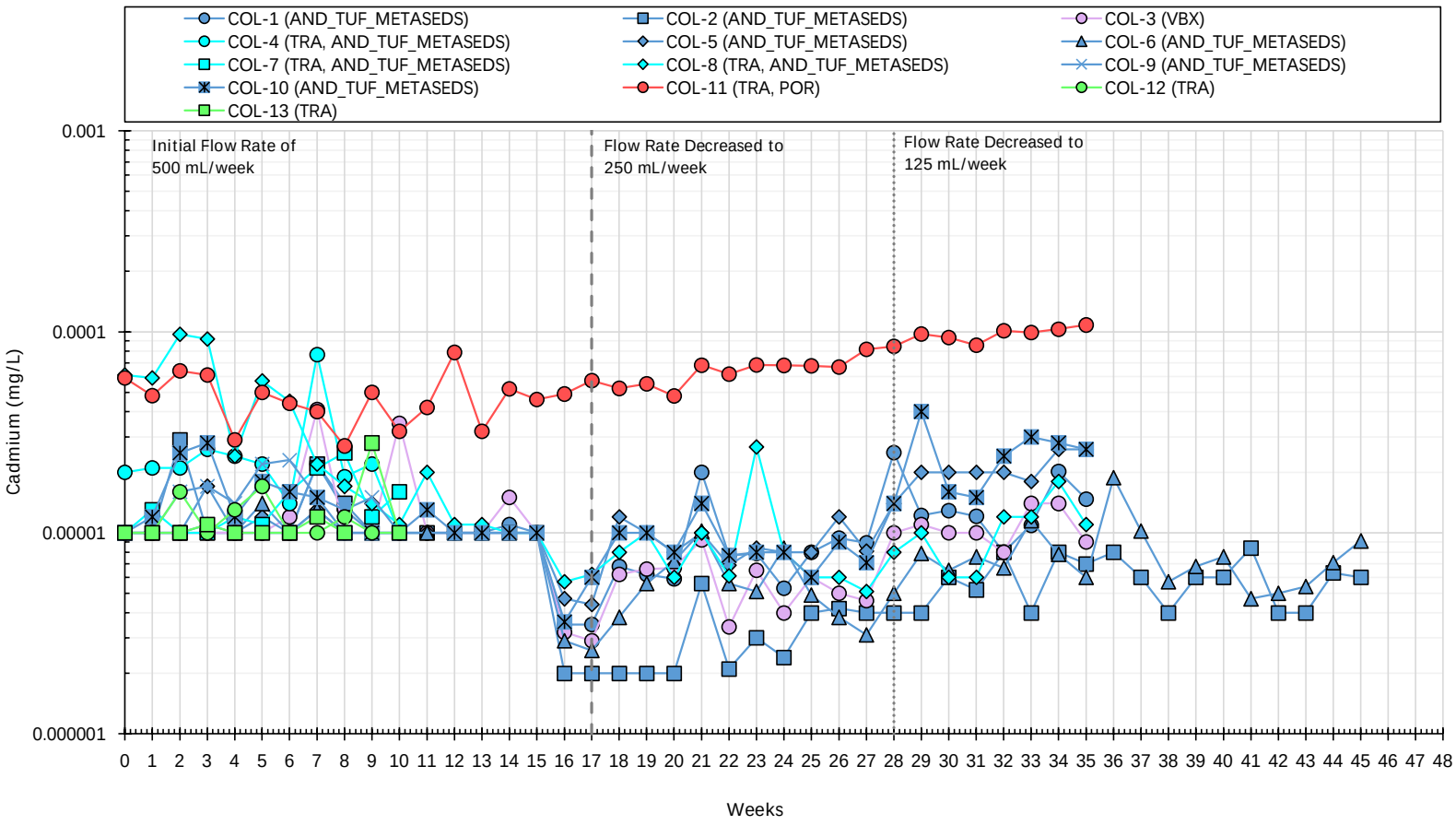
POR = Porphyry

Dissolved Calcium (Ca) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-18	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

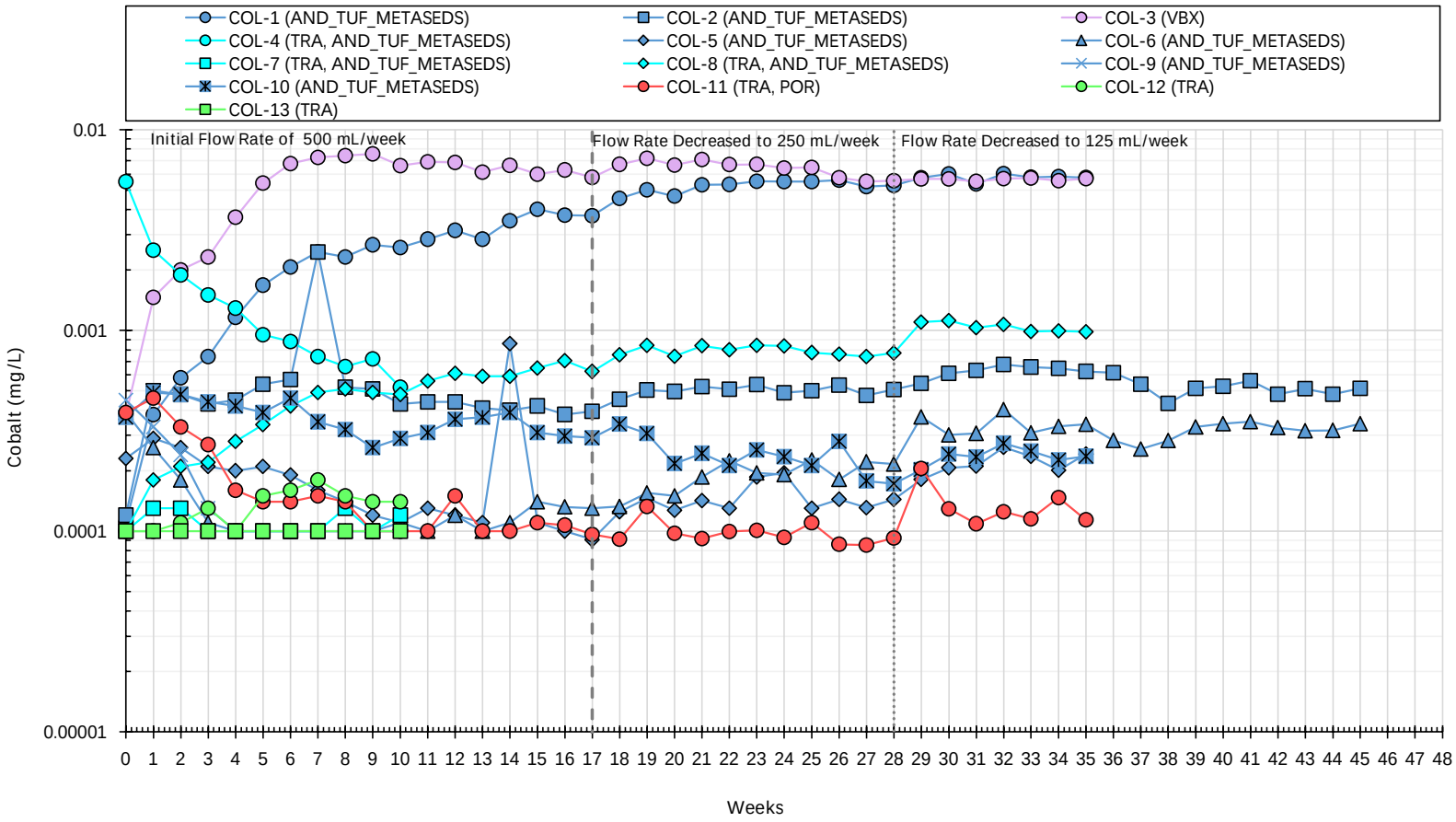
POR = Porphyry

Dissolved Cadmium (Cd) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-19	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

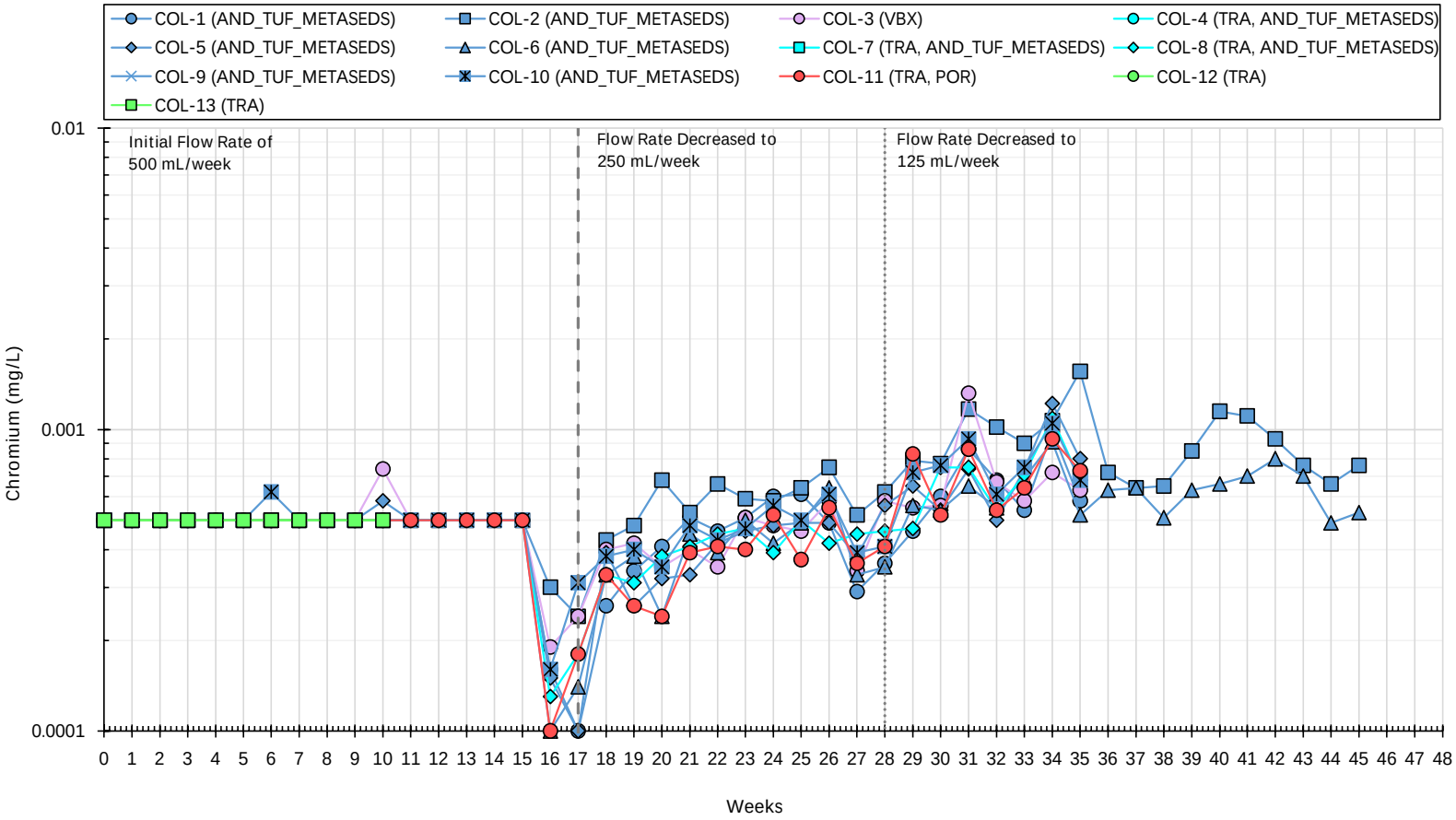
POR = Porphyry

Dissolved Cobalt (Co) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-20	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

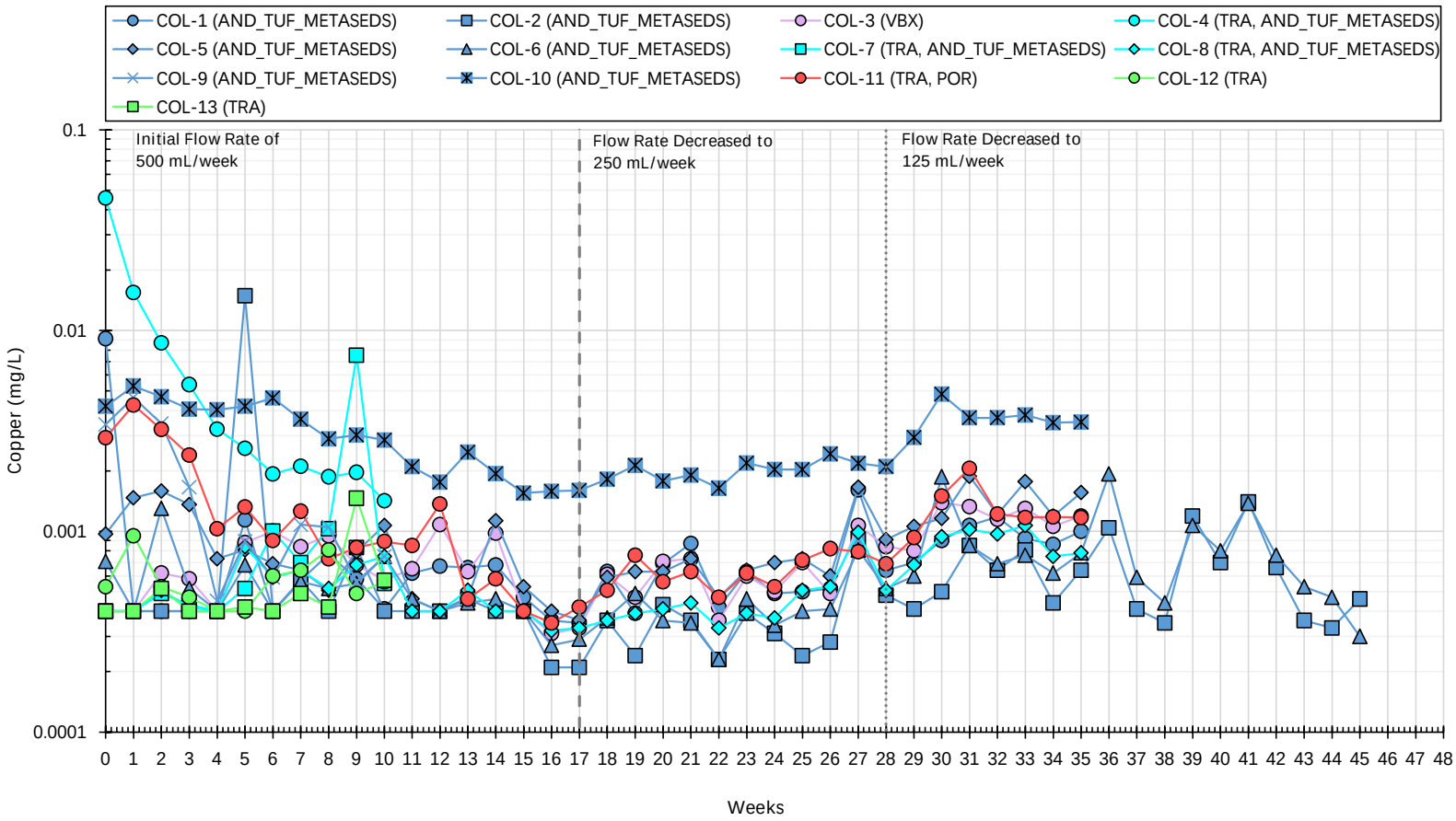
POR = Porphyry

Dissolved Chromium (Cr) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-21	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

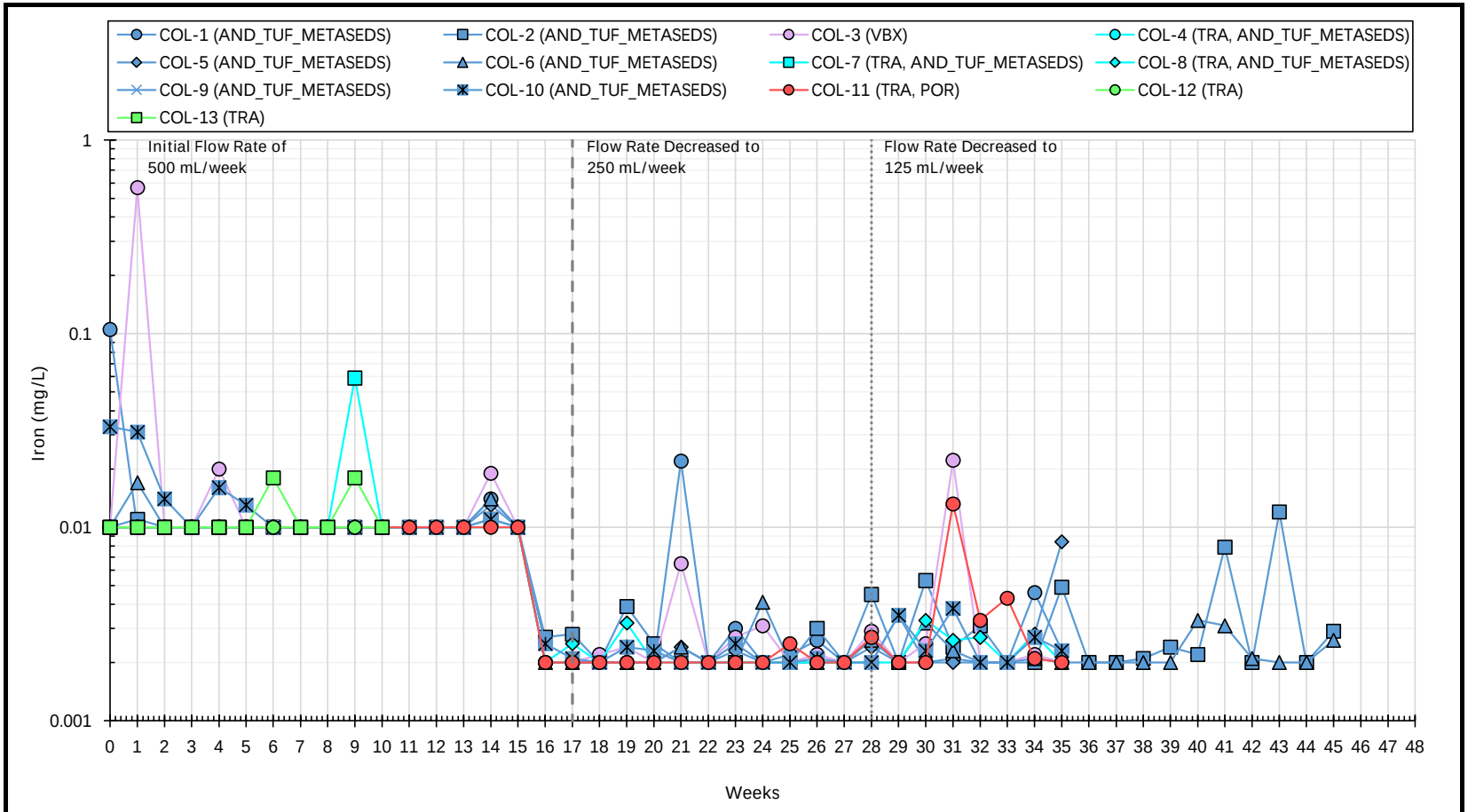
POR = Porphyry

Dissolved Copper (Cu) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-22	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

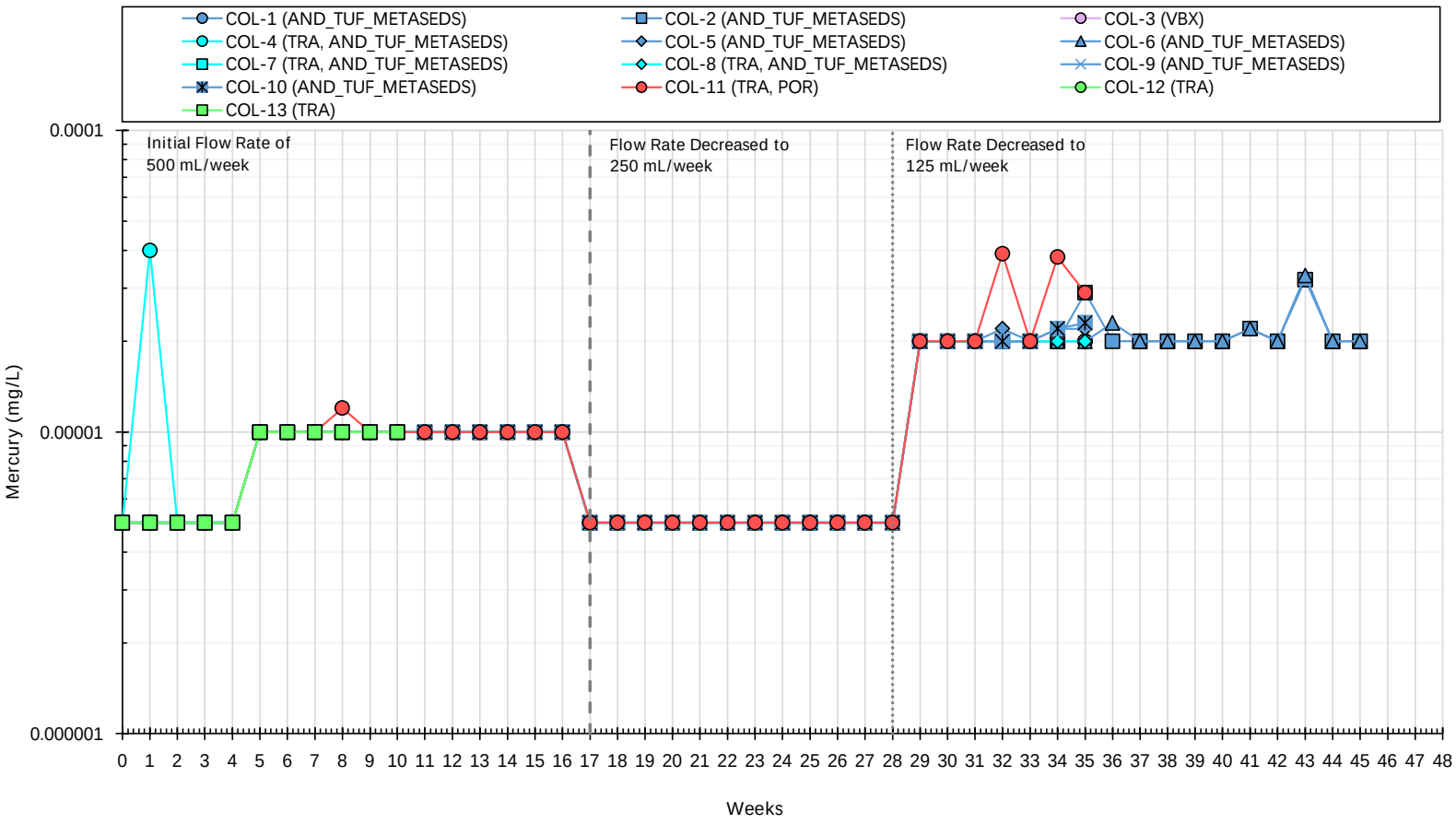
POR = Porphyry

Dissolved Iron (Fe) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-23	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

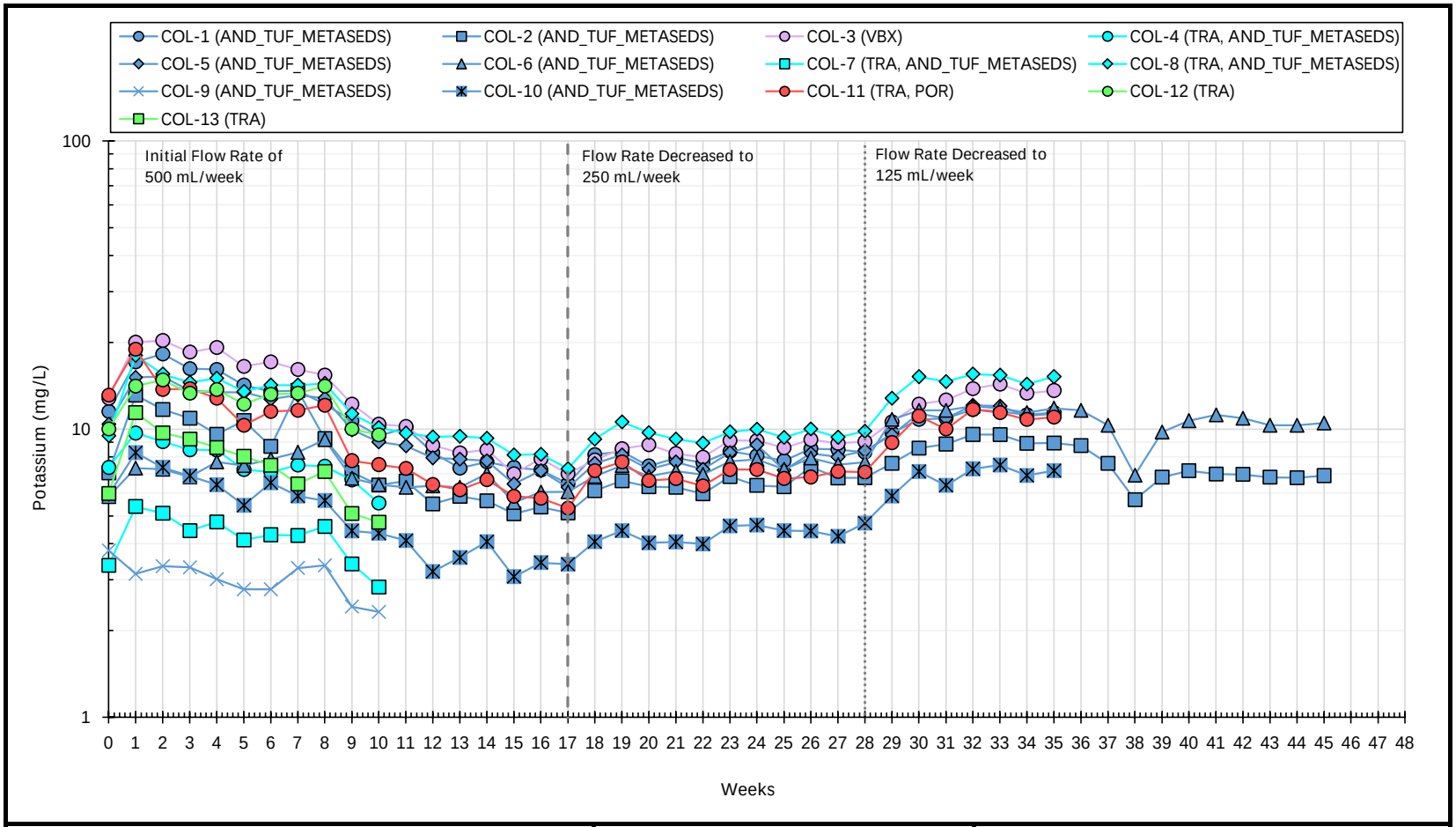
POR = Porphyry

Dissolved Mercury (Hg) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-24	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

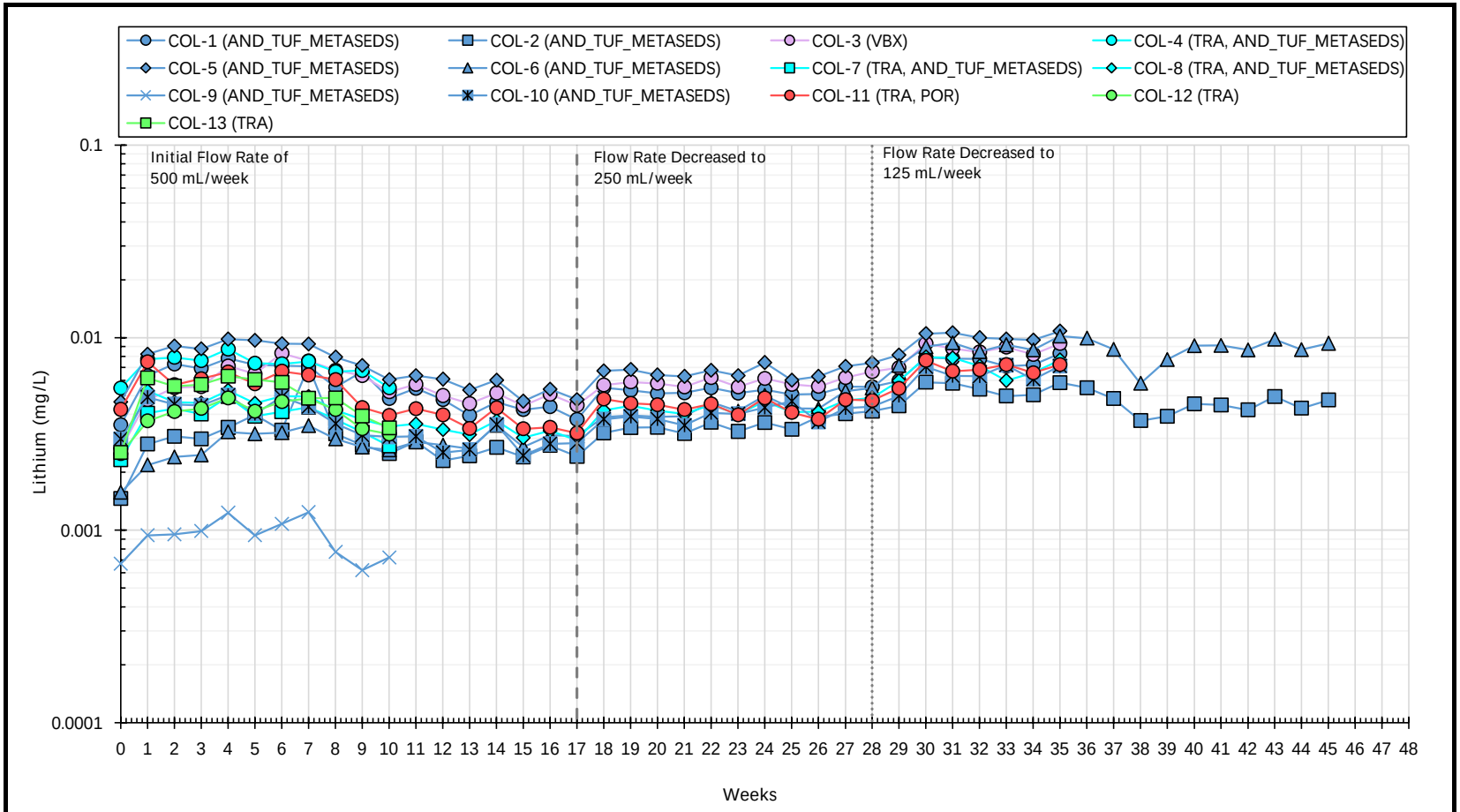
POR = Porphyry

Dissolved Potassium (K) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-25	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

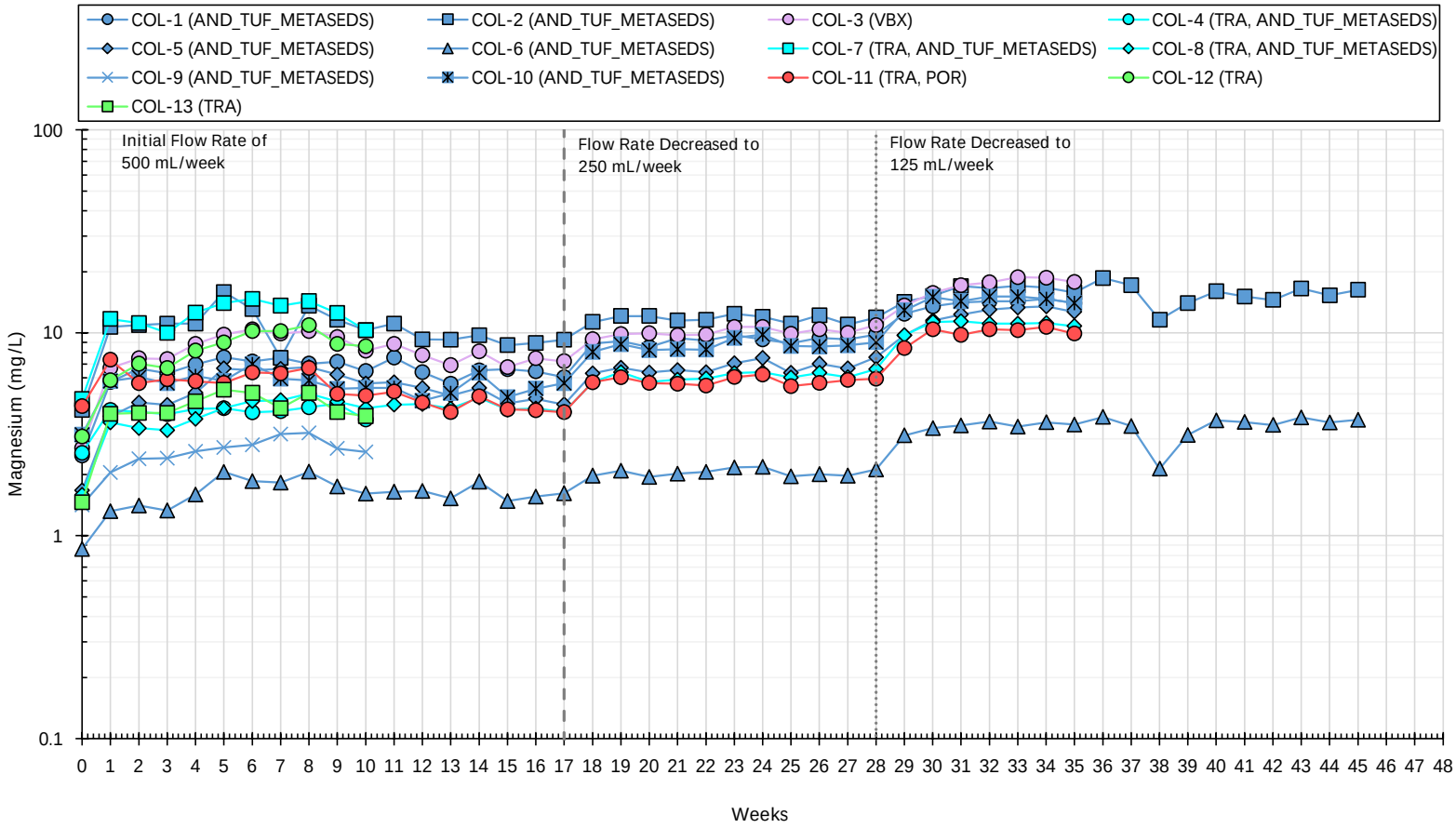
POR = Porphyry

Dissolved Lithium (Li) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-26	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

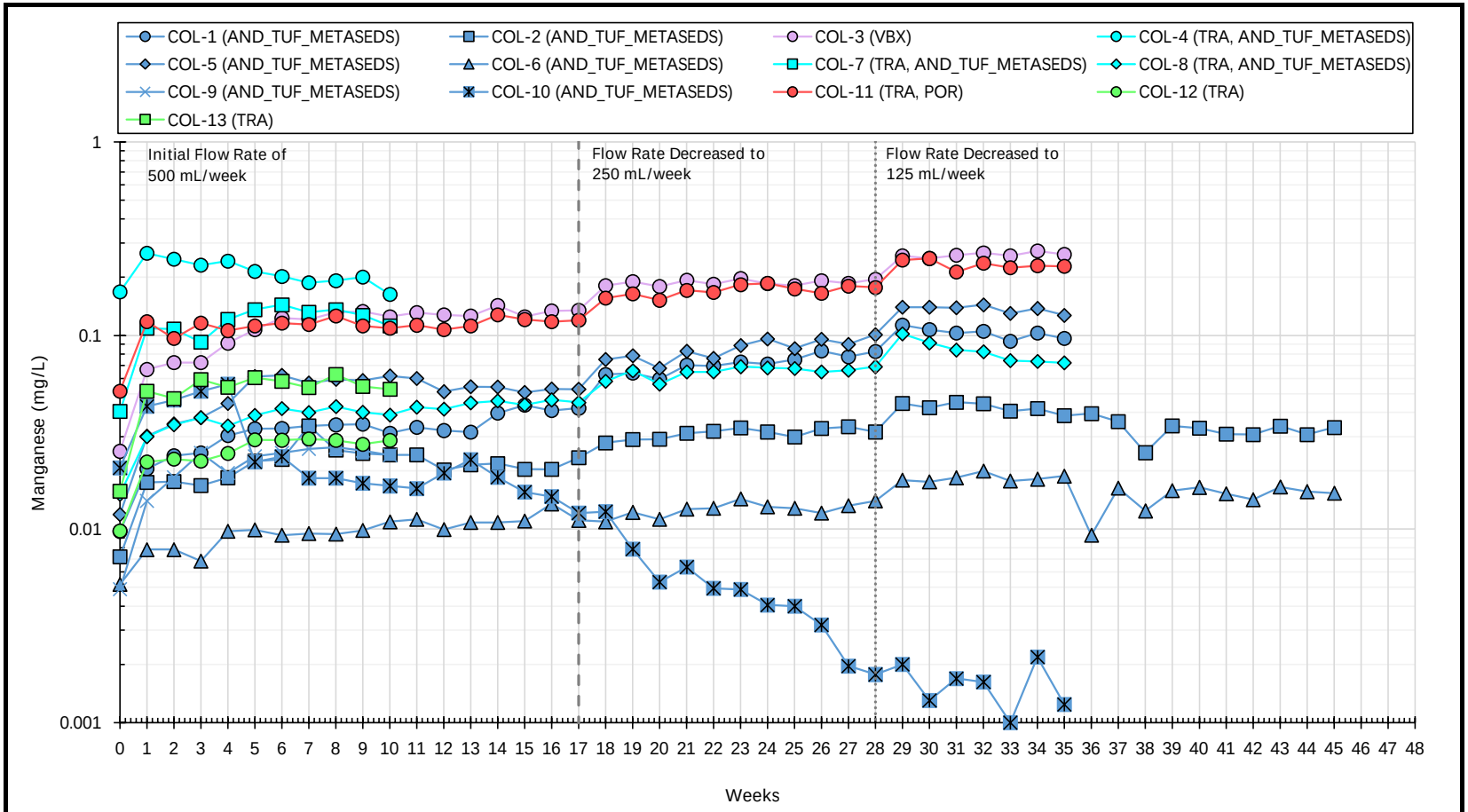
POR = Porphyry

Dissolved Magnesium (Mg) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-27	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

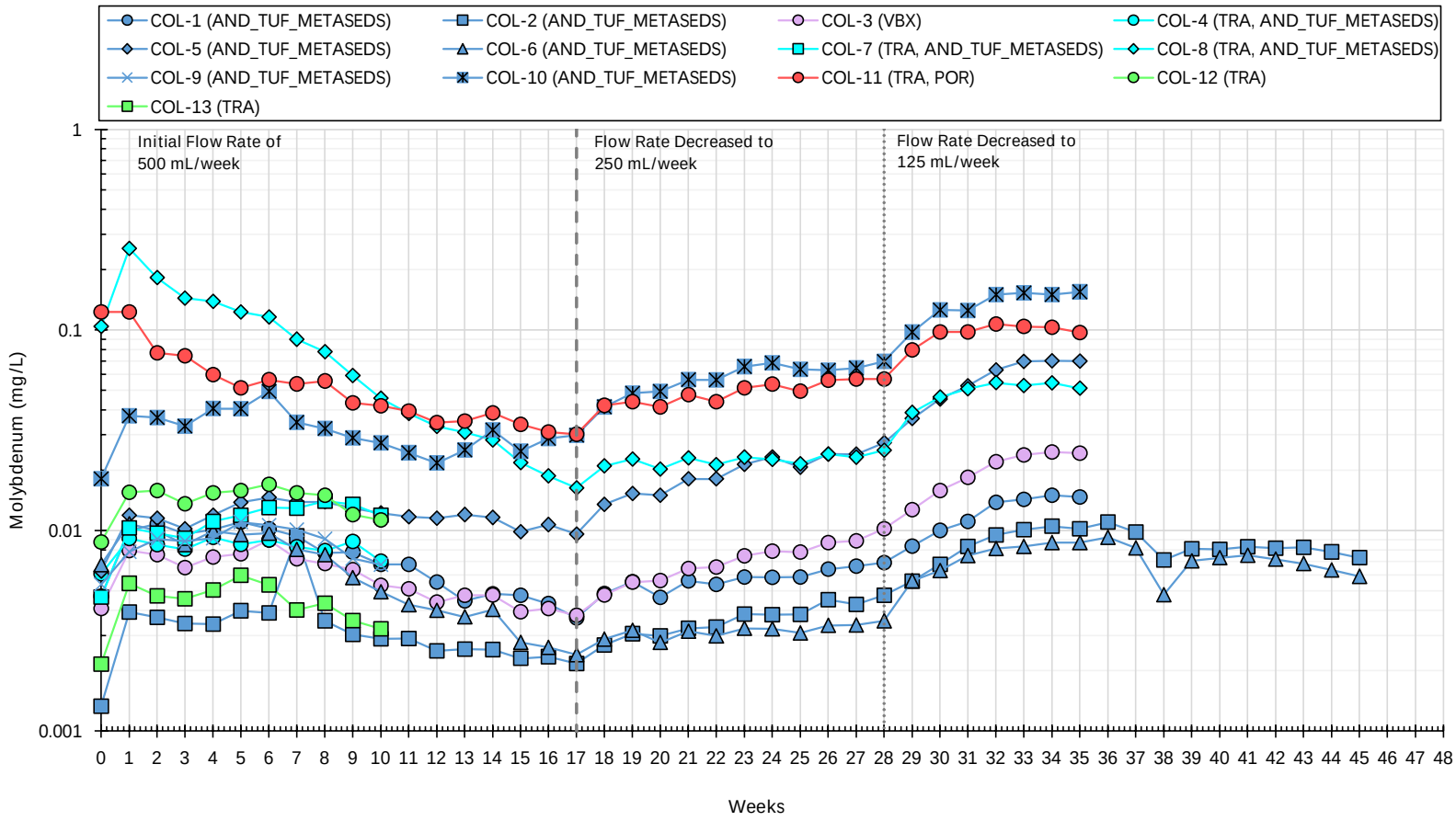
POR = Porphyry

Dissolved Manganese (Mn) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-28	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

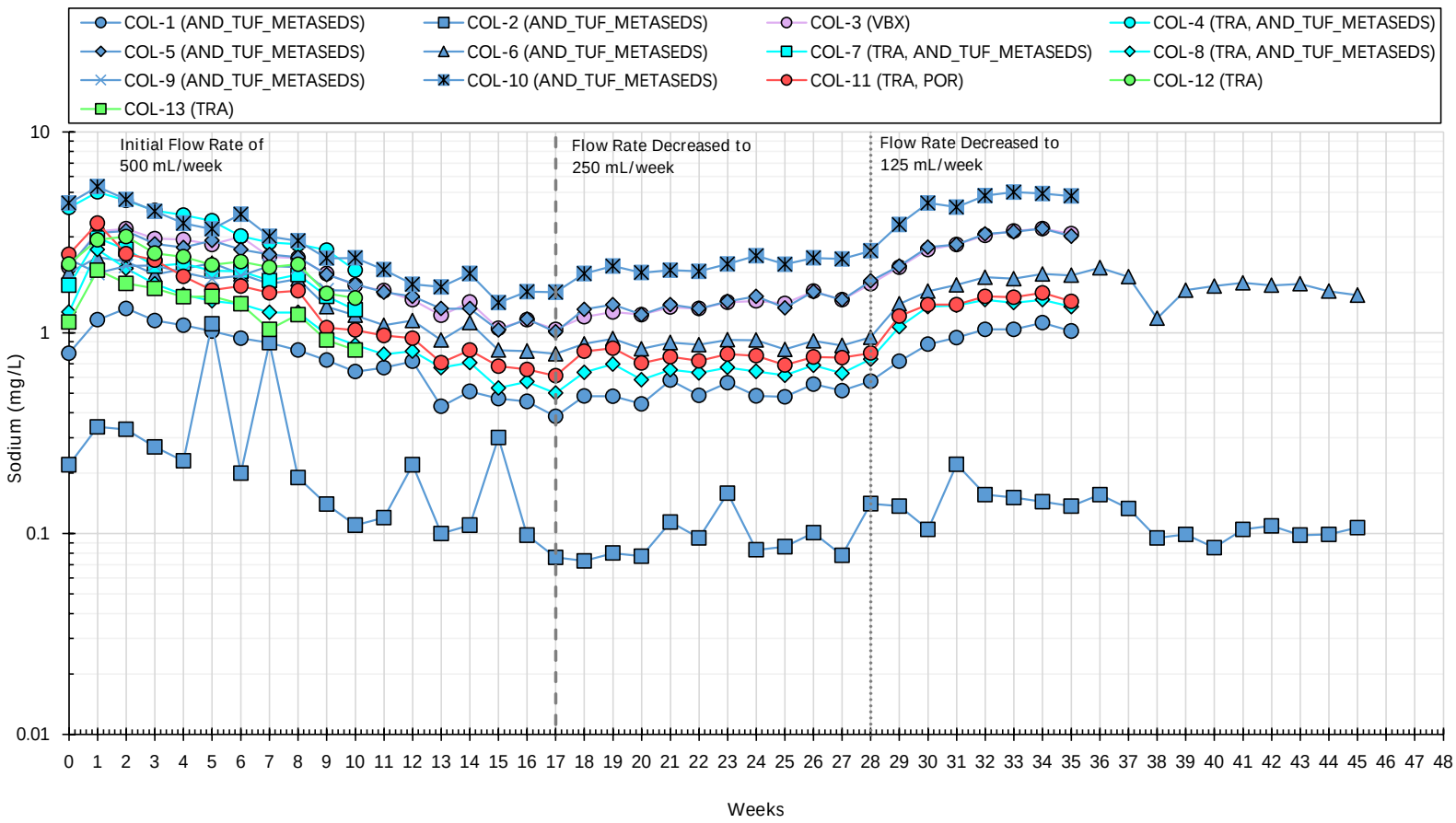
POR = Porphyry

Dissolved Molybdenum (Mo) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-29	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

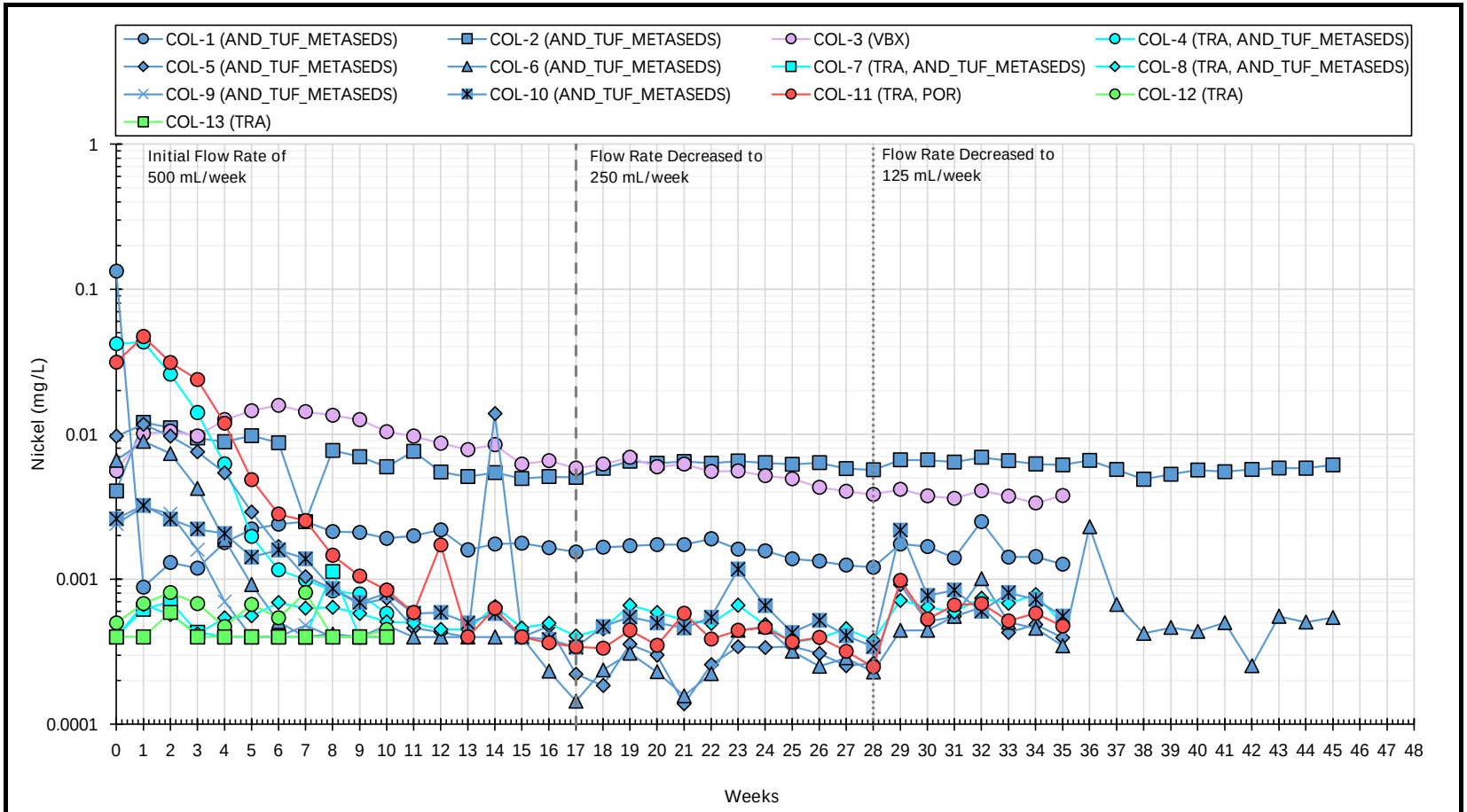
POR = Porphyry

Dissolved Sodium (Na) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-30	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

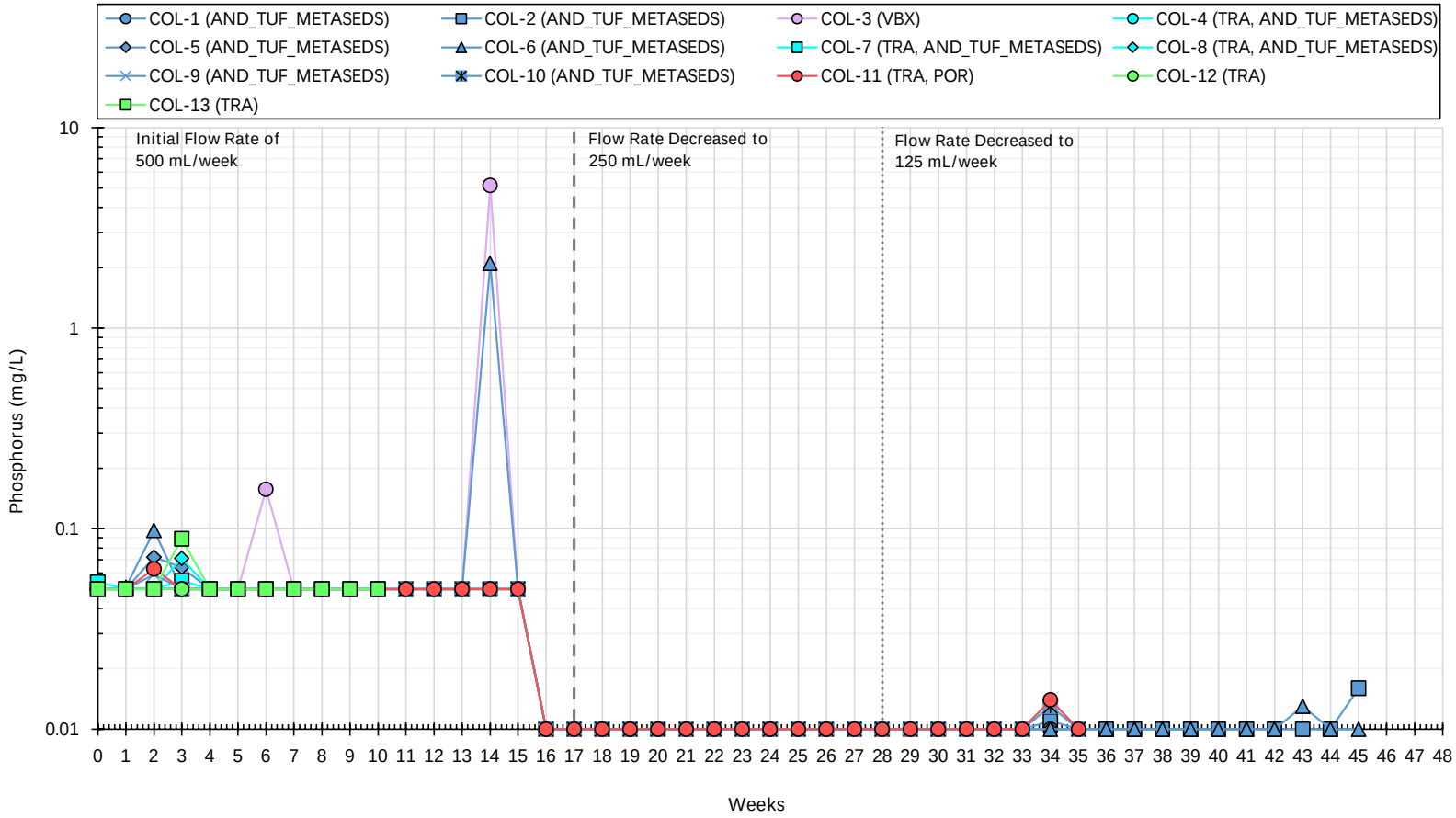
POR = Porphyry

Dissolved Nickel (Ni) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-31	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

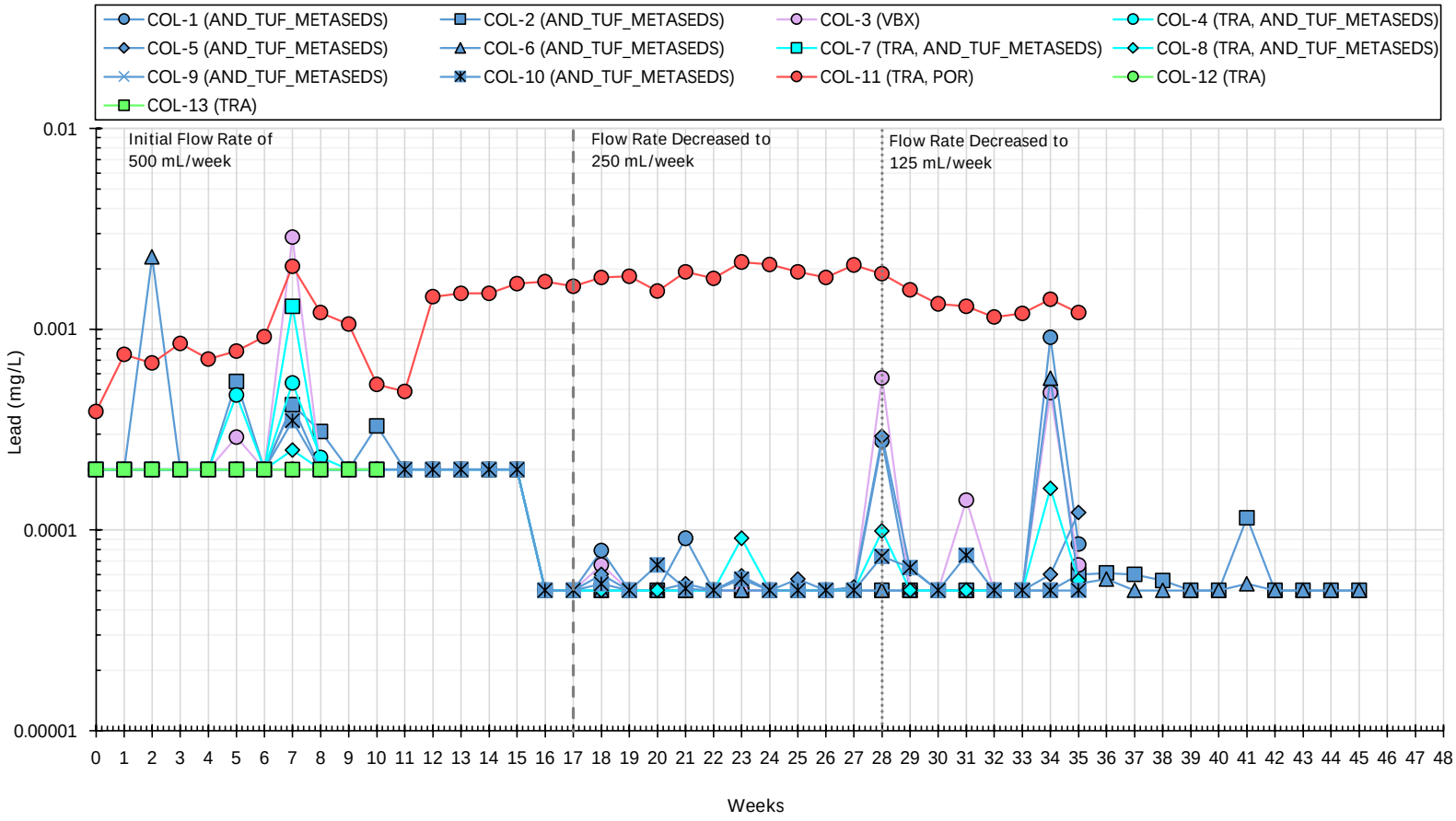
POR = Porphyry

Dissolved Phosphorus (P) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-32	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

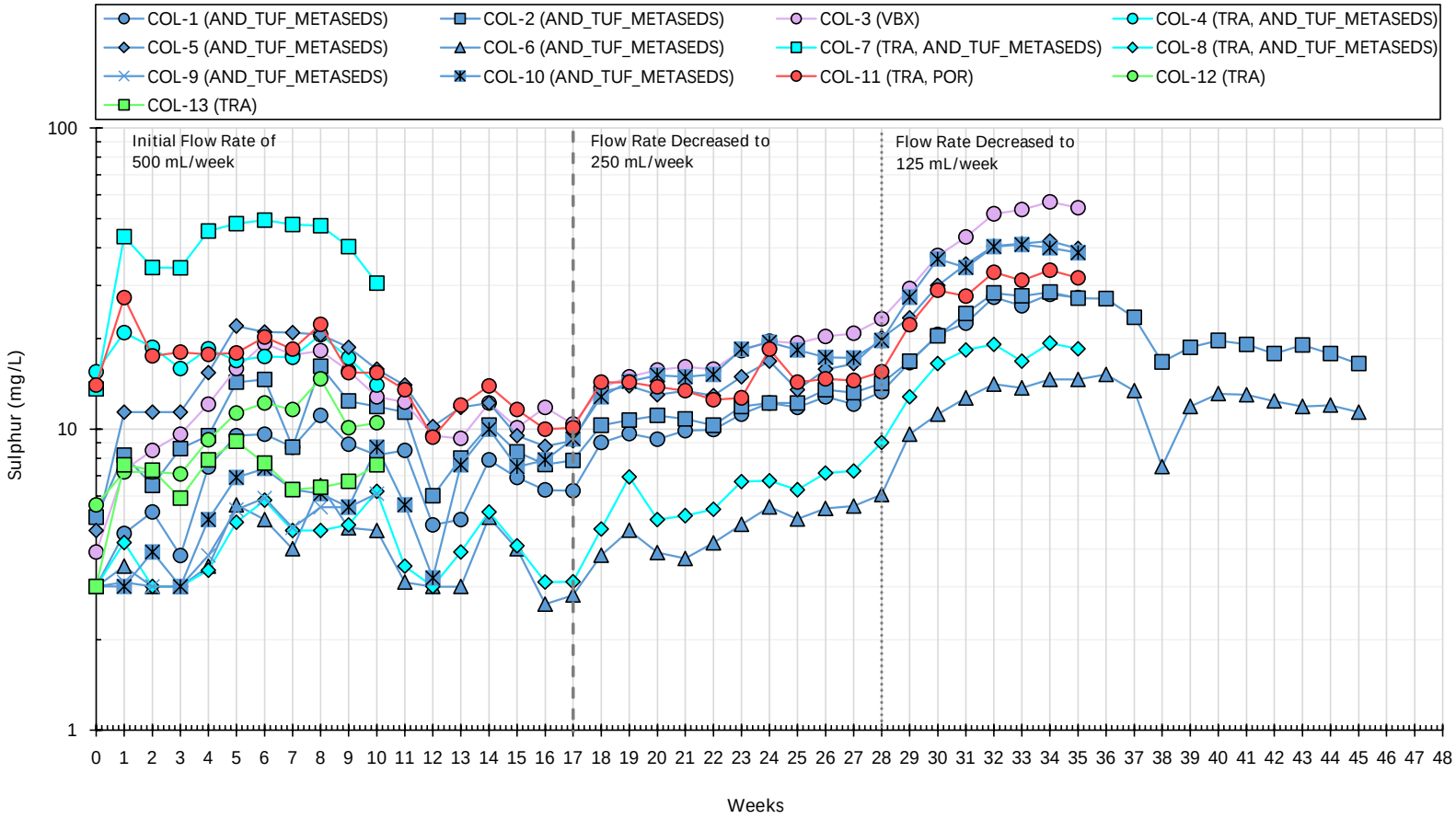
POR = Porphyry

Dissolved Lead (Pb) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-33	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

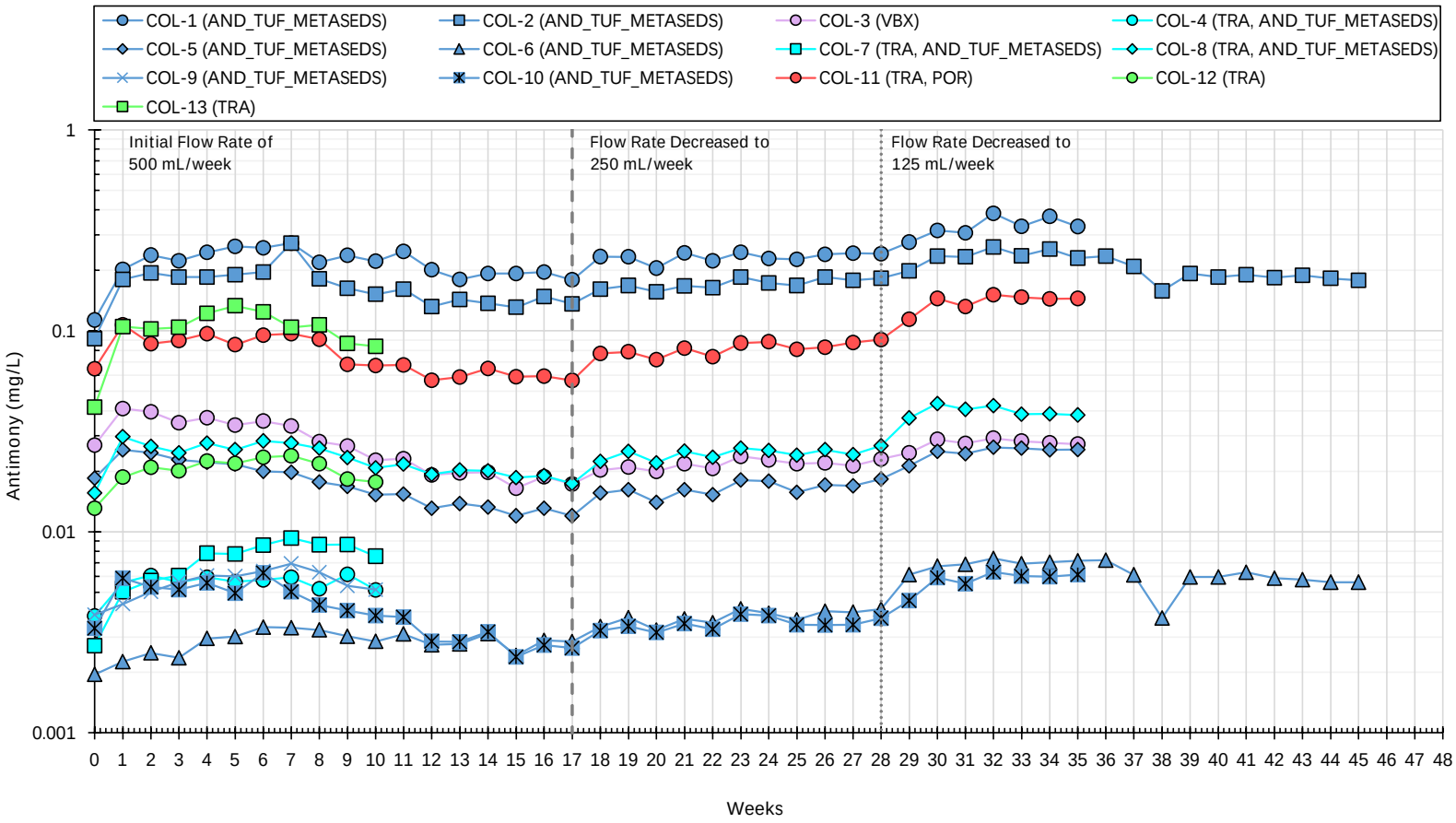
POR = Porphyry

Dissolved Sulphur (S) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-34	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

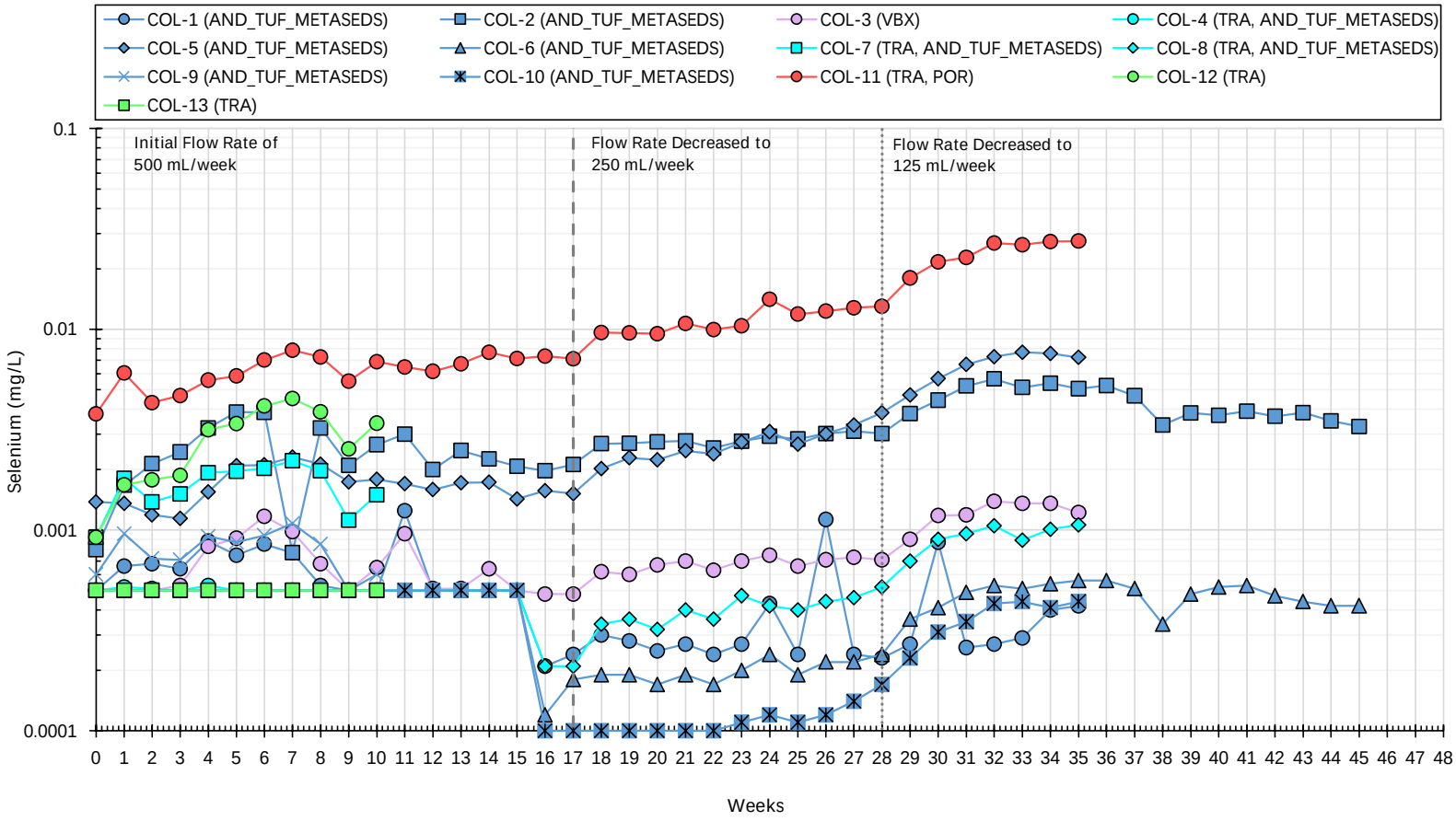
POR = Porphyry

Dissolved Antimony (Sb) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-35	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

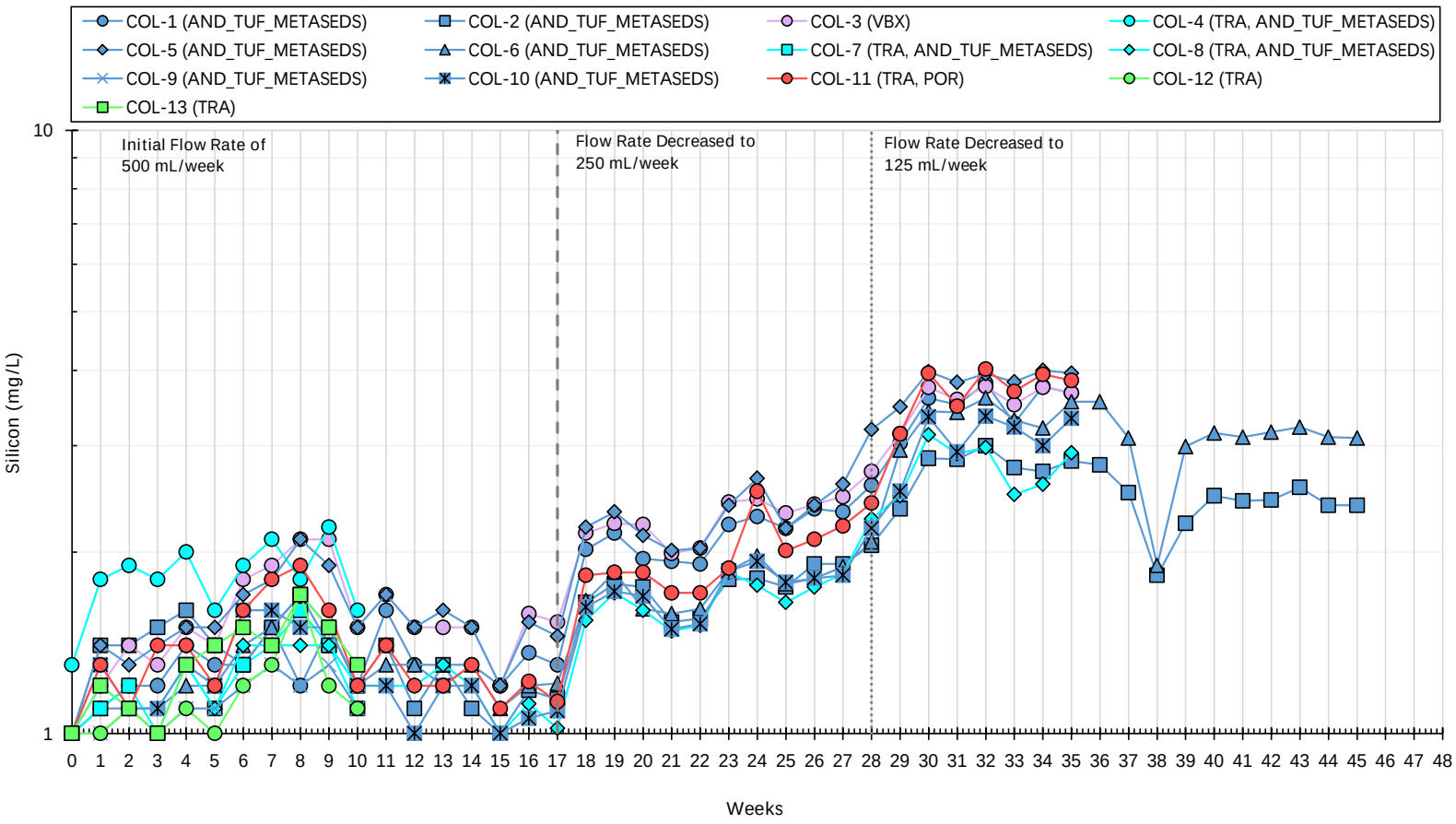
POR = Porphyry

Dissolved Selenium (Se) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-36	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

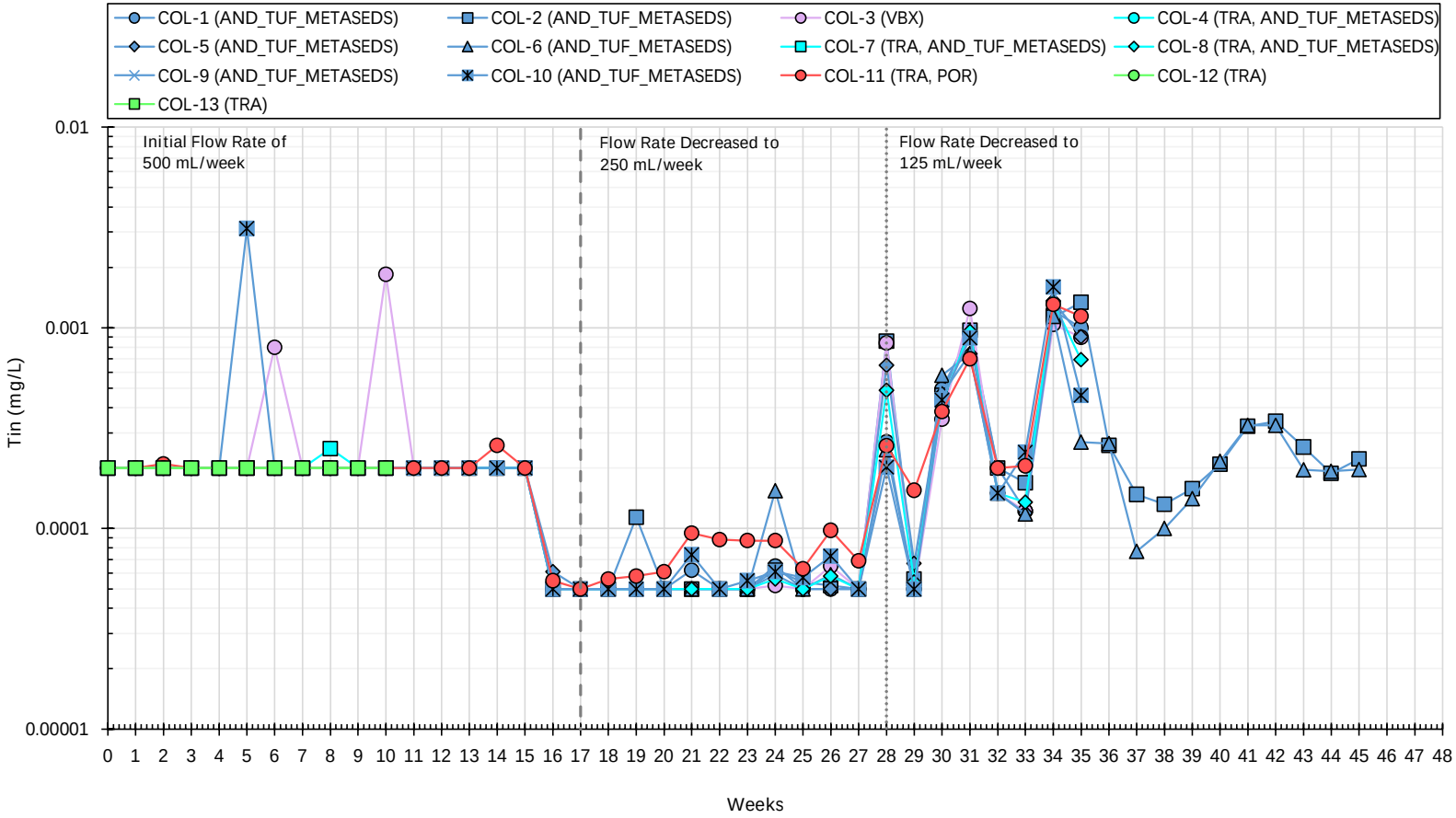
POR = Porphyry

Dissolved Silicon (Si) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-37	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

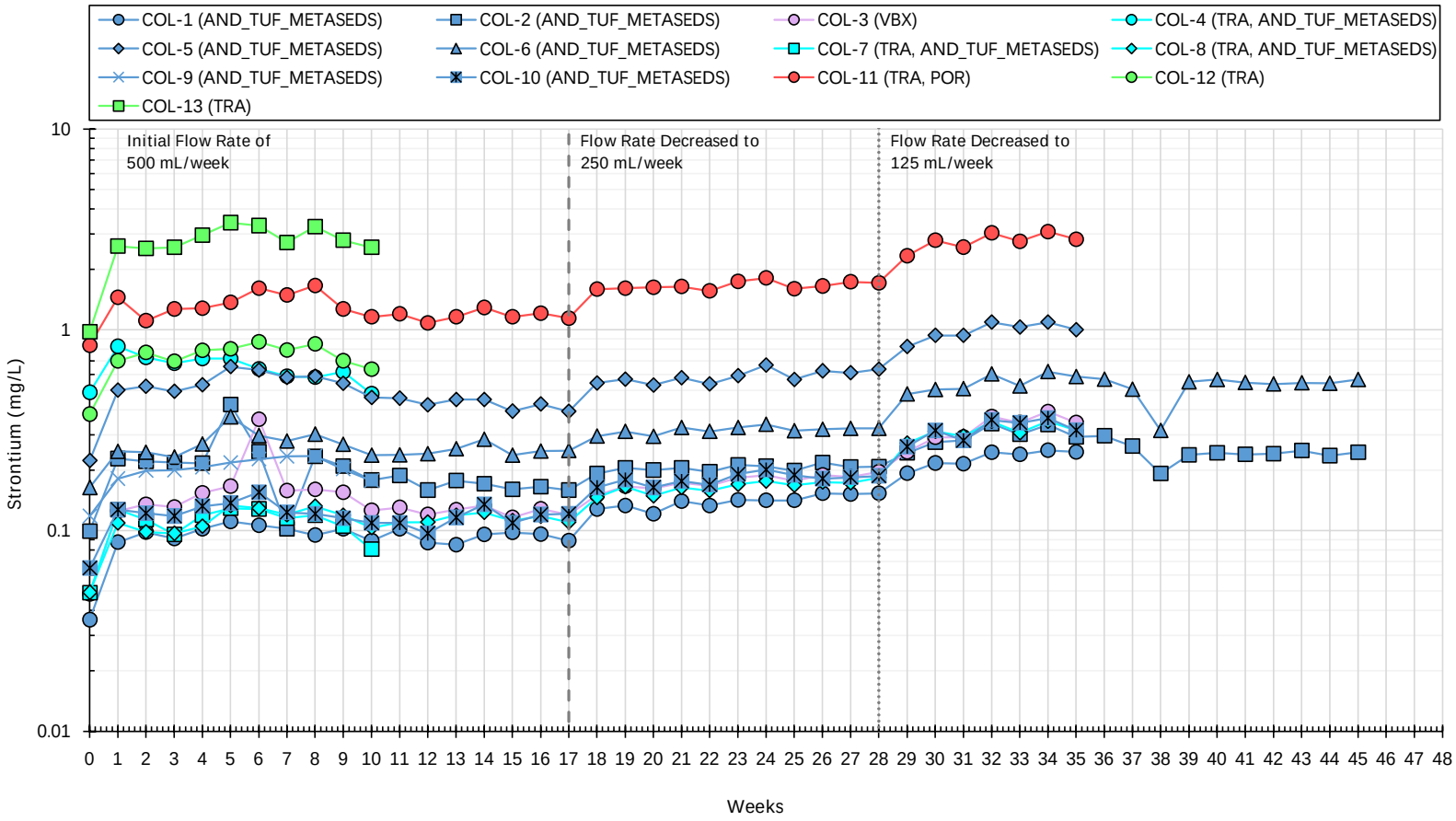
POR = Porphyry

Dissolved Tin (Sn) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-38	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

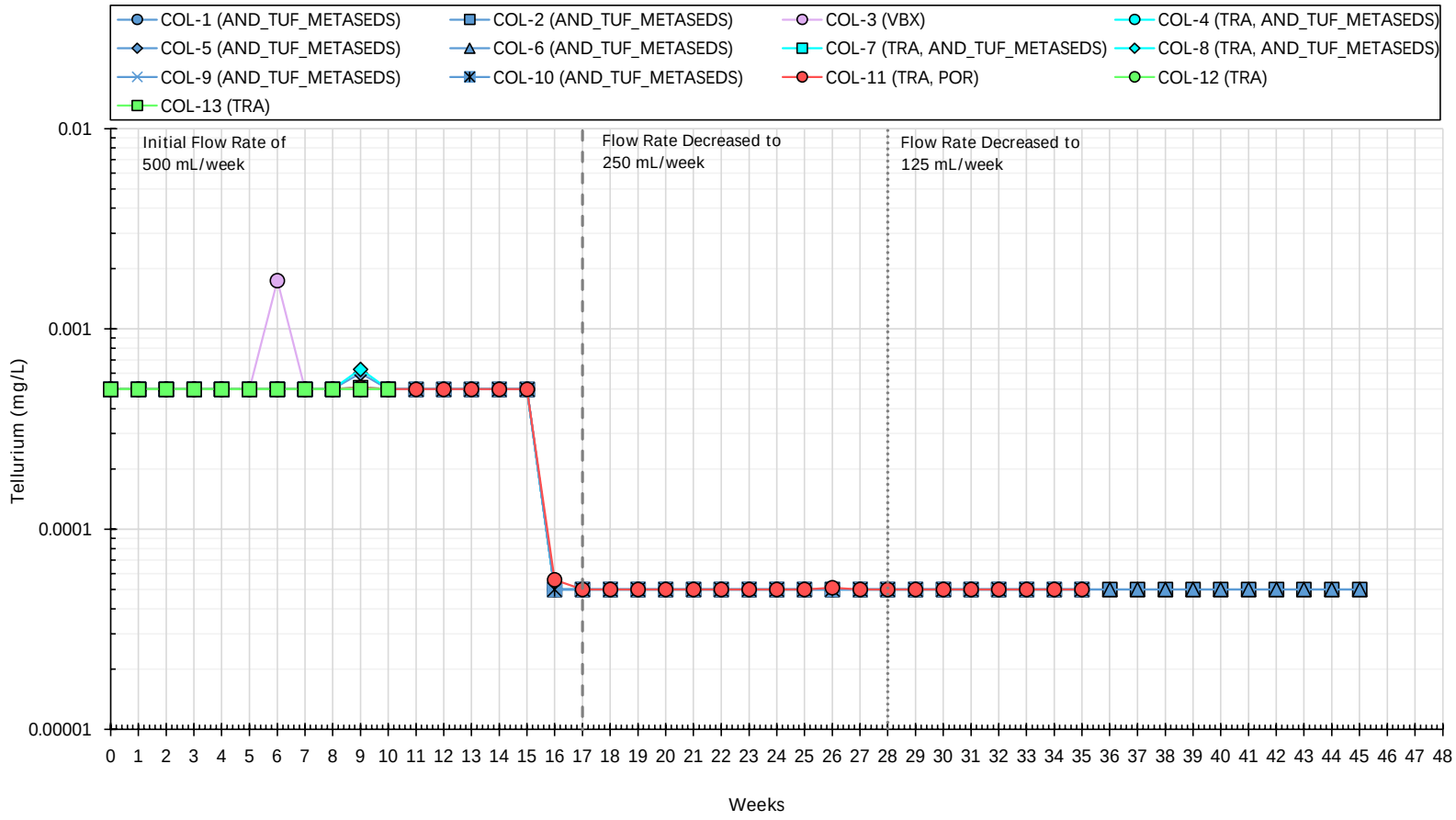
POR = Porphyry

Dissolved Strontium (Sr) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-39	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

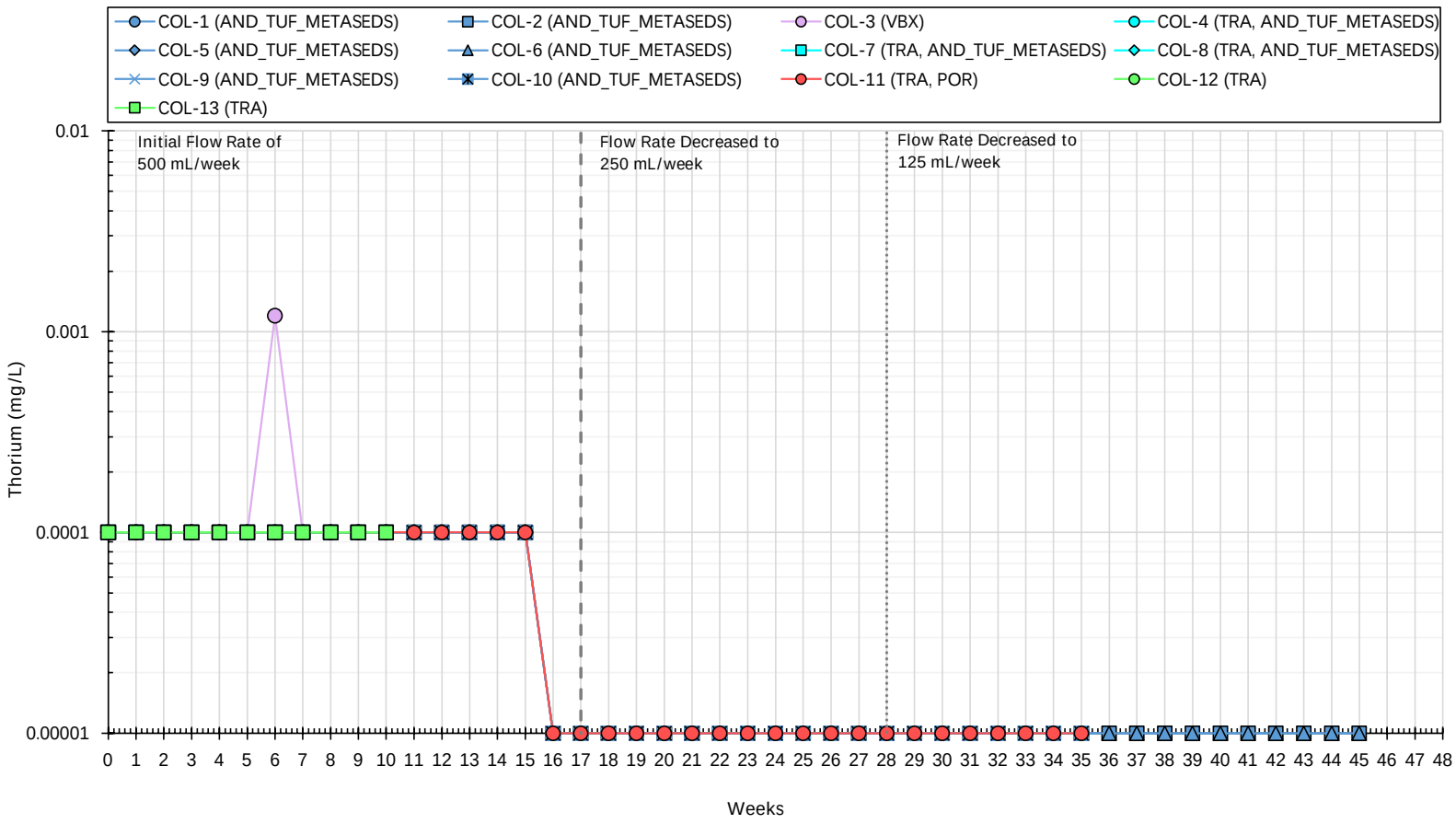
POR = Porphyry

Dissolved Tellurium (Te) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-40	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

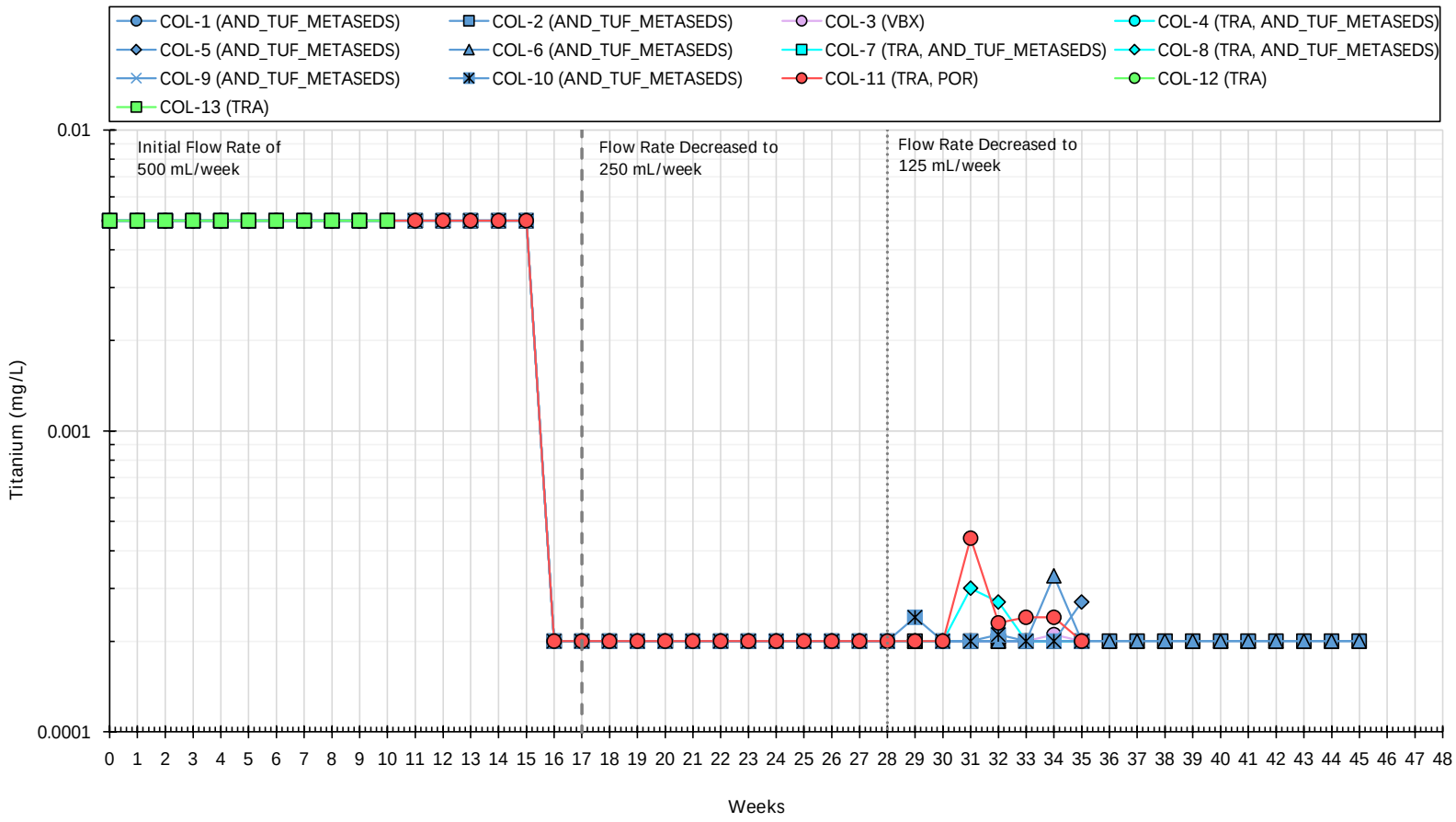
POR = Porphyry

Dissolved Thorium (Th) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-41	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

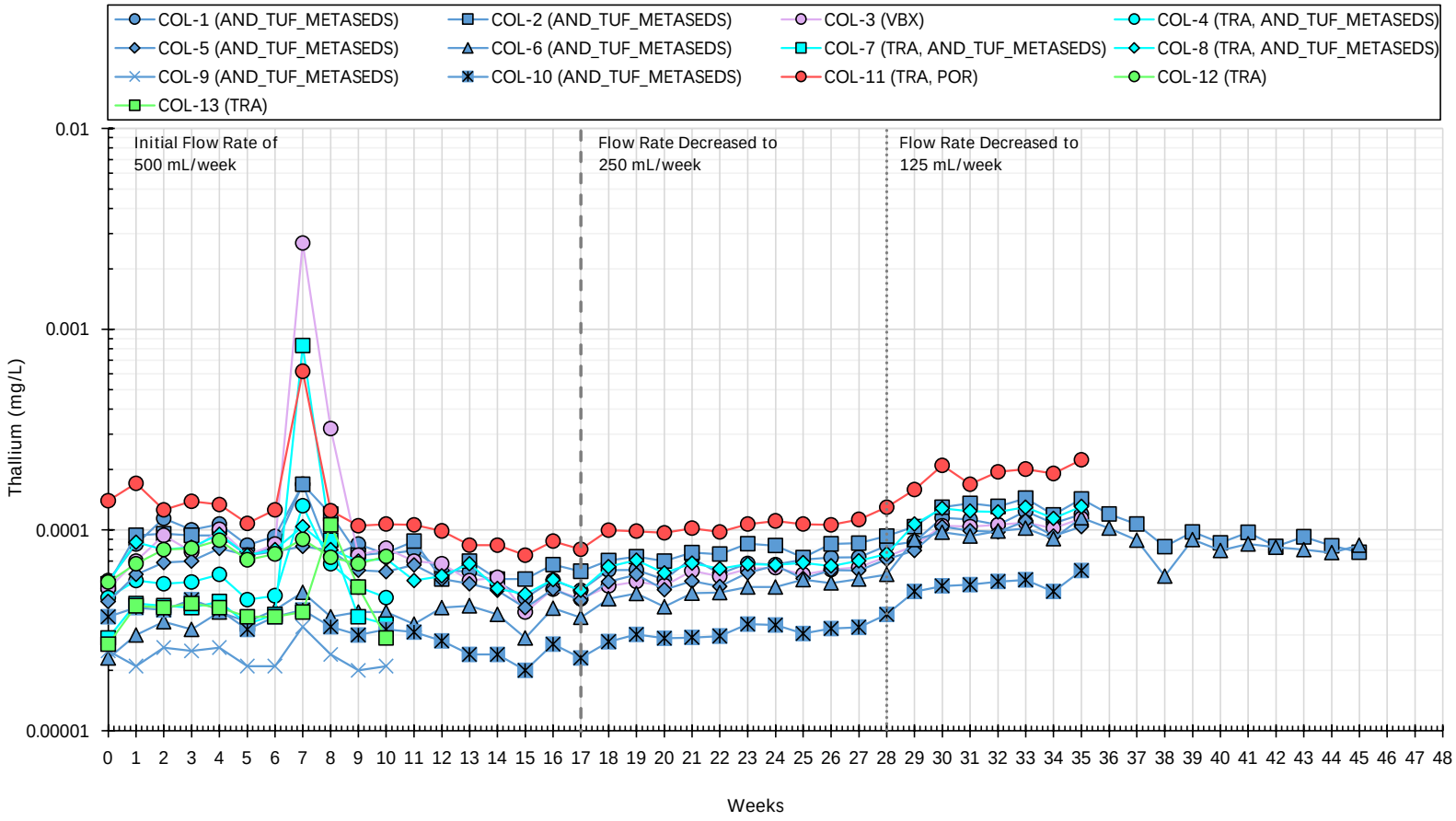
POR = Porphyry

Dissolved Titanium (Ti) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-42	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

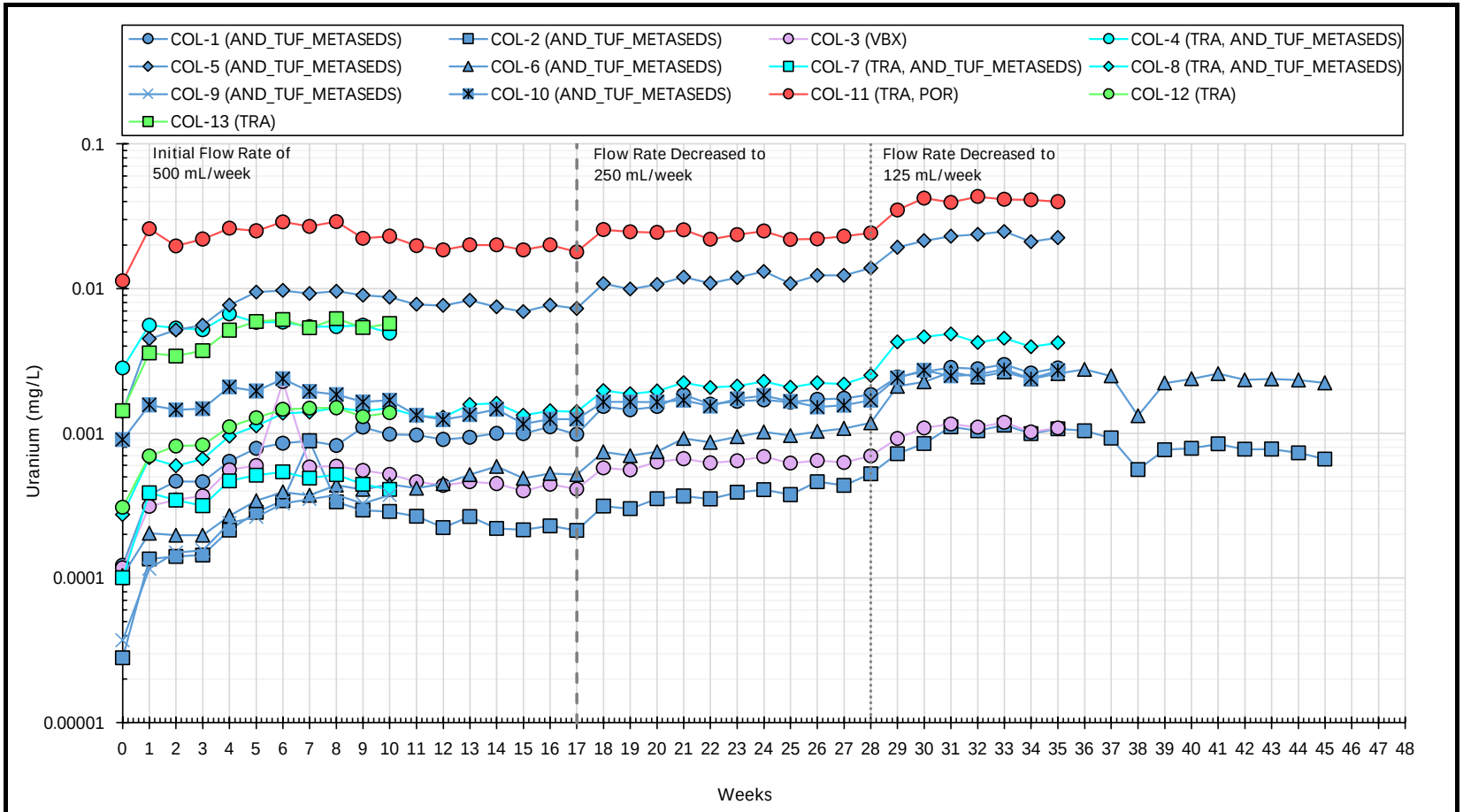
POR = Porphyry

Dissolved Thallium (Tl) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-43	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

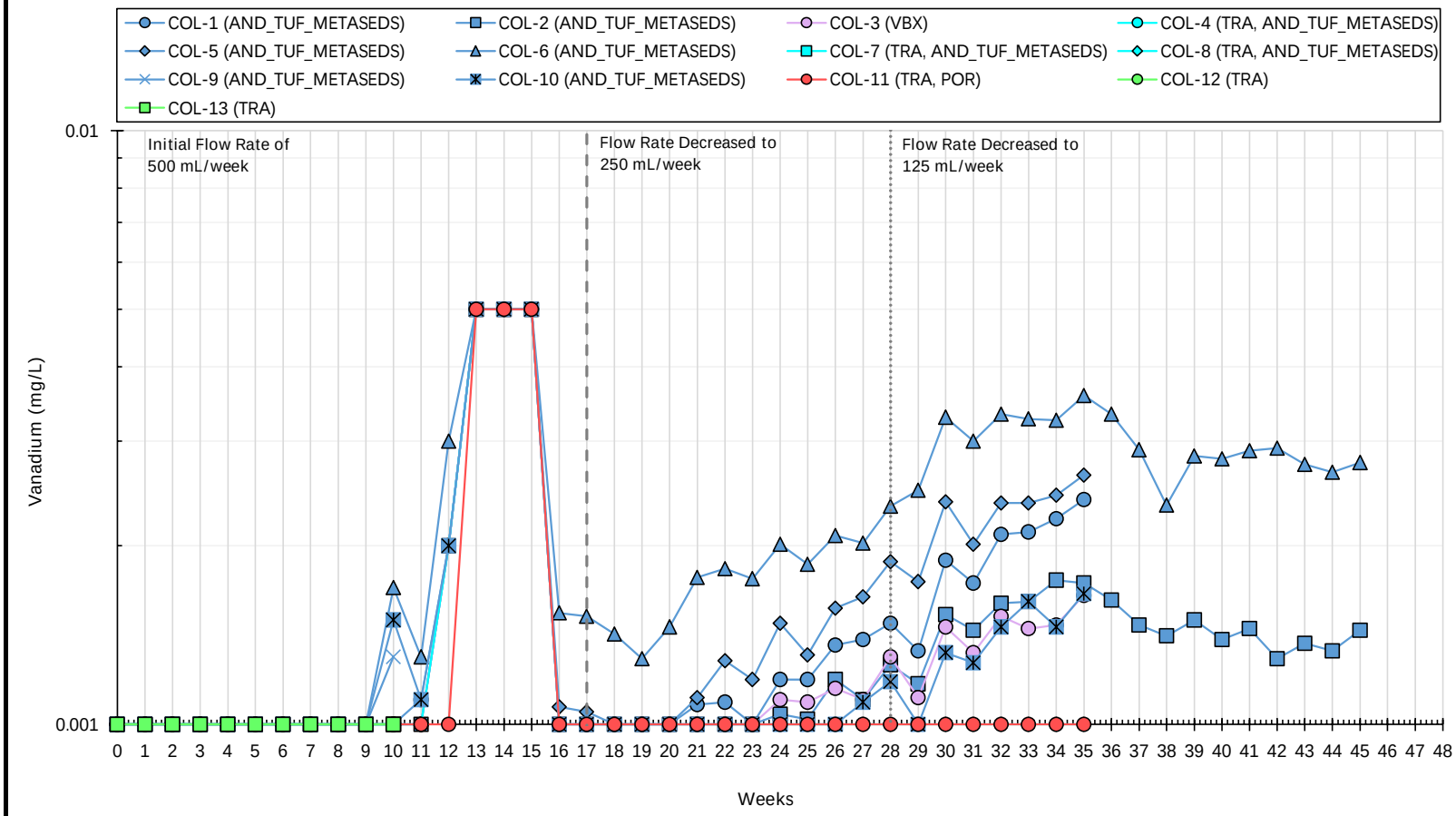
POR = Porphyry

Dissolved Uranium (U) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-44	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

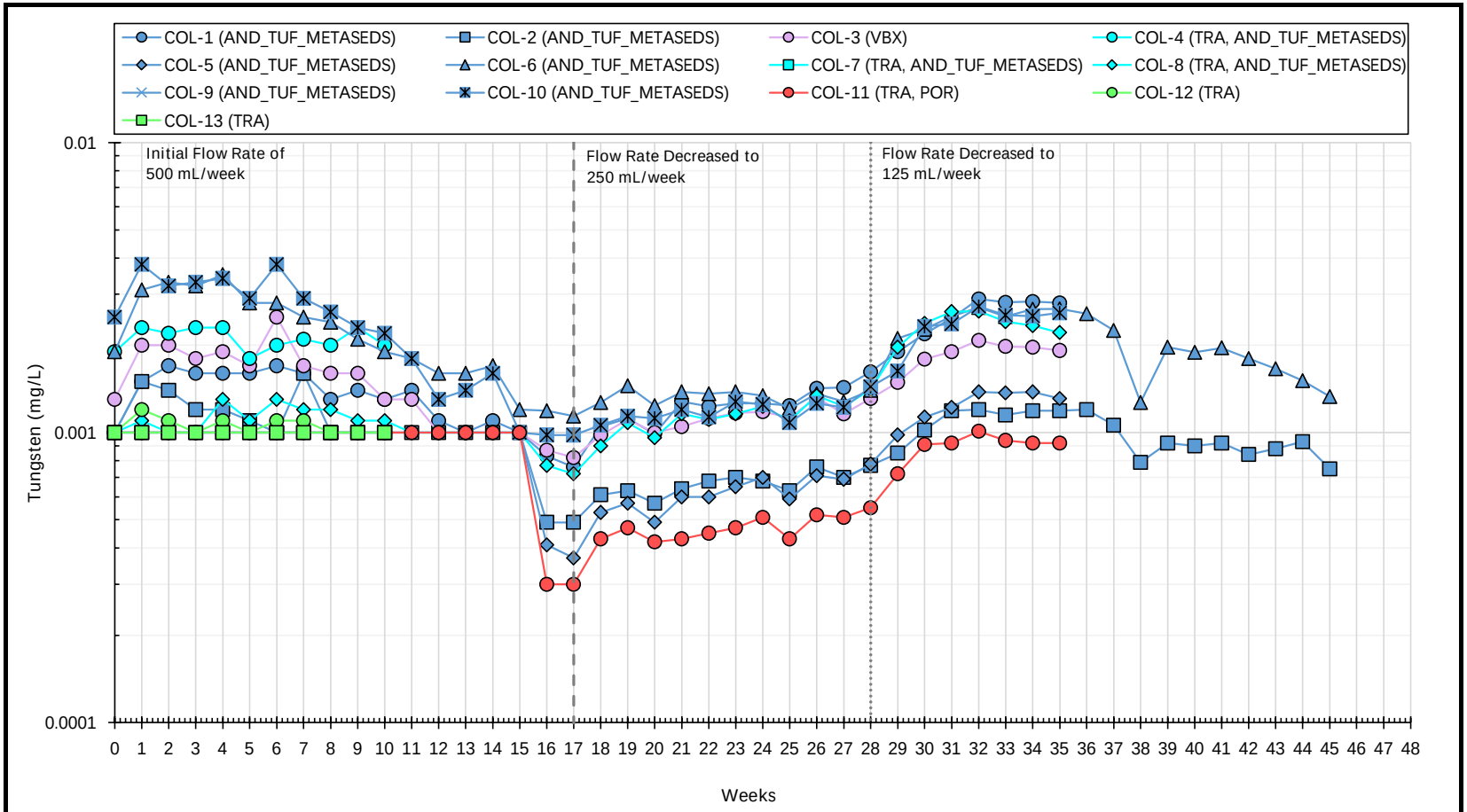
POR = Porphyry

Dissolved Vanadium (V) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-45	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

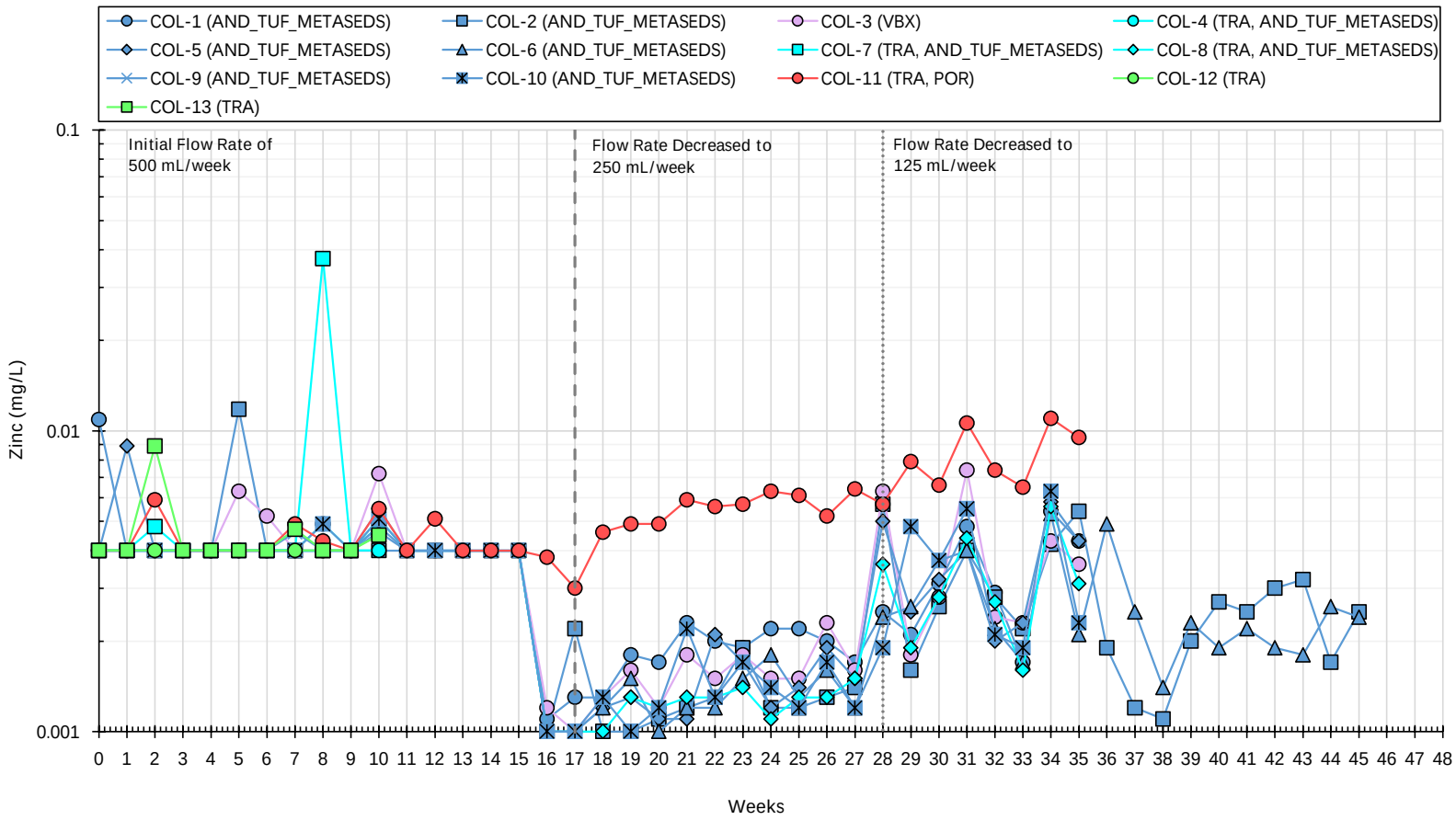
POR = Porphyry

Dissolved Tungsten (W) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-46	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

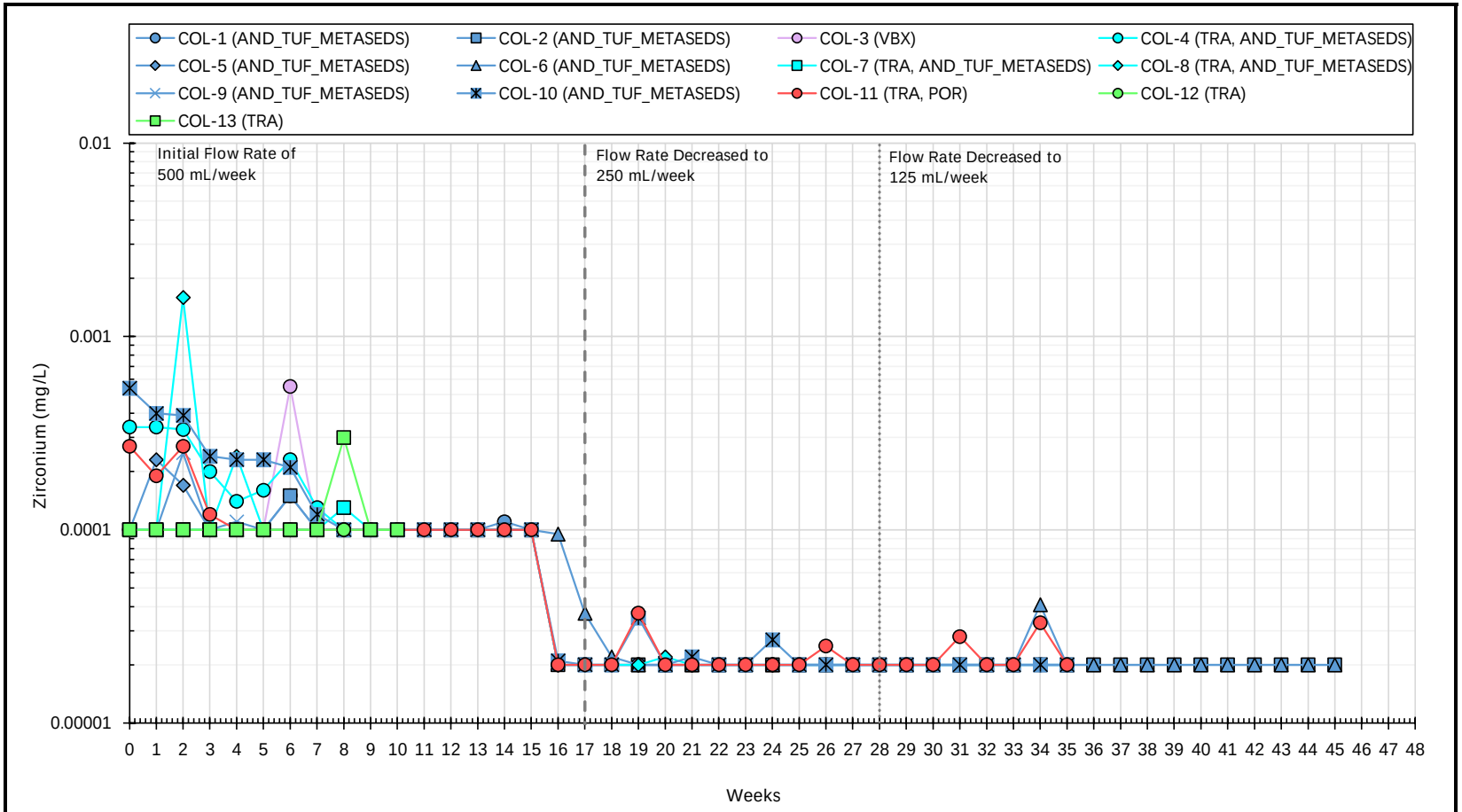
POR = Porphyry

Dissolved Zinc (Zn) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-47	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW



Notes

Lithology acronyms:

AND_TUF_METASEDS = Andesite, Tuff, and Metasediments

TRA = Trachyte

VBX = Volcanic Breccia

POR = Porphyry

Dissolved Zirconium (Zr) - ICPMS

Mine Rock Column Testing and Detailed Mineralogy Summary

Springpole Gold Project

Figure Number		C-48	
Project Number		ONS2104	
Date		April 2025	
Drawn	MT	Reviewed By	SW

Appendix D

Laboratory Certificates of Analysis

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-1

Global
ARD Testing Services Inc.

Sample ID: M112105 (B9) & M112103 (B9)
Sample Wt. used (g): 3500 + 3500 = 7000
HCT ID: COL-1

GLOBAL PROJECT NO: 1956 (Columns)
CLIENT: First Mining Gold Corporation
PROJECT NAME: Springpole Project Geochem (Columns)
PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS											
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.005	0.125	0.001	0.00005	0.00005	0.0001	0.00001	0.00001	0.002	0.000002	0.05	0.0001	0.000005
		1000	785	7.46	269	2.0	55.7	41.6	3.32	0.95	0.0740	29.0	0.0527	0.0434	0.00892	<0.0050	<0.00010	<0.00010	<0.0500	0.000013	7.18	<0.00050	0.0001
											Replicate Analysis:	28.5	0.0507	0.0403	0.00845	<0.0050	<0.00010	<0.00010	<0.0500	0.000017	7	<0.00050	0.0001
29-Dec-21	0	1000	910	7.25	220	3.8	53.9	34.1	2.47	0.74	0.0120	37.0	0.0858	0.207	0.0197	<0.0050	<0.00010	<0.00010	<0.0500	0.000011	8.08	<0.00050	0.0002
		1000	950	7.43	147.1	2.7	42.4	19.0	1.04	0.36	0.0104	27.4	0.115	0.146	0.0169	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	6	<0.00050	0.0001
		2000	1940	7.53	84	2.4	31.1	8.3	0.27	0.31	0.0074	17.0	0.114	0.0827	0.0137	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	3.94	<0.00050	<0.00010
		2000	1960	7.59	95.1	2.4	36.9	6.3	0.15	0.24	0.0069	23.7	0.137	0.113	0.0217	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	5.37	<0.00050	0.0001
05-Jan-22	1	500	491	7.54	175.4	2.5	63.6	17.8	0.43	0.38	<0.0050	54.5	0.081	0.202	0.038	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	12.4	<0.00050	0.00038
12-Jan-22	2	500	480	7.77	187.8	2.9	75.7	20.0	0.18	0.29	0.0123	61.9	0.0918	0.238	0.0558	0.0059	<0.00010	<0.00010	<0.0500	<0.000010	13.8	<0.00050	0.00058
											Replicate Analysis:	60.8	0.0892	0.234	0.054	0.0057	<0.00010	<0.00010	<0.0500	<0.000010	13.4	<0.00050	0.00055
19-Jan-22	3	500	485	7.72	198.9	2.0	71.1	17.2	0.17	0.34	0.0071	58.9	0.0813	0.223	0.0641	0.0055	<0.00010	<0.00010	<0.0500	<0.000010	13.2	<0.00050	0.00074
											Replicate Analysis:	57.8	0.0826	0.222	0.0621	0.0056	<0.00010	<0.00010	<0.0500	<0.000010	12.8	<0.00050	0.00068
26-Jan-22	4	500	480	7.45	183.5	3.1	76.9	24	0.11	0.28	0.0165	65	0.0866	0.245	0.0929	0.0059	<0.00010	<0.00010	<0.0500	<0.000010	14.5	<0.00050	0.00116
02-Feb-22	5	500	477	7.38	198.5	4.1	66.9	27.9	0.11	0.25	0.0153	69.8	0.0713	0.263	0.13	0.0085	<0.00010	<0.00010	<0.0500	<0.000010	15.4	<0.00050	0.00168
							Replicate Analysis:	28	0.11	0.25	N/A	68.1	0.0721	0.257	0.125	0.0056	<0.00010	<0.00010	<0.0500	0.000012	14.8	<0.00050	0.00164
02-Feb-22	5D											68.1	0.067	0.25	0.124	0.0065	<0.00010	<0.00010	<0.0500	<0.000010	14.7	<0.00050	0.00177
											Replicate Analysis:	68.5	0.0673	0.252	0.125	0.0063	<0.00010	<0.00010	<0.0500	<0.000010	14.9	<0.00050	0.00185
09-Feb-22	6	500	479	7.36	181.5	3.8	62.2	29.7	0.17	0.19	0.0216	68.5	0.082	0.259	0.166	0.0054	<0.00010	<0.00010	<0.0500	<0.000010	15.5	<0.00050	0.00207
16-Feb-22	7	500	475	7.50	193.9	3.6	62.6	29.9	<0.10	0.31	0.0103	68.7	0.0557	0.273	0.198	0.0056	<0.00010	<0.00010	<0.0500	0.000022	15.1	<0.00050	0.00246
											Replicate Analysis:	68.8	0.0693	0.274	0.197	0.006	<0.00010	<0.00010	<0.0500	0.000025	15.2	<0.00050	0.00246
23-Feb-22	8	500	474	7.39	118	2.5	50.0	26.1	<0.10	0.25	0.0253	63.2	0.0815	0.219	0.174	<0.0050	<0.00010	<0.00010	<0.0500	0.000013	13.7	<0.00050	0.00232
02-Mar-22	9	500	470	7.42	192	3.4	61.2	34.2	<0.10	0.40	0.0251	72.5	0.0818	0.237	0.232	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	17.1	<0.00050	0.0027
09-Mar-22	10	500	473	6.88	184	5.0	52.2	30.1	0.11	0.28	0.0068	59.6	0.0748	0.222	0.192	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	13.1	<0.00050	0.0026
16-Mar-22	11	500	472	7.56	177	3.2	60.9	28.5		0.30	0.0052	68.9	0.0982	0.248	0.238	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	15.1	<0.00050	0.00285
23-Mar-22	12	500	477	7.61	160	2.8	56.2	20.4		0.25	0.0154	60.0	0.0725	0.201	0.221	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	13.4	<0.00050	0.0032
30-Mar-22	13	500	478	7.67	140	2.9	55.3	21.3		0.17	0.0208	54.3	0.086	0.18	0.227	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	12.5	<0.00050	0.00285
06-Apr-22	14	500	475	7.61	104	2.8	54.5	20.4		0.19	0.0057	60.7	0.0685	0.193	0.247	<0.0050	<0.00010	<0.00010	<0.0500	0.000011	13.5	<0.00050	0.0035
											Replicate Analysis:	59.5	0.068	0.179	0.228	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	13.1	<0.00050	0.0032
13-Apr-22	15	500	469	7.58	166	3.0	57.5	20.2		<0.10	0.009	63.2	0.0686	0.193	0.241	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	14.4	<0.00050	0.00401
											Replicate Analysis:	61.9	0.0692	0.19	0.234	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	13.9	<0.00050	0.0039
20-Apr-22	16	500	471	7.71	176	2.3	58.3	20.1		0.21	0.0081	62.4	0.0766	0.196	0.263	0.0038	<0.000010	<0.000010	0.0092	0.0000035	14.3	0.00016	0.0038
27-Apr-22	17	500	474	7.48	156	3.9	55.1	17.9		<0.10	0.0092	59.7	0.0797	0.179	0.26	0.00352	<0.000010	<0.000010	0.0076	0.0000035	13.9	<0.00010	0.00373
04-May-22	18	**250**	228	7.77	223	3.6	82.0	38.2		0.18	<0.0050	88.2	0.0648	0.234	0.257	0.0053	<0.000010	<0.000010	0.0114	0.0000068	20.7	0.00026	0.0045
11-May-22	19	250	222	7.43	197	6.3	81.6	28.9		<0.10	<0.0050	93.7	0.0662	0.233	0.275	0.0050	<0.000010	<0.000010	0.0117	0.0000062	22.5	0.00034	0.0050
18-May-22	20	250	232	7.26	215	8.3	80.2	30		0.22	0.0105	88.1	0.062	0.205	0.253	0.0044	<0.000010	<0.000010	0.0119	0.0000059	21.3	0.00041	0.00466
											Replicate Analysis:	87.5	0.060	0.205	0.252	0.0047	<0.000010	<0.000010	0.0118	0.000007	21.1	0.00041	0.00465
25-May-22	21	250	221	7.01	232	11.7	83.6	40.3		0.22	0.0075	94.1	0.066	0.244	0.294	0.0411	<0.000010	<0.000010	0.0141	<0.0000200	22.2	0.00051	0.0053
											Replicate Analysis:	93.9	0.065	0.246	0.299	0.0416	<0.000010	<0.000010	0.0140	<0.0000200	22.2	0.00053	0.0054
01-Jun-22	22	250	225	7.22	254	2.0	81.2	33.6		0.15	<0.0050	90.7	0.071	0.223	0.281	0.0050	<0.000010	<0.000010	0.0110	0.0000077	21.2	0.00046	0.00534
08-Jun-22	23	250	230	7.11	243	9.3	82.7	35		0.24	<0.0050	103.0	0.065	0.246	0.303	0.0059	<0.000010	<0.000010	0.0154	0.0000079	25.3	0.00051	0.00553
											Replicate Analysis:	98.5	0.064	0.245	0.310	0.0062	<0.000010	<0.000010	0.0148	0.0000086	23.5	0.00046	0.00569
15-Jun-22	24	250	222	7.78	240	3.0	78.5	36.8		0.14	<0.0050	97.8	0.067	0.229	0.309	0.0056	<0.000010	0.000011	0.0117	0.0000053	23.9	0.0006	0.00551
22-Jun-22	25	250	223	7.32	227	8.2	80.3	35.4		0.24	<0.0050	99.8	0.063	0.227	0.303	0.0055	<0.000010	<0.000010	0.0115	0.000008	25.3	0.00061	0.00551
29-Jun-22	26	250	224	7.39	234	6.2	79.7	38.9		0.17	<0.0050	99.3	0.067	0.24	0.341	0.0064	<0.000010	<0.000010	0.0139	0.0000094	24.2	0.00049	0.00561
06-Jul-22	27	250	220	7.19	236	8.0	80.5	38.8		0.25	0.0084	105.0	0.071	0.243	0.342	0.0057	<0.000010	<0.000010	0.0142	0.0000089	26.7	0.00029	0.0052
											Replicate Analysis:	107.7	0.072	0.245	0.348	0.0057	<0.000010	<0.000010	0.0141	0.0000085	27.9	0.00031	0.00528
13-Jul-22	28	250	225	7.52	261	8.1	89.0	43.7		0.23	<0.0050	107.0	0.082	0.242	0.37	0.0065	<0.000010	<0.000010	0.0148	0.0000251	26.8	0.00036	0.00528
											Replicate Analysis:	105.9	0.081	0.244	0.372	0.0069	<0.000010	<0.000010	0.0144	0.0000211	26.3	0.00034	0.00529
20-Jul-22	29	**125**	119	7.35	302	8.2	100.6	52.4		0.14		136.0	0.059	0.276	0.349	0.0074	<0.000010	<0.000010	0.0157	0.0000122	34.1	0.00046	0.00576
27-Jul-22	30	125	121	7.92	332	5.0	106.0	61.7		0.19		147.0	0.078	0.316	0.423	0.0083	<0.000010	<0.000010	0.0232	0.0000129	36.6	0.0006	0.00601
03-Aug-22	31	125	117	7.64	363	10.0	103.0	68.3		0.17		152.0	0.063	0.307	0.433	0.0083	<0.000010	<0.000010	0.0229	0.0000121	37.7	0.00086	0.00537
10-Aug-22	32	125	120	7.90	383	5.0	105.0	79.9		0.20		163.0	0.068	0.384	0.489	0.0101	<0.000010	<0.000010	0.0254	<0.0000080	41.7	0.00068	0.00603
17-Aug-22	33	125	118	7.83	356	8.3	88.3	79.7		0.24		151.0	0.070	0.331	0.509	0.0100	<0.000010	<0.000010	0.0213	0.0000109	36.7	0.00054	0.00578
24-Aug-22	34	125	116	7.77	361	3.3	98.3	82.4		0.27		165.0	0.062	0.37	0.525	0.0106	<0.000010	<0.000010	0.0241	0.0000202	41.9	0.00099	0.00584
31-Aug-22	35	125	115	8.02	367	2.5	90.0	78.4		0.23		159.0	0.073	0.33	0.543	0.0095	<0.000010	<0.000010	0.0236	0.0000147	40.5	0.00058	0.00577

CERTIFICATE OF ANALYSIS • KINE

Global
ARD Testing Services Inc.

				Instrument/Method:						CVAA													
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0001	0.002	0.00005	0.00005	0.005	0.00005	0.0000050 / 0.000020	0.00001	0.00004	0.01	0.02	0.0001	0.1	0.00001	0.02	0.0001	1	0.00005	0.000004	0.00001
		1000	785	0.0006	0.01	<0.00020	0.00812	2.69	0.0079	<0.000005	0.0155	0.001	0.068	50.1	0.00383	<1.0	<0.000050	6.43	0.0485	15.0	<0.00050	0.000174	<0.00010
				0.00052	<0.010	<0.00020	0.00773	2.52	0.0072		0.0144	0.00096	<0.050	47.2	0.00364	<1.0	<0.000050	6.05	0.0467	14.0	<0.00050	0.000167	<0.00010
29-Dec-21	0	1000	910	<0.00040	<0.010	<0.00020	0.00807	4.09	0.0096	<0.000005	0.0212	0.00159	<0.050	36	0.00238	<1.0	<0.000050	4.05	0.0656	12.0	<0.00050	0.00014	<0.00010
		1000	950	0.00046	<0.010	<0.00020	0.00584	3.01	0.0067	<0.000005	0.0116	0.00069	<0.050	22.9	0.00174	<1.0	<0.000050	2.32	0.0427	7.5	<0.00050	0.000088	<0.00010
		2000	1940	<0.00040	<0.010	<0.00020	0.00309	1.74	0.0064	<0.000005	0.00444	<0.00040	<0.050	11.8	0.00054	<1.0	<0.000050	0.92	0.027	3.1	<0.00050	0.000059	<0.00010
		2000	1960	0.00913	0.11	<0.00020	0.00352	2.48	0.0097	<0.000005	0.00471	0.133	<0.050	11.5	<0.00050	<1.0	<0.000050	0.79	0.0359	<3.0	<0.00050	0.000056	<0.00010
05-Jan-22	1	500	491	<0.00040	<0.010	<0.00020	0.00634	5.72	0.0205	<0.000005	0.01	0.00088	<0.050	17.1	0.00066	1.1	<0.000050	1.16	0.0873	4.50	<0.00050	0.000085	<0.00010
12-Jan-22	2	500	480	<0.00040	<0.010	<0.00020	0.00731	6.67	0.0239	<0.000005	0.0108	0.0013	<0.050	18.2	0.00068	1.2	<0.000050	1.32	0.0981	5.30	<0.00050	0.000114	<0.00010
				<0.00040	<0.010	<0.00020	0.00723	6.69	0.024	<0.000040	0.0108	0.00127	<0.050	18.3	0.00073	1.4	<0.000050	1.32	0.0971	6.10	<0.00050	0.000111	<0.00010
19-Jan-22	3	500	485	<0.00040	<0.010	<0.00020	0.00692	6.31	0.0247	<0.000005	0.00963	0.00119	<0.050	16.2	0.00064	1.2	<0.000050	1.15	0.0911	3.80	<0.00050	0.0001	<0.00010
				<0.00040	<0.010	<0.00020	0.00678	6.42	0.0252	<0.000005	0.0098	0.00136	<0.050	16.5	0.00055	1.2	<0.000050	1.19	0.0931	4.10	<0.00050	0.000093	<0.00010
26-Jan-22	4	500	480	<0.00040	<0.010	<0.00020	0.00781	6.98	0.0304	<0.000005	0.0101	0.00179	<0.050	16.1	0.00088	1.4	<0.000050	1.09	0.102	7.50	<0.00050	0.000107	<0.00010
02-Feb-22	5	500	477	0.00114	<0.010	<0.00020	0.00722	7.58	0.033	<0.000010	0.011	0.00221	<0.050	14.2	0.00075	1.3	<0.000050	1.02	0.111	9.50	<0.00050	0.000084	<0.00010
				0.00086	<0.010	<0.00020	0.00689	7.54	0.0331	<0.000010	0.0105	0.00222	<0.050	14.3	0.00081	1.2	<0.000050	1.01	0.108	8.80	<0.00050	0.000086	<0.00010
02-Feb-22	5D			0.00078	<0.010	<0.00020	0.0069	7.63	0.033		0.0116	0.00238	<0.050	15.8	0.00066	1.4	<0.000050	1.1	0.112	8.80	<0.00050	0.00009	<0.00010
				0.00075	<0.010	<0.00020	0.00693	7.67	0.0336		0.0115	0.00258	<0.050	15.7	0.00059	1.4	<0.000050	1.1	0.112	8.70	<0.00050	0.000092	<0.00010
09-Feb-22	6	500	479	<0.00040	<0.010	<0.00020	0.00716	7.22	0.0331	<0.000010	0.0102	0.00239	<0.050	13.5	0.00085	1.3	<0.000050	0.94	0.106	9.60	<0.00050	0.000093	<0.00010
16-Feb-22	7	500	475	0.00057	<0.010	0.00042	0.00711	7.53	0.0341	<0.000010	0.00937	0.00249	<0.050	13.6	0.00077	1.5	<0.000050	0.89	0.102	8.70	<0.00050	0.000169	<0.00010
				0.00055	<0.010	0.0004	0.0073	7.56	0.0339		0.00938	0.00249	<0.050	13.7	0.00073	1.6	<0.000050	0.89	0.103	9.80	<0.00050	0.000165	<0.00010
23-Feb-22	8	500	474	0.00077	<0.010	<0.00020	0.00554	7.05	0.0345	<0.000010	0.00774	0.00213	<0.050	12.2	0.00053	1.2	<0.000050	0.82	0.0948	11.10	<0.00050	0.000074	<0.00010
02-Mar-22	9	500	470	0.00058	<0.010	<0.00020	0.00665	7.21	0.0348	<0.000010	0.0078	0.0021	<0.050	10.7	<0.00050	1.5	<0.000050	0.73	0.102	8.90	<0.00050	0.000085	<0.00010
09-Mar-22	10	500	473	0.00041	<0.010	<0.00020	0.00483	6.48	0.0313	<0.000010	0.00677	0.00191	<0.050	9.47	<0.00050	1.2	<0.000050	0.64	0.0888	8.20	<0.00050	0.000076	<0.00010
16-Mar-22	11	500	472	0.00062	<0.010	<0.00020	0.00546	7.55	0.0336	<0.000010	0.00678	0.00199	<0.050	10.1	0.00125	1.6	<0.000050	0.67	0.102	8.50	<0.00050	0.000079	<0.00010
23-Mar-22	12	500	477	0.00067	<0.010	<0.00020	0.00477	6.41	0.0323	<0.000010	0.00552	0.00219	<0.050	8.27	<0.00050	1.3	<0.000050	0.72	0.0869	4.80	<0.00050	0.000063	<0.00010
30-Mar-22	13	500	478	0.00066	<0.010	<0.00020	0.00394	5.62	0.0316	<0.000010	0.00446	0.00159	<0.050	7.32	<0.00050	1.2	<0.000050	0.43	0.085	5.00	<0.00050	0.000062	<0.00010
06-Apr-22	14	500	475	0.00068	0.01	<0.00020	0.00462	6.53	0.0397	<0.000010	0.00483	0.00175	<0.050	7.69	<0.00050	1.3	<0.000050	0.51	0.0957	7.90	<0.00050	0.000055	<0.00010
				0.00053	0.01	<0.00020	0.00455	6.08	0.0358	<0.000010	0.00439	0.00178	<0.050	7.03	<0.00050	1.2	<0.000050	0.47	0.0873	7.10	<0.00050	0.000058	<0.00010
13-Apr-22	15	500	469	0.00047	<0.010	<0.00020	0.00423	6.62	0.0437	<0.000010	0.00475	0.00177	<0.050	7.35	<0.00050	1.2	<0.000050	0.47	0.0978	6.90	<0.00050	0.000046	<0.00010
				0.0006	<0.010	<0.00020	0.0038	6.11	0.0415		0.00472	0.0018	<0.050	6.91	<0.00050	1.1	<0.000050	0.43	0.0953	6.70	<0.00050	0.000055	<0.00010
20-Apr-22	16	500	471	0.00036	<0.0020	<0.000050	0.00439	6.46	0.0409	<0.000010	0.00431	0.00165	<0.010	7.21	0.00021	1.36	<0.000010	0.455	0.096	6.27	<0.000050	0.0000562	<0.000010
27-Apr-22	17	500	474	0.00035	<0.0020	<0.000050	0.00376	6.04	0.0421	<0.000005	0.00367	0.00154	<0.010	6.47	0.00024	1.3	<0.000010	0.383	0.0889	6.24	<0.000050	0.00005	<0.000010
04-May-22	18	**250**	228	0.00063	<0.0020	0.000079	0.0055	8.87	0.0628	<0.0000050	0.00484	0.00166	<0.010	8.15	0.0003	2.02	0.0112	0.483	0.128	9.02	<0.000050	0.0000632	<0.000010
11-May-22	19	250	222	0.00039	<0.0020	<0.000050	0.00533	9.10	0.0640	<0.0000050	0.00556	0.0017	<0.010	8.36	0.00028	2.15	0.000131	0.482	0.133	9.67	<0.000050	0.0000633	<0.000010
18-May-22	20	250	232	0.00069	<0.0020	<0.000050	0.00513	8.49	0.0595	<0.0000050	0.00464	0.00173	<0.010	7.44	0.00025	1.95	<0.000010	0.442	0.121	9.26	<0.000050	0.0000566	<0.000010
				0.0007	<0.0020	<0.000050	0.00518	8.60	0.0593		0.00472	0.00169	<0.010	7.47	0.00024	1.95	<0.000010	0.435	0.121	9.33	<0.000050	0.0000549	<0.000010
25-May-22	21	250	221	0.00087	0.0220	0.000091	0.00518	9.39	0.0703	<0.0000050	0.00562	0.00173	<0.010	7.92	0.00027	1.93	0.000064	0.581	0.14	9.89	<0.000050	0.0000725	<0.000010
				0.00079	0.0283	<0.000500	0.00518	9.43	0.0718		0.00567	0.00166	<0.010	8.17	0.00026	1.9	0.000063	0.558	0.142	9.95	<0.000050	0.0000629	<0.000010
01-Jun-22	22	250	225	0.00042	<0.0020	<0.000050	0.00548	9.17	0.0695	<0.0000050	0.00539	0.0019	<0.010	7.63	0.00024	1.91	<0.000010	0.487	0.133	9.95	<0.000050	0.0000605	<0.000010
08-Jun-22	23	250	230	0.00063	0.0030	<0.000050	0.00516	9.71	0.0729	<0.0000050	0.00585	0.00161	<0.010	8.37	0.00027	2.22	0.000013	0.564	0.142	11.20	<0.000050	0.0000681	<0.000010
				0.00059	0.0031	<0.000050	0.00475	9.67	0.0732		0.00588	0.00166	<0.010	8.2	0.00026	2.16	0.000014	0.501	0.141	10.80	<0.000050	0.0000684	<0.000010
15-Jun-22	24	250	222	0.00049	<0.0020	<0.000050	0.00536	9.27	0.0712	<0.0000050	0.00584	0.00157	<0.010	8.07	0.00043	2.29	0.000013	0.485	0.141	12.20	<0.000050	0.0000671	<0.000010
22-Jun-22	25	250	223	0.0005	0.0022	<0.000050	0.00507	8.88	0.0750	<0.0000050	0.00586	0.00138	<0.010	7.76	0.00024	2.19	<0.000010	0.48	0.141	11.80	<0.000050	0.0000713	<0.000010
29-Jun-22	26	250	224	0.00052	0.0026	<0.000050	0.0051	9.43	0.0832	<0.0000050	0.00641	0.00133	<0.010	8.55	**0.00113**	2.36	<0.000010	0.555	0.153	12.80	<0.000050	0.0000728	<0.000010
06-Jul-22	27	250	220	0.00161	<0.0020	<0.000050	0.00558	9.30	0.0776	<0.0000050	0.00665	0.00125	<0.010	8.5	0.00024	2.33	<0.000010	0.515	0.152	12.10	<0.000050	0.0000731	<0.000010
				0.00164	<0.0020	<0.000050	0.00566	9.25	0.0791		0.00663	0.00131	<0.010	8.52	0.00022	2.57	<0.000010	0.528	0.155	13.30	<0.000050	0.0000781	<0.000010
13-Jul-22	28	250	225	0.00064	<0.0020	0.000278	0.00555	9.81	0.0826	<0.0000050	0.00692	0.00121	<0.010	8.31	0.00023	2.58	<0.000010	0.574	0.153	13.30	<0.000050	0.0000836	<0.000010
				0.00069	<0.0020	0.000296	0.00553	9.74	0.0828		0.00693	0.00121	<0.010	8.23	0.00022	2.55	0.000011	0.578	0.154	13.10	<0.000050	0.000081	<0.000010
20-Jul-22	29	**125**	119	0.0007	0.0035	<0.000050	0.00596	12.4	0.1130	<0.000020	0.00837	0.00175	<0.010	9.7	0.00027	3.03	0.00004	0.72	0.193	16.60	<0.000050	0.0000875	<0.000010
27-Jul-22	30	125	121	0.0009	<0.0020	<0.000050	0.00787	13.50	0.1070	<0.000020	0.01	0.00168	<0.010	10.8	0.00087	3.6	0.001	0.875	0.217	20.60	<0.000050	0.000115	<0.000010
03-Aug-22	31	125	117	0.00107	0.0021	<0.000050	0.00779	14.10	0.1030	<0.000020	0.0111	0.0014	<0.010	10.9	0.00026	3.51	0.000013	0.945	0.215	22.50	<0.000050	0.000113	<0.000010
10-Aug-22	32	125	120	0.00118	<0.0020	<0.000050	0.00774	14.30	0.1050	<0.000020	0.0138	0.00249	<0.010	11.7	0.00027	3.81	0.000014	1.04	0.245	27.4	<0.000050	0.000106	<0.000010
17-Aug-22	33	125	118	0.00092	<0.0020	<0.000050	0.00711	14.30	0.0933	<0.000020	0.0143	0.00142	<0.010	11.5	0.00029	3.27	<0.000010	1.04	0.239	25.7	<0.000050	0.000124	<0.000010
24-Aug-22	34	125	116	0.00086	0.0046	0.000912	0.00722	14.70	0.1030	<0.000020	0.015	0.00143	<0.010	11.2	0.0004	3.76	0.000029	1.12	0.251	28	<0.000050	0.000108	<0.000010
31-Aug-22	35	125	115	0.001	0.0023	0.000085	0.00828	14.00	0.0967	<0.000020	0.0147	0.00127	<0.010	11.4	0.00042	3.67	0.000081	1.02	0.246	27.3	<0.000050	0.00012	<0.000010

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Instrument/Method:										
Unit:		**mL**	**mL**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
MDL:		**5**	**5**	**0.00015**	**0.0002**	**0.0002**	**0.000001**	**0.001**	**0.001**	**0.00002**
		1000	785	<0.00020	<0.0050	0.002	0.000303	<0.0010	<0.0040	0.00026
				<0.00020	<0.0050	0.0019	0.00028	<0.0010	<0.0040	0.00031
29-Dec-21	0	1000	910	<0.00020	<0.0050	0.0021	0.000397	<0.0010	<0.0040	0.00017
		1000	950	<0.00020	<0.0050	0.0014	0.000205	<0.0010	<0.0040	<0.00010
		2000	1940	<0.00020	<0.0050	<0.0010	0.000091	<0.0010	<0.0040	<0.00010
		2000	1960	<0.00020	<0.0050	<0.0010	0.000122	<0.0010	0.0109	<0.00010
05-Jan-22	1	500	491	<0.00020	<0.0050	0.0015	0.000377	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	480	<0.00020	<0.0050	0.0017	0.000465	<0.0010	<0.0040	<0.00010
				<0.00020	<0.0050	0.0016	0.000465	<0.0010	<0.0040	0.00017
19-Jan-22	3	500	485	<0.00020	<0.0050	0.0016	0.000463	<0.0010	<0.0040	<0.00010
				<0.00020	<0.0050	0.0014	0.000458	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	480	<0.00020	<0.0050	0.0016	0.000641	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	477	<0.00020	<0.0050	0.0016	0.000787	<0.0010	<0.0040	<0.00010
				<0.00020	<0.0050	0.0016	0.0008	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	0.0018	0.000807	<0.0010	<0.0040	<0.00010
				<0.00020	<0.0050	0.0018	0.000813	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	479	<0.00020	<0.0050	0.0017	0.000854	<0.0010	<0.0040	0.00015
16-Feb-22	7	500	475	<0.00020	<0.0050	0.0016	0.000885	<0.0010	<0.0040	<0.00010
				<0.00020	<0.0050	0.0016	0.000878	<0.0010	<0.0040	<0.00010
23-Feb-22	8	500	474	<0.00020	<0.0050	0.0013	0.000822	<0.0010	<0.0040	<0.00010
02-Mar-22	9	500	470	<0.00020	<0.0050	0.0014	0.0011	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	473	<0.00020	<0.0050	0.0013	0.000984	<0.0010	0.0046	<0.00010
16-Mar-22	11	500	472	<0.00020	<0.0050	0.0014	0.000971	0.0011	<0.0040	<0.00010
23-Mar-22	12	500	477	<0.00020	<0.0050	0.0011	0.000905	<0.0020	<0.0040	<0.00010
30-Mar-22	13	500	478	<0.00020	<0.0050	0.001	0.000937	<0.0050	<0.0040	<0.00010
06-Apr-22	14	500	475	<0.00020	<0.0050	0.0011	0.001	<0.0050	<0.0040	0.00011
				<0.00020	<0.0050	<0.0010	0.000951	<0.0050	<0.0040	<0.00010
13-Apr-22	15	500	469	<0.00020	<0.0050	<0.0010	0.000993	<0.0050	<0.0040	<0.00010
				<0.00020	<0.0050	<0.0010	0.001	<0.0050	<0.0040	0.00025
20-Apr-22	16	500	471	<0.000050	<0.00020	0.00083	0.00111	<0.00100	0.0011	<0.000020
27-Apr-22	17	500	474	<0.000050	<0.00020	0.00076	0.000984	<0.00100	0.0013	<0.000020
04-May-22	18	**250**	228	<0.000050	<0.00020	0.00105	0.00153	<0.00100	0.0013	<0.000020
11-May-22	19	250	222	<0.000050	<0.00020	0.00112	0.00145	<0.00100	0.0018	<0.000020
18-May-22	20	250	232	<0.000050	<0.00020	0.00099	0.00153	<0.00100	0.0017	<0.000020
				<0.000050	<0.00020	0.00102	0.0015	<0.00100	0.0018	<0.000020
25-May-22	21	250	221	0.000062	<0.00020	0.00128	0.00184	0.00108	0.0023	<0.000020
				0.000064	<0.00020	0.0012	0.0018	0.00105	0.0023	0.000023
01-Jun-22	22	250	225	<0.000050	<0.00020	0.00123	0.00159	0.00109	0.0020	<0.000020
08-Jun-22	23	250	230	<0.000050	<0.00020	0.00126	0.00166	<0.00100	0.0019	<0.000020
				<0.000050	<0.00020	0.00128	0.00171	0.00104	0.0022	<0.000020
15-Jun-22	24	250	222	0.000065	<0.00020	0.00126	0.0017	0.00119	0.0022	<0.000020
22-Jun-22	25	250	223	<0.000050	<0.00020	0.00124	0.00164	0.00119	0.0022	<0.000020
29-Jun-22	26	250	224	0.000050	<0.00020	0.00142	0.00172	0.00136	0.0020	<0.000020
06-Jul-22	27	250	220	<0.000050	<0.00020	0.00143	0.00174	0.00139	0.0017	<0.000020
				<0.000050	<0.00020	0.00145	0.00174	0.00144	0.0016	<0.000020
13-Jul-22	28	250	225	0.00027	<0.00020	0.00162	0.00185	0.00148	0.0025	<0.000020
				0.000242	<0.00020	0.00156	0.00185	0.0015	0.0024	<0.000020
20-Jul-22	29	**125**	119	<0.000050	<0.00020	0.0019	0.00245	0.00133	0.0021	<0.000020
27-Jul-22	30	125	121	0.000495	<0.00020	0.00219	0.00267	0.00189	0.0031	<0.000020
03-Aug-22	31	125	117	0.000936	<0.00020	0.00248	0.00284	0.00173	0.0048	<0.000020
10-Aug-22	32	125	120	<0.000200	<0.00020	0.00289	0.00279	0.00209	0.0029	<0.000020
17-Aug-22	33	125	118	0.000122	<0.00020	0.00281	0.00299	0.00211	0.0017	<0.000020
24-Aug-22	34	125	116	0.00122	<0.00020	0.00283	0.00261	0.00222	0.0054	<0.000020
31-Aug-22	35	125	115	0.001	<0.00020	0.0028	0.00282	0.00239	0.0043	<0.000020

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-2

Global
ARD Testing Services Inc.

Sample ID: M112065 (B9) & M112074 (B9)
Sample Wt. used (g): 3500 + 3500 = 7000
HCT ID: COL-2

GLOBAL PROJECT NO: 1956 (Columns)
CLIENT: First Mining Gold Corporation
PROJECT NAME: Springpole Project Geochem (Columns)
PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (as CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.01	1.0 / 0.1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.005	0.125	0.001	0.00005	0.00005	0.0001	0.00001	0.00001	0.002	0.000002	0.05	0.0001	0.000005
		1000	760	7.65	220	2.2	38.4	39.7	4.54	0.54	0.0240	50.0	0.022	0.030	0.050	0.0084	<0.00010	<0.00010	<0.0500	<0.000010	10.8	<0.00050	<0.00010
		1000	890	7.72	305	2.8	63.9	73.9	3.77	0.41	0.0150	90.9	0.029	0.241	0.660	0.0111	<0.00010	<0.00010	<0.0500	<0.000010	15.4	<0.00050	0.0005
29-Dec-21	0	1000	960	7.49	174.4	2.4	44.0	29.6	2.13	0.37	0.0081	52.6	0.039	0.140	0.427	0.0053	<0.00010	<0.00010	<0.0500	<0.000010	9.4	<0.00050	0.0002
		2000	1950	7.54	114.1	2.6	38.0	14.5	0.46	0.29	0.0096	35.2	0.051	0.103	0.368	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	6.7	<0.00050	0.0001
		2000	1960	7.54	99.4	2.2	38.6	<5.0	0.17	0.22	0.0084	33.5	0.068	0.092	0.384	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	6.5	<0.00050	0.0001
05-Jan-22	1	500	487	7.98	215	1.6	79.1	25.5	0.57	0.36	0.0226	82.3	0.035	0.180	0.566	0.0097	<0.00010	<0.00010	<0.0500	<0.000010	15.3	<0.00050	0.0005
12-Jan-22	2	500	475	7.96	207	2.4	82.5	29.2	0.21	0.28	0.03	82.4	0.045	0.194	0.541	0.0103	<0.00010	<0.00010	<0.0500	0.000029	14.9	<0.00050	0.00048
19-Jan-22	3	500	470	8.03	223	2.0	79.6	29.6	0.17	0.38	0.0298	81.8	0.045	0.185	0.463	0.0094	<0.00010	<0.00010	<0.0500	<0.000010	14.5	<0.00050	0.00043
26-Jan-22	4	500	475	7.75	207	2.3	83.7	33.7	0.15	0.27	0.0517	85.3	0.043	0.185	0.400	0.0099	<0.00010	<0.00010	<0.0500	<0.000010	15.8	<0.00050	0.00045
02-Feb-22	5	500	477	7.76	237	3.4	76.0	40.7	0.14	0.25	0.0282	122	0.040	0.190	0.379	0.0139	<0.00010	<0.00010	<0.0500	<0.000010	22.4	<0.00050	0.00054
02-Feb-22	5D										*Duplicate Analysis:*	101	0.042	0.188	0.353	0.0108	<0.00010	<0.00010	<0.0500	<0.000010	18.1	<0.00050	0.0006
09-Feb-22	6	500	472	7.74	222	3.4	71.1	44.5	0.14	0.26	0.0249	99.4	0.053	0.196	0.348	0.0105	<0.00010	<0.00010	<0.0500	<0.000010	18.2	<0.00050	0.00057
16-Feb-22	7	500	470	7.63	235	3.6	69.8	44.6	0.11	0.33	0.0272	99.5	0.035	0.198	0.348	0.0092	<0.00010	<0.00010	<0.0500	0.000036	18.5	<0.00050	0.00058
23-Feb-22	8	500	476	7.66	236	2.5	62.5	45.0	0.12	0.27	0.0288	99.4	0.044	0.181	0.332	0.0101	<0.00010	<0.00010	<0.0500	0.000014	17.4	<0.00050	0.00052
02-Mar-22	9	500	475	7.61	232	2.5	52.4	40.2	0.14	0.44	0.0343	90.3	0.048	0.163	0.312	0.0083	<0.00010	<0.00010	<0.0500	<0.000010	17.1	<0.00050	0.0005
09-Mar-22	10	500	478	7.71	219	3.0	62.5	35.0	0.29	0.31	<0.0050	80.9	0.047	0.152	0.261	0.0080	<0.00010	<0.00010	<0.0500	<0.000010	15.4	<0.00050	0.0004
16-Mar-22	11	500	477	7.78	209	2.9	67.7	30.6		0.33	0.0064	86.1	0.051	0.161	0.288	0.0085	<0.00010	<0.00010	<0.0500	<0.000010	16.1	<0.00050	0.00044
23-Mar-22	12	500	472	7.78	185	2.6	61.5	27.9		0.26	0.0143	75.1	0.039	0.132	0.260	0.0071	<0.00010	<0.00010	<0.0500	<0.000010	14.8	<0.00050	0.0004
30-Mar-22	13	500	469	7.86	172	2.5	63.0	31.2		0.23	0.0135	78.2	0.048	0.143	0.308	0.0069	<0.00010	<0.00010	<0.0500	<0.000010	16.1	<0.00050	0.00041
06-Apr-22	14	500	470	7.82	124	2.1	59.9	23.5		0.21	<0.0050	77.5	0.042	0.137	0.307	0.0078	<0.00010	<0.00010	<0.0500	<0.000010	15.0	<0.00050	0.0004
13-Apr-22	15	500	476	7.73	182	3.0	61.5	26.1		<0.10	0.0055	73.5	0.042	0.131	0.296	0.0068	<0.00010	<0.00010	<0.0500	<0.000010	15.1	<0.00050	0.00042
20-Apr-22	16	500	472	7.89	197	2.3	62.8	24.9		0.29	0.0097	74.8	0.047	0.148	0.341	0.0071	<0.000010	<0.000010	0.0076	<0.0000020	15.2	0.00030	0.0004
27-Apr-22	17	500	469	7.74	185	3.9	63.0	23.3		<0.10	0.012	78.0	0.042	0.136	0.326	0.0068	<0.000010	<0.000010	0.0064	<0.0000020	16.0	0.00024	0.000395
04-May-22	18	**250**	229	7.87	227	3.4	83.4	32.0		0.23	<0.0050	98.0	0.036	0.161	0.363	0.0106	<0.000010	<0.000010	0.0087	<0.0000020	20.6	0.00043	0.0005
11-May-22	19	250	224	7.73	140	6.2	85.7	32.7		0.24	<0.0050	104.0	0.043	0.168	0.398	0.0103	<0.000010	<0.000010	0.0099	<0.0000020	21.8	0.00048	0.0005
18-May-22	20	250	234	7.67	242	7.7	92.7	36.1		0.24	0.0122	107.0	0.036	0.156	0.391	0.0093	<0.000010	<0.000010	0.0099	<0.0000020	22.9	0.00068	0.000496
25-May-22	21	250	225	7.55	236	11.4	87.5	35.2		0.18	<0.0050	100.0	0.035	0.167	0.422	0.0109	<0.000010	<0.000010	0.0085	0.0000056	21.0	0.00053	0.000525
01-Jun-22	22	250	230	7.64	267	8.1	86.8	35.9		0.17	<0.0050	100.0	0.039	0.164	0.417	0.0104	<0.000010	<0.000010	0.0071	0.0000021	21.0	0.00066	0.000509
08-Jun-22	23	250	227	7.54	244	9.3	87.0	35.9		0.22	<0.0050	110.0	0.043	0.185	0.472	0.0115	<0.000010	<0.000010	0.0110	0.000003	23.5	0.00059	0.000537
15-Jun-22	24	250	231	7.93	250	2.5	84.6	39.1		0.24	<0.0050	110.0	0.037	0.173	0.481	0.0104	<0.000010	0.00001	0.0082	0.0000024	24.2	0.00058	0.000489
22-Jun-22	25	250	226	7.44	240	7.5	91.3	37.3		0.24	<0.0050	105.0	0.036	0.168	0.485	0.0111	<0.000010	<0.000010	0.0089	<0.0000040	23.6	0.00064	0.000501
29-Jun-22	26	250	228	7.75	248	5.7	84.2	42.9		0.2	<0.0050	115.0	0.033	0.185	0.555	0.0119	<0.000010	<0.000010	0.0117	0.0000042	26.0	0.00075	0.000534
06-Jul-22	27	250	219	7.65	242	6.9	84.3	40.0		0.26	<0.0050	113.0	0.044	0.178	0.516	0.0107	<0.000010	<0.000010	0.0091	0.000004	26.9	0.00052	0.000475
13-Jul-22	28	250	220	7.41	263	10.0	100.5	42.5		0.17	<0.0050	113.0	0.047	0.183	0.592	0.0113	<0.000010	<0.000010	0.0094	<0.0000040	25.9	0.00062	0.000508
20-Jul-22	29	**125**	111	7.73	298	8.2	101.0	52.2		0.13		138.0	0.030	0.199	0.619	0.0135	<0.000010	<0.000010	0.0095	<0.0000040	31.7	0.00079	0.000544
27-Jul-22	30	125	118	8.04	327	5.0	105.0	61.9		0.22		147.0	0.034	0.235	0.730	0.0150	<0.000010	<0.000010	0.0136	<0.0000060	33.6	0.00077	0.00061
03-Aug-22	31	125	115	7.88	346	3.8	108.0	74.1		0.14		161.0	0.027	0.233	0.770	0.0172	<0.000010	<0.000010	0.0148	0.0000052	36.5	0.00117	0.000632
10-Aug-22	32	125	119	7.83	375	3.8	100.0	80.0		0.18		166.0	0.031	0.261	0.836	0.0187	<0.000010	<0.000010	0.0146	<0.0000080	39.0	0.00102	0.000675
17-Aug-22	33	125	120	7.88	350	6.7	93.3	79.2		0.22		152.0	0.033	0.236	0.847	0.0174	<0.000010	<0.000010	0.0120	<0.0000040	32.7	0.0009	0.000657
24-Aug-22	34	125	113	7.80	356	5.0	93.3	81.4		0.21		163.0	0.029	0.255	0.894	0.0179	<0.000010	<0.000010	0.0139	<0.0000080	37.6	0.00107	0.000647
											Replicate Analysis:	162.1	0.028	0.256	0.887	0.0179	<0.000010	<0.000010	0.0141	<0.0000080	37.5	0.00105	0.000631
31-Aug-22	35	125	116	7.85	371	3.1	90.0	78.1		<0.10		156.0	0.032	0.230	0.897	0.0157	<0.000010	<0.000010	0.0134	<0.0000070	36.3	0.00156	0.000624
07-Sep-22	36	125	114	7.77	288	3.8	102.5	79.6		0.27		165.0	0.028	0.235	0.966	0.0177	<0.000010	<0.000010	0.0128	<0.0000080	35.4	0.00072	0.000616
14-Sep-22	37	125	119	7.58	341	6.7	90.0	76.0		0.23		151.0	0.027	0.209	0.918	0.0143	<0.000010	<0.000010	0.0101	<0.0000060	31.9	0.00064	0.00054
21-Sep-22	38	125	120	7.66	259	5.0	70.0	55.3		0.23		107.0	0.026	0.158	0.723	0.0094	<0.000010	<0.000010	0.0070	<0.0000040	23.5	0.00065	0.000432
											Replicate Analysis:	107.3	0.027	0.158	0.726	0.0097	<0.000010	<0.000010	0.0068	<0.0000040	23.9	0.00068	0.000432
28-Sep-22	39	125	117	7.92	306	5.0	100.0	60.1		0.25		141.0	0.023	0.193	0.900	0.0121	<0.000010	<0.000010	0.0098	<0.0000060	33.5	0.00085	0.000515
05-Oct-22	40	125	116	7.02	297	22.1	113.4	62.5		0.28		149.0	0.024	0.185	0.926	0.0115	<0.000010	<0.000010	0.0099	<0.0000060	33.2	0.00115	0.000526
12-Oct-22	41	125	120	7.37	312	13.0	105.0	60.4		0.31		143.0	0.026	0.190	0.924	0.0118	<0.000010	<0.000010	0.0122	0.0000084	32.3	0.00111	0.000562
19-Oct-22	42	125	124	7.42	244	5.2	101.9	57.6		0.13		147.0	0.0188	0.184	0.962	0.0113	<0.000010	<0.000010	0.0094	<0.0000040	34.9	0.00093	0.000481
26-Oct-22	43	125		7.22	244	18.9	106.5	59.7		0.12		148.0	0.0221	0.189	0.951	0.0119	<0.000010	<0.000010	0.0094	<0.0000040	31.8	0.00076	0.000512
											Replicate Analysis:	148.0	0.0215	0.189	0.954	0.0118	<0.000010	<0.000010	0.0090	0.0000038	31.8	0.00078	0.000516
02-Nov-22	44	125	115	7.28	310	26.7	96.7	54.4		0.13		147.0	0.0238	0.182	0.933	0.014	<0.000010	<0.000010	0.0160	0.0000063	33.5	0.00066	0.000481
09-Nov-22	45	125	118	7.35	313	23.0	105.0	51.5				152.0	0.0288	0.178	0.927	0.0109	<0.000010	<0.000010	0.0091	<0.0000060	34.0	0.00076	0.000515
16-Nov-22	46	125		7.10	266	16.5	110.5																
23-Nov-22	47	125		7.33	263	13.6	112.6																

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Global ARD Testing Services Inc.

				Instrument/Method:						CVAA														
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0001	0.002	0.00005	0.00005	0.005	0.00005	0.0000050 / 0.00002	0.00001	0.00004	0.01	0.02	0.0001	0.1	0.00001	0.02	0.0001	1	0.00005	0.000004	0.00001
		1000	760	<0.00040	<0.010	<0.00020	0.00164	5.57	0.0098	<0.000005	0.0042	0.0028	<0.050	25.80	0.0009	<1.0	<0.000050	1.50	0.143	13.1	<0.00050	0.000127	<0.00010
		1000	890	<0.00040	<0.010	<0.00020	0.00253	12.70	0.0149	<0.000005	0.0089	0.0218	<0.050	32.30	0.0026	1.10	<0.000050	1.90	0.278	20.3	<0.00050	0.000160	<0.00010
29-Dec-21	0	1000	960	<0.00040	<0.010	<0.00020	0.00177	7.05	0.0082	<0.000005	0.0039	0.0102	<0.050	17.70	0.0015	<1.0	<0.000050	0.95	0.162	10.8	<0.00050	0.000088	<0.00010
		2000	1950	<0.00040	<0.010	<0.00020	0.00134	4.46	0.0068	<0.000005	0.0018	0.0053	<0.050	9.58	0.0008	<1.0	<0.000050	0.41	0.107	6.0	<0.00050	0.000074	<0.00010
		2000	1960	<0.00040	<0.010	<0.00020	0.00146	4.17	0.0072	<0.000005	0.0013	0.0041	<0.050	7.05	0.0008	<1.0	<0.000050	0.22	0.099	5.1	<0.00050	0.000054	<0.00010
05-Jan-22	1	500	487	<0.00040	0.0110	<0.00020	0.0028	10.70	0.0174	<0.000005	0.0039	0.0121	<0.050	13.10	0.0017	1.40	<0.000050	0.34	0.228	8.2	<0.00050	0.000094	<0.00010
12-Jan-22	2	500	475	<0.00040	<0.010	<0.00020	0.00307	10.90	0.0176	<0.000005	0.0037	0.0111	<0.050	11.70	0.0021	1.40	<0.000050	0.33	0.221	6.5	<0.00050	0.000096	<0.00010
19-Jan-22	3	500	470	<0.00040	<0.010	<0.00020	0.00298	11.10	0.0168	<0.000005	0.0034	0.0094	<0.050	10.90	0.0025	1.50	<0.000050	0.27	0.218	8.6	<0.00050	0.000094	<0.00010
26-Jan-22	4	500	475	<0.00040	<0.010	<0.00020	0.00342	11.10	0.0184	<0.000005	0.0034	0.0089	<0.050	9.60	0.0032	1.60	<0.000050	0.23	0.216	9.5	<0.00050	0.000094	<0.00010
02-Feb-22	5	500	477	0.0149	<0.010	0.00055	0.00397	15.90	0.0224	<0.000010	0.0040	0.0098	<0.050	10.70	0.0039	1.40	<0.000050	1.11	0.424	14.3	<0.00050	0.000075	<0.00010
02-Feb-22	5D			0.00115	<0.010	<0.00020	0.00314	13.60	0.0229		0.0042	0.0110	<0.050	10.50	0.0033	1.50	<0.000050	0.27	0.253	13.3	<0.00050	0.000088	<0.00010
09-Feb-22	6	500	472	<0.00040	<0.010	<0.00020	0.0033	13.10	0.0229	<0.000010	0.0039	0.0087	<0.050	8.71	0.0039	1.30	<0.000050	0.20	0.247	14.6	<0.00050	0.000083	<0.00010
16-Feb-22	7	500	470	0.00062	<0.010	0.00059	0.0036	13.00	0.0243	<0.000010	0.0036	0.0084	<0.050	8.93	0.0038	1.80	<0.000050	0.18	0.226	14.1	<0.00050	0.000115	<0.00010
23-Feb-22	8	500	476	<0.00040	<0.010	0.00031	0.00317	13.60	0.0256	<0.000010	0.0036	0.0077	<0.050	9.27	0.0032	1.70	<0.000050	0.19	0.234	16.2	<0.00050	0.000120	<0.00010
02-Mar-22	9	500	475	0.00083	<0.010	<0.00020	0.00277	11.60	0.0246	<0.000010	0.0030	0.0070	<0.050	7.07	0.0021	1.40	<0.000050	0.14	0.209	12.4	<0.00050	0.000075	<0.00010
09-Mar-22	10	500	478	<0.00040	<0.010	0.00033	0.0025	10.30	0.0242	<0.000010	0.0029	0.0060	<0.050	6.39	0.0027	1.20	<0.000050	0.11	0.178	11.9	<0.00050	0.000077	<0.00010
16-Mar-22	11	500	477	<0.00040	<0.010	<0.00020	0.00288	11.10	0.0242	<0.000010	0.0029	0.0076	<0.050	6.60	0.0030	1.40	<0.000050	0.12	0.188	11.4	<0.00050	0.000088	<0.00010
23-Mar-22	12	500	472	<0.00040	<0.010	<0.00020	0.0023	9.26	0.0202	<0.000010	0.0025	0.0055	<0.050	5.49	0.0020	1.10	<0.000050	0.22	0.159	6.0	<0.00050	0.000057	<0.00010
30-Mar-22	13	500	469	0.00046	<0.010	<0.00020	0.00243	9.24	0.0215	<0.000010	0.0026	0.0051	<0.050	5.85	0.0025	1.30	<0.000050	<0.10	0.177	8.0	<0.00050	0.000070	<0.00010
06-Apr-22	14	500	470	<0.00040	0.01	<0.00020	0.00269	9.72	0.0218	<0.000010	0.0026	0.0054	<0.050	5.63	0.0023	1.10	<0.000050	0.11	0.171	10.3	<0.00050	0.000057	<0.00010
13-Apr-22	15	500	476	<0.00040	<0.010	<0.00020	0.0024	8.70	0.0204	<0.000010	0.0023	0.0050	<0.050	5.08	0.0021	<1.0	<0.000050	0.30	0.160	8.4	<0.00050	0.000057	<0.00010
20-Apr-22	16	500	472	0.00021	0.00	<0.000050	0.00275	8.92	0.0203	<0.000010	0.0024	0.0051	<0.010	5.36	0.0020	1.18	<0.000010	0.10	0.165	7.6	<0.000050	0.000067	<0.000010
27-Apr-22	17	500	469	0.00021	0.0028	<0.000050	0.00242	9.24	0.0234	<0.000005	0.0022	0.0050	<0.010	5.12	0.0021	1.14	<0.000010	0.08	0.159	7.9	<0.000050	0.000062	<0.000010
04-May-22	18	**250**	229	0.00036	<0.0020	<0.000050	0.0032	11.30	0.0279	<0.0000050	0.0027	0.0058	<0.010	6.11	0.0027	1.65	0.00133	0.07	0.192	10.3	<0.000050	0.000070	<0.000010
11-May-22	19	250	224	0.00024	0.00	<0.000050	0.00342	12.10	0.0290	<0.0000050	0.0031	0.0065	<0.010	6.61	0.0027	1.77	0.00001	0.08	0.205	10.7	<0.000050	0.000074	<0.000010
18-May-22	20	250	234	0.00043	0.0025	<0.000050	0.00343	12.10	0.0291	<0.0000050	0.0030	0.0063	<0.010	6.31	0.0028	1.75	0.00001	0.08	0.200	11.1	<0.000050	0.000070	<0.000010
25-May-22	21	250	225	0.00036	<0.0020	<0.000050	0.00318	11.50	0.0312	<0.0000050	0.0033	0.0065	<0.010	6.27	0.0028	1.53	0.00002	0.11	0.205	10.8	<0.000050	0.000077	<0.000010
01-Jun-22	22	250	230	0.00023	<0.0020	<0.000050	0.00363	11.60	0.0320	<0.0000050	0.0033	0.0063	<0.010	5.97	0.0026	1.55	<0.000010	0.10	0.196	10.3	<0.000050	0.000076	<0.000010
08-Jun-22	23	250	227	0.00039	0.0020	<0.000050	0.00326	12.40	0.0333	<0.0000050	0.0038	0.0065	<0.010	6.84	0.0028	1.80	0.00001	0.16	0.212	11.9	<0.000050	0.000086	<0.000010
15-Jun-22	24	250	231	0.00031	<0.0020	<0.000050	0.00362	12.00	0.0317	<0.0000050	0.0038	0.0064	<0.010	6.37	0.0029	1.81	0.00001	0.08	0.209	12.2	<0.000050	0.000084	<0.000010
22-Jun-22	25	250	226	0.00024	<0.0020	<0.000050	0.00334	11.10	0.0299	<0.0000050	0.0038	0.0062	<0.010	6.31	0.0028	1.75	<0.000010	0.09	0.199	12.2	<0.000050	0.000073	<0.000010
29-Jun-22	26	250	228	0.00028	0.0030	<0.000050	0.00388	12.20	0.0331	<0.0000050	0.0045	0.0064	<0.010	7.39	0.0030	1.91	<0.000010	0.10	0.218	13.5	<0.000050	0.000085	<0.000010
06-Jul-22	27	250	219	0.00092	<0.0020	<0.000050	0.00403	11.00	0.0337	<0.0000050	0.0043	0.0058	<0.010	6.76	0.0031	1.91	<0.000010	0.08	0.207	13.2	<0.000050	0.000086	<0.000010
13-Jul-22	28	250	220	0.00048	0.0045	<0.000050	0.00414	11.90	0.0317	<0.0000050	0.0047	0.0057	<0.010	6.78	0.0030	2.05	<0.000010	0.14	0.208	14.2	<0.000050	0.000093	<0.000010
20-Jul-22	29	**125**	111	0.00041	<0.0020	<0.000050	0.00442	14.20	0.0445	<0.000020	0.0056	0.0066	<0.010	7.61	0.0038	2.36	<0.000010	0.14	0.243	16.8	<0.000050	0.000104	<0.000010
27-Jul-22	30	125	118	0.0005	0.0053	<0.000050	0.00587	15.20	0.0424	<0.000020	0.0068	0.0066	<0.010	8.59	0.0044	2.86	<0.000010	0.11	0.275	20.4	<0.000050	0.000130	<0.000010
03-Aug-22	31	125	115	0.00085	0.0024	<0.000050	0.00581	17.00	0.0452	<0.000020	0.0083	0.0064	<0.010	8.86	0.0052	2.85	0.00002	0.22	0.281	24.2	<0.000050	0.000136	<0.000010
10-Aug-22	32	125	119	0.00064	0.0031	<0.000050	0.0054	16.60	0.0444	<0.000020	0.0095	0.0069	<0.010	9.58	0.0057	3.00	0.00001	0.16	0.341	28.3	<0.000050	0.000131	<0.000010
17-Aug-22	33	125	120	0.00081	<0.0020	<0.000050	0.00498	17.10	0.0406	<0.000020	0.0101	0.0066	<0.010	9.56	0.0051	2.76	0.00001	0.15	0.301	27.7	<0.000050	0.000144	<0.000010
24-Aug-22	34	125	113	0.00044	<0.0020	<0.000050	0.00504	16.70	0.0419	<0.000020	0.0105	0.0062	0.011	8.92	0.0054	2.72	<0.000010	0.14	0.337	28.5	<0.000050	0.000119	<0.000010
				0.00044	0.0020	<0.000050	0.00512	16.70	0.0415	<0.000020	0.0105	0.0062	<0.010	8.86	0.0053	2.72	<0.000010	0.14	0.338	28.5	<0.000050	0.000124	<0.000010
31-Aug-22	35	125	116	0.00064	0.0049	0.00006	0.00583	15.80	0.0385	0.000029	0.0102	0.0062	<0.010	8.93	0.0051	2.83	<0.000010	0.14	0.293	27.2	<0.000050	0.000143	<0.000010
07-Sep-22	36	125	114	0.00104	<0.0020	0.000061	0.00549	18.60	0.0395	<0.000020	0.0110	0.0066	<0.010	8.76	0.0053	2.79	<0.000010	0.16	0.296	27.1	<0.000050	0.000120	<0.000010
14-Sep-22	37	125	119	0.00041	<0.0020	0.00006	0.00482	17.20	0.0359	<0.000020	0.0098	0.0057	<0.010	7.60	0.0047	2.51	<0.000010	0.13	0.263	23.5	<0.000050	0.000107	<0.000010
21-Sep-22	38	125	120	0.00035	0.0021	0.000056	0.00371	11.60	0.0248	<0.000020	0.0071	0.0049	<0.010	5.68	0.0033	1.83	<0.000010	0.10	0.192	16.7	<0.000050	0.000083	<0.000010
				0.00034	0.0024	0.000071	0.0036	11.70	0.0248	0.00002	0.0072	0.0048	<0.010	5.74	0.0032	1.87	<0.000010	0.09	0.194	16.8	<0.000050	0.000081	<0.000010
28-Sep-22	39	125	117	0.00119	0.0024	<0.000050	0.00391	14.00	0.0341	<0.000020	0.0081	0.0053	<0.010	6.80	0.0038	2.23	<0.000010	0.10	0.238	18.7	<0.000050	0.000098	<0.000010
05-Oct-22	40	125	116	0.0007	0.0022	<0.000050	0.00454	16.00	0.0332	<0.000020	0.0081	0.0057	<0.010	7.16	0.0037	2.48	<0.000010	0.09	0.244	19.7	<0.000050	0.000086	<0.000010
12-Oct-22	41	125	120	0.0014	0.0079	0.000115	0.00447	15.10	0.0309	0.000022	0.0083	0.0055	<0.010	6.98	0.0039	2.43	0.00001	0.11	0.239	19.1	<0.000050	0.000097	<0.000010
19-Oct-22	42	125	124	0.00066	<0.0020	<0.000050	0.00421	14.50	0.0308	<0.000020	0.00815	0.00572	<0.010	6.95	0.00369	2.44	<0.000010	0.11	0.241	17.8	<0.000050	0.0000829	<0.000010
26-Oct-22	43	125		0.00036	0.012	<0.000050	0.00495	16.50	0.0340	0.000032	0.00825	0.00586	<0.010	6.80	0.00384	2.56	<0.000010	0.098	0.250	19.0	<0.000050	0.0000924	<0.000010
				0.00038	0.0120	<0.000050	0.00479	16.60	0.0342	0.000033	0.00828	0.0060	<0.010	6.78	0.0038	2.50	<0.000010	0.099	0.250	18.7	<0.000050	0.0000869	<0.000010
02-Nov-22	44	125	115	0.00033	<0.0020	<0.000050	0.00430	15.30	0.0308	<0.000020	0.00781	0.00583	<0.010	6.77	0.00349	2.39	<0.000010	0.099	0.236	17.8	<0.000050	0.0000834	<0.000010
09-Nov-22	45	125	118	0.00046	0.0029	<0.000050	0.00474	16.30	0.0335	0.000020	0.00730	0.00613	0.016	6.89	0.00328	2.39	<0.000010	0.107	0.245	16.5	<0.000050	0.0000776	<0.000010
16-Nov-22	46	125																					
23-Nov-22	47	125																					

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Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Instrument/Method:									
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.00015	0.0002	0.0002	0.000001	0.001	0.001	0.00002
		1000	760	<0.00020	<0.0050	<0.0010	0.000068	<0.0010	<0.0040	<0.00010
		1000	890	<0.00020	<0.0050	0.0022	0.000176	<0.0010	<0.0040	<0.00010
29-Dec-21	0	1000	960	<0.00020	<0.0050	0.0011	0.000070	<0.0010	<0.0040	<0.00010
		2000	1950	<0.00020	<0.0050	<0.0010	0.000032	<0.0010	<0.0040	<0.00010
		2000	1960	<0.00020	<0.0050	<0.0010	0.000028	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	487	<0.00020	<0.0050	0.0015	0.000135	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	475	<0.00020	<0.0050	0.0014	0.000141	<0.0010	<0.0040	<0.00010
19-Jan-22	3	500	470	<0.00020	<0.0050	0.0012	0.000144	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	475	<0.00020	<0.0050	0.0012	0.000214	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	477	<0.00020	<0.0050	0.0011	0.000284	<0.0010	0.0118	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	0.0012	0.000304	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	472	<0.00020	<0.0050	<0.0010	0.000342	<0.0010	<0.0040	0.00015
16-Feb-22	7	500	470	<0.00020	<0.0050	<0.0010	0.000305	<0.0010	0.0057	<0.00010
23-Feb-22	8	500	476	<0.00020	<0.0050	<0.0010	0.000335	<0.0010	<0.0040	<0.00010
02-Mar-22	9	500	475	<0.00020	<0.0050	<0.0010	0.000294	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	478	<0.00020	<0.0050	<0.0010	0.000288	<0.0010	<0.0040	<0.00010
16-Mar-22	11	500	477	<0.00020	<0.0050	<0.0010	0.000267	<0.0010	<0.0040	<0.00010
23-Mar-22	12	500	472	<0.00020	<0.0050	<0.0010	0.000223	<0.0020	<0.0040	<0.00010
30-Mar-22	13	500	469	<0.00020	<0.0050	<0.0010	0.000266	<0.0050	<0.0040	<0.00010
06-Apr-22	14	500	470	<0.00020	<0.0050	<0.0010	0.000220	<0.0050	<0.0040	<0.00010
13-Apr-22	15	500	476	<0.00020	<0.0050	<0.0010	0.000215	<0.0050	<0.0040	<0.00010
20-Apr-22	16	500	472	<0.000050	<0.00020	0.0005	0.000229	<0.0010	<0.0010	<0.000020
27-Apr-22	17	500	469	<0.000050	<0.00020	0.0005	0.000213	<0.0010	0.0022	<0.000020
04-May-22	18	**250**	229	<0.000050	<0.00020	0.0006	0.000313	<0.0010	<0.0010	<0.000020
11-May-22	19	250	224	0.00011	<0.00020	0.0006	0.000301	<0.0010	0.0010	<0.000020
18-May-22	20	250	234	<0.000050	<0.00020	0.0006	0.000353	<0.0010	0.0011	<0.000020
25-May-22	21	250	225	<0.000050	<0.00020	0.0006	0.000368	<0.0010	0.0012	<0.000020
01-Jun-22	22	250	230	<0.000050	<0.00020	0.0007	0.000352	<0.0010	0.0013	<0.000020
08-Jun-22	23	250	227	<0.000050	<0.00020	0.0007	0.000391	<0.0010	0.0019	<0.000020
15-Jun-22	24	250	231	0.00006	<0.00020	0.0007	0.000407	0.00104	0.0012	<0.000020
22-Jun-22	25	250	226	0.00005	<0.00020	0.0006	0.000376	0.00102	0.0012	<0.000020
29-Jun-22	26	250	228	0.00005	<0.00020	0.0008	0.000463	0.00119	0.0013	<0.000020
06-Jul-22	27	250	219	<0.000050	<0.00020	0.0007	0.000436	0.00110	0.0014	<0.000020
13-Jul-22	28	250	220	0.00086	<0.00020	0.0008	0.000525	0.00126	0.0057	<0.000020
20-Jul-22	29	**125**	111	0.00006	<0.00020	0.0009	0.000720	0.00117	0.0016	<0.000020
27-Jul-22	30	125	118	0.00046	<0.00020	0.0010	0.000851	0.00153	0.0026	<0.000020
03-Aug-22	31	125	115	0.00097	<0.00020	0.0012	0.001110	0.00144	0.0040	<0.000020
10-Aug-22	32	125	119	<0.000200	<0.00020	0.0012	0.001040	0.00160	0.0028	<0.000020
17-Aug-22	33	125	120	0.00017	<0.00020	0.0012	0.001140	0.00161	0.0022	<0.000020
24-Aug-22	34	125	113	0.00113	<0.00020	0.0012	0.000993	0.00175	0.0042	<0.000020
				0.00110	<0.00020	0.0012	0.000996	0.00161	0.0044	<0.000020
31-Aug-22	35	125	116	0.00134	<0.00020	0.0012	0.001070	0.00173	0.0054	<0.000020
07-Sep-22	36	125	114	0.00026	<0.00020	0.0012	0.001040	0.00162	0.0019	<0.000020
14-Sep-22	37	125	119	0.00015	<0.00020	0.0011	0.000927	0.00147	0.0012	<0.000020
21-Sep-22	38	125	120	0.00013	<0.00020	0.0008	0.000561	0.00141	0.0011	<0.000020
				0.00013	<0.00020	0.0008	0.000554	0.00136	0.0014	<0.000020
28-Sep-22	39	125	117	0.00016	<0.00020	0.0009	0.000768	0.00150	0.0020	<0.000020
05-Oct-22	40	125	116	0.00021	<0.00020	0.0009	0.000785	0.00139	0.0027	<0.000020
12-Oct-22	41	125	120	0.00032	<0.00020	0.0009	0.000844	0.00145	0.0025	<0.000020
19-Oct-22	42	125	124	0.000342	<0.00020	0.00084	0.000773	0.00129	0.0030	<0.000020
26-Oct-22	43	125		0.000255	<0.00020	0.00088	0.000778	0.00137	0.0032	<0.000020
				0.000234	<0.00020	0.00084	0.000769	0.00144	0.0032	<0.000020
02-Nov-22	44	125	115	0.000188	<0.00020	0.00093	0.000731	0.00133	0.0017	<0.000020
09-Nov-22	45	125	118	0.000222	<0.00020	0.00075	0.000662	0.00144	0.0025	<0.000020
16-Nov-22	46	125								
23-Nov-22	47	125								

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-3

Global ARD Testing Services Inc.

Sample ID: W-058 (B8)

Sample Wt. used (g): 7000.0

HCT ID: COL-3

GLOBAL PROJECT NO: 1956 (Columns)

CLIENT: First Mining Gold Corporation

PROJECT NAME: Springpole Project Geochem (Columns)

PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.005	0.125	0.001	0.00005	0.00005	0.0001	0.00001	0.00001	0.002	0.000002	0.05	0.0001	0.000005
		1000	740	7.70	270	2.4	60.7	31.7	5.13	<0.10	0.0073	36.5	0.0674	0.00429	0.00217	<0.0050	<0.00010	<0.00010	<0.0500	0.000017	9.61	<0.00050	0.0005
		1000	860	7.72	270	2.7	70.5	30.5	4.03	0.73	0.0069	51.8	0.113	0.0386	0.0342	0.0050	<0.00010	<0.00010	<0.0500	0.000019	12.9	<0.00050	0.0006
29-Dec-21	0	1000	940	7.59	186.4	2.7	57.2	19.0	2.92	0.57	0.0054	37.2	0.13	0.0301	0.0294	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	9.3	<0.00050	0.0004
		2000	1960	7.63	117.9	2.1	43.2	9.1	0.69	0.49	0.0061	25.0	0.168	0.0236	0.0295	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	6.37	<0.00050	0.0003
		2000	1960	7.67	119.3	2.6	49.3	<5.0	0.47	0.41	0.0026	30.8	0.184	0.027	0.0503	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	7.84	<0.00050	0.0004
05-Jan-22	1	500	493	8.04	226	1.6	88.0	20	0.92	0.49	0.0064	75.8	0.094	0.041	0.104	0.0065	<0.00010	<0.00010	<0.0500	<0.000010	19.3	<0.00050	0.00146
12-Jan-22	2	500	480	8.00	232	2.0	95.0	27.1	0.87	0.4	0.0238	81.5	0.104	0.0395	0.151	0.0074	<0.00010	<0.00010	<0.0500	<0.000010	20.3	<0.00050	0.002
19-Jan-22	3	500	482	8.05	259	1.9	93.1	29.6	0.79	0.46	0.0144	81	0.0907	0.0348	0.171	0.0076	<0.00010	<0.00010	<0.0500	<0.000010	20.2	<0.00050	0.00232
26-Jan-22	4	500	480	7.89	260	2.1	105.7	38.7	0.64	0.39	0.028	96.9	0.0954	0.037	0.22	0.0088	<0.00010	<0.00010	<0.0500	<0.000010	24.3	<0.00050	0.00366
02-Feb-22	5	500	475	7.88	286	3.5	92.0	46.1	0.46	0.32	0.0315	104	0.108	0.034	0.26	0.0087	<0.00010	<0.00010	<0.0500	<0.000010	25.6	<0.00050	0.00541
02-Feb-22	5D										*Duplicate Analysis:*	104	0.0663	0.0332	0.257	0.0095	<0.00010	<0.00010	<0.0500	0.000014	24.8	<0.00050	0.0059
09-Feb-22	6	500	477	7.76	276	3.2	91.0	52.1	0.38	0.32	0.0209	138	0.0911	0.0355	0.307	0.0114	<0.00010	<0.00010	<0.0500	0.000012	38.1	<0.00050	0.00677
16-Feb-22	7	500	473	7.81	279	2.3	87.5	49.8	0.27	0.42	0.0641	107	0.0568	0.0336	0.339	0.0084	<0.00010	<0.00010	<0.0500	0.000041	26.4	<0.00050	0.00726
23-Feb-22	8	500	470	7.75	264	2.5	83.3	48.9	0.24	0.34	0.0314	104	0.0795	0.0281	0.322	0.0076	<0.00010	<0.00010	<0.0500	0.00001	24.9	<0.00050	0.00743
02-Mar-22	9	500	470	7.79	272	2.6	81.7	45.6	0.2	0.49	0.0364	104	0.0812	0.0267	0.322	0.0071	<0.00010	<0.00010	<0.0500	<0.000010	25.8	<0.00050	0.0076
09-Mar-22	10	500	474	7.83	256	2.8	76.1	36.6	0.31	0.37	0.0112	88	0.0788	0.0227	0.263	0.0071	<0.00010	<0.00010	<0.0500	0.000035	21.7	0.00074	0.0066
16-Mar-22	11	500	475	7.83	243	3.1	80.0	32.5		0.4	<0.0050	91.7	0.0763	0.0231	0.277	0.0064	<0.00010	<0.00010	<0.0500	<0.000010	22.1	<0.00050	0.0069
23-Mar-22	12	500	478	7.85	223	2.8	73.8	25.5		0.33	0.0194	85.3	0.0756	0.0192	0.272	0.0057	<0.00010	<0.00010	<0.0500	<0.000010	21.3	<0.00050	0.0069
30-Mar-22	13	500	472	7.93	202	2.5	74.4	34.8		0.28	0.0218	81.5	0.0751	0.0196	0.288	0.0063	<0.00010	<0.00010	<0.0500	<0.000010	21.2	<0.00050	0.00614
06-Apr-22	14	500	476	7.84	228	2.4	66.8	33.4		0.26	0.0071	86.3	0.0859	0.0198	0.302	0.0066	<0.00010	<0.00010	<0.0500	0.000015	21.2	<0.00050	0.0066
13-Apr-22	15	500	480	7.79	204	3.0	69.1	31.0		<0.10	0.0071	78.6	0.0709	0.0165	0.251	0.0051	<0.00010	<0.00010	<0.0500	<0.000010	20.3	<0.00050	0.006
20-Apr-22	16	500	481	7.92	224	2.4	74.0	31.5		0.32	0.0093	83.9	0.0842	0.0188	0.29	0.0059	<0.000010	<0.000010	0.0085	0.0000032	21.2	0.00019	0.0063
27-Apr-22	17	500	475	7.81	209	3.7	71.8	29.4		<0.10	0.0115	84.6	0.0803	0.0173	0.271	0.00533	<0.000010	<0.000010	0.0070	0.0000029	21.9	0.00024	0.00579
04-May-22	18	**250**	226	7.86	153	4.0	90.0	41.2		0.28	<0.0050	110.0	0.0633	0.0203	0.243	0.0080	<0.000010	<0.000010	0.0095	0.0000062	28.5	0.0004	0.0067
11-May-22	19	250	227	7.78	166	6.1	97.4	46.3		0.28	<0.0050	118.0	0.0658	0.021	0.258	0.0079	<0.000010	<0.000010	0.0100	0.0000066	30.8	0.00042	0.0072
18-May-22	20	250	235	7.74	300	7.7	101.7	50.2		0.3	0.011	122.0	0.063	0.02	0.242	0.0075	<0.000010	<0.000010	0.0107	0.0000067	32.5	0.00035	0.00666
25-May-22	21	250	231	7.54	290	11.7	96.8	51.8		0.22	<0.0050	117.0	0.067	0.0218	0.265	0.0081	<0.000010	<0.000010	0.0105	0.0000092	30.7	0.0004	0.00709
01-Jun-22	22	250	228	7.50	259	9.0	71.4	42.8		0.2	<0.0050	117.0	0.066	0.0207	0.252	0.0080	<0.000010	<0.000010	0.0097	0.0000034	30.5	0.00035	0.0067
08-Jun-22	23	250	224	7.60	303	9.1	96.1	53.8		0.3	<0.0050	131.0	0.076	0.0237	0.269	0.0090	<0.000010	<0.000010	0.0138	0.0000065	34.9	0.00051	0.00671
15-Jun-22	24	250	225	7.97	315	2.2	93.0	58.7		0.26	<0.0050	130.0	0.075	0.0228	0.278	0.0091	<0.000010	0.000011	0.0109	<0.0000040	34.6	0.00048	0.00644
22-Jun-22	25	250	225	7.42	293	7.3	98.4	56.6		0.27	<0.0050	128.0	0.073	0.0218	0.265	0.0085	<0.000010	<0.000010	0.0104	<0.0000060	34.9	0.00046	0.00647
29-Jun-22	26	250	220	7.74	312	6.0	88.8	64.0		0.27	<0.0050	125.0	0.077	0.022	0.266	0.00899	<0.000010	<0.000010	0.0123	<0.0000050	33	0.00058	0.00575
06-Jul-22	27	250	223	7.65	286	7.1	89.0	61.8		0.39	0.009	134.0	0.082	0.0213	0.249	0.0088	<0.000010	<0.000010	0.0124	0.0000046	37.2	0.00034	0.00551
13-Jul-22	28	250	221	7.37	343	9.0	109.6	68.5		0.28	<0.0050	140.0	0.090	0.023	0.267	0.0103	<0.000010	<0.000010	0.0138	<0.0000100	37.9	0.00058	0.00556
20-Jul-22	29	**125**	120	7.81	395	7.5	113.0	80.3		0.26		178.0	0.061	0.0247	0.235	0.0117	<0.000010	<0.000010	0.0144	0.000011	48.9	0.00055	0.00568
27-Jul-22	30	125	117	8.15	456	2.5	120.0	105		0.31		202.0	0.076	0.0288	0.272	0.0137	<0.000010	<0.000010	0.0225	<0.0000100	55.1	0.00056	0.00567
03-Aug-22	31	125	118	6.95	476	12.5	85.0	122		0.28		216.0	0.067	0.0275	0.249	0.0157	<0.000010	<0.000010	0.0224	<0.0000100	58	0.00132	0.00551
10-Aug-22	32	125	115	7.89	526	3.8	110.0	147		0.33		231.0	0.071	0.0292	0.267	0.0208	<0.000010	<0.000010	0.0231	<0.0000080	63.1	0.00067	0.00571
17-Aug-22	33	125	119	7.97	521	5.0	103.3	155		0.37		235.0	0.073	0.0282	0.274	0.0182	<0.000010	<0.000010	0.0224	<0.0000140	62.9	0.00058	0.00573
24-Aug-22	34	125	116	7.88	525	3.3	103.3	155		0.42		240.0	0.069	0.0277	0.266	0.0178	<0.000010	<0.000010	0.0227	<0.0000140	65.2	0.00072	0.00557
31-Aug-22	35	125	114	8.11	521	2.5	93.8	153		0.35		232.0	0.079	0.0273	0.278	0.0172	<0.000010	<0.000010	0.0219	<0.0000090	63.5	0.00063	0.00571

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

		Instrument/Method:								CVAA														
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0001	0.002	0.00005	0.00005	0.005	0.00005	0.0000050 / 0.000020	0.00001	0.00004	0.01	0.02	0.0001	0.1	0.00001	0.02	0.0001	1	0.00005	0.000004	0.00001
		1000	740	0.00347	0.02	<0.00020	0.00456	3.03	0.0412	<0.000005	0.0128	0.0109	<0.050	37.9	<0.00050	<1.0	<0.000050	11.8	0.0641	10.2	<0.00050	0.000115	<0.00010
		1000	860	0.00224	0.02	<0.00020	0.00452	4.77	0.0353	<0.000005	0.0198	0.0249	<0.050	37	0.00064	<1.0	<0.000050	11	0.0992	12	<0.00050	0.000106	<0.00010
29-Dec-21	0	1000	940	0.00141	0.04	<0.00020	0.00347	3.39	0.0231	<0.000005	0.012	0.0152	<0.050	24.7	<0.00050	<1.0	<0.000050	6.64	0.0639	6.8	<0.00050	0.000075	<0.00010
		2000	1960	0.00056	<0.010	<0.00020	0.00243	2.21	0.0194	<0.000005	0.00575	0.00756	<0.050	15	<0.00050	<1.0	<0.000050	3.18	0.0418	3.2	<0.00050	0.000053	<0.00010
		2000	1960	<0.00040	<0.010	<0.00020	0.00265	2.71	0.0252	<0.000005	0.00408	0.00557	<0.050	12.8	<0.00050	<1.0	<0.000050	2.12	0.0482	3.9	<0.00050	0.000051	<0.00010
05-Jan-22	1	500	493	<0.00040	0.5680	<0.00020	0.00476	6.71	0.0667	<0.000005	0.00796	0.0101	<0.050	20	<0.00050	1.2	<0.000050	3.2	0.125	7.3	<0.00050	0.00007	<0.00010
12-Jan-22	2	500	480	0.00062	<0.010	<0.00020	0.00549	7.5	0.0724	<0.000005	0.00759	0.0105	<0.050	20.3	<0.00050	1.4	<0.000050	3.29	0.135	8.5	<0.00050	0.000094	<0.00010
19-Jan-22	3	500	482	0.00058	0.01	<0.00020	0.00556	7.43	0.0723	<0.000005	0.00653	0.00973	<0.050	18.5	0.00053	1.3	<0.000050	2.94	0.131	9.6	<0.00050	0.000078	<0.00010
26-Jan-22	4	500	480	<0.00040	0.02	<0.00020	0.00713	8.82	0.0914	<0.000005	0.00738	0.0126	<0.050	19.2	0.00083	1.5	<0.000050	2.91	0.154	12.1	<0.00050	0.000101	<0.00010
02-Feb-22	5	500	475	0.00088	<0.010	0.00029	0.0065	9.8	0.107	<0.000010	0.00765	0.0145	<0.050	16.5	0.00091	1.4	<0.000050	2.75	0.166	15.9	<0.00050	0.000075	<0.00010
02-Feb-22	5D			0.00104	<0.010	0.00033	0.0063	10.1	0.11		0.00841	0.0161	<0.050	18.6	0.00065	1.6	<0.000050	2.92	0.172	15.4	<0.00050	0.000076	<0.00010
09-Feb-22	6	500	477	0.001	<0.010	<0.00020	0.0083	10.4	0.123	<0.000010	0.00898	0.0158	0.157	17.1	0.00117	1.8	<0.000050	3.02	0.358	19.3	0.00174	0.000085	0.0012
16-Feb-22	7	500	473	0.00084	<0.010	0.00288	0.00758	9.92	0.121	<0.000010	0.00723	0.0143	<0.050	16.1	0.00098	1.9	<0.000050	2.39	0.158	17.6	<0.00050	0.00269	<0.00010
23-Feb-22	8	500	470	0.00095	<0.010	0.0002	0.00678	10.2	0.132	<0.000010	0.00684	0.0135	<0.050	15.4	0.00068	2.1	<0.000050	2.36	0.16	18.2	<0.00050	0.00032	<0.00010
02-Mar-22	9	500	470	0.00068	<0.010	<0.00020	0.00635	9.53	0.133	<0.000010	0.00637	0.0126	<0.050	12.2	<0.00050	2.1	<0.000050	1.97	0.155	15.6	<0.00050	0.000075	<0.00010
09-Mar-22	10	500	474	0.00057	<0.010	<0.00020	0.00523	8.17	0.125	<0.000010	0.00533	0.0104	<0.050	10.4	0.00065	1.5	<0.000050	1.72	0.126	12.8	<0.00050	0.000081	<0.00010
16-Mar-22	11	500	475	0.00065	<0.010	<0.00020	0.00572	8.82	0.131	<0.000010	0.00512	0.00968	<0.050	10.2	0.00096	1.7	<0.000050	1.62	0.13	12.3	<0.00050	0.00007	<0.00010
23-Mar-22	12	500	478	0.00108	<0.010	<0.00020	0.005	7.77	0.1280	<0.000010	0.00439	0.00866	<0.050	8.78	0.00051	1.5	<0.000050	1.46	0.12	9.5	<0.00050	0.000068	<0.00010
30-Mar-22	13	500	472	0.00063	<0.010	<0.00020	0.00455	6.92	0.126	<0.000010	0.00474	0.00784	<0.050	8.26	0.00051	1.5	<0.000050	1.22	0.127	9.3	<0.00050	0.000056	<0.00010
06-Apr-22	14	500	476	0.00098	0.02	<0.00020	0.00516	8.1	0.1430	<0.000010	0.00476	0.00846	5.16	8.47	0.00064	1.5	<0.000050	1.42	0.133	12.2	<0.00050	0.000058	<0.00010
13-Apr-22	15	500	480	<0.00040	<0.010	<0.00020	0.00442	6.77	0.125	<0.000010	0.00393	0.0062	<0.050	7	<0.00050	1.2	<0.000050	1.05	0.116	10.1	<0.00050	0.000039	<0.00010
20-Apr-22	16	500	481	0.00031	<0.0020	<0.000050	0.00509	7.49	0.1340	<0.000010	0.00408	0.00656	<0.010	7.88	0.00048	1.58	<0.000010	1.16	0.128	11.8	<0.000050	0.0000508	<0.000010
27-Apr-22	17	500	475	0.00033	<0.0020	<0.000050	0.00446	7.25	0.135	<0.000005	0.00377	0.00582	<0.010	7	0.00048	1.53	<0.000010	1.04	0.12	10.4	<0.000050	0.0000454	<0.000010
04-May-22	18	**250**	226	0.00061	0.00	0.000067	0.00567	9.29	0.1810	<0.0000050	0.00477	0.00621	<0.010	7.81	0.00062	2.15	0.00002	1.2	0.15	13.7	<0.000050	0.0000527	<0.000010
11-May-22	19	250	227	0.00047	0.00	<0.000050	0.00588	9.85	0.1900	<0.0000050	0.00552	0.00693	<0.010	8.55	0.0006	2.23	<0.000010	1.27	0.166	14.9	<0.000050	0.0000554	<0.000010
18-May-22	20	250	235	0.00071	<0.0020	<0.000050	0.00579	9.93	0.1790	<0.0000050	0.00563	0.00597	<0.010	8.82	0.00067	2.22	0.000016	1.23	0.162	15.7	<0.000050	0.0000528	<0.000010
25-May-22	21	250	231	0.00073	0.0065	<0.000050	0.00555	9.73	0.1930	<0.0000050	0.00647	0.0062	<0.010	8.22	0.0007	1.99	0.000012	1.34	0.173	16.1	<0.000050	0.0000627	<0.000010
01-Jun-22	22	250	228	0.00036	<0.0020	<0.000050	0.0062	9.81	0.1840	<0.0000050	0.00657	0.00554	<0.010	7.99	0.00063	2.03	<0.000010	1.32	0.167	15.8	<0.000050	0.0000587	<0.000010
08-Jun-22	23	250	224	0.0006	0.0027	<0.000050	0.00555	10.7	0.1970	<0.0000050	0.00748	0.00557	<0.010	9.12	0.0007	2.42	<0.000010	1.42	0.183	18.2	<0.000050	0.0000639	<0.000010
15-Jun-22	24	250	225	0.0005	0.0031	<0.000050	0.00614	10.7	0.1850	<0.0000050	0.00788	0.00517	<0.010	9.12	0.00075	2.45	<0.000010	1.44	0.189	19.6	<0.000050	0.0000650	<0.000010
22-Jun-22	25	250	225	0.0007	<0.0020	<0.000050	0.00573	9.89	0.1810	<0.0000050	0.00779	0.00492	<0.010	8.61	0.00066	2.32	<0.000010	1.4	0.177	19.3	<0.000050	0.0000601	<0.000010
29-Jun-22	26	250	220	0.00049	0.0022	<0.000050	0.00558	10.4	0.1920	<0.0000050	0.0087	0.00431	<0.010	9.18	0.00071	2.4	<0.000010	1.61	0.189	20.3	<0.000050	0.0000635	<0.000010
06-Jul-22	27	250	223	0.00107	<0.0020	<0.000050	0.0062	10	0.1860	<0.0000050	0.00888	0.00404	<0.010	8.91	0.00073	2.47	<0.000010	1.46	0.185	20.8	<0.000050	0.0000651	<0.000010
13-Jul-22	28	250	221	0.00084	0.0029	0.000572	0.00665	10.9	0.1950	<0.0000050	0.0102	0.00383	<0.010	9.04	0.00071	2.72	<0.000010	1.75	0.196	23.2	<0.000050	0.0000737	<0.000010
20-Jul-22	29	**125**	120	0.0008	<0.0020	<0.000050	0.00698	13.6	0.2580	<0.000020	0.0127	0.00417	<0.010	10.6	0.0009	3.14	<0.000010	2.12	0.246	29.3	<0.000050	0.0000835	<0.000010
27-Jul-22	30	125	117	0.00139	0.0025	<0.000050	0.00931	15.7	0.2500	<0.000020	0.0158	0.00375	<0.010	12.2	0.00118	3.75	<0.000010	2.59	0.291	37.7	<0.000050	0.000105	<0.000010
03-Aug-22	31	125	118	0.00133	0.0222	0.000141	0.00879	17.2	0.2600	<0.000020	0.0184	0.00361	<0.010	12.6	0.00119	3.58	0.000016	2.75	0.292	43.4	<0.000050	0.000104	<0.000010
10-Aug-22	32	125	115	0.00115	<0.0020	<0.000050	0.00843	17.7	0.2670	<0.000020	0.022	0.00407	<0.010	13.8	0.00139	3.76	<0.000010	3.05	0.369	51.9	<0.000050	0.000106	<0.000010
17-Aug-22	33	125	119	0.0013	<0.0020	<0.000050	0.00894	18.8	0.2580	<0.000020	0.0238	0.00373	<0.010	14.3	0.00136	3.51	<0.000010	3.21	0.344	53.5	<0.000050	0.000109	<0.000010
24-Aug-22	34	125	116	0.00106	0.0022	0.000484	0.00819	18.7	0.2730	<0.000020	0.0246	0.00335	<0.010	13.3	0.00136	3.75	0.000014	3.3	0.391	56.8	<0.000050	0.000102	<0.000010
31-Aug-22	35	125	114	0.00119	<0.0020	0.000067	0.00932	17.8	0.2620	0.00002	0.0243	0.00378	<0.010	13.6	0.00122	3.67	<0.000010	3.11	0.344	54.3	<0.000050	0.000114	<0.000010

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Instrument/Method:									
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.00015	0.0002	0.0002	0.000001	0.001	0.001	0.00002
		1000	740	<0.00020	<0.0050	0.0018	0.000135	<0.0010	<0.0040	0.00035
		1000	860	<0.00020	<0.0050	0.0024	0.000273	<0.0010	<0.0040	0.00015
29-Dec-21	0	1000	940	<0.00020	<0.0050	0.0019	0.000188	<0.0010	<0.0040	0.00021
		2000	1960	<0.00020	<0.0050	0.0013	0.00011	<0.0010	<0.0040	<0.00010
		2000	1960	<0.00020	<0.0050	0.0013	0.000117	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	493	<0.00020	<0.0050	0.002	0.000312	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	480	<0.00020	<0.0050	0.002	0.000347	<0.0010	<0.0040	<0.00010
19-Jan-22	3	500	482	<0.00020	<0.0050	0.0018	0.00037	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	480	<0.00020	<0.0050	0.0019	0.00056	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	475	<0.00020	<0.0050	0.0017	0.000598	<0.0010	0.0063	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	0.0019	0.000589	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	477	0.0008	<0.0050	0.0025	0.00227	<0.0010	0.0052	0.0006
16-Feb-22	7	500	473	<0.00020	<0.0050	0.0017	0.000585	<0.0010	<0.0040	<0.00010
23-Feb-22	8	500	470	<0.00020	<0.0050	0.0016	0.000592	<0.0010	<0.0040	<0.00010
02-Mar-22	9	500	470	<0.00020	<0.0050	0.0016	0.000554	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	474	0.00185	<0.0050	0.0013	0.000519	<0.0010	0.0072	<0.00010
16-Mar-22	11	500	475	<0.00020	<0.0050	0.0013	0.000463	<0.0010	<0.0040	<0.00010
23-Mar-22	12	500	478	<0.00020	<0.0050	0.001	0.000435	<0.0020	<0.0040	<0.00010
30-Mar-22	13	500	472	<0.00020	<0.0050	0.001	0.000463	<0.0050	<0.0040	<0.00010
06-Apr-22	14	500	476	<0.00020	<0.0050	0.001	0.000449	<0.0050	<0.0040	<0.00010
13-Apr-22	15	500	480	<0.00020	<0.0050	<0.0010	0.000399	<0.0050	<0.0040	<0.00010
20-Apr-22	16	500	481	<0.000050	<0.00020	0.00087	0.000443	<0.00100	0.0012	<0.000020
27-Apr-22	17	500	475	<0.000050	<0.00020	0.00082	0.000411	<0.0010	<0.0010	<0.000020
04-May-22	18	**250**	226	<0.000050	<0.00020	0.00098	0.000577	<0.0010	0.0013	<0.000020
11-May-22	19	250	227	<0.000050	<0.00020	0.00111	0.000557	<0.0010	0.0016	<0.000020
18-May-22	20	250	235	<0.000050	<0.00020	0.001	0.000632	<0.0010	0.0012	<0.000020
25-May-22	21	250	231	<0.000050	<0.00020	0.00105	0.000668	<0.0010	0.0018	<0.000020
01-Jun-22	22	250	228	<0.000050	<0.00020	0.00112	0.000623	<0.0010	0.0015	<0.000020
08-Jun-22	23	250	224	<0.000050	<0.00020	0.00117	0.000645	<0.0010	0.0018	<0.000020
15-Jun-22	24	250	225	0.000052	<0.00020	0.00118	0.000689	0.00110	0.0015	<0.000020
22-Jun-22	25	250	225	<0.000050	<0.00020	0.00113	0.000622	0.00109	0.0015	<0.000020
29-Jun-22	26	250	220	0.000065	<0.00020	0.00132	0.000647	0.00115	0.0023	<0.000020
06-Jul-22	27	250	223	<0.000050	<0.00020	0.00116	0.000628	0.00110	0.002	<0.000020
13-Jul-22	28	250	221	0.000840	<0.00020	0.00131	0.000697	0.00130	0.006	<0.000020
20-Jul-22	29	**125**	120	<0.000050	<0.00020	0.00149	0.000920	0.00111	0.002	<0.000020
27-Jul-22	30	125	117	0.000351	<0.00020	0.00179	0.00109	0.00146	0.003	<0.000020
03-Aug-22	31	125	118	0.00125	<0.00020	0.0019	0.00116	0.00132	0.007	<0.000020
10-Aug-22	32	125	115	<0.000150	<0.00020	0.00208	0.0011	0.00152	0.002	<0.000020
17-Aug-22	33	125	119	0.000122	<0.00020	0.00198	0.00119	0.00145	0.002	<0.000020
24-Aug-22	34	125	116	0.00104	0.00021	0.00197	0.00102	0.00147	0.004	<0.000020
31-Aug-22	35	125	114	0.000896	<0.00020	0.00192	0.00109	0.00165	0.004	<0.000020

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-4

Global ARD Testing Services Inc.

Sample ID: W-105 (B8) & W-133 (B8)

Sample Wt. used (g): 3500 + 3500 = 7000

HCT ID: COL-4

GLOBAL PROJECT NO: 1956 (Columns)

CLIENT: First Mining Gold Corporation

PROJECT NAME: Springpole Project Geochem (Columns)

PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.0005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	820	7.23	505	3.7	35.9	159	8.46	<0.10	<0.0050	143.0	0.015	0.00355	0.003	0.0137	<0.00010	<0.00010	<0.0500	0.000033	48.4	<0.00050	0.0205
		1000	890	7.37	642	4.1	50.6	262.8	6.29	<0.10	<0.0050	211.0	0.0162	0.00647	0.00819	0.0174	<0.00010	<0.00010	<0.0500	0.000083	70	<0.00050	0.0249
29-Dec-21	0	1000	960	7.30	455	3.7	42.9	174.8	3.22	0.47	<0.0050	156.0	0.0228	0.00491	0.00777	0.0119	<0.00010	<0.00010	<0.0500	0.00004	52	<0.00050	0.0169
		2000	1980	7.26	255	3.4	33.0	91.6	1.92	0.42	<0.0050	80.6	0.0245	0.00372	0.00665	0.0075	<0.00010	<0.00010	<0.0500	0.000033	26.7	<0.00050	0.0101
		2000	1975	7.31	193	3.1	35.8	54.6	1.43	0.37	<0.0050	60.0	0.0326	0.00381	0.00651	0.0063	<0.00010	<0.00010	<0.0500	0.00002	19.8	<0.00050	0.0055
05-Jan-22	1	500	490	7.64	274	2.9	57.4	64.7	1.76	0.48	<0.0050	101.0	0.017	0.00558	0.00441	0.0109	<0.00010	<0.00010	<0.0500	0.000021	33.7	<0.00050	0.00251
												Replicate	0.016	0.00524	0.00422	0.0104	<0.00010	<0.00010	<0.0500	0.000023	31.8	<0.00050	0.00236
12-Jan-22	2	500	480	7.59	248	3.4	61.3	62.4	1.5	0.35	<0.0050	94.3	0.0218	0.00605	0.00413	0.0112	<0.00010	<0.00010	<0.0500	0.000021	31	<0.00050	0.00189
19-Jan-22	3	500	475	7.58	264	3.5	61.1	58.2	1.28	0.43	<0.0050	89	0.0185	0.0056	0.00419	0.0099	<0.00010	<0.00010	<0.0500	0.000026	29.1	<0.00050	0.0015
26-Jan-22	4	500	475	7.50	234	3.4	67.5	56.9	0.97	0.36	0.0068	94.7	0.0214	0.00594	0.00381	0.0112	<0.00010	<0.00010	<0.0500	0.000024	30.9	<0.00050	0.00129
02-Feb-22	5	500	478	7.51	226	4.4	54.2	49.3	0.75	0.29	0.0061	91.5	0.0224	0.00565	0.00456	0.0104	<0.00010	<0.00010	<0.0500	0.000022	29.6	<0.00050	0.00095
02-Feb-22	5D											77.9	0.0432	0.00455	0.00319	0.0104	<0.00010	<0.00010	<0.0500	0.000055	24.9	<0.00050	0.00102
09-Feb-22	6	500	480	7.41	211	4.3	52.1	50.9	0.68	0.27	<0.0050	85.4	0.0279	0.00576	0.00447	0.0095	<0.00010	<0.00010	<0.0500	0.000014	27.5	<0.00050	0.00088
16-Feb-22	7	500	477	7.43	219	4.9	50.2	51.8	0.59	0.4	<0.0050	83.6	<0.0050	0.00594	0.00493	0.0091	<0.00010	<0.00010	<0.0500	0.000077	26.7	<0.00050	0.00074
23-Feb-22	8	500	473	7.35	206	7.5	45.0	50.9	0.53	0.32	0.0122	77.8	0.021	0.0052	0.00497	0.0085	<0.00010	<0.00010	<0.0500	0.000019	24	<0.00050	0.00066
02-Mar-22	9	500	480	7.40	214	5.4	48.3	48.1	0.48	0.5	0.0102	85.6	0.0236	0.00615	0.00533	0.0082	<0.00010	<0.00010	<0.0500	0.000022	26.9	<0.00050	0.0007
09-Mar-22	10	500	475	7.73	214	7.5	44.0	49.7	0.45	0.35	0.01	69.4	0.022	0.00513	0.00413	0.0075	<0.00010	<0.00010	<0.0500	<0.000010	21.6	<0.00050	0.00052

CERTIFICATE OF ANALYSIS ▪ KINI

Global
ARD Testing Services Inc.

		Instrument/Method:								CVAA													
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.000005	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	820	0.0733	0.03	<0.00020	0.00945	5.42	0.3650	<0.000005	0.00935	0.0462	<0.050	19	0.00103	1	<0.000050	13.3	1.1	48.2	<0.00050	0.000101	<0.00010
		1000	890	0.141	0.03	<0.00020	0.0138	8.65	0.7010	<0.000005	0.0166	0.134	<0.050	22.9	0.00154	1.8	<0.000050	19.4	1.81	69.2	<0.00050	0.000119	<0.00010
29-Dec-21	0	1000	960	0.1	0.02	<0.00020	0.0108	6.38	0.3990	<0.000005	0.012	0.0995	<0.050	17.8	0.00139	1.5	<0.000050	12.8	1.26	51	<0.00050	0.000084	<0.00010
		2000	1980	0.0664	0.01	<0.00020	0.00669	3.33	0.2270	<0.000005	0.00699	0.0547	<0.050	9.99	0.00067	1.1	<0.000050	7	0.675	24	<0.00050	0.00006	<0.00010
		2000	1975	0.0457	<0.010	<0.00020	0.00547	2.56	0.1680	<0.000005	0.00607	0.0419	<0.050	7.36	<0.00050	1.3	<0.000050	4.2	0.487	15.5	<0.00050	0.000046	<0.00010
05-Jan-22	1	500	490	0.0155	<0.010	<0.00020	0.00773	4.17	0.2660	<0.000005	0.00913	0.0432	<0.050	9.69	0.00052	1.8	<0.000050	5.02	0.826	20.9	<0.00050	0.000056	<0.00010
				0.0149	0.0180	<0.00020	0.00722	3.97	0.2570		0.00864	0.0408	<0.050	9.2	0.00054	1.6	<0.000050	4.78	0.787	19.5	<0.00050	0.000048	<0.00010
12-Jan-22	2	500	480	0.00869	<0.010	<0.00020	0.00791	4.07	0.248	<0.000005	0.00851	0.0259	<0.050	9.04	0.00051	1.9	<0.000050	4.56	0.728	18.7	<0.00050	0.000054	<0.00010
19-Jan-22	3	500	475	0.00538	<0.010	<0.00020	0.0076	3.97	0.231	<0.000005	0.00806	0.0141	<0.050	8.46	<0.00050	1.8	<0.000050	4.06	0.68	15.9	<0.00050	0.000055	<0.00010
26-Jan-22	4	500	475	0.00323	<0.010	<0.00020	0.00872	4.22	0.242	<0.000005	0.00925	0.00624	<0.050	8.45	0.00053	2	<0.000050	3.85	0.718	18.5	<0.00050	0.00006	<0.00010
02-Feb-22	5	500	478	0.00259	<0.010	0.00047	0.00737	4.25	0.214	<0.000010	0.00853	0.00197	<0.050	7.23	<0.00050	1.6	<0.000050	3.61	0.717	16.9	<0.00050	0.000045	<0.00010
02-Feb-22	5D			0.00419	0.039	0.0038	0.00632	3.78	0.196		0.0081	0.0025	<0.050	7.37	<0.00050	1.7	0.000067	3.38	0.609	14.9	<0.00050	0.000046	<0.00010
09-Feb-22	6	500	480	0.00193	<0.010	<0.00020	0.0073	4.05	0.202	<0.000010	0.00896	0.00116	<0.050	7.09	<0.00050	1.9	<0.000050	3.03	0.638	17.4	<0.00050	0.000047	<0.00010
16-Feb-22	7	500	477	0.00211	<0.010	0.00054	0.00753	4.11	0.187	<0.000010	0.00829	0.00099	<0.050	7.49	<0.00050	2.1	<0.000050	2.81	0.586	17.3	<0.00050	0.000132	<0.00010
23-Feb-22	8	500	473	0.00187	<0.010	0.00023	0.00665	4.3	0.192	<0.000010	0.00792	0.00083	<0.050	7.43	<0.00050	1.8	<0.000050	2.76	0.58	20.6	<0.00050	0.000068	<0.00010
02-Mar-22	9	500	480	0.00197	<0.010	<0.00020	0.00675	4.47	0.2000	<0.000010	0.00881	0.00079	<0.050	6.66	<0.00050	2.2	<0.000050	2.58	0.617	17.2	<0.00050	0.000052	<0.00010
09-Mar-22	10	500	475	0.00142	<0.010	<0.00020	0.00548	3.74	0.1630	<0.000010	0.00703	0.00058	<0.050	5.54	<0.00050	1.6	<0.000050	2.05	0.479	14	<0.00050	0.000046	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINI

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Instrument/Method:									
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	820	<0.00020	<0.0050	0.0025	0.00245	<0.0010	0.0124	0.00143
		1000	890	<0.00020	<0.0050	0.0029	0.00782	<0.0010	0.0059	0.00156
29-Dec-21	0	1000	960	<0.00020	<0.0050	0.0024	0.0057	<0.0010	0.005	0.00097
		2000	1980	<0.00020	<0.0050	0.0018	0.00322	<0.0010	<0.0040	0.00056
		2000	1975	<0.00020	<0.0050	0.0019	0.00282	<0.0010	<0.0040	0.00034
		500	490	<0.00020	<0.0050	0.0023	0.00558	<0.0010	<0.0040	0.00034
05-Jan-22	1			<0.00020	<0.0050	0.0022	0.00531	<0.0010	<0.0040	0.00034
12-Jan-22	2	500	480	<0.00020	<0.0050	0.0022	0.00533	<0.0010	<0.0040	0.00033
19-Jan-22	3	500	475	<0.00020	<0.0050	0.0023	0.00519	<0.0010	<0.0040	0.0002
26-Jan-22	4	500	475	<0.00020	<0.0050	0.0023	0.00667	<0.0010	<0.0040	0.00014
02-Feb-22	5	500	478	<0.00020	<0.0050	0.0018	0.00582	<0.0010	<0.0040	0.00016
02-Feb-22	5D			0.00506	<0.0050	0.0018	0.00538	<0.0010	0.0131	0.00012
09-Feb-22	6	500	480	<0.00020	<0.0050	0.002	0.00587	<0.0010	<0.0040	0.0002
16-Feb-22	7	500	477	<0.00020	<0.0050	0.0021	0.00546	<0.0010	<0.0040	0.0001
23-Feb-22	8	500	473	<0.00020	<0.0050	0.002	0.00545	<0.0010	0.0049	<0.00010
02-Mar-22	9	500	480	<0.00020	<0.0050	0.0023	0.00558	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	475	<0.00020	<0.0050	0.002	0.00492	<0.0010	<0.0040	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-5

Global ARD Testing Services Inc.

Sample ID: W-070 (B8)

Sample Wt. used (g): 7000.0

HCT ID: COL-5

GLOBAL PROJECT NO: 1956 (Columns)

CLIENT: First Mining Gold Corporation

PROJECT NAME: Springpole Project Geochem (Columns)

PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.005	0.125	0.001	0.00005	0.00005	0.0001	0.00001	0.00001	0.002	0.000002	0.05	0.0001	0.000005
		1000	880	7.62	341	1.9	54.4	62.8	5.38	<0.10	0.1120	60.2	0.0468	0.0131	0.00955	0.0270	<0.00010	<0.00010	<0.0500	0.000014	18.6	<0.00050	0.0010
		1000	920	7.55	276	3.2	54.2	53.2	3.91	0.77	0.0051	56.3	0.0691	0.0358	0.0147	0.0227	<0.00010	<0.00010	<0.0500	0.00002	16.2	<0.00050	0.0010
29-Dec-21	0	1000	970	7.53	174	3.0	41.7	24.5	2.36	0.69	<0.0050	37.4	0.114	0.0234	0.0146	0.0139	<0.00010	<0.00010	<0.0500	<0.000010	11	<0.00050	0.0005
		2000	1960	7.50	112	2.8	35.0	13.0	1.22	0.55	<0.0050	25.1	0.131	0.0166	0.0164	0.0097	<0.00010	<0.00010	<0.0500	<0.000010	7.64	<0.00050	0.0003
		2000	1965	7.58	111	2.2	37.4	5.4	0.75	0.51	<0.0050	28.7	0.152	0.0185	0.0165	0.0148	<0.00010	<0.00010	<0.0500	<0.000010	8.72	<0.00050	0.0002
05-Jan-22	1	500	491	7.84	202	1.8	59.6	28.5	1.33	0.4	<0.0050	61.5	0.070	0.0255	0.00983	0.0370	<0.00010	<0.00010	<0.0500	<0.000010	18.2	<0.00050	0.00029
12-Jan-22	2	500	485	7.80	203	2.3	62.3	35.3	1.12	0.33	0.0082	65.9	0.0754	0.0247	0.00862	0.0378	<0.00010	<0.00010	<0.0500	<0.000010	18.9	<0.00050	0.00026
19-Jan-22	3	500	480	7.84	221	2.3	61.5	36.3	0.84	0.41	<0.0050	64.9	0.0721	0.0228	0.00822	0.0353	<0.00010	<0.00010	<0.0500	0.000017	18.7	<0.00050	0.00021
26-Jan-22	4	500	470	7.60	213	3.1	66.3	43.2	0.62	0.34	0.008	72.5	0.0677	0.0222	0.0067	0.0339	<0.00010	<0.00010	<0.0500	<0.000010	20.7	<0.00050	0.0002
02-Feb-22	5	500	475	7.64	251	4.5	60.1	51.9	0.5	0.39	0.0053	90.8	0.0688	0.0217	0.00654	0.036	<0.00010	<0.00010	<0.0500	0.000012	25.3	<0.00050	0.00021
02-Feb-22	5D										*Duplicate Analysis:*	88.4	0.0604	0.0205	0.00602	0.0364	<0.00010	<0.00010	<0.0500	<0.000010	24.4	<0.00050	0.00023
09-Feb-22	6	500	477	7.57	236	4.0	57.2	55.1	0.39	<0.10	<0.0050	92.6	0.0751	0.02	0.00635	0.0321	<0.00010	<0.00010	<0.0500	<0.000010	26.3	<0.00050	0.00019
16-Feb-22	7	500	472	7.57	248	3.9	56.9	56.8	0.26	<0.10	<0.0050	89.1	0.0548	0.0198	0.00666	0.0306	<0.00010	<0.00010	<0.0500	0.000013	24.7	<0.00050	0.00016
23-Feb-22	8	500	476	7.32	227	2.5	50.0	54.8	0.22	<0.10	0.0087	86.4	0.0833	0.0177	0.00616	0.0271	<0.00010	<0.00010	<0.0500	<0.000010	23.4	<0.00050	0.00014
02-Mar-22	9	500	470	7.39	233	2.7	47.3	51.9	0.19	0.4	0.0055	83.4	0.0874	0.0168	0.00503	0.0232	<0.00010	<0.00010	<0.0500	<0.000010	23.1	<0.00050	0.0001
09-Mar-22	10	500	471	7.78	223	2.8	52.5	45.8	0.17	0.34	0.0114	73.1	0.0847	0.0153	0.00526	0.0220	<0.00010	<0.00010	<0.0500	<0.000010	20	0.00058	0.0001
16-Mar-22	11	500	472	7.71	208	3.0	54.9	46.6		0.39	<0.0050	73	0.0902	0.0154	0.0057	0.021	<0.00010	<0.00010	<0.0500	<0.000010	19.8	<0.00050	0.00013
23-Mar-22	12	500	475	7.73	192	3.0	52.5	34.4		0.31	0.0058	70.7	0.0818	0.0131	0.00548	0.0196	<0.00010	<0.00010	<0.0500	<0.000010	19.5	<0.00050	0.0001
30-Mar-22	13	500	477	7.77	174	2.8	53.6	39.4		0.25	0.0088	69.7	0.0936	0.0138	0.0061	0.0205	<0.00010	<0.00010	<0.0500	<0.000010	19.8	<0.00050	0.00011
06-Apr-22	14	500	479	7.71	112	2.4	47.2	35.6		0.26	<0.0050	69.0	0.108	0.0133	0.00346	0.0198	<0.00010	<0.00010	<0.0500	<0.000010	18.8	<0.00050	0.0009
13-Apr-22	15	500	481	7.66	181	3.1	54.0	30.4		<0.10	0.005	61.9	0.0871	0.0120	0.0055	0.0183	<0.00010	<0.00010	<0.0500	<0.000010	17.3	<0.00050	0.00011
20-Apr-22	16	500	474	7.74	185	2.9	54.4	28.2		0.27	<0.0050	64.9	0.0939	0.0131	0.00666	0.0208	<0.000010	<0.000010	0.0074	0.0000047	18.2	0.00015	0.0001
											Replicate Analysis:	64.0	0.0924	0.0135	0.0065	0.0208	<0.000010	<0.000010	0.0075	0.0000063	17.9	0.00012	0.0001
27-Apr-22	17	500	472	7.67	172	4.0	54.2	25.5		<0.10	<0.0050	63.3	0.102	0.0120	0.00644	0.0207	<0.000010	<0.000010	0.0061	0.0000044	18	0.0001	0.0000908
04-May-22	18	**250**	219	7.86	128	3.6	73.5	39.5		0.18	<0.0050	89.0	0.0687	0.0156	0.00575	0.0326	<0.000010	<0.000010	0.0101	<0.0000120	25.2	0.00039	0.0001
11-May-22	19	250	226	7.65	134	6.6	74.7	41.9		0.25	<0.0050	96.2	0.0784	0.0162	0.00615	0.0340	<0.000010	<0.000010	0.0092	<0.0000100	27.4	0.00026	0.0001
18-May-22	20	250	230	7.52	133	9.1	73.2	42.4		0.25	0.0097	89.7	0.0725	0.0140	0.00565	0.0295	<0.000010	<0.000010	0.0093	<0.0000080	25.4	0.00032	0.000127
25-May-22	21	250	232	7.45	239	12.1	75.9	44.5		<0.10	<0.0050	90.3	0.0679	0.0162	0.00608	0.0341	<0.000010	<0.000010	0.0094	<0.0000100	25.3	0.00033	0.000142
01-Jun-22	22	250	226	7.67	333	8.0	95.3	53.4		0.26	<0.0050	87.3	0.0808	0.0153	0.00612	0.0315	<0.000010	<0.000010	0.0083	0.0000069	24.4	0.00042	0.00013
08-Jun-22	23	250	227	7.44	239	9.6	74.1	43.0		0.29	<0.0050	103.0	0.0874	0.0181	0.00683	0.0372	<0.000010	<0.000010	0.0132	0.0000084	29.5	0.00046	0.000186
15-Jun-22	24	250	220	7.85	261	2.8	73.7	48.2		<0.10	<0.0050	109.0	0.0856	0.0179	0.00696	0.0380	<0.000010	<0.000010	0.0107	<0.0000080	31.1	0.00048	0.000195
22-Jun-22	25	250	224	7.39	230	7.6	77.4	42.2		0.31	<0.0050	94.7	0.0743	0.0157	0.00625	0.0325	<0.000010	<0.000010	0.0096	<0.0000080	27.4	0.00049	0.00013
29-Jun-22	26	250	223	7.55	246	6.8	69.7	49.5		0.37	<0.0050	96.2	0.0834	0.0171	0.00702	0.0367	<0.000010	<0.000010	0.0112	<0.0000120	26.9	0.00049	0.000144
06-Jul-22	27	250	225	7.58	238	7.7	70.3	48.5		0.44	<0.0050	102.0	0.087	0.0169	0.00679	0.0348	<0.000010	<0.000010	0.0117	0.0000081	30	0.00038	0.000131
13-Jul-22	28	250	218	7.35	271	9.1	91.3	52.3		0.19	<0.0050	106.0	0.097	0.0183	0.00792	0.0387	<0.000010	<0.000010	0.0123	<0.0000140	30.1	0.00056	0.000144
20-Jul-22	29	**125**	113	7.69	332	8.6	91.4	72.2		0.17		143.0	0.068	0.0213	0.00697	0.0500	<0.000010	<0.000010	0.0139	<0.0000200	41	0.00065	0.000181
27-Jul-22	30	125	121	7.82	363	5.0	91.7	80.3		0.26		152.0	0.085	0.0251	0.0087	0.0556	<0.000010	<0.000010	0.0197	<0.0000200	42	0.00054	0.000207
03-Aug-22	31	125	118	7.57	367	5.0	80.0	94.9		0.18		166.0	0.056	0.0245	0.00825	0.0616	<0.000010	<0.000010	0.0219	<0.0000200	46.1	0.00074	0.000211
10-Aug-22	32	125	120	7.70	408	5.0	85.4	114		0.2		177.0	0.074	0.0263	0.00908	0.0663	<0.000010	<0.000010	0.0215	<0.0000200	49.5	0.0005	0.000262
17-Aug-22	33	125	115	7.85	418	3.3	76.7	134		0.31		165.0	0.065	0.026	0.00917	0.0627	<0.000010	<0.000010	0.0199	<0.0000180	44	0.00074	0.000236
24-Aug-22	34	125	114	7.47	412	6.7	81.8	120		0.31		180.0	0.065	0.0255	0.00904	0.0602	<0.000010	<0.000010	0.0219	<0.0000260	49.7	0.00122	0.000201
31-Aug-22	35	125	117	8.02	419	2.5	73.8	115		0.33		171.0	0.081	0.0257	0.00981	0.0561	<0.000010	<0.000010	0.0205	<0.0000260	47.6	0.0008	0.000242

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

Instrument/Method:										CVAA														
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0001	0.002	0.00005	0.00005	0.005	0.00005	0.0000050 / 0.000020	0.00001	0.00004	0.01	0.02	0.0001	0.1	0.00001	0.02	0.0001	1	0.00005	0.000004	0.00001
		1000	880	0.00717	<0.010	<0.00020	0.0143	3.32	0.0276	<0.000005	0.0258	0.00999	0.1	40.6	0.00103	<1.0	<0.000050	15	0.436	23.9	<0.00050	0.000105	<0.00010
		1000	920	0.00361	<0.010	<0.00020	0.012	3.81	0.0255	<0.000005	0.0297	0.0393	<0.050	30.6	0.00239	1	0.000076	11.2	0.468	16.8	<0.00050	0.000093	<0.00010
29-Dec-21	0	1000	970	0.00215	<0.010	<0.00020	0.00742	2.43	0.0131	<0.000005	0.0153	0.0232	<0.050	19.4	0.00166	<1.0	<0.000050	6.15	0.287	10	0.00056	0.000063	<0.00010
		2000	1960	0.00127	<0.010	<0.00020	0.00455	1.45	0.0105	<0.000005	0.00707	0.0121	<0.050	11.8	0.00093	<1.0	<0.000050	3	0.192	4.3	<0.00050	0.000042	<0.00010
		2000	1965	0.00097	<0.010	<0.00020	0.00464	1.67	0.0119	<0.000005	0.00626	0.0097	<0.050	10.4	0.00138	<1.0	0.000057	2.14	0.223	4.6	<0.00050	0.000044	<0.00010
05-Jan-22	1	500	491	0.00147	<0.010	<0.00020	0.00821	3.88	0.0302	<0.000005	0.0119	0.0117	<0.050	15.1	0.00136	1.4	<0.000050	3.14	0.5	11.4	<0.00050	0.00006	<0.00010
12-Jan-22	2	500	485	0.00159	<0.010	<0.00020	0.00907	4.53	0.0349	<0.000005	0.0115	0.00968	0.072	15.2	0.00119	1.3	0.00595	3.22	0.523	11.4	<0.00050	0.000069	<0.00010
19-Jan-22	3	500	480	0.00136	<0.010	<0.00020	0.00873	4.41	0.0376	<0.000005	0.0102	0.00754	0.064	13.6	0.00114	1.4	<0.000050	2.77	0.493	11.4	<0.00050	0.00007	<0.00010
26-Jan-22	4	500	470	0.00073	<0.010	<0.00020	0.00982	5.06	0.0445	<0.000005	0.0119	0.0054	<0.050	13.4	0.00155	1.5	<0.000050	2.66	0.532	15.4	<0.00050	0.000081	<0.00010
02-Feb-22	5	500	475	0.00081	<0.010	<0.00020	0.0097	6.67	0.0614	<0.000010	0.0138	0.00291	<0.050	13.4	0.00209	1.5	<0.000050	2.88	0.654	22	<0.00050	0.000075	<0.00010
02-Feb-22	5D			0.00101	<0.010	<0.00020	0.00923	6.65	0.0606		0.015	0.00334	<0.050	14.6	0.0017	1.6	<0.000050	3.01	0.66	21	<0.00050	0.000067	<0.00010
09-Feb-22	6	500	477	0.00069	<0.010	<0.00020	0.00929	6.53	0.0621	<0.000010	0.0146	0.00168	<0.050	12.7	0.00211	1.7	<0.000050	2.59	0.63	21	<0.00050	0.000078	<0.00010
16-Feb-22	7	500	472	0.00064	<0.010	<0.00020	0.00928	6.64	0.0568	<0.000010	0.0139	0.00104	<0.050	13.1	0.00231	1.8	<0.000050	2.45	0.579	20.9	<0.00050	0.000083	<0.00010
23-Feb-22	8	500	476	0.00051	<0.010	<0.00020	0.00792	6.78	0.0593	<0.000010	0.0139	0.00086	<0.050	12.8	0.00213	2.1	<0.000050	2.38	0.586	20.6	<0.00050	0.000079	<0.00010
02-Mar-22	9	500	470	0.00079	<0.010	<0.00020	0.00717	6.23	0.0585	<0.000010	0.0129	0.00067	<0.050	9.94	0.00174	1.9	<0.000050	1.95	0.541	18.7	0.0006	0.000063	<0.00010
09-Mar-22	10	500	471	0.00107	<0.010	<0.00020	0.00606	5.63	0.0618	<0.000010	0.0122	0.00074	<0.050	9.01	0.00179	1.5	<0.000050	1.74	0.46	15.8	<0.00050	0.000062	<0.00010
16-Mar-22	11	500	472	0.00046	<0.010	<0.00020	0.00634	5.71	0.0599	<0.000010	0.0117	0.00046	<0.050	8.74	0.0017	1.7	<0.000050	1.59	0.456	14	<0.00050	0.000067	<0.00010
23-Mar-22	12	500	475	<0.00040	<0.010	<0.00020	0.00608	5.35	0.0513	<0.000010	0.0115	0.00043	<0.050	7.94	0.00159	1.5	<0.000050	1.52	0.423	10.2	<0.00050	0.000057	<0.00010
30-Mar-22	13	500	477	0.00047	<0.010	<0.00020	0.00535	4.91	0.0543	<0.000010	0.012	<0.00040	<0.050	7.87	0.00172	1.6	<0.000050	1.32	0.45	11.8	<0.00050	0.000054	<0.00010
06-Apr-22	14	500	479	0.00113	0.01	<0.00020	0.00602	5.35	0.0542	<0.000010	0.0116	0.0139	<0.050	7.75	0.00173	1.5	<0.000050	1.32	0.449	12.2	<0.00050	0.00005	<0.00010
13-Apr-22	15	500	481	0.00053	<0.010	<0.00020	0.00468	4.49	0.0508	<0.000010	0.00988	<0.00040	<0.050	6.45	0.00143	1.2	<0.000050	1.03	0.393	9.5	<0.00050	0.000041	<0.00010
20-Apr-22	16	500	474	0.0004	<0.0020	<0.000050	0.0054	4.73	0.0528	<0.000010	0.0107	0.000473	<0.010	7.16	0.00157	1.53	<0.000010	1.17	0.426	8.77	<0.000050	0.0000508	<0.000010
				0.00039	<0.0020	<0.000050	0.00534	4.6	0.0517	N/A	0.0107	0.000462	<0.010	6.99	0.00165	1.53	<0.000010	1.14	0.419	8.65	<0.000050	0.0000491	<0.000010
27-Apr-22	17	500	472	0.00036	<0.0020	<0.000050	0.00477	4.44	0.0527	<0.000005	0.00959	0.000221	<0.010	6.27	0.00152	1.45	<0.000010	1.01	0.392	9.16	<0.000050	0.0000446	<0.000010
04-May-22	18	**250**	219	0.00059	<0.0020	0.00006	0.00674	6.32	0.0752	<0.0000050	0.0135	0.000185	<0.010	7.6	0.00202	2.2	0.000034	1.31	0.543	13.3	<0.000050	0.0000552	<0.000010
11-May-22	19	250	226	0.00063	<0.0020	<0.000050	0.00683	6.74	0.0784	<0.0000050	0.0153	0.000356	<0.010	8.13	0.00229	2.33	<0.000010	1.38	0.567	13.9	<0.000050	0.0000601	<0.000010
18-May-22	20	250	230	0.00063	<0.0020	<0.000050	0.0064	6.38	0.0677	<0.0000050	0.015	0.0003	<0.010	7.25	0.00224	2.13	<0.000010	1.23	0.53	13	<0.000050	0.0000505	<0.000010
25-May-22	21	250	232	0.00073	0.0024	0.000054	0.0063	6.55	0.0829	<0.0000050	0.0181	0.000138	<0.010	7.68	0.00248	2.01	0.000035	1.38	0.577	13.4	<0.000050	0.0000557	<0.000010
01-Jun-22	22	250	226	0.00047	<0.0020	<0.000050	0.00678	6.41	0.0760	<0.0000050	0.0181	0.000257	<0.010	7.25	0.00239	2.03	0.000011	1.32	0.537	12.9	<0.000050	0.0000523	<0.000010
08-Jun-22	23	250	227	0.00064	0.0023	0.000059	0.00635	7.08	0.0887	<0.0000050	0.0214	0.000343	<0.010	8.28	0.00274	2.39	<0.000010	1.43	0.59	14.9	<0.000050	0.0000613	<0.000010
15-Jun-22	24	250	220	0.0007	<0.0020	<0.000050	0.00743	7.52	0.0961	<0.0000050	0.0233	0.000337	<0.010	8.81	0.00309	2.65	<0.000010	1.52	0.668	16.8	<0.000050	0.0000667	<0.000010
22-Jun-22	25	250	224	0.00073	<0.0020	0.000057	0.00602	6.35	0.0855	<0.0000050	0.0207	0.000344	<0.010	7.21	0.00268	2.19	<0.000010	1.33	0.565	13.5	<0.000050	0.0000572	<0.000010
29-Jun-22	26	250	223	0.0006	<0.0020	<0.000050	0.0063	7.05	0.0955	<0.0000050	0.0241	0.000307	<0.010	8.23	0.00301	2.39	<0.000010	1.6	0.624	15.8	<0.000050	0.0000630	<0.000010
06-Jul-22	27	250	225	0.00166	<0.0020	0.000052	0.0071	6.67	0.0900	<0.0000050	0.024	0.000253	<0.010	8	0.00333	2.59	0.000011	1.46	0.61	16.5	<0.000050	0.0000628	<0.000010
13-Jul-22	28	250	218	0.00091	0.0024	0.000293	0.0074	7.57	0.1010	<0.0000050	0.0274	0.000263	<0.010	8.42	0.00384	3.19	<0.000010	1.81	0.636	20.1	<0.000050	0.0000714	<0.000010
20-Jul-22	29	**125**	113	0.00106	<0.0020	0.000064	0.00813	9.72	0.1400	<0.000020	0.0361	0.000917	<0.010	9.54	0.0047	3.48	<0.000010	2.15	0.824	23.4	<0.000050	0.000079	<0.000010
27-Jul-22	30	125	121	0.00116	<0.0020	<0.000050	0.0105	11.5	0.1400	<0.000020	0.0452	0.00051	<0.010	11.3	0.00568	3.98	0.000175	2.67	0.936	30	<0.000050	0.000104	<0.000010
03-Aug-22	31	125	118	0.00188	<0.0020	<0.000050	0.0106	12.3	0.1390	<0.000020	0.0526	0.000553	<0.010	10.9	0.00667	3.82	0.000041	2.75	0.938	35.3	<0.000050	0.0000991	<0.000010
10-Aug-22	32	125	120	0.00121	<0.0020	<0.000050	0.01	13	0.1440	0.000022	0.0632	<0.000640	<0.010	12.1	0.00731	3.95	0.000012	3.1	1.09	40.5	<0.000050	0.0000977	<0.000010
17-Aug-22	33	125	115	0.00177	<0.0020	<0.000050	0.00985	13.3	0.1300	<0.000020	0.0696	0.000428	<0.010	12	0.00769	3.83	0.000026	3.18	1.03	41.3	<0.000050	0.000111	<0.000010
24-Aug-22	34	125	114	0.00119	0.0028	0.00006	0.00973	13.5	0.1380	0.000022	0.0703	0.000486	<0.010	11.1	0.00757	4	0.000103	3.3	1.09	42.1	<0.000050	0.0000933	<0.000010
31-Aug-22	35	125	117	0.00156	0.0084	0.000122	0.0108	12.7	0.1270	0.000022	0.0698	0.000395	<0.010	11.3	0.00724	3.96	0.000026	3.03	1	39.8	<0.000050	0.000104	<0.000010

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

				Instrument/Method:						
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.00015	0.0002	0.0002	0.000001	0.001	0.001	0.00002
		1000	880	<0.00020	<0.0050	<0.0010	0.00248	<0.0010	0.0043	0.00024
		1000	920	<0.00020	<0.0050	<0.0010	0.00347	<0.0010	<0.0040	0.00013
29-Dec-21	0	1000	970	<0.00020	<0.0050	<0.0010	0.0019	<0.0010	<0.0040	<0.00010
		2000	1960	<0.00020	<0.0050	<0.0010	0.00108	<0.0010	<0.0040	<0.00010
		2000	1965	<0.00020	<0.0050	<0.0010	0.00141	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	491	<0.00020	<0.0050	<0.0010	0.00448	<0.0010	0.009	0.00023
12-Jan-22	2	500	485	<0.00020	<0.0050	<0.0010	0.00517	<0.0010	<0.0040	0.00017
19-Jan-22	3	500	480	<0.00020	<0.0050	<0.0010	0.00557	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	470	<0.00020	<0.0050	<0.0010	0.00768	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	475	<0.00020	<0.0050	<0.0010	0.00945	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	<0.0010	0.0094	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	477	<0.00020	<0.0050	<0.0010	0.00969	<0.0010	<0.0040	<0.00010
16-Feb-22	7	500	472	<0.00020	<0.0050	<0.0010	0.00925	<0.0010	<0.0040	<0.00010
23-Feb-22	8	500	476	<0.00020	<0.0050	<0.0010	0.00959	<0.0010	<0.0040	<0.00010
02-Mar-22	9	500	470	<0.00020	<0.0050	<0.0010	0.00901	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	471	<0.00020	<0.0050	<0.0010	0.00874	<0.0010	0.0055	<0.00010
16-Mar-22	11	500	472	<0.00020	<0.0050	<0.0010	0.00777	<0.0010	<0.0040	<0.00010
23-Mar-22	12	500	475	<0.00020	<0.0050	<0.0010	0.00762	<0.0020	<0.0040	<0.00010
30-Mar-22	13	500	477	<0.00020	<0.0050	<0.0010	0.0083	<0.0050	<0.0040	<0.00010
06-Apr-22	14	500	479	<0.00020	<0.0050	<0.0010	0.00746	<0.0050	<0.0040	<0.00010
13-Apr-22	15	500	481	<0.00020	<0.0050	<0.0010	0.00693	<0.0050	<0.0040	<0.00010
20-Apr-22	16	500	474	0.000061	<0.00020	0.00041	0.0077	0.00107	<0.0010	<0.000020
				0.000084	<0.00020	0.00041	0.00751	0.00108	<0.0010	<0.000020
27-Apr-22	17	500	472	<0.000050	<0.00020	0.00037	0.00728	0.00105	<0.0010	<0.000020
04-May-22	18	**250**	219	<0.000050	<0.00020	0.00053	0.0108	<0.0010	0.0012	<0.000020
11-May-22	19	250	226	<0.000050	<0.00020	0.00057	0.00992	<0.0010	0.0013	<0.000020
18-May-22	20	250	230	<0.000050	<0.00020	0.00049	0.0107	<0.0010	0.0011	<0.000020
25-May-22	21	250	232	<0.000050	<0.00020	0.0006	0.012	0.00111	0.0011	<0.000020
01-Jun-22	22	250	226	<0.000050	<0.00020	0.0006	0.0109	0.00128	0.0021	<0.000020
08-Jun-22	23	250	227	<0.000050	<0.00020	0.00065	0.0119	0.00119	0.0017	<0.000020
15-Jun-22	24	250	220	0.000059	<0.00020	0.0007	0.0131	0.00148	0.0012	<0.000020
22-Jun-22	25	250	224	<0.000050	<0.00020	0.00059	0.0108	0.00131	0.0014	<0.000020
29-Jun-22	26	250	223	<0.000050	<0.00020	0.00071	0.0123	0.00157	0.0019	<0.000020
06-Jul-22	27	250	225	<0.000050	<0.00020	0.00069	0.0123	0.00164	0.0015	<0.000020
13-Jul-22	28	250	218	0.000649	<0.00020	0.00078	0.0139	0.00188	0.0050	<0.000020
20-Jul-22	29	**125**	113	0.000067	0.0002	0.00098	0.0193	0.00174	0.0025	<0.000020
27-Jul-22	30	125	121	0.000468	<0.00020	0.00113	0.0214	0.00237	0.0032	<0.000020
03-Aug-22	31	125	118	0.000742	<0.00020	0.00122	0.023	0.00201	0.0040	<0.000020
10-Aug-22	32	125	120	<0.000150	<0.00020	0.00138	0.0237	0.00236	0.0020	<0.000020
17-Aug-22	33	125	115	0.000119	<0.00020	0.00137	0.0248	0.00236	0.0023	<0.000020
24-Aug-22	34	125	114	0.00136	<0.00020	0.00138	0.0211	0.00243	0.0058	<0.000020
31-Aug-22	35	125	117	0.000901	0.00027	0.00131	0.0225	0.00263	0.0043	<0.000020

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-6

Global ARD Testing Services Inc.

Sample ID: W-027 (B8) & W-264 (B8)

Sample Wt. used (g): 3000 + 4000 = 7000

HCT ID: COL-6

GLOBAL PROJECT NO: 1956 (Columns)

CLIENT: First Mining Gold Corporation

PROJECT NAME: Springpole Project Geochem (Columns)

PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (as CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	860	7.34	127.7	2.7	34.6	17.2	1.62	0.17	0.0076	30.0	0.047	0.001	0.007	0.0161	<0.00010	<0.00010	<0.0500	0.000011	9.9	<0.00050	0.0007
		1000	890	7.38	160.5	3.4	36.2	30.3	1.29	0.37	<0.0050	39.8	0.046	0.002	0.013	0.0127	<0.00010	<0.00010	<0.0500	0.000017	13.1	<0.00050	0.00099
29-Dec-21	0	1000	940	7.28	131.4	3.4	34.2	20.8	0.82	0.21	<0.0050	34.3	0.065	0.002	0.013	0.0121	<0.00010	<0.00010	<0.0500	<0.000010	11.4	<0.00050	0.00075
		2000	1955	7.30	84.7	3.2	27.0	10.6	0.43	0.24	<0.0050	22.5	0.109	0.001	0.011	0.0099	<0.00010	<0.00010	<0.0500	<0.000010	7.6	<0.00050	0.00044
		2000	1970	7.40	82.9	2.8	29.2	5.1	0.38	0.23	<0.0050	22.2	0.077	0.002	0.015	0.0108	<0.00010	<0.00010	<0.0500	<0.000010	7.5	<0.00050	0.00039
05-Jan-22	1	500	492	7.68	108.9	1.8	39.0	12.5	0.34	0.3	0.0092	35.1	0.046	0.00226	0.013	0.0188	<0.00010	<0.00010	<0.0500	<0.000010	11.9	<0.00050	0.00026
12-Jan-22	2	500	480	7.62	107.5	3.3	44.1	11.6	0.26	0.24	<0.0050	35.1	0.0589	0.0025	0.0129	0.0219	<0.00010	<0.00010	<0.0500	<0.000010	11.7	<0.00050	0.00018
19-Jan-22	3	500	475	7.68	118	2.4	45.5	10.9	0.17	0.28	<0.0050	34.2	0.055	0.00236	0.0116	0.0207	<0.00010	<0.00010	<0.0500	0.000011	11.5	<0.00050	0.00011
26-Jan-22	4	500	475	7.53	114.5	3.2	50.7	11.2	0.13	0.22	0.0054	38.5	0.0602	0.00295	0.0134	0.0243	<0.00010	<0.00010	<0.0500	<0.000010	12.7	<0.00050	<0.00010
02-Feb-22	5	500	472	7.58	119.2	4.2	46.8	11.2	<0.10	0.23	0.0058	48.7	0.0538	0.00301	0.0135	0.0257	<0.00010	<0.00010	<0.0500	0.000014	16.1	<0.00050	<0.00010
02-Feb-22	5D										*Duplicate Analysis:*	41.4	0.05	0.00285	0.0138	0.0264	<0.00010	<0.00010	<0.0500	0.000012	13.5	<0.00050	<0.00010
09-Feb-22	6	500	478	7.54	117	3.9	48.2	12.4	<0.10	<0.10	<0.0050	41.9	0.0562	0.00335	0.0174	0.0251	<0.00010	<0.00010	<0.0500	<0.000010	13.7	<0.00050	<0.00010
16-Feb-22	7	500	477	7.48	122.1	3.1	47.3	12.1	<0.10	<0.10	<0.0050	40.9	0.0344	0.00333	0.0213	0.0264	<0.00010	<0.00010	<0.0500	0.000013	13.3	<0.00050	<0.00010
23-Feb-22	8	500	471	7.45	108	2.5	45.0	12.5	<0.10	<0.10	0.0141	43.2	0.0543	0.00325	0.0236	0.0266	<0.00010	<0.00010	<0.0500	<0.000010	13.9	<0.00050	<0.00010
02-Mar-22	9	500	470	7.49	116	2.6	39.7	11.9	<0.10	0.3	0.0128	38.5	0.0524	0.00302	0.0234	0.0229	<0.00010	<0.00010	<0.0500	<0.000010	12.5	<0.00050	<0.00010
09-Mar-22	10	500	474	6.99	119	2.9	42.4	12.6	<0.10	0.21	0.0123	34.6	0.0445	0.00285	0.0227	0.0232	<0.00010	<0.00010	<0.0500	<0.000010	11.2	<0.00050	0.0001
16-Mar-22	11	500	469	7.58	111	3.0	43.4	11.0		0.25	<0.0050	35.2	0.0487	0.0031	0.0249	0.0233	<0.00010	<0.00010	<0.0500	<0.000010	11.4	<0.00050	0.0001
23-Mar-22	12	500	477	7.67	105	2.6	41.2	8.1		0.16	0.0069	36.4	0.0437	0.00274	0.0272	0.0234	<0.00010	<0.00010	<0.0500	<0.000010	11.8	<0.00050	0.0001
30-Mar-22	13	500	475	7.69	97	2.7	41.6	11.4		0.16	0.0094	36.4	0.0494	0.00277	0.0324	0.0256	<0.00010	<0.00010	<0.0500	<0.000010	12	<0.00050	<0.00010
06-Apr-22	14	500	469	7.68	69	2.0	39.9	11.0		0.19	0.0057	38.3	0.0482	0.00312	0.0369	0.0271	<0.00010	<0.00010	<0.0500	<0.000010	12.3	<0.00050	0.0001
13-Apr-22	15	500	478	7.56	104	2.7	40.4	9.0		<0.10	<0.0050	34.9	0.0392	0.00243	0.0321	0.0224	<0.00010	<0.00010	<0.0500	<0.000010	11.5	<0.00050	0.00014
20-Apr-22	16	500	470	7.72	108	2.4	40.7	8.8		<0.10	0.0061	35.8	0.0399	0.00288	0.0372	0.0256	<0.000010	<0.000010	0.0056	0.0000029	11.7	<0.00010	0.000132
27-Apr-22	17	500	472	7.55	109	4.1	41.3	9.0		<0.10	0.0076	37.3	0.0424	0.00284	0.0409	0.0242	<0.000010	<0.000010	0.0048	0.0000026	12.3	0.00014	0.00013
04-May-22	18	**250**	220	7.65	72	3.6	50.4	11.9		<0.10	<0.0050	44.8	0.0334	0.00337	0.0401	0.0335	<0.000010	<0.000010	0.0065	0.0000038	14.7	0.00033	0.0001
11-May-22	19	250	218	7.48	112	6.4	53.3	13.2		0.21	<0.0050	49.1	0.0361	0.00374	0.0447	0.0335	<0.000010	<0.000010	0.0064	0.0000056	16.2	0.00038	0.0002
18-May-22	20	250	222	7.44	117	8.4	50.9	12.8		0.20	0.0098	44.7	0.0354	0.00324	0.0453	0.0305	<0.000010	<0.000010	0.0066	0.0000072	14.6	0.00024	0.00015
25-May-22	21	250	225	7.32	137	12.1	55.4	14.4		<0.10	<0.0050	45.9	0.0318	0.00369	0.0528	0.0347	<0.000010	<0.000010	0.0064	0.0000102	15.0	0.00045	0.000186
01-Jun-22	22	250	221	7.39	156	9.0	53.7	14.7		0.14	<0.0050	45.9	0.0376	0.00353	0.0523	0.0326	<0.000010	<0.000010	0.0056	0.0000056	15.0	0.00039	0.000224
08-Jun-22	23	250	226	7.37	141	9.6	53.8	14.2		0.15	<0.0050	51.4	0.0407	0.00414	0.0574	0.0372	<0.000010	<0.000010	0.0088	0.0000051	17.0	0.0005	0.000195
15-Jun-22	24	250	223	7.65	147	2.7	53.5	16.8		0.12	<0.0050	53.9	0.0402	0.00393	0.0628	0.0362	<0.000010	0.000012	0.0077	0.0000084	18.0	0.00042	0.000191
22-Jun-22	25	250	227	7.30	140	6.5	56.6	15.4		0.17	<0.0050	49.7	0.0368	0.00365	0.0595	0.0346	<0.000010	<0.000010	0.0063	0.0000049	16.7	0.00049	0.000226
29-Jun-22	26	250	224	7.42	134	5.8	47.3	16.6		0.27	<0.0050	46.3	0.0376	0.00402	0.0652	0.0351	<0.000010	<0.000010	0.0072	0.0000038	15.2	0.00064	0.000181
06-Jul-22	27	250	227	7.44	138	6.5	48.1	17.2		<0.10	<0.0050	53.5	0.036	0.00398	0.0674	0.0353	<0.000010	<0.000010	0.0074	0.0000031	18.2	0.00033	0.000221
13-Jul-22	28	250	220	7.33	151	6.0	62.2	17.6		0.12	<0.0050	52.6	0.040	0.00412	0.0753	0.0365	<0.000010	<0.000010	0.0082	0.000005	17.5	0.00035	0.000216
20-Jul-22	29	**125**	114	7.49	201	9.8	68.8	29.5		0.12		77.5	0.037	0.00613	0.0914	0.0572	<0.000010	<0.000010	0.0096	0.0000079	25.9	0.00056	0.000371
27-Jul-22	30	125	115	7.88	215	2.5	68.2	33.3		0.16		77.5	0.035	0.00674	0.103	0.0585	<0.000010	<0.000010	0.0136	0.0000065	25.4	0.00054	0.000301
03-Aug-22	31	125	117	7.62	218	10.0	63.3	38.6		0.13		81.8	0.026	0.0069	0.11	0.0600	<0.000010	<0.000010	0.0133	0.0000076	27	0.00065	0.000307
10-Aug-22	32	125	120	7.70	235	6.7	70.0	42.5		0.14		86.7	0.029	0.00738	0.119	0.0660	<0.000010	<0.000010	0.0135	0.0000067	28.7	0.00055	0.000403
17-Aug-22	33	125	118	7.65	221	3.3	60.0	43.2		0.19		82.9	0.027	0.00693	0.116	0.0616	<0.000010	<0.000010	0.0128	0.0000115	27.5	0.00069	0.000309
24-Aug-22	34	125	113	7.58	222	5.0	60.0	46.2		0.21		85.5	0.032	0.00704	0.132	0.0608	<0.000010	<0.000010	0.0129	0.0000078	28.2	0.00091	0.000332
31-Aug-22	35	125	115	7.97	236	2.5	57.5	46.8		0.22		85.0	0.030	0.00717	0.14	0.0589	<0.000010	<0.000010	0.0127	<0.0000060	28.2	0.00052	0.000341
07-Sep-22	36	125	119	7.40	249	10.0	60.0	50.3		0.29		86.0	0.025	0.00722	0.145	0.0673	<0.000010	<0.000010	0.0127	0.0000188	28.1	0.00063	0.000283
14-Sep-22	37	125	117	7.60	219	3.3	60.0	45.2		0.23		77.0	0.024	0.00611	0.13	0.0575	<0.000010	<0.000010	0.0098	0.0000102	25.1	0.00064	0.000257
21-Sep-22	38	125	120	7.26	147	9.5	37.5	26.8		0.21		47.2	0.025	0.00373	0.0974	0.0327	<0.000010	<0.000010	0.006	0.0000057	15.4	0.00051	0.000282
28-Sep-22	39	125	121	7.78	208	3.3	58.3	39.2		0.24		79.1	0.023	0.00596	0.136	0.0507	<0.000010	<0.000010	0.0084	0.0000068	26.5	0.00063	0.00033
05-Oct-22	40	125	119	7.42	215	12.5	65.0	42.2		0.18		86.3	0.0217	0.00595	0.141	0.052	<0.000010	<0.000010	0.0104	0.0000076	28.4	0.00066	0.000343
12-Oct-22	41	125		7.23	220	10.0	70.0	44.1		0.33		84.1	0.021	0.00628	0.143	0.0533	<0.000010	<0.000010	0.0126	0.0000047	27.7	0.0007	0.000351
19-Oct-22	42	125		7.66	177	6.2	67.5	39.7		0.16		87.6	0.0128	0.00588	0.148	0.0505	<0.000010	<0.000010	0.0106	<0.0000050	29.2	0.0008	0.000328
26-Oct-22	43	125		7.48	175	20.3	72.0	39.5		0.18		81.7	0.0155	0.00578	0.141	0.0524	<0.000010	<0.000010	0.0095	0.0000054	26.4	0.0007	0.000316
02-Nov-22	44	125	120	7.25	221	15.0	65.0	37.0		0.16		84.2	0.0181	0.00561	0.140	0.0513	<0.000010	<0.000010	0.0146	0.0000071	27.7	0.00049	0.000318
09-Nov-22	45	125	121	7.34	216	16.7	60.0	34.6				87.0	0.0185	0.00561	0.143	0.0499	<0.000010	<0.000010	0.0087	0.0000091	28.7	0.00053	0.000343
16-Nov-22	46	125		6.92	193	18.6	74.4																
23-Nov-22	47	125		6.92	185	19.0	72.4																

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		Instrument/Method:								CVAA														
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.0000050 / 0.000020	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	860	0.00115	<0.010	<0.00020	0.00183	1.26	0.0070	<0.000005	0.0071	0.0049	<0.050	8.51	<0.00050	<1.0	<0.000050	3.79	0.171	5.7	<0.00050	0.000036	<0.00010
		1000	890	0.00145	<0.010	<0.00020	0.00251	1.70	0.0061	<0.000005	0.0193	0.0150	<0.050	10.80	<0.00050	1.00	<0.000050	5.04	0.303	7.8	<0.00050	0.000045	<0.00010
29-Dec-21	0	1000	940	0.0014	<0.010	<0.00020	0.00222	1.41	0.0044	<0.000005	0.0130	0.0123	<0.050	9.91	<0.00050	<1.0	<0.000050	4.16	0.251	7.3	<0.00050	0.000035	<0.00010
		2000	1955	0.00075	<0.010	<0.00020	0.00146	0.87	0.0043	<0.000005	0.0070	0.0067	<0.050	6.07	<0.00050	<1.0	<0.000050	2.36	0.163	<3.0	<0.00050	0.000023	<0.00010
		2000	1970	0.00071	<0.010	<0.00020	0.00157	0.86	0.0052	<0.000005	0.0068	0.0066	<0.050	5.83	<0.00050	1.00	<0.000050	1.99	0.164	<3.0	<0.00050	0.000023	<0.00010
05-Jan-22	1	500	492	<0.00040	0.0170	<0.00020	0.00218	1.32	0.0078	<0.000005	0.0108	0.00891	0.051	7.32	<0.00050	1.10	<0.000050	2.38	0.248	3.5	<0.00050	0.00003	<0.00010
12-Jan-22	2	500	480	0.0013	<0.010	0.00229	0.0024	1.41	0.00783	<0.000005	0.00996	0.00734	0.098	7.24	<0.00050	1.10	<0.000050	2.26	0.245	<3.0	<0.00050	0.000035	<0.00010
19-Jan-22	3	500	475	0.00052	<0.010	<0.00020	0.00246	1.33	0.00682	<0.000005	0.0085	0.00422	<0.050	6.83	<0.00050	1.10	<0.000050	1.95	0.232	<3.0	<0.00050	0.000032	<0.00010
26-Jan-22	4	500	475	<0.00040	<0.010	<0.00020	0.00324	1.6	0.00975	<0.000005	0.00991	0.00187	<0.050	7.7	<0.00050	1.20	<0.000050	2.08	0.27	3.5	<0.00050	0.000039	<0.00010
02-Feb-22	5	500	472	0.00068	<0.010	<0.00020	0.00317	2.06	0.00991	<0.000010	0.00954	0.00092	<0.050	7.46	<0.00050	1.20	<0.000050	2.22	0.368	5.6	<0.00050	0.000035	<0.00010
02-Feb-22	5D			0.0007	<0.010	<0.00020	0.00286	1.85	0.0101		0.0106	0.00091	<0.050	8.5	<0.00050	1.30	<0.000050	2.16	0.306	3.6	<0.00050	0.000034	<0.00010
09-Feb-22	6	500	478	<0.00040	<0.010	<0.00020	0.00321	1.86	0.00928	<0.000010	0.00969	0.00051	<0.050	7.87	<0.00050	1.40	<0.000050	1.96	0.297	5.0	<0.00050	0.00004	<0.00010
16-Feb-22	7	500	477	0.00056	<0.010	<0.00020	0.00349	1.83	0.00948	<0.000010	0.00803	<0.00040	<0.050	8.3	<0.00050	1.50	<0.000050	1.75	0.279	4.0	<0.00050	0.000049	<0.00010
23-Feb-22	8	500	471	0.00052	<0.010	<0.00020	0.00298	2.07	0.00942	<0.000010	0.00758	0.00042	<0.050	9.19	<0.00050	1.70	<0.000050	1.85	0.302	6.5	<0.00050	0.000037	<0.00010
02-Mar-22	9	500	470	0.00055	<0.010	<0.00020	0.0027	1.75	0.0098	<0.000010	0.00582	<0.00040	<0.050	6.75	<0.00050	1.50	<0.000050	1.35	0.268	4.7	<0.00050	0.000039	<0.00010
09-Mar-22	10	500	474	0.00075	<0.010	<0.00020	0.00261	1.61	0.0109	<0.000010	0.00495	0.00048	<0.050	6.41	<0.00050	1.20	<0.000050	1.22	0.237	4.6	<0.00050	0.000039	<0.00010
16-Mar-22	11	500	469	0.00046	<0.010	<0.00020	0.00287	1.65	0.0112	<0.000010	0.00427	<0.00040	<0.050	6.27	<0.00050	1.30	<0.000050	1.09	0.238	3.1	<0.00050	0.000034	<0.00010
23-Mar-22	12	500	477	<0.00040	<0.010	<0.00020	0.00277	1.66	0.0100	<0.000010	0.004	<0.00040	<0.050	6.35	<0.00050	1.30	<0.000050	1.15	0.241	<3.0	<0.00050	0.000041	<0.00010
30-Mar-22	13	500	475	0.00044	<0.010	<0.00020	0.00265	1.53	0.0108	<0.000010	0.00371	<0.00040	<0.050	6.27	<0.00050	1.30	<0.000050	0.92	0.255	<3.0	<0.00050	0.000042	<0.00010
06-Apr-22	14	500	469	0.00046	0.01	<0.00020	0.0035	1.85	0.0108	<0.000010	0.00403	<0.00040	2.1	7	<0.00050	1.30	<0.000050	1.12	0.285	5.1	<0.00050	0.000038	<0.00010
13-Apr-22	15	500	478	<0.00040	<0.010	<0.00020	0.00271	1.48	0.011	<0.000010	0.00277	<0.00040	<0.050	5.56	<0.00050	1.10	<0.000050	0.82	0.237	4.0	<0.00050	0.000029	<0.00010
20-Apr-22	16	500	470	0.00027	<0.0020	<0.000050	0.00311	1.56	0.0135	<0.000010	0.00261	0.000232	<0.010	6.05	0.00012	1.20	<0.000010	0.81	0.249	2.6	<0.000050	0.0000408	<0.000010
27-Apr-22	17	500	472	0.00029	<0.0020	<0.000050	0.00308	1.62	0.0111	<0.000005	0.0024	0.000144	<0.010	6.06	0.00018	1.21	<0.000010	0.79	0.25	2.8	<0.000050	0.0000367	<0.000010
04-May-22	18	**250**	220	0.00037	<0.0020	<0.000050	0.00386	1.98	0.0109	<0.0000050	0.00287	0.000237	<0.010	6.85	0.00019	1.66	0.000212	0.88	0.295	3.8	<0.000050	0.0000455	<0.000010
11-May-22	19	250	218	0.00049	<0.0020	<0.000050	0.00395	2.09	0.0122	<0.0000050	0.00318	0.000309	<0.010	7.47	0.00019	1.85	<0.000010	0.93	0.311	4.6	<0.000050	0.0000482	<0.000010
18-May-22	20	250	222	0.00036	<0.0020	<0.000050	0.00388	1.95	0.0112	<0.0000050	0.00276	0.00023	<0.010	6.85	0.00017	1.61	<0.000010	0.83	0.294	3.9	<0.000050	0.0000415	<0.000010
25-May-22	21	250	225	0.00035	0.0024	<0.000050	0.00391	2.02	0.0127	<0.0000050	0.00314	0.000157	<0.010	7.14	0.00019	1.58	<0.000010	0.89	0.326	3.7	<0.000050	0.0000484	<0.000010
01-Jun-22	22	250	221	0.00023	<0.0020	<0.000050	0.00462	2.06	0.0128	<0.0000050	0.00298	0.000223	<0.010	6.96	0.00017	1.61	<0.000010	0.87	0.311	4.2	<0.000050	0.0000488	<0.000010
08-Jun-22	23	250	226	0.00046	<0.0020	<0.000050	0.00415	2.17	0.0143	<0.0000050	0.00325	0.000444	<0.010	7.72	0.0002	1.86	<0.000010	0.92	0.326	4.8	<0.000050	0.0000521	<0.000010
15-Jun-22	24	250	223	0.00034	0.0041	<0.000050	0.005	2.19	0.0130	<0.0000050	0.00323	0.00047	<0.010	7.85	0.00024	1.97	0.000012	0.92	0.338	5.5	<0.000050	0.0000521	<0.000010
22-Jun-22	25	250	227	0.0004	<0.0020	<0.000050	0.0043	1.96	0.0128	<0.0000050	0.00308	0.000318	<0.010	7.25	0.00019	1.77	<0.000010	0.83	0.314	5.0	<0.000050	0.0000566	<0.000010
29-Jun-22	26	250	224	0.00041	<0.0020	<0.000050	0.00427	2.01	0.0121	<0.0000050	0.00336	0.000251	<0.010	7.92	0.00022	1.81	<0.000010	0.91	0.319	5.5	<0.000050	0.0000545	<0.000010
06-Jul-22	27	250	227	0.00081	<0.0020	<0.000050	0.00528	1.98	0.0132	<0.0000050	0.00338	0.000286	<0.010	7.52	0.00022	1.89	<0.000010	0.86	0.323	5.6	<0.000050	0.0000569	<0.000010
13-Jul-22	28	250	220	0.00052	0.0026	<0.000050	0.00547	2.12	0.0140	<0.0000050	0.00355	0.000229	<0.010	7.67	0.00024	2.08	<0.000010	0.95	0.323	6.1	<0.000050	0.00006	<0.000010
20-Jul-22	29	**125**	114	0.0006	<0.0020	<0.000050	0.00717	3.12	0.0179	<0.000020	0.00561	0.000444	<0.010	10.8	0.00036	2.95	0.000022	1.39	0.478	9.6	<0.000050	0.0000896	<0.000010
27-Jul-22	30	125	115	0.00187	0.0032	<0.000050	0.00895	3.39	0.0175	<0.000020	0.00631	0.000445	<0.010	11.6	0.00041	3.42	0.000080	1.61	0.504	11.2	<0.000050	0.0000975	<0.000010
03-Aug-22	31	125	117	0.00085	0.0023	<0.000050	0.00939	3.49	0.0184	<0.000020	0.0075	0.000555	<0.010	11.6	0.00049	3.41	0.000022	1.73	0.509	12.7	<0.000050	0.0000933	<0.000010
10-Aug-22	32	125	120	0.00069	<0.0020	<0.000050	0.00847	3.65	0.0199	<0.000020	0.00814	0.00101	<0.010	12	0.00053	3.60	<0.000010	1.89	0.602	14.1	<0.000050	0.000099	<0.000010
17-Aug-22	33	125	118	0.00076	<0.0020	<0.000050	0.0092	3.45	0.0177	<0.000020	0.00831	0.000503	<0.010	11.8	0.00051	3.31	<0.000010	1.86	0.524	13.7	<0.000050	0.000102	<0.000010
24-Aug-22	34	125	113	0.00062	0.0021	0.00057	0.00863	3.62	0.0181	<0.000020	0.0087	0.000459	<0.010	11.4	0.00054	3.21	0.003120	1.96	0.618	14.6	<0.000050	0.0000904	<0.000010
31-Aug-22	35	125	115	0.00078	<0.0020	0.000054	0.0102	3.53	0.0188	<0.000020	0.0087	0.000346	<0.010	11.8	0.00056	3.55	0.000012	1.93	0.585	14.6	<0.000050	0.000115	<0.000010
07-Sep-22	36	125	119	0.00193	<0.0020	0.000057	0.00994	3.85	0.0093	0.000023	0.00926	0.0023	<0.010	11.6	0.00056	3.55	<0.000010	2.11	0.567	15.2	<0.000050	0.000102	<0.000010
14-Sep-22	37	125	117	0.00059	<0.0020	<0.000050	0.00869	3.47	0.0163	0.000020	0.00817	0.000669	<0.010	10.3	0.00051	3.09	<0.000010	1.90	0.505	13.4	<0.000050	0.0000889	<0.000010
21-Sep-22	38	125	120	0.00044	<0.0020	<0.000050	0.00578	2.14	0.0124	<0.000020	0.00478	0.000422	<0.010	6.91	0.00034	1.90	<0.000010	1.18	0.315	7.5	<0.000050	0.0000589	<0.000010
28-Sep-22	39	125	121	0.00107	<0.0020	<0.000050	0.00771	3.14	0.0158	<0.000020	0.00704	0.000464	<0.010	9.75	0.00048	2.99	<0.000010	1.63	0.55	11.9	<0.000050	0.0000897	<0.000010
05-Oct-22	40	125	119	0.0008	0.0033	<0.000050	0.00909	3.71	0.0164	<0.000020	0.00731	0.000437	<0.010	10.7	0.00052	3.15	<0.000010	1.71	0.566	13.1	<0.000050	0.0000791	<0.000010
12-Oct-22	41	125		0.00138	0.0031	0.000054	0.00911	3.63	0.0152	0.000022	0.00751	0.000502	<0.010	11.2	0.00053	3.10	<0.000010	1.77	0.546	13.0	<0.000050	0.0000853	<0.000010
19-Oct-22	42	125		0.00076	0.0021	<0.000050	0.00864	3.51	0.0142	<0.000020	0.00718	0.000253	<0.010	10.9	0.00047	3.16	<0.000010	1.72	0.537	12.4	<0.000050	0.0000821	<0.000010
26-Oct-22	43	125		0.00053	<0.0020	<0.000050	0.0098	3.83	0.0165	0.000033	0.00683	0.000555	0.013	10.3	0.00044	3.22	0.000033	1.75	0.544	11.9	<0.000050	0.0000799	<0.000010
02-Nov-22	44	125	120	0.00047	<0.0020	<0.000050	0.00866	3.61	0.0156	<0.000020	0.00636	0.000505	<0.010	10.3	0.00042	3.10	<0.000010	1.61	0.541	12.0	<0.000050	0.0000771	<0.000010
09-Nov-22	45	125	121	0.0003	0.0026	<0.000050	0.00936	3.73	0.0153	<0.000020	0.00591	0.000544	<0.010	10.5	0.00042	3.09	<0.000010	1.54	0.565	11.4	<0.000050	0.000084	<0.000010
16-Nov-22	46	125																						
23-Nov-22	47	125																						

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

		Instrument/Method:								
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	860	<0.00020	<0.0050	<0.0010	0.000097	<0.0010	0.0046	0.00031
		1000	890	<0.00020	<0.0050	0.0021	0.000298	<0.0010	<0.0040	0.00034
29-Dec-21	0	1000	940	<0.00020	<0.0050	0.0021	0.000200	0.00120	<0.0040	<0.00010
		2000	1955	<0.00020	<0.0050	0.0014	0.000088	<0.0010	<0.0040	0.00011
		2000	1970	<0.00020	<0.0050	0.0019	0.000104	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	492	<0.00020	<0.0050	0.0031	0.000204	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	480	<0.00020	<0.0050	0.0033	0.000197	<0.0010	<0.0040	<0.00010
19-Jan-22	3	500	475	<0.00020	<0.0050	0.0032	0.000197	<0.0010	<0.0040	0.0001
26-Jan-22	4	500	475	<0.00020	<0.0050	0.0035	0.000269	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	472	<0.00020	<0.0050	0.0028	0.000341	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	0.0032	0.000342	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	478	<0.00020	<0.0050	0.0028	0.000392	<0.0010	<0.0040	<0.00010
16-Feb-22	7	500	477	<0.00020	<0.0050	0.0025	0.000372	<0.0010	<0.0040	<0.00010
23-Feb-22	8	500	471	<0.00020	<0.0050	0.0024	0.000439	0.001	<0.0040	<0.00010
02-Mar-22	9	500	470	<0.00020	<0.0050	0.0021	0.000408	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	474	<0.00020	<0.0050	0.0019	0.000443	0.0017	0.0048	<0.00010
16-Mar-22	11	500	469	<0.00020	<0.0050	0.0018	0.000417	0.0013	<0.0040	<0.00010
23-Mar-22	12	500	477	<0.00020	<0.0050	0.0016	0.000448	<0.0030	<0.0040	<0.00010
30-Mar-22	13	500	475	<0.00020	<0.0050	0.0016	0.000518	<0.0050	<0.0040	<0.00010
06-Apr-22	14	500	469	<0.00020	<0.0050	0.0017	0.000589	<0.0050	<0.0040	<0.00010
13-Apr-22	15	500	478	<0.00020	<0.0050	0.0012	0.000489	<0.0050	<0.0040	<0.00010
20-Apr-22	16	500	470	<0.000050	<0.00020	0.00119	0.000526	0.00154	<0.0010	0.000095
27-Apr-22	17	500	472	<0.000050	<0.00020	0.00114	0.000517	0.00152	<0.0010	0.000037
04-May-22	18	**250**	220	<0.000050	<0.00020	0.00127	0.000743	0.00142	0.0012	0.000022
11-May-22	19	250	218	<0.000050	<0.00020	0.00145	0.000701	0.00129	0.0015	<0.000020
18-May-22	20	250	222	<0.000050	<0.00020	0.00124	0.000745	0.00146	<0.0010	<0.000020
25-May-22	21	250	225	<0.000050	<0.00020	0.00138	0.000918	0.00177	0.0012	<0.000020
01-Jun-22	22	250	221	<0.000050	<0.00020	0.00136	0.000867	0.00183	0.0012	<0.000020
08-Jun-22	23	250	226	<0.000050	<0.00020	0.00138	0.000947	0.00176	0.0015	<0.000020
15-Jun-22	24	250	223	0.000154	<0.00020	0.00134	0.00102	0.00201	0.0018	<0.000020
22-Jun-22	25	250	227	<0.000050	<0.00020	0.00121	0.000963	0.00186	0.0013	<0.000020
29-Jun-22	26	250	224	0.000059	<0.00020	0.00136	0.00103	0.00208	0.0016	<0.000020
06-Jul-22	27	250	227	<0.000050	<0.00020	0.00128	0.00108	0.00202	0.0012	<0.000020
13-Jul-22	28	250	220	0.000247	<0.00020	0.0014	0.00118	0.00233	0.0024	<0.000020
20-Jul-22	29	**125**	114	<0.000050	<0.00020	0.00211	0.00211	0.00248	0.0026	<0.000020
27-Jul-22	30	125	115	0.000579	<0.00020	0.00227	0.00226	0.00329	0.0037	<0.000020
03-Aug-22	31	125	117	0.000743	<0.00020	0.00252	0.00264	0.003	0.0040	<0.000020
10-Aug-22	32	125	120	<0.000150	<0.00020	0.0027	0.00245	0.00333	0.0022	<0.000020
17-Aug-22	33	125	118	0.000118	<0.00020	0.00251	0.00265	0.00327	0.0017	<0.000020
24-Aug-22	34	125	113	0.00114	0.00033	0.00266	0.00237	0.00325	0.0053	0.000041
31-Aug-22	35	125	115	0.000269	<0.00020	0.00267	0.00258	0.00358	0.0021	<0.000020
07-Sep-22	36	125	119	0.000265	<0.00020	0.00257	0.00276	0.00333	0.0049	<0.000020
14-Sep-22	37	125	117	0.000077	<0.00020	0.00225	0.00249	0.0029	0.0025	<0.000020
21-Sep-22	38	125	120	0.0001	<0.00020	0.00127	0.00132	0.00234	0.0014	<0.000020
28-Sep-22	39	125	121	0.000141	<0.00020	0.00197	0.00222	0.00283	0.0023	<0.000020
05-Oct-22	40	125	119	0.000216	<0.00020	0.00189	0.00238	0.0028	0.0019	<0.000020
12-Oct-22	41	125		0.000327	<0.00020	0.00196	0.00258	0.00289	0.0022	<0.000020
19-Oct-22	42	125		0.000327	<0.00020	0.00180	0.00234	0.00292	0.0019	<0.000020
26-Oct-22	43	125		0.000196	<0.00020	0.00166	0.00237	0.00274	0.0018	<0.000020
02-Nov-22	44	125	120	0.000193	<0.00020	0.00151	0.00233	0.00266	0.0026	<0.000020
09-Nov-22	45	125	121	0.000197	<0.00020	0.00133	0.00223	0.00276	0.0024	<0.000020
16-Nov-22	46	125								
23-Nov-22	47	125								

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-7

Global
ARD Testing Services Inc.

Sample ID: W-278 (B8) & W-303 (B8)
Sample Wt. used (g): 3200 + 3800 = 7000
HCT ID: COL-7

GLOBAL PROJECT NO: 1956 (Columns)
CLIENT: First Mining Gold Corporation
PROJECT NAME: Springpole Project Geochem (Columns)
PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.0005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	900	7.18	528	3.6	29.2	192	8.68	<0.10	0.0106	182.0	0.0203	0.0022	0.00095	0.0103	<0.00010	<0.00010	<0.0500	0.000026	54.6	<0.00050	0.0001
		1000	920	7.22	603	3.7	33.8	173.9	6.22	0.32	0.0069	229.0	0.0354	0.0037	0.00136	0.0100	<0.00010	<0.00010	<0.0500	<0.000010	61.6	<0.00050	0.0002
29-Dec-21	0	1000	960	7.25	362	3.3	28.1	133.8	4.71	0.37	<0.0050	134.0	0.0477	0.00313	0.00136	0.0057	<0.00010	<0.00010	<0.0500	<0.000010	36.3	<0.00050	<0.00010
												Replicate	0.049	0.00308	0.00137	0.0058	<0.00010	<0.00010	<0.0500	0.000011	35.6	<0.00050	0.0001
		2000	1960	7.28	191.4	3.5	26.0	32.8	1.94	0.29	<0.0050	65.6	0.0757	0.00212	0.00135	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	18.1	<0.00050	<0.00010
		2000	1975	7.36	171.9	2.7	28.4	46	0.74	0.23	<0.0050	62.4	0.0822	0.00271	0.00145	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	17.2	<0.00050	<0.00010
05-Jan-22	1	500	488	7.53	369	3.1	43.6	121	1.1	0.25	<0.0050	158.0	0.039	0.00504	0.00106	0.0077	<0.00010	<0.00010	<0.0500	0.000013	43.8	<0.00050	0.00013
12-Jan-22	2	500	460	7.53	325	3.5	44.4	113	0.73	0.26	<0.0050	143	0.0567	0.00571	0.00086	0.0075	<0.00010	<0.00010	<0.0500	<0.000010	38.8	<0.00050	0.00013
19-Jan-22	3	500	480	7.56	350	3.2	46.4	108	0.5	0.33	<0.0050	127	0.0543	0.00606	0.00112	0.0061	<0.00010	<0.00010	<0.0500	<0.000010	34.2	<0.00050	<0.00010
26-Jan-22	4	500	480	7.36	339	3.9	48.7	117	0.33	0.27	<0.0050	155	0.0627	0.00782	0.001	0.0075	<0.00010	<0.00010	<0.0500	0.000012	41.2	<0.00050	<0.00010
02-Feb-22	5	500	476	7.38	370	5.1	41.2	128	0.27	0.26	0.0057	167	0.0516	0.00776	0.00115	0.0076	<0.00010	<0.00010	<0.0500	0.000011	43.5	<0.00050	<0.00010
02-Feb-22	5D											161	0.0491	0.00715	0.00097	0.0074	<0.00010	<0.00010	<0.0500	0.000021	42	<0.00050	<0.00010
09-Feb-22	6	500	471	7.34	365	4.2	42.0	135	0.24	<0.10	<0.0050	172	0.061	0.00857	0.00116	0.0073	<0.00010	<0.00010	<0.0500	0.000016	44.8	<0.00050	0.0001
16-Feb-22	7	500	472	7.36	355	4.6	41.3	128	0.15	<0.10	<0.0050	158	0.0388	0.0093	0.00135	0.007	<0.00010	<0.00010	<0.0500	0.000021	40.8	<0.00050	<0.00010
23-Feb-22	8	500	475	7.40	348	10.0	42.5	123	0.16	<0.10	0.0077	154	0.0727	0.00863	0.00108	0.0066	<0.00010	<0.00010	<0.0500	0.000025	38	<0.00050	0.00013
02-Mar-22	9	500	480	7.37	344	8.4	37.2	112	0.15	0.45	0.0061	140	0.0667	0.00866	0.00096	0.0057	<0.00010	<0.00010	<0.0500	0.000012	35.3	<0.00050	<0.00010
09-Mar-22	10	500	477	7.45	364	8.0	35.3	105	0.12	0.26	0.0102	113.0	0.054	0.00757	0.00107	0.0050	<0.00010	<0.00010	<0.0500	0.000016	28.1	<0.00050	0.00012

CERTIFICATE OF ANALYSIS • KINE

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
Instrument/Method:										CVAA													
Unit:		mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
RDL:		5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.000005	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	900	0.00061	<0.010	<0.00020	0.00453	11.1	0.0881	<0.000005	0.00693	0.00154	<0.050	12.7	0.00123	<1.0	<0.000050	9.48	0.157	55.7	<0.00050	0.000087	<0.00010
		1000	920	0.00041	<0.010	<0.00020	0.00548	18.3	0.1320	<0.000005	0.0116	0.00192	<0.050	11.8	0.003	<1.0	<0.000050	10.2	0.19	71.3	<0.00050	0.000085	<0.00010
		1000	960	<0.00040	<0.010	<0.00020	0.00384	10.5	0.0712	<0.000005	0.00758	0.0008	<0.050	7.66	0.00176	<1.0	<0.000050	6.16	0.109	37.7	<0.00050	0.000064	<0.00010
29-Dec-21	0			<0.00040	<0.010	<0.00020	0.00384	10.4	0.0700		0.00784	0.00081	<0.050	7.58	0.00169	<1.0	<0.000050	5.97	0.109	37.9	<0.00050	0.000063	<0.00010
		2000	1960	<0.00040	<0.010	<0.00020	0.00242	4.95	0.0345	<0.000005	0.00438	0.00042	<0.050	4.31	0.00081	<1.0	<0.000050	2.62	0.053	17	<0.00050	0.000038	<0.00010
		2000	1975	<0.00040	<0.010	<0.00020	0.00232	4.72	0.0405	<0.000005	0.00465	<0.00040	0.054	3.36	0.00092	<1.0	<0.000050	1.72	0.0489	13.6	<0.00050	0.000029	<0.00010
05-Jan-22	1	500	488	<0.00040	<0.010	<0.00020	0.00405	11.7	0.1090	<0.000005	0.0103	0.00062	<0.050	5.38	0.00181	1.1	<0.000050	2.96	0.127	43.6	<0.00050	0.000043	<0.00010
12-Jan-22	2	500	460	0.00049	<0.010	<0.00020	0.00428	11.2	0.108	<0.000005	0.00969	0.0007	<0.050	5.1	0.00138	1.2	<0.000050	2.6	0.113	34.4	<0.00050	0.000042	<0.00010
19-Jan-22	3	500	480	0.00043	<0.010	<0.00020	0.00401	10	0.0923	<0.000005	0.00915	0.00043	0.055	4.44	0.00151	<1.0	<0.000050	2.15	0.0957	34.3	<0.00050	0.000041	<0.00010
26-Jan-22	4	500	480	<0.00040	<0.010	<0.00020	0.00494	12.6	0.121	<0.000005	0.0111	<0.00040	<0.050	4.76	0.00193	1.3	<0.000050	2.21	0.119	45.5	<0.00050	0.000044	<0.00010
02-Feb-22	5	500	476	0.00052	<0.010	<0.00020	0.00391	14	0.136	<0.000010	0.0119	<0.00040	<0.050	4.12	0.00196	1.1	<0.000050	2.04	0.129	48.1	<0.00050	0.000034	<0.00010
02-Feb-22	5D			0.00071	<0.010	<0.00020	0.00373	13.7	0.135		0.0121	<0.00040	<0.050	4.58	0.00166	1.1	<0.000050	2.12	0.127	47.8	<0.00050	0.000034	<0.00010
09-Feb-22	6	500	471	0.001	<0.010	<0.00020	0.00412	14.7	0.144	<0.000010	0.013	<0.00040	<0.050	4.29	0.00203	1.3	<0.000050	2.02	0.128	49.4	<0.00050	0.000038	<0.00010
16-Feb-22	7	500	472	0.0007	<0.010	0.0013	0.00435	13.6	0.132	<0.000010	0.0129	<0.00040	<0.050	4.27	0.00221	1.4	<0.000050	1.82	0.115	47.8	<0.00050	0.000828	<0.00010
23-Feb-22	8	500	475	0.00103	<0.010	<0.00020	0.00377	14.3	0.136	<0.000010	0.014	0.00113	<0.050	4.59	0.00197	1.6	<0.000050	1.95	0.119	47.3	<0.00050	0.000089	<0.00010
02-Mar-22	9	500	480	0.00753	0.06	<0.00020	0.00323	12.5	0.1270	<0.000010	0.0135	<0.00040	<0.050	3.4	0.00112	1.4	<0.000050	1.52	0.105	40.4	0.00051	0.000037	<0.00010
09-Mar-22	10	500	477	0.00055	<0.010	<0.00020	0.00274	10.3	0.1120	<0.000010	0.0119	0.0004	<0.050	2.83	0.0015	1.1	0.000065	1.3	0.0806	30.5	<0.00050	0.000034	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Instrument/Method:									
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	900	<0.00020	<0.0050	<0.0010	0.000211	<0.0010	<0.0040	<0.00010
		1000	920	<0.00020	<0.0050	<0.0010	0.000481	<0.0010	<0.0040	<0.00010
		1000	960	<0.00020	<0.0050	<0.0010	0.000247	<0.0010	<0.0040	<0.00010
29-Dec-21	0			<0.00020	<0.0050	<0.0010	0.00025	<0.0010	<0.0040	<0.00010
		2000	1960	<0.00020	<0.0050	<0.0010	0.000092	<0.0010	<0.0040	<0.00010
		2000	1975	<0.00020	<0.0050	<0.0010	0.0001	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	488	<0.00020	<0.0050	<0.0010	0.000388	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	460	<0.00020	<0.0050	<0.0010	0.000345	<0.0010	0.0048	<0.00010
19-Jan-22	3	500	480	<0.00020	<0.0050	<0.0010	0.000316	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	480	<0.00020	<0.0050	<0.0010	0.000469	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	476	<0.00020	<0.0050	<0.0010	0.000514	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	<0.0010	0.000516	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	471	<0.00020	<0.0050	<0.0010	0.00054	<0.0010	<0.0040	<0.00010
16-Feb-22	7	500	472	<0.00020	<0.0050	<0.0010	0.000491	<0.0010	<0.0040	<0.00010
23-Feb-22	8	500	475	0.00025	<0.0050	<0.0010	0.000518	<0.0010	0.0374	0.0001
02-Mar-22	9	500	480	<0.00020	<0.0050	<0.0010	0.000444	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	477	<0.00020	<0.0050	<0.0010	0.000408	<0.0010	0.005	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-8

Global ARD Testing Services Inc.

Sample ID: M112089 (B9) & W-041 (B8)

Sample Wt. used (g): 4100 + 2900 = 7000

HCT ID: COL-8

GLOBAL PROJECT NO: 1956 (Columns)

CLIENT: First Mining Gold Corporation

PROJECT NAME: Springpole Project Geochem (Columns)

PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	860	7.52	112.7	2.7	37.6	6.2	2.06	<0.10	0.0082	21.4	0.0455	0.00483	0.0035	0.0072	<0.00010	<0.00010	<0.0500	0.000056	6.37	<0.00050	<0.00010
		1000	880	7.53	168.3	3.1	69.6	13.1	1.77	0.44	0.0064	37.3	0.0567	0.0267	0.00562	0.0146	<0.00010	<0.00010	<0.0500	0.00021	10	<0.00050	0.0002
29-Dec-21	0	1000	940	7.47	114.2	2.6	20.8	8.6	1.31	0.32	<0.0050	24.6	0.0697	0.0186	0.00504	0.0085	<0.00010	<0.00010	<0.0500	0.000107	6.69	<0.00050	<0.00010
		2000	1975	7.49	89.5	2.9	7.1	6.1	0.82	0.27	0.0078	20.5	0.0928	0.0153	0.0053	0.0075	<0.00010	<0.00010	<0.0500	0.000056	5.69	<0.00050	<0.00010
		2000	1980	7.55	86.4	2.7	36.7	5.4	0.52	0.29	0.0071	21.1	0.092	0.0156	0.00653	0.0075	<0.00010	<0.00010	<0.0500	0.000061	5.82	<0.00050	<0.00010
												Replicate	0.0911	0.0148	0.0061	0.0109	<0.00010	<0.00010	<0.0500	0.000061	5.72	<0.00050	<0.00010
05-Jan-22	1	500	490	7.80	156.4	2.1	63.1	9.9	1.14	0.29	<0.0050	44.1	0.059	0.0297	0.00919	0.0177	<0.00010	<0.00010	<0.0500	0.000059	11.7	<0.00050	0.00018
12-Jan-22	2	500	485	7.75	140.9	2.7	64.1	9	0.75	0.32	0.0055	40.6	0.0721	0.0266	0.0109	0.0162	<0.00010	<0.00010	<0.0500	0.000097	10.7	<0.00050	0.00021
19-Jan-22	3	500	485	7.90	164.2	1.8	62.3	9.4	0.46	0.26	0.0055	40.4	0.0649	0.0247	0.0122	0.015	<0.00010	<0.00010	<0.0500	0.000092	10.7	<0.00050	0.00022
26-Jan-22	4	500	480	7.68	144.2	2.5	64.0	10.2	0.4	0.33	<0.0050	43.5	0.089	0.0276	0.0182	0.0153	<0.00010	<0.00010	<0.0500	0.000024	11.2	<0.00050	0.000280
26-Jan-22	4	500	480	7.68	144.2	2.5	64.0	10.2	0.4	0.33	<0.0050	43.5	0.089	0.0276	0.0182	0.0153	<0.00010	<0.00010	<0.0500	0.000024	11.2	<0.00050	0.000280
02-Feb-22	5	500	475	7.70	152.3	3.6	61.8	11.6	0.35	0.33	0.0056	49.1	0.082	0.0256	0.0222	0.0151	<0.00010	<0.00010	<0.0500	0.000057	12.6	<0.00050	0.000340
02-Feb-22	5D										*Duplicate Analysis:*	47.3	0.0779	0.0259	0.0218	0.0156	<0.00010	<0.00010	<0.0500	0.000051	11.8	<0.00050	0.000400
09-Feb-22	6	500	477	7.68	149.6	2.6	63.1	13.9	0.31	<0.10	<0.0050	52.4	0.122	0.0283	0.0323	0.0163	<0.00010	<0.00010	<0.0500	0.000045	13.4	<0.00050	0.000420
16-Feb-22	7	500	473	7.72	157.5	3.3	62.2	14	0.2	<0.10	<0.0050	51	0.0761	0.0276	0.0371	0.0156	<0.00010	<0.00010	<0.0500	0.000022	12.7	<0.00050	0.000490
23-Feb-22	8	500	478	7.17	86	5.0	55.0	14.7	0.2	<0.10	0.0119	54.3	0.0999	0.026	0.0413	0.0150	<0.00010	<0.00010	<0.0500	0.000017	13.5	<0.00050	0.000510
02-Mar-22	9	500	480	7.54	147	4.0	59.4	14.3	0.26	0.44	0.0069	48.9	0.101	0.0234	0.0427	0.0132	<0.00010	<0.00010	<0.0500	0.000014	12	<0.00050	0.000490
09-Mar-22	10	500	472	7.73	150	5.0	50.5	18.6	0.14	0.33	0.0124	45.3	0.102	0.0208	0.0377	0.0115	<0.00010	<0.00010	<0.0500	0.000011	11.1	<0.00050	0.000480
								Replicate Analysis:	0.14	0.34		44.6	0.107	0.022	0.0406	0.0123	<0.00010	<0.00010	<0.0500	0.000028	10.9	0.00067	0.000550
16-Mar-22	11	500	475	7.75	139	2.7	55.8	15.3		0.34	0.0051	45.9	0.108	0.0217	0.04	0.0121	<0.00010	<0.00010	<0.0500	0.00002	11.1	<0.00050	0.000560
23-Mar-22	12	500	481	7.74	132	2.6	54.0	11.4		0.24	0.0061	46.3	0.165	0.0193	0.0416	0.0117	<0.00010	<0.00010	<0.0500	0.000011	11.2	<0.00050	0.000610
30-Mar-22	13	500	479	7.82	120	2.4	54.2	12.7		0.21	0.0086	47.5	0.114	0.0203	0.0505	0.0119	<0.00010	<0.00010	<0.0500	0.000011	12	<0.00050	0.000590
06-Apr-22	14	500	477	7.83	130	1.7	48.9	13.8		0.22	0.0055	48.4	0.0935	0.0201	0.0452	0.0123	<0.00010	<0.00010	<0.0500	<0.000010	11.5	<0.00050	0.000590
13-Apr-22	15	500	473	7.66	131	2.7	52.9	10.5		<0.10	<0.0050	45.1	0.0989	0.0186	0.0453	0.0117	<0.00010	<0.00010	<0.0500	<0.000010	11.2	<0.00050	0.000650
20-Apr-22	16	500	471	7.84	137	2.0	53.2	10.0		<0.10	0.0053	45.6	0.0845	0.019	0.0441	0.0121	<0.000010	<0.000010	0.0104	0.0000057	11.3	0.00013	0.0007
27-Apr-22	17	500	478	7.68	126	4.2	49.5	9.6		<0.10	0.0058	45.3	0.096	0.0174	0.0425	0.0112	<0.000010	<0.000010	0.0089	0.0000062	11.4	0.00018	0.000624
04-May-22	18	**250**	219	7.77	95	3.6	68.1	14.8		0.1	<0.0050	61.1	0.0794	0.0224	0.0395	0.0155	<0.000010	<0.000010	0.0134	<0.0000080	15.1	0.00033	0.000756
11-May-22	19	250	225	7.65	104	6.2	72.7	16.6		0.33	<0.0050	69.5	0.0893	0.0251	0.0443	0.0163	<0.000010	<0.000010	0.0138	<0.0000100	17.2	0.00031	0.000842
18-May-22	20	250	232	7.55	178	8.7	71.1	16.7		0.23	0.0102	63.9	0.0739	0.022	0.0409	0.0141	<0.000010	<0.000010	0.0142	<0.0000060	16.2	0.00038	0.000742
25-May-22	21	250	240	7.35	183	12.2	72.1	18.3		0.11	<0.0050	63.7	0.0788	0.0252	0.0452	0.0166	<0.000010	<0.000010	0.0138	<0.0000100	15.8	0.00041	0.000838
01-Jun-22	22	250	227	7.55	200	8.5	70.7	18.1		0.16	<0.0050	65.3	0.0943	0.0235	0.0431	0.0155	<0.000010	<0.000010	0.0124	0.0000061	16.3	0.00045	0.000801
08-Jun-22	23	250	225	7.47	191	9.1	73.4	19.0		0.31	<0.0050	72.2	0.0923	0.0261	0.0461	0.0173	<0.000010	<0.000010	0.0162	0.0000267	18.5	0.00047	0.000843
15-Jun-22	24	250	224	7.84	195	2.6	71.0	21.3		0.25	<0.0050	74.2	0.0899	0.0254	0.0471	0.0168	<0.000010	<0.000010	0.0142	<0.0000080	19.1	0.00039	0.000836
22-Jun-22	25	250	228	7.35	184	7.4	75.8	19.2		0.3	<0.0050	70.2	0.0884	0.0241	0.0446	0.0161	<0.000010	<0.000010	0.0128	<0.0000060	18.2	0.0005	0.000774
29-Jun-22	26	250	221	7.57	185	6.1	67.5	22.5		0.52	<0.0050	69.7	0.0980	0.0256	0.0502	0.0163	<0.000010	<0.000010	0.0158	<0.0000060	17.4	0.00042	0.000759
06-Jul-22	27	250	222	7.59	185	6.0	68.8	21.5		0.13	<0.0050	72.3	0.100	0.0242	0.0478	0.0161	<0.000010	<0.000010	0.0158	0.0000051	19	0.00045	0.000741
13-Jul-22	28	250	217	7.36	198	8.9	87.2	23.1		0.15	<0.0050	75.8	0.109	0.0268	0.0528	0.0175	<0.000010	<0.000010	0.0174	<0.0000080	19.4	0.00046	0.000771
20-Jul-22	29	**125**	119	7.73	279	7.9	100.2	40.4		0.19		117.0	0.067	0.0369	0.0449	0.0267	<0.000010	<0.000010	0.0218	<0.0000100	**30.6**	0.00047	0.0011
27-Jul-22	30	125	120	8.05	303	2.5	100.0	49.1		0.24		122.0	0.086	0.0434	0.0572	0.0299	<0.000010	<0.000010	0.0325	<0.0000060	30	0.00075	0.00112
03-Aug-22	31	125	114	7.88	303	7.5	95.5	54.7		0.2		126.0	0.071	0.0407	0.0542	0.0293	<0.000010	<0.000010	0.0326	<0.0000060	31.8	0.00075	0.00103
10-Aug-22	32	125	116	7.71	308	7.5	110.0	58.3		0.23		125.0	0.077	0.0424	0.0582	0.0330	<0.000010	<0.000010	0.0319	<0.0000120	31.7	0.00054	0.00107
17-Aug-22	33	125	118	7.88	309	3.3	90.0	59.3		0.29		105.0	0.080	0.0384	0.0562	0.0294	<0.000010	<0.000010	0.0239	<0.0000120	23.5	0.00071	0.000987
24-Aug-22	34	125	112	7.92	295	1.7	90.0	61.7		0.32		122.0	0.072	0.0385	0.0578	0.0289	<0.000010	<0.000010	0.0313	<0.0000180	30.4	0.00109	0.000994
31-Aug-22	35	125	119	8.10	310	3.3	96.7	58.3		0.3		119.0	0.085	0.0381	0.0618	0.0277	<0.000010	<0.000010	0.0295	<0.0000110	29.8	0.00068	0.000984

CERTIFICATE OF ANALYSIS ▪ KINI

Global
ARD Testing Services Inc.

Instrument/Method:										CVAA														
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.0000050 / 0.000020	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	860	0.00048	<0.010	<0.00020	0.00332	1.34	0.0089	<0.000005	0.135	<0.00040	<0.050	15.3	<0.00050	<1.0	<0.000050	2.55	0.0368	<3.0	<0.00050	0.000076	<0.00010
		1000	880	0.00044	<0.010	<0.00020	0.00552	2.96	0.0216	<0.000005	0.395	0.00095	0.057	21.4	0.00055	<1.0	<0.000050	4.12	0.0883	4.6	<0.00050	0.000105	<0.00010
29-Dec-21	0	1000	940	<0.00040	<0.010	<0.00020	0.00369	1.92	0.0157	<0.000005	0.201	0.00068	<0.050	14.1	<0.00050	<1.0	<0.000050	2.52	0.0557	<3.0	<0.00050	0.000071	<0.00010
		2000	1975	<0.00040	<0.010	<0.00020	0.00278	1.53	0.0132	<0.000005	0.123	<0.00040	<0.050	11.3	<0.00050	<1.0	<0.000050	1.78	0.0457	<3.0	<0.00050	0.000061	<0.00010
		2000	1980	<0.00040	<0.010	<0.00020	0.00266	1.59	0.0151	<0.000005	0.104	<0.00040	<0.050	9.49	<0.00050	<1.0	<0.000050	1.27	0.0492	<3.0	<0.00050	0.000055	<0.00010
				<0.00040	<0.010	<0.00020	0.0026	1.53	0.0146		0.0993	<0.00040	<0.050	9.08	<0.00050	<1.0	<0.000050	1.22	0.046	<3.0	<0.00050	0.000063	<0.00010
05-Jan-22	1	500	490	<0.00040	<0.010	<0.00020	0.00529	3.61	0.0300	<0.000005	0.255	0.00067	<0.050	18	<0.00050	1.2	<0.000050	2.59	0.109	4.2	<0.00050	0.000087	<0.00010
12-Jan-22	2	500	485	0.00051	<0.010	<0.00020	0.00462	3.39	0.0346	<0.000005	0.182	0.00057	<0.050	15.5	<0.00050	1.1	<0.000050	2.09	0.0984	<3.0	<0.00050	0.00008	<0.00010
19-Jan-22	3	500	485	0.00042	<0.010	<0.00020	0.00457	3.31	0.0376	<0.000005	0.144	0.00042	0.071	14.5	<0.00050	1.1	<0.000050	1.75	0.0966	<3.0	<0.00050	0.000082	<0.00010
26-Jan-22	4	500	480	<0.00040	<0.010	<0.00020	0.00532	3.77	0.0341	<0.000005	0.139	0.00054	<0.050	15	<0.00050	1.3	<0.000050	1.55	0.105	3.4	<0.00050	0.000095	<0.00010
26-Jan-22	4	500	480	<0.00040	<0.010	<0.00020	0.00532	3.77	0.0341	<0.000005	0.139	0.00054	<0.050	15	<0.00050	1.3	<0.000050	1.55	0.105	3.4	<0.00050	0.000095	<0.00010
02-Feb-22	5	500	475	0.00084	<0.010	<0.00020	0.00456	4.25	0.0386	<0.000010	0.123	0.00056	<0.050	13.5	<0.00050	1.1	<0.000050	1.44	0.133	4.9	<0.00050	0.000075	<0.00010
02-Feb-22	5D			0.00111	<0.010	<0.00020	0.00443	4.31	0.0397		0.134	0.00058	<0.050	14.9	<0.00050	1.2	<0.000050	1.48	0.12	3.4	<0.00050	0.000074	<0.00010
09-Feb-22	6	500	477	0.00059	<0.010	<0.00020	0.00498	4.61	0.0419	<0.000010	0.116	0.00069	<0.050	14.2	<0.00050	1.4	<0.000050	1.39	0.129	5.8	<0.00050	0.00008	<0.00010
16-Feb-22	7	500	473	0.00064	<0.010	0.00025	0.00495	4.65	0.0399	<0.000010	0.0899	0.00063	<0.050	14.2	<0.00050	1.4	<0.000050	1.26	0.12	4.6	<0.00050	0.000104	<0.00010
23-Feb-22	8	500	478	0.00052	<0.010	<0.00020	0.00421	5.01	0.0430	<0.000010	0.078	0.00064	<0.050	14.4	<0.00050	1.4	<0.000050	1.26	0.132	4.6	<0.00050	0.00008	<0.00010
02-Mar-22	9	500	480	0.00068	<0.010	<0.00020	0.00376	4.59	0.0402	<0.000010	0.0592	0.00058	<0.050	11.3	<0.00050	1.4	<0.000050	0.98	0.119	4.8	0.00063	0.00007	<0.00010
09-Mar-22	10	500	472	0.00075	<0.010	<0.00020	0.00345	4.25	0.0388	<0.000010	0.0456	0.00051	<0.050	10.1	<0.00050	1.2	<0.000050	0.87	0.103	6.2	<0.00050	0.000072	<0.00010
				0.00087	<0.010	<0.00020	0.00342	4.34	0.0406		0.0472	0.0008	<0.050	10.3	<0.00050	1.2	<0.000050	0.92	0.108	6	<0.00050	0.000082	<0.00010
16-Mar-22	11	500	475	<0.00040	<0.010	<0.00020	0.00356	4.42	0.0426	<0.000010	0.0383	0.0005	<0.050	9.69	<0.00050	1.2	<0.000050	0.78	0.11	3.5	<0.00050	0.000056	<0.00010
23-Mar-22	12	500	481	<0.00040	<0.010	<0.00020	0.00333	4.46	0.0417	<0.000010	0.033	0.00045	<0.050	9.4	<0.00050	1.2	<0.000050	0.81	0.11	<3.0	<0.00050	0.000059	<0.00010
30-Mar-22	13	500	479	0.00051	<0.010	<0.00020	0.00313	4.24	0.0448	<0.000010	0.0309	0.00045	<0.050	9.43	<0.00050	1.3	<0.000050	0.67	0.119	3.9	<0.00050	0.000068	<0.00010
06-Apr-22	14	500	477	<0.00040	<0.010	<0.00020	0.00371	4.8	0.0459	<0.000010	0.0283	0.00065	<0.050	9.29	<0.00050	1.2	<0.000050	0.71	0.123	5.3	<0.00050	0.000051	<0.00010
13-Apr-22	15	500	473	<0.00040	<0.010	<0.00020	0.00302	4.18	0.0438	<0.000010	0.0218	0.00046	<0.050	8.14	<0.00050	<1.0	<0.000050	0.53	0.112	4.1	<0.00050	0.000048	<0.00010
20-Apr-22	16	500	471	0.00032	<0.0020	<0.000050	0.00328	4.24	0.0465	<0.000010	0.0187	0.000497	<0.010	8.17	0.00021	1.12	<0.000010	0.57	0.118	3.1	<0.000050	0.0000566	<0.000010
27-Apr-22	17	500	478	0.00033	0.0025	<0.000050	0.00294	4.07	0.045	<0.000005	0.0163	0.000405	<0.010	7.29	0.00021	1.02	<0.000010	0.5	0.11	3.11	<0.000050	0.0000501	<0.000010
04-May-22	18	**250**	219	0.00036	<0.0020	<0.000050	0.00419	5.7	0.0579	<0.0000050	0.021	0.000456	<0.010	9.22	0.00034	1.54	0.000014	0.634	0.146	4.65	<0.000050	0.0000657	<0.000010
11-May-22	19	250	225	0.00039	0.0032	<0.000050	0.00443	6.41	0.0657	<0.0000050	0.0227	0.000661	<0.010	10.6	0.00036	1.71	<0.000010	0.698	0.165	6.94	<0.000050	0.0000707	<0.000010
18-May-22	20	250	232	0.00041	<0.0020	<0.000050	0.00418	5.72	0.0561	<0.0000050	0.0202	0.000589	<0.010	9.71	0.00032	1.6	0.000051	0.584	0.149	5	<0.000050	0.000061	<0.000010
25-May-22	21	250	240	0.00044	<0.0020	<0.000050	0.00401	5.88	0.0648	<0.0000050	0.023	0.000525	<0.010	9.22	0.0004	1.48	0.000013	0.655	0.164	5.16	<0.000050	0.0000684	<0.000010
01-Jun-22	22	250	227	0.00033	<0.0020	<0.000050	0.00449	5.95	0.0649	<0.0000050	0.0213	0.000494	<0.010	8.93	0.00036	1.51	<0.000010	0.631	0.158	5.41	<0.000050	0.0000641	<0.000010
08-Jun-22	23	250	225	0.00039	<0.0020	0.000091	0.004	6.33	0.0690	<0.0000050	0.0232	0.000662	<0.010	9.77	0.00047	1.85	<0.000010	0.672	0.17	6.69	<0.000050	0.0000678	<0.000010
15-Jun-22	24	250	224	0.00037	<0.0020	<0.000050	0.00467	6.4	0.0681	<0.0000050	0.0226	0.000485	<0.010	9.97	0.00042	1.76	<0.000010	0.642	0.176	6.73	<0.000050	0.000067	<0.000010
22-Jun-22	25	250	228	0.00051	<0.0020	<0.000050	0.00411	6.02	0.0674	<0.0000050	0.0215	0.000366	<0.010	9.34	0.0004	1.65	<0.000010	0.614	0.168	6.29	<0.000050	0.0000688	<0.000010
29-Jun-22	26	250	221	0.00053	<0.0020	<0.000050	0.00412	6.35	0.0648	<0.0000050	0.0241	0.000392	<0.010	10	0.00044	1.75	<0.000010	0.688	0.174	7.14	<0.000050	0.0000663	<0.000010
06-Jul-22	27	250	222	0.00099	<0.0020	<0.000050	0.00471	6.04	0.0662	<0.0000050	0.0232	0.000455	<0.010	9.37	0.00046	1.84	<0.000010	0.628	0.173	7.26	<0.000050	0.0000702	<0.000010
13-Jul-22	28	250	217	0.00051	<0.0020	0.000099	0.00487	6.63	0.0690	<0.0000050	0.0251	0.000378	<0.010	9.82	0.00052	2.27	<0.000010	0.739	0.183	9.01	<0.000050	0.0000761	<0.000010
20-Jul-22	29	**125**	119	0.00068	<0.0020	<0.000050	0.00597	9.71	0.1020	<0.000020	0.0388	0.000714	<0.010	12.8	0.0007	2.48	<0.000010	1.07	0.272	12.8	<0.000050	0.000107	<0.000010
27-Jul-22	30	125	120	0.00094	0.0033	<0.000050	0.00792	11.3	0.0916	<0.000020	0.0462	0.000641	<0.010	15.2	0.0009	3.13	0.000035	1.35	0.312	16.5	<0.000050	0.000128	<0.000010
03-Aug-22	31	125	114	0.00102	0.0026	<0.000050	0.00785	11.4	0.0841	<0.000020	0.0509	0.000594	<0.010	14.6	0.00096	2.91	0.000011	1.37	0.295	18.3	<0.000050	0.000124	<0.000010
10-Aug-22	32	125	116	0.00097	0.0027	<0.000050	0.00712	11.1	0.0824	<0.000020	0.0546	<0.000740	<0.010	15.5	0.00105	2.98	<0.000010	1.46	0.349	19.1	<0.000050	0.000123	<0.000010
17-Aug-22	33	125	118	0.00107	<0.0020	<0.000050	0.00598	11.1	0.0742	<0.000020	0.0527	0.000681	<0.010	15.4	0.00089	2.49	<0.000010	1.41	0.307	16.8	<0.000050	0.00013	<0.000010
24-Aug-22	34	125	112	0.00075	0.0028	0.000161	0.00657	11.2	0.0734	<0.000020	0.0544	0.000782	0.014	14.3	0.00101	2.59	0.000011	1.46	0.35	19.3	<0.000050	0.000114	<0.000010
31-Aug-22	35	125	119	0.00078	<0.0020	0.000056	0.00766	10.8	0.0722	<0.000020	0.0511	0.000492	<0.010	15.2	0.00106	2.92	<0.000010	1.35	0.315	18.5	<0.000050	0.000131	<0.000010

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Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
Instrument/Method:										
Unit:		mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MDL:		5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	860	<0.00020	<0.0050	<0.0010	0.000161	<0.0010	<0.0040	0.00017
		1000	880	<0.00020	<0.0050	0.0012	0.000577	<0.0010	<0.0040	0.0003
29-Dec-21	0	1000	940	<0.00020	<0.0050	<0.0010	0.000353	<0.0010	<0.0040	<0.00010
		2000	1975	<0.00020	<0.0050	<0.0010	0.000245	<0.0010	<0.0040	0.00019
		2000	1980	<0.00020	<0.0050	<0.0010	0.000274	<0.0010	<0.0040	<0.00010
				<0.00020	<0.0050	<0.0010	0.000271	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	490	<0.00020	<0.0050	0.0011	0.000678	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	485	<0.00020	<0.0050	0.001	0.000595	<0.0010	<0.0040	0.00159
19-Jan-22	3	500	485	<0.00020	<0.0050	<0.0010	0.000664	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	480	<0.00020	<0.0050	0.0013	0.000953	<0.0010	<0.0040	0.00024
26-Jan-22	4	500	480	<0.00020	<0.0050	0.0013	0.000953	<0.0010	<0.0040	0.00024
02-Feb-22	5	500	475	<0.00020	<0.0050	0.0011	0.00112	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	0.0012	0.00117	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	477	<0.00020	<0.0050	0.0013	0.00137	<0.0010	<0.0040	<0.00010
16-Feb-22	7	500	473	<0.00020	<0.0050	0.0012	0.0014	<0.0010	<0.0040	<0.00010
23-Feb-22	8	500	478	<0.00020	<0.0050	0.0012	0.0015	<0.0010	<0.0040	<0.00010
02-Mar-22	9	500	480	<0.00020	<0.0050	0.0011	0.00143	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	472	<0.00020	<0.0050	0.0011	0.00149	<0.0010	0.0051	<0.00010
				0.0011	<0.0050	0.0011	0.0015	<0.0010	0.0056	<0.00010
16-Mar-22	11	500	475	<0.00020	<0.0050	0.001	0.00132	<0.0010	<0.0040	<0.00010
23-Mar-22	12	500	481	<0.00020	<0.0050	<0.0010	0.00129	<0.0020	<0.0040	<0.00010
30-Mar-22	13	500	479	<0.00020	<0.0050	0.001	0.00158	<0.0050	<0.0040	<0.00010
06-Apr-22	14	500	477	<0.00020	<0.0050	0.001	0.00161	<0.0050	<0.0040	<0.00010
13-Apr-22	15	500	473	<0.00020	<0.0050	<0.0010	0.00133	<0.0050	<0.0040	<0.00010
20-Apr-22	16	500	471	<0.000050	<0.00020	0.00077	0.001430	<0.00100	<0.0010	<0.000020
27-Apr-22	17	500	478	<0.000050	<0.00020	0.00072	0.00141	<0.00100	<0.0010	<0.000020
04-May-22	18	**250**	219	<0.000050	<0.00020	0.0009	0.00197	<0.00100	<0.0010	<0.000020
11-May-22	19	250	225	<0.000050	<0.00020	0.00108	0.00187	<0.00100	0.0013	<0.000020
18-May-22	20	250	232	<0.000050	<0.00020	0.00096	0.00196	<0.00100	0.0012	0.000022
25-May-22	21	250	240	<0.000050	<0.00020	0.00116	0.00224	<0.00100	0.0013	<0.000020
01-Jun-22	22	250	227	<0.000050	<0.00020	0.00111	0.00207	<0.00100	0.0013	<0.000020
08-Jun-22	23	250	225	<0.000050	<0.00020	0.00116	0.00212	<0.00100	0.0014	<0.000020
15-Jun-22	24	250	224	0.000056	<0.00020	0.00123	0.00228	<0.00100	0.0011	<0.000020
22-Jun-22	25	250	228	<0.000050	<0.00020	0.0011	0.00208	<0.00100	0.0013	<0.000020
29-Jun-22	26	250	221	0.000058	<0.00020	0.00134	0.00223	<0.00100	0.0013	<0.000020
06-Jul-22	27	250	222	<0.000050	<0.00020	0.00123	0.00219	<0.00100	0.0015	<0.000020
13-Jul-22	28	250	217	0.000488	<0.00020	0.00141	0.00251	<0.00100	0.0036	<0.000020
20-Jul-22	29	**125**	119	0.000054	<0.00020	0.00197	0.00427	<0.00100	0.0019	<0.000020
27-Jul-22	30	125	120	0.000424	<0.00020	0.00238	0.00464	<0.00100	0.0028	<0.000020
03-Aug-22	31	125	114	0.000958	0.0003	0.00261	0.00486	<0.00100	0.0044	<0.000020
10-Aug-22	32	125	116	<0.000150	0.00027	0.00262	0.00425	<0.00100	0.0027	<0.000020
17-Aug-22	33	125	118	0.000135	<0.00020	0.00241	0.00454	<0.00100	0.0016	<0.000020
24-Aug-22	34	125	112	0.00135	<0.00020	0.00234	0.00397	<0.00100	0.0056	<0.000020
31-Aug-22	35	125	119	0.000693	<0.00020	0.00221	0.00421	<0.00100	0.0031	<0.000020

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-9

Global
ARD Testing Services Inc.

Sample ID: W-117 (B8)
Sample Wt. used (g): 7000.0
HCT ID: COL-9

GLOBAL PROJECT NO: 1956 (Columns)
CLIENT: First Mining Gold Corporation
PROJECT NAME: Springpole Project Geochem (Columns)
PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.0005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	880	7.46	194	3.1	51.7	18.5	5.07	<0.10	<0.0050	41.7	0.0625	0.00414	0.00287	0.0072	<0.00010	<0.00010	<0.0500	<0.000010	12.8	<0.00050	0.0010
		1000	910	7.48	255	3.5	65.6	34.8	3.91	0.16	<0.0050	64.5	0.0971	0.00805	0.00503	0.0106	<0.00010	<0.00010	<0.0500	0.00002	18.9	<0.00050	0.0019
29-Dec-21	0	1000	960	7.51	180.4	2.9	50.6	20.8	2.77	0.11	<0.0050	41.2	0.126	0.0065	0.00487	0.0071	<0.00010	<0.00010	<0.0500	<0.000010	12.1	<0.00050	0.0013
		2000	1980	7.58	81.2	2.0	32.8	7.1	1.16	<0.10	<0.0050	23.2	0.196	0.00309	0.00377	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	7.2	<0.00050	0.0005
		2000	1980	7.56	81.4	2.8	33.9	<5.0	0.32	<0.10	<0.0050	26.6	0.211	0.00387	0.00417	<0.0050	<0.00010	<0.00010	<0.0500	<0.000010	8.31	<0.00050	0.0005
05-Jan-22	1	500	492	7.70	112.1	2.5	44.3	10.7	0.33	0.24	<0.0050	42.1	0.123	0.00437	0.00375	0.0062	<0.00010	<0.00010	<0.0500	<0.000010	13.5	<0.00050	0.00033
12-Jan-22	2	500	470	7.67	112.6	2.6	48.9	11	0.28	0.18	<0.0050	45	0.149	0.00504	0.00366	0.0071	<0.00010	<0.00010	<0.0500	0.000016	14.1	<0.00050	0.00024
19-Jan-22	3	500	475	7.81	125.6	2.5	49.4	11	0.2	0.24	<0.0050	45.2	0.143	0.00562	0.0042	0.0067	<0.00010	<0.00010	<0.0500	0.000017	14.1	<0.00050	0.00013
26-Jan-22	4	500	480	7.55	114.4	3.0	53.4	12.4	0.14	0.2	<0.0050	46	0.149	0.00605	0.00452	0.0073	<0.00010	<0.00010	<0.0500	0.000014	14.1	<0.00050	<0.00010
02-Feb-22	5	500	478	7.58	122.6	3.7	45.0	13.6	0.12	<0.10	<0.0050	47.6	0.133	0.006	0.00458	0.0074	<0.00010	<0.00010	<0.0500	0.000022	14.6	<0.00050	<0.00010
02-Feb-22	5D											48	0.129	0.00567	0.00426	0.0073	<0.00010	<0.00010	<0.0500	0.000019	14.5	<0.00050	<0.00010
09-Feb-22	6	500	473	7.51	119.1	3.8	46.7	15.1	0.12	<0.10	<0.0050	50.5	0.129	0.00638	0.00513	0.007	<0.00010	<0.00010	<0.0500	0.000023	15.6	<0.00050	<0.00010
16-Feb-22	7	500	472	7.56	132	3.1	47.8	16.3	<0.10	<0.10	<0.0050	52	0.114	0.00695	0.00603	0.0078	<0.00010	<0.00010	<0.0500	0.000015	15.6	<0.00050	<0.00010
23-Feb-22	8	500	470	7.27	67	5.0	45.0	15.5	<0.10	<0.10	0.0082	47.2	0.138	0.00628	0.00582	0.0076	<0.00010	<0.00010	<0.0500	0.000013	13.6	<0.00050	<0.00010
02-Mar-22	9	500	470	7.39	124	4.2	40.4	14.1	<0.10	0.4	<0.0050	43.1	0.139	0.00538	0.00533	0.0061	<0.00010	<0.00010	<0.0500	0.000015	12.8	<0.00050	<0.00010
09-Mar-22	10	500	474	7.61	119	4.8	40.0	16	<0.10	0.13	0.0125	40.3	0.123	0.00515	0.00535	0.0064	<0.00010	<0.00010	<0.0500	<0.000010	11.8	<0.00050	<0.00010

CERTIFICATE OF ANALYSIS • KINE

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
Instrument/Method:										CVAA													
Unit:		mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
RDL:		5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.000005	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	880	0.00701	<0.010	<0.00020	0.00113	2.36	0.0090	<0.000005	0.0104	0.00365	<0.050	11.6	0.00149	<1.0	<0.000050	11.7	0.171	7.6	<0.00050	0.00006	<0.00010
		1000	910	0.0132	<0.010	<0.00020	0.00135	4.16	0.0095	<0.000005	0.0271	0.00943	<0.050	13.1	0.00314	<1.0	<0.000050	16.9	0.349	11.1	<0.00050	0.000067	<0.00010
29-Dec-21	0	1000	960	0.00776	<0.010	<0.00020	0.00097	2.66	0.0064	<0.000005	0.0172	0.0058	<0.050	9.47	0.00167	<1.0	<0.000050	11.3	0.217	6.1	<0.00050	0.000049	<0.00010
		2000	1980	0.00286	<0.010	<0.00020	0.00054	1.25	0.0037	<0.000005	0.00548	0.00198	<0.050	4.23	0.0006	<1.0	<0.000050	3.07	0.101	<3.0	<0.00050	0.000025	<0.00010
		2000	1980	0.00341	<0.010	<0.00020	0.00067	1.42	0.0049	<0.000005	0.00538	0.0024	<0.050	3.79	0.0006	<1.0	<0.000050	2.32	0.118	<3.0	<0.00050	0.000025	<0.00010
05-Jan-22	1	500	492	0.00463	<0.010	<0.00020	0.00094	2.05	0.0140	<0.000005	0.00783	0.00316	<0.050	3.14	0.00096	<1.0	<0.000050	1.98	0.181	3.1	<0.00050	0.000021	<0.00010
12-Jan-22	2	500	470	0.00344	<0.010	<0.00020	0.00095	2.39	0.0185	<0.000005	0.00907	0.00282	0.059	3.34	0.00072	1.1	<0.000050	2.15	0.199	<3.0	<0.00050	0.000026	<0.00010
19-Jan-22	3	500	475	0.00166	<0.010	<0.00020	0.00099	2.41	0.0247	<0.000005	0.00885	0.0016	<0.050	3.31	0.00071	<1.0	<0.000050	2.17	0.2	<3.0	<0.00050	0.000025	<0.00010
26-Jan-22	4	500	480	0.00045	<0.010	<0.00020	0.00123	2.6	0.0195	<0.000005	0.00916	0.0007	<0.050	3.01	0.00093	1.1	<0.000050	2.00	0.207	3.8	<0.00050	0.000026	<0.00010
02-Feb-22	5	500	478	0.00089	<0.010	<0.00020	0.00094	2.72	0.0238	<0.000010	0.011	<0.00040	<0.050	2.78	0.00087	1.1	<0.000050	1.86	0.218	5.4	<0.00050	0.000021	<0.00010
02-Feb-22	5D			0.00115	<0.010	<0.00020	0.001	2.85	0.0249		0.0107	<0.00040	<0.050	3.16	0.00074	1.2	<0.000050	2.04	0.222	5.3	<0.00050	<0.000020	<0.00010
09-Feb-22	6	500	473	0.00059	<0.010	<0.00020	0.00108	2.81	0.0247	<0.000010	0.0106	<0.00040	<0.050	2.78	0.00094	1.2	<0.000050	1.92	0.227	5.9	<0.00050	0.000021	<0.00010
16-Feb-22	7	500	472	0.00108	<0.010	<0.00020	0.00124	3.17	0.0259	<0.000010	0.0101	0.00048	<0.050	3.29	0.00108	1.3	<0.000050	2.15	0.234	4.7	<0.00050	0.000033	<0.00010
23-Feb-22	8	500	470	0.00105	<0.010	<0.00020	0.00077	3.21	0.0265	<0.000010	0.00909	<0.00040	<0.050	3.36	0.00085	1.2	<0.000050	2.12	0.235	5.5	<0.00050	0.000024	<0.00010
02-Mar-22	9	500	470	0.00056	<0.010	<0.00020	0.00062	2.69	0.0254	<0.000010	0.00724	<0.00040	<0.050	2.42	<0.00050	1.3	<0.000050	1.63	0.202	5.5	<0.00050	0.00002	<0.00010
09-Mar-22	10	500	474	0.00075	<0.010	<0.00020	0.00072	2.59	0.0241	<0.000010	0.00675	<0.00040	<0.050	2.32	0.0006	1.1	<0.000050	1.62	0.177	6.1	<0.00050	0.000021	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Instrument/Method:									
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	880	<0.00020	<0.0050	<0.0010	0.000125	<0.0010	0.004	0.00054
		1000	910	<0.00020	<0.0050	0.0015	0.000297	<0.0010	<0.0040	0.00049
29-Dec-21	0	1000	960	<0.00020	<0.0050	0.0014	0.000142	<0.0010	<0.0040	0.00025
		2000	1980	<0.00020	<0.0050	<0.0010	0.000033	<0.0010	<0.0040	<0.00010
		2000	1980	<0.00020	<0.0050	<0.0010	0.000037	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	492	<0.00020	<0.0050	<0.0010	0.000116	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	470	<0.00020	<0.0050	<0.0010	0.00015	<0.0010	<0.0040	0.00025
19-Jan-22	3	500	475	<0.00020	<0.0050	<0.0010	0.000155	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	480	<0.00020	<0.0050	<0.0010	0.000239	<0.0010	<0.0040	0.00011
02-Feb-22	5	500	478	<0.00020	<0.0050	<0.0010	0.000264	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	<0.0010	0.000276	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	473	<0.00020	<0.0050	<0.0010	0.000328	<0.0010	<0.0040	<0.00010
16-Feb-22	7	500	472	<0.00020	<0.0050	<0.0010	0.000351	<0.0010	0.0046	<0.00010
23-Feb-22	8	500	470	<0.00020	<0.0050	<0.0010	0.000375	<0.0010	<0.0040	<0.00010
02-Mar-22	9	500	470	<0.00020	<0.0050	<0.0010	0.000326	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	474	<0.00020	<0.0050	<0.0010	0.000373	0.0013	0.005	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-10

Global
ARD Testing Services Inc.

Sample ID: W-204 (B8)
Sample Wt. used (g): 7000.0
HCT ID: COL-10

GLOBAL PROJECT NO: 1956 (Columns)
CLIENT: First Mining Gold Corporation
PROJECT NAME: Springpole Project Geochem (Columns)
PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	830	7.64	220	2.4	45.7	15.9	16.9	<0.10	0.0136	44.9	0.0762	0.00293	0.00463	0.0097	<0.00010	<0.00010	<0.0500	0.000023	11.2	<0.00050	0.0006
		1000	870	7.55	307	3.0	60.9	40.8	11.3	0.52	<0.0050	70.6	0.0774	0.00647	0.00828	0.0142	<0.00010	<0.00010	<0.0500	0.00005	16.3	<0.00050	0.0012
29-Dec-21	0	1000	920	7.41	224	3.7	52.0	19.6	9.3	0.4	0.0071	54.3	0.1010	0.00529	0.00822	0.0116	<0.00010	<0.00010	<0.0500	0.000031	12.3	<0.00050	0.0008
		2000	1960	7.52	109.4	2.8	39.9	7.8	2.7	0.38	0.0067	31.0	0.1360	0.0031	0.00643	0.0057	<0.00010	<0.00010	<0.0500	0.000013	7.52	<0.00050	0.0004
		2000	1975	7.53	111.7	3.0	45.5	<5.0	1.63	0.35	<0.0050	33.3	0.1380	0.00331	0.00766	0.0071	<0.00010	<0.00010	<0.0500	<0.000010	8.15	<0.00050	0.0004
05-Jan-22	1	500	485	7.87	177.7	2.1	75.2	9.3	1.75	0.36	0.0053	63.7	0.0740	0.00588	0.0076	0.0129	<0.00010	<0.00010	<0.0500	0.000012	15.9	<0.00050	0.00049
12-Jan-22	2	500	480	7.84	176.4	2.9	82.8	10.2	1.66	0.31	<0.0050	64.8	0.0727	0.00531	0.00647	0.0131	<0.00010	<0.00010	<0.0500	0.000025	16	<0.00050	0.00048
19-Jan-22	3	500	490	7.88	198.5	2.6	83.9	10.8	1.37	0.28	0.0075	63.4	0.0667	0.00515	0.00583	0.0124	<0.00010	<0.00010	<0.0500	0.000028	16.1	<0.00050	0.00044
26-Jan-22	4	500	480	7.70	163.2	2.8	81.5	12.9	1.03	0.27	0.0063	70.1	0.1020	0.00557	0.0105	0.0135	<0.00010	<0.00010	<0.0500	0.000012	18	<0.00050	0.00042
02-Feb-22	5	500	479	7.74	170.8	3.7	67.3	15.5	0.86	0.2	0.0061	66.9	0.1010	0.00495	0.0117	0.0121	<0.00010	<0.00010	<0.0500	0.000018	17.2	<0.00050	0.00039
02-Feb-22	5D										*Duplicate Analysis:*	62.1	0.0899	0.00446	0.0104	0.0115	<0.00010	<0.00010	<0.0500	0.000015	15.6	<0.00050	0.00041
09-Feb-22	6	500	474	7.77	194.2	3.3	78.8	22.8	0.97	<0.10	0.0087	79.9	0.0992	0.00625	0.014	0.0151	<0.00010	<0.00010	<0.0500	0.000016	20.4	0.00062	0.00046
16-Feb-22	7	500	475	7.72	169.9	2.8	67.1	18.5	0.6	0.27	<0.0050	67.2	0.0916	0.00504	0.0149	0.0126	<0.00010	<0.00010	<0.0500	0.000015	17.1	<0.00050	0.00035
23-Feb-22	8	500	472	7.45	163	3.8	57.5	18.4	0.56	0.22	0.0082	62.2	0.1190	0.00433	0.0135	0.0111	<0.00010	<0.00010	<0.0500	<0.000010	15.3	<0.00050	0.00032
02-Mar-22	9	500	470	7.60	166	2.6	54.1	19.1	0.56	0.35	<0.0050	61.0	0.1140	0.00406	0.013	0.0101	<0.00010	<0.00010	<0.0500	<0.000010	15.7	<0.00050	0.0003
09-Mar-22	10	500	476	7.68	167	4.0	53.8	27.0	0.47	0.25	0.0101	58.9	0.1030	0.00383	0.0114	0.0110	<0.00010	<0.00010	<0.0500	<0.000010	14.7	<0.00050	0.0003
16-Mar-22	11	500	473	7.74	160	3.2	51.9	26.7		0.26	<0.0050	57.9	0.0940	0.00376	0.0119	0.0095	<0.00010	<0.00010	<0.0500	0.000013	14.4	<0.00050	0.00031
23-Mar-22	12	500	469	7.71	140	2.7	53.1	20.8		0.16	0.0066	53.9	0.0903	0.00285	0.0105	0.0093	<0.00010	<0.00010	<0.0500	<0.000010	13.9	<0.00050	0.0004
30-Mar-22	13	500	478	7.78	145	2.7	56.3	24.0		0.18	<0.0050	59.7	0.0942	0.00283	0.0109	0.0113	<0.00010	<0.00010	<0.0500	<0.000010	15.6	<0.00050	0.00037
06-Apr-22	14	500	474	7.79	143	2.4	48.8	31.8		0.2	<0.0050	69.0	0.0871	0.00318	0.0126	0.0121	<0.00010	<0.00010	<0.0500	<0.000010	17.1	<0.00050	0.0004
13-Apr-22	15	500	471	7.55	80	3.2	47.9	22.0		<0.10	<0.0050	57.0	0.0832	0.00239	0.0109	0.0101	<0.00010	<0.00010	<0.0500	<0.000010	14.9	<0.00050	0.00031
20-Apr-22	16	500	467	7.74	168	2.4	50.1	24.9		0.21	<0.0050	61.9	0.0880	0.00273	0.0113	0.0110	<0.000010	<0.000010	0.0063	0.0000036	16	0.00016	0.0003
27-Apr-22	17	500	480	7.64	167	4.3	51.4	26.1		<0.10	<0.0050	66.0	0.0989	0.00264	0.0129	0.0112	<0.000010	<0.000010	0.0057	0.000006	17.1	0.00031	0.000291
04-May-22	18	**250**	227	7.76	126	3.9	68.4	42.9		0.13	<0.0050	92.6	0.0663	0.00322	0.00797	0.0165	<0.000010	<0.000010	0.0087	<0.0000100	23.8	0.00038	0.0003
11-May-22	19	250	222	7.61	140	6.6	69.6	46.5		0.2	<0.0050	98.9	0.0793	0.00339	0.00887	0.0165	<0.000010	<0.000010	0.0067	<0.0000100	25.1	0.0004	0.0003
18-May-22	20	250	236	7.52	137	8.7	70.2	49.1		0.17	0.0099	97.8	0.0691	0.00315	0.00816	0.0148	<0.000010	<0.000010	0.0086	<0.0000080	25.6	0.00035	0.000217
25-May-22	21	250	235	7.41	239	12.2	70.9	49.3		<0.10	<0.0050	95.0	0.0717	0.0035	0.00947	0.0162	<0.000010	<0.000010	0.0081	<0.0000140	24.3	0.00048	0.000244
01-Jun-22	22	250	230	7.48	265	8.9	68.4	50.9		0.13	<0.0050	93.7	0.0867	0.00328	0.00922	0.0159	<0.000010	<0.000010	0.0075	0.0000077	23.9	0.00043	0.000212
08-Jun-22	23	250	226	7.46	252	9.6	69.9	52.8		0.17	<0.0050	113.0	0.0876	0.00389	0.0105	0.0185	<0.000010	<0.000010	0.0116	<0.0000080	29.6	0.00047	0.000254
15-Jun-22	24	250	224	7.82	266	2.7	68.3	58.7		0.15	<0.0050	115.0	0.0880	0.00383	0.0104	0.0186	<0.000010	<0.000010	0.0094	<0.0000080	29.7	0.00056	0.000235
22-Jun-22	25	250	221	7.27	252	8.2	75.1	55.3		0.18	<0.0050	122.0	0.0736	0.00345	0.00995	0.0170	<0.000010	<0.000010	0.0108	<0.0000060	34.7	0.0005	0.000212
29-Jun-22	26	250	223	7.55	248	6.2	62.7	54.6		0.24	<0.0050	98.8	0.0973	0.00344	0.0125	0.0168	<0.000010	<0.000010	0.0092	<0.0000090	25.4	0.00061	0.00028
06-Jul-22	27	250	220	7.52	190	7.5	66.7	54		<0.10	<0.0050	107.0	0.100	0.00345	0.0117	0.0170	<0.000010	<0.000010	0.01	0.0000071	28.7	0.00039	0.000178
13-Jul-22	28	250	224	7.27	276	8.5	84.4	57.3		0.13	<0.0050	110.0	0.118	0.00372	0.0132	0.0183	<0.000010	<0.000010	0.0108	<0.0000140	29.4	0.00041	0.000172
20-Jul-22	29	**125**	120	7.59	371	5.0	95.0	82.1		0.13		155.0	0.081	0.00455	0.0093	0.0258	<0.000010	<0.000010	0.0119	<0.0000400	40.7	0.00072	0.000202
27-Jul-22	30	125	118	8.03	227	2.5	95.0	98.8		0.19		171.0	0.086	0.00593	0.0122	0.0296	<0.000010	<0.000010	0.02	<0.0000160	43.9	0.00076	0.000242
03-Aug-22	31	125	115	7.59	377	10.0	75.0	97.5		0.15		164.0	0.075	0.0055	0.012	0.0262	<0.000010	<0.000010	0.0175	<0.0000150	42.1	0.00093	0.000234
10-Aug-22	32	125	113	7.89	371	10.0	80.0	115		0.14		179.0	0.081	0.00632	0.013	0.0322	<0.000010	<0.000010	0.0193	<0.0000240	46.7	0.00061	0.000274
17-Aug-22	33	125	117	7.79	418	5.0	80.0	117		0.24		182.0	0.062	0.00603	0.0142	0.0307	<0.000010	<0.000010	0.0217	<0.0000300	48	0.00075	0.00025
24-Aug-22	34	125	111	7.64	373	5.0	75.0	116		0.21		175.0	0.059	0.00597	0.0134	0.0276	<0.000010	<0.000010	0.0205	<0.0000280	45.8	0.00105	0.000226
31-Aug-22	35	125	116	8.06	392	2.5	62.5	111		0.25		168.0	0.077	0.00612	0.0153	0.0283	<0.000010	<0.000010	0.0191	<0.0000260	44.4	0.00068	0.000236

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Global
ARD Testing Services Inc.

		Instrument/Method:								CVAA													
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.0000050 / 0.000020	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	830	0.00782	0.05	<0.00020	0.00603	4.09	0.0244	<0.000005	0.0267	0.00258	0.065	12.8	<0.00050	<1.0	<0.000050	15.4	0.0918	6.2	<0.00050	0.000061	<0.00010
		1000	870	0.0126	0.08	<0.00020	0.00767	7.24	0.0360	<0.000005	0.0644	0.00791	<0.050	14.9	<0.00050	<1.0	<0.000050	21	0.154	9.9	<0.00050	0.000074	<0.00010
29-Dec-21	0	1000	920	0.0089	0.05	<0.00020	0.00581	5.72	0.0289	<0.000005	0.0457	0.0061	<0.050	11.3	<0.00050	1	<0.000050	14.7	0.117	6.7	<0.00050	0.000056	<0.00010
		2000	1960	0.00411	0.04	<0.00020	0.00298	2.95	0.0181	<0.000005	0.0176	0.00277	<0.050	6.2	<0.00050	<1.0	<0.000050	5.8	0.0613	<3.0	<0.00050	0.000035	<0.00010
		2000	1975	0.0042	0.03	<0.00020	0.00298	3.15	0.0207	<0.000005	0.0181	0.00261	<0.050	5.91	<0.00050	<1.0	<0.000050	4.42	0.0649	<3.0	<0.00050	0.000037	<0.00010
05-Jan-22	1	500	485	0.00529	0.0310	<0.00020	0.00491	5.79	0.0431	<0.000005	0.0373	0.00322	<0.050	8.28	<0.00050	1.3	<0.000050	5.34	0.127	<3.0	<0.00050	0.000041	<0.00010
12-Jan-22	2	500	480	0.00468	0.014	<0.00020	0.00451	6.04	0.0463	<0.000005	0.0365	0.0026	<0.050	7.36	<0.00050	1.1	<0.000050	4.61	0.122	3.9	<0.00050	0.00004	<0.00010
19-Jan-22	3	500	490	0.00406	0.01	<0.00020	0.00445	5.65	0.0515	<0.000005	0.0331	0.00221	<0.050	6.88	<0.00050	1.1	<0.000050	4.03	0.118	<3.0	<0.00050	0.000045	<0.00010
26-Jan-22	4	500	480	0.00403	0.016	<0.00020	0.00503	6.12	0.056	<0.000005	0.0405	0.00206	<0.050	6.4	<0.00050	1.3	<0.000050	3.51	0.132	5	<0.00050	0.00004	<0.00010
02-Feb-22	5	500	479	0.00419	0.013	<0.00020	0.00402	5.8	0.0222	<0.000010	0.0404	0.00142	<0.050	5.43	<0.00050	1.2	<0.000050	3.28	0.137	6.9	<0.00050	0.000032	<0.00010
02-Feb-22	5D			0.00475	0.014	<0.00020	0.0037	5.63	0.0214		0.0423	0.00152	<0.050	5.83	<0.00050	1.3	<0.000050	3.21	0.124	5.7	<0.00050	0.000028	<0.00010
09-Feb-22	6	500	474	0.00461	<0.010	<0.00020	0.00493	7.01	0.0237	<0.000010	0.0493	0.00159	<0.050	6.51	<0.00050	1.6	<0.000050	3.89	0.155	7.4	<0.00050	0.000037	<0.00010
16-Feb-22	7	500	475	0.00362	<0.010	0.00035	0.00438	5.94	0.0183	<0.000010	0.0347	0.00138	<0.050	5.86	<0.00050	1.6	<0.000050	3.02	0.123	6.3	<0.00050	0.00004	<0.00010
23-Feb-22	8	500	472	0.00289	<0.010	<0.00020	0.00357	5.82	0.0183	<0.000010	0.0322	0.00086	<0.050	5.64	<0.00050	1.5	<0.000050	2.87	0.121	6.1	<0.00050	0.000033	<0.00010
02-Mar-22	9	500	470	0.00301	<0.010	<0.00020	0.00311	5.29	0.0172	<0.000010	0.029	0.00069	<0.050	4.43	<0.00050	1.5	<0.000050	2.35	0.115	5.5	<0.00050	0.00003	<0.00010
09-Mar-22	10	500	476	0.00285	<0.010	<0.00020	0.00305	5.35	0.0167	<0.000010	0.0273	0.0008	<0.050	4.35	<0.00050	1.2	<0.000050	2.36	0.109	8.7	<0.00050	0.000032	<0.00010
16-Mar-22	11	500	473	0.0021	<0.010	<0.00020	0.00307	5.35	0.0162	<0.000010	0.0244	0.00058	<0.050	4.1	<0.00050	1.2	<0.000050	2.06	0.109	5.6	<0.00050	0.000031	<0.00010
23-Mar-22	12	500	469	0.00176	<0.010	<0.00020	0.00253	4.63	0.0195	<0.000010	0.0217	0.00059	<0.050	3.2	<0.00050	1	<0.000050	1.74	0.0967	3.2	<0.00050	0.000028	<0.00010
30-Mar-22	13	500	478	0.00248	<0.010	<0.00020	0.00262	5.05	0.0228	<0.000010	0.0252	0.0005	<0.050	3.58	<0.00050	1.2	<0.000050	1.69	0.116	7.6	<0.00050	0.000024	<0.00010
06-Apr-22	14	500	474	0.00194	0.0110	<0.00020	0.00354	6.35	0.0185	<0.000010	0.0317	0.00058	<0.050	4.07	<0.00050	1.2	<0.000050	1.97	0.135	10	<0.00050	0.000024	<0.00010
13-Apr-22	15	500	471	0.00155	<0.010	<0.00020	0.00244	4.82	0.0155	<0.000010	0.0248	<0.00040	<0.050	3.07	<0.00050	<1.0	<0.000050	1.41	0.109	7.5	<0.00050	<0.000020	<0.00010
20-Apr-22	16	500	467	0.00158	0.0025	<0.000050	0.00281	5.30	0.0147	<0.000010	0.0288	0.000384	<0.010	3.44	<0.00010	1.06	<0.000010	1.6	0.12	7.9	<0.000050	0.000027	<0.000010
27-Apr-22	17	500	480	0.0016	0.0021	<0.000050	0.00283	5.64	0.0121	<0.000005	0.0299	0.000339	<0.010	3.39	<0.00010	1.09	<0.000010	1.59	0.121	9.27	<0.000050	0.000023	<0.000010
04-May-22	18	**250**	227	0.00182	<0.0020	0.000054	0.00377	8.05	0.0123	<0.0000050	0.0414	0.00047	<0.010	4.07	<0.00010	1.62	0.000031	1.97	0.164	12.8	<0.000050	0.0000278	<0.000010
11-May-22	19	250	222	0.00213	0.0024	<0.000050	0.0039	8.78	0.0079	<0.0000050	0.0484	0.000548	<0.010	4.44	<0.00010	1.72	<0.000010	2.15	0.179	14.4	<0.000050	0.0000302	<0.000010
18-May-22	20	250	236	0.00178	0.0023	0.000067	0.00378	8.21	0.0053	<0.0000050	0.0494	0.000499	<0.010	4.03	<0.00010	1.69	0.000012	1.99	0.164	15.1	<0.000050	0.0000289	<0.000010
25-May-22	21	250	235	0.00191	<0.0020	0.000051	0.0035	8.32	0.0064	<0.0000050	0.0565	0.00046	<0.010	4.06	<0.00010	1.49	0.000035	2.05	0.176	14.9	<0.000050	0.0000291	<0.000010
01-Jun-22	22	250	230	0.00164	<0.0020	<0.000050	0.00407	8.26	0.0049	<0.0000050	0.0563	0.000547	<0.010	3.99	<0.00010	1.52	<0.000010	2.02	0.169	15.2	<0.000050	0.0000296	<0.000010
08-Jun-22	23	250	226	0.00219	0.0025	0.000057	0.00402	9.43	0.0049	<0.0000050	0.0657	0.00117	<0.010	4.61	0.00011	1.86	0.000013	2.2	0.191	18.4	<0.000050	0.000034	<0.000010
15-Jun-22	24	250	224	0.00203	0.0020	<0.000050	0.00434	9.81	0.0041	<0.0000050	0.0685	0.000656	<0.010	4.64	0.00012	1.93	0.00001	2.42	0.201	19.4	<0.000050	0.0000336	<0.000010
22-Jun-22	25	250	221	0.00203	<0.0020	<0.000050	0.00467	8.63	0.0040	<0.0000050	0.0637	0.000428	<0.010	4.44	0.00011	1.78	<0.000010	2.19	0.189	18.3	<0.000050	0.0000305	<0.000010
29-Jun-22	26	250	223	0.00243	0.0021	<0.000050	0.00365	8.58	0.0032	<0.0000050	0.063	0.000521	<0.010	4.42	0.00012	1.81	0.00001	2.36	0.181	17.3	<0.000050	0.0000323	<0.000010
06-Jul-22	27	250	220	0.00218	<0.0020	<0.000050	0.00431	8.67	0.0020	<0.0000050	0.0646	0.000409	<0.010	4.24	0.00014	1.83	0.00002	2.33	0.184	17.2	<0.000050	0.0000328	<0.000010
13-Jul-22	28	250	224	0.0021	<0.0020	0.000074	0.00438	8.98	0.0018	<0.0000050	0.0697	0.000343	<0.010	4.71	0.00017	2.19	<0.000010	2.56	0.187	19.7	<0.000050	0.000038	<0.000010
20-Jul-22	29	**125**	120	0.00294	0.0035	0.000065	0.00499	12.9	0.0020	<0.000020	0.0976	0.00218	<0.010	5.86	0.00023	2.52	0.000013	3.46	0.262	27.4	<0.000050	0.0000494	<0.000010
27-Jul-22	30	125	118	0.00483	0.0023	<0.000050	0.00706	15	0.0013	<0.000020	0.126	0.000772	<0.010	7.13	0.00031	3.35	0.000091	4.43	0.315	36.7	<0.000050	0.0000527	<0.000010
03-Aug-22	31	125	115	0.00368	0.0038	0.000075	0.00633	14.3	0.0017	<0.000020	0.125	0.00084	<0.010	6.37	0.00035	2.93	0.00001	4.22	0.281	34.4	<0.000050	0.0000534	<0.000010
10-Aug-22	32	125	113	0.00368	<0.0020	<0.000050	0.00631	15.1	0.0016	<0.000020	0.15	<0.000600	<0.010	7.28	0.00043	3.36	0.00001	4.82	0.355	40.4	<0.000050	0.0000553	<0.000010
17-Aug-22	33	125	117	0.00379	<0.0020	<0.000050	0.0072	15.1	0.0010	<0.000020	0.153	0.000806	<0.010	7.49	0.00044	3.22	<0.000010	5.01	0.343	41	<0.000050	0.0000565	<0.000010
24-Aug-22	34	125	111	0.00348	0.0027	<0.000050	0.00607	14.7	0.0022	0.000022	0.15	0.000726	0.013	6.9	0.00041	3	0.000053	4.93	0.363	40	<0.000050	0.0000493	<0.000010
31-Aug-22	35	125	116	0.0035	0.0023	<0.000050	0.00713	14	0.0012	0.000023	0.155	0.000557	<0.010	7.16	0.00044	3.33	<0.000010	4.79	0.316	38.5	<0.000050	0.0000629	<0.000010

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Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Instrument/Method:									
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	830	<0.00020	<0.0050	0.0024	0.000537	<0.0010	<0.0040	0.00082
		1000	870	<0.00020	<0.0050	0.0043	0.00153	<0.0010	<0.0040	0.00125
29-Dec-21	0	1000	920	<0.00020	<0.0050	0.0037	0.00135	<0.0010	<0.0040	0.00082
		2000	1960	<0.00020	<0.0050	0.0022	0.000787	<0.0010	<0.0040	0.00051
		2000	1975	<0.00020	<0.0050	0.0025	0.000903	<0.0010	<0.0040	0.00054
05-Jan-22	1	500	485	<0.00020	<0.0050	0.0038	0.00157	<0.0010	<0.0040	0.0004
12-Jan-22	2	500	480	<0.00020	<0.0050	0.0032	0.00145	<0.0010	<0.0040	0.00039
19-Jan-22	3	500	490	<0.00020	<0.0050	0.0033	0.00148	<0.0010	<0.0040	0.00024
26-Jan-22	4	500	480	<0.00020	<0.0050	0.0034	0.00209	<0.0010	<0.0040	0.00023
02-Feb-22	5	500	479	0.00312	<0.0050	0.0029	0.00196	<0.0010	<0.0040	0.00023
02-Feb-22	5D			<0.00020	<0.0050	0.0031	0.0019	<0.0010	<0.0040	0.00012
09-Feb-22	6	500	474	<0.00020	<0.0050	0.0038	0.00238	<0.0010	<0.0040	0.0002
16-Feb-22	7	500	475	<0.00020	<0.0050	0.0029	0.00194	<0.0010	<0.0040	0.0001
23-Feb-22	8	500	472	<0.00020	<0.0050	0.0026	0.00185	<0.0010	0.0049	<0.00010
02-Mar-22	9	500	470	<0.00020	<0.0050	0.0023	0.00165	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	476	<0.00020	<0.0050	0.0022	0.00169	0.0015	0.0051	<0.00010
16-Mar-22	11	500	473	<0.00020	<0.0050	0.0018	0.00133	0.0011	<0.0040	<0.00010
23-Mar-22	12	500	469	<0.00020	<0.0050	0.0013	0.00124	<0.0020	<0.0040	<0.00010
30-Mar-22	13	500	478	<0.00020	<0.0050	0.0014	0.00134	<0.0050	<0.0040	<0.00010
06-Apr-22	14	500	474	<0.00020	<0.0050	0.0016	0.00147	<0.0050	<0.0040	<0.00010
13-Apr-22	15	500	471	<0.00020	<0.0050	<0.0010	0.00116	<0.0050	<0.0040	<0.00010
20-Apr-22	16	500	467	<0.000050	<0.00020	0.00098	0.00125	<0.00100	<0.0010	0.000021
27-Apr-22	17	500	480	<0.000050	<0.00020	0.00098	0.00125	<0.00100	<0.0010	0.000020
04-May-22	18	**250**	227	<0.000050	<0.00020	0.00106	0.00165	<0.00100	0.0013	<0.000020
11-May-22	19	250	222	<0.000050	<0.00020	0.00114	0.00165	<0.00100	<0.0010	0.000035
18-May-22	20	250	236	<0.000050	<0.00020	0.00112	0.00164	<0.00100	0.0012	<0.000020
25-May-22	21	250	235	0.000074	<0.00020	0.0012	0.00169	<0.00100	0.0022	0.000022
01-Jun-22	22	250	230	<0.000050	<0.00020	0.00113	0.00154	<0.00100	0.0013	<0.000020
08-Jun-22	23	250	226	0.000055	<0.00020	0.00128	0.00173	<0.00100	0.0017	<0.000020
15-Jun-22	24	250	224	0.000061	<0.00020	0.00125	0.00182	<0.00100	0.0014	0.000027
22-Jun-22	25	250	221	0.000057	<0.00020	0.00108	0.00166	<0.00100	0.0012	<0.000020
29-Jun-22	26	250	223	0.000073	<0.00020	0.00126	0.00152	<0.00100	0.0017	<0.000020
06-Jul-22	27	250	220	<0.000050	<0.00020	0.00122	0.00156	0.00109	0.0012	<0.000020
13-Jul-22	28	250	224	0.000202	<0.00020	0.00144	0.00169	0.00118	0.0019	<0.000020
20-Jul-22	29	**125**	120	<0.000050	0.00024	0.00163	0.00241	<0.00100	0.0048	<0.000020
27-Jul-22	30	125	118	0.000436	<0.00020	0.00232	0.00273	0.00132	0.0037	<0.000020
03-Aug-22	31	125	115	0.000889	<0.00020	0.00237	0.00249	0.00127	0.0055	<0.000020
10-Aug-22	32	125	113	<0.000150	0.00021	0.00272	0.00255	0.00146	0.0021	<0.000020
17-Aug-22	33	125	117	0.00024	<0.00020	0.00254	0.00276	0.00161	0.0019	<0.000020
24-Aug-22	34	125	111	0.0016	<0.00020	0.00252	0.00239	0.00146	0.0063	<0.000020
31-Aug-22	35	125	116	0.000462	<0.00020	0.00259	0.00271	0.00166	0.002	<0.000020

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-11

Global ARD Testing Services Inc.

Sample ID: W-221 (B8) & W-198 (B8)

Sample Wt. used (g): 3500 + 3500 = 7000

HCT ID: COL-11

GLOBAL PROJECT NO: 1956 (Columns)

CLIENT: First Mining Gold Corporation

PROJECT NAME: Springpole Project Geochem (Columns)

PROJECT NO: ONS2104

				Instrument/Method:	pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	870	7.28	252	3.2	33.0	49.5	8.01	0.37	0.0511	69.3	0.0372	0.025	0.0184	0.0446	<0.00010	<0.00010	<0.0500	0.000074	21.2	<0.00050	0.0007
		1000	890	7.29	407	3.7	43.3	118.9	6.77	0.31	<0.0050	127.0	0.0416	0.095	0.0262	0.0642	<0.00010	<0.00010	<0.0500	0.000091	36.2	<0.00050	0.0011
29-Dec-21	0	1000	940	7.34	320	3.1	37.7	80.9	4.21	0.35	0.0127	102.0	0.0649	0.0861	0.0269	0.0550	<0.00010	<0.00010	<0.0500	0.000114	28.9	<0.00050	0.0008
		2000	1975	7.27	227	2.9	34.5	58.6	3.92	0.33	0.0614	67.2	0.0828	0.0549	0.0221	0.0545	<0.00010	<0.00010	<0.0500	0.000053	19	<0.00050	0.0004
		2000	1980	7.37	207	2.8	35.7	45.1	3.79	0.33	<0.0050	63.5	0.0932	0.0647	0.0244	0.0581	<0.00010	<0.00010	<0.0500	0.000059	18.2	<0.00050	0.0004
05-Jan-22	1	500	487	7.60	310	2.8	53.8	79.3	4.5	0.98	<0.0050	109.0	0.042	0.107	0.0204	0.0547	<0.00010	<0.00010	<0.0500	0.000048	31.6	<0.00050	0.00046
12-Jan-22	2	500	490	7.60	230	3.2	50.4	55.7	2.64	0.61	0.0493	78.7	0.0703	0.0862	0.0153	0.0421	<0.00010	<0.00010	<0.0500	0.000064	22.2	<0.00050	0.00033
19-Jan-22	3	500	485	7.71	249	2.1	55.5	51.4	1.79	0.57	0.0063	81.4	0.0499	0.0893	0.0149	0.0473	<0.00010	<0.00010	<0.0500	0.000061	22.8	<0.00050	0.00027
26-Jan-22	4	500	480	7.49	210	3.1	61.4	45.9	0.91	0.63	0.0065	78.2	0.0582	0.0967	0.0122	0.0384	<0.00010	<0.00010	<0.0500	0.000029	21.8	<0.00050	0.00016
02-Feb-22	5	500	471	7.59	216	4.3	52.6	41.5	0.57	0.52	<0.0050	75.5	0.0836	0.0853	0.0108	0.0394	<0.00010	<0.00010	<0.0500	0.00005	20.9	<0.00050	0.00014
02-Feb-22	5D										*Duplicate Analysis:*	74.3	0.0425	0.0829	0.0104	0.0452	<0.00010	<0.00010	<0.0500	0.000035	20.5	<0.00050	0.00017
09-Feb-22	6	500	480	7.51	218	4.0	56.3	45.1	0.49	0.58	<0.0050	84.1	0.0526	0.0951	0.0112	0.0393	<0.00010	<0.00010	<0.0500	0.000044	23.1	<0.00050	0.00014
16-Feb-22	7	500	475	7.51	215	4.5	54.9	42.1	0.32	0.61	<0.0050	79.5	0.0373	0.0968	0.0114	0.0405	<0.00010	<0.00010	<0.0500	0.00004	21.4	<0.00050	0.00015
23-Feb-22	8	500	472	7.45	202	5.0	50.0	41.2	0.31	0.6	0.0075	78.5	0.0551	0.0907	0.0104	0.0411	<0.00010	<0.00010	<0.0500	0.000027	20.3	<0.00050	0.00014
02-Mar-22	9	500	475	7.50	207	4.5	43.9	32.8	0.23	0.69	<0.0050	65.3	0.0504	0.0682	0.0081	0.0360	<0.00010	<0.00010	<0.0500	0.00005	17.9	<0.00050	<0.00010
09-Mar-22	10	500	481	7.58	192	5.5	43.8	36.6	0.21	0.58	0.0128	59.8	0.0573	0.0671	0.00809	0.0367	<0.00010	<0.00010	<0.0500	0.000032	15.8	<0.00050	<0.00010
16-Mar-22	11	500	477	7.58	175	3.0	47.1	35.6		0.62	<0.0050	60.2	0.0568	0.0675	0.0083	0.0381	<0.00010	<0.00010	<0.0500	0.000042	15.6	<0.00050	<0.00010
23-Mar-22	12	500	469	7.57	154	3.2	42.5	22.8		0.54	<0.0050	56.6	0.0513	0.0567	0.00855	0.0390	<0.00010	<0.00010	<0.0500	0.000079	15.2	<0.00050	0.00015
30-Mar-22	13	500	470	7.62	139	2.8	42.5	27.8		0.53	0.0086	54.6	0.0561	0.0588	0.00865	0.0415	<0.00010	<0.00010	<0.0500	0.000032	15.1	<0.00050	<0.00010
06-Apr-22	14	500	471	7.66	125	2.0	37.5	27.3		0.51	<0.0050	59.5	0.0591	0.065	0.00975	0.0470	<0.00010	<0.00010	<0.0500	0.000052	15.8	<0.00050	0.00010
13-Apr-22	15	500	474	7.49	148	3.1	41.0	23.6		0.59	<0.0050	55.1	0.0584	0.0591	0.0088	0.0440	<0.00010	<0.00010	<0.0500	0.000046	15.1	<0.00050	0.00011
20-Apr-22	16	500	473	7.65	155	2.6	41.6	24.1		0.52	<0.0050	54.3	0.0516	0.0595	0.0089	0.0441	<0.000010	<0.000010	0.0072	0.000049	14.9	<0.00010	0.00011
27-Apr-22	17	500	477	7.50	147	4.3	41.2	22.1		0.39	<0.0050	53.6	0.0559	0.0566	0.00849	0.0453	<0.000010	<0.000010	0.0062	0.0000571	14.8	0.00018	0.000096
											Replicate Analysis:	53.8	0.0558	0.057	0.0087	0.0458	<0.000010	<0.000010	0.0060	0.000054	14.9	0.00018	0.000094
04-May-22	18	**250**	219	7.65	109	4.1	56.8	36.0		0.59	<0.0050	73.6	0.0490	0.077	0.00856	0.0574	<0.000010	<0.000010	0.0098	0.0000523	20.1	0.00033	0.000091
11-May-22	19	250	223	7.52	137	6.9	56.5	35.0		0.53	<0.0050	74.7	0.0579	0.0786	0.00941	0.0570	<0.000010	<0.000010	0.0068	0.0000551	19.9	0.00026	0.000133
18-May-22	20	250	234	7.43	115	9.3	61.0	36.9		0.67	0.0107	74.5	0.0451	0.0719	0.00856	0.0525	<0.000010	<0.000010	0.0102	0.0000479	20.5	0.00024	0.000098
25-May-22	21	250	245	7.34	198	12.4	60.9	36.8		0.66	<0.0050	72.9	0.0478	0.0819	0.00972	0.0598	<0.000010	<0.000010	0.0093	0.0000682	19.9	0.00039	0.000092
01-Jun-22	22	250	230	7.41	219	9.5	56.6	35.5		0.57	<0.0050	70.2	0.0619	0.0744	0.0094	0.0547	<0.000010	<0.000010	0.0081	0.0000614	19.0	0.00041	0.000099
08-Jun-22	23	250	227	7.33	199	9.9	59.3	35.0		0.64	<0.0050	81.2	0.0603	0.087	0.0106	0.0642	<0.000010	<0.000010	0.0111	0.0000684	22.5	0.0004	0.000101
15-Jun-22	24	250	225	7.69	216	2.9	57.9	41.1		0.59	<0.0050	84.8	0.0537	0.0882	0.0102	0.0645	<0.000010	<0.000010	0.0098	0.000068	23.6	0.00052	0.000093
22-Jun-22	25	250	220	7.36	196	8.6	62.7	35.8		0.5	<0.0050	76.9	0.0553	0.0809	0.00977	0.0587	<0.000010	<0.000010	0.0089	0.0000676	21.8	0.00037	0.000110
29-Jun-22	26	250	222	7.44	198	6.6	54.1	38.5		0.81	<0.0050	72.1	0.0551	0.0829	0.0114	0.0609	<0.000010	<0.000010	0.0094	0.0000666	19.5	0.00055	0.000086
06-Jul-22	27	250	228	7.43	140	8.0	56.1	39.1		0.69	<0.0050	84.5	0.058	0.0875	0.0114	0.0653	<0.000010	<0.000010	0.0106	0.0000819	24.1	0.00036	0.0000853
13-Jul-22	28	250	224	7.31	215	8.5	70.5	40.1		0.57	<0.0050	82.8	0.065	0.0905	0.0124	0.0688	<0.000010	<0.000010	0.0121	0.0000847	23.3	0.00041	0.0000925
20-Jul-22	29	**125**	117	7.45	279	10.2	73.3	60.7		0.63		119.0	0.040	0.114	0.0121	0.0940	<0.000010	0.000016	0.0134	0.0000975	33.7	0.00083	0.000205
27-Jul-22	30	125	114	7.96	319	5.0	80.0	74.5		0.89		134.0	0.047	0.145	0.0154	0.1090	<0.000010	<0.000010	0.0202	0.0000937	36.4	0.00052	0.000129
											Replicate Analysis:	138.4	0.047	0.148	0.0154	0.1010	<0.000010	<0.000010	0.0197	0.0000982	38.4	0.00053	0.000135
03-Aug-22	31	125	120	7.62	306	8.3	70.0	75		0.78		131.0	0.047	0.132	0.0154	0.0926	<0.000010	<0.000010	0.0177	0.0000855	36.4	0.00086	0.000109
10-Aug-22	32	125	115	7.78	340	7.5	70.0	84		0.88		145.0	0.047	0.151	0.0169	0.1020	<0.000010	<0.000010	0.0197	0.000101	40.8	0.00054	0.000125
17-Aug-22	33	125	118	7.68	325	3.3	63.3	75.9		0.96		137.0	0.050	0.147	0.0172	0.0874	<0.000010	<0.000010	0.0183	0.0000989	37.8	0.00064	0.000115
24-Aug-22	34	125	121	7.53	337	10.0	72.5	82.9		0.91		146.0	0.044	0.144	0.0175	0.0842	<0.000010	<0.000010	0.02	0.000103	40.7	0.00093	0.000147
31-Aug-22	35	125	119	8.01	344	2.5	63.8	82.9		0.9		136.0	0.046	0.145	0.0181	0.0796	<0.000010	<0.000010	0.0185	0.000108	38.1	0.00073	0.000114

CERTIFICATE OF ANALYSIS ▪ KINI

Global
ARD Testing Services Inc.

		Instrument/Method:								CVAA													
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.0000050 / 0.000020	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	870	0.00696	<0.010	0.00027	0.00403	3.95	0.0545	<0.000005	0.116	0.0165	0.056	20.7	0.00272	<1.0	<0.000050	3.56	0.7	17.4	<0.00050	0.000148	<0.00010
		1000	890	0.00757	<0.010	0.00055	0.00798	8.96	0.0992	<0.000005	0.193	0.0665	<0.050	26.5	0.00567	<1.0	<0.000050	5.93	1.42	31	<0.00050	0.000237	<0.00010
29-Dec-21	0	1000	940	0.00505	<0.010	0.00039	0.00716	7.22	0.0713	<0.000005	0.155	0.0509	<0.050	22.6	0.00448	<1.0	<0.000050	4.76	1.19	24.6	<0.00050	0.000207	<0.00010
		2000	1975	0.00287	<0.010	0.00031	0.00456	4.77	0.0480	<0.000005	0.108	0.0306	0.054	15.5	0.00333	<1.0	<0.000050	3.14	0.812	17.8	<0.00050	0.000146	<0.00010
		2000	1980	0.00293	<0.010	0.00039	0.00424	4.35	0.0516	<0.000005	0.123	0.0314	<0.050	13.1	0.00379	<1.0	<0.000050	2.46	0.836	14	<0.00050	0.00014	<0.00010
05-Jan-22	1	500	487	0.00426	<0.010	0.00075	0.00749	7.36	0.1180	<0.000005	0.123	0.0471	<0.050	18.9	0.00606	1.3	<0.000050	3.51	1.45	27.3	<0.00050	0.000171	<0.00010
12-Jan-22	2	500	490	0.00322	<0.010	0.00068	0.00569	5.64	0.0967	<0.000005	0.0769	0.0312	0.063	13.7	0.00431	1.1	<0.000050	2.47	1.11	17.5	<0.00050	0.000126	<0.00010
19-Jan-22	3	500	485	0.0024	<0.010	0.00085	0.00612	5.91	0.116	<0.000005	0.0744	0.0238	<0.050	13.8	0.00468	1.4	<0.000050	2.3	1.27	18	<0.00050	0.000139	<0.00010
26-Jan-22	4	500	480	0.00103	<0.010	0.00071	0.00663	5.77	0.106	<0.000005	0.0598	0.0119	<0.050	12.8	0.00558	1.4	<0.000050	1.91	1.28	17.7	<0.00050	0.000134	<0.00010
02-Feb-22	5	500	471	0.00132	<0.010	0.00078	0.00575	5.66	0.112	<0.000010	0.0515	0.00485	<0.050	10.3	0.00586	1.2	<0.000050	1.63	1.37	17.9	<0.00050	0.000108	<0.00010
02-Feb-22	5D			0.00183	<0.010	0.00094	0.00561	5.81	0.112	N/A	0.0561	0.00559	<0.050	11.4	0.00559	1.4	<0.000050	1.73	1.4	17.4	<0.00050	0.000112	<0.00010
09-Feb-22	6	500	480	0.0009	<0.010	0.00092	0.00669	6.39	0.116	<0.000010	0.0565	0.00281	<0.050	11.5	0.00703	1.6	<0.000050	1.71	1.61	20.2	<0.00050	0.000126	<0.00010
16-Feb-22	7	500	475	0.00126	<0.010	0.00206	0.0064	6.31	0.114	<0.000010	0.0538	0.00253	<0.050	11.6	0.00785	1.8	<0.000050	1.58	1.49	18.4	<0.00050	0.000618	<0.00010
23-Feb-22	8	500	472	0.00073	<0.010	0.00121	0.00605	6.72	0.126	0.000012	0.0557	0.00146	<0.050	12.1	0.00729	1.9	<0.000050	1.62	1.66	22.3	<0.00050	0.000125	<0.00010
02-Mar-22	9	500	475	0.00083	<0.010	0.00106	0.00434	5	0.1120	<0.000010	0.0432	0.00105	<0.050	7.76	0.00552	1.6	<0.000050	1.06	1.27	15.4	0.00051	0.000105	<0.00010
09-Mar-22	10	500	481	0.00089	<0.010	0.00053	0.00394	4.9	0.1090	<0.000010	0.0418	0.00084	<0.050	7.52	0.00688	1.2	<0.000050	1.03	1.16	15.4	<0.00050	0.000107	<0.00010
16-Mar-22	11	500	477	0.00085	<0.010	0.00049	0.00427	5.13	0.113	<0.000010	0.0394	0.00059	<0.050	7.3	0.0065	1.4	<0.000050	0.97	1.2	13.5	<0.00050	0.000106	<0.00010
23-Mar-22	12	500	469	0.00137	<0.010	0.00145	0.00397	4.53	0.1070	<0.000010	0.0346	0.00172	<0.050	6.42	0.00617	1.2	<0.000050	0.94	1.08	9.4	<0.00050	0.000099	<0.00010
30-Mar-22	13	500	470	0.00046	<0.010	0.00151	0.00338	4.07	0.112	<0.000010	0.0351	<0.00040	<0.050	6.15	0.00673	1.2	<0.000050	0.71	1.16	12	<0.00050	0.000084	<0.00010
06-Apr-22	14	500	471	0.00058	<0.010	0.00151	0.00432	4.87	0.1280	<0.000010	0.0386	0.00063	<0.050	6.68	0.00768	1.3	<0.000050	0.82	1.29	13.9	<0.00050	0.000084	<0.00010
13-Apr-22	15	500	474	<0.00040	<0.010	0.00169	0.00336	4.19	0.121	<0.000010	0.0338	0.0004	<0.050	5.85	0.00714	1.1	<0.000050	0.68	1.16	11.6	<0.00050	0.000075	<0.00010
20-Apr-22	16	500	473	0.00035	<0.0020	0.00173	0.00343	4.16	0.1180	<0.000010	0.031	0.000364	<0.010	5.75	0.00734	1.22	<0.000010	0.657	1.21	10	0.000056	0.000088	<0.000010
27-Apr-22	17	500	477	0.00042	<0.0020	0.00164	0.00319	4.06	0.12	<0.000005	0.0302	0.000343	<0.010	5.31	0.00712	1.13	<0.000010	0.61	1.14	10.1	<0.000050	0.0000801	<0.000010
				0.00042	<0.0020	0.00162	0.00323	4.08	0.122	N/A	0.0304	0.00035	<0.010	5.35	0.00728	1.16	<0.000010	0.609	1.17	10.5	<0.000050	0.0000785	<0.000010
04-May-22	18	**250**	219	0.00051	<0.0020	0.00181	0.00479	5.7	0.1560	<0.0000050	0.0421	0.000334	<0.010	7.17	0.00963	1.83	0.000111	0.807	1.59	14.3	<0.000050	0.0000997	<0.000010
11-May-22	19	250	223	0.00076	<0.0020	0.00184	0.00456	6.04	0.1640	<0.0000050	0.0438	0.000445	<0.010	7.69	0.00958	1.85	0.00001	0.837	1.61	14.3	<0.000050	0.0000987	<0.000010
18-May-22	20	250	234	0.00056	<0.0020	0.00155	0.00448	5.66	0.1520	<0.0000050	0.0414	0.000351	<0.010	6.62	0.00951	1.85	<0.000010	0.707	1.63	13.8	<0.000050	0.0000968	<0.000010
25-May-22	21	250	245	0.00063	<0.0020	0.00193	0.00423	5.61	0.1710	<0.0000050	0.0476	0.00058	<0.010	6.72	0.0107	1.71	0.000023	0.76	1.64	13.4	<0.000050	0.000102	<0.000010
01-Jun-22	22	250	230	0.00047	<0.0020	0.00179	0.00453	5.5	0.1670	<0.0000050	0.0438	0.000386	<0.010	6.35	0.00997	1.71	<0.000010	0.725	1.56	12.5	<0.000050	0.0000977	<0.000010
08-Jun-22	23	250	227	0.00062	<0.0020	0.00216	0.00398	6.06	0.1830	<0.0000050	0.0515	0.000444	<0.010	7.23	0.0104	1.88	0.000012	0.784	1.74	12.7	<0.000050	0.000107	<0.000010
15-Jun-22	24	250	225	0.00053	<0.0020	0.0021	0.00487	6.23	0.1860	<0.0000050	0.0536	0.000463	<0.010	7.23	0.0141	2.52	0.000012	0.767	1.81	18.4	<0.000050	0.000111	<0.000010
22-Jun-22	25	250	220	0.00072	0.0025	0.00193	0.00409	5.45	0.1740	<0.0000050	0.0495	0.000369	<0.010	6.74	0.0119	2.01	<0.000010	0.69	1.6	14.3	<0.000050	0.000107	<0.000010
29-Jun-22	26	250	222	0.00082	<0.0020	0.00181	0.00377	5.66	0.1650	<0.0000050	0.0561	0.000396	<0.010	6.81	0.0123	2.1	0.00002	0.758	1.65	14.7	0.000051	0.000106	<0.000010
06-Jul-22	27	250	228	0.00079	<0.0020	0.00209	0.00477	5.86	0.1800	<0.0000050	0.0569	0.000318	<0.010	7.12	0.0128	2.21	0.000028	0.751	1.73	14.5	<0.000050	0.000113	<0.000010
13-Jul-22	28	250	224	0.00069	0.0027	0.00189	0.00471	5.94	0.1770	<0.0000050	0.057	0.000248	<0.010	7.09	0.013	2.41	0.000015	0.791	1.71	15.5	<0.000050	0.00013	<0.000010
20-Jul-22	29	**125**	117	0.00093	<0.0020	0.00157	0.00545	8.41	0.2450	<0.000020	0.0795	0.000978	<0.010	8.96	0.018	3.14	0.000017	1.21	2.34	22.2	<0.000050	0.000159	<0.000010
27-Jul-22	30	125	114	0.0015	<0.0020	0.00134	0.00761	10.4	0.2500	<0.000020	0.0979	0.000531	<0.010	11.1	0.0217	3.96	0.000035	1.38	2.79	28.9	<0.000050	0.00021	<0.000010
				0.00145	<0.0020	0.00133	0.00751	10.3	0.2490	<0.000020	0.0973	0.000532	<0.010	10.6	0.0221	3.86	0.000037	1.36	2.77	26.8	<0.000050	0.000203	<0.000010
03-Aug-22	31	125	120	0.00206	0.0132	0.0013	0.00669	9.79	0.2130	0.00002	0.0977	0.000665	<0.010	10	0.0228	3.49	0.000033	1.38	2.58	27.6	<0.000050	0.000169	<0.000010
10-Aug-22	32	125	115	0.00122	0.0033	0.00115	0.00683	10.4	0.2360	0.000039	0.107	<0.000680	<0.010	11.7	0.0269	4.02	0.00003	1.52	3.03	33.2	<0.000050	0.000195	<0.000010
17-Aug-22	33	125	118	0.00117	0.0043	0.0012	0.00724	10.3	0.2240	<0.000020	0.104	0.000515	<0.010	11.4	0.0264	3.69	0.000031	1.5	2.76	31.2	<0.000050	0.000201	<0.000010
24-Aug-22	34	125	121	0.00118	0.0021	0.00141	0.00656	10.7	0.2290	0.000038	0.103	0.000582	0.014	10.8	0.0274	3.94	0.000117	1.58	3.08	33.7	<0.000050	0.000191	<0.000010
31-Aug-22	35	125	119	0.00117	<0.0020	0.00121	0.00725	9.92	0.2280	0.000029	0.097	0.000475	<0.010	11	0.0275	3.85	0.000042	1.43	2.82	31.8	<0.000050	0.000224	<0.000010

CERTIFICATE OF ANALYSIS ▪ KINI

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Instrument/Method:									
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	MDL:	5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	870	<0.00020	<0.0050	<0.0010	0.00504	<0.0010	0.0042	0.00058
		1000	890	<0.00020	<0.0050	<0.0010	0.0198	<0.0010	0.0049	0.0007
29-Dec-21	0	1000	940	<0.00020	<0.0050	<0.0010	0.017	<0.0010	<0.0040	0.00051
		2000	1975	<0.00020	<0.0050	<0.0010	0.0106	<0.0010	<0.0040	0.00047
		2000	1980	<0.00020	<0.0050	<0.0010	0.0113	<0.0010	<0.0040	0.00027
05-Jan-22	1	500	487	<0.00020	<0.0050	<0.0010	0.0259	<0.0010	<0.0040	0.00019
12-Jan-22	2	500	490	0.00021	<0.0050	<0.0010	0.0197	<0.0010	0.0059	0.00027
19-Jan-22	3	500	485	<0.00020	<0.0050	<0.0010	0.022	<0.0010	<0.0040	0.00012
26-Jan-22	4	500	480	<0.00020	<0.0050	<0.0010	0.0261	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	471	<0.00020	<0.0050	<0.0010	0.0251	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	<0.0010	0.026	<0.0010	<0.0040	0.00016
09-Feb-22	6	500	480	<0.00020	<0.0050	<0.0010	0.0289	<0.0010	<0.0040	0.0001
16-Feb-22	7	500	475	<0.00020	<0.0050	<0.0010	0.0269	<0.0010	0.0049	<0.00010
23-Feb-22	8	500	472	<0.00020	<0.0050	<0.0010	0.029	<0.0010	0.0043	<0.00010
02-Mar-22	9	500	475	<0.00020	<0.0050	<0.0010	0.0222	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	481	<0.00020	<0.0050	<0.0010	0.023	<0.0010	0.0055	<0.00010
16-Mar-22	11	500	477	<0.00020	<0.0050	<0.0010	0.0198	<0.0010	<0.0040	<0.00010
23-Mar-22	12	500	469	<0.00020	<0.0050	<0.0010	0.0185	<0.0010	0.0051	<0.00010
30-Mar-22	13	500	470	<0.00020	<0.0050	<0.0010	0.02	<0.0050	<0.0040	<0.00010
06-Apr-22	14	500	471	0.00026	<0.0050	<0.0010	0.02	<0.0050	<0.0040	<0.00010
13-Apr-22	15	500	474	<0.00020	<0.0050	<0.0010	0.0185	<0.0050	<0.0040	<0.00010
20-Apr-22	16	500	473	0.000055	<0.00020	0.0003	0.02	<0.00100	0.0038	<0.000020
27-Apr-22	17	500	477	<0.000050	<0.00020	0.0003	0.0179	<0.00100	0.0030	<0.000020
				0.000051	<0.00020	0.0003	0.0176	<0.00100	0.0032	0.000024
04-May-22	18	**250**	219	0.000056	<0.00020	0.00043	0.0255	<0.00100	0.0046	<0.000020
11-May-22	19	250	223	0.000058	<0.00020	0.00047	0.0247	<0.00100	0.0049	0.000037
18-May-22	20	250	234	0.000061	<0.00020	0.00042	0.0244	<0.00100	0.0049	<0.000020
25-May-22	21	250	245	0.000095	<0.00020	0.00043	0.0254	<0.00100	0.0059	<0.000020
01-Jun-22	22	250	230	0.000088	<0.00020	0.00045	0.0219	<0.00100	0.0056	<0.000020
08-Jun-22	23	250	227	0.000087	<0.00020	0.00047	0.0236	<0.00100	0.0057	<0.000020
15-Jun-22	24	250	225	0.000087	<0.00020	0.00051	0.025	<0.00100	0.0063	<0.000020
22-Jun-22	25	250	220	0.000063	<0.00020	0.00043	0.0218	<0.00100	0.0061	<0.000020
29-Jun-22	26	250	222	0.000098	<0.00020	0.00052	0.0221	<0.00100	0.0052	0.000025
06-Jul-22	27	250	228	0.000069	<0.00020	0.00051	0.023	<0.00100	0.0064	<0.000020
13-Jul-22	28	250	224	0.000258	<0.00020	0.00055	0.0242	<0.00100	0.0057	<0.000020
20-Jul-22	29	**125**	117	0.000155	<0.00020	0.00072	0.0349	<0.00100	0.0079	<0.000020
27-Jul-22	30	125	114	0.000382	<0.00020	0.00091	0.0421	<0.00100	0.0066	<0.000020
				0.000417	<0.00020	0.00093	0.0424	<0.00100	0.0062	<0.000020
03-Aug-22	31	125	120	0.000701	0.00044	0.00092	0.0394	<0.00100	0.0106	0.000028
10-Aug-22	32	125	115	<0.000200	0.00023	0.00101	0.0432	<0.00100	0.0074	<0.000020
17-Aug-22	33	125	118	0.000205	0.00024	0.00094	0.0414	<0.00100	0.0065	<0.000020
24-Aug-22	34	125	121	0.00131	0.00024	0.00092	0.041	<0.00100	0.0110	0.000033
31-Aug-22	35	125	119	0.00114	<0.00020	0.00092	0.0398	<0.00100	0.0095	<0.000020

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-12

Global
ARD Testing Services Inc.

Sample ID: W-290 (B8) & W-302 (B8)
Sample Wt. used (g): 3500 + 3500 = 7000
HCT ID: COL-12

GLOBAL PROJECT NO: 1956 (Columns)
CLIENT: First Mining Gold Corporation
PROJECT NAME: Springpole Project Geochem (Columns)
PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.0005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	880	7.57	179.6	2.3	35.4	26.1	6.08	0.29	<0.0050	33.7	0.0369	0.00649	0.00555	0.0208	<0.00010	<0.00010	<0.0500	0.00002	9.4	0.00056	<0.00010
		1000	920	7.52	246	2.9	46.3	43.3	4.22	0.33	<0.0050	55.3	0.0539	0.0207	0.00773	0.0326	<0.00010	<0.00010	<0.0500	0.000025	12.6	<0.00050	<0.00010
29-Dec-21	0	1000	960	7.43	187.6	3.1	41.7	32.6	3.71	0.37	<0.0050	39.7	0.0636	0.017	0.00704	0.0298	<0.00010	<0.00010	<0.0500	0.000014	8.48	<0.00050	<0.00010
		2000	1980	7.54	126.4	2.1	36.2	16.1	1.54	0.31	<0.0050	29.0	0.086	0.0115	0.00731	0.0256	<0.00010	<0.00010	<0.0500	<0.000010	6.64	<0.00050	<0.00010
		2000	1985	7.53	112.3	2.5	38.6	6.3	0.93	0.29	<0.0050	30.2	0.0992	0.0131	0.00763	0.0319	<0.00010	<0.00010	<0.0500	<0.000010	7	<0.00050	<0.00010
05-Jan-22	1	500	486	7.84	178.5	1.8	59.6	26.7	1.08	0.36	<0.0050	54.6	0.049	0.0187	0.00529	0.0574	<0.00010	<0.00010	<0.0500	<0.000010	12.2	<0.00050	<0.00010
12-Jan-22	2	500	475	7.85	187.4	2.2	68.7	27	0.85	0.34	0.0343	60.7	0.0633	0.0209	0.00636	0.0579	<0.00010	<0.00010	<0.0500	0.000016	12.7	<0.00050	0.00011
19-Jan-22	3	500	470	7.95	200	1.8	68.0	26.3	0.6	0.3	<0.0050	59	0.0675	0.0201	0.0533	0.0507	<0.00010	<0.00010	<0.0500	<0.000010	12.5	<0.00050	0.00013
26-Jan-22	4	500	475	7.81	198.8	2.1	77.3	30.8	0.47	0.32	0.0051	68	0.0777	0.0225	0.00591	0.0505	<0.00010	<0.00010	<0.0500	0.000013	13.7	<0.00050	<0.00010
02-Feb-22	5	500	474	7.76	206	3.5	67.2	31.9	0.39	0.29	<0.0050	72.6	0.0602	0.0219	0.00581	0.0403	<0.00010	<0.00010	<0.0500	0.000017	14.3	<0.00050	0.00015
02-Feb-22	5D											71.5	0.0581	0.0204	0.00525	0.0414	<0.00010	<0.00010	<0.0500	0.000013	13.6	<0.00050	0.00018
09-Feb-22	6	500	475	7.80	208	3.0	70.7	36.5	0.37	0.26	<0.0050	79.8	0.0753	0.0235	0.00629	0.0438	<0.00010	<0.00010	<0.0500	<0.000010	15.1	<0.00050	0.00016
16-Feb-22	7	500	477	7.72	213	3.2	68.8	35.8	0.26	<0.10	<0.0050	78.3	0.0554	0.0239	0.00643	0.0379	<0.00010	<0.00010	<0.0500	<0.000010	14.6	<0.00050	0.00018
23-Feb-22	8	500	473	7.70	141	7.5	70.0	35.5	0.25	0.27	0.0082	80.8	0.0833	0.0218	0.00632	0.0359	<0.00010	<0.00010	<0.0500	0.000012	14.4	<0.00050	0.00015
02-Mar-22	9	500	475	7.61	189	4.5	59.7	30.7	0.21	0.4	0.0	67.5	0.0772	0.0183	0.00555	0.0286	<0.00010	<0.00010	<0.0500	<0.000010	12.5	<0.00050	0.0001
09-Mar-22	10	500	477	7.77	199	3.5	63.8	26.7	0.19	0.33	<0.0050	65.3	0.080	0.0177	0.00516	0.0307	<0.00010	<0.00010	<0.0500	<0.000010	11.9	<0.00050	0.00014

CERTIFICATE OF ANALYSIS • KINE

Global
ARD Testing Services Inc.

		Instrument/Method:								CVAA													
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.000005	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	880	0.00059	0.04	<0.00020	0.0035	2.47	0.0076	<0.000005	0.0129	0.0008	<0.050	20.4	0.00122	<1.0	<0.000050	6.14	0.332	9.4	<0.00050	0.000084	<0.00010
		1000	920	0.00044	<0.010	<0.00020	0.00481	5.79	0.0145	<0.000005	0.0277	0.00182	<0.050	24.2	0.00271	<1.0	<0.000050	9.11	0.69	13.8	<0.00050	0.000107	<0.00010
29-Dec-21	0	1000	960	<0.00040	<0.010	<0.00020	0.00369	4.49	0.0104	<0.000005	0.019	0.00137	<0.050	18.1	0.00184	<1.0	<0.000050	6.51	0.502	8.6	<0.00050	0.000077	<0.00010
		2000	1980	<0.00040	<0.010	<0.00020	0.0026	3.02	0.0084	<0.000005	0.0103	0.00075	<0.050	11.8	0.00104	<1.0	<0.000050	3.31	0.352	6	<0.00050	0.000061	<0.00010
		2000	1985	0.00053	<0.010	<0.00020	0.0025	3.08	0.0098	<0.000005	0.00875	0.0005	<0.050	10	0.00092	<1.0	<0.000050	2.2	0.38	5.6	<0.00050	0.000055	<0.00010
05-Jan-22	1	500	486	0.00095	<0.010	<0.00020	0.00369	5.83	0.0222	<0.000005	0.0155	0.00068	<0.050	14.1	0.00168	<1.0	<0.000050	2.9	0.7	7.2	<0.00050	0.000068	<0.00010
12-Jan-22	2	500	475	0.00053	<0.010	<0.00020	0.00413	7.04	0.023	<0.000005	0.0158	0.00081	<0.050	14.8	0.00178	1.1	<0.000050	3.01	0.769	7.2	<0.00050	0.00008	<0.00010
19-Jan-22	3	500	470	0.00047	<0.010	<0.00020	0.00429	6.72	0.0224	<0.000005	0.0136	0.00068	<0.050	13.3	0.00187	<1.0	<0.000050	2.49	0.697	7.1	<0.00050	0.000081	<0.00010
26-Jan-22	4	500	475	<0.00040	<0.010	<0.00020	0.00487	8.17	0.0246	<0.000005	0.0154	0.00047	<0.050	13.7	0.00316	1.1	<0.000050	2.39	0.789	9.2	<0.00050	0.000089	<0.00010
02-Feb-22	5	500	474	<0.00040	<0.010	<0.00020	0.00415	8.96	0.0289	<0.000010	0.0158	0.00067	<0.050	12.2	0.00339	1	<0.000050	2.18	0.804	11.3	<0.00050	0.000071	<0.00010
02-Feb-22	5D			0.00064	<0.010	<0.00020	0.00414	9.11	0.0301		0.0165	0.00064	<0.050	13.7	0.0031	1	<0.000050	2.38	0.824	10.3	<0.00050	0.000072	<0.00010
09-Feb-22	6	500	475	0.0006	<0.010	<0.00020	0.00465	10.2	0.0288	<0.000010	0.017	0.00054	<0.050	13.2	0.00415	1.2	<0.000050	2.26	0.87	12.2	<0.00050	0.000076	<0.00010
16-Feb-22	7	500	477	0.00064	<0.010	<0.00020	0.00484	10.2	0.0292	<0.000010	0.0154	0.00081	<0.050	13.3	0.00452	1.3	<0.000050	2.12	0.793	11.6	<0.00050	0.00009	<0.00010
23-Feb-22	8	500	473	0.00081	<0.010	<0.00020	0.00423	10.9	0.0287	<0.000010	0.015	<0.00040	<0.050	14.1	0.00388	1.7	<0.000050	2.19	0.85	14.7	<0.00050	0.000073	<0.00010
02-Mar-22	9	500	475	0.00049	<0.010	<0.00020	0.00336	8.81	0.0274	<0.000010	0.012	<0.00040	<0.050	10	0.00254	1.2	<0.000050	1.57	0.7	10.1	<0.00050	0.000068	<0.00010
09-Mar-22	10	500	477	0.00056	<0.010	<0.00020	0.00316	8.6	0.0287	<0.000010	0.0113	0.00045	<0.050	9.54	0.00341	1.1	<0.000050	1.49	0.636	10.5	<0.00050	0.000074	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

		Instrument/Method:								
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	880	<0.00020	<0.0050	0.0011	0.00024	<0.0010	<0.0040	<0.00010
		1000	920	<0.00020	<0.0050	0.0015	0.000839	<0.0010	<0.0040	<0.00010
29-Dec-21	0	1000	960	<0.00020	<0.0050	0.0012	0.000591	<0.0010	<0.0040	<0.00010
		2000	1980	<0.00020	<0.0050	<0.0010	0.00032	<0.0010	<0.0040	<0.00010
		2000	1985	<0.00020	<0.0050	<0.0010	0.000307	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	486	<0.00020	<0.0050	0.0012	0.000697	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	475	<0.00020	<0.0050	0.0011	0.000817	<0.0010	<0.0040	<0.00010
19-Jan-22	3	500	470	<0.00020	<0.0050	0.001	0.000827	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	475	<0.00020	<0.0050	0.0011	0.00111	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	474	<0.00020	<0.0050	<0.0010	0.00128	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	0.001	0.00127	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	475	<0.00020	<0.0050	0.0011	0.00146	<0.0010	<0.0040	<0.00010
16-Feb-22	7	500	477	<0.00020	<0.0050	0.0011	0.00149	<0.0010	<0.0040	<0.00010
23-Feb-22	8	500	473	<0.00020	<0.0050	0.001	0.0015	<0.0010	<0.0040	<0.00010
02-Mar-22	9	500	475	<0.00020	<0.0050	<0.0010	0.0013	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	477	<0.00020	<0.0050	<0.0010	0.00139	<0.0010	0.005	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINETIC TESTING RESULTS OF COL-13

Global ARD Testing Services Inc.

Sample ID: M112128 (B9) & M112149 (B9)

Sample Wt. used (g): 3500 + 3500 = 7000

HCT ID: COL-13

GLOBAL PROJECT NO: 1956 (Columns)

CLIENT: First Mining Gold Corporation

PROJECT NAME: Springpole Project Geochem (Columns)

PROJECT NO: ONS2104

		Instrument/Method:		pH Meter	EC Meter	Tiration/Calculation		Colourimetry	IC	SIE	Colourimetry	Calc.	Dissolved Metals by ICP-MS										
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	pH	EC	Acidity (to pH 8.3)	Alkalinity (to pH 4.5)	Sulphate	Chloride	Fluoride	Dissolved Phosphorous	Hardness (CaCO3)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
	Unit:	mL	mL	pH Units	µS/cm	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.01	1	0.5	0.5	0.5 / 5.0	0.05	0.02	0.0005	0.5	0.001	0.0001	0.0002	0.0002	0.0001	0.0001	0.01	0.00001	0.05	0.0005	0.0001
		1000	840	7.41	182	2.7	29.8	22.5	12.4	0.87	0.0126	30.6	0.0593	0.0278	0.0319	0.0245	<0.00010	<0.00010	<0.0500	0.000015	8.85	<0.00050	<0.00010
		1000	865	7.36	232	3.2	36.2	34.6	9.77	0.51	0.0062	45.5	0.0591	0.0883	0.0352	0.0401	<0.00010	<0.00010	<0.0500	0.000014	11.4	<0.00050	<0.00010
29-Dec-21	0	1000	920	7.62	137.1	2.2	30.3	17.8	6.42	0.4	<0.0050	28.2	0.0844	0.0614	0.0296	0.0276	<0.00010	<0.00010	<0.0500	<0.000010	7.32	<0.00050	<0.00010
		2000	1970	7.43	85.8	2.5	25.4	10.6	2.27	0.41	<0.0050	20.4	0.0987	0.0392	0.0226	0.0217	<0.00010	<0.00010	<0.0500	<0.000010	5.61	<0.00050	<0.00010
		2000	1970	7.41	78.2	2.8	25.3	5.4	0.94	0.36	<0.0050	21.0	0.104	0.0417	0.0221	0.0268	<0.00010	<0.00010	<0.0500	<0.000010	5.98	<0.00050	<0.00010
05-Jan-22	1	500	488	7.66	165.4	2.5	51.2	23.6	1.35	0.53	<0.0050	55.2	0.064	0.105	0.0223	0.0726	<0.00010	<0.00010	<0.0500	<0.000010	15.5	<0.00050	<0.00010
12-Jan-22	2	500	480	7.67	148.9	2.3	53.6	22.1	0.89	0.47	<0.0050	50.9	0.0748	0.102	0.0216	0.0623	<0.00010	<0.00010	<0.0500	<0.000010	13.7	<0.00050	<0.00010
							Replicate	22.1	0.89	0.47													
19-Jan-22	3	500	490	7.76	169.4	2.4	55.8	22.2	0.75	0.51	0.0076	50.9	0.0637	0.104	0.02	0.0664	<0.00010	<0.00010	<0.0500	0.000011	13.7	<0.00050	<0.00010
26-Jan-22	4	500	480	7.61	143	2.8	55.7	22	0.51	0.48	0.0064	53.3	0.0922	0.122	0.0245	0.0626	<0.00010	<0.00010	<0.0500	<0.000010	13.8	<0.00050	<0.00010
02-Feb-22	5	500	477	7.61	165.8	4.1	53.9	24.5	0.5	0.53	<0.0050	60.7	0.0691	0.133	0.025	0.0645	<0.00010	<0.00010	<0.0500	<0.000010	15.6	<0.00050	<0.00010
02-Feb-22	5D											58	0.0624	0.125	0.0234	0.0632	<0.00010	<0.00010	<0.0500	<0.000010	14.5	<0.00050	<0.00010
09-Feb-22	6	500	476	7.58	150.3	3.5	52.6	23.9	0.41	0.13	<0.0050	57.9	0.0782	0.124	0.025	0.0563	<0.00010	<0.00010	<0.0500	<0.000010	14.8	<0.00050	<0.00010
16-Feb-22	7	500	473	7.50	132.1	4.1	45.1	18.4	0.24	<0.10	<0.0050	49	0.071	0.104	0.0238	0.048	<0.00010	<0.00010	<0.0500	0.000012	12.6	<0.00050	<0.00010
23-Feb-22	8	500	471	7.31	114	5.0	47.5	21.2	0.27	0.11	0.0094	55.5	0.0842	0.107	0.0245	0.0552	<0.00010	<0.00010	<0.0500	<0.000010	13.9	<0.00050	<0.00010
02-Mar-22	9	500	470	7.36	118	3.0	41.5	18.9	0.24	0.58	0.0136	46.5	0.112	0.0865	0.0231	0.0414	<0.00010	<0.00010	<0.0500	0.000028	11.9	<0.00050	<0.00010
09-Mar-22	10	500	475	7.69	139	3.0	44.5	18	0.2	0.5	0.0119	43.6	0.089	0.0836	0.0197	0.0430	<0.00010	<0.00010	<0.0500	<0.000010	11	<0.00050	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

		Instrument/Method:								CVAA													
Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulphur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.0005	0.02	0.0005	0.0005	0.05	0.0002	0.000005	0.0001	0.0005	0.05	0.05	0.0005	0.05	0.00008	0.02	0.0002	0.5	0.0002	0.00005	0.0001
		1000	840	0.00092	<0.010	<0.00020	0.00683	2.06	0.0163	<0.000005	0.00462	<0.00040	<0.050	21.2	<0.00050	<1.0	<0.000050	5.05	0.845	8.5	<0.00050	0.00006	<0.00010
		1000	865	0.00043	<0.010	<0.00020	0.00978	4.12	0.0257	<0.000005	0.00967	0.00048	<0.050	23.5	<0.00050	<1.0	<0.000050	6.76	1.78	13.5	<0.00050	0.000077	<0.00010
29-Dec-21	0	1000	920	<0.00040	<0.010	<0.00020	0.00541	2.41	0.0142	<0.000005	0.00512	<0.00040	<0.050	13.1	<0.00050	<1.0	<0.000050	3.21	1.15	5	<0.00050	0.000048	<0.00010
		2000	1970	<0.00040	<0.010	<0.00020	0.00319	1.56	0.0138	<0.000005	0.0025	<0.00040	<0.050	8.16	<0.00050	<1.0	<0.000050	1.68	0.88	3.8	<0.00050	0.000029	<0.00010
		2000	1970	<0.00040	<0.010	<0.00020	0.00253	1.46	0.0157	<0.000005	0.00215	<0.00040	<0.050	5.98	<0.00050	<1.0	<0.000050	1.13	0.978	<3.0	<0.00050	0.000027	<0.00010
05-Jan-22	1	500	488	<0.00040	<0.010	<0.00020	0.00618	3.99	0.0515	<0.000005	0.00545	<0.00040	<0.050	11.4	<0.00050	1.2	<0.000050	2.05	2.61	7.6	<0.00050	0.000042	<0.00010
12-Jan-22	2	500	480	0.00052	<0.010	<0.00020	0.0056	4.03	0.0473	<0.000005	0.00472	0.00059	<0.050	9.7	<0.00050	1.1	<0.000050	1.76	2.54	7.3	<0.00050	0.000041	<0.00010
19-Jan-22	3	500	490	<0.00040	<0.010	<0.00020	0.00571	4.03	0.0592	<0.000005	0.00457	<0.00040	0.089	9.23	<0.00050	1	<0.000050	1.66	2.57	5.9	<0.00050	0.000043	<0.00010
26-Jan-22	4	500	480	<0.00040	<0.010	<0.00020	0.00631	4.6	0.0541	<0.000005	0.00505	<0.00040	<0.050	8.62	<0.00050	1.3	<0.000050	1.51	2.96	7.9	<0.00050	0.000041	<0.00010
02-Feb-22	5	500	477	0.00042	<0.010	<0.00020	0.00606	5.25	0.0606	<0.000010	0.00597	<0.00040	<0.050	8.03	<0.00050	1.4	<0.000050	1.52	3.41	9.1	<0.00050	0.000037	<0.00010
02-Feb-22	5D			0.00061	<0.010	<0.00020	0.00588	5.27	0.0592		0.00597	<0.00040	<0.050	8.65	<0.00050	1.4	<0.000050	1.59	3.41	8.6	<0.00050	0.000035	<0.00010
09-Feb-22	6	500	476	0.0004	0.018	<0.00020	0.00586	5.06	0.058	<0.000010	0.00535	<0.00040	<0.050	7.48	<0.00050	1.5	<0.000050	1.39	3.3	7.7	<0.00050	0.000037	<0.00010
16-Feb-22	7	500	473	0.00049	<0.010	<0.00020	0.00485	4.25	0.0538	<0.000010	0.00401	<0.00040	<0.050	6.45	<0.00050	1.4	<0.000050	1.04	2.72	6.3	<0.00050	0.000039	<0.00010
23-Feb-22	8	500	471	0.00042	<0.010	<0.00020	0.00486	5.06	0.0629	<0.000010	0.00434	<0.00040	<0.050	7.13	<0.00050	1.7	<0.000050	1.23	3.26	6.4	<0.00050	0.000106	<0.00010
02-Mar-22	9	500	470	0.00146	0.02	<0.00020	0.00392	4.07	0.0545	<0.000010	0.00356	<0.00040	<0.050	5.09	<0.00050	1.5	<0.000050	0.92	2.79	6.7	<0.00050	0.000052	<0.00010
09-Mar-22	10	500	475	0.00057	<0.010	<0.00020	0.0034	3.89	0.0527	<0.000010	0.00323	<0.00040	<0.050	4.75	<0.00050	1.3	<0.000050	0.82	2.57	7.6	<0.00050	0.000029	<0.00010

CERTIFICATE OF ANALYSIS ▪ KINE

Global
ARD Testing Services Inc.

Sampling Date	Week No.	Input Vol. (DI Water)	Output Vol. (Leachate)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
	Instrument/Method:									
	Unit:	mL	mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	RDL:	5	5	0.0005	0.0005	0.0001	0.00005	0.001	0.001	0.0001
		1000	840	<0.00020	<0.0050	<0.0010	0.00131	<0.0010	<0.0040	0.00014
		1000	865	<0.00020	<0.0050	<0.0010	0.00291	<0.0010	<0.0040	<0.00010
29-Dec-21	0	1000	920	0.00021	<0.0050	<0.0010	0.0021	<0.0010	<0.0040	<0.00010
		2000	1970	<0.00020	<0.0050	<0.0010	0.00133	<0.0010	<0.0040	<0.00010
		2000	1970	<0.00020	<0.0050	<0.0010	0.00143	<0.0010	<0.0040	<0.00010
05-Jan-22	1	500	488	<0.00020	<0.0050	<0.0010	0.00359	<0.0010	<0.0040	<0.00010
12-Jan-22	2	500	480	<0.00020	<0.0050	<0.0010	0.00341	<0.0010	0.0089	<0.00010
19-Jan-22	3	500	490	<0.00020	<0.0050	<0.0010	0.00372	<0.0010	<0.0040	<0.00010
26-Jan-22	4	500	480	<0.00020	<0.0050	<0.0010	0.00516	<0.0010	<0.0040	<0.00010
02-Feb-22	5	500	477	<0.00020	<0.0050	<0.0010	0.00591	<0.0010	<0.0040	<0.00010
02-Feb-22	5D			<0.00020	<0.0050	<0.0010	0.00595	<0.0010	<0.0040	<0.00010
09-Feb-22	6	500	476	<0.00020	<0.0050	<0.0010	0.00609	<0.0010	<0.0040	<0.00010
16-Feb-22	7	500	473	<0.00020	<0.0050	<0.0010	0.00534	<0.0010	0.0047	<0.00010
23-Feb-22	8	500	471	<0.00020	<0.0050	<0.0010	0.00619	<0.0010	<0.0040	0.0003
02-Mar-22	9	500	470	<0.00020	<0.0050	<0.0010	0.00536	<0.0010	<0.0040	<0.00010
09-Mar-22	10	500	475	<0.00020	<0.0050	<0.0010	0.00573	<0.0010	0.005	<0.00010

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Internal Priority
Attn : Chris Gunning

17-August-2022

Date Rec. : 15 March 2022
LR Report : **CA07219-MAR22**
Project : CA20I-00000-110-19032-01
Client Ref : MI5063-MAR22

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %
1: Column 1	51.0	14.4	9.84	3.44	4.41	1.27	5.17
2: Column 2	36.2	7.50	11.5	11.4	10.3	0.05	2.02

Sample ID	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	Sum %	S %
1: Column 1	1.21	0.33	0.14	< 0.01	0.03	7.53	98.8	0.11
2: Column 2	0.63	0.09	0.38	0.09	0.02	16.3	96.5	1.20

Control Quality Analysis - not suitable for commercial exchange

Sarah Thyret-Arbour
Technologist, Mineral Services, Analytical

OnLine LIMS

0003013830

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA07219-MAR22**

Method Descriptions

Parameter	Description	SGS Method Code
Al2O3	Aluminum by by borate fusion XRF	GO/GC/GT_XRF76V/R
CaO	Calcium by borate fusion XRF	GO/GC/GT_XRF76V/R
Cr2O3	Chromium by borate fusion XRF	GO/GC/GT_XRF76V/R
Fe2O3	Iron by borate fusion XRF	GO/GC/GT_XRF76V/R
K2O	Potassium by borate fusion XRF	GO/GC/GT_XRF76V/R
LOI	Loss at 1000C XRF	GO/GC/GT_XRF76V/R
MgO	Magnesium by borate fusion XRF	GO/GC/GT_XRF76V/R
MnO	Manganese by borate fusion XRF	GO/GC/GT_XRF76V/R
Na2O	Sodium by borate fusion XRF	GO/GC/GT_XRF76V/R
P2O5	Phosphorus by borate fusion XRF	GO/GC/GT_XRF76V/R
S	Sulphur by Leco	GE/GO/GC/GT_CSA06V
SiO2	Silicon by borate fusion XRF	GO/GC/GT_XRF76V/R
Sum	Sum	
TiO2	Titanium by borate fusion XRF	GO/GC/GT_XRF76V/R
V2O5	Vanadium by borate fusion XRF	GO/GC/GT_XRF76V/R

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Internal Priority
Attn : Chris Gunning

17-August-2022

Date Rec. : 17 March 2022
LR Report : **CA07323-MAR22**
Project : CA20I-00000-110-19032-01
Client Ref : MI5063-MAR22

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %
1: Column 3 HLS Sink	36.3	13.5	26.3	3.25	4.48	1.66	3.55
2: Column 3 HLS Float	51.6	16.1	12.4	2.43	2.76	2.96	4.05

Sample ID	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	Sum %	S %
1: Column 3 HLS Sink	1.94	0.17	0.36	0.04	0.04	6.56	98.1	0.11
2: Column 3 HLS Float	1.02	0.20	0.20	0.03	0.04	5.21	99.0	0.73

Control Quality Assay
Not Suitable for Commercial Exchange

Sarah Thyret-Arbour
Technologist, Mineral Services, Analytical

OnLine LIMS

0003013833

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA07323-MAR22**

Method Descriptions

Parameter	Description	SGS Method Code
Al2O3	Aluminum by by borate fusion XRF	GO/GC/GT_XRF76V/R
CaO	Calcium by borate fusion XRF	GO/GC/GT_XRF76V/R
Cr2O3	Chromium by borate fusion XRF	GO/GC/GT_XRF76V/R
Fe2O3	Iron by borate fusion XRF	GO/GC/GT_XRF76V/R
K2O	Potassium by borate fusion XRF	GO/GC/GT_XRF76V/R
LOI	Loss at 1000C XRF	GO/GC/GT_XRF76V/R
MgO	Magnesium by borate fusion XRF	GO/GC/GT_XRF76V/R
MnO	Manganese by borate fusion XRF	GO/GC/GT_XRF76V/R
Na2O	Sodium by borate fusion XRF	GO/GC/GT_XRF76V/R
P2O5	Phosphorus by borate fusion XRF	GO/GC/GT_XRF76V/R
S	Sulphur by Leco	GE/GO/GC/GT_CSA06V
SiO2	Silicon by borate fusion XRF	GO/GC/GT_XRF76V/R
Sum	Sum	
TiO2	Titanium by borate fusion XRF	GO/GC/GT_XRF76V/R
V2O5	Vanadium by borate fusion XRF	GO/GC/GT_XRF76V/R

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Internal Priority
Attn : Chris Gunning

17-August-2022

Date Rec. : 21 March 2022
LR Report : **CA07339-MAR22**
Project : CA20I-00000-110-19032-01
Client Ref : MI5063-MAR22

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	Ag g/t	As g/t	Ba g/t	Be g/t	Bi g/t	Cd g/t	Co g/t	Cu g/t	Li g/t	Mo g/t
1: Column 1	< 2	31	350	2.78	< 20	< 8	31	38	< 50	< 5
2: Column 2	< 2	65	121	1.61	< 20	< 8	76	35	< 50	< 5
3: Column 3 HLS Sink	< 2	1370	257	2.85	< 20	< 8	91	109	< 50	< 5
4: Column 3 HLS Float	< 2	187	287	3.11	< 20	< 8	40	45	< 50	< 5

Sample ID	Ni g/t	Pb g/t	Sb g/t	Se g/t	Sn g/t	Sr g/t	Tl g/t	U g/t	Y g/t	Zn g/t
1: Column 1	32	< 20	< 10	< 30	< 20	244	< 30	< 30	15.6	124
2: Column 2	549	< 20	< 10	< 30	< 20	391	< 30	< 30	4.6	97
3: Column 3 HLS Sink	177	< 20	< 10	< 30	< 20	195	< 30	< 30	10.6	171
4: Column 3 HLS Float	94	< 20	< 10	< 30	< 20	177	< 30	< 30	10.4	131

Control Quality Assay
Not Suitable for Commercial Exchange

Sarah Thyret-Arbour
Technologist, Mineral Services, Analytical

OnLine LIMS

0003013839

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA07339-MAR22**

Method Descriptions

Parameter	Description	SGS Method Code
Antimony	Antimony by ICP-OES strong acid digestion	GC_ICP42C
Arsenic	Arsenic by ICP-OES strong acid digestion	GC_ICP42C
Barium	Barium by ICP-OES strong acid digestion	GC_ICP42C
Beryllium	Beryllium by ICP-OES strong acid digestion	GC_ICP42C
Bismuth	Bismuth by ICP-OES strong acid digestion	GC_ICP42C
Cadmium	Cadmium by ICP-OES strong acid digestion	GC_ICP42C
Cobalt	Cobalt by ICP-OES strong acid digestion	GC_ICP42C
Copper	Copper by ICP-OES strong acid digestion	GC_ICP42C
Lead	Lead by ICP-OES strong acid digestion	GC_ICP42C
Lithium	Lithium by ICP-OES strong acid digestion	GC_ICP42C
Molybdenum	Molybdenum by ICP-OES strong acid digestion	GC_ICP42C
Nickel	Nickel by ICP-OES strong acid digestion	GC_ICP42C
Selenium	Selenium by ICP-OES strong acid digestion	GC_ICP42C
Silver	Silver by ICP-OES strong acid digestion	GC_ICP42C
Strontium	Strontium by ICP-OES strong acid digestion	GC_ICP42C
Thallium	Thallium by ICP-OES strong acid digestion	GC_ICP42C
Tin	Tin by ICP-OES strong acid digestion	GC_ICP42C
Uranium	Uranium by ICP-OES strong acid digestion	GC_ICP42C
Yttrium	Yttrium by ICP-OES strong acid digestion	GC_ICP42C
Zinc	Zinc by ICP-OES strong acid digestion	GC_ICP42C

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
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LR Internal Priority
Attn : Chris Gunning

17-August-2022

Date Rec. : 19 April 2022
LR Report : **CA07345-APR22**
Project : CA20I-00000-110-19032-01
Client Ref : MI5111-APR22

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	Si %	Al %	Fe %	Mg %	Ca %	Na %	K %	Ti %	P %	Mn %	Cr %
1: 1959-B9 15 M112089 HLS Sink	19.3	6.74	10.8	1.51	5.75	0.18	4.30	0.94	0.17	0.23	0.01
2: 1959-B9 15 M112089 HLS Float	29.6	7.02	4.02	0.70	2.60	0.31	4.45	0.31	0.07	0.09	< 0.01
3: 1956-B8 2211198 HLS Sink	12.0	5.06	16.1	2.56	5.91	0.64	3.35	1.45	0.12	0.28	0.01
4: 1956-B8 2211198 HLS Float	25.2	8.88	2.01	1.13	4.05	1.11	7.05	0.18	0.04	0.13	0.01

Sample ID	V %	LOI %	Sum %	S %	Ag g/t	As g/t	Ba g/t	Be g/t	Bi g/t	Cd g/t	Co g/t
1: 1959-B9 15 M112089 HLS Sink	0.01	10.4	98.1	0.52	< 5	293	573	3.09	< 20	< 5	< 50
2: 1959-B9 15 M112089 HLS Float	< 0.01	5.49	99.2	0.04	< 5	< 30	648	3.32	< 20	< 5	< 50
3: 1956-B8 2211198 HLS Sink	0.02	13.0	91.8	11.9	< 5	131	806	1.41	< 20	32	< 50
4: 1956-B8 2211198 HLS Float	< 0.01	6.66	98.3	0.20	< 5	< 30	2250	2.06	< 20	< 5	< 50

Sample ID	Cu g/t	Li g/t	Mo g/t	Ni g/t	Pb g/t	Sb g/t	Se g/t	Sn g/t	Sr g/t	Tl g/t	U g/t	Y g/t
1: 1959-B9 15 M112089 HLS Sink	53	< 40	< 5	55	35	< 30	< 30	< 20	344	< 30	< 50	23.7
2: 1959-B9 15 M112089 HLS Float	17	< 40	< 5	< 20	< 20	< 30	< 30	< 20	150	< 30	< 50	18.9
3: 1956-B8 2211198 HLS Sink	224	< 40	105	120	1020	< 30	< 30	< 20	346	< 30	< 50	15.0
4: 1956-B8 2211198 HLS Float	17	< 40	28	< 20	160	< 30	< 30	< 20	455	< 30	< 50	10.6

Sample ID	Zn g/t
1: 1959-B9 15 M112089 HLS Sink	254
2: 1959-B9 15 M112089 HLS Float	94
3: 1956-B8 2211198 HLS Sink	8320
4: 1956-B8 2211198 HLS Float	290

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA07345-APR22**

Control Quality Analysis - not suitable for commercial exchange

Sarah Thyret-Arbour
Technologist, Mineral Services, Analytical

OnLine LIMS

0003013715

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : CA07345-APR22

Method Descriptions

Parameter	Description	SGS Method Code
Al2O3	Aluminum by by borate fusion XRF	GO/GC/GT_XRF76V/R
Antimony	Antimony by ICP-OES strong acid digestion	GC_ICP42C
Arsenic	Arsenic by ICP-OES strong acid digestion	GC_ICP42C
Barium	Barium by ICP-OES strong acid digestion	GC_ICP42C
Beryllium	Beryllium by ICP-OES strong acid digestion	GC_ICP42C
Bismuth	Bismuth by ICP-OES strong acid digestion	GC_ICP42C
Cadmium	Cadmium by ICP-OES strong acid digestion	GC_ICP42C
CaO	Calcium by borate fusion XRF	GO/GC/GT_XRF76V/R
Cobalt	Cobalt by ICP-OES strong acid digestion	GC_ICP42C
Copper	Copper by ICP-OES strong acid digestion	GC_ICP42C
Cr2O3	Chromium by borate fusion XRF	GO/GC/GT_XRF76V/R
Fe2O3	Iron by borate fusion XRF	GO/GC/GT_XRF76V/R
K2O	Potassium by borate fusion XRF	GO/GC/GT_XRF76V/R
Lead	Lead by ICP-OES strong acid digestion	GC_ICP42C
Lithium	Lithium by ICP-OES strong acid digestion	GC_ICP42C
LOI	Loss at 1000C XRF	GO/GC/GT_XRF76V/R
MgO	Magnesium by borate fusion XRF	GO/GC/GT_XRF76V/R
MnO	Manganese by borate fusion XRF	GO/GC/GT_XRF76V/R
Molybdenum	Molybdenum by ICP-OES strong acid digestion	GC_ICP42C
Na2O	Sodium by borate fusion XRF	GO/GC/GT_XRF76V/R
Nickel	Nickel by ICP-OES strong acid digestion	GC_ICP42C
P2O5	Phosphorus by borate fusion XRF	GO/GC/GT_XRF76V/R
S	Sulphur by Leco	GE/GO/GC/GT_CSA06V
Selenium	Selenium by ICP-OES strong acid digestion	GC_ICP42C
Silver	Silver by ICP-OES strong acid digestion	GC_ICP42C
SiO2	Silicon by borate fusion XRF	GO/GC/GT_XRF76V/R
Strontium	Strontium by ICP-OES strong acid digestion	GC_ICP42C
Sum	Sum	
Thallium	Thallium by ICP-OES strong acid digestion	GC_ICP42C
Tin	Tin by ICP-OES strong acid digestion	GC_ICP42C
TiO2	Titanium by borate fusion XRF	GO/GC/GT_XRF76V/R
Uranium	Uranium by ICP-OES strong acid digestion	GC_ICP42C
V2O5	Vanadium by borate fusion XRF	GO/GC/GT_XRF76V/R
Yttrium	Yttrium by ICP-OES strong acid digestion	GC_ICP42C
Zinc	Zinc by ICP-OES strong acid digestion	GC_ICP42C

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Internal Priority
Attn : Chris Gunning

17-August-2022

Date Rec. : 25 April 2022
LR Report : **CA06016-APR22**
Project : CA20I-00000-110-19032-01
Client Ref : MI5063-MAR22

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	S %	As %
1: Column 1	0.12	0.093
2: Column 2	1.14	0.084
3: Column 3 HLS Sink	0.70	0.13
4: Column 3 HLS Float	0.11	0.016

Control Quality Assay
Not Suitable for Commercial Exchange

Sarah Thyret-Arbour
Technologist, Mineral Services, Analytical

OnLine LIMS

0003013822

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA06016-APR22**

Method Descriptions

Parameter	Description	SGS Method Code
Arsenic	Arsenic by internal std XRF	GO/GC_XRF75F
S	Sulphur by Leco	GE/GO/GC/GT_CSA06V

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Internal Priority
Attn : Chris Gunning

17-August-2022

Date Rec. : 26 April 2022
LR Report : **CA07454-APR22**
Project : CA20I-00000-110-19032-01
Client Ref : MI5111-APR22

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	As %
1: 1959-B9 15 M112089 HLS Sink	0.032
2: 1959-B9 15 M112089 HLS Float	0.002
3: 1956-B8 2211198 HLS Sink	0.075
4: 1956-B8 2211198 HLS Float	0.001

Control Quality Analysis - not suitable for commercial exchange

Sarah Thyret-Arbour
Technologist, Mineral Services, Analytical

OnLine LIMS

0003013718

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : **CA07454-APR22**

Method Descriptions

Parameter	Description	SGS Method Code
Arsenic	Arsenic by internal std XRF	GO/GC_XRF75F

CERTIFICATE OF ANALYSIS ▪ COVER PAGE

Global ARD Testing Services Inc.

CLIENT INFORMATION	
Client:	Wood PLC
Project Manager:	Anna Klein
Mailing Address	2020 Winston Park Drive
	Oakville, ON; L6H 6X7
Contact No:	+1(905)403-3444

COMPANY INFORMATION	
Legal Name:	Global ARD Testing Services Inc.
Mailing Address:	6891 Antrim Avenue
	Burnaby, BC
	V5J 4M5
Contact No:	
	Main: (604) 428-2730
	Alternate: (604) 603-1359

PROJECT INFORMATION	
Project Name:	Springpole
Project Number:	ONS2104

RESULTS		
Reported To:	**1**	Meghan Bertenshaw (meghan@firstmininggold.com)
	2	Kristen Gault (kristen.gault@woodplc.com)
	3	Anna Klein (anna.klein@woodplc.com)
	4	
Date Reported:		
	Version-1:	February 24, 2023

REPORTING	
Global Project No:	1956 Columns CDP
Report Version:	1
Pages (Including Cover):	6
Report Title:	COA 1956 COL CDP x12 Springpole Samples (rec'd 24-Oct2
Analysis Reviewed By:	Prab Bhatia (Pbhatia@globalARDtesting.com)
Position:	Project Manager
Report Certified By:	Prab Bhatia
Signature:	

INVOICE		
Submitted To:	**1**	Meghan Bertenshaw (meghan@firstmininggold.com)
	2	Kristen Gault (kristen.gault@woodplc.com)
	3	Anna Klein (anna.klein@woodplc.com)
	4	
Client PO No:		
Global Invoice No:		ARD1956-0523B
Date Submitted:		May 9, 2023

NOTES
All samples and pulps are stored at no charge for 90 days past reporting date.
Please contact the lab if you would like to continue storage past 90 days.
Storage charges will apply.

CERTIFICATE OF ANALYSIS ▪ SAMPLE DETAILS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

SAMPLE RECEIPT INFO	
Date Samples Received:	October 24,2022
No of Samples Received:	12
Samples Received By:	Prab

ANALYTICAL INSTRUCTIONS	
From:	
	as per email Confirmation
Date:	October 24,2022

S. No.	Sample ID	Sample Description	ORIGINAL		
			Batch#	Weight (Kg)	Sample ID
1a	Column 1 - Upper - CDP		B9	3.50	M112105
1b	Column 1 - Lower - CDP			3.50	M112103
3a	Column 3 - Upper - CDP		B8	7.00	W-058
3b	Column 3 - Lower - CDP				
5a	Column 5 - Upper - CDP		B8	7.00	W-070
5b	Column 5 - Lower - CDP				
8a	Column 8 - Upper - CDP		B9	4.10	M112089
8b	Column 8 - Lower - CDP		B8	2.90	W-041
10a	Column 10 - Upper - CDP		B8	7.00	W-204
10b	Column 10 - Lower - CDP				
11a	Column 11 - Upper - CDP		B8	3.50	W-221
11b	Column 11 - Lower - CDP			3.50	W-198

CERTIFICATE OF ANALYSIS ▪ ABA RESULTS

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

S. No.	Sample ID	Paste pH	Fizz Rating	Total Carbon	Total Inorganic C	$CaCO_3$ Equivalents[*1]	Total Sulphur	Sulphate Sulphur	Sulphide Sulphur	AP[*3]	Standard Sobek NP	NNP[*4]	NPR[*5]
	Units:	**pH Units**		**wt %**	**wt %**	**kg CaCO3/tonne**	**wt %**	**wt %**	**wt %**		**kg CaCO3/tonne**		
	Reported Detection Limit:	***0.1***		***0.02***	***0.02***	***1.7***	***0.01***	***0.01***	***0.01***	**0.3**	***0.5***		
1a	Column 1 - Upper - CDP	9.3	Moderate	1.75	1.21	100.8	0.12	0.03	0.09	2.8	113.7	110.9	40.4
1b	Column 1 - Lower - CDP	9.3	Moderate	1.66	1.39	115.8	0.14	0.03	0.11	3.4	120.0	116.6	34.9
3a	Column 3 - Upper - CDP	8.9	Strong	1.21	0.87	72.9	0.26	0.04	0.22	6.9	63.7	56.8	9.3
3b	Column 3 - Lower - CDP	8.8	Strong	1.28	1.17	97.5	0.30	0.04	0.26	8.1	90.2	82.1	11.1
5a	Column 5 - Upper - CDP	9.1	Strong	1.42	1.25	104.2	1.88	0.03	1.85	57.8	120.7	62.9	2.1
5b	Column 5 - Lower - CDP	9.1	Strong	1.41	1.20	100.0	2.12	0.03	2.09	65.3	122.7	57.4	1.9
8a	Column 8 - Upper - CDP	9.2	Strong	1.82	1.65	137.2	0.12	0.03	0.09	2.8	129.5	126.7	46.0
8b	Column 8 - Lower - CDP	9.1	Strong	1.83	1.67	139.2	0.11	0.03	0.08	2.5	129.3	126.8	51.7
10a	Column 10 - Upper - CDP	9.0	Strong	2.69	1.94	161.7	0.52	0.03	0.49	15.3	189.6	174.3	12.4
10b	Column 10 - Lower - CDP	9.3	Strong	2.61	2.06	171.7	0.43	0.04	0.39	12.2	194.6	182.4	16.0
11a	Column 11 - Upper - CDP	8.9	Strong	1.92	1.47	122.5	2.12	0.02	2.10	65.6	144.2	78.6	2.2
11b	Column 11 - Lower - CDP	9.0	Strong	1.69	1.47	122.5	1.91	0.02	1.89	59.1	127.2	68.1	2.2
	QUALITY ASSURANCE / QUALITY CONTROL												
Pulp Replicates:													
10a	Column 10 - Upper - CDP	9.3	Strong	2.69			0.52	0.04			194.6		
10a R	Column 10 - Upper - CDP R	9.3	Strong	2.70			0.54	0.03			184.9		
	%RPD	0%		0%			-4%	29%			5%		
10b	Column 10 - Lower - CDP	9.3	Strong					0.04			194.6		
10b R	Column 10 - Lower - CDP R	9.3	Strong					0.03			184.9		
	%RPD	0%						29%			5%		
Reference Material Analysis:													
Reference Material		1) NBM-1 2) KZK-1		GS310-7	KZK-1		GS310-7	RTS-3a			1) KZK-1 (Slight) 2) KZK-1 (Moderate)		
Ref. Material Certified Value		**1) 8.45 2) 8.80**		**4.16**	**0.92**		**10.92**	**1.10**			**1) 59.0 2) 64.8**		
Reference Material Results		1) N/A 2) 8.86		4.34	0.87		11.37	1.17			1) 56.7 2) N/A		
Acceptance Range:		***90% - 110%***		***90% - 110%***	***80% - 120%***		***90% - 110%***	***90% - 110%***			***90% - 110%***		
Method Blank Analysis:													
Method Blank Results				<0.01	<0.02		<0.01	<0.01					
GLOBAL SOP NO./METHOD:		*ARD-005*	*ARD-005*	*LECO*	*$HClO_4$ Leach CO_2 Coulometer*	*Calc.*	*LECO*	*ARD-010 (HCl Leach)*	*Calc.*	*Calc.*	*ARD-007*	*Calc.*	*Calc.*

NOTES:
Job No: YVR2211312

Date of Analysis (24 h): October 6-7, 2022
pH of DI water used (pH units): 5.59
EC of DI water used (µS/cm): 0.11

METHODS:
Total Sulphur by Leco.
Total Inorganic Carbon (TIC): $HClO_4$ leach, evolved CO_2 analysed by CO_2 Coulometer.

ABBREVIATIONS:
R = Rep = Replicate (a replicate is a sub-sample scooped from a single pulp sample bag produced per client sample)
D = Dup = Duplicate (a duplicate is 2nd sub-pulp sample bag produced by processing a 2nd split of the client sample. A duplicate pulp sample is prepared only at client request.
EC = Electric Conductivity
NP = Neutralization Potential
Calc. = Calculation
IND = Indeterminate
COA = Certificate Of Analysis
N/A = Not Applicable
NR = Not Reported

CALCULATIONS:
*[1] $CaCO_3$ Equivalents: Is based on TIC (Total Inorganic Carbon)
*[2] Non-Extractable Sulphur: Total sulphur - (sulphate sulphur + sulphide sulphur)
*[3] AP (Acid Potential): Sulphide-sulphur x 31.25
*[4] NNP (Net Neutralization Potential): NP - AP
*[5] NPR (Neutralization Potential Ratio): NP/AP

REFERENCES:
Sample Preparation: ASTM E877-08; MEND Report 1.20.1, Version 0 (2009)
ABA: Air-dried, jaw-crushed, split by riffling and pulverized to 85% passing 200 mesh (75 µm).
Surface Rinse-pH: MEND Report 1.20.1, Version 0 (2009).
Modified ABA (Sobek) NP: MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.
STD Sobek NP / Paste pH / Fizz Rating: Sobek, A.A., Schuller, W.A., Freeman, J.R. and Smith, R.M.; US EPA-600/2-78-054 (1978).
Paste pH / Fizz Rating: Sobek, A.A., Schuller, W.A., Freeman, J.R. and Smith, R.M.; US EPA-600/2-78-054 (1978).
Sulphate Sulphur: Based on MEND method using HCl leach. The S extracted is determined by analysing the extract for SO_4 using UV-Vis Spectrophotometer (STD Method 4500-SO42- E).
Sulphur Speciation: Sequential HCl and HNO_3 leach. The S extracted is determined by analysing the extract for SO_4 using UV-Vis Spectrophotometer (STD Method 4500-SO42- E).

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ METALS RESULTS BY AQUA REGIA DIGEST & ICP-MS ANALYSIS ON SOLIDS

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

S. No.	Sample ID	Method	Silver (Ag)	Aluminum (Al)	Arsenic (As)	Gold (Au)	Boron (B)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Calcium (Ca)	Cadmium (Cd)	Cerium (Ce)	Cobalt (Co)	Chromium (Cr)	Cesium (Cs)	r (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Hafnium (Hf)	Mercury (Hg)	Indium (In)	Potassium (K)	Lanthanum (La)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)
		Analyte	Silver (Ag)	Aluminum (Al)	Arsenic (As)	Gold (Au)	Boron (B)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Calcium (Ca)	Cadmium (Cd)	Cerium (Ce)	Cobalt (Co)	Chromium (Cr)	Cesium (Cs)	r (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Hafnium (Hf)	Mercury (Hg)	Indium (In)	Potassium (K)	Lanthanum (La)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)
		Unit	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm
		MDL	0.01	0.01	0.1	0.0005	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05	0.05	0.02	0.005	0.005	0.01	0.2	0.1	0.01	5
		Sample Type																										
1	Column 1 - Upper - CDP	Pulp	0.07	1.87	882.3	0.0113	<10	68	0.51	0.04	2.92	0.08	37.23	19.2	22	21.57	39.5	5.79	6.06	0.08	1.16	0.02	0.011	1.55	16.5	14.4	1.72	990
2	Column 1 - Lower - CDP	Pulp	0.09	1.82	1066.0	0.0220	<10	66	0.50	0.04	2.68	0.08	37.22	21.2	21	21.76	44.5	5.53	6.16	0.07	1.21	0.02	0.012	1.51	16.5	14.5	1.60	894
3	Column 3 - Upper - CDP	Pulp	0.09	2.60	435.9	0.0040	<10	70	0.84	0.02	1.93	0.09	22.43	37.7	88	15.86	57.2	9.45	9.16	0.12	0.66	0.01	0.019	1.34	9.3	21.4	1.31	1561
4	Column 3 - Lower - CDP	Pulp	0.10	2.59	527.8	0.0037	<10	72	0.86	0.02	2.03	0.09	23.12	41.4	87	16.30	69.2	9.72	9.49	0.12	0.68	0.01	0.019	1.33	9.7	22.8	1.33	1635
5	Column 5 - Upper - CDP	Pulp	0.27	1.37	68.9	0.0480	<10	182	0.45	0.02	3.78	0.14	79.94	24.5	40	20.53	46.3	4.96	4.65	0.06	1.26	0.02	0.008	1.20	53.7	30.9	1.15	1160
6	Column 5 - Lower - CDP	Pulp	0.32	1.37	73.4	0.0535	<10	172	0.44	0.03	3.68	0.15	87.88	26.7	39	21.63	41.2	4.99	4.82	0.06	1.33	0.02	0.009	1.20	58.6	32.2	1.14	1126
7	Column 8 - Upper - CDP	Pulp	0.05	1.37	60.4	0.0045	<10	74	0.49	0.04	3.15	0.07	51.76	17.7	50	35.29	37.7	4.96	5.65	0.07	1.43	0.03	0.012	1.18	23.6	14.8	1.89	1160
8	Column 8 - Lower - CDP	Pulp	0.05	1.37	68.4	0.0051	<10	74	0.49	0.04	3.16	0.09	54.16	18.9	49	35.36	37.7	4.95	5.79	0.07	1.53	0.03	0.012	1.16	24.6	15.2	1.80	1161
9	Column 10 - Upper - CDP	Pulp	0.28	0.87	17.5	0.0269	<10	104	0.43	0.01	4.82	0.12	39.36	28.1	30	6.92	212.2	6.71	6.03	0.06	1.23	0.04	0.027	0.68	17.7	14.8	1.69	1583
10	Column 10 - Lower - CDP	Pulp	0.28	0.82	15.6	0.0306	<10	98	0.41	<0.01	4.62	0.13	36.19	25.8	29	6.76	216.6	6.13	5.83	0.06	1.03	0.04	0.026	0.65	16.2	14.3	1.67	1539
11	Column 11 - Upper - CDP	Pulp	1.07	0.57	126.3	0.0528	<10	123	0.26	0.17	3.98	2.49	28.30	15.0	20	6.06	49.7	3.35	1.66	<0.05	1.85	0.89	0.010	0.49	15.2	13.3	0.93	1418
12	Column 11 - Lower - CDP	Pulp	1.37	0.60	111.5	0.0649	<10	137	0.27	0.22	3.72	2.63	30.48	13.3	21	6.49	45.0	2.99	1.82	<0.05	2.23	0.77	0.009	0.52	17.0	15.6	0.91	1375
QUALITY ASSURANCE / QUALITY CONTROL																												
Pulp Replicates																												
12	Column 11 - Lower - CDP	Pulp	1.37	0.60	111.5	0.0649	<10	137	0.27	0.22	3.72	2.63	30.48	13.3	21	6.49	45.0	2.99	1.82	<0.05	2.23	0.774	0.009	0.52	17.0	15.6	0.91	1375
12 R	Column 11 - Lower - CDP R		1.24	0.59	112.0	0.0659	<10	136	0.27	0.21	3.66	2.73	30.34	13.3	21	6.43	44.8	2.95	1.81	<0.05	2.24	0.767	0.009	0.51	16.8	14.7	0.90	1354
		%RPD	10%	2%	0%	-2%		1%	0%	5%	2%	-4%	0%	0%	0%	1%	0%	1%	1%		0%	1%	0%	2%	1%	6%	1%	2%
Reference Material																												
STD OREAS 601			49.45	0.800	300.7	0.762	<10	265	0.60	20.52	1.00	7.81	44.8	4.40	48.0	2.02	1037.1	2.16	4.77	0.09	0.67	0.297	1.641	0.230	21.3	8.10	0.180	435
True Value STD OREAS 601			**49.40**	**0.826**	**305.0**	**0.774**	**<10**	**2714**	**0.62**	**20.60**	**1.07**	**7.81**	**44.8**	**4.70**	**44.2**	**1.98**	**1010.0**	**2.20**	**5.17**	**<0.1**	**<1**	**<3**	**1.680**	**0.251**	**21.2**	**7.95**	**0.195**	**450**
% Difference			0%	-3%	-1%	-2%			-3%	0%	-7%	0%	0%	-6%	9%	2%	3%	-2%	-8%				-2%	-8%	0%	2%	-8%	-3%
Method Blank:																												
Method Blank			<0.01	<0.01	<0.1	<0.0005	<10	<10	<0.05	<0.01	<0.01	<0.01	<0.02	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.02	<0.005	<0.005	<0.01	<0.2	<0.1	<0.01	<5

Notes:
Job No: YVR2211312

Analytical Methods (IMS-130):
A 0.5 g of pulp sample is leached in hot (95°C) 3:1 aqua regia digestion followed by ICP Mass Spec analysis.
Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5 g).
Refractory and graphitic samples can limit Au solubility.

Abbreviations:
R / Rep = Replicate (a replicate is a sub-sample scooped from a single sample bag produced per client sample)
D / Dup = Duplicate (a duplicate is 2nd sub-sample bag produced by processing a second split of the original client sample received)
MDL = Measurable Detection Limit
COA: Certificate Of Analysis.
IND = Indeterminate
NR: Not reported in COA

On Cerfified Reference Material and Tolerance:
Any one element in a run reporting outside tolerance limits does not constitute failure of the standard.
As per Certificate of Analysis (COA): All values indicated are Certified. Values indicated in green are indicative only.
NR = Not Reported (in the Certificate Of Analysis).

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ METALS RESULTS BY AQUA REGIA DIGEST & ICP-MS ANALYSIS ON SOLIDS

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

S. No.	Sample ID	Method	Molybdenum (Mo)	Sodium (Na)	Niobium (Nb)	Nickel (Ni)	Phosphorous (P)	Lead (Pb)	Rubidium (Rb)	Rhenium (Re)	Sulphur (S)	Antimony (Sb)	Scandium (Sc)	Selenium (Se)	Tin (Sn)	m (Sr)	Tantalum (Ta)	Tellurium (Te)	Thorium (Th)	Titanium (Ti)	Thallium (Tl)	Uranium (U)	Vandium (V)	n (W)	Yttrium (Y)	Zinc (Zn)	Zirconium (Zr)
		Analyte	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr
		Unit	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		MDL	0.05	0.01	0.05	0.2	10	0.2	0.1	0.001	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05	1	0.5
		Sample Typ																									
1	Column 1 - Upper - CDP	Pulp	0.84	0.01	0.18	26.3	1480	5.2	175.1	<0.001	0.13	2.32	4.7	<0.2	0.3	210.9	0.01	0.01	2.6	0.211	2.95	0.42	42	0.52	8.82	102	53.1
2	Column 1 - Lower - CDP	Pulp	0.87	0.01	0.19	27.7	1426	5.1	178.0	<0.001	0.14	2.34	4.7	<0.2	0.3	205.6	<0.01	0.02	2.7	0.205	3.02	0.45	42	0.55	8.85	100	55.3
3	Column 3 - Upper - CDP	Pulp	2.97	0.02	0.11	98.2	819	3.2	130.2	<0.001	0.25	1.07	10.9	<0.2	0.3	110.4	<0.01	0.04	0.9	0.186	2.62	0.24	88	1.69	5.93	113	30.1
4	Column 3 - Lower - CDP	Pulp	3.20	0.02	0.12	103.5	822	3.5	133.8	<0.001	0.29	1.11	11.5	<0.2	0.3	120.7	<0.01	0.06	0.9	0.184	2.66	0.26	88	2.17	6.22	113	32.1
5	Column 5 - Upper - CDP	Pulp	14.30	0.02	<0.05	32.3	702	22.6	109.8	0.004	1.81	0.86	4.9	1.1	<0.2	411.4	<0.01	1.26	1.5	0.144	1.64	1.66	48	0.35	10.83	106	52.5
6	Column 5 - Lower - CDP	Pulp	15.11	0.02	<0.05	33.9	702	28.5	115.7	0.005	1.95	0.89	5.1	1.3	<0.2	420.1	<0.01	1.5	1.6	0.143	1.7	1.88	47	0.34	11.11	109	56
7	Column 8 - Upper - CDP	Pulp	2.19	0.02	0.07	20.5	1070	3.7	143.8	<0.001	0.12	1.92	5.3	<0.2	0.2	240.1	<0.01	0.03	3.6	0.139	2.73	0.77	49	1.66	10.02	76	61.5
8	Column 8 - Lower - CDP	Pulp	2.61	0.02	0.07	22.0	1077	3.9	149.4	<0.001	0.11	1.86	5.4	<0.2	0.2	250.4	<0.01	0.04	3.7	0.138	2.83	0.82	47	2.71	10.84	75	66.5
9	Column 10 - Upper - CDP	Pulp	3.62	0.03	0.16	33.1	1276	4.0	59.2	<0.001	0.51	0.66	8.1	<0.2	0.3	163.3	<0.01	0.19	2.4	0.121	1	0.59	114	1.05	10.91	66	55.2
10	Column 10 - Lower - CDP	Pulp	3.45	0.03	0.10	33.8	1282	3.8	59.4	<0.001	0.40	0.53	8.0	<0.2	0.3	162.8	<0.01	0.19	2.3	0.097	0.97	0.54	106	0.82	10.53	63	46.9
11	Column 11 - Upper - CDP	Pulp	38.10	0.01	0.15	20.4	495	195.0	56.4	0.004	2.00	8.89	1.5	1.3	<0.2	242.9	<0.01	1.59	2.5	0.028	0.85	6.12	11	0.43	8.16	584	77.2
12	Column 11 - Lower - CDP	Pulp	52.57	<0.01	0.15	17.7	468	231.8	65.6	0.004	1.81	9.56	1.4	1.2	<0.2	258.9	<0.01	1.71	2.9	0.027	0.97	5.88	11	0.45	8.24	570	93.3
QUALITY ASSURANCE / QUALITY CONTROL																											
Pulp Replicates																											
12	Column 11 - Lower - CDP	Pulp	52.57	<0.01	0.15	17.7	468	231.8	65.6	0.004	1.81	9.56	1.4	1.2	<0.2	258.9	<0.01	1.71	2.9	0.027	0.97	5.88	11	0.45	8.24	570	93.3
12 R	Column 11 - Lower - CDP R		51.16	<0.01	0.15	17.4	468	229.8	65.7	0.004	1.81	8.81	1.4	1.1	<0.2	258.9	<0.01	1.63	2.9	0.027	0.96	5.85	11	0.44	8.24	570	92.8
		%RPD	3%		0%	2%	0%	1%	0%	0%	0%	8%	0%	9%		0%		5%	0%	0%	1%	1%	0%	2%	0%	0%	1%
Reference Material																											
STD OREAS 601			3.82	0.05	0.28	25.5	347	277.6	16.2	<0.001	0.97	20.36	1.80	11.5	2.60	34.0	<0.01	15.01	6.6	0.008	0.72	1.90	8.00	1.07	5.94	1257	26.1
True Value STD OREAS 601			**3.80**	**0.07**	**<1**	**24.1**	**360**	**283.0**	**16.0**	**<1**	**1.04**	**21.10**	**1.83**	**12.3**	**2.61**	**36.2**	**0.099**	**15.40**	**6.7**	**0.010**	**0.74**	**1.94**	**9.24**	**1.06**	**5.87**	**1293**	**26.7**
% Difference			1%			6%	-4%	-2%	1%		-7%	-4%	-2%	-7%	0%	-6%		-3%	-1%	-22%	-3%	-2%	-13%	1%	1%	-3%	-2%
Method Blank:																											
Method Blank			<0.05	<0.01	<0.05	<0.2	<10	<0.2	<0.1	<0.001	<0.01	<0.05	<0.1	<0.2	<0.2	<0.2	<0.01	<0.01	<0.2	<0.005	<0.02	<0.05	<1	<0.05	<0.05	<1	<0.5

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ MEND SHAKE FLASK EXTRACTION RESUL

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

Parameter	Method	Unit	RDL	1a Column 1 - Upper - CDP	1b Column 1 - Lower - CDP	3a Column 3 - Upper - CDP	3b Column 3 - Lower - CDP	5a Column 5 - Upper - CDP	5b Column 5 - Lower - CDP	8a Column 8 - Upper - CDP
Weight of dry sample used	Weighing Scale	g	0.01	1000	1000	1000	1000	1000	1000	1000
Volume of DI water used	Graduated Cylinder	mL	0.50	3000	3000	3000	3000	3000	3000	3000
On filtered samples (using 0.45 µm filter paper):										
pH	Meter	pH units	0.01	6.6	7.3	7.3	7.2	7.4	7.4	7.4
EC	Meter	µS/cm	1	34	46	35	43	63	69	54
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5	17.5	26.0	20.9	22.7	38.6	40.8	34.5
Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5	13.9	18.2	18.3	19.9	33.3	34.8	22.0
Sulphate	Gravimetric	mg/L	1	3.5	4.4	4.2	5.1	4.5	4.8	3.4
Chloride	IC	mg/L	0.1	0.3	0.8	0.2	0.5	0.1	0.5	0.3
Fluoride	IC	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Phosphorous	IC	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dissolved Hg	CVAF	Ug/L	0.005	0.013	0.014	0.076	0.008	0.007	0.007	0.008
Dissolved Metals Analysis by ICP-MS:										
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.125	19.0	23.6	20.5	23.4	39.0	39.8	26.8
Aluminum Dissolved	ICP-MS	mg/L	0.001	0.0831	0.124	0.0933	0.104	0.189	0.21	0.144
Antimony Dissolved	ICP-MS	mg/L	0.00005	0.0104	0.0165	0.00114	0.00123	0.00113	0.00154	0.00168
Arsenic Dissolved	ICP-MS	mg/L	0.00005	0.0742	0.12	0.033	0.0317	0.00482	0.0055	0.0286
Barium Dissolved	ICP-MS	mg/L	0.0001	0.00483	0.00176	0.00139	0.00139	0.0103	0.00872	0.00473
Beryllium Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Boron Dissolved	ICP-MS	mg/L	0.002	<0.0020	0.0233	0.0025	0.0135	0.0035	0.0139	0.0068
Cadmium Dissolved	ICP-MS	mg/L	0.000002	0.0000034	0.000006	0.0000031	0.0000023	0.0000061	0.0000065	<0.0000020
Calcium Dissolved	ICP-MS	mg/L	0.05	5.4	6.7	6.0	6.8	13.9	13.8	8.5
Chromium Dissolved	ICP-MS	mg/L	0.000	0.0001	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002
Cobalt Dissolved	ICP-MS	mg/L	0.000005	0.000466	0.00115	0.000422	0.000571	0.0000412	0.000041	0.000236
Copper Dissolved	ICP-MS	mg/L	0.0001	0.00048	0.00094	0.00033	0.00052	0.00047	0.00071	0.00037
Iron Dissolved	ICP-MS	mg/L	0.002	0.0062	0.0122	0.0074	0.0055	0.0034	0.0084	0.0041
Lead Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	0.000051	0.000062	<0.000050
Lithium Dissolved	ICP-MS	mg/L	0.000	0.0005	0.0012	0.0006	0.0008	0.0008	0.0014	0.0007
Magnesium Dissolved	ICP-MS	mg/L	0.005	1.4	1.7	1.3	1.5	1.1	1.3	1.3
Manganese Dissolved	ICP-MS	mg/L	0.00005	0.0298	0.0412	0.0862	0.103	0.0815	0.0835	0.0393
Mercury Dissolved	ICP-MS	ug/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum Dissolved	ICP-MS	mg/L	0.00001	0.000375	0.000705	0.000524	0.000749	0.00197	0.00295	0.00132
Nickel Dissolved	ICP-MS	mg/L	0.00004	0.000464	0.000788	0.000495	0.000531	0.000267	0.000199	0.00019
Phosphorus Dissolved	ICP-MS	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Potassium Dissolved	ICP-MS	mg/L	0.02	1.08	1.78	0.941	1.56	1.64	2.13	2.08
Selenium Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	0.00049	0.00072	0.00012
Silicon Dissolved	ICP-MS	mg/L	0.1	0.29	0.54	0.34	0.43	0.66	0.79	0.56
Silver Dissolved	ICP-MS	mg/L	0.00001	0.000014	<0.000010	0.00008	<0.000010	<0.000010	<0.000010	0.000012
Sodium Dissolved	ICP-MS	mg/L	0.02	0.134	1.35	0.171	0.795	0.231	0.916	0.367
Strontium Dissolved	ICP-MS	mg/L	0.0001	0.0258	0.029	0.0255	0.0261	0.185	0.166	0.0513
Sulphur Dissolved	ICP-MS	mg/L	1.00000	1.0	1.5	1.5	1.9	1.5	1.7	<1.00
Tellurium Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Thallium Dissolved	ICP-MS	mg/L	0.000004	0.0000203	0.0000247	0.00002	0.0000175	0.0000216	0.0000197	0.0000307
Thorium Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000054	<0.000050
Titanium Dissolved	ICP-MS	mg/L	0.0002	<0.00020	0.00047	0.0003	<0.00020	<0.00020	0.00025	0.00024
Tungsten Dissolved	ICP-MS	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Uranium Dissolved	ICP-MS	mg/L	0.000001	0.0000437	0.000108	0.0000096	0.0000156	0.00136	0.00186	0.000199
Vanadium Dissolved	ICP-MS	mg/L	0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Zinc Dissolved	ICP-MS	mg/L	0.00	0.002	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zirconium Dissolved	ICP-MS	mg/L	0.000	0.000	0.000	0.000	0.000	<0.000020	<0.000020	0.000
Ion Balance:										
Major Anions	Calc.	meq/L		0.36	0.48	0.46	0.52	0.76	0.81	0.52
Major Cations	Calc.	meq/L		0.43	0.60	0.46	0.56	0.86	0.92	0.63
Difference	Calc.	meq/L		-0.07	-0.12	0.00	-0.05	-0.10	-0.11	-0.11
Balance (%)	Calc.	%		-8.6%	-11.5%	-0.1%	-4.2%	-6.0%	-6.6%	-9.5%
			Shake Flask Extract ID:	*22K1229-01*	*22K1229-02*	*22K1229-03*	*22K1229-04*	*22K1229-05*	*22K1229-06*	*22K1229-07*

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

Parameter	Method	Unit	RDL	1a	1b	3a	3b	5a	5b	8a
				Column 1 - Upper - CDP	Column 1 - Lower - CDP	Column 3 - Upper - CDP	Column 3 - Lower - CDP	Column 5 - Upper - CDP	Column 5 - Lower - CDP	Column 8 - Upper - CDP

NOTES:
Job No: 22K1229
Date of Analysis (24 h): November 16, 2022
pH of DI water used (pH Units): 6.24
EC of DI water used (µS/cm): 1.13

ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliquot).
D / Dup = Duplicate (which involves the analysis of a separate SF extract, produced by processing a secopnd split of the original client sample received).
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
NA = Not Applicable.
NR = Not Reported.
mg/L = Milligrams per Litre

REFERENCE:
Prediction Manual for Drainage Chemistry from Sulphidic Geologic Material, MEND Report 1.20.1; Version 0 - Dec. 2009. Section 11.5; P 11 (8-9).
Extraction Method used: Using gyratory shaker for 24 h (± 2 h; gentle agitation).
Liquid: Solid ratio used: 3: 1; L: S; 750 mL DI H_2O: 250 g of crushed sample (85% passing 1/4 inch - i.e. 6.3 mm)

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Parameter	Method	Unit	RDL	8b	10a	10b	11a	11b	Method Blank
				Column 8 - Lower - CDP	Column 10 - Upper - CDP	Column 10 - Lower - CDP	Column 11 - Upper - CDP	Column 11 - Lower - CDP	
Weight of dry sample used	Weighing Scale	g	0.01	1000	1000	1000	1000	1000	N/A
Volume of DI water used	Graduated Cylinder	mL	0.50	3000	3000	3000	3000	3000	750
On filtered samples (using 0.45 µm filter paper):									
pH	Meter	pH units	0.01	7.4	7.4	7.4	7.4	7.4	5.9
EC	Meter	µS/cm	1	46	56	50	67	68	1.02
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5	29.7	33.0	33.4	40.2	37.9	
Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5	27.1	31.6	31.4	33.5	32.7	
Sulphate	Gravimetric	mg/L	1	3.0	5.2	3.2	4.3	6.1	<1.00
Chloride	IC	mg/L	0.1	0.4	0.3	0.2	0.1	0.4	
Fluoride	IC	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	
Dissolved Phosphorous	IC	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Dissolved Hg	CVAF	Ug/L	0.005	0.008	0.008	0.008	0.007	0.005	
Dissolved Metals Analysis by ICP-MS:									
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.125	30.9	34.5	30.6	40.7	38.2	<0.125
Aluminum Dissolved	ICP-MS	mg/L	0.001	0.162	0.129	0.145	0.119	0.128	<0.0010
Antimony Dissolved	ICP-MS	mg/L	0.00005	0.00244	0.000437	0.000447	0.0128	0.0119	<0.000050
Arsenic Dissolved	ICP-MS	mg/L	0.00005	0.0331	0.012	0.0153	0.00815	0.00904	<0.000050
Barium Dissolved	ICP-MS	mg/L	0.0001	0.00493	0.00341	0.00395	0.0831	0.0993	<0.00010
Beryllium Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Boron Dissolved	ICP-MS	mg/L	0.002	0.0124	0.0051	0.0071	0.0063	0.0099	<0.0020
Cadmium Dissolved	ICP-MS	mg/L	0.000002	0.0000027	<0.0000020	<0.0000020	0.0000679	0.00011	<0.0000020
Calcium Dissolved	ICP-MS	mg/L	0.05	9.8	10.8	9.6	13.9	12.9	<0.050
Chromium Dissolved	ICP-MS	mg/L	0.000	0.0002	0.0002	0.0002	0.0002	0.0003	0.000
Cobalt Dissolved	ICP-MS	mg/L	0.000005	0.000301	0.000125	0.00012	0.0000318	0.0000326	<0.0000050
Copper Dissolved	ICP-MS	mg/L	0.0001	0.00044	0.00126	0.00154	0.00055	0.00072	<0.00010
Iron Dissolved	ICP-MS	mg/L	0.002	0.0072	0.0041	0.0046	0.0022	0.0023	<0.0020
Lead Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050	<0.000050	0.00205	0.00353	<0.000050
Lithium Dissolved	ICP-MS	mg/L	0.000	0.0011	0.0008	0.0006	0.0006	0.0008	<0.000050
Magnesium Dissolved	ICP-MS	mg/L	0.005	1.6	1.8	1.6	1.4	1.4	<0.0050
Manganese Dissolved	ICP-MS	mg/L	0.00005	0.0445	0.0263	0.0191	0.145	0.136	0.000063
Mercury Dissolved	ICP-MS	ug/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.020
Molybdenum Dissolved	ICP-MS	mg/L	0.00001	0.00197	0.00598	0.00369	0.0123	0.00944	<0.000010
Nickel Dissolved	ICP-MS	mg/L	0.00004	0.000187	0.000223	0.00014	0.000182	0.000263	<0.000040
Phosphorus Dissolved	ICP-MS	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Potassium Dissolved	ICP-MS	mg/L	0.02	2.72	1.19	1.03	1.63	2.11	<0.020
Selenium Dissolved	ICP-MS	mg/L	0.0001	0.00013	<0.00010	<0.00010	0.00489	0.00525	<0.00010
Silicon Dissolved	ICP-MS	mg/L	0.1	0.67	0.54	0.54	0.74	0.78	<0.10
Silver Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	0.000013	<0.000010	<0.000010	<0.000010
Sodium Dissolved	ICP-MS	mg/L	0.02	0.72	0.495	0.442	0.291	1.15	0.077
Strontium Dissolved	ICP-MS	mg/L	0.0001	0.0591	0.044	0.0414	0.471	0.533	<0.00010
Sulphur Dissolved	ICP-MS	mg/L	1.00000	<1.00	2.1	<1.00	1.9	2.8	<1.00
Tellurium Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Thallium Dissolved	ICP-MS	mg/L	0.000004	0.0000313	0.0000157	0.0000145	0.0000418	0.0000499	<0.0000040
Thorium Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Titanium Dissolved	ICP-MS	mg/L	0.0002	0.00026	0.00021	0.00028	<0.00020	<0.00020	<0.00020
Tungsten Dissolved	ICP-MS	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Uranium Dissolved	ICP-MS	mg/L	0.000001	0.000357	0.000223	0.000258	0.00226	0.00264	<0.0000010
Vanadium Dissolved	ICP-MS	mg/L	0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Zinc Dissolved	ICP-MS	mg/L	0.00	<0.0010	<0.0010	<0.0010	0.003	0.003	<0.0010
Zirconium Dissolved	ICP-MS	mg/L	0.000	0.000	0.000	0.000	0.000	0.000	<0.000020
Ion Balance:									
Major Anions	Calc.	meq/L		0.62	0.75	0.70	0.76	0.79	
Major Cations	Calc.	meq/L		0.74	0.76	0.68	0.90	0.90	
Difference	Calc.	meq/L		-0.13	-0.01	0.02	-0.13	-0.11	
Balance (%)	Calc.	%		-9.4%	-0.6%	1.7%	-8.1%	-6.5%	
			Shake Flask Extract ID:	*22K1229-08*	*22K1229-09*	*22K1229-10*	*22K1229-11*	*22K1229-12*	*22K1229-13*

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Parameter	Method	Unit	RDL	8b	10a	10b	11a	11b	Method Blank
				Column 8 - Lower - CDP	Column 10 - Upper - CDP	Column 10 - Lower - CDP	Column 11 - Upper - CDP	Column 11 - Lower - CDP	

NOTES:
Job No: 22K1229
Date of Analysis (24 h): November 16, 2022
pH of DI water used (pH Units): 6.24
EC of DI water used (µS/cm): 1.13

ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliq
D / Dup = Duplicate (which involves the analysis of a separate SF extract, produced b
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
NA = Not Applicable.
NR = Not Reported.
mg/L = Milligrams per Litre

REFERENCE:
Prediction Manual for Drainage Chemistry from Sulphidic Geologic Material, MEND R
Extraction Method used: Using gyratory shaker for 24 h (± 2 h; gentle agitation).
Liquid: Solid ratio used: 3: 1; L: S; 750 mL DI H_2O: 250 g of crushed sample (85% p

Sulphate:

Certified Reference Material:	Parameter: Sulphate	% Recovery	Matrix Spike %	Units	QC Limits
STD Mineral Water (15.3 mg/L)	13.50	88.2%		%	80 - 120
Spiked Blank (19.61 mg/L)	17.00		86.7%	%	80 - 120

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
22K1229_B2K1226-BLK1	Chloride	<0.10	mg/L	T	REG	SM 4110 B (2017)	10-Nov-22	0.1	mg/L		
22K1229_B2K1226-BLK1	Fluoride	<0.10	mg/L	T	REG	SM 4110 B (2017)	10-Nov-22	0.1	mg/L		
22K1229_B2K1226-BLK2	Chloride	<0.10	mg/L	T	REG	SM 4110 B (2017)	10-Nov-22	0.1	mg/L		
22K1229_B2K1226-BLK2	Fluoride	<0.10	mg/L	T	REG	SM 4110 B (2017)	10-Nov-22	0.1	mg/L		
22K1229_B2K1226-BS1	Chloride	100	%	T	SC	SM 4110 B (2017)	10-Nov-22	1	%	110	90
22K1229_B2K1226-BS1	Fluoride	101	%	T	SC	SM 4110 B (2017)	10-Nov-22	1	%	108	88
22K1229_B2K1226-BS2	Chloride	100	%	T	SC	SM 4110 B (2017)	10-Nov-22	1	%	110	90
22K1229_B2K1226-BS2	Fluoride	101	%	T	SC	SM 4110 B (2017)	10-Nov-22	1	%	108	88
22K1229_B2K1390-BLK1	Aluminum dissolved	0.0012	mg/L	F	REG	EPA 6020B	15-Nov-22	0.001	mg/L		
22K1229_B2K1390-BLK1	Antimony dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00005	mg/L		
22K1229_B2K1390-BLK1	Arsenic dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00005	mg/L		
22K1229_B2K1390-BLK1	Barium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.0001	mg/L		
22K1229_B2K1390-BLK1	Beryllium dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00001	mg/L		
22K1229_B2K1390-BLK1	Bismuth dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00001	mg/L		
22K1229_B2K1390-BLK1	Boron dissolved	<0.0020	mg/L	F	REG	EPA 6020B	15-Nov-22	0.002	mg/L		
22K1229_B2K1390-BLK1	Cadmium dissolved	<0.0000020	mg/L	F	REG	EPA 6020B	13-Nov-22	0.000002	mg/L		
22K1229_B2K1390-BLK1	Calcium dissolved	<0.050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.05	mg/L		
22K1229_B2K1390-BLK1	Chromium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.0001	mg/L		
22K1229_B2K1390-BLK1	Cobalt dissolved	<0.0000050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.000005	mg/L		
22K1229_B2K1390-BLK1	Copper dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.0001	mg/L		
22K1229_B2K1390-BLK1	Iron dissolved	<0.0020	mg/L	F	REG	EPA 6020B	13-Nov-22	0.002	mg/L		
22K1229_B2K1390-BLK1	Lead dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00005	mg/L		
22K1229_B2K1390-BLK1	Lithium dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00005	mg/L		
22K1229_B2K1390-BLK1	Magnesium dissolved	<0.0050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.005	mg/L		
22K1229_B2K1390-BLK1	Manganese dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00005	mg/L		
22K1229_B2K1390-BLK1	Mercury dissolved	<0.000020	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00002	mg/L		
22K1229_B2K1390-BLK1	Molybdenum dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00001	mg/L		
22K1229_B2K1390-BLK1	Nickel dissolved	<0.000040	mg/L	F	REG	EPA 6020B	15-Nov-22	0.00004	mg/L		
22K1229_B2K1390-BLK1	Phosphorus dissolved	<0.010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.01	mg/L		
22K1229_B2K1390-BLK1	Potassium dissolved	<0.020	mg/L	F	REG	EPA 6020B	13-Nov-22	0.02	mg/L		
22K1229_B2K1390-BLK1	Selenium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.0001	mg/L		
22K1229_B2K1390-BLK1	Silicon dissolved	<0.10	mg/L	F	REG	EPA 6020B	13-Nov-22	0.1	mg/L		
22K1229_B2K1390-BLK1	Silver dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00001	mg/L		
22K1229_B2K1390-BLK1	Sodium dissolved	<0.020	mg/L	F	REG	EPA 6020B	13-Nov-22	0.02	mg/L		
22K1229_B2K1390-BLK1	Strontium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.0001	mg/L		
22K1229_B2K1390-BLK1	Sulfur dissolved	<1.00	mg/L	F	REG	EPA 6020B	13-Nov-22	1	mg/L		
22K1229_B2K1390-BLK1	Tellurium dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00005	mg/L		
22K1229_B2K1390-BLK1	Thallium dissolved	<0.0000040	mg/L	F	REG	EPA 6020B	13-Nov-22	0.000004	mg/L		
22K1229_B2K1390-BLK1	Thorium dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00001	mg/L		
22K1229_B2K1390-BLK1	Tin dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00005	mg/L		
22K1229_B2K1390-BLK1	Titanium dissolved	<0.00020	mg/L	F	REG	EPA 6020B	13-Nov-22	0.0002	mg/L		
22K1229_B2K1390-BLK1	Tungsten dissolved	<0.00020	mg/L	F	REG	EPA 6020B	13-Nov-22	0.0002	mg/L		
22K1229_B2K1390-BLK1	Uranium dissolved	<0.0000010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.000001	mg/L		
22K1229_B2K1390-BLK1	Vanadium dissolved	<0.00100	mg/L	F	REG	EPA 6020B	13-Nov-22	0.001	mg/L		
22K1229_B2K1390-BLK1	Zinc dissolved	<0.0010	mg/L	F	REG	EPA 6020B	13-Nov-22	0.001	mg/L		
22K1229_B2K1390-BLK1	Zirconium dissolved	<0.000020	mg/L	F	REG	EPA 6020B	13-Nov-22	0.00002	mg/L		
22K1229_B2K1390-BS1	Aluminum dissolved	101	%	F	SC	EPA 6020B	15-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Antimony dissolved	101	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Arsenic dissolved	104	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Barium dissolved	98	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Beryllium dissolved	105	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Bismuth dissolved	101	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Boron dissolved	103	%	F	SC	EPA 6020B	15-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Cadmium dissolved	100	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Calcium dissolved	105	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Chromium dissolved	103	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Cobalt dissolved	101	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Copper dissolved	101	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Iron dissolved	99	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Lead dissolved	100	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Lithium dissolved	107	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Magnesium dissolved	101	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Manganese dissolved	102	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Mercury dissolved	98	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Molybdenum dissolved	99	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Nickel dissolved	101	%	F	SC	EPA 6020B	15-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Phosphorus dissolved	102	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Potassium dissolved	102	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Selenium dissolved	100	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Silicon dissolved	106	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Silver dissolved	101	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Sodium dissolved	100	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Strontium dissolved	100	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80

CERTIFICATE OF ANALYSIS ▪ MEND-SFE QA/QC RESULTS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

Sulphate:

Certified Reference Material:	Parameter: Sulphate	% Recovery	Matrix Spike %	Units	QC Limits
STD Mineral Water (15.3 mg/L)	13.50	88.2%		%	80 - 120
Spiked Blank (19.61 mg/L)	17.00		86.7%	%	80 - 120

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
22K1229_B2K1390-BS1	Sulfur dissolved	104	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Tellurium dissolved	99	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Thallium dissolved	99	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Thorium dissolved	100	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Tin dissolved	103	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Titanium dissolved	102	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Tungsten dissolved	101	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Uranium dissolved	102	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Vanadium dissolved	100	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Zinc dissolved	100	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1390-BS1	Zirconium dissolved	101	%	F	SC	EPA 6020B	13-Nov-22	1	%	120	80
22K1229_B2K1517-BLK1	Phosphorus Total Dissolved	<0.0050	mg/L	F	REG	SM 4500-P F (2017)	15-Nov-22	0.005	mg/L		
22K1229_B2K1517-BLK2	Phosphorus Total Dissolved	<0.0050	mg/L	F	REG	SM 4500-P F (2017)	15-Nov-22	0.005	mg/L		
22K1229_B2K1517-BS1	Phosphorus Total Dissolved	108	%	F	SC	SM 4500-P F (2017)	15-Nov-22	1	%	115	85
22K1229_B2K1517-BS2	Phosphorus Total Dissolved	107	%	F	SC	SM 4500-P F (2017)	15-Nov-22	1	%	115	85
22K1229_B2K1532-BLK1	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	15-Nov-22	0.005	ug/L		
22K1229_B2K1532-BLK2	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	15-Nov-22	0.005	ug/L		
22K1229_B2K1532-BLK3	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	15-Nov-22	0.005	ug/L		
22K1229_B2K1532-BLK4	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	15-Nov-22	0.005	ug/L		
22K1229_B2K1532-BS1	Mercury dissolved	109	%	F	SC	EPA 245.7*	15-Nov-22	1	%	120	80
22K1229_B2K1532-BS2	Mercury dissolved	104	%	F	SC	EPA 245.7*	15-Nov-22	1	%	120	80
22K1229_B2K1532-BS3	Mercury dissolved	97	%	F	SC	EPA 245.7*	15-Nov-22	1	%	120	80
22K1229_B2K1532-BS4	Mercury dissolved	105	%	F	SC	EPA 245.7*	15-Nov-22	1	%	120	80
22K1229_B2K1532-DUP2	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	15-Nov-22	0.005	ug/L		

NOTES:
Job No: 22K1229

Abbreviations & Descriptions:
Method Blank (Blk): A blank sample that undergoes sample processing identical to that carried out for the test samples.
Method Blank results are used to assess contamination from the laboratory environment and reagents.

Duplicate (Dup): An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process.
Duplicates provide a measure of the analytical method's precision (reproducibility).

Blank Spike (BS): A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS).
Blank spikes provide a measure of the analytical method's accuracy.

Matrix Spike (MS): A second aliquot of sample is fortified with a known concentration of target analytes and carried through the entire analytical process.
Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.

Standard Reference Material (SRM): A homogenous material of similar matrix to the samples, certified for the parameter(s) listed.
Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples.

For all types of QC, specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

EQL = Estimated Quantitation Limits
PQL = Practical Quantitation Limits
UCL = Upper Control Limit
LCL = Lower Control Limit
BLK = Blank
BS = Blank Spike
MS = Matrix Spike
DUP = Duplicate

CERTIFICATE OF ANALYSIS ▪ COVER PAGE

Global ARD Testing Services Inc.

CLIENT INFORMATION	
Client:	Wood PLC
Project Manager:	Anna Klein
Mailing Address	2020 Winston Park Drive
	Oakville, ON; L6H 6X7
Contact No:	+1(905)403-3444

COMPANY INFORMATION	
Legal Name:	Global ARD Testing Services Inc.
Mailing Address:	6891 Antrim Avenue
	Burnaby, BC
	V5J 4M5
Contact No:	
	Main: (604) 428-2730
	Alternate: (604) 603-1359

PROJECT INFORMATION	
Project Name:	Springpole
Project Number:	ONS2104

REPORTING	
Global Project No:	1956 Columns CDP
Report Version:	1
Pages (Including Cover):	6
Report Title:	COA COL CDP x4 Springpole Samples (rec'd 12-Dec22
Analysis Reviewed By:	Prab Bhatia (Pbhatia@globalARDtesting.com)
Position:	Project Manager
Report Certified By:	Prab Bhatia
Signature:	Prab Bhatia

RESULTS		
Reported To:	**1**	Kristen Gault (kristen.gault@woodplc.com)
	2	Anna Klein (anna.klein@woodplc.com)
	3	
	4	
Date Reported:		
	Version-1:	February 24, 2023

INVOICE		
Submitted To:	**1**	Meghan Bertenshaw (meghan@firstmininggold.com)
	2	Kristen Gault (kristen.gault@woodplc.com)
	3	Anna Klein (anna.klein@woodplc.com)
	4	
Client PO No:		
Global Invoice No:		ARD1956-0523C
Date Submitted:		May 9, 2023

NOTES
All samples and pulps are stored at no charge for 90 days past reporting date.
Please contact the lab if you would like to continue storage past 90 days.
Storage charges will apply.

CERTIFICATE OF ANALYSIS ▪ SAMPLE DETAILS

Global
ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

SAMPLE RECEIPT INFO	
Date Samples Received:	December 12,2022
No of Samples Received:	4
Samples Received By:	Prab

ANALYTICAL INSTRUCTIONS	
From:	
	as per email Confirmation
Date:	December 12,2022

S. No.	Sample ID	Sample Description	Condition (Wet/Dry)	Wt. of Sample Rec'd (kg)	Global Notes (if any)
2a	Column 2 - Upper - CDP				
2b	Column 2 - Lower - CDP				
6a	Column 6 - Upper - CDP				
6b	Column 6 - Lower - CDP				

Total wt of sample rec'd (kg): **0.00**

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ ABA RESULTS

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

S. No.	Sample ID	Paste pH	Fizz Rating	Total Carbon	Total Inorganic C	$CaCO_3$ Equivalents*1	Total Sulphur	TS/TC Pkg	Sulphate Sulphur	Sulphide Sulphur	AP*3	Standard Sobek NP	NNP*4	NPR*5
	Units:	pH Units		wt %	wt %	kg CaCO3/tonne	wt %		wt %	wt %		kg CaCO3/tonne		
	Reported Detection Limit:	***0.1***		***0.02***	***0.02***	***1.7***	***0.01***		***0.01***	***0.01***	**0.3**	***0.5***		
2a	Column 2 - Upper - CDP	8.6	Moderate	4.24	4.10	341.7	1.49	0.35	0.03	1.46	45.6	347.1	301.5	7.6
2b	Column 2 - Lower - CDP	8.8	Moderate	4.29	4.26	355.0	1.18	0.28	0.02	1.16	36.3	344.0	307.8	9.5
6a	Column 6 - Upper - CDP	8.8	Strong	0.89	0.68	56.7	0.17	0.19	0.02	0.15	4.7	54.5	49.8	11.6
6b	Column 6 - Lower - CDP	8.8	Strong	0.66	0.41	34.2	0.15	0.23	0.01	0.14	4.4	42.9	38.5	9.8
	QUALITY ASSURANCE / QUALITY CONTROL													
Pulp Replicates:														
	%RPD													
Reference Material Analysis:														
Reference Material		1) NBM-1 2) KZK-1		OREAS 601	KZK-1		OREAS 601		RTS-3a			1) KZK-1 (Slight) 2) KZK-1 (Moderate)		
Ref. Material Certified Value		**1) 8.45 2) 8.80**		**0.29**	**0.92**		**1.12**		**1.10**			**1) 59.0 2) 64.8**		
Reference Material Results		1) N/A 2) 8.86		0.31	0.84		1.12		1.01			1) N/A 2) 62.9		
Acceptance Range:		***90% - 110%***		***90% - 110%***	***80% - 120%***		***90% - 110%***		***90% - 110%***			***90% - 110%***		
Method Blank Analysis:														
Method Blank Results				<0.01	<0.02		<0.01		<0.01					
GLOBAL SOP NO./METHOD:		*ARD-005*	*ARD-005*	*LECO*	*$HClO_4$ Leach CO_2 Coulometer*	*Calc.*	*LECO*	*Calc.*	*ARD-010 (HCl Leach)*	*Calc.*	*Calc.*	*ARD-007*	*Calc.*	*Calc.*

NOTES:
Job No: YVR2310142

Date of Analysis (24 h): October 6-7, 2022
pH of DI water used (pH units): 5.59
EC of DI water used (µS/cm): 0.11

METHODS:
Total Sulphur by Leco.
Total Inorganic Carbon (TIC): $HClO_4$ leach, evolved CO_2 analysed by CO_2 Coulometer.

ABBREVIATIONS:
R = Rep = Replicate (a replicate is a sub-sample scooped from a single pulp sample bag produced per client sample)
D = Dup = Duplicate (a duplicate is 2nd sub-pulp sample bag produced by processing a 2nd split of the client sample. A duplicate pulp sample is prepared only at client request.
EC = Electric Conductivity
NP = Neutralization Potential
Calc. = Calculation
IND = Indeterminate
COA = Certificate Of Analysis
N/A = Not Applicable
NR = Not Reported

CALCULATIONS:
*1 $CaCO_3$ Equivalents: Is based on TIC (Total Inorganic Carbon)
*2 Non-Extractable Sulphur: Total sulphur - (sulphate sulphur + sulphide sulphur)
*3 AP (Acid Potential): Sulphide-sulphur x 31.25
*4 NNP (Net Neutralization Potential): NP - AP
*5 NPR (Neutralization Potential Ratio): NP/AP

REFERENCES:
Sample Preparation: ASTM E877-08; MEND Report 1.20.1, Version 0 (2009)
ABA: Air-dried, jaw-crushed, split by riffling and pulverized to 85% passing 200 mesh (75 µm).
Surface Rinse-pH: MEND Report 1.20.1, Version 0 (2009).
Modified ABA (Sobek) NP: MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.
STD Sobek NP / Paste pH / Fizz Rating: Sobek, A.A., Schuller, W.A., Freeman, J.R. and Smith, R.M.; US EPA-600/2-78-054 (1978).
Paste pH / Fizz Rating: Sobek, A.A., Schuller, W.A., Freeman, J.R. and Smith, R.M.; US EPA-600/2-78-054 (1978).
Sulphate Sulphur: Based on MEND method using HCl leach. The S extracted is determined by analysing the extract for SO_4 using UV-Vis Spectrophotometer (STD Method 4500-SO42- E).
Sulphur Speciation: Sequential HCl and HNO_3 leach. The S extracted is determined by analysing the extract for SO_4 using UV-Vis Spectrophotometer (STD Method 4500-SO42- E).

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ METALS RESULTS BY AQUA REGIA DIGEST & ICP-MS ANALYSIS ON SOLIDS

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

S. No.	Sample ID	Method	Silver (Ag)	Aluminum (Al)	Arsenic (As)	Gold (Au)	Boron (B)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Calcium (Ca)	Cadmium (Cd)	Cerium (Ce)	Cobalt (Co)	Chromium (Cr)	Cesium (Cs)	r (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Hafnium (Hf)	Mercury (Hg)	Indium (In)	Potassium (K)	Lanthanum (La)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)
		Analyte																									
		Unit	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm
		MDL	0.01	0.01	0.1	0.0005	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05	0.05	0.02	0.005	0.005	0.01	0.2	0.1	0.01	5
		Sample Type																										
2a	Column 2 - Upper - CDP	Pulp	0.15	3.15	900.4	0.0208	15	51	1.07	0.02	6.47	0.11	3.59	87.1	448	40.31	40.0	7.90	8.75	0.13	0.32	0.04	0.023	1.24	1.5	28.8	6.62	2472
2b	Column 2 - Lower - CDP	Pulp	0.16	3.19	854.6	0.0350	18	65	1.33	0.02	6.64	0.10	3.55	79.5	415	56.52	36.9	8.13	8.61	0.14	0.36	0.04	0.023	1.81	1.5	31.2	6.42	2861
6a	Column 6 - Upper - CDP	Pulp	0.12	4.15	16.5	0.0165	13	39	0.89	0.08	2.80	0.03	25.18	26.8	63	30.81	23.0	4.98	14.74	0.13	0.67	0.01	0.020	2.75	10.9	125.9	4.70	544
6b	Column 6 - Lower - CDP	Pulp	0.11	4.72	16.3	0.0182	15	50	1.11	0.06	2.16	0.03	22.41	26.5	63	39.20	18.9	5.22	15.86	0.14	0.67	0.01	0.018	3.58	9.7	159.6	5.52	522
QUALITY ASSURANCE / QUALITY CONTROL																												
Pulp Replicates																												
		%RPD														#DIV/0!	#DIV/0!	####	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Reference Material																												
STD OREAS 601			49.23	0.810	302.1	0.770	<10	238	0.61	21.57	1.06	7.73	44.8	4.70	41.0	1.91	1051.4	2.18	5.13	0.09	0.75	0.320	1.698	0.250	20.4	7.90	0.190	448
True Value STD OREAS 601			**49.40**	**0.826**	**305.0**	**0.774**	**<10**	**2714**	**0.62**	**20.60**	**1.07**	**7.81**	**44.8**	**4.70**	**44.2**	**1.98**	**1010.0**	**2.20**	**5.17**	**<0.1**	**<1**	**<3**	**1.680**	**0.251**	**21.2**	**7.95**	**0.195**	**450**
% Difference			0%	-2%	-1%	0%			-2%	5%	-1%	-1%	0%	0%	-7%	-4%	4%	-1%	-1%				1%	0%	-4%	-1%	-3%	0%
Method Blank:																												
Method Blank			<0.01	<0.01	<0.1	<0.0005	<10	<10	<0.05	<0.01	<0.01	<0.01	<0.02	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.02	<0.005	<0.005	<0.01	<0.2	<0.1	<0.01	<5

Notes:
Job No: YVR2310142

Analytical Methods (IMS-130):
A 0.5 g of pulp sample is leached in hot (95°C) 3:1 aqua regia digestion followed by ICP Mass Spec analysis.
Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5 g).
Refractory and graphitic samples can limit Au solubility.

Abbreviations:
R / Rep = Replicate (a replicate is a sub-sample scooped from a single sample bag produced per client sample)
D / Dup = Duplicate (a duplicate is 2nd sub-sample bag produced by processing a second split of the original client sample received)
MDL = Measurable Detection Limit
COA: Certificate Of Analysis.
IND = Indeterminate
NR: Not reported in COA

On Cerffified Reference Material and Tolerance:
Any one element in a run reporting outside tolerance limits does not constitute failure of the standard.
As per Certificate of Analysis (COA): All values indicated are Certified. Values indicated in green are indicative only.
NR = Not Reported (in the Certificate Of Analysis).

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ METALS RESULTS BY AQUA REGIA DIGEST & ICP-MS ANALYSIS ON SOLIDS

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

S. No.	Sample ID	Method	Molybdenum (Mo)	Sodium (Na)	Niobium (Nb)	Nickel (Ni)	Phosphorous (P)	Lead (Pb)	Rubidium (Rb)	Rhenium (Re)	Sulphur (S)	Antimony (Sb)	Scandium (Sc)	Selenium (Se)	Tin (Sn)	m (Sr)	Tantalum (Ta)	Tellurium (Te)	Thorium (Th)	Titanium (Ti)	Thallium (Tl)	Uranium (U)	Vandium (V)	n (W)	Yttrium (Y)	Zinc (Zn)	Zirconium (Zr)
		Analyte	Molybdenum (Mo)	Sodium (Na)	Niobium (Nb)	Nickel (Ni)	Phosphorous (P)	Lead (Pb)	Rubidium (Rb)	Rhenium (Re)	Sulphur (S)	Antimony (Sb)	Scandium (Sc)	Selenium (Se)	Tin (Sn)	m (Sr)	Tantalum (Ta)	Tellurium (Te)	Thorium (Th)	Titanium (Ti)	Thallium (Tl)	Uranium (U)	Vandium (V)	n (W)	Yttrium (Y)	Zinc (Zn)	Zirconium (Zr)
		Unit	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		MDL	0.05	0.01	0.05	0.2	10	0.2	0.1	0.001	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05	1	0.5
		Sample Typ																									
2a	Column 2 - Upper - CDP	Pulp	4.90	<0.01	<0.05	517.7	367	7.1	122.1	<0.001	1.52	2.68	12.6	0.5	<0.2	417.8	<0.01	0.15	0.3	0.13	2.3	0.12	73	0.19	3.79	83	11.5
2b	Column 2 - Lower - CDP	Pulp	2.39	<0.01	<0.05	489.6	360	7.5	179.2	<0.001	1.20	2.48	12.3	0.7	0.4	349	<0.01	0.18	<0.2	0.184	3.45	0.13	74	0.24	3.73	96	13.1
6a	Column 6 - Upper - CDP	Pulp	3.47	0.02	<0.05	44.4	809	3.5	313.8	0.001	0.20	0.4	9.8	<0.2	0.2	63.9	<0.01	0.13	1.3	0.214	5.03	0.34	103	0.17	6.38	55	22.8
6b	Column 6 - Lower - CDP	Pulp	5.01	0.02	<0.05	44.2	974	3.1	404.3	<0.001	0.18	0.37	10.4	<0.2	0.2	51	<0.01	0.12	1.1	0.266	6.47	0.34	111	0.19	5.87	64	22.8
QUALITY ASSURANCE / QUALITY CONTROL																											
Pulp Replicates																											
		%RPD	#DIV/0!	#DIV/0!	#DIV/0!	#####	#DIV/0!	#####		#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!	#####	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#####	#DIV/0!
Reference Material																											
STD OREAS 601			3.73	0.07	0.27	23.1	356	282.0	14.9	<0.001	1.04	20.14	1.70	12.0	2.50	33.3	<0.01	15.81	6.4	0.008	0.74	1.88	8.00	1.00	5.86	1294	27.0
True Value STD OREAS 601			**3.80**	**0.07**	**<1**	**24.1**	**360**	**283.0**	**16.0**	**<1**	**1.04**	**21.10**	**1.83**	**12.3**	**2.61**	**36.2**	**0.099**	**15.40**	**6.7**	**0.010**	**0.74**	**1.94**	**9.24**	**1.06**	**5.87**	**1293**	**26.7**
% Difference			-2%			-4%	-1%	0%	-7%		0%	-5%	-7%	-2%	-4%	-8%		3%	-4%	-22%	0%	-3%	-13%	-6%	0%	0%	1%
Method Blank:																											
Method Blank			<0.05	<0.01	<0.05	<0.2	<10	<0.2	<0.1	<0.001	<0.01	<0.05	<0.1	<0.2	<0.2	<0.2	<0.01	<0.01	<0.2	<0.005	<0.02	<0.05	<1	<0.05	<0.05	<1	<0.5

CERTIFICATE OF ANALYSIS ▪ MEND SHAKE FLASK EXTRACTION RESULTS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

Parameter	Method	Unit	RDL	2a	2b	6a	6b	Method Blank
				Column 2 - Upper - CDP	Column 2 - Lower - CDP	Column 6 - Upper - CDP	Column 6 - Lower - CDP	
Weight of dry sample used	Weighing Scale	g	0.01	1000	1000	1000	1000	N/A
Volume of DI water used	Graduated Cylinder	mL	0.50	3000	3000	3000	3000	3000
On filtered samples (using 0.45 µm filter paper):								
pH	Meter	pH units	0.01	6.8	7.0	7.0	7.0	5.9
EC	Meter	µS/cm	1	60	63	64	64	1.43
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5	6.4	6.7	6.9	6.7	
Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5	31.5	31.1	36.1	35.1	
Sulphate	Gravimetric	mg/L	1	5.2	3.9	3.6	3.2	
Chloride	IC	mg/L	0.1	0.2	1.0	0.3	0.3	
Fluoride	IC	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	
Dissolved Phosphorous	IC	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	
Dissolved Hg	CVAF	Ug/L	0.005	0.023	0.017	0.009	0.010	
Dissolved Metals Analysis by ICP-MS:								
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.125	29.2	28.0	26.7	25.6	<0.125
Aluminum Dissolved	ICP-MS	mg/L	0.001	0.0626	0.0617	0.128	0.123	<0.0010
Antimony Dissolved	ICP-MS	mg/L	0.00005	0.017	0.0162	0.000657	0.000689	<0.000050
Arsenic Dissolved	ICP-MS	mg/L	0.00005	0.211	0.157	0.0398	0.0525	<0.000050
Barium Dissolved	ICP-MS	mg/L	0.0001	0.00284	0.00254	0.0125	0.0121	<0.00010
Beryllium Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Boron Dissolved	ICP-MS	mg/L	0.002	0.002	0.0124	0.0033	0.0089	<0.0020
Cadmium Dissolved	ICP-MS	mg/L	0.000002	0.0000027	0.0000035	0.0000027	0.000004	<0.0000020
Calcium Dissolved	ICP-MS	mg/L	0.05	7.2	6.7	9.5	9.0	<0.050
Chromium Dissolved	ICP-MS	mg/L	0.000	0.0002	0.0002	0.0002	0.0002	0.000
Cobalt Dissolved	ICP-MS	mg/L	0.000005	0.0000856	0.000113	0.0000811	0.000109	<0.0000050
Copper Dissolved	ICP-MS	mg/L	0.0001	0.00023	0.00027	0.00034	0.00041	<0.00010
Iron Dissolved	ICP-MS	mg/L	0.002	0.0027	0.0026	0.0112	0.0068	<0.0020
Lead Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium Dissolved	ICP-MS	mg/L	0.000	0.0006	0.0009	0.0014	0.0020	<0.000050
Magnesium Dissolved	ICP-MS	mg/L	0.005	2.7	2.7	0.7	0.8	<0.0050
Manganese Dissolved	ICP-MS	mg/L	0.00005	0.0256	0.0426	0.0199	0.0166	<0.000050
Mercury Dissolved	ICP-MS	ug/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.020
Molybdenum Dissolved	ICP-MS	mg/L	0.00001	0.000226	0.00023	0.000164	0.000224	<0.000010
Nickel Dissolved	ICP-MS	mg/L	0.00004	0.00157	0.00148	0.0002	0.000228	<0.000040
Phosphorus Dissolved	ICP-MS	mg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010
Potassium Dissolved	ICP-MS	mg/L	0.02	1.26	1.57	2.93	3.23	<0.020
Selenium Dissolved	ICP-MS	mg/L	0.0001	0.00017	0.00023	0.00016	0.00014	<0.00010
Silicon Dissolved	ICP-MS	mg/L	0.1	0.28	0.26	0.68	0.72	<0.10
Silver Dissolved	ICP-MS	mg/L	0.00001	<0.000010	0.00103	<0.000010	0.000121	<0.000010
Sodium Dissolved	ICP-MS	mg/L	0.02	0.098	0.54	0.282	0.585	<0.020
Strontium Dissolved	ICP-MS	mg/L	0.0001	0.0475	0.0387	0.106	0.112	<0.00010
Sulphur Dissolved	ICP-MS	mg/L	1.00000	<1.00	<1.00	<1.00	<1.00	<1.00
Tellurium Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Thallium Dissolved	ICP-MS	mg/L	0.000004	0.0000349	0.0000304	0.000043	0.0000394	<0.0000040
Thorium Dissolved	ICP-MS	mg/L	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin Dissolved	ICP-MS	mg/L	0.00005	0.000056	<0.000050	<0.000050	<0.000050	<0.000050
Titanium Dissolved	ICP-MS	mg/L	0.0002	<0.00020	<0.00020	0.00041	<0.00020	<0.00020
Tungsten Dissolved	ICP-MS	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Uranium Dissolved	ICP-MS	mg/L	0.000001	0.0000093	0.0000086	0.000104	0.00013	<0.0000010
Vanadium Dissolved	ICP-MS	mg/L	0.001	<0.00100	<0.00100	0.00107	0.00128	<0.00100
Zinc Dissolved	ICP-MS	mg/L	0.00	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010
Zirconium Dissolved	ICP-MS	mg/L	0.000	<0.000020	<0.000020	<0.000020	0.000	<0.000020
Ion Balance:								
Major Anions	Calc.	meq/L		0.74	0.73	0.81	0.78	
Major Cations	Calc.	meq/L		0.64	0.64	0.64	0.64	
Difference	Calc.	meq/L		0.11	0.09	0.17	0.14	
Balance (%)	Calc.	%		7.7%	6.5%	11.4%	9.7%	
			Shake Flask Extract ID:	*23A1342-01*	*23A1342-02*	*23A1342-03*	*23A1342-04*	*23A1342-05*

CERTIFICATE OF ANALYSIS ▪ MEND SHAKE FLASK EXTRACTION RESULTS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

Parameter	Method	Unit	RDL	2a	2b	6a	6b	Method Blank
				Column 2 - Upper - CDP	Column 2 - Lower - CDP	Column 6 - Upper - CDP	Column 6 - Lower - CDP	

NOTES:
Job No: 23A1342
Date of Analysis (24 h): December 12-13,2022 1:15pm
pH of DI water used (pH Units): 5.88
EC of DI water used (µS/cm): 1.39

ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliquot).
D / Dup = Duplicate (which involves the analysis of a separate SF extract, produced by processing a secopnd split of the original client sample received).
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
NA = Not Applicable.
NR = Not Reported.
mg/L = Milligrams per Litre

REFERENCE:
Prediction Manual for Drainage Chemistry from Sulphidic Geologic Material, MEND Report 1.20.1; Version 0 - Dec. 2009. Section 11.5; P 11 (8-9).
Extraction Method used: Using gyratory shaker for 24 h (± 2 h; gentle agitation).
Liquid: Solid ratio used: 3: 1; L: S; 750 mL DI H_2O: 250 g of crushed sample (85% passing 1/4 inch - i.e. 6.3 mm)

Sulphate:

Certified Reference Material:	Parameter: Sulphate	% Recovery	Matrix Spike %	Units	QC Limits
STD Mineral Water (15.3 mg/L)	13.60	88.9%		%	80 - 120
Spiked Blank (19.61 mg/L)	17.70		90.3%	%	80 - 120

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
23A1342_B3A1471-BLK1	Chloride	<0.10	mg/L	T	REG	SM 4110 B (2020)	17-Jan-23	0.1	mg/L		
23A1342_B3A1471-BLK1	Fluoride	<0.10	mg/L	T	REG	SM 4110 B (2020)	17-Jan-23	0.1	mg/L		
23A1342_B3A1471-BLK2	Chloride	<0.10	mg/L	T	REG	SM 4110 B (2020)	17-Jan-23	0.1	mg/L		
23A1342_B3A1471-BLK2	Fluoride	<0.10	mg/L	T	REG	SM 4110 B (2020)	17-Jan-23	0.1	mg/L		
23A1342_B3A1471-BS1	Chloride	100	%	T	SC	SM 4110 B (2020)	17-Jan-23	1	%	110	90
23A1342_B3A1471-BS1	Fluoride	100	%	T	SC	SM 4110 B (2020)	17-Jan-23	1	%	108	88
23A1342_B3A1471-BS2	Chloride	101	%	T	SC	SM 4110 B (2020)	17-Jan-23	1	%	110	90
23A1342_B3A1471-BS2	Fluoride	102	%	T	SC	SM 4110 B (2020)	17-Jan-23	1	%	108	88
23A1342_B3A1471-DUP2	Chloride	0.18	mg/L	T	REG	SM 4110 B (2020)	17-Jan-23	0.1	mg/L		
23A1342_B3A1471-DUP2	Fluoride	<0.10	mg/L	T	REG	SM 4110 B (2020)	17-Jan-23	0.1	mg/L		
23A1342_B3A1471-MS2	Chloride	15.9	mg/L	T	REG	SM 4110 B (2020)	17-Jan-23	0.1	mg/L	125	75
23A1342_B3A1471-MS2	Fluoride	3.9	mg/L	T	REG	SM 4110 B (2020)	17-Jan-23	0.1	mg/L	125	75
23A1342_B3A1491-BLK1	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	17-Jan-23	0.005	ug/L		
23A1342_B3A1491-BLK2	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	17-Jan-23	0.005	ug/L		
23A1342_B3A1491-BLK3	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	17-Jan-23	0.005	ug/L		
23A1342_B3A1491-BLK4	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	17-Jan-23	0.005	ug/L		
23A1342_B3A1491-BS1	Mercury dissolved	98	%	F	SC	EPA 245.7*	17-Jan-23	1	%	120	80
23A1342_B3A1491-BS2	Mercury dissolved	94	%	F	SC	EPA 245.7*	17-Jan-23	1	%	120	80
23A1342_B3A1491-BS3	Mercury dissolved	93	%	F	SC	EPA 245.7*	17-Jan-23	1	%	120	80
23A1342_B3A1491-BS4	Mercury dissolved	98	%	F	SC	EPA 245.7*	17-Jan-23	1	%	120	80
23A1342_B3A1691-BLK1	Phosphorus Total Dissolved	<0.0050	mg/L	F	REG	SM 4500-P F (2021)	19-Jan-23	0.005	mg/L		
23A1342_B3A1691-BLK2	Phosphorus Total Dissolved	<0.0050	mg/L	F	REG	SM 4500-P F (2021)	19-Jan-23	0.005	mg/L		
23A1342_B3A1691-BS1	Phosphorus Total Dissolved	100	%	F	SC	SM 4500-P F (2021)	19-Jan-23	1	%	115	85
23A1342_B3A1691-BS2	Phosphorus Total Dissolved	99	%	F	SC	SM 4500-P F (2021)	19-Jan-23	1	%	115	85
23A1342_B3A1691-DUP1	Phosphorus Total Dissolved	0.0201	mg/L	F	REG	SM 4500-P F (2021)	19-Jan-23	0.005	mg/L		
23A1342_B3A1691-MS1	Phosphorus Total Dissolved	0.173	mg/L	F	REG	SM 4500-P F (2021)	19-Jan-23	0.005	mg/L	125	70
23A1342_B3A1800-BLK1	Aluminum dissolved	<0.0010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.001	mg/L		
23A1342_B3A1800-BLK1	Antimony dissolved	<0.000050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00005	mg/L		
23A1342_B3A1800-BLK1	Arsenic dissolved	<0.000050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00005	mg/L		
23A1342_B3A1800-BLK1	Barium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.0001	mg/L		
23A1342_B3A1800-BLK1	Beryllium dissolved	<0.000010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00001	mg/L		
23A1342_B3A1800-BLK1	Bismuth dissolved	<0.000010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00001	mg/L		
23A1342_B3A1800-BLK1	Boron dissolved	<0.0020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.002	mg/L		
23A1342_B3A1800-BLK1	Cadmium dissolved	<0.0000020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.000002	mg/L		
23A1342_B3A1800-BLK1	Calcium dissolved	<0.050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.05	mg/L		
23A1342_B3A1800-BLK1	Chromium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.0001	mg/L		
23A1342_B3A1800-BLK1	Cobalt dissolved	<0.0000050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.000005	mg/L		
23A1342_B3A1800-BLK1	Copper dissolved	<0.00010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.0001	mg/L		
23A1342_B3A1800-BLK1	Iron dissolved	<0.0020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.002	mg/L		
23A1342_B3A1800-BLK1	Lead dissolved	<0.000050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00005	mg/L		
23A1342_B3A1800-BLK1	Lithium dissolved	<0.000050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00005	mg/L		
23A1342_B3A1800-BLK1	Magnesium dissolved	<0.0050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.005	mg/L		
23A1342_B3A1800-BLK1	Manganese dissolved	<0.000050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00005	mg/L		
23A1342_B3A1800-BLK1	Mercury dissolved	<0.000020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00002	mg/L		
23A1342_B3A1800-BLK1	Molybdenum dissolved	<0.000010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00001	mg/L		
23A1342_B3A1800-BLK1	Nickel dissolved	<0.000040	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00004	mg/L		
23A1342_B3A1800-BLK1	Phosphorus dissolved	<0.010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.01	mg/L		
23A1342_B3A1800-BLK1	Potassium dissolved	<0.020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.02	mg/L		
23A1342_B3A1800-BLK1	Selenium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.0001	mg/L		
23A1342_B3A1800-BLK1	Silicon dissolved	<0.10	mg/L	F	REG	EPA 6020B	20-Jan-23	0.1	mg/L		
23A1342_B3A1800-BLK1	Silver dissolved	<0.000010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00001	mg/L		
23A1342_B3A1800-BLK1	Sodium dissolved	<0.020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.02	mg/L		
23A1342_B3A1800-BLK1	Strontium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.0001	mg/L		
23A1342_B3A1800-BLK1	Sulfur dissolved	<1.00	mg/L	F	REG	EPA 6020B	20-Jan-23	1	mg/L		
23A1342_B3A1800-BLK1	Tellurium dissolved	<0.000050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00005	mg/L		
23A1342_B3A1800-BLK1	Thallium dissolved	<0.0000040	mg/L	F	REG	EPA 6020B	20-Jan-23	0.000004	mg/L		
23A1342_B3A1800-BLK1	Thorium dissolved	<0.000010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00001	mg/L		
23A1342_B3A1800-BLK1	Tin dissolved	<0.000050	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00005	mg/L		
23A1342_B3A1800-BLK1	Titanium dissolved	<0.00020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.0002	mg/L		
23A1342_B3A1800-BLK1	Tungsten dissolved	<0.00020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.0002	mg/L		
23A1342_B3A1800-BLK1	Uranium dissolved	<0.0000010	mg/L	F	REG	EPA 6020B	20-Jan-23	0.000001	mg/L		
23A1342_B3A1800-BLK1	Vanadium dissolved	<0.00100	mg/L	F	REG	EPA 6020B	20-Jan-23	0.001	mg/L		
23A1342_B3A1800-BLK1	Zinc dissolved	0.0018	mg/L	F	REG	EPA 6020B	20-Jan-23	0.001	mg/L		
23A1342_B3A1800-BLK1	Zirconium dissolved	<0.000020	mg/L	F	REG	EPA 6020B	20-Jan-23	0.00002	mg/L		
23A1342_B3A1800-BS1	Aluminum dissolved	102	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Antimony dissolved	104	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Arsenic dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Barium dissolved	100	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Beryllium dissolved	100	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Bismuth dissolved	100	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Boron dissolved	99	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Cadmium dissolved	100	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Calcium dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80

CERTIFICATE OF ANALYSIS ▪ MEND-SFE QA/QC RESULTS

Global
ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 Columns CDP
CLIENT: Wood PLC
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 1

Sulphate:

Certified Reference Material:	Parameter: Sulphate	% Recovery	Matrix Spike %	Units	QC Limits
STD Mineral Water (15.3 mg/L)	13.60	88.9%		%	80 - 120
Spiked Blank (19.61 mg/L)	17.70		90.3%	%	80 - 120

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
23A1342_B3A1800-BS1	Chromium dissolved	102	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Cobalt dissolved	102	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Copper dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Iron dissolved	102	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Lead dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Lithium dissolved	97	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Magnesium dissolved	100	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Manganese dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Mercury dissolved	104	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Molybdenum dissolved	98	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Nickel dissolved	99	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Phosphorus dissolved	98	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Potassium dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Selenium dissolved	102	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Silicon dissolved	103	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Silver dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Sodium dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Strontium dissolved	103	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Sulfur dissolved	99	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Tellurium dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Thallium dissolved	98	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Thorium dissolved	100	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Tin dissolved	99	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Titanium dissolved	102	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Tungsten dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Uranium dissolved	101	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Vanadium dissolved	100	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Zinc dissolved	102	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80
23A1342_B3A1800-BS1	Zirconium dissolved	102	%	F	SC	EPA 6020B	20-Jan-23	1	%	120	80

NOTES:
Job No: 23A1342

Abbreviations & Descriptions:
Method Blank (Blk): A blank sample that undergoes sample processing identical to that carried out for the test samples.
Method Blank results are used to assess contamination from the laboratory environment and reagents.

Duplicate (Dup): An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process.
Duplicates provide a measure of the analytical method's precision (reproducibility).

Blank Spike (BS): A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS).
Blank spikes provide a measure of the analytical method's accuracy.

Matrix Spike (MS): A second aliquot of sample is fortified with a known concentration of target analytes and carried through the entire analytical process.
Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.

Standard Reference Material (SRM): A homogenous material of similar matrix to the samples, certified for the parameter(s) listed.
Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples.

For all types of QC, specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

EQL = Estimated Quantitation Limits
PQL = Practical Quantitation Limits
UCL = Upper Control Limit
LCL = Lower Control Limit
BLK = Blank
BS = Blank Spike
MS = Matrix Spike
DUP = Duplicate

Appendix E

QEMSCAN Results

QEMSCAN DATA

prepared for:

Gold Canyon Resouces

Project 19032-01
MI5063-MAR22
April 4, 2022

Prepared by:

Margot Aldis/Chris Gunning
Mineralogist/Senior Mineralogist

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy) (METH# 8.11.1) used by SGS Minerals Services

SGS Canada
P.O. Box 4300, 185 Concession Street, Lakefield, Ontario, Canada K0L 2H0
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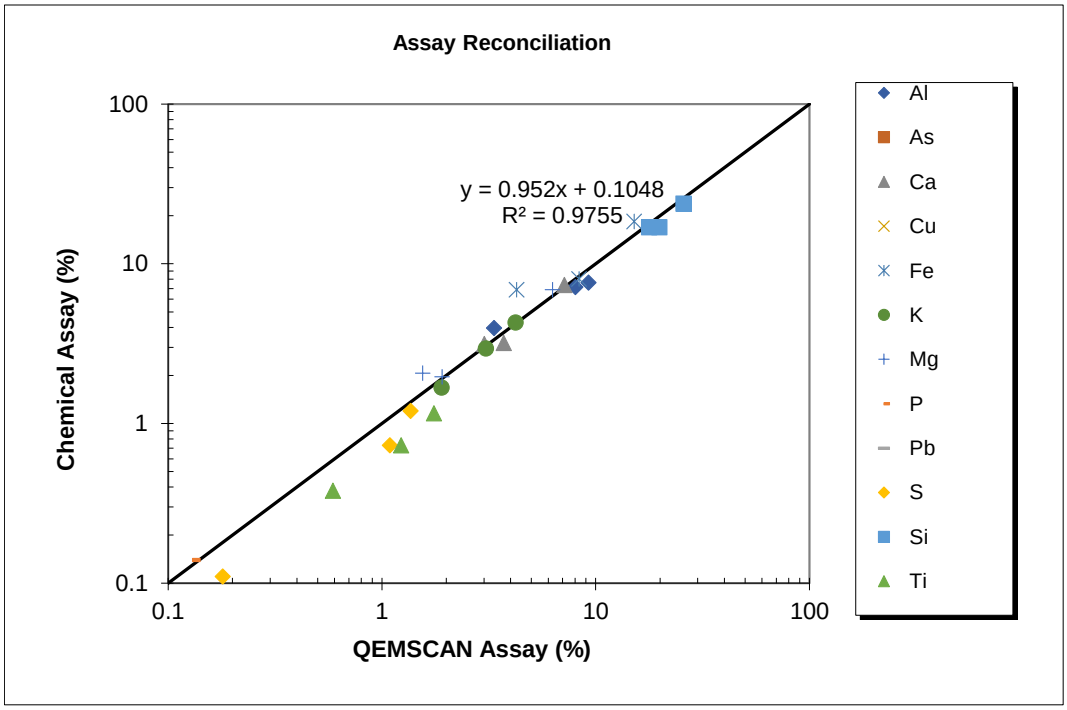
Member of the SGS Group (SGS SA)

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Assay Reconciliation



Sample	Column 1	Column 2	Column 3 HLS Sink
Element	**-300/+3um**	**-300/+3um**	**-300/+3um**
Al (QEMSCAN)	9.25	3.34	8.04
Al (Chemical)	7.62	3.97	7.14
As (QEMSCAN)	0.09	0.08	0.06
As (Chemical)	0.00	0.01	0.14
Ca (QEMSCAN)	3.01	7.13	3.71
Ca (Chemical)	3.15	7.36	3.20
Cu (QEMSCAN)	0.00	0.00	0.01
Cu (Chemical)	0.00	0.00	0.01
Fe (QEMSCAN)	4.26	8.36	15.1
Fe (Chemical)	6.88	8.04	18.4
K (QEMSCAN)	4.22	1.90	3.06
K (Chemical)	4.29	1.68	2.95
Mg (QEMSCAN)	1.55	6.29	1.91
Mg (Chemical)	2.07	6.88	1.96
P (QEMSCAN)	0.13	0.04	0.08
P (Chemical)	0.14	0.04	0.07
Pb (QEMSCAN)	0.01	0.00	0.00
Pb (Chemical)	0.00	0.00	0.00
S (QEMSCAN)	0.18	1.36	1.09
S (Chemical)	0.11	1.20	0.73
Si (QEMSCAN)	25.7	19.8	17.8
Si (Chemical)	23.8	16.9	17.0
Ti (QEMSCAN)	1.23	0.59	1.75
Ti (Chemical)	0.73	0.38	1.16
Zn (QEMSCAN)	0.01	0.00	0.06
Zn (Chemical)	0.01	0.01	0.02

Gold Canyon Resouces
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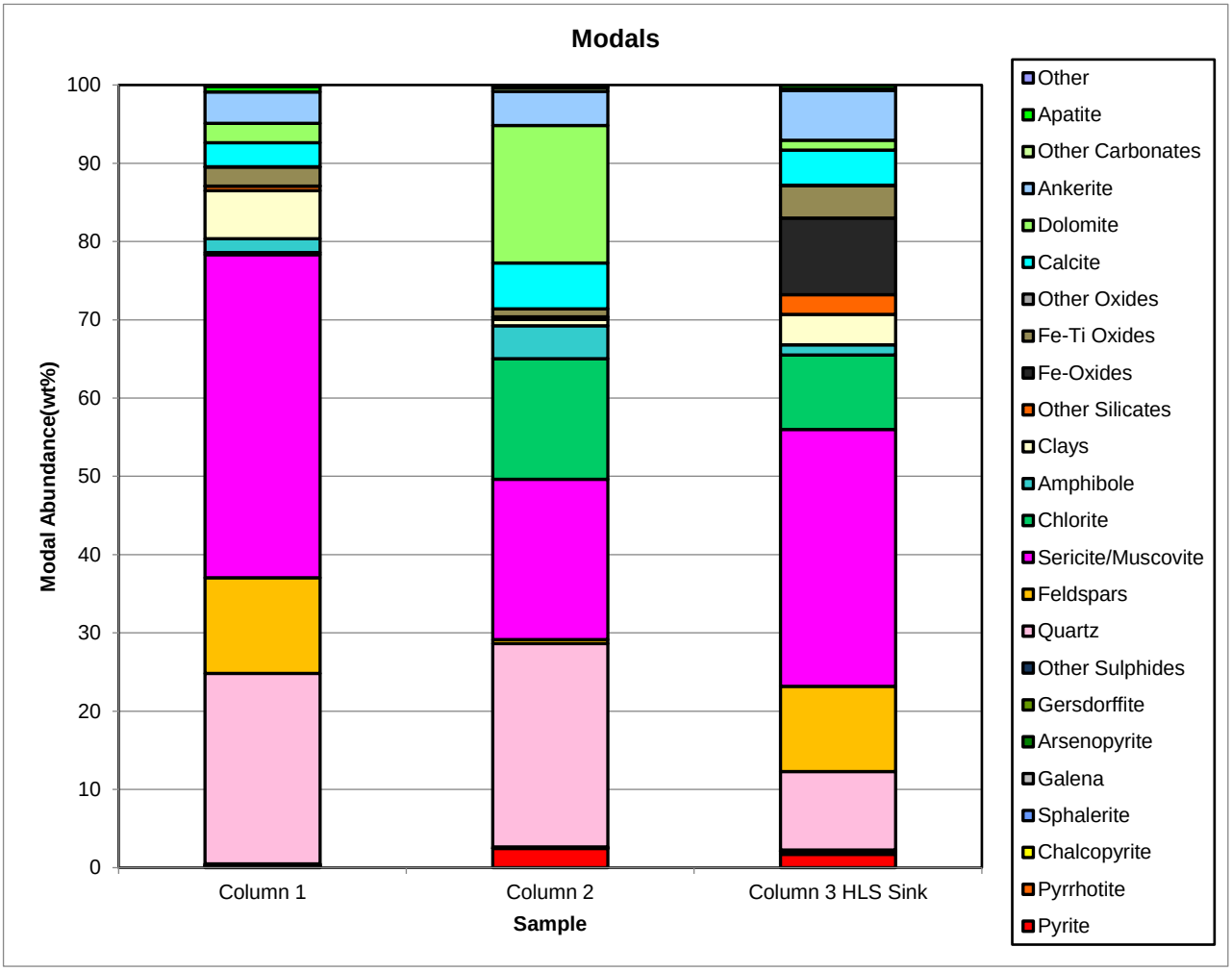

Gold Canyon Resouces
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High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

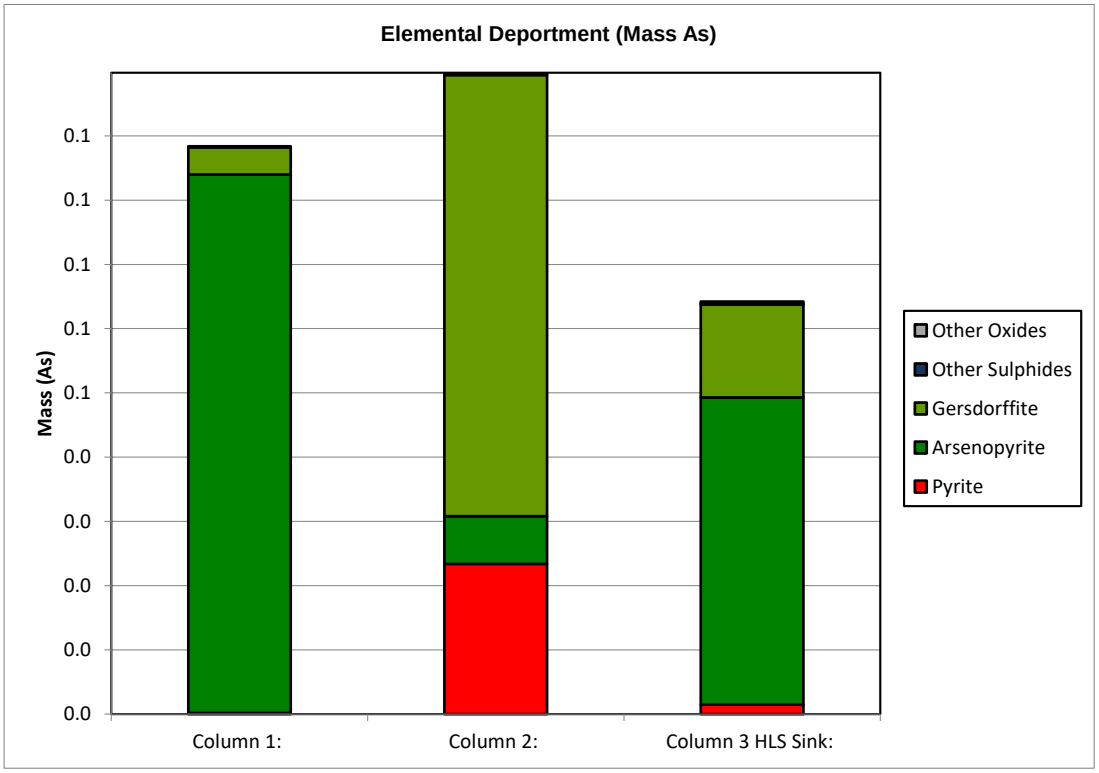
Modals

Survey		**19032-01 / MI5063-MAR22**		
Project		**Gold Canyon Resouces**		
Sample		Column 1	Column 2	Column 3 HLS Sink
Fraction		-300/+3um	-300/+3um	-300/+3um
Mass Size Distribution (%)		100.0	100.0	100.0
Calculated ESD Particle Size		27	29	34
		Sample	**Sample**	**Sample**
Mineral Mass (%)	Pyrite	0.23	2.47	1.69
	Pyrrhotite	0.00	0.00	0.38
	Chalcopyrite	0.02	0.01	0.04
	Sphalerite	0.01	0.00	0.01
	Galena	0.01	0.00	0.00
	Arsenopyrite	0.19	0.02	0.10
	Gersdorffite	0.01	0.15	0.03
	Other Sulphides	0.00	0.00	0.00
	Quartz	24.4	26.0	10.0
	Feldspars	12.2	0.48	10.9
	Sericite/Muscovite	41.3	20.5	32.8
	Chlorite	0.28	15.4	9.50
	Amphibole	1.76	4.18	1.32
	Clays	6.15	0.83	3.90
	Other Silicates	0.56	0.27	2.51
	Fe-Oxides	0.02	0.06	9.79
	Fe-Ti Oxides	2.45	1.00	4.17
	Other Oxides	0.01	0.00	0.01
	Calcite	3.06	5.86	4.49
	Dolomite	2.49	17.6	1.28
	Ankerite	4.01	4.35	6.35
	Other Carbonates	0.00	0.49	0.20
	Apatite	0.72	0.23	0.45
	Other	0.15	0.07	0.05
	Total	100.0	100.0	100.0
Mean Grain Size by Frequency (µm)	Pyrite	23	57	29
	Pyrrhotite	9	9	16
	Chalcopyrite	17	11	15
	Sphalerite	10	0	9
	Galena	11	9	9
	Arsenopyrite	21	9	25
	Gersdorffite	10	20	15
	Other Sulphides	9	13	9
	Quartz	19	25	17
	Feldspars	18	11	17
	Sericite/Muscovite	16	17	17
	Chlorite	9	16	20
	Amphibole	10	11	9
	Clays	10	10	10
	Other Silicates	10	9	11
	Fe-Oxides	11	21	39
	Fe-Ti Oxides	16	15	28
	Other Oxides	14	9	9
	Calcite	11	11	11
	Dolomite	11	15	10
	Ankerite	16	13	17
	Other Carbonates	9	36	10
	Apatite	11	12	11
	Other	10	10	9

Gold Canyon Resouces
19032-01
MI5063-MAR22

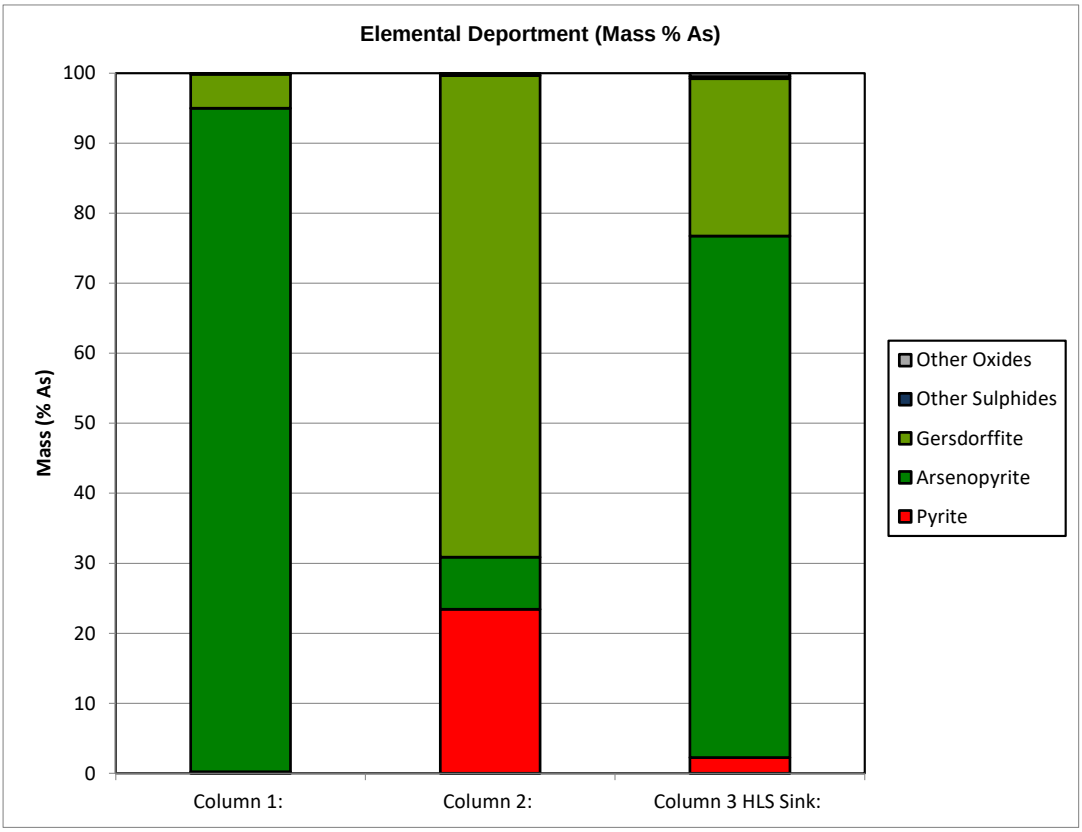
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

As Deportment - Absolute



	Column 1:	Column 2:	Column 3 HLS Sink:
Pyrite	0.00	0.02	0.00
Arsenopyrite	0.08	0.01	0.05
Gersdorffite	0.00	0.07	0.01
Other Sulphides	0.00	0.00	0.00
Other Oxides	0.00	0.00	0.00
Total	0.09	0.10	0.06

As Deportment - Normalized

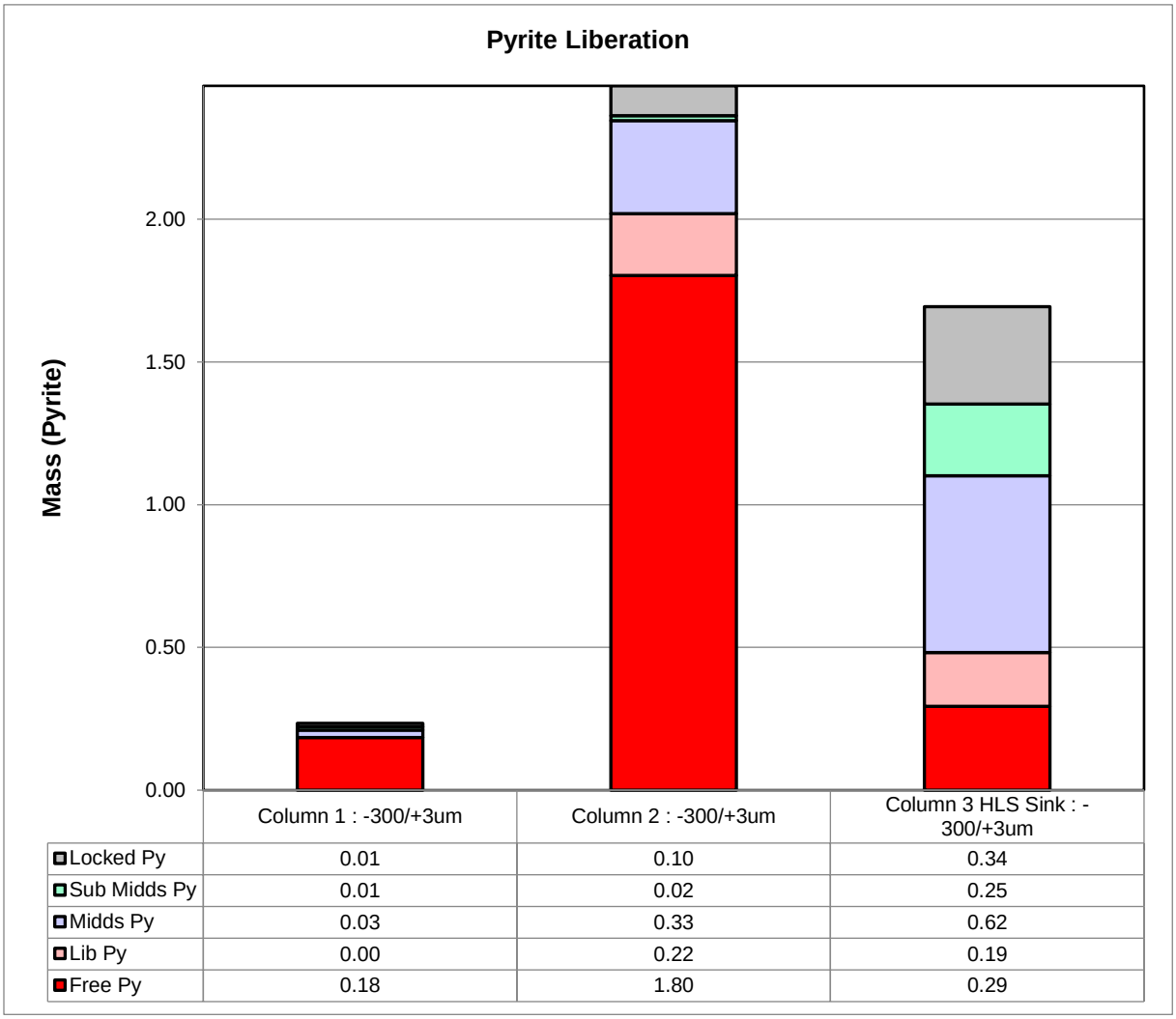


	Column 1:	Column 2:	Column 3 HLS Sink:
Pyrite	0.21	23.4	2.27
Arsenopyrite	94.8	7.44	74.5
Gersdorffite	4.83	68.8	22.5
Other Sulphides	0.17	0.36	0.30
Other Oxides	0.00	0.00	0.49
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Py	0.01	0.10	0.34
Sub Midds Py	0.01	0.02	0.25
Midds Py	0.03	0.33	0.62
Lib Py	0.00	0.22	0.19
Free Py	0.18	1.80	0.29

Absolute Mass of Pyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Py	0.18	1.80	0.29
Lib Py	0.00	0.22	0.19
Midds Py	0.03	0.33	0.62
Sub Midds Py	0.01	0.02	0.25
Locked Py	0.01	0.10	0.34
Total	0.23	2.47	1.69

Gold Canyon Resouces
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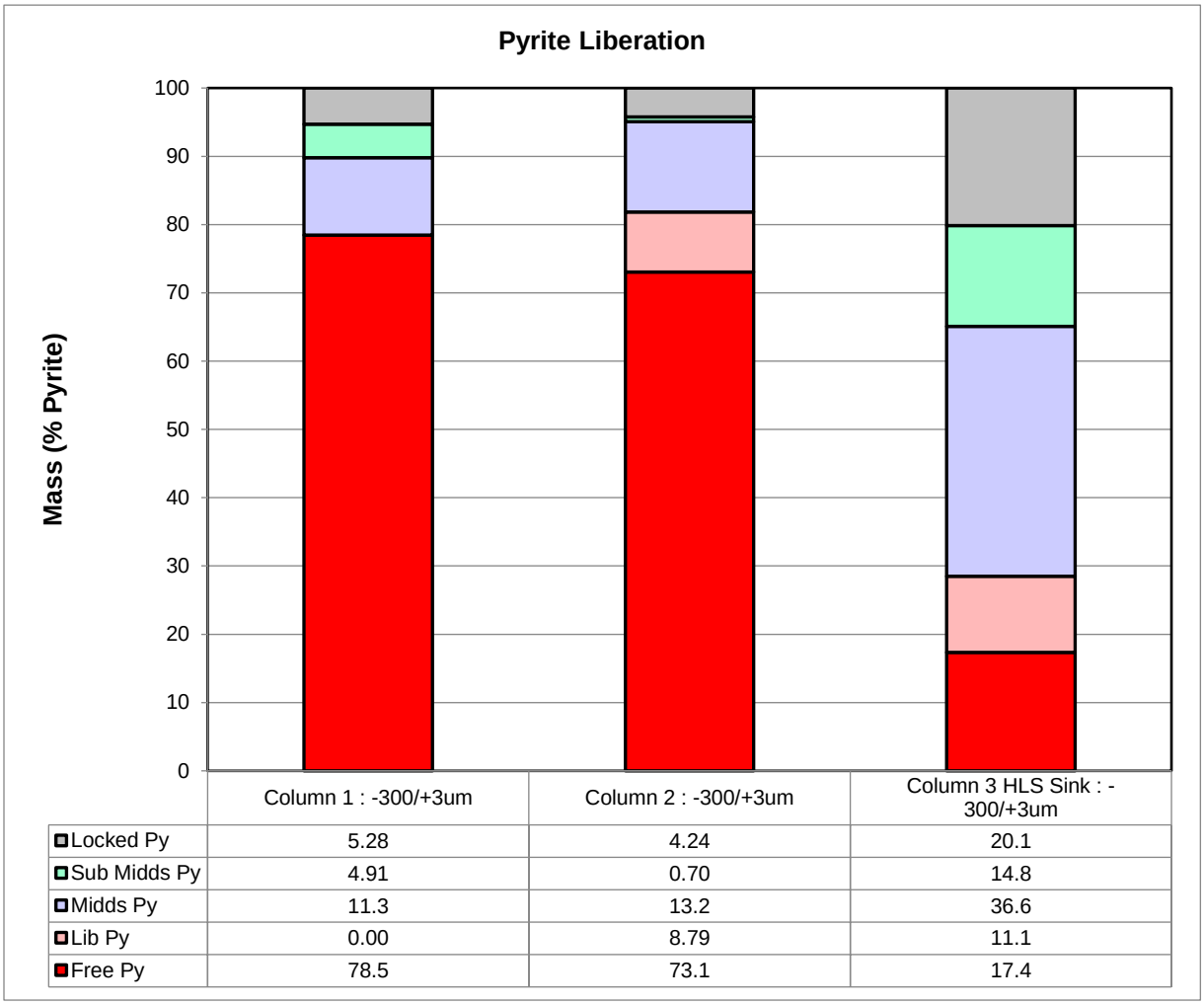
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Py	5.28	4.24	20.1
Sub Midds Py	4.91	0.70	14.8
Midds Py	11.3	13.2	36.6
Lib Py	0.00	8.79	11.1
Free Py	78.5	73.1	17.4

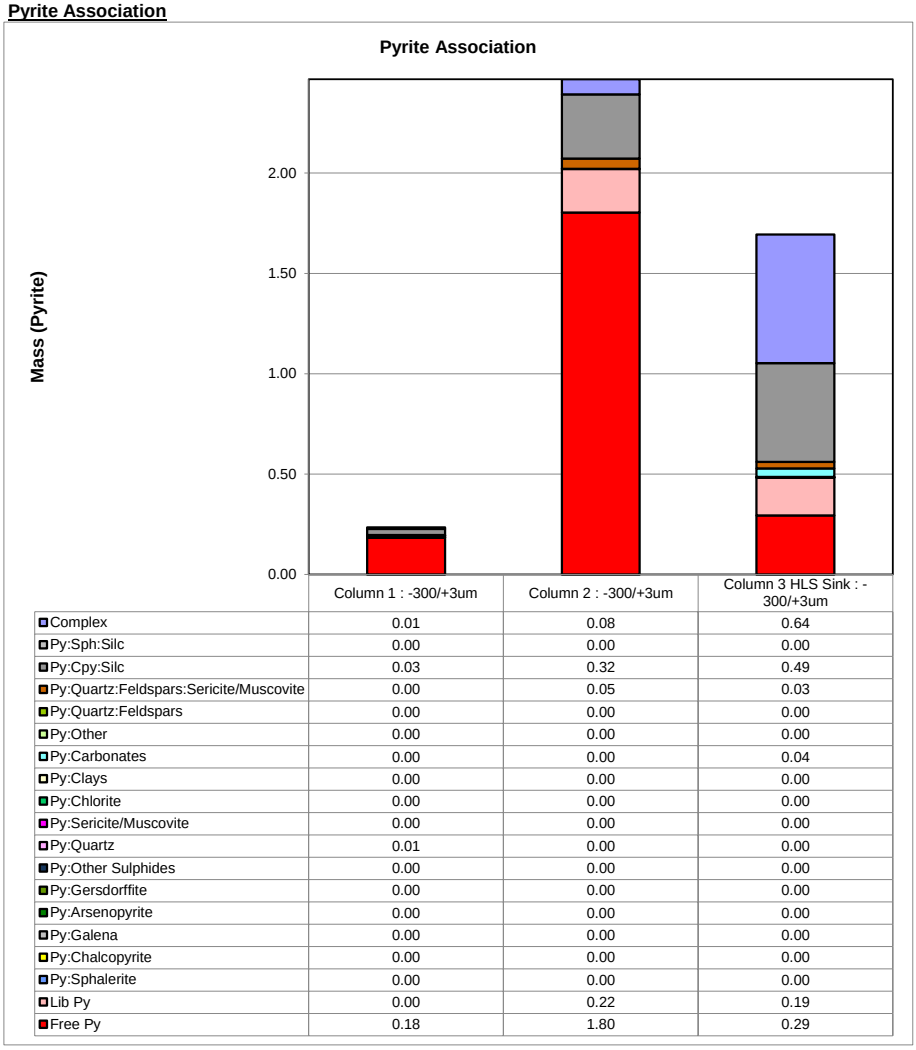
Normalized Mass of Pyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Py	78.5	73.1	17.4
Lib Py	0.00	8.79	11.1
Midds Py	11.3	13.2	36.6
Sub Midds Py	4.91	0.70	14.8
Locked Py	5.28	4.24	20.1
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Association



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	0.01	0.08	0.64
Py:Sph:Silc	0.00	0.00	0.00
Py:Cpy:Silc	0.03	0.32	0.49
Py:Quartz:Feldspars:Sericite/Muscovite	0.00	0.05	0.03
Py:Quartz:Feldspars	0.00	0.00	0.00
Py:Other	0.00	0.00	0.00
Py:Carbonates	0.00	0.00	0.04
Py:Clays	0.00	0.00	0.00
Py:Chlorite	0.00	0.00	0.00
Py:Sericite/Muscovite	0.00	0.00	0.00
Py:Quartz	0.01	0.00	0.00
Py:Other Sulphides	0.00	0.00	0.00
Py:Gersdorffite	0.00	0.00	0.00
Py:Arsenopyrite	0.00	0.00	0.00
Py:Galena	0.00	0.00	0.00
Py:Chalcopyrite	0.00	0.00	0.00
Py:Sphalerite	0.00	0.00	0.00
Lib Py	0.00	0.22	0.19
Free Py	0.18	1.80	0.29

Absolute Mass of Pyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Py	0.18	1.80	0.29
Lib Py	0.00	0.22	0.19
Py:Sphalerite	0.00	0.00	0.00
Py:Chalcopyrite	0.00	0.00	0.00
Py:Galena	0.00	0.00	0.00
Py:Arsenopyrite	0.00	0.00	0.00
Py:Gersdorffite	0.00	0.00	0.00
Py:Other Sulphides	0.00	0.00	0.00
Py:Quartz	0.01	0.00	0.00
Py:Sericite/Muscovite	0.00	0.00	0.00
Py:Chlorite	0.00	0.00	0.00
Py:Clays	0.00	0.00	0.00
Py:Carbonates	0.00	0.00	0.04
Py:Other	0.00	0.00	0.00
Py:Quartz:Feldspars	0.00	0.00	0.00
Py:Quartz:Feldspars:Sericite/Muscovit	0.00	0.05	0.03
Py:Cpy:Silc	0.03	0.32	0.49
Py:Sph:Silc	0.00	0.00	0.00
Complex	0.01	0.08	0.64
Total	0.23	2.47	1.69

Gold Canyon Resouces
19032-01
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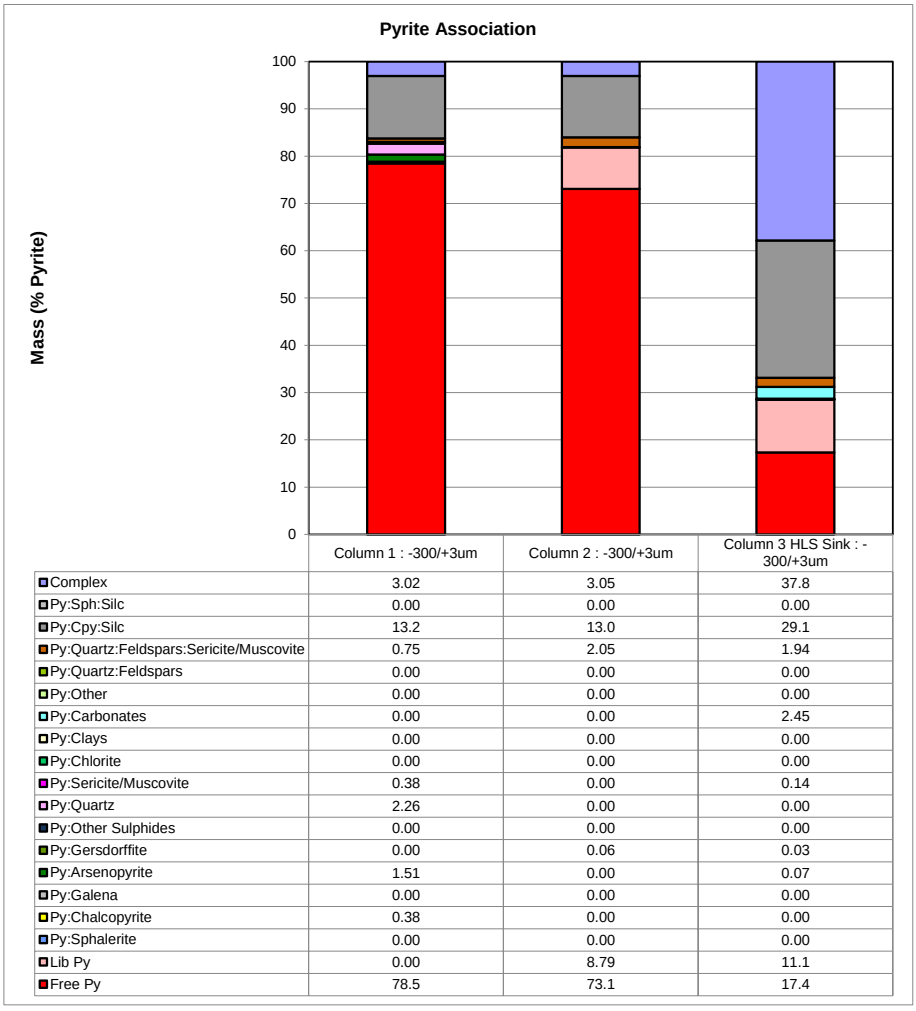
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Association



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	3.02	3.05	37.8
Py:Sph:Silc	0.00	0.00	0.00
Py:Cpy:Silc	13.2	13.0	29.1
Py:Quartz:Feldspars:Sericite/Muscovite	0.75	2.05	1.94
Py:Quartz:Feldspars	0.00	0.00	0.00
Py:Other	0.00	0.00	0.00
Py:Carbonates	0.00	0.00	2.45
Py:Clays	0.00	0.00	0.00
Py:Chlorite	0.00	0.00	0.00
Py:Sericite/Muscovite	0.38	0.00	0.14
Py:Quartz	2.26	0.00	0.00
Py:Other Sulphides	0.00	0.00	0.00
Py:Gersdorffite	0.00	0.06	0.03
Py:Arsenopyrite	1.51	0.00	0.07
Py:Galena	0.00	0.00	0.00
Py:Chalcopyrite	0.38	0.00	0.00
Py:Sphalerite	0.00	0.00	0.00
Lib Py	0.00	8.79	11.1
Free Py	78.5	73.1	17.4

Normalized Mass of Pyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Py	78.5	73.1	17.4
Lib Py	0.00	8.79	11.1
Py:Sphalerite	0.00	0.00	0.00
Py:Chalcopyrite	0.38	0.00	0.00
Py:Galena	0.00	0.00	0.00
Py:Arsenopyrite	1.51	0.00	0.07
Py:Gersdorffite	0.00	0.06	0.03
Py:Other Sulphides	0.00	0.00	0.00
Py:Quartz	2.26	0.00	0.00
Py:Sericite/Muscovite	0.38	0.00	0.14
Py:Chlorite	0.00	0.00	0.00
Py:Clays	0.00	0.00	0.00
Py:Carbonates	0.00	0.00	2.45
Py:Other	0.00	0.00	0.00
Py:Quartz:Feldspars	0.00	0.00	0.00
Py:Quartz:Feldspars:Sericite/Muscovite	0.75	2.05	1.94
Py:Cpy:Silc	13.2	13.0	29.1
Py:Sph:Silc	0.00	0.00	0.00
Complex	3.02	3.05	37.8
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

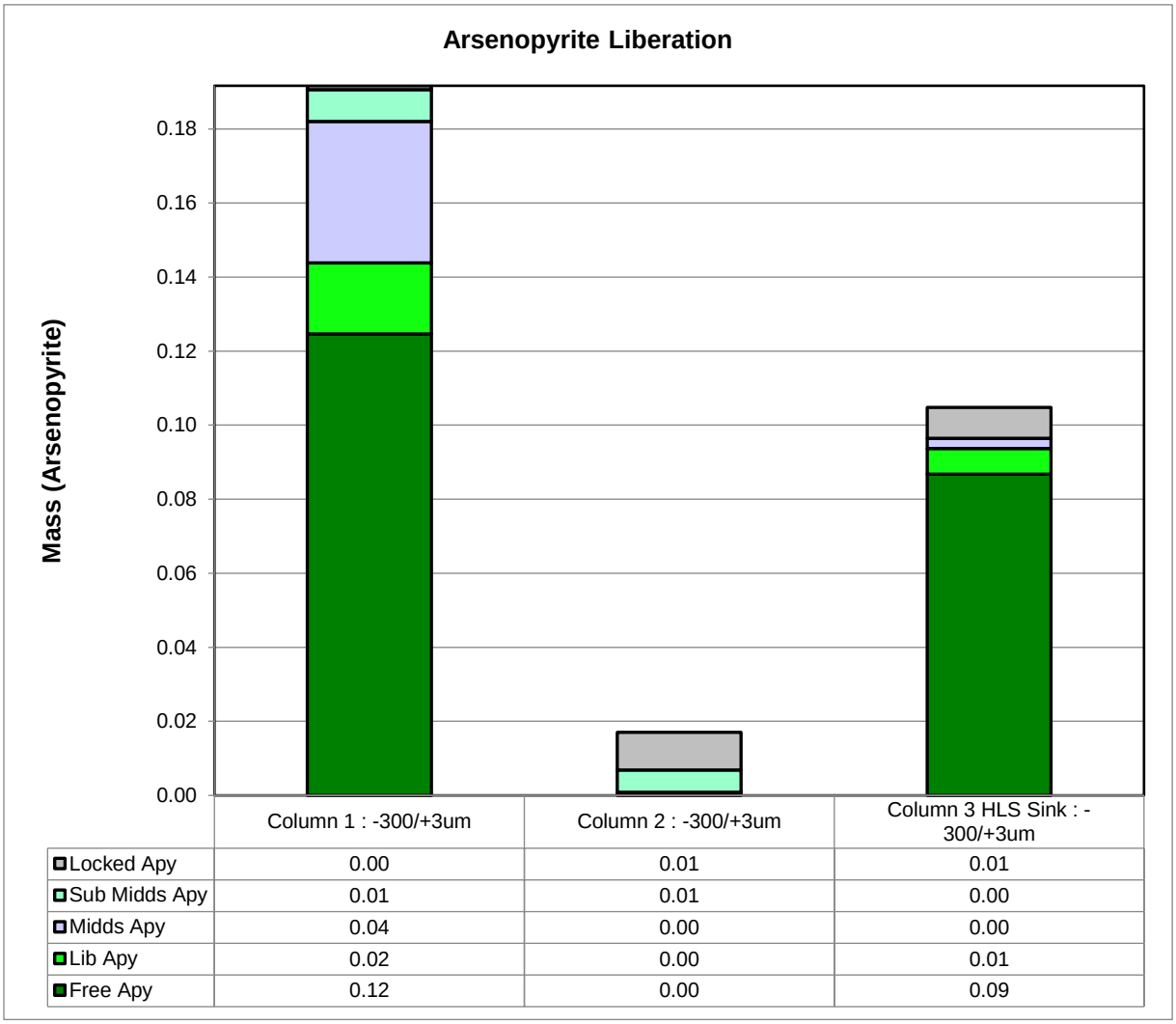
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Association

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Apy	0.00	0.01	0.01
Sub Midds Apy	0.01	0.01	0.00
Midds Apy	0.04	0.00	0.00
Lib Apy	0.02	0.00	0.01
Free Apy	0.12	0.00	0.09

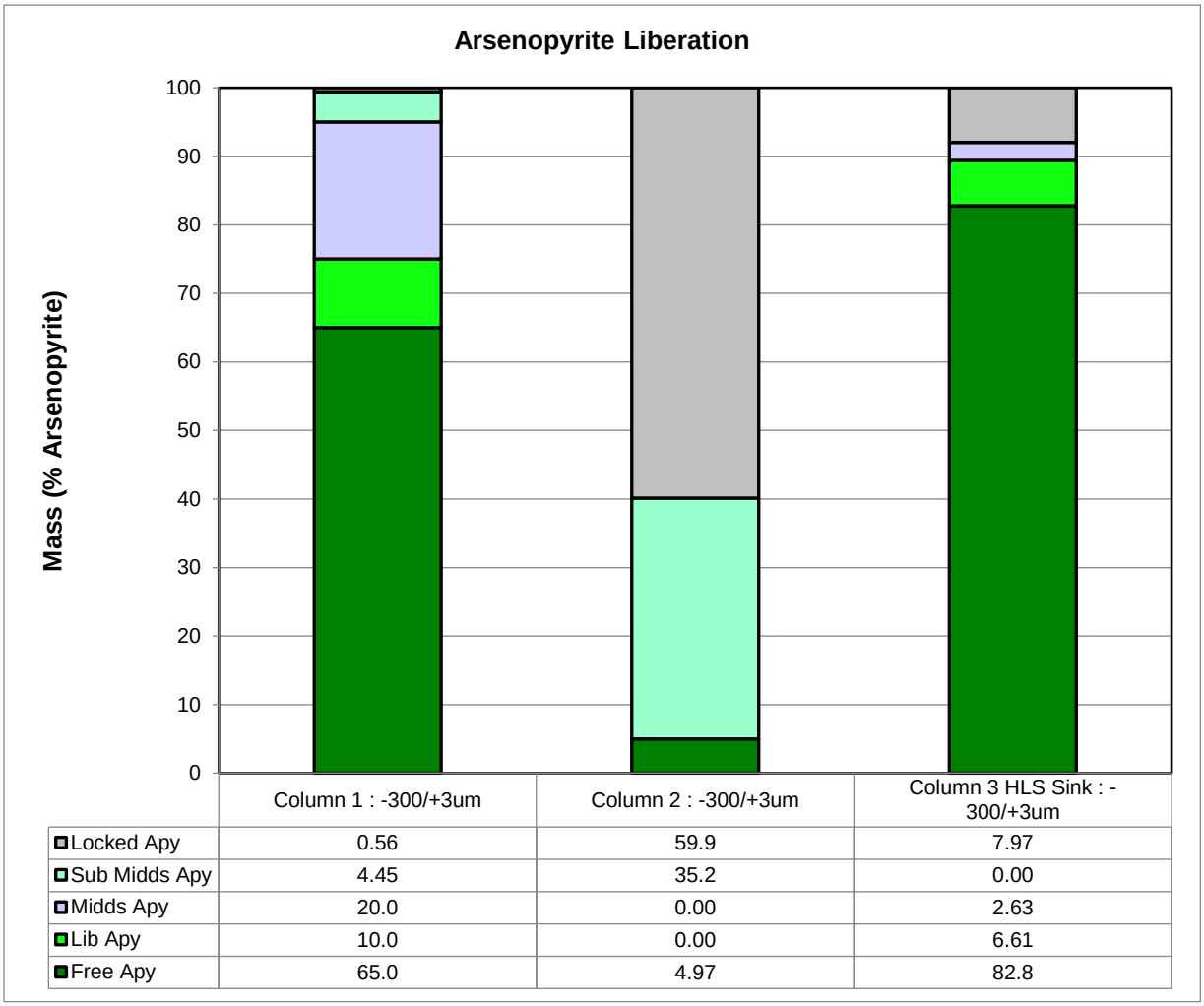
Absolute Mass of Arsenopyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Apy	0.12	0.00	0.09
Lib Apy	0.02	0.00	0.01
Midds Apy	0.04	0.00	0.00
Sub Midds Apy	0.01	0.01	0.00
Locked Apy	0.00	0.01	0.01
Total	0.19	0.02	0.10

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Apy	0.56	59.9	7.97
Sub Midds Apy	4.45	35.2	0.00
Midds Apy	20.0	0.00	2.63
Lib Apy	10.0	0.00	6.61
Free Apy	65.0	4.97	82.8

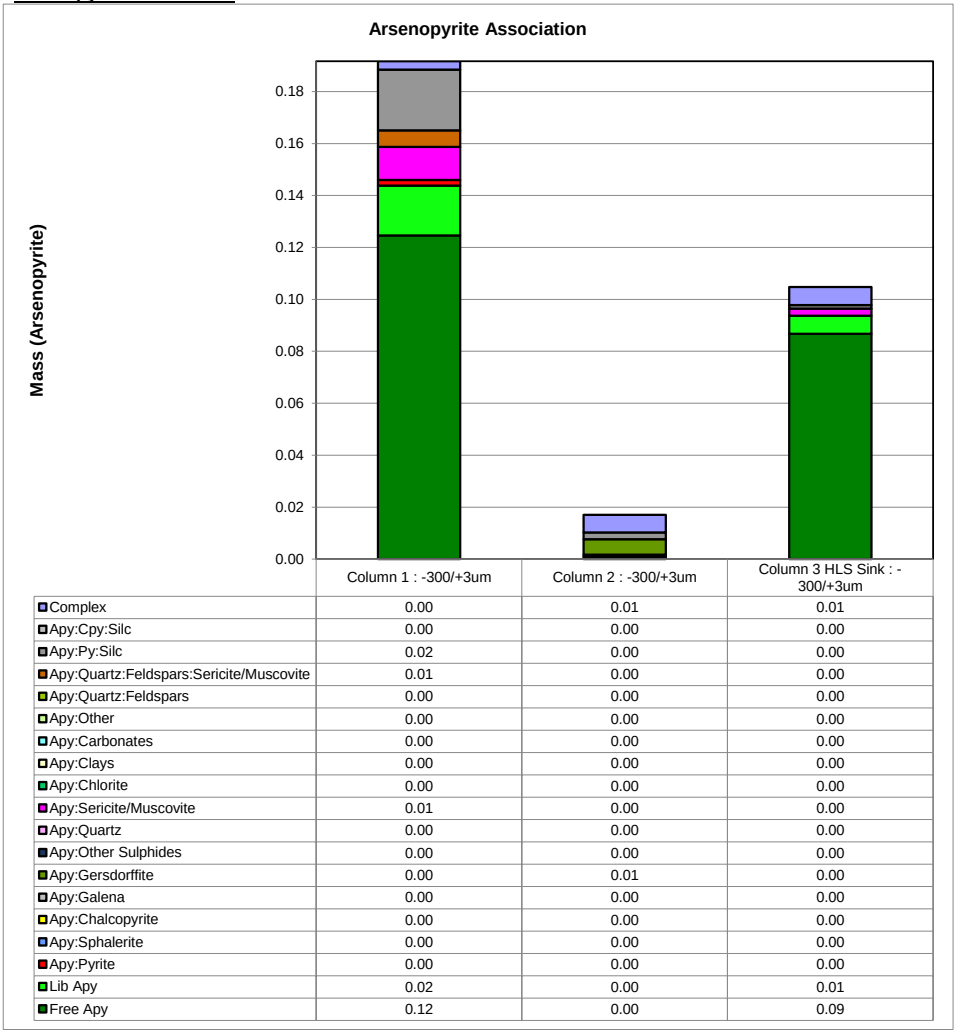
Normalized Mass of Arsenopyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Apy	65.0	4.97	82.8
Lib Apy	10.0	0.00	6.61
Midds Apy	20.0	0.00	2.63
Sub Midds Apy	4.45	35.2	0.00
Locked Apy	0.56	59.9	7.97
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Association



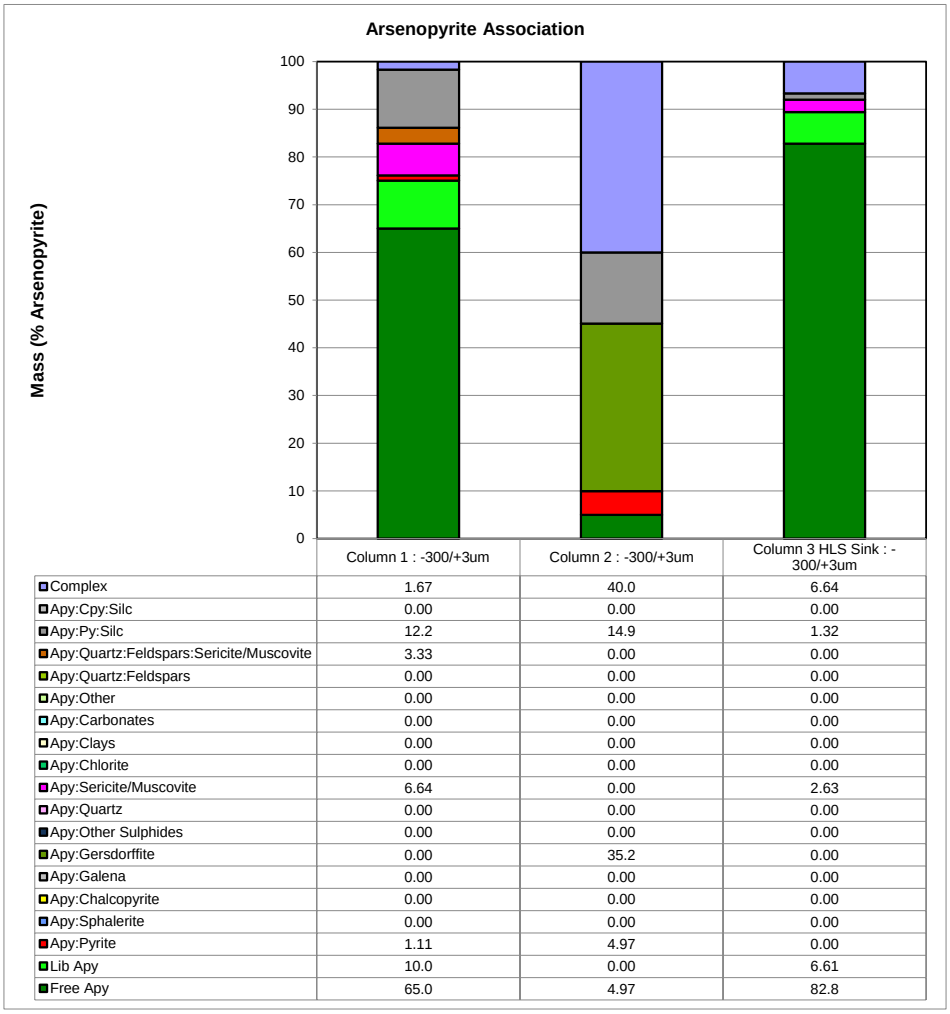
	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	0.00	0.01	0.01
Apy:Cpy:Silc	0.00	0.00	0.00
Apy:Py:Silc	0.02	0.00	0.00
Apy:Quartz:Feldspars:Sericite/Muscovite	0.01	0.00	0.00
Apy:Quartz:Feldspars	0.00	0.00	0.00
Apy:Other	0.00	0.00	0.00
Apy:Carbonates	0.00	0.00	0.00
Apy:Clays	0.00	0.00	0.00
Apy:Chlorite	0.00	0.00	0.00
Apy:Sericite/Muscovite	0.01	0.00	0.00
Apy:Quartz	0.00	0.00	0.00
Apy:Other Sulphides	0.00	0.00	0.00
Apy:Gersdorffite	0.00	0.01	0.00
Apy:Galena	0.00	0.00	0.00
Apy:Chalcopyrite	0.00	0.00	0.00
Apy:Sphalerite	0.00	0.00	0.00
Apy:Pyrite	0.00	0.00	0.00
Lib Apy	0.02	0.00	0.01
Free Apy	0.12	0.00	0.09

Absolute Mass of Arsenopyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Apy	0.12	0.00	0.09
Lib Apy	0.02	0.00	0.01
Apy:Pyrite	0.00	0.00	0.00
Apy:Sphalerite	0.00	0.00	0.00
Apy:Chalcopyrite	0.00	0.00	0.00
Apy:Galena	0.00	0.00	0.00
Apy:Gersdorffite	0.00	0.01	0.00
Apy:Other Sulphides	0.00	0.00	0.00
Apy:Quartz	0.00	0.00	0.00
Apy:Sericite/Muscovite	0.01	0.00	0.00
Apy:Chlorite	0.00	0.00	0.00
Apy:Clays	0.00	0.00	0.00
Apy:Carbonates	0.00	0.00	0.00
Apy:Other	0.00	0.00	0.00
Apy:Quartz:Feldspars	0.00	0.00	0.00
Apy:Quartz:Feldspars:Sericite/Muscovite	0.01	0.00	0.00
Apy:Py:Silc	0.02	0.00	0.00
Apy:Cpy:Silc	0.00	0.00	0.00
Complex	0.00	0.01	0.01
Total	0.19	0.02	0.10

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Association



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	1.67	40.0	6.64
Apy:Cpy:Silc	0.00	0.00	0.00
Apy:Py:Silc	12.2	14.9	1.32
Apy:Quartz:Feldspars:Sericite/Muscovite	3.33	0.00	0.00
Apy:Quartz:Feldspars	0.00	0.00	0.00
Apy:Other	0.00	0.00	0.00
Apy:Carbonates	0.00	0.00	0.00
Apy:Clays	0.00	0.00	0.00
Apy:Chlorite	0.00	0.00	0.00
Apy:Sericite/Muscovite	6.64	0.00	2.63
Apy:Quartz	0.00	0.00	0.00
Apy:Other Sulphides	0.00	0.00	0.00
Apy:Gersdorffite	0.00	35.2	0.00
Apy:Galena	0.00	0.00	0.00
Apy:Chalcopyrite	0.00	0.00	0.00
Apy:Sphalerite	0.00	0.00	0.00
Apy:Pyrite	1.11	4.97	0.00
Lib Apy	10.0	0.00	6.61
Free Apy	65.0	4.97	82.8

Normalized Mass of Arsenopyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Apy	65.0	4.97	82.8
Lib Apy	10.0	0.00	6.61
Apy:Pyrite	1.11	4.97	0.00
Apy:Sphalerite	0.00	0.00	0.00
Apy:Chalcopyrite	0.00	0.00	0.00
Apy:Galena	0.00	0.00	0.00
Apy:Gersdorffite	0.00	35.2	0.00
Apy:Other Sulphides	0.00	0.00	0.00
Apy:Quartz	0.00	0.00	0.00
Apy:Sericite/Muscovite	6.64	0.00	2.63
Apy:Chlorite	0.00	0.00	0.00
Apy:Clays	0.00	0.00	0.00
Apy:Carbonates	0.00	0.00	0.00
Apy:Other	0.00	0.00	0.00
Apy:Quartz:Feldspars	0.00	0.00	0.00
Apy:Quartz:Feldspars:Sericite/Muscovite	3.33	0.00	0.00
Apy:Py:Silc	12.2	14.9	1.32
Apy:Cpy:Silc	0.00	0.00	0.00
Complex	1.67	40.0	6.64
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

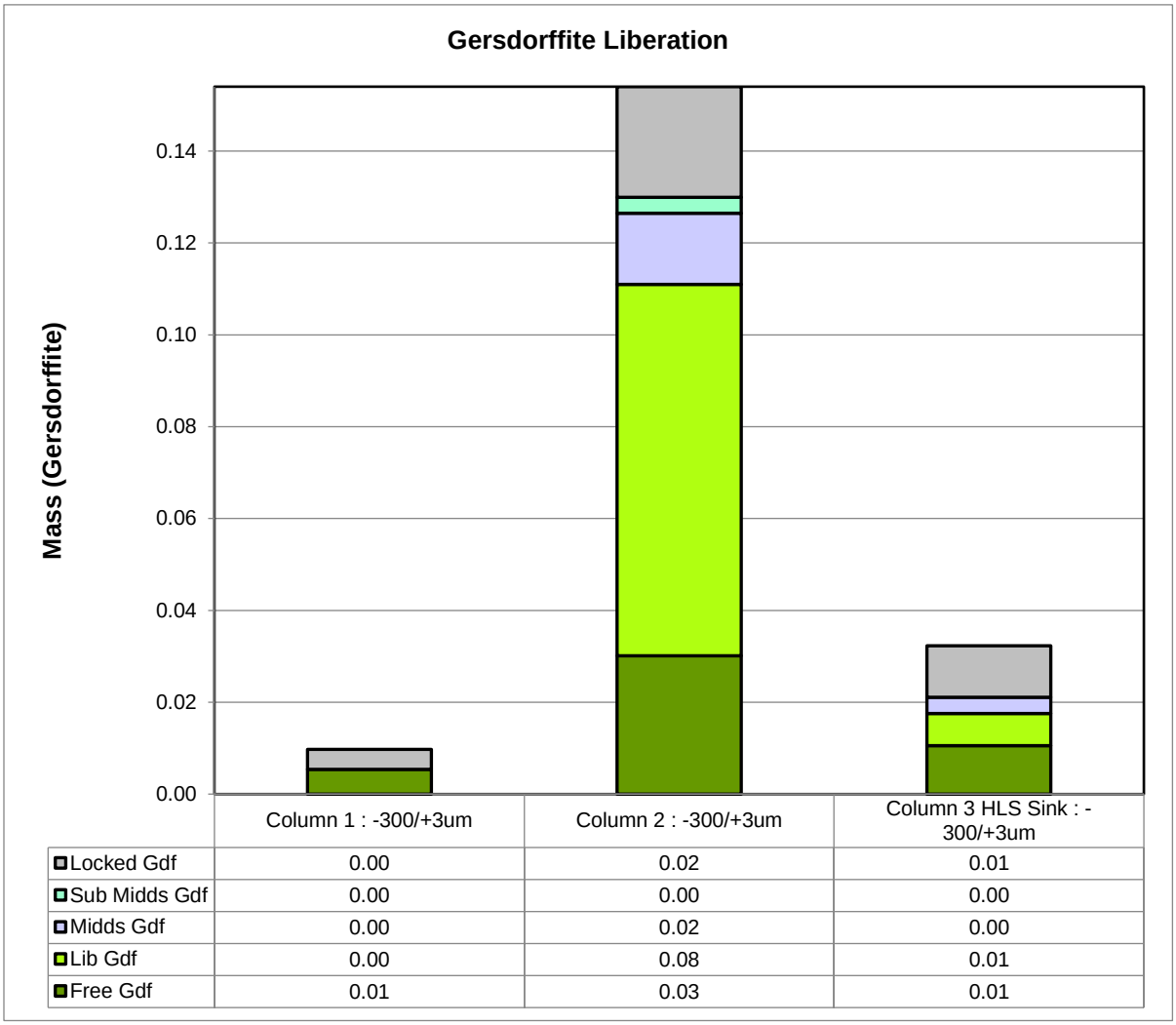
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Association

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Gdf	0.00	0.02	0.01
Sub Midds Gdf	0.00	0.00	0.00
Midds Gdf	0.00	0.02	0.00
Lib Gdf	0.00	0.08	0.01
Free Gdf	0.01	0.03	0.01

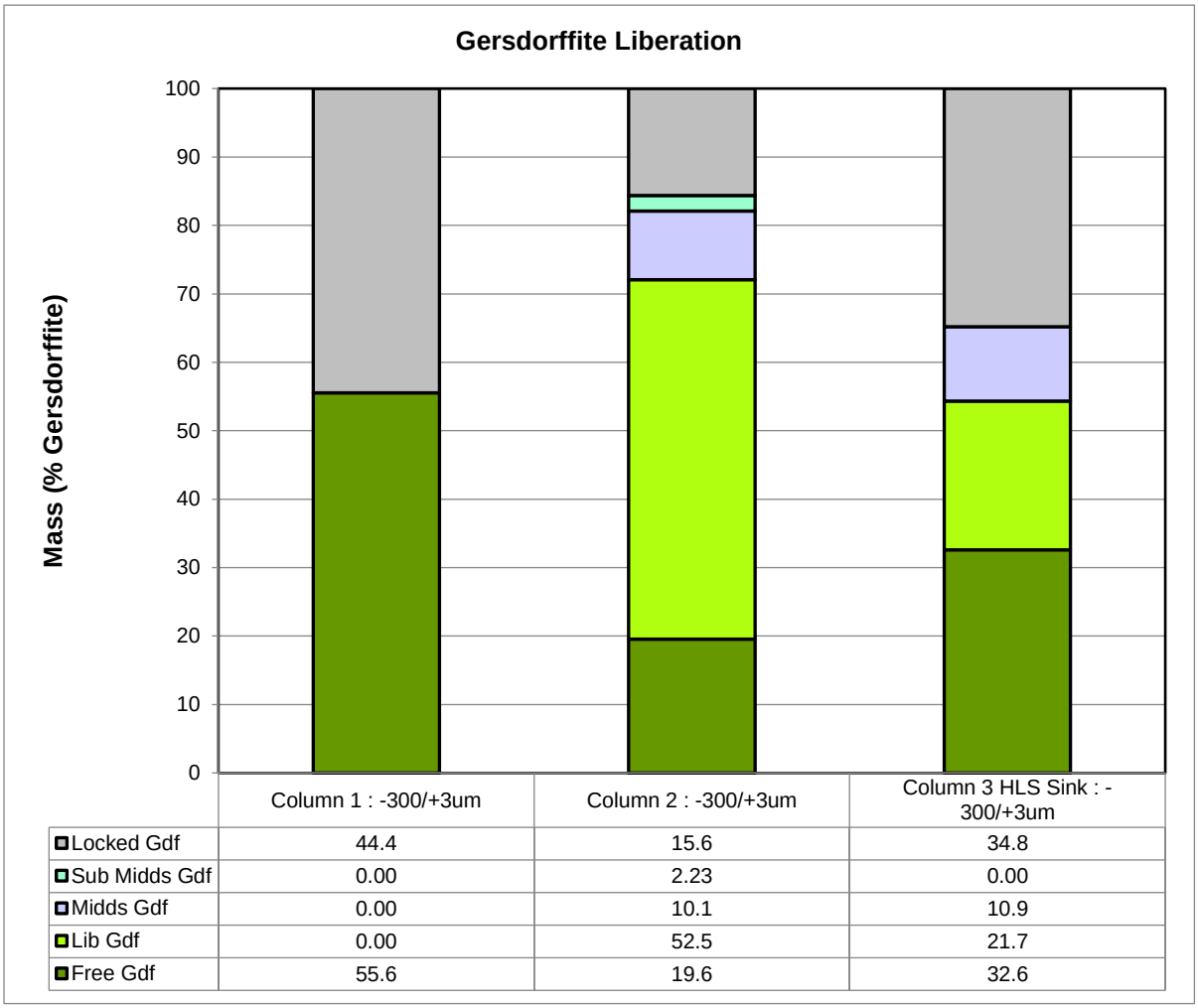
Absolute Mass of Gersdorffite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Gdf	0.01	0.03	0.01
Lib Gdf	0.00	0.08	0.01
Midds Gdf	0.00	0.02	0.00
Sub Midds Gdf	0.00	0.00	0.00
Locked Gdf	0.00	0.02	0.01
Total	0.01	0.15	0.03

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Gdf	44.4	15.6	34.8
Sub Midds Gdf	0.00	2.23	0.00
Midds Gdf	0.00	10.1	10.9
Lib Gdf	0.00	52.5	21.7
Free Gdf	55.6	19.6	32.6

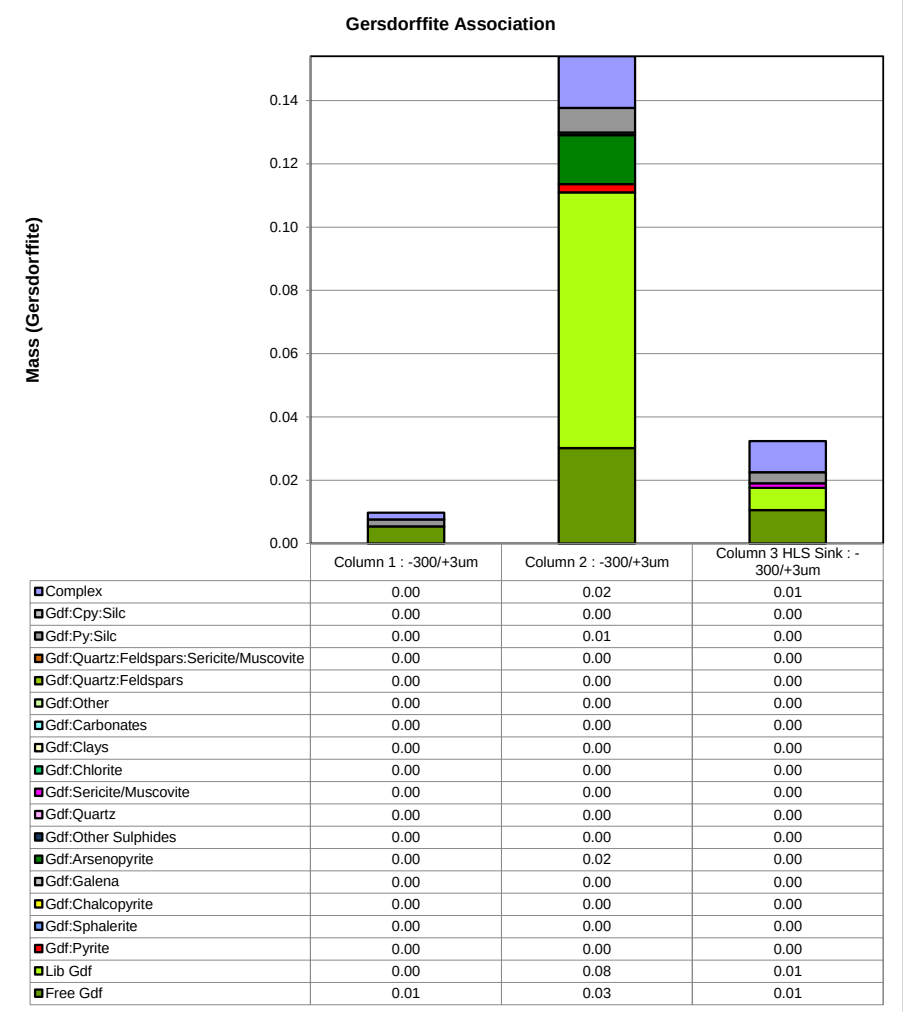
Normalized Mass of Gersdorffite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Gdf	55.6	19.6	32.6
Lib Gdf	0.00	52.5	21.7
Midds Gdf	0.00	10.1	10.9
Sub Midds Gdf	0.00	2.23	0.00
Locked Gdf	44.4	15.6	34.8
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Association



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	0.00	0.02	0.01
Gdf:Cpy:Silc	0.00	0.00	0.00
Gdf:Py:Silc	0.00	0.01	0.00
Gdf:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00	0.00
Gdf:Quartz:Feldspars	0.00	0.00	0.00
Gdf:Other	0.00	0.00	0.00
Gdf:Carbonates	0.00	0.00	0.00
Gdf:Clays	0.00	0.00	0.00
Gdf:Chlorite	0.00	0.00	0.00
Gdf:Sericite/Muscovite	0.00	0.00	0.00
Gdf:Quartz	0.00	0.00	0.00
Gdf:Other Sulphides	0.00	0.00	0.00
Gdf:Arsenopyrite	0.00	0.02	0.00
Gdf:Galena	0.00	0.00	0.00
Gdf:Chalcopyrite	0.00	0.00	0.00
Gdf:Sphalerite	0.00	0.00	0.00
Gdf:Pyrite	0.00	0.00	0.00
Lib Gdf	0.00	0.08	0.01
Free Gdf	0.01	0.03	0.01

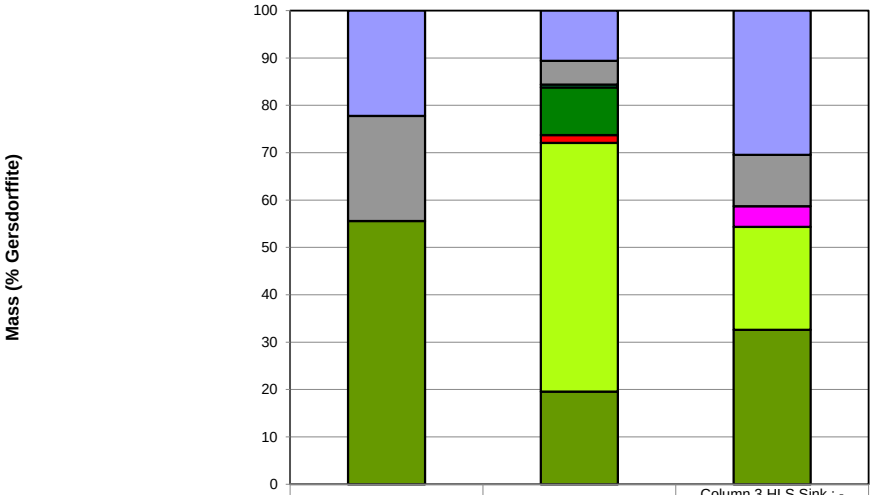
Absolute Mass of Gersdorffite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Gdf	0.01	0.03	0.01
Lib Gdf	0.00	0.08	0.01
Gdf:Pyrite	0.00	0.00	0.00
Gdf:Sphalerite	0.00	0.00	0.00
Gdf:Chalcopyrite	0.00	0.00	0.00
Gdf:Galena	0.00	0.00	0.00
Gdf:Arsenopyrite	0.00	0.02	0.00
Gdf:Other Sulphides	0.00	0.00	0.00
Gdf:Quartz	0.00	0.00	0.00
Gdf:Sericite/Muscovite	0.00	0.00	0.00
Gdf:Chlorite	0.00	0.00	0.00
Gdf:Clays	0.00	0.00	0.00
Gdf:Carbonates	0.00	0.00	0.00
Gdf:Other	0.00	0.00	0.00
Gdf:Quartz:Feldspars	0.00	0.00	0.00
Gdf:Quartz:Feldspars:Sericite/Muscovit	0.00	0.00	0.00
Gdf:Py:Silc	0.00	0.01	0.00
Gdf:Cpy:Silc	0.00	0.00	0.00
Complex	0.00	0.02	0.01
Total	0.01	0.15	0.03

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Association



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	22.2	10.6	30.4
Gdf:Cpy:Silc	0.00	0.00	0.00
Gdf:Py:Silc	22.2	5.03	10.9
Gdf:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00	0.00
Gdf:Quartz:Feldspars	0.00	0.00	0.00
Gdf:Other	0.00	0.00	0.00
Gdf:Carbonates	0.00	0.00	0.00
Gdf:Clays	0.00	0.00	0.00
Gdf:Chlorite	0.00	0.56	0.00
Gdf:Sericite/Muscovite	0.00	0.00	4.35
Gdf:Quartz	0.00	0.00	0.00
Gdf:Other Sulphides	0.00	0.00	0.00
Gdf:Arsenopyrite	0.00	10.1	0.00
Gdf:Galena	0.00	0.00	0.00
Gdf:Chalcopyrite	0.00	0.00	0.00
Gdf:Sphalerite	0.00	0.00	0.00
Gdf:Pyrite	0.00	1.68	0.00
Lib Gdf	0.00	52.5	21.7
Free Gdf	55.6	19.6	32.6

Normalized Mass of Gersdorffite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Gdf	55.6	19.6	32.6
Lib Gdf	0.00	52.5	21.7
Gdf:Pyrite	0.00	1.68	0.00
Gdf:Sphalerite	0.00	0.00	0.00
Gdf:Chalcopyrite	0.00	0.00	0.00
Gdf:Galena	0.00	0.00	0.00
Gdf:Arsenopyrite	0.00	10.1	0.00
Gdf:Other Sulphides	0.00	0.00	0.00
Gdf:Quartz	0.00	0.00	0.00
Gdf:Sericite/Muscovite	0.00	0.00	4.35
Gdf:Chlorite	0.00	0.56	0.00
Gdf:Clays	0.00	0.00	0.00
Gdf:Carbonates	0.00	0.00	0.00
Gdf:Other	0.00	0.00	0.00
Gdf:Quartz:Feldspars	0.00	0.00	0.00
Gdf:Quartz:Feldspars:Sericite/Muscovit	0.00	0.00	0.00
Gdf:Py:Silc	22.2	5.03	10.9
Gdf:Cpy:Silc	0.00	0.00	0.00
Complex	22.2	10.6	30.4
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

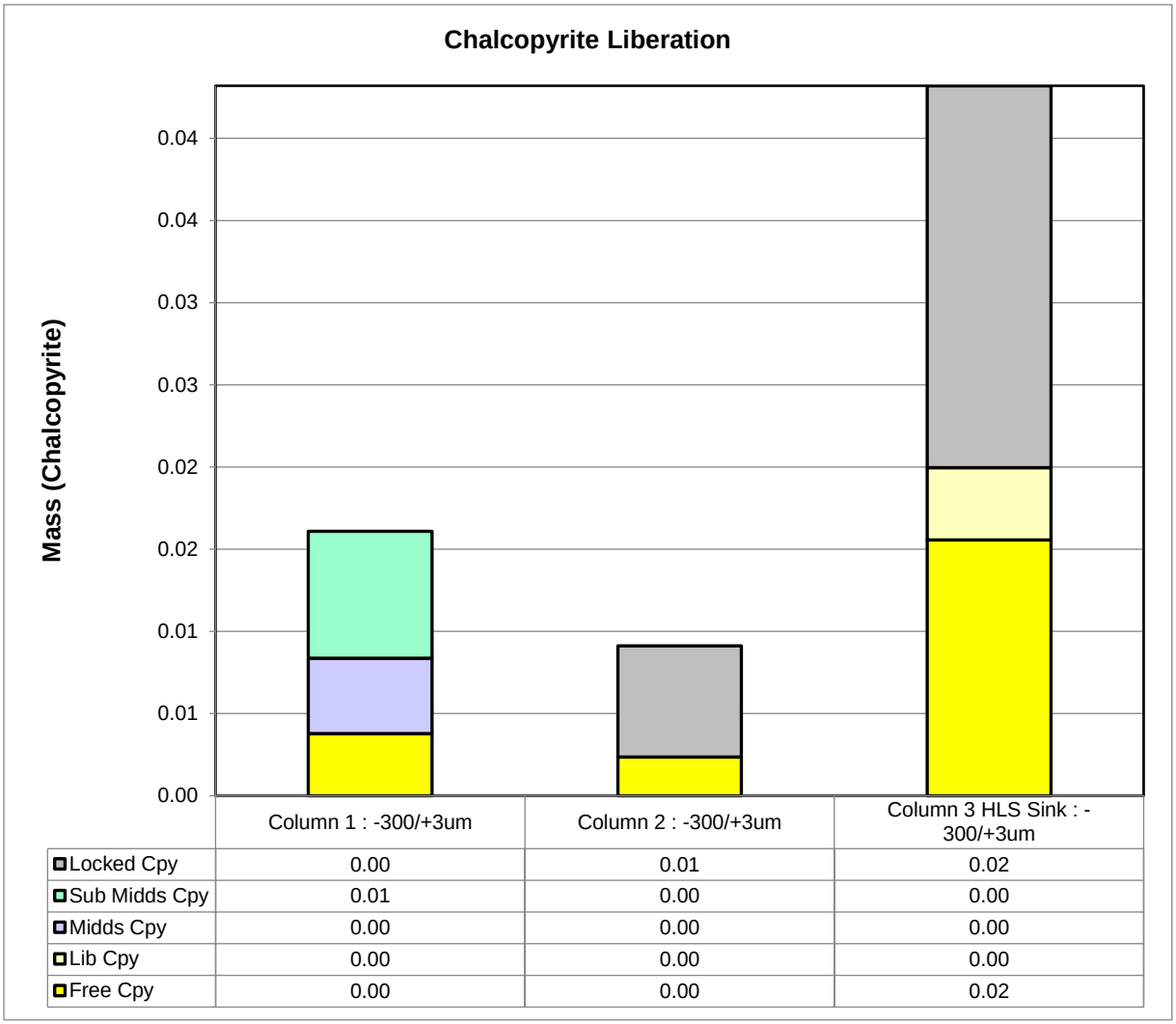
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Association

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Chalcopyrite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Cpy	0.00	0.01	0.02
Sub Midds Cpy	0.01	0.00	0.00
Midds Cpy	0.00	0.00	0.00
Lib Cpy	0.00	0.00	0.00
Free Cpy	0.00	0.00	0.02

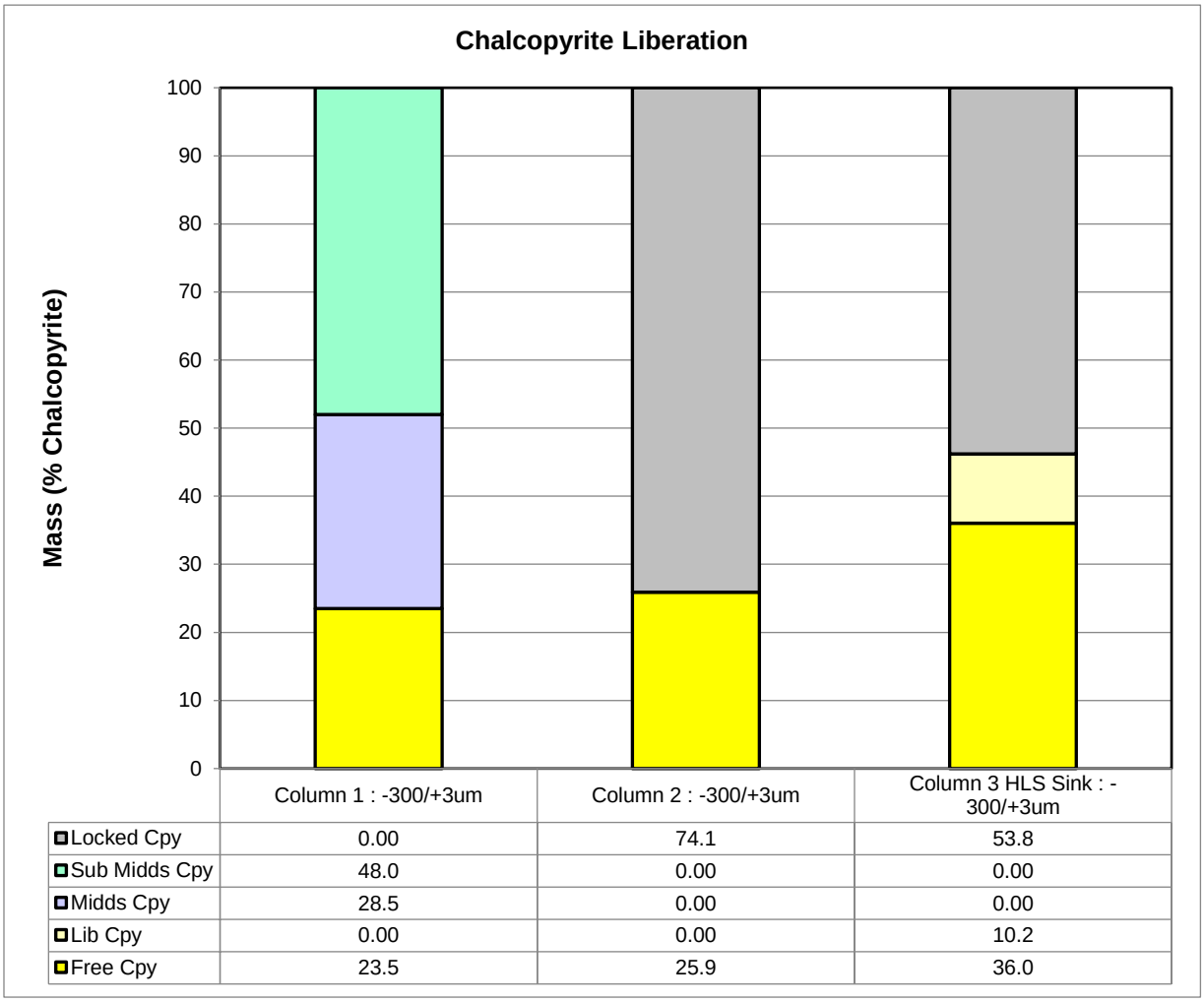
Absolute Mass of Chalcopyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Cpy	0.00	0.00	0.02
Lib Cpy	0.00	0.00	0.00
Midds Cpy	0.00	0.00	0.00
Sub Midds Cpy	0.01	0.00	0.00
Locked Cpy	0.00	0.01	0.02
Total	0.02	0.01	0.04

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Chalcopyrite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Cpy	0.00	74.1	53.8
Sub Midds Cpy	48.0	0.00	0.00
Midds Cpy	28.5	0.00	0.00
Lib Cpy	0.00	0.00	10.2
Free Cpy	23.5	25.9	36.0

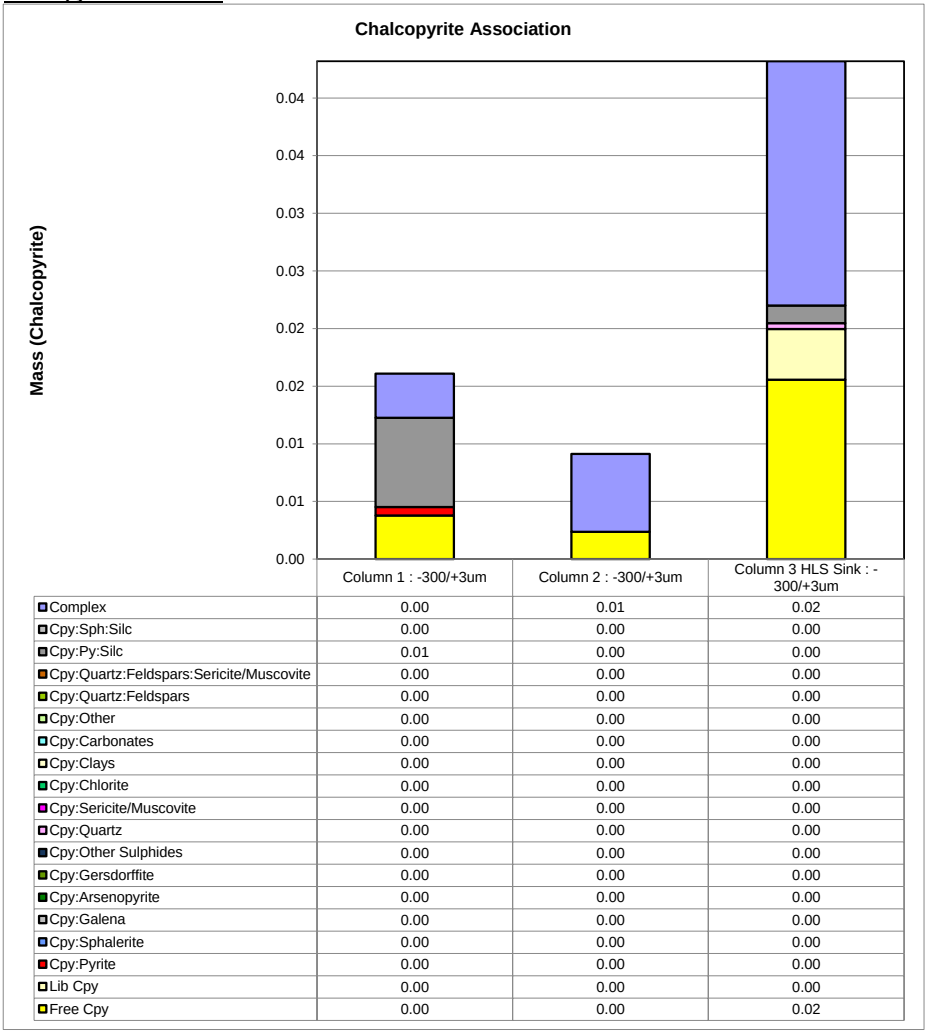
Normalized Mass of Chalcopyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Cpy	23.5	25.9	36.0
Lib Cpy	0.00	0.00	10.2
Midds Cpy	28.5	0.00	0.00
Sub Midds Cpy	48.0	0.00	0.00
Locked Cpy	0.00	74.1	53.8
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Chalcopyrite Association



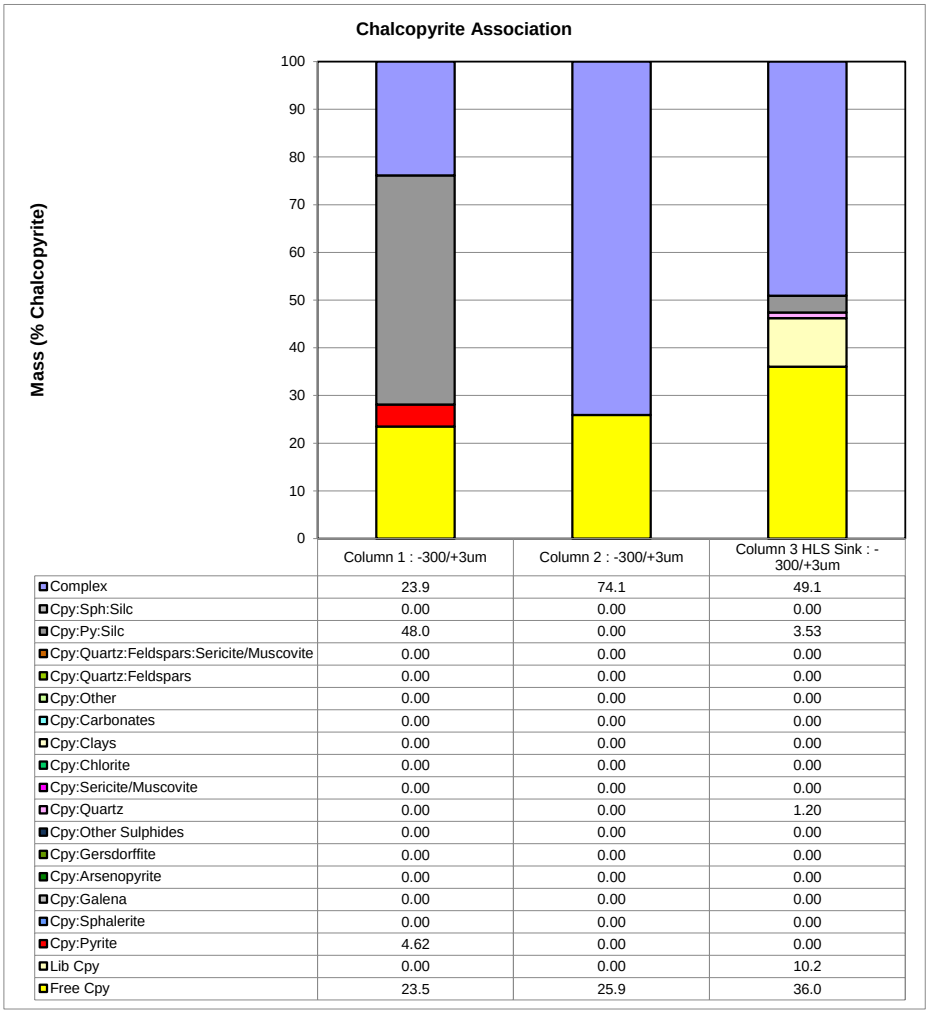
	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	0.00	0.01	0.02
Cpy:Sph:Silc	0.00	0.00	0.00
Cpy:Py:Silc	0.01	0.00	0.00
Cpy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00	0.00
Cpy:Quartz:Feldspars	0.00	0.00	0.00
Cpy:Other	0.00	0.00	0.00
Cpy:Carbonates	0.00	0.00	0.00
Cpy:Clays	0.00	0.00	0.00
Cpy:Chlorite	0.00	0.00	0.00
Cpy:Sericite/Muscovite	0.00	0.00	0.00
Cpy:Quartz	0.00	0.00	0.00
Cpy:Other Sulphides	0.00	0.00	0.00
Cpy:Gersdorffite	0.00	0.00	0.00
Cpy:Arsenopyrite	0.00	0.00	0.00
Cpy:Galena	0.00	0.00	0.00
Cpy:Sphalerite	0.00	0.00	0.00
Cpy:Pyrite	0.00	0.00	0.00
Lib Cpy	0.00	0.00	0.00
Free Cpy	0.00	0.00	0.02

Absolute Mass of Chalcopyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Cpy	0.00	0.00	0.02
Lib Cpy	0.00	0.00	0.00
Cpy:Pyrite	0.00	0.00	0.00
Cpy:Sphalerite	0.00	0.00	0.00
Cpy:Galena	0.00	0.00	0.00
Cpy:Arsenopyrite	0.00	0.00	0.00
Cpy:Gersdorffite	0.00	0.00	0.00
Cpy:Other Sulphides	0.00	0.00	0.00
Cpy:Quartz	0.00	0.00	0.00
Cpy:Sericite/Muscovite	0.00	0.00	0.00
Cpy:Chlorite	0.00	0.00	0.00
Cpy:Clays	0.00	0.00	0.00
Cpy:Carbonates	0.00	0.00	0.00
Cpy:Other	0.00	0.00	0.00
Cpy:Quartz:Feldspars	0.00	0.00	0.00
Cpy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00	0.00
Cpy:Py:Silc	0.01	0.00	0.00
Cpy:Sph:Silc	0.00	0.00	0.00
Complex	0.00	0.01	0.02
Total	0.02	0.01	0.04

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Chalcopyrite Association



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	23.9	74.1	49.1
Cpy:Sph:Silc	0.00	0.00	0.00
Cpy:Py:Silc	48.0	0.00	3.53
Cpy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00	0.00
Cpy:Quartz:Feldspars	0.00	0.00	0.00
Cpy:Other	0.00	0.00	0.00
Cpy:Carbonates	0.00	0.00	0.00
Cpy:Clays	0.00	0.00	0.00
Cpy:Chlorite	0.00	0.00	0.00
Cpy:Sericite/Muscovite	0.00	0.00	0.00
Cpy:Quartz	0.00	0.00	1.20
Cpy:Other Sulphides	0.00	0.00	0.00
Cpy:Gersdorffite	0.00	0.00	0.00
Cpy:Arsenopyrite	0.00	0.00	0.00
Cpy:Galena	0.00	0.00	0.00
Cpy:Sphalerite	0.00	0.00	0.00
Cpy:Pyrite	4.62	0.00	0.00
Lib Cpy	0.00	0.00	10.2
Free Cpy	23.5	25.9	36.0

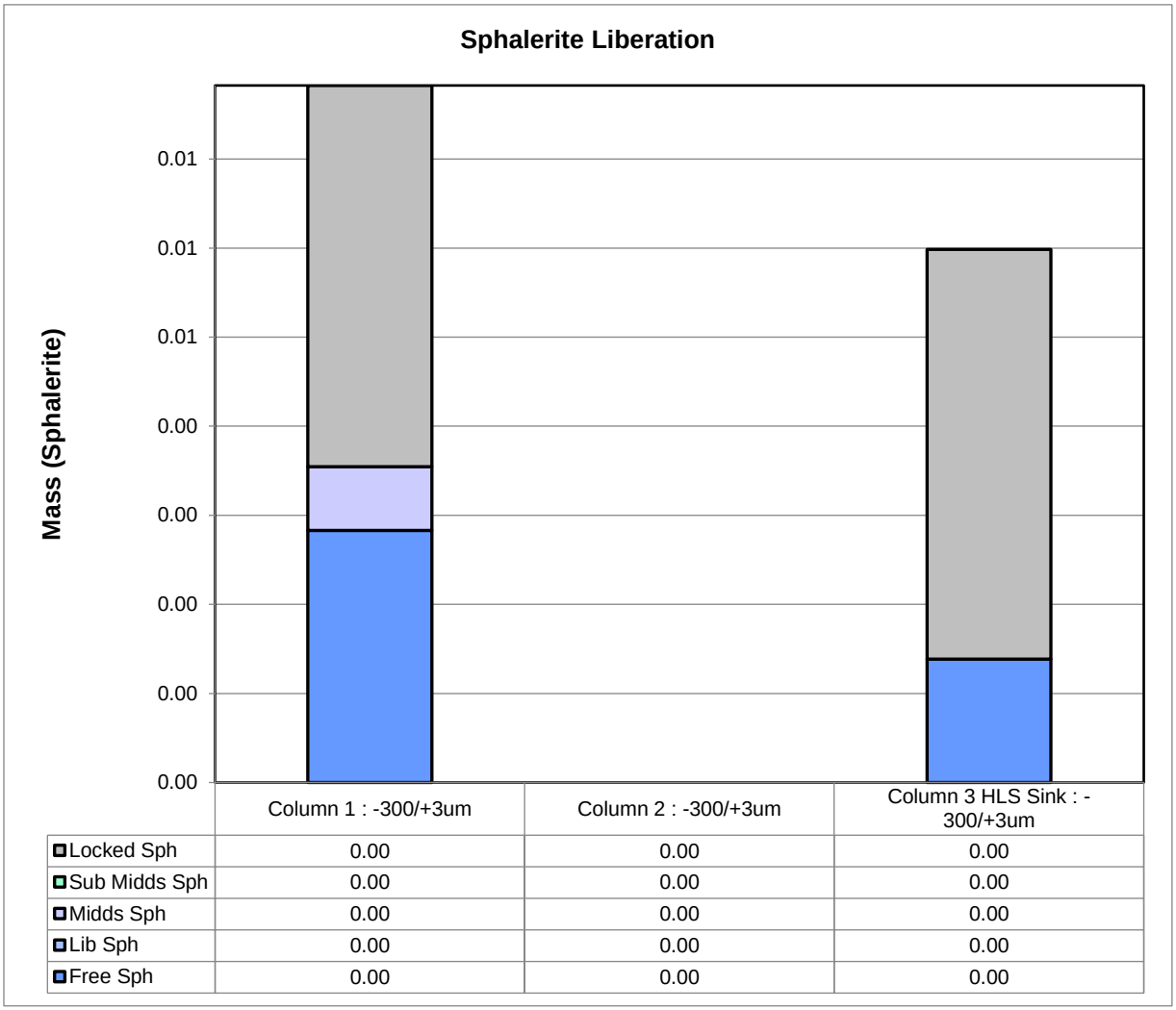
Normalized Mass of Chalcopyrite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Cpy	23.5	25.9	36.0
Lib Cpy	0.00	0.00	10.2
Cpy:Pyrite	4.62	0.00	0.00
Cpy:Sphalerite	0.00	0.00	0.00
Cpy:Galena	0.00	0.00	0.00
Cpy:Arsenopyrite	0.00	0.00	0.00
Cpy:Gersdorffite	0.00	0.00	0.00
Cpy:Other Sulphides	0.00	0.00	0.00
Cpy:Quartz	0.00	0.00	1.20
Cpy:Sericite/Muscovite	0.00	0.00	0.00
Cpy:Chlorite	0.00	0.00	0.00
Cpy:Clays	0.00	0.00	0.00
Cpy:Carbonates	0.00	0.00	0.00
Cpy:Other	0.00	0.00	0.00
Cpy:Quartz:Feldspars	0.00	0.00	0.00
Cpy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00	0.00
Cpy:Py:Silc	48.0	0.00	3.53
Cpy:Sph:Silc	0.00	0.00	0.00
Complex	23.9	74.1	49.1
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Sphalerite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Sph	0.00	0.00	0.00
Sub Midds Sph	0.00	0.00	0.00
Midds Sph	0.00	0.00	0.00
Lib Sph	0.00	0.00	0.00
Free Sph	0.00	0.00	0.00

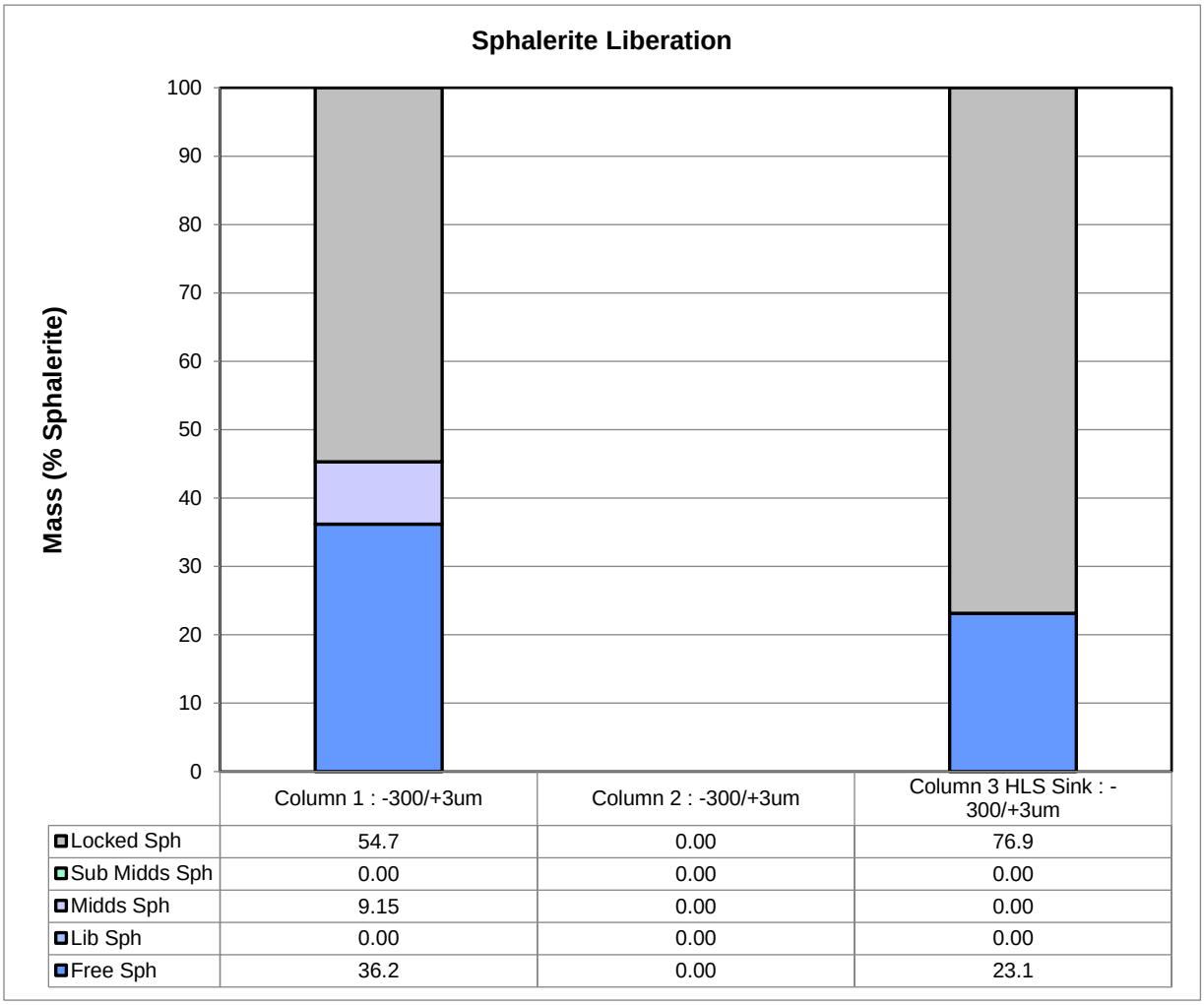
Absolute Mass of Sphalerite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Sph	0.00	0.00	0.00
Lib Sph	0.00	0.00	0.00
Midds Sph	0.00	0.00	0.00
Sub Midds Sph	0.00	0.00	0.00
Locked Sph	0.00	0.00	0.00
Total	0.01	0.00	0.01

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Sphalerite Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Sph	54.7	0.00	76.9
Sub Midds Sph	0.00	0.00	0.00
Midds Sph	9.15	0.00	0.00
Lib Sph	0.00	0.00	0.00
Free Sph	36.2	0.00	23.1

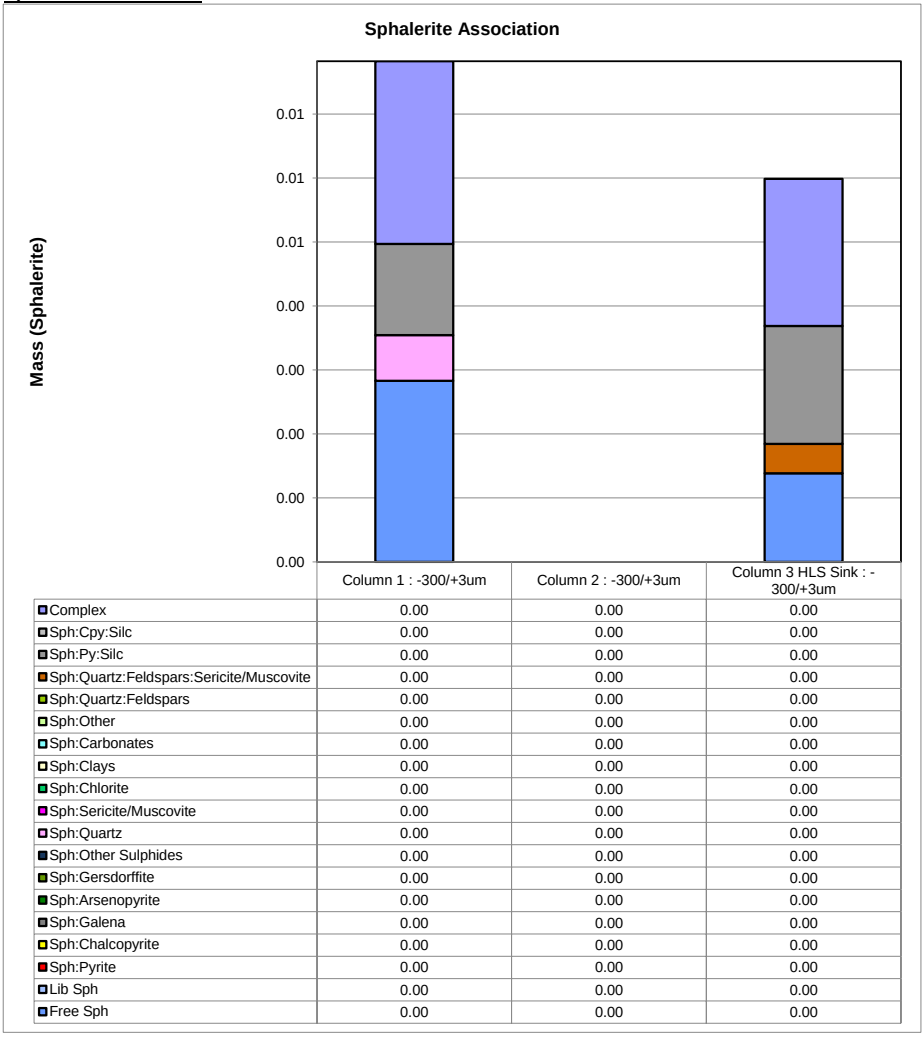
Normalized Mass of Sphalerite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Sph	36.2	0.00	23.1
Lib Sph	0.00	0.00	0.00
Midds Sph	9.15	0.00	0.00
Sub Midds Sph	0.00	0.00	0.00
Locked Sph	54.7	0.00	76.9
Total	100.0	0.00	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Sphalerite Association



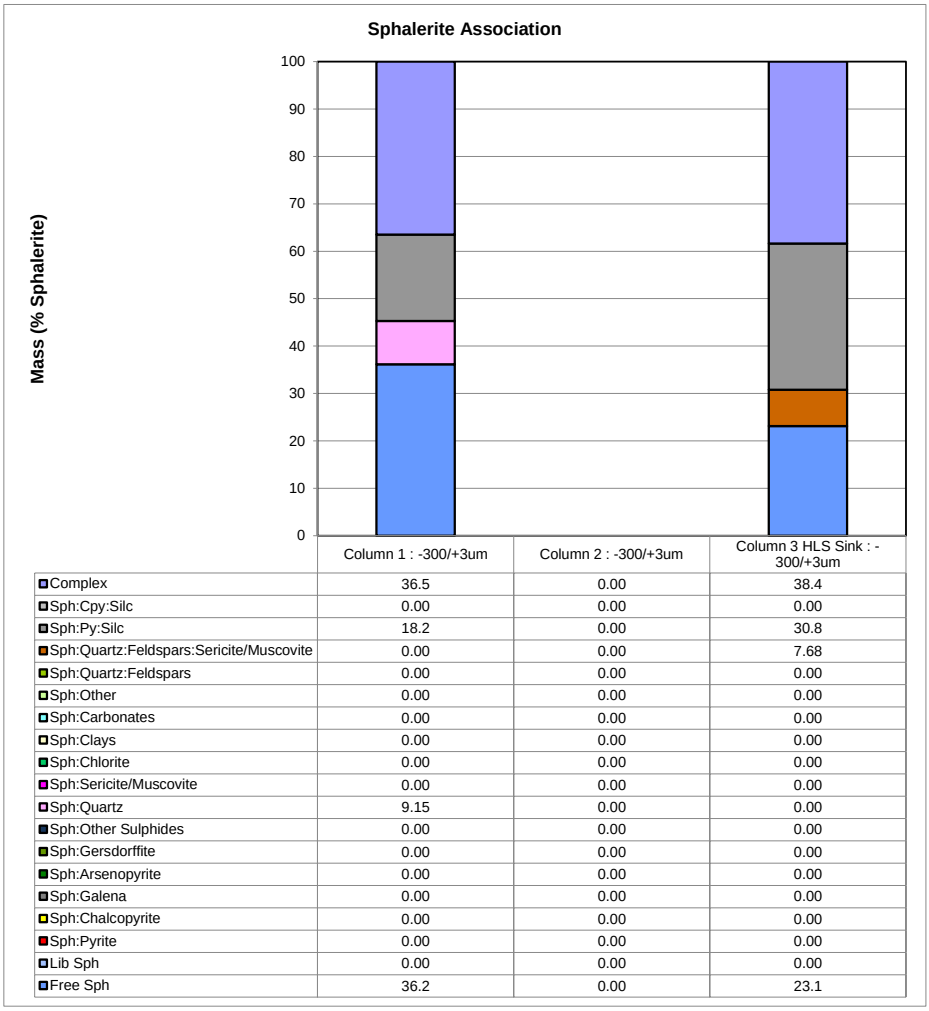
	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	0.00	0.00	0.00
Sph:Cpy:Silc	0.00	0.00	0.00
Sph:Py:Silc	0.00	0.00	0.00
Sph:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00	0.00
Sph:Quartz:Feldspars	0.00	0.00	0.00
Sph:Other	0.00	0.00	0.00
Sph:Carbonates	0.00	0.00	0.00
Sph:Clays	0.00	0.00	0.00
Sph:Chlorite	0.00	0.00	0.00
Sph:Sericite/Muscovite	0.00	0.00	0.00
Sph:Quartz	0.00	0.00	0.00
Sph:Other Sulphides	0.00	0.00	0.00
Sph:Gersdorffite	0.00	0.00	0.00
Sph:Arsenopyrite	0.00	0.00	0.00
Sph:Galena	0.00	0.00	0.00
Sph:Chalcopyrite	0.00	0.00	0.00
Sph:Pyrite	0.00	0.00	0.00
Lib Sph	0.00	0.00	0.00
Free Sph	0.00	0.00	0.00

Absolute Mass of Sphalerite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Sph	0.00	0.00	0.00
Lib Sph	0.00	0.00	0.00
Sph:Pyrite	0.00	0.00	0.00
Sph:Chalcopyrite	0.00	0.00	0.00
Sph:Galena	0.00	0.00	0.00
Sph:Arsenopyrite	0.00	0.00	0.00
Sph:Gersdorffite	0.00	0.00	0.00
Sph:Other Sulphides	0.00	0.00	0.00
Sph:Quartz	0.00	0.00	0.00
Sph:Sericite/Muscovite	0.00	0.00	0.00
Sph:Chlorite	0.00	0.00	0.00
Sph:Clays	0.00	0.00	0.00
Sph:Carbonates	0.00	0.00	0.00
Sph:Other	0.00	0.00	0.00
Sph:Quartz:Feldspars	0.00	0.00	0.00
Sph:Quartz:Feldspars:Sericite/Muscovit	0.00	0.00	0.00
Sph:Py:Silc	0.00	0.00	0.00
Sph:Cpy:Silc	0.00	0.00	0.00
Complex	0.00	0.00	0.00
Total	0.01	0.00	0.01

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Sphalerite Association



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	36.5	0.00	38.4
Sph:Cpy:Silc	0.00	0.00	0.00
Sph:Py:Silc	18.2	0.00	30.8
Sph:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00	7.68
Sph:Quartz:Feldspars	0.00	0.00	0.00
Sph:Other	0.00	0.00	0.00
Sph:Carbonates	0.00	0.00	0.00
Sph:Clays	0.00	0.00	0.00
Sph:Chlorite	0.00	0.00	0.00
Sph:Sericite/Muscovite	0.00	0.00	0.00
Sph:Quartz	9.15	0.00	0.00
Sph:Other Sulphides	0.00	0.00	0.00
Sph:Gersdorffite	0.00	0.00	0.00
Sph:Arsenopyrite	0.00	0.00	0.00
Sph:Galena	0.00	0.00	0.00
Sph:Chalcopyrite	0.00	0.00	0.00
Sph:Pyrite	0.00	0.00	0.00
Lib Sph	0.00	0.00	0.00
Free Sph	36.2	0.00	23.1

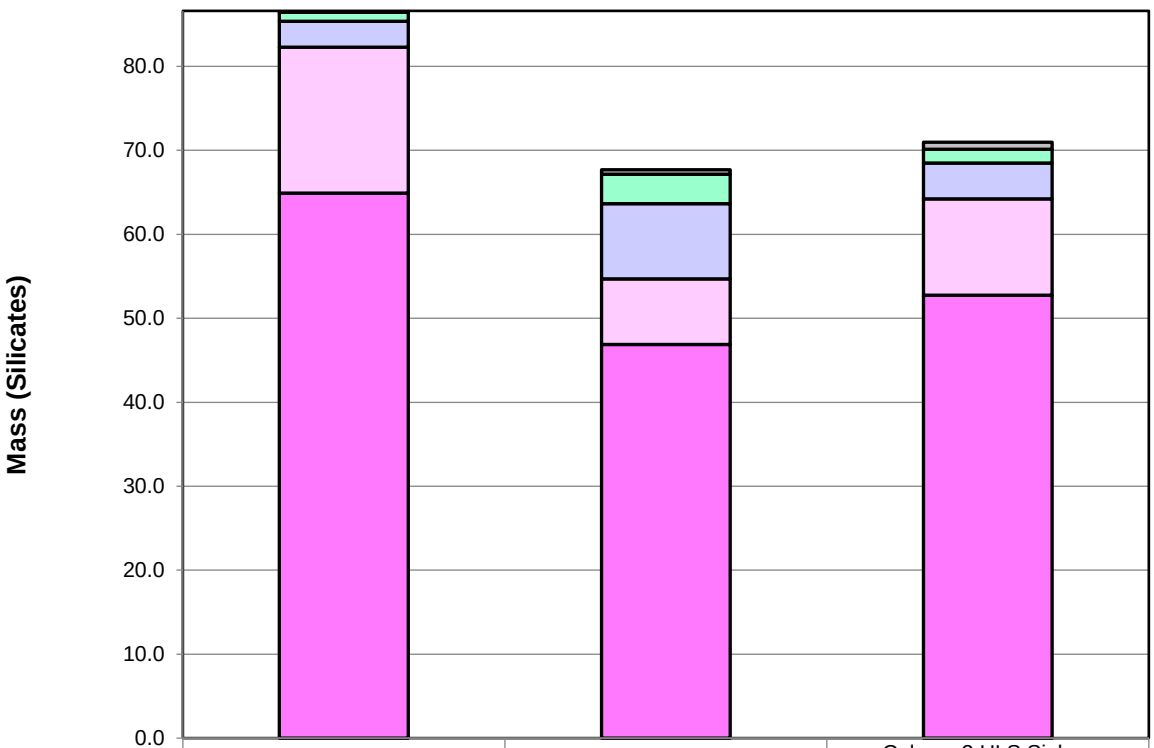
Normalized Mass of Sphalerite Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Sph	36.2	0.00	23.1
Lib Sph	0.00	0.00	0.00
Sph:Pyrite	0.00	0.00	0.00
Sph:Chalcopyrite	0.00	0.00	0.00
Sph:Galena	0.00	0.00	0.00
Sph:Arsenopyrite	0.00	0.00	0.00
Sph:Gersdorffite	0.00	0.00	0.00
Sph:Other Sulphides	0.00	0.00	0.00
Sph:Quartz	9.15	0.00	0.00
Sph:Sericite/Muscovite	0.00	0.00	0.00
Sph:Chlorite	0.00	0.00	0.00
Sph:Clays	0.00	0.00	0.00
Sph:Carbonates	0.00	0.00	0.00
Sph:Other	0.00	0.00	0.00
Sph:Quartz:Feldspars	0.00	0.00	0.00
Sph:Quartz:Feldspars:Sericite/Muscovit	0.00	0.00	7.68
Sph:Py:Silc	18.2	0.00	30.8
Sph:Cpy:Silc	0.00	0.00	0.00
Complex	36.5	0.00	38.4
Total	100.0	0.00	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Silc	0.17	0.55	0.84
Sub Midds Silc	1.06	3.52	1.62
Midds Silc	3.07	8.94	4.28
Lib Silc	17.4	7.82	11.5
Free Silc	64.9	46.9	52.7

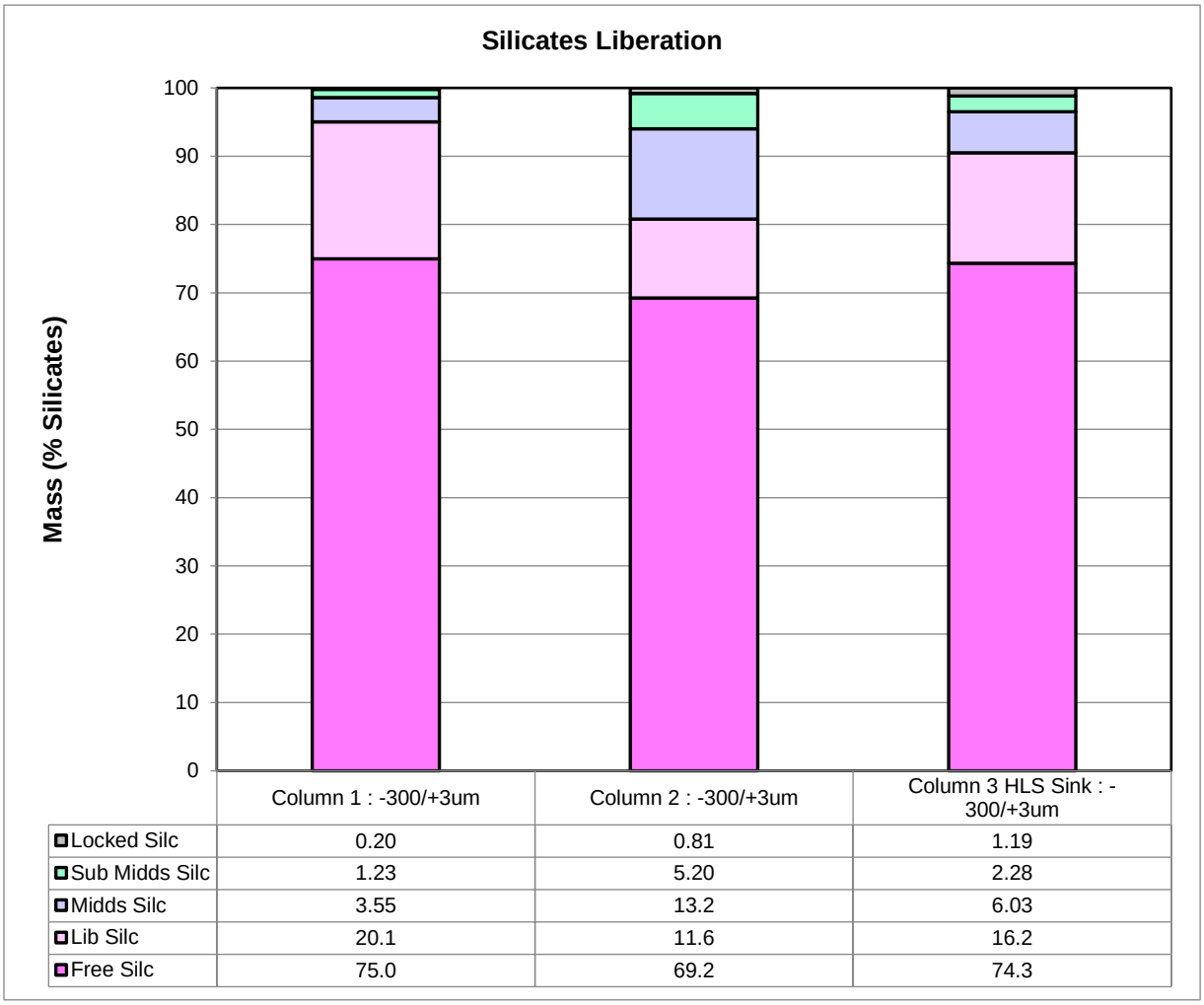
Absolute Mass of Silicates Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Silc	64.9	46.9	52.7
Lib Silc	17.4	7.82	11.5
Midds Silc	3.07	8.94	4.28
Sub Midds Silc	1.06	3.52	1.62
Locked Silc	0.17	0.55	0.84
Total	86.6	67.7	71.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Liberation



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Locked Silc	0.20	0.81	1.19
Sub Midds Silc	1.23	5.20	2.28
Midds Silc	3.55	13.2	6.03
Lib Silc	20.1	11.6	16.2
Free Silc	75.0	69.2	74.3

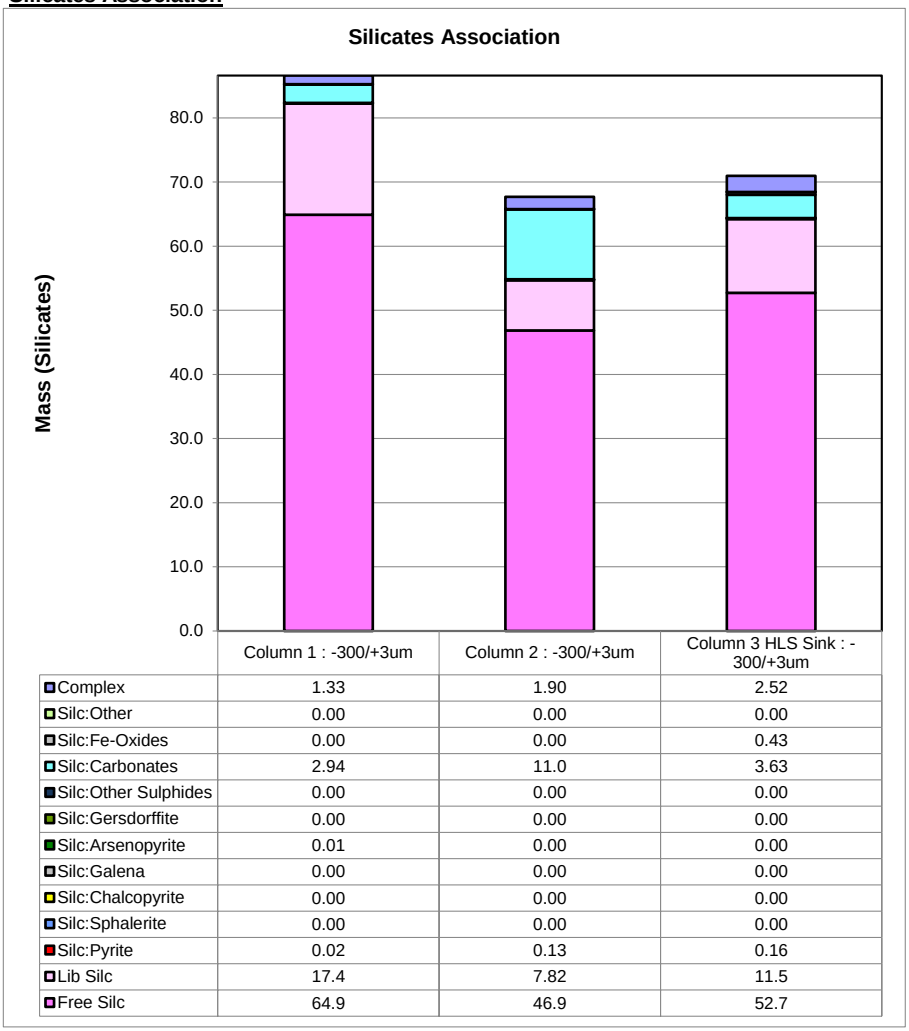
Normalized Mass of Silicates Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Silc	75.0	69.2	74.3
Lib Silc	20.1	11.6	16.2
Midds Silc	3.55	13.2	6.03
Sub Midds Silc	1.23	5.20	2.28
Locked Silc	0.20	0.81	1.19
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Association



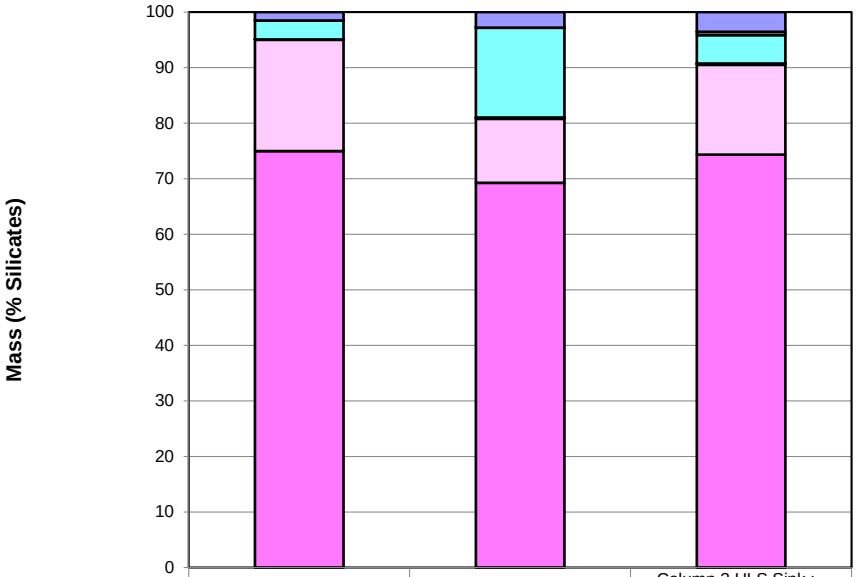
	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	1.33	1.90	2.52
Silc:Other	0.00	0.00	0.00
Silc:Fe-Oxides	0.00	0.00	0.43
Silc:Carbonates	2.94	11.0	3.63
Silc:Other Sulphides	0.00	0.00	0.00
Silc:Gersdorffite	0.00	0.00	0.00
Silc:Arsenopyrite	0.01	0.00	0.00
Silc:Galena	0.00	0.00	0.00
Silc:Chalcopyrite	0.00	0.00	0.00
Silc:Sphalerite	0.00	0.00	0.00
Silc:Pyrite	0.02	0.13	0.16
Lib Silc	17.4	7.82	11.5
Free Silc	64.9	46.9	52.7

Absolute Mass of Silicates Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Silc	64.9	46.9	52.7
Lib Silc	17.4	7.82	11.5
Silc:Pyrite	0.02	0.13	0.16
Silc:Sphalerite	0.00	0.00	0.00
Silc:Chalcopyrite	0.00	0.00	0.00
Silc:Galena	0.00	0.00	0.00
Silc:Arsenopyrite	0.01	0.00	0.00
Silc:Gersdorffite	0.00	0.00	0.00
Silc:Other Sulphides	0.00	0.00	0.00
Silc:Carbonates	2.94	11.0	3.63
Silc:Fe-Oxides	0.00	0.00	0.43
Silc:Other	0.00	0.00	0.00
Complex	1.33	1.90	2.52
Total	86.6	67.7	71.0

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Association



	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Complex	1.53	2.80	3.55
Silc:Other	0.00	0.00	0.00
Silc:Fe-Oxides	0.00	0.00	0.61
Silc:Carbonates	3.40	16.2	5.11
Silc:Other Sulphides	0.00	0.00	0.00
Silc:Gersdorffite	0.00	0.00	0.00
Silc:Arsenopyrite	0.01	0.00	0.00
Silc:Galena	0.00	0.00	0.00
Silc:Chalcopyrite	0.00	0.00	0.00
Silc:Sphalerite	0.00	0.00	0.00
Silc:Pyrite	0.02	0.19	0.22
Lib Silc	20.1	11.6	16.2
Free Silc	75.0	69.2	74.3

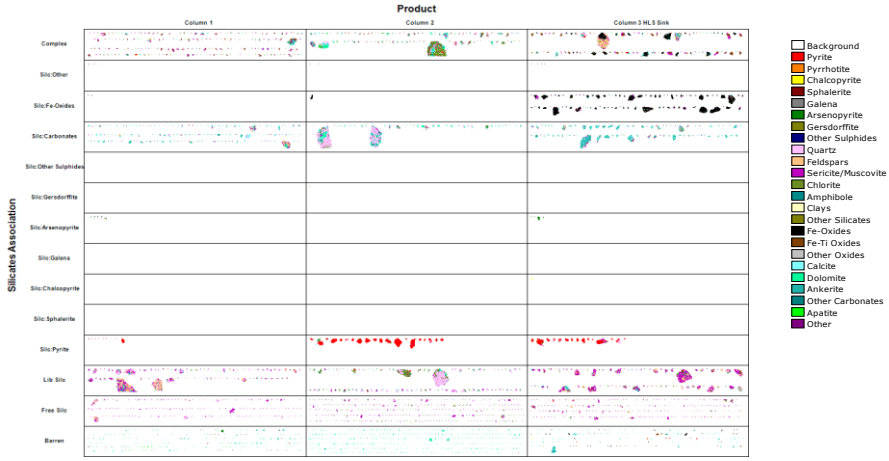
Normalized Mass of Silicates Across Samples

Mineral Name	Column 1 : -300/+3um	Column 2 : -300/+3um	Column 3 HLS Sink : -300/+3um
Free Silc	75.0	69.2	74.3
Lib Silc	20.1	11.6	16.2
Silc:Pyrite	0.02	0.19	0.22
Silc:Sphalerite	0.00	0.00	0.00
Silc:Chalcopyrite	0.00	0.00	0.00
Silc:Galena	0.00	0.00	0.00
Silc:Arsenopyrite	0.01	0.00	0.00
Silc:Gersdorffite	0.00	0.00	0.00
Silc:Other Sulphides	0.00	0.00	0.00
Silc:Carbonates	3.40	16.2	5.11
Silc:Fe-Oxides	0.00	0.00	0.61
Silc:Other	0.00	0.00	0.00
Complex	1.53	2.80	3.55
Total	100.0	100.0	100.0

Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

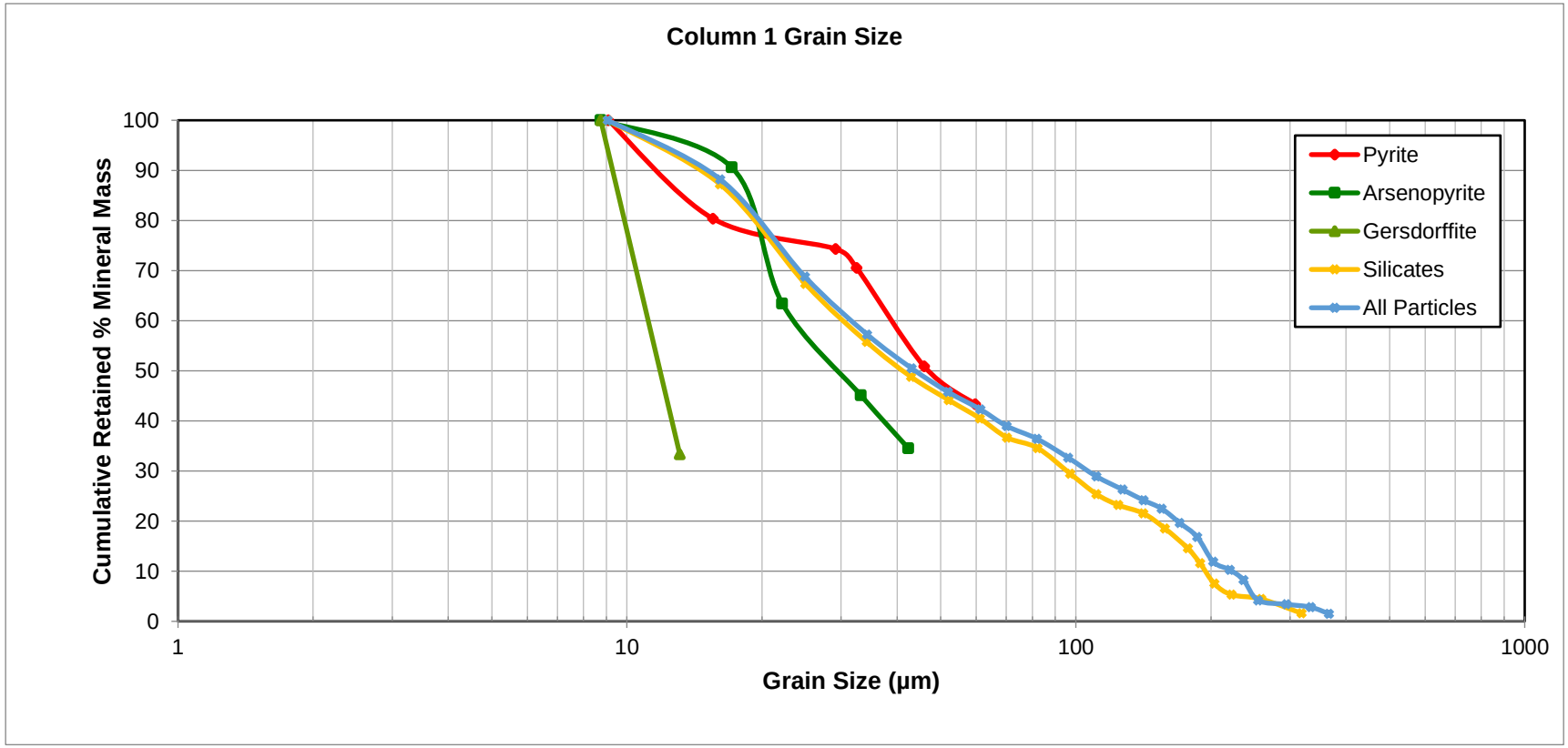
Silicates Association



Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

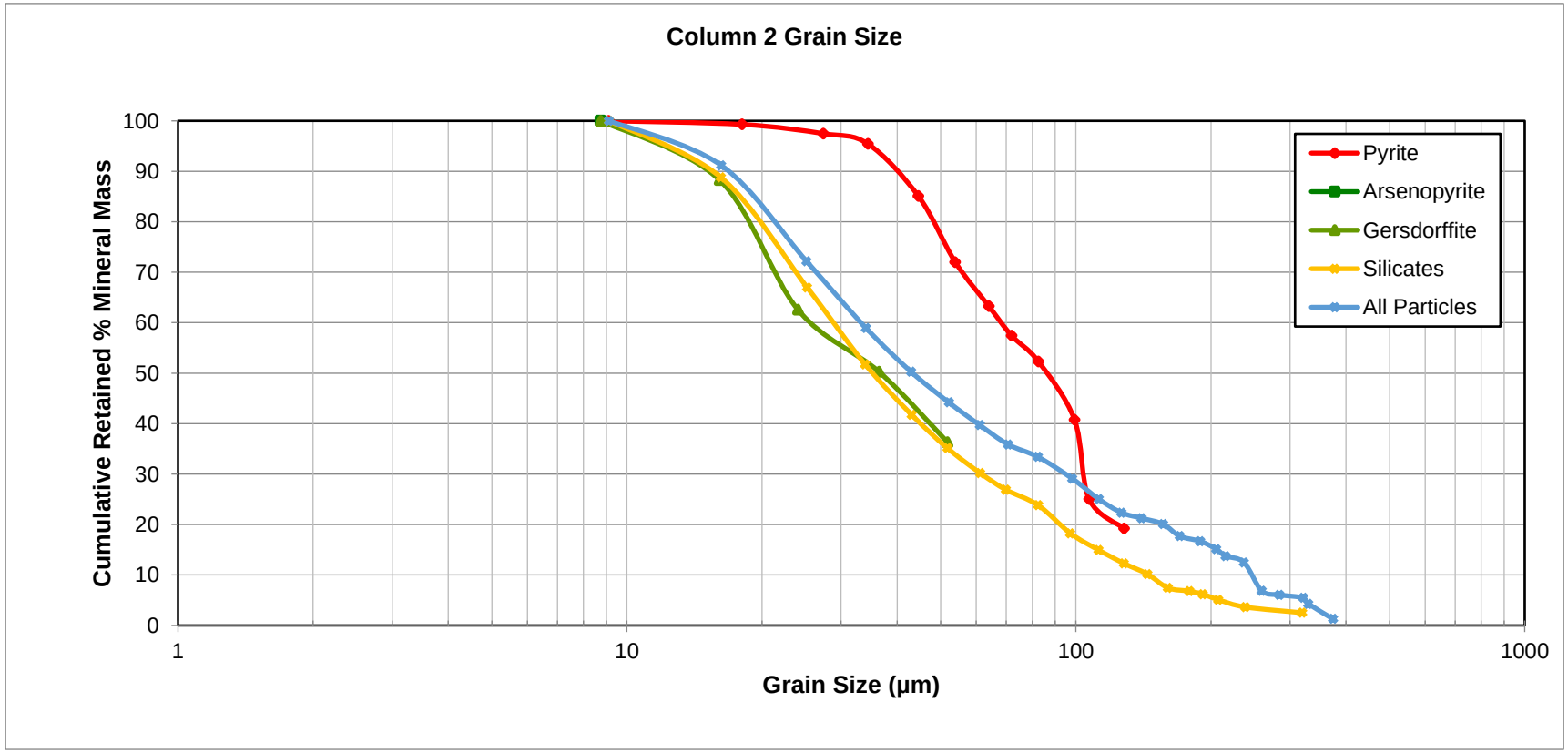
Cumulative Retained Grain Size Distribution



Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

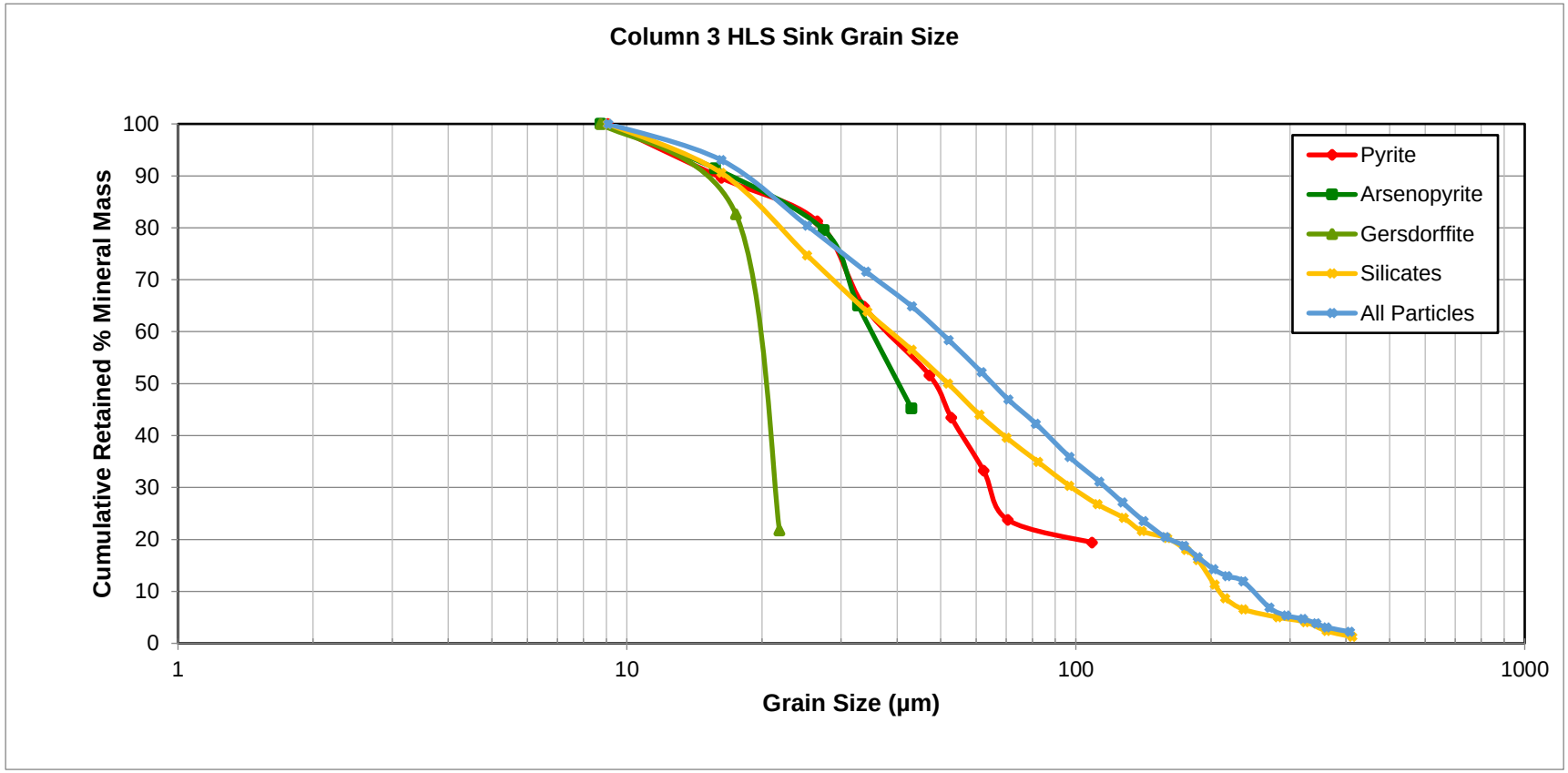
Cumulative Retained Grain Size Distribution



Gold Canyon Resouces
19032-01
MI5063-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Cumulative Retained Grain Size Distribution



QEMSCAN DATA

prepared for:

Gold Canyon Resouces

Project 19032-01
MI5111-MAR22
May 10, 2022

Prepared by:

Margot Aldis/Chris Gunning
Mineralogist/Senior Mineralogist

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy) (METH# 8.11.1) used by SGS Minerals Services

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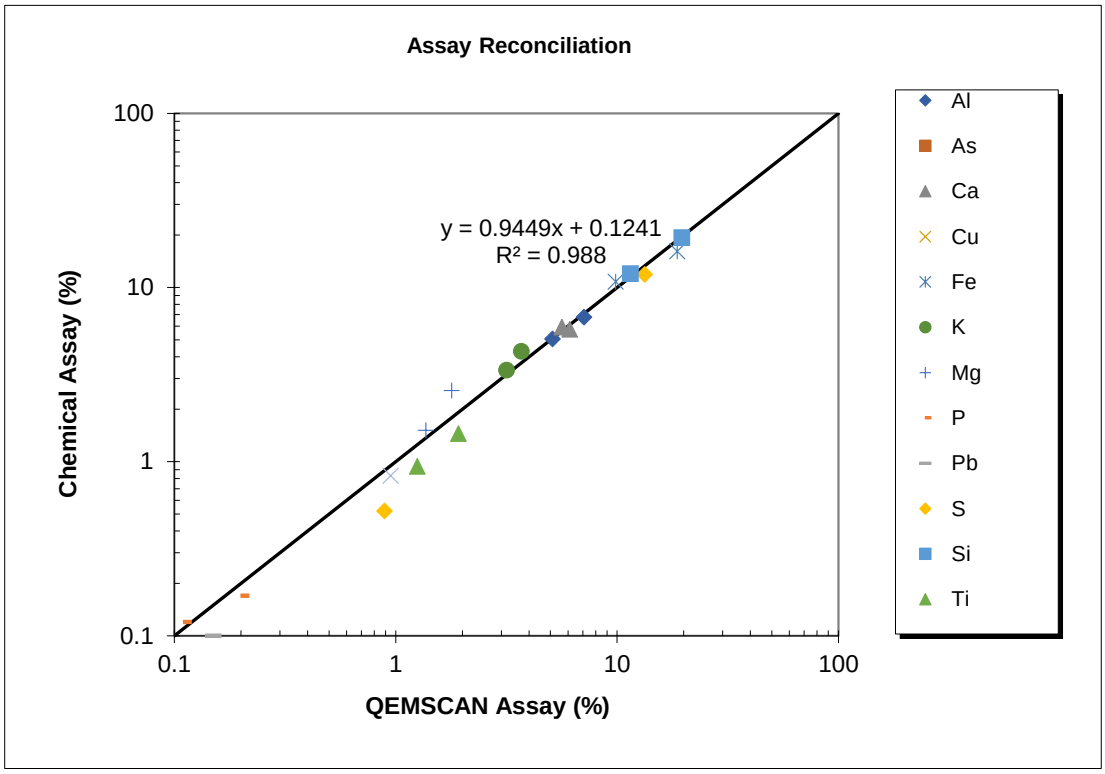
Member of the SGS Group (SGS SA)

Gold Canyon Resouces
19032-01
MI5111-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Assay Reconciliation



Sample	1956-B9 15 M112089 HLS Sink	1956-B8 2211198 HLS Sink
Element	**-300/+3um**	**-300/+3um**
Al (QEMSCAN)	7.09	5.11
Al (Chemical)	6.74	5.06
As (QEMSCAN)	0.04	0.07
As (Chemical)	0.03	0.08
Ca (QEMSCAN)	6.11	5.63
Ca (Chemical)	5.75	5.91
Cu (QEMSCAN)	0.01	0.03
Cu (Chemical)	0.01	0.02
Fe (QEMSCAN)	9.84	18.7
Fe (Chemical)	10.8	16.1
K (QEMSCAN)	3.69	3.17
K (Chemical)	4.30	3.35
Mg (QEMSCAN)	1.37	1.79
Mg (Chemical)	1.51	2.56
P (QEMSCAN)	0.20	0.11
P (Chemical)	0.17	0.12
Pb (QEMSCAN)	0.00	0.15
Pb (Chemical)	0.00	0.10
S (QEMSCAN)	0.89	13.3
S (Chemical)	0.52	11.9
Si (QEMSCAN)	19.6	11.5
Si (Chemical)	19.3	12
Ti (QEMSCAN)	1.25	1.92
Ti (Chemical)	0.94	1.45
Zn (QEMSCAN)	0.03	0.95
Zn (Chemical)	0.03	0.83

Gold Canyon Resouces
19032-01
MI5111-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Modals

Survey		**19032-01 / MI5111-MAR22**	
Project		**Gold Canyon Resouces**	
Sample		**1956-B9 15 M112089 HLS Sink**	**1956-B8 2211198 HLS Sink**
Fraction		-300/+3um	-300/+3um
Mass Size Distribution (%)		100.0	100.0
Calculated ESD Particle Size		33	35
		Sample	**Sample**
Mineral Mass (%)	Pyrite	1.43	24.0
	Pyrrhotite	0.29	0.04
	Chalcopyrite	0.02	0.07
	Sphalerite	0.02	1.55
	Galena	0.00	0.18
	Arsenopyrite	0.07	0.01
	Gersdorffite	0.01	0.01
	Other Sulphides	0.00	0.01
	Quartz	21.2	6.27
	Feldspars	6.67	9.58
	Sericite/Muscovite	34.4	25.8
	Chlorite	0.07	0.16
	Amphibole	0.10	0.08
	Clays	1.35	0.80
	Other Silicates	0.71	0.38
	Fe-Oxides	2.67	0.92
	Fe-Ti Oxides	3.39	5.30
	Other Oxides	0.01	0.00
	Calcite	2.07	2.81
	Dolomite	0.77	2.99
	Ankerite	23.6	18.3
	Other Carbonates	0.08	0.01
	Apatite	1.05	0.57
	Other	0.11	0.16
	Total	100.0	100.0
Mean Grain Size by Frequency (µm)	Pyrite	46	55
	Pyrrhotite	19	12
	Chalcopyrite	14	17
	Sphalerite	12	31
	Galena	9	14
	Arsenopyrite	31	9
	Gersdorffite	9	14
	Other Sulphides	9	11
	Quartz	22	20
	Feldspars	21	31
	Sericite/Muscovite	20	22
	Chlorite	20	24
	Amphibole	10	13
	Clays	11	11
	Other Silicates	16	15
	Fe-Oxides	30	37
	Fe-Ti Oxides	28	28
	Other Oxides	11	10
	Calcite	16	17
	Dolomite	13	16
	Ankerite	26	23
	Other Carbonates	10	9
	Apatite	19	15
	Other	10	12

Gold Canyon Resouces
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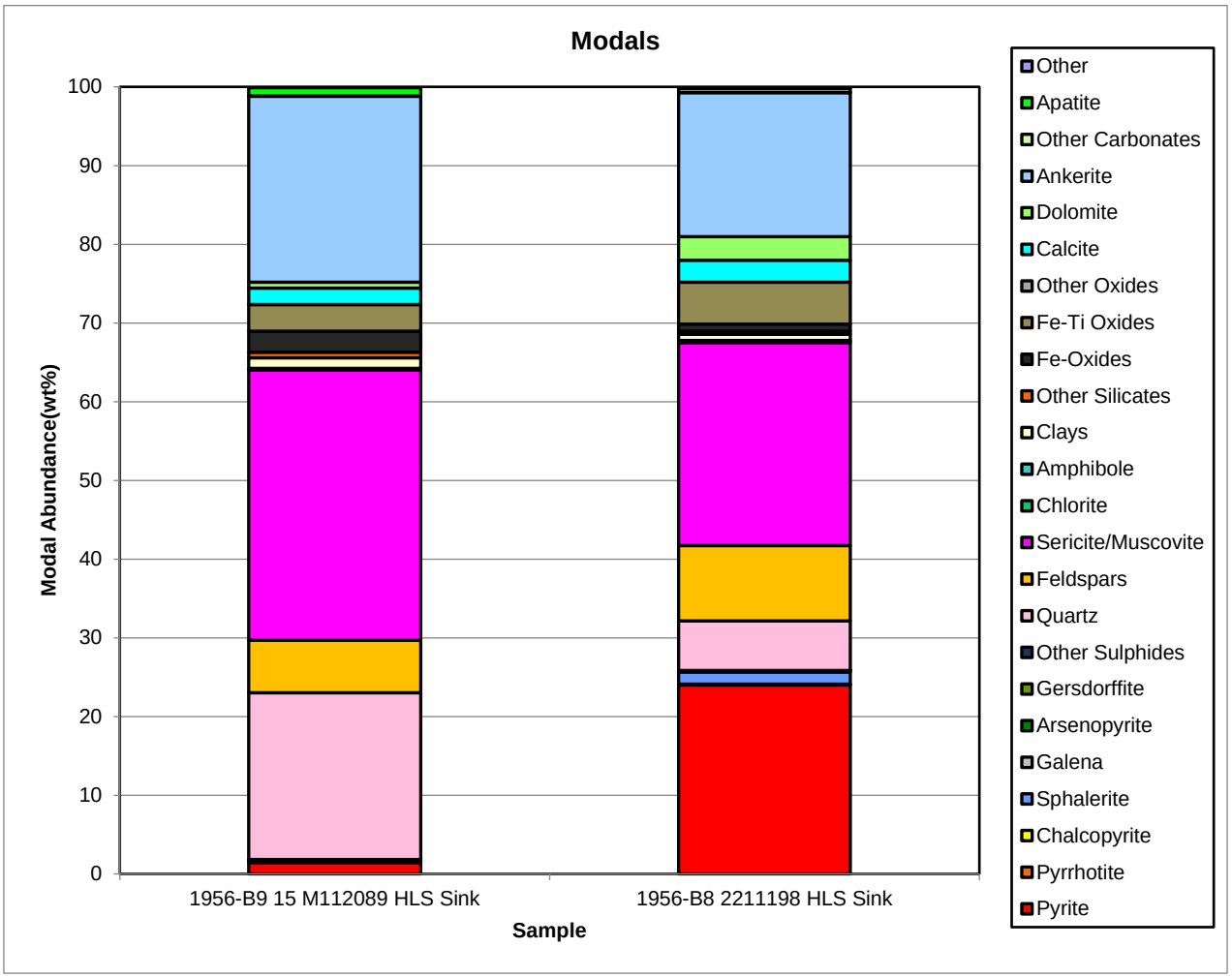
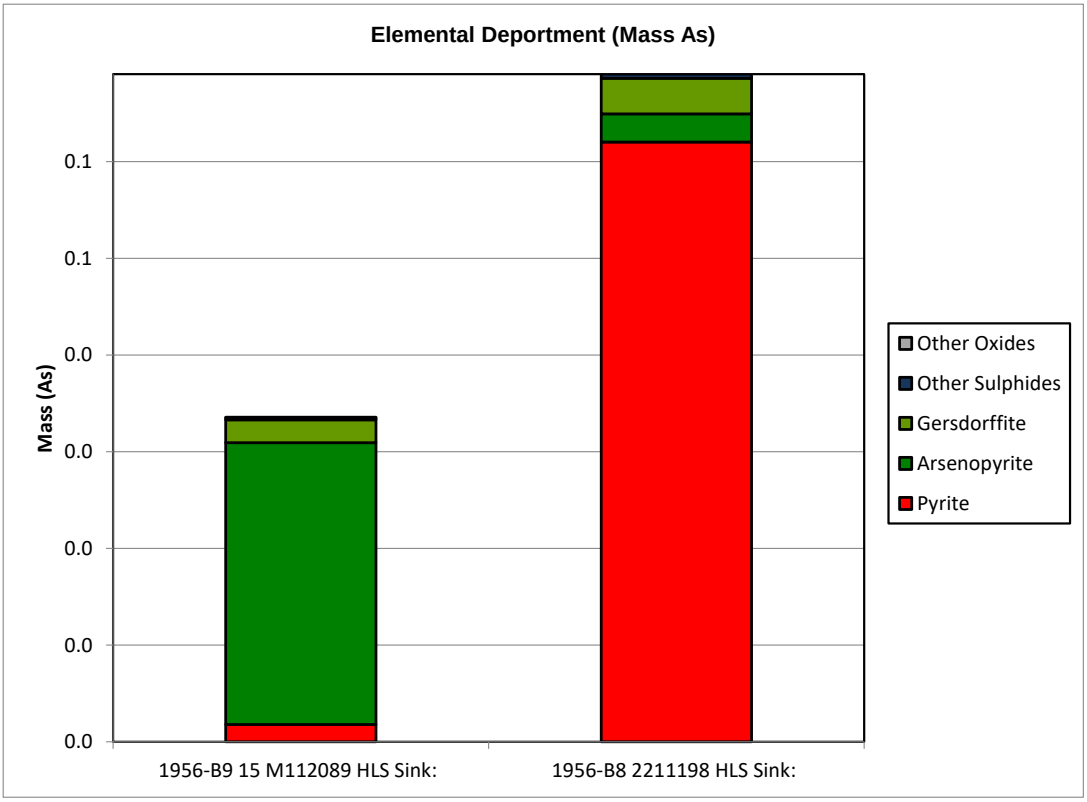
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)



High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

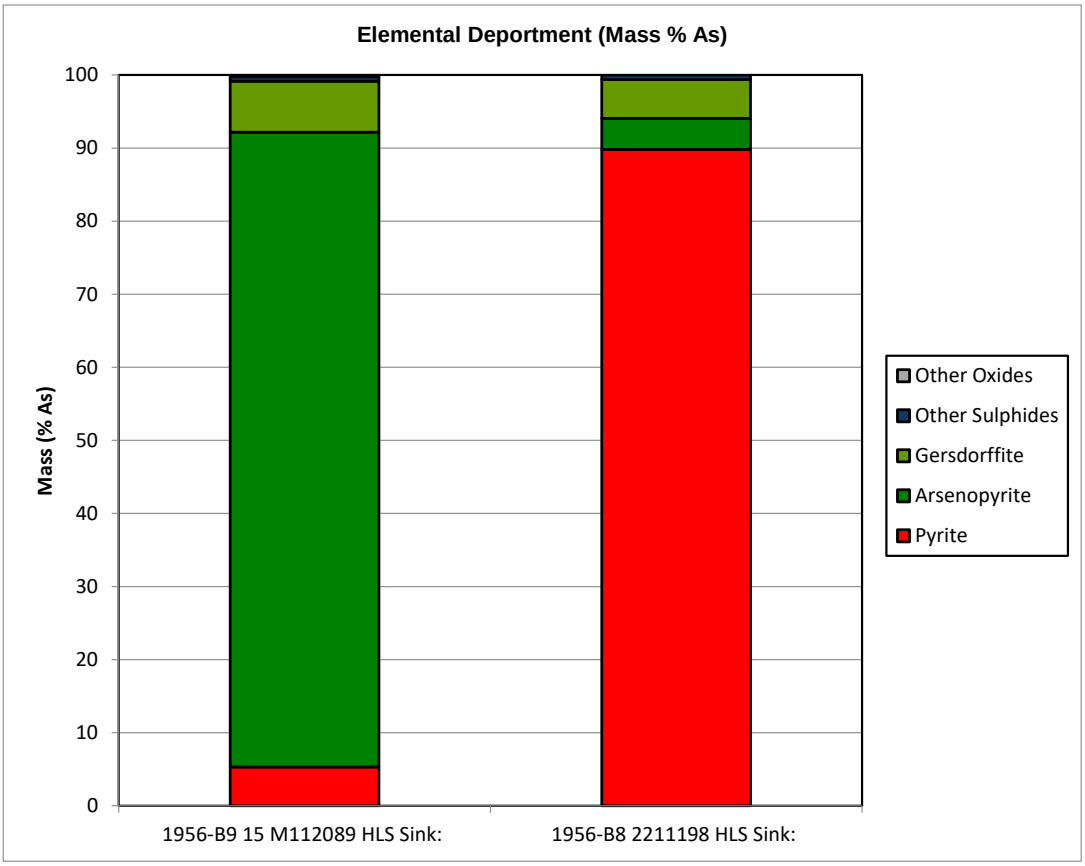
As Deportment - Absolute



	1956-B9 15 M112089 HLS Sink:	1956-B8 2211198 HLS Sink:
Pyrite	0.00	0.06
Arsenopyrite	0.03	0.00
Gersdorffite	0.00	0.00
Other Sulphides	0.00	0.00
Other Oxides	0.00	0.00
Total	0.03	0.07

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

As Deportment - Normalized



	1956-B9 15 M112089 HLS Sink:	1956-B8 2211198 HLS Sink:
Pyrite	5.32	89.8
Arsenopyrite	86.8	4.23
Gersdorffite	6.98	5.33
Other Sulphides	0.62	0.62
Other Oxides	0.25	0.00
Total	100.0	100.0

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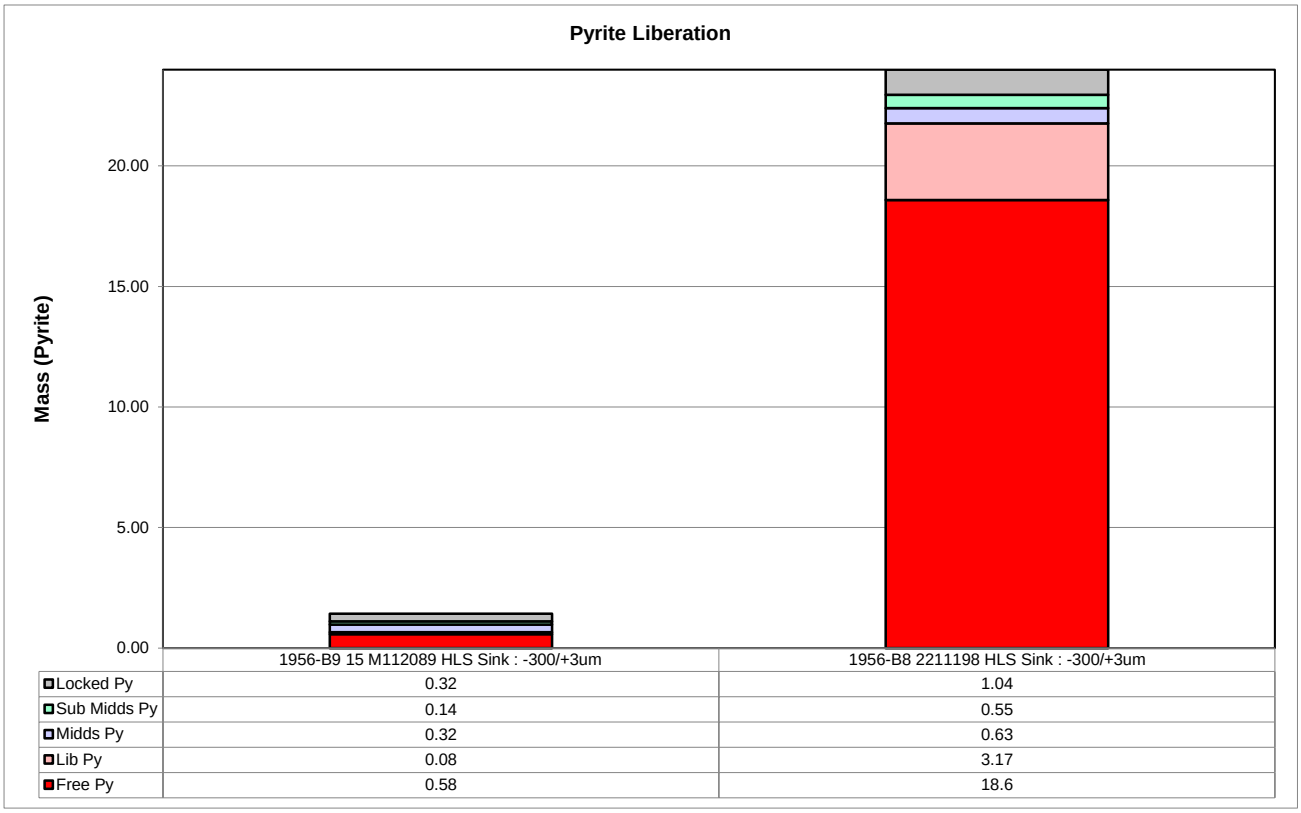
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Liberation



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Py	0.32	1.04
Sub Midds Py	0.14	0.55
Midds Py	0.32	0.63
Lib Py	0.08	3.17
Free Py	0.58	18.6

Absolute Mass of Pyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Py	0.58	18.6
Lib Py	0.08	3.17
Midds Py	0.32	0.63
Sub Midds Py	0.14	0.55
Locked Py	0.32	1.04
Total	1.43	24.0

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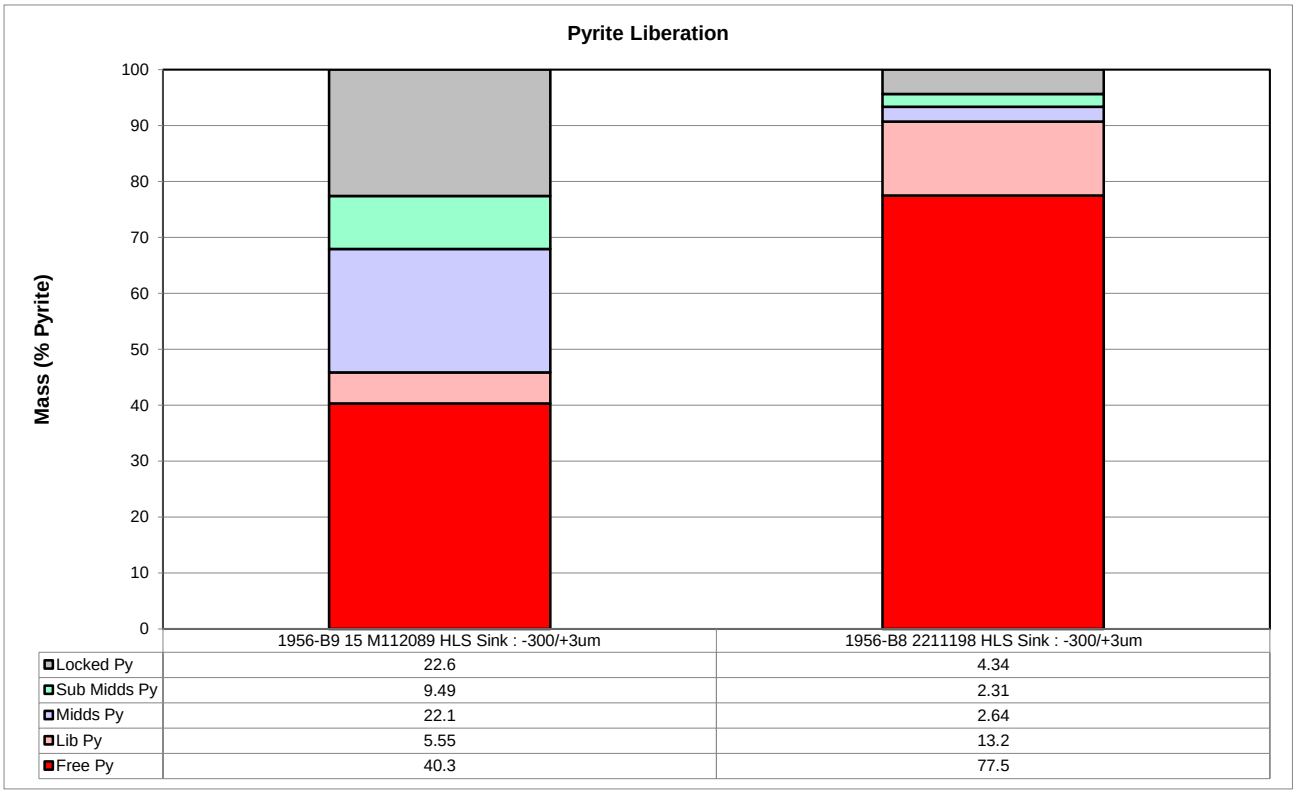
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Liberation



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Py	22.6	4.34
Sub Midds Py	9.49	2.31
Midds Py	22.1	2.64
Lib Py	5.55	13.2
Free Py	40.3	77.5

Normalized Mass of Pyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Py	40.3	77.5
Lib Py	5.55	13.2
Midds Py	22.1	2.64
Sub Midds Py	9.49	2.31
Locked Py	22.6	4.34
Total	100.0	100.0

Gold Canyon Resouces
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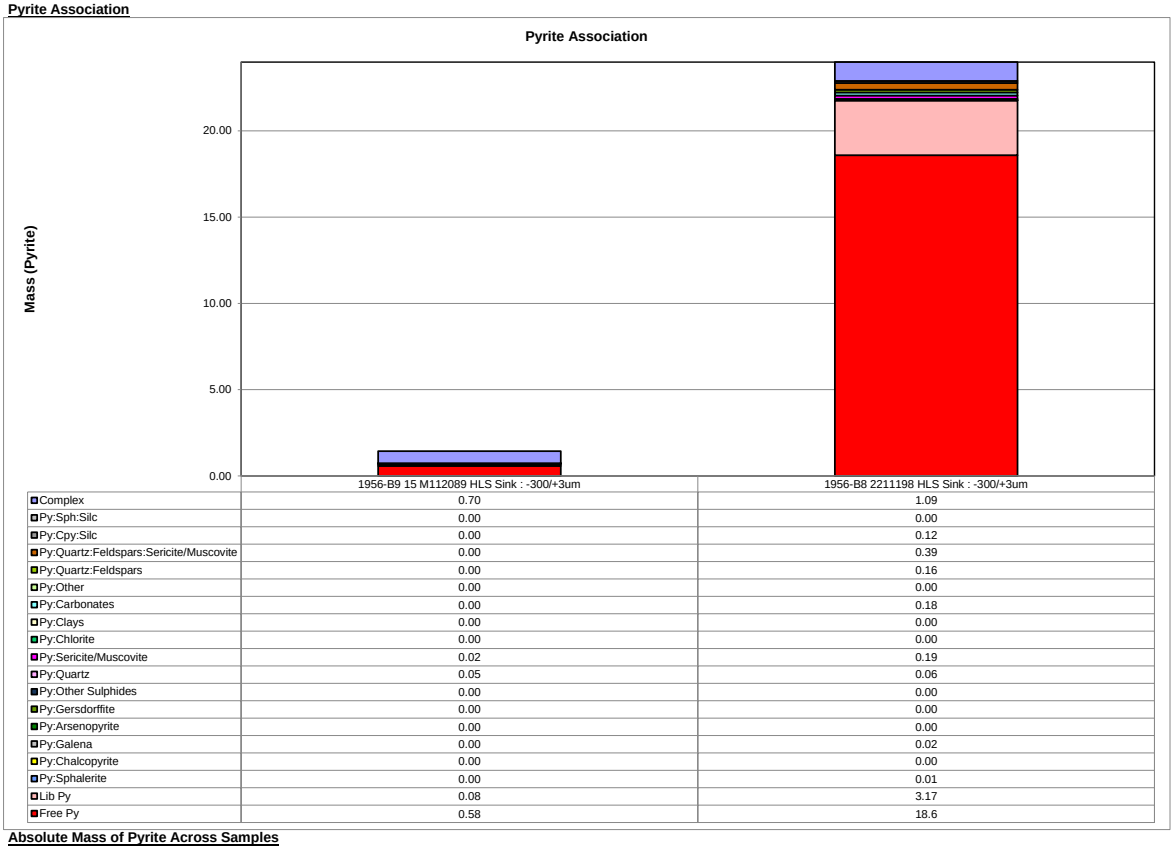
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Association



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	0.70	1.09
Py:Sph:Silc	0.00	0.00
Py:Cpy:Silc	0.00	0.12
Py:Quartz:Feldspars:Sericite/Muscovite	0.00	0.39
Py:Quartz:Feldspars	0.00	0.16
Py:Other	0.00	0.00
Py:Carbonates	0.00	0.18
Py:Clays	0.00	0.00
Py:Chlorite	0.00	0.00
Py:Sericite/Muscovite	0.02	0.19
Py:Quartz	0.05	0.06
Py:Other Sulphides	0.00	0.00
Py:Gersdorffite	0.00	0.00
Py:Arsenopyrite	0.00	0.00
Py:Galena	0.00	0.02
Py:Chalcopyrite	0.00	0.00
Py:Sphalerite	0.00	0.01
Lib Py	0.08	3.17
Free Py	0.58	18.6

Absolute Mass of Pyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Py	0.58	18.6
Lib Py	0.08	3.17
Py:Sphalerite	0.00	0.01
Py:Chalcopyrite	0.00	0.00
Py:Galena	0.00	0.02
Py:Arsenopyrite	0.00	0.00
Py:Gersdorffite	0.00	0.00
Py:Other Sulphides	0.00	0.00
Py:Quartz	0.05	0.06
Py:Sericite/Muscovite	0.02	0.19
Py:Chlorite	0.00	0.00
Py:Clays	0.00	0.00
Py:Carbonates	0.00	0.18
Py:Other	0.00	0.00
Py:Quartz:Feldspars	0.00	0.16
Py:Quartz:Feldspars:Sericite/Muscovite	0.00	0.39
Py:Cpy:Silc	0.00	0.12
Py:Sph:Silc	0.00	0.00
Complex	0.70	1.09
Total	1.43	24.0

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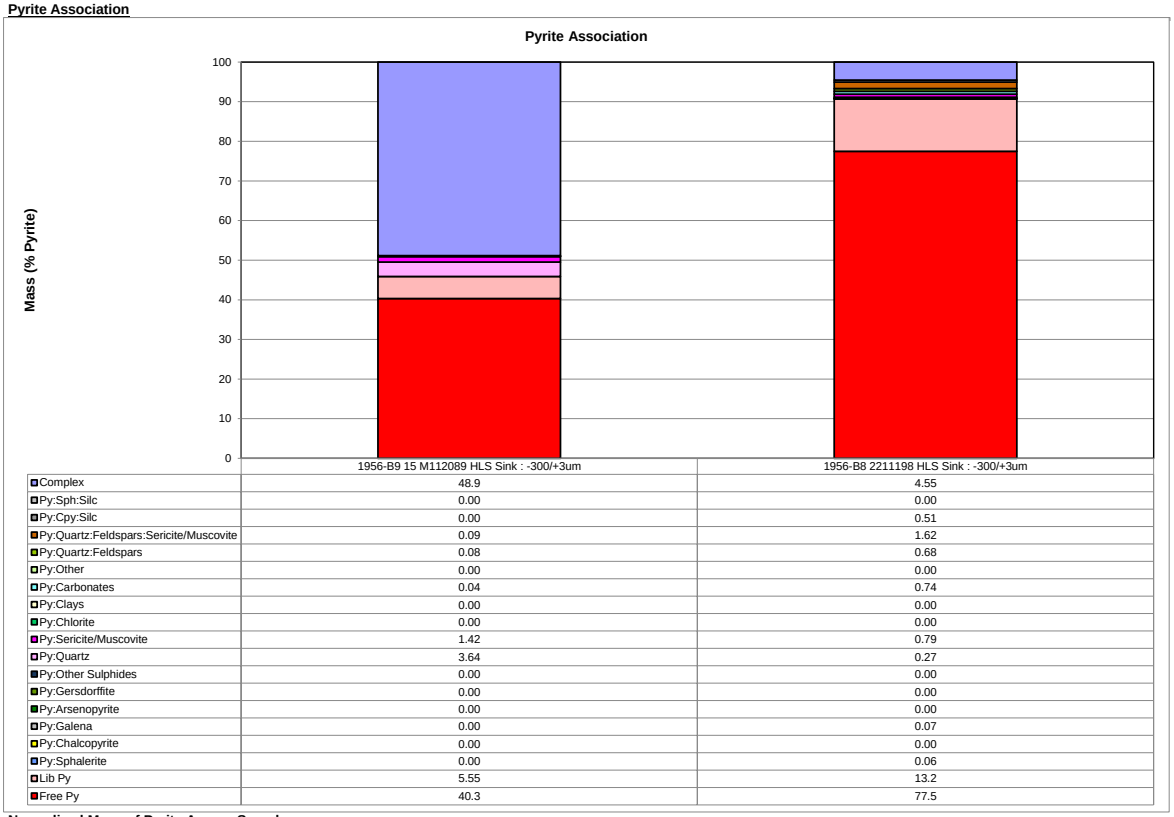
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Association



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	48.9	4.55
Py:Sph:Silc	0.00	0.00
Py:Cpy:Silc	0.00	0.51
Py:Quartz:Feldspars:Sericite/Muscovite	0.09	1.62
Py:Quartz:Feldspars	0.08	0.68
Py:Other	0.00	0.00
Py:Carbonates	0.04	0.74
Py:Clays	0.00	0.00
Py:Chlorite	0.00	0.00
Py:Sericite/Muscovite	1.42	0.79
Py:Quartz	3.64	0.27
Py:Other Sulphides	0.00	0.00
Py:Gersdorffite	0.00	0.00
Py:Arsenopyrite	0.00	0.00
Py:Galena	0.00	0.07
Py:Chalcopyrite	0.00	0.00
Py:Sphalerite	0.00	0.06
Lib Py	5.55	13.2
Free Py	40.3	77.5

Normalized Mass of Pyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Py	40.3	77.5
Lib Py	5.55	13.2
Py:Sphalerite	0.00	0.06
Py:Chalcopyrite	0.00	0.00
Py:Galena	0.00	0.07
Py:Arsenopyrite	0.00	0.00
Py:Gersdorffite	0.00	0.00
Py:Other Sulphides	0.00	0.00
Py:Quartz	3.64	0.27
Py:Sericite/Muscovite	1.42	0.79
Py:Chlorite	0.00	0.00
Py:Clays	0.00	0.00
Py:Carbonates	0.04	0.74
Py:Other	0.00	0.00
Py:Quartz:Feldspars	0.08	0.68
Py:Quartz:Feldspars:Sericite/Muscovite	0.09	1.62
Py:Cpy:Silc	0.00	0.51
Py:Sph:Silc	0.00	0.00
Complex	48.9	4.55
Total	100.0	100.0

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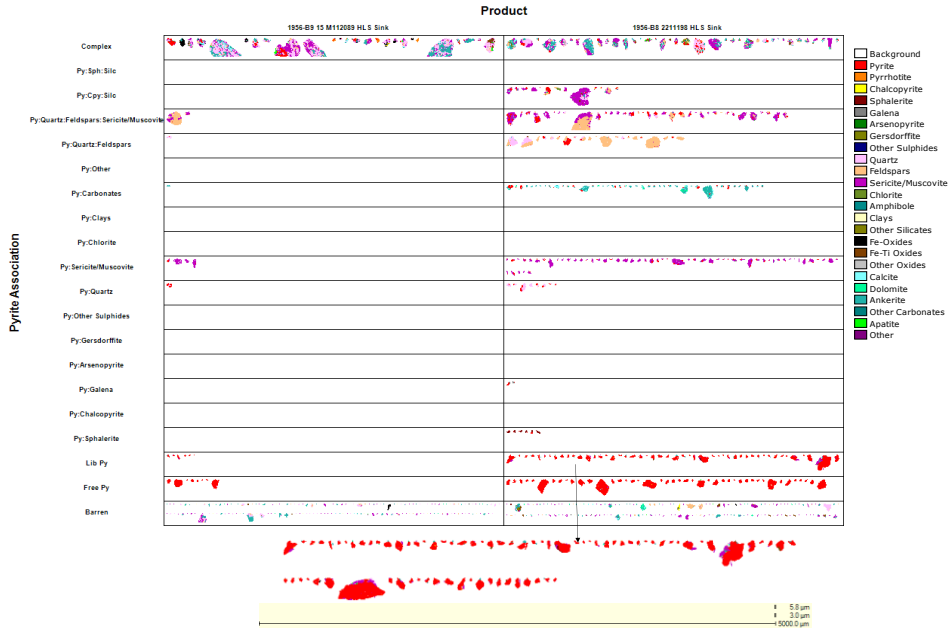
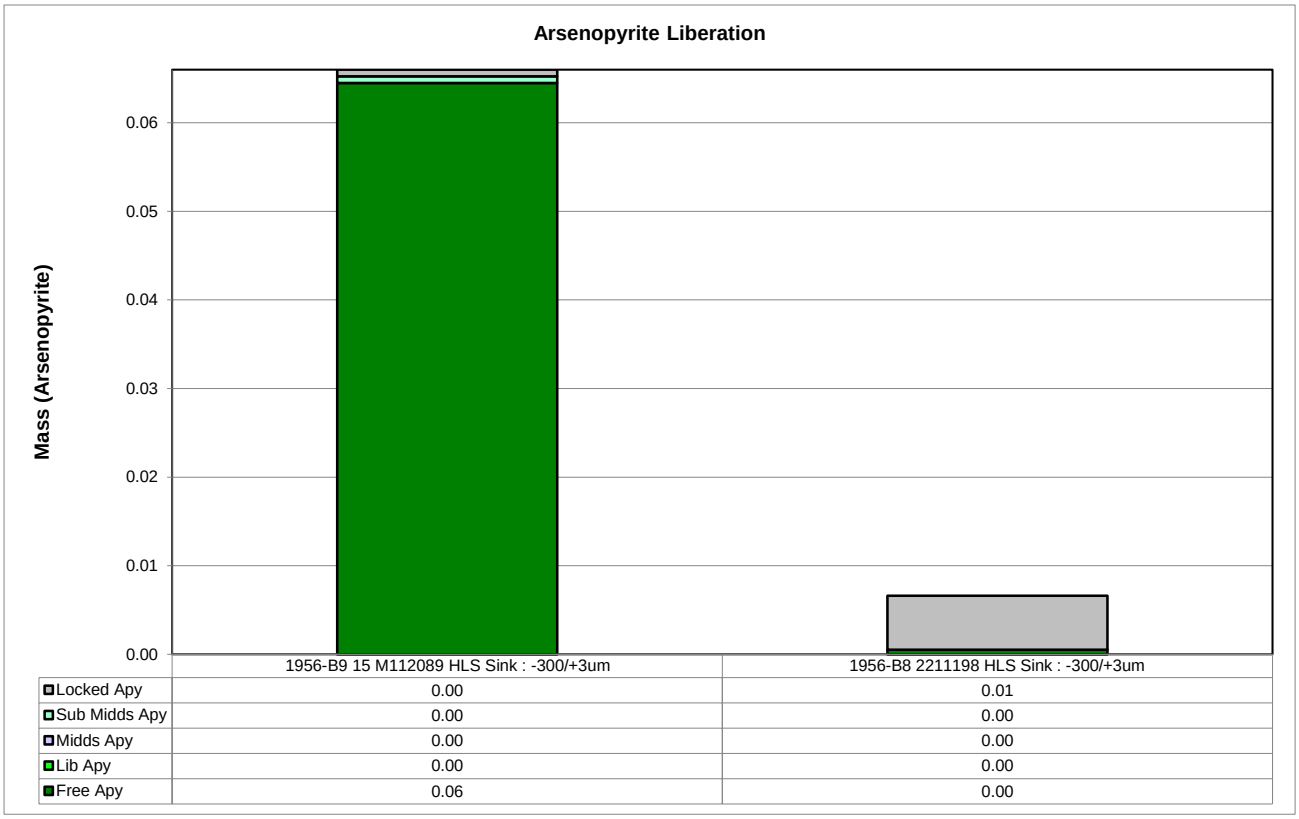
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Pyrite Association



High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Liberation



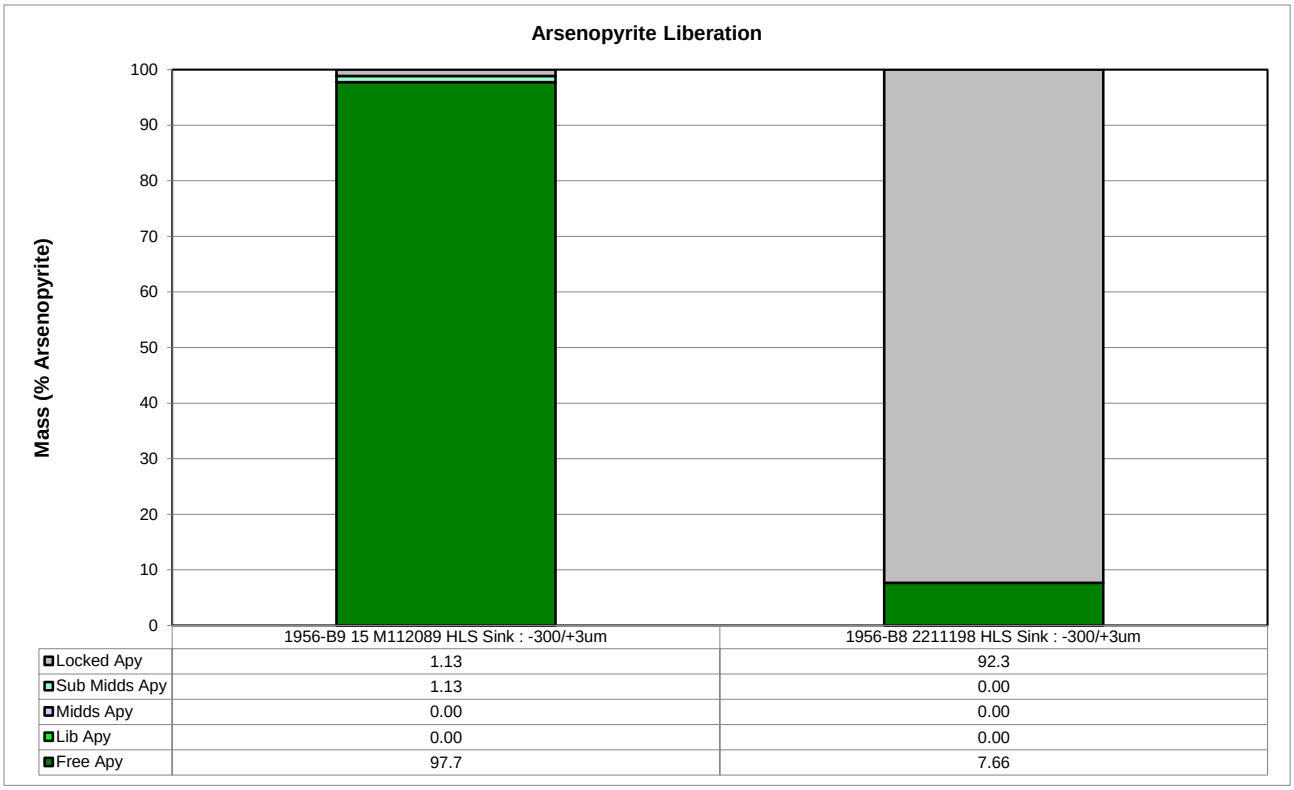
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Apy	0.00	0.01
Sub Midds Apy	0.00	0.00
Midds Apy	0.00	0.00
Lib Apy	0.00	0.00
Free Apy	0.06	0.00

Absolute Mass of Arsenopyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Apy	0.06	0.00
Lib Apy	0.00	0.00
Midds Apy	0.00	0.00
Sub Midds Apy	0.00	0.00
Locked Apy	0.00	0.01
Total	0.07	0.01

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Liberation



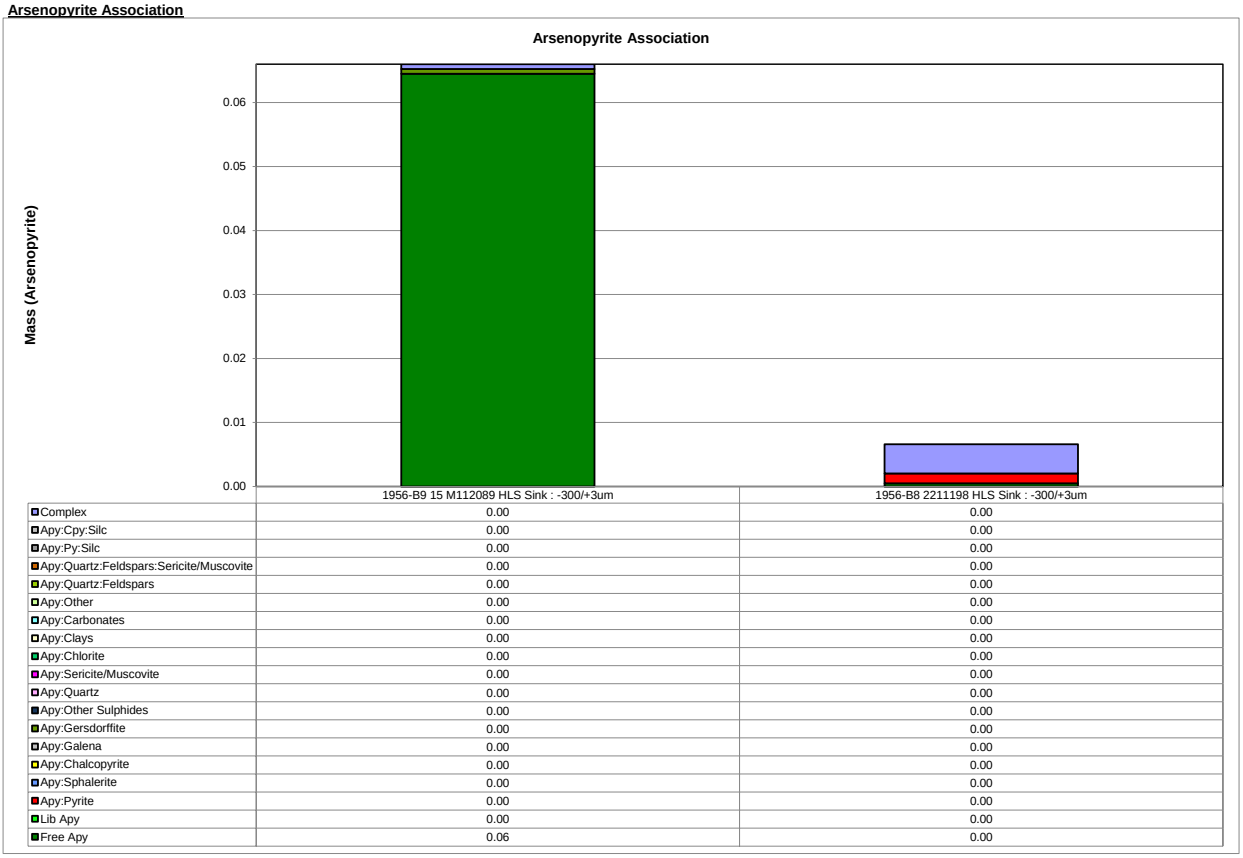
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Apy	1.13	92.3
Sub Midds Apy	1.13	0.00
Midds Apy	0.00	0.00
Lib Apy	0.00	0.00
Free Apy	97.7	7.66

Normalized Mass of Arsenopyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Apy	97.7	7.66
Lib Apy	0.00	0.00
Midds Apy	0.00	0.00
Sub Midds Apy	1.13	0.00
Locked Apy	1.13	92.3
Total	100.0	100.0

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Association



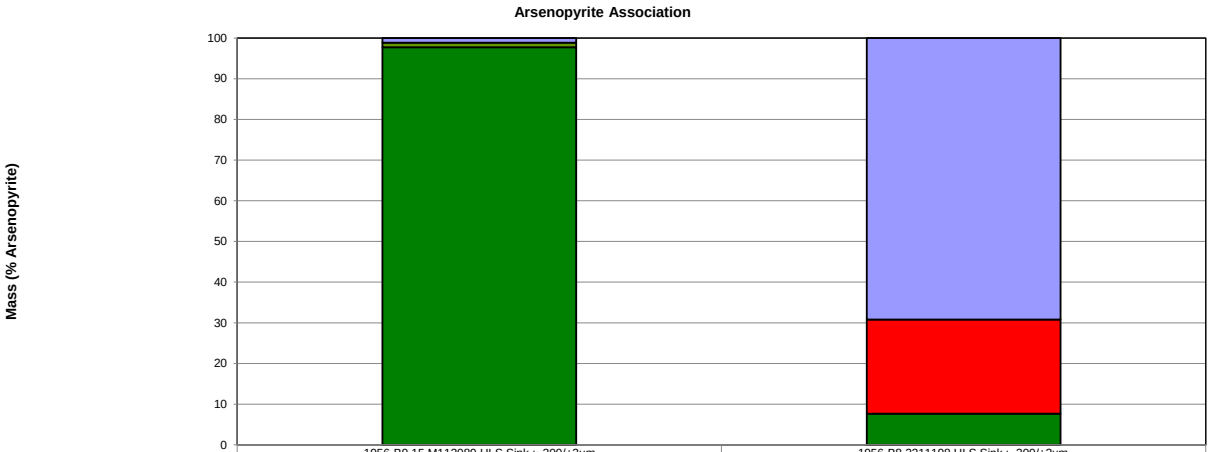
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	0.00	0.00
Apy:Cpy:Silc	0.00	0.00
Apy:Py:Silc	0.00	0.00
Apy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Apy:Quartz:Feldspars	0.00	0.00
Apy:Other	0.00	0.00
Apy:Carbonates	0.00	0.00
Apy:Clays	0.00	0.00
Apy:Chlorite	0.00	0.00
Apy:Sericite/Muscovite	0.00	0.00
Apy:Quartz	0.00	0.00
Apy:Other Sulphides	0.00	0.00
Apy:Gersdorffite	0.00	0.00
Apy:Galena	0.00	0.00
Apy:Chalcopyrite	0.00	0.00
Apy:Sphalerite	0.00	0.00
Apy:Pyrite	0.00	0.00
Lib Apy	0.00	0.00
Free Apy	0.06	0.00

Absolute Mass of Arsenopyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Apy	0.06	0.00
Lib Apy	0.00	0.00
Apy:Pyrite	0.00	0.00
Apy:Sphalerite	0.00	0.00
Apy:Chalcopyrite	0.00	0.00
Apy:Galena	0.00	0.00
Apy:Gersdorffite	0.00	0.00
Apy:Other Sulphides	0.00	0.00
Apy:Quartz	0.00	0.00
Apy:Sericite/Muscovite	0.00	0.00
Apy:Chlorite	0.00	0.00
Apy:Clays	0.00	0.00
Apy:Carbonates	0.00	0.00
Apy:Other	0.00	0.00
Apy:Quartz:Feldspars	0.00	0.00
Apy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Apy:Py:Silc	0.00	0.00
Apy:Cpy:Silc	0.00	0.00
Complex	0.00	0.00
Total	0.07	0.01

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Association



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	1.13	69.2
Apy:Cpy:Silc	0.00	0.00
Apy:Py:Silc	0.00	0.00
Apy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Apy:Quartz:Feldspars	0.00	0.00
Apy:Other	0.00	0.00
Apy:Carbonates	0.00	0.00
Apy:Clays	0.00	0.00
Apy:Chlorite	0.00	0.00
Apy:Sericite/Muscovite	0.00	0.00
Apy:Quartz	0.00	0.00
Apy:Other Sulphides	0.00	0.00
Apy:Gersdorffite	1.13	0.00
Apy:Galena	0.00	0.00
Apy:Chalcopyrite	0.00	0.00
Apy:Sphalerite	0.00	0.00
Apy:Pyrite	0.00	23.2
Lib Apy	0.00	0.00
Free Apy	97.7	7.66

Normalized Mass of Arsenopyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Apy	97.7	7.66
Lib Apy	0.00	0.00
Apy:Pyrite	0.00	23.2
Apy:Sphalerite	0.00	0.00
Apy:Chalcopyrite	0.00	0.00
Apy:Galena	0.00	0.00
Apy:Gersdorffite	1.13	0.00
Apy:Other Sulphides	0.00	0.00
Apy:Quartz	0.00	0.00
Apy:Sericite/Muscovite	0.00	0.00
Apy:Chlorite	0.00	0.00
Apy:Clays	0.00	0.00
Apy:Carbonates	0.00	0.00
Apy:Other	0.00	0.00
Apy:Quartz:Feldspars	0.00	0.00
Apy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Apy:Py:Silc	0.00	0.00
Apy:Cpy:Silc	0.00	0.00
Complex	1.13	69.2
Total	100.0	100.0

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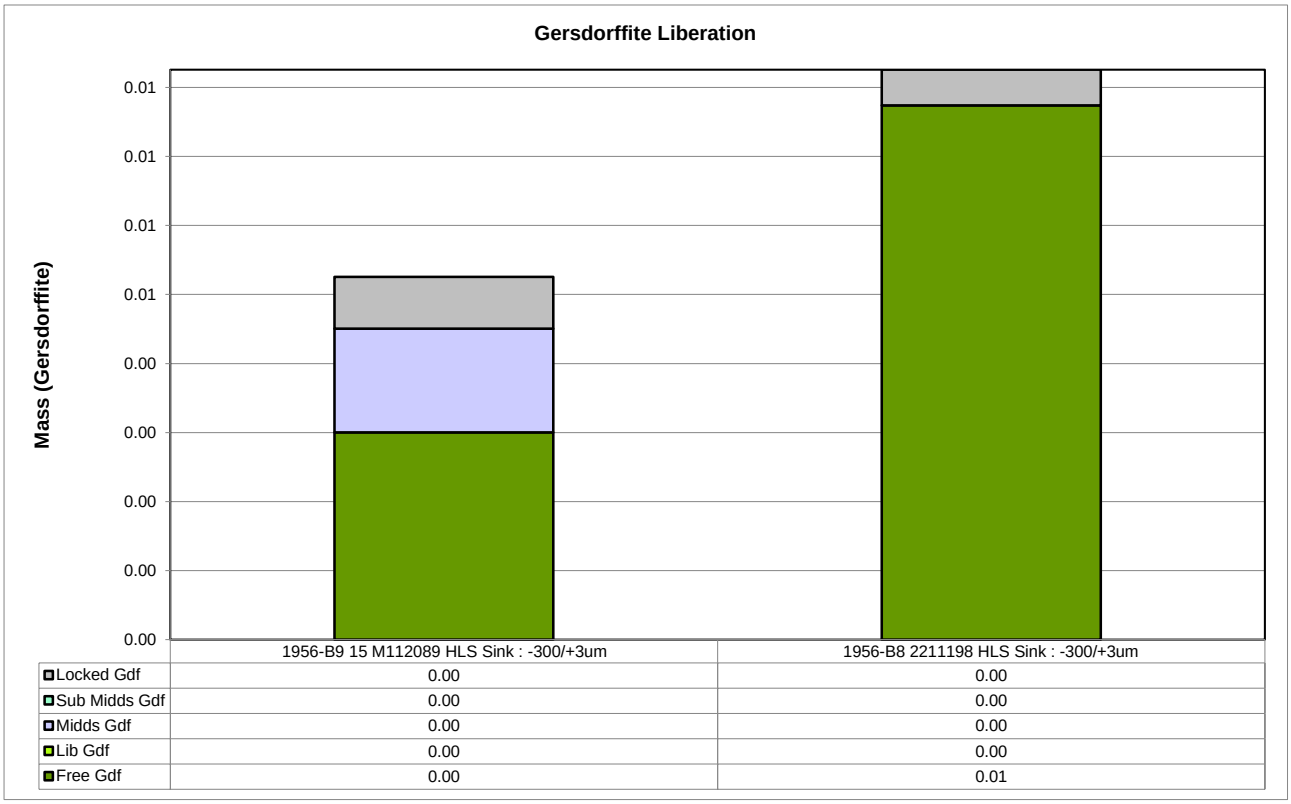
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Arsenopyrite Association

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Liberation



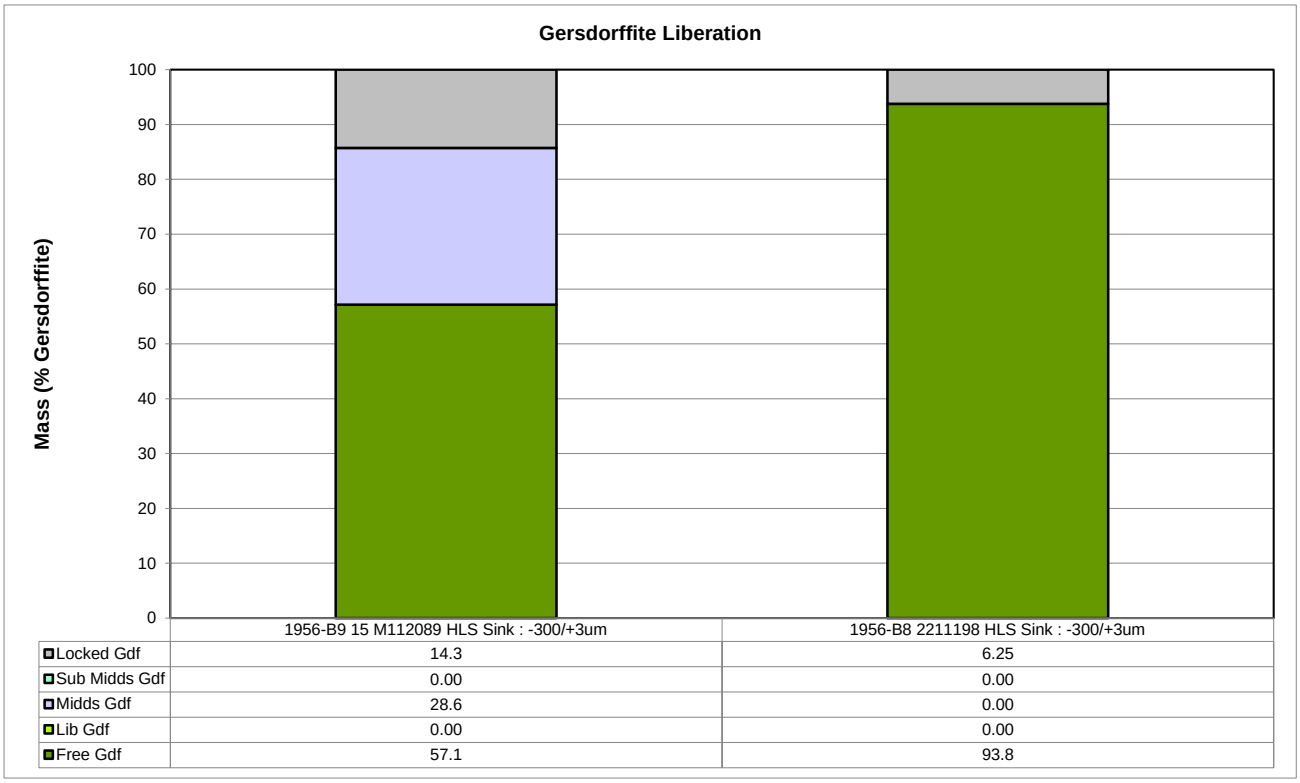
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Gdf	0.00	0.00
Sub Midds Gdf	0.00	0.00
Midds Gdf	0.00	0.00
Lib Gdf	0.00	0.00
Free Gdf	0.00	0.01

Absolute Mass of Gersdorffite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Gdf	0.00	0.01
Lib Gdf	0.00	0.00
Midds Gdf	0.00	0.00
Sub Midds Gdf	0.00	0.00
Locked Gdf	0.00	0.00
Total	0.01	0.01

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Liberation



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Gdf	14.3	6.25
Sub Midds Gdf	0.00	0.00
Midds Gdf	28.6	0.00
Lib Gdf	0.00	0.00
Free Gdf	57.1	93.8

Normalized Mass of Gersdorffite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Gdf	57.1	93.8
Lib Gdf	0.00	0.00
Midds Gdf	28.6	0.00
Sub Midds Gdf	0.00	0.00
Locked Gdf	14.3	6.25
Total	100.0	100.0

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Association

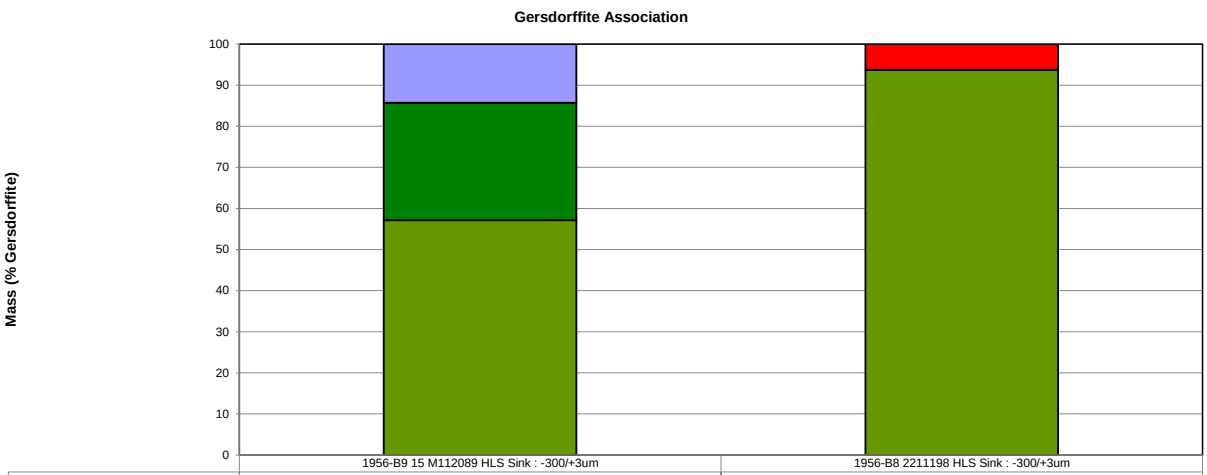
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	0.00	0.00
Gdf:Cpy:Silc	0.00	0.00
Gdf:Py:Silc	0.00	0.00
Gdf:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Gdf:Quartz:Feldspars	0.00	0.00
Gdf:Other	0.00	0.00
Gdf:Carbonates	0.00	0.00
Gdf:Clays	0.00	0.00
Gdf:Chlorite	0.00	0.00
Gdf:Sericite/Muscovite	0.00	0.00
Gdf:Quartz	0.00	0.00
Gdf:Other Sulphides	0.00	0.00
Gdf:Arsenopyrite	0.00	0.00
Gdf:Galena	0.00	0.00
Gdf:Chalcopyrite	0.00	0.00
Gdf:Sphalerite	0.00	0.00
Gdf:Pyrite	0.00	0.00
Lib Gdf	0.00	0.00
Free Gdf	0.00	0.01

Absolute Mass of Gersdorffite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Gdf	0.00	0.01
Lib Gdf	0.00	0.00
Gdf:Pyrite	0.00	0.00
Gdf:Sphalerite	0.00	0.00
Gdf:Chalcopyrite	0.00	0.00
Gdf:Galena	0.00	0.00
Gdf:Arsenopyrite	0.00	0.00
Gdf:Other Sulphides	0.00	0.00
Gdf:Quartz	0.00	0.00
Gdf:Sericite/Muscovite	0.00	0.00
Gdf:Chlorite	0.00	0.00
Gdf:Clays	0.00	0.00
Gdf:Carbonates	0.00	0.00
Gdf:Other	0.00	0.00
Gdf:Quartz:Feldspars	0.00	0.00
Gdf:Quartz:Feldspars:Sericite/Muscovit	0.00	0.00
Gdf:Py:Silc	0.00	0.00
Gdf:Cpy:Silc	0.00	0.00
Complex	0.00	0.00
Total	0.01	0.01

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Association



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	14.3	0.00
Gdf:Cpy:Silc	0.00	0.00
Gdf:Py:Silc	0.00	0.00
Gdf:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Gdf:Quartz:Feldspars	0.00	0.00
Gdf:Other	0.00	0.00
Gdf:Carbonates	0.00	0.00
Gdf:Clays	0.00	0.00
Gdf:Chlorite	0.00	0.00
Gdf:Sericite/Muscovite	0.00	0.00
Gdf:Quartz	0.00	0.00
Gdf:Other Sulphides	0.00	0.00
Gdf:Arsenopyrite	28.6	0.00
Gdf:Galena	0.00	0.00
Gdf:Chalcopyrite	0.00	0.00
Gdf:Sphalerite	0.00	0.00
Gdf:Pyrite	0.00	6.25
Lib Gdf	0.00	0.00
Free Gdf	57.1	93.8

Normalized Mass of Gersdorffite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Gdf	57.1	93.8
Lib Gdf	0.00	0.00
Gdf:Pyrite	0.00	6.25
Gdf:Sphalerite	0.00	0.00
Gdf:Chalcopyrite	0.00	0.00
Gdf:Galena	0.00	0.00
Gdf:Arsenopyrite	28.6	0.00
Gdf:Other Sulphides	0.00	0.00
Gdf:Quartz	0.00	0.00
Gdf:Sericite/Muscovite	0.00	0.00
Gdf:Chlorite	0.00	0.00
Gdf:Clays	0.00	0.00
Gdf:Carbonates	0.00	0.00
Gdf:Other	0.00	0.00
Gdf:Quartz:Feldspars	0.00	0.00
Gdf:Quartz:Feldspars:Sericite/Muscovit	0.00	0.00
Gdf:Py:Silc	0.00	0.00
Gdf:Cpy:Silc	0.00	0.00
Complex	14.3	0.00
Total	100.0	100.0

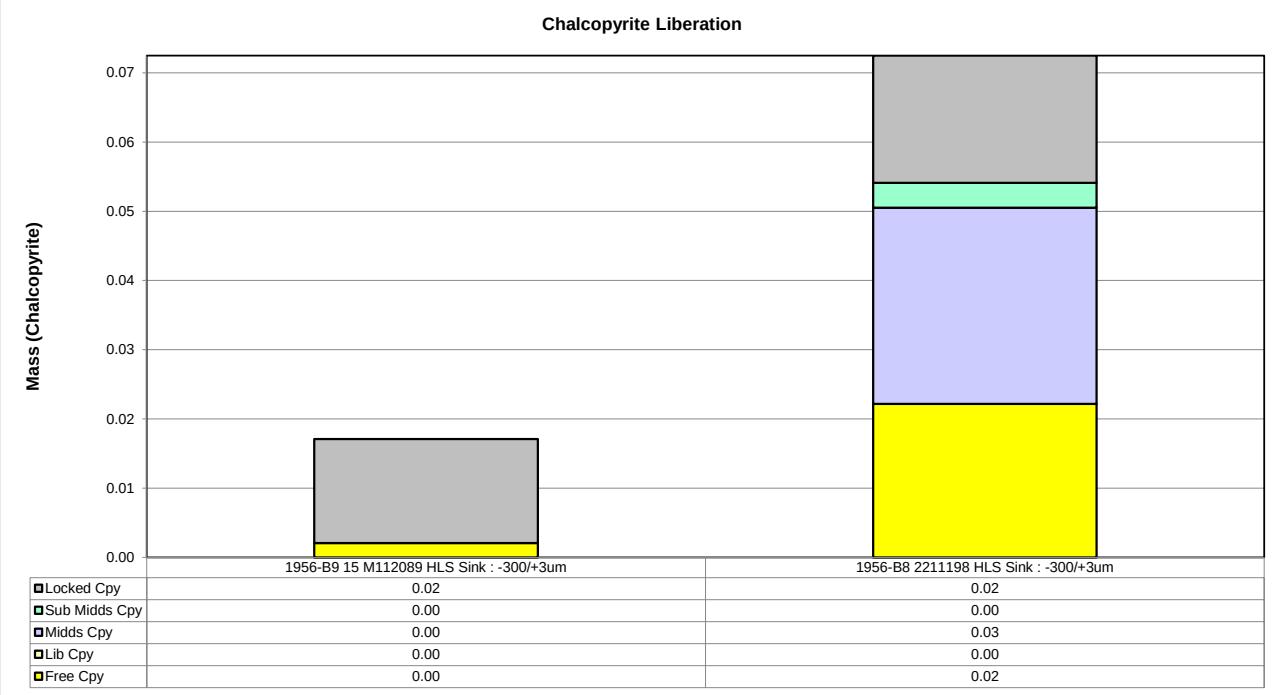
Gold Canyon Resouces
19032-01
MI5111-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Gersdorffite Association

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Chalcopyrite Liberation



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Cpy	0.02	0.02
Sub Midds Cpy	0.00	0.00
Midds Cpy	0.00	0.03
Lib Cpy	0.00	0.00
Free Cpy	0.00	0.02

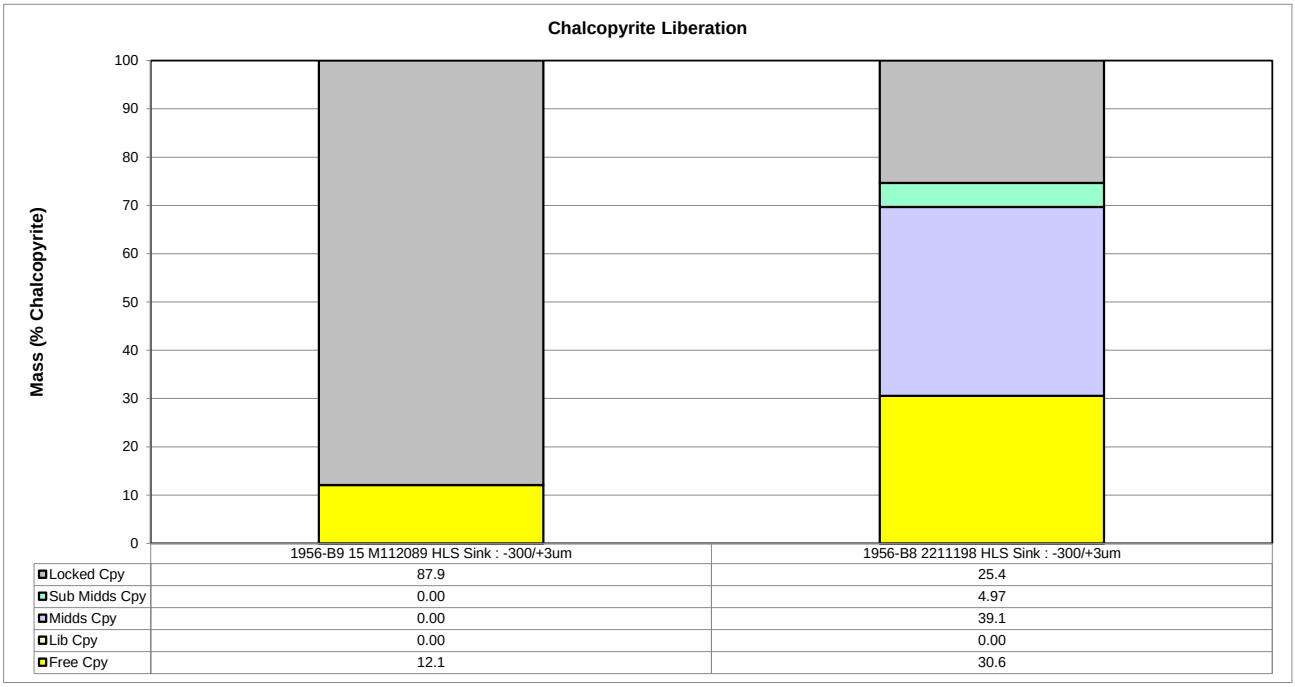
Absolute Mass of Chalcopyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Cpy	0.00	0.02
Lib Cpy	0.00	0.00
Midds Cpy	0.00	0.03
Sub Midds Cpy	0.00	0.00
Locked Cpy	0.02	0.02
Total	0.02	0.07

Gold Canyon Resouces
19032-01
MI5111-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Chalcopyrite Liberation



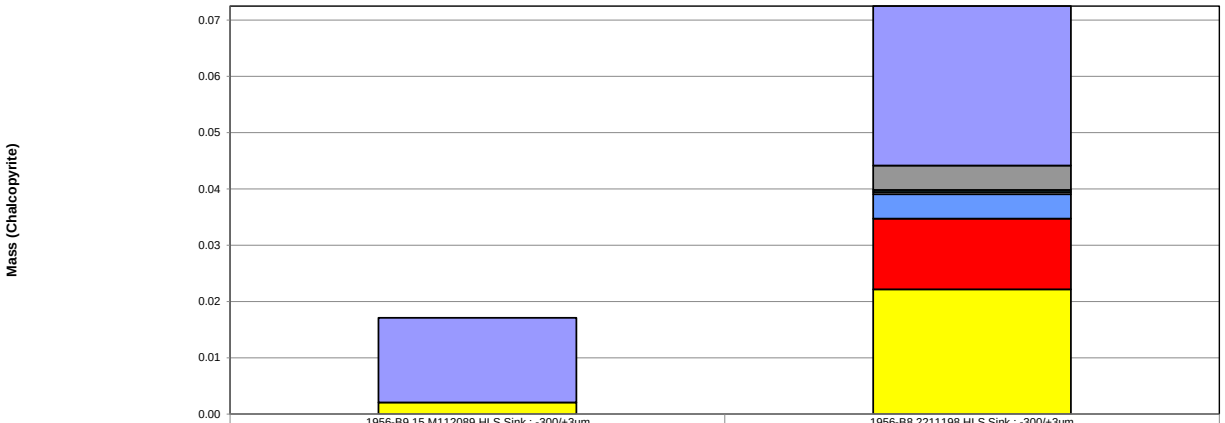
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Cpy	87.9	25.4
Sub Midds Cpy	0.00	4.97
Midds Cpy	0.00	39.1
Lib Cpy	0.00	0.00
Free Cpy	12.1	30.6

Normalized Mass of Chalcopyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Cpy	12.1	30.6
Lib Cpy	0.00	0.00
Midds Cpy	0.00	39.1
Sub Midds Cpy	0.00	4.97
Locked Cpy	87.9	25.4
Total	100.0	100.0

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Chalcopyrite Association



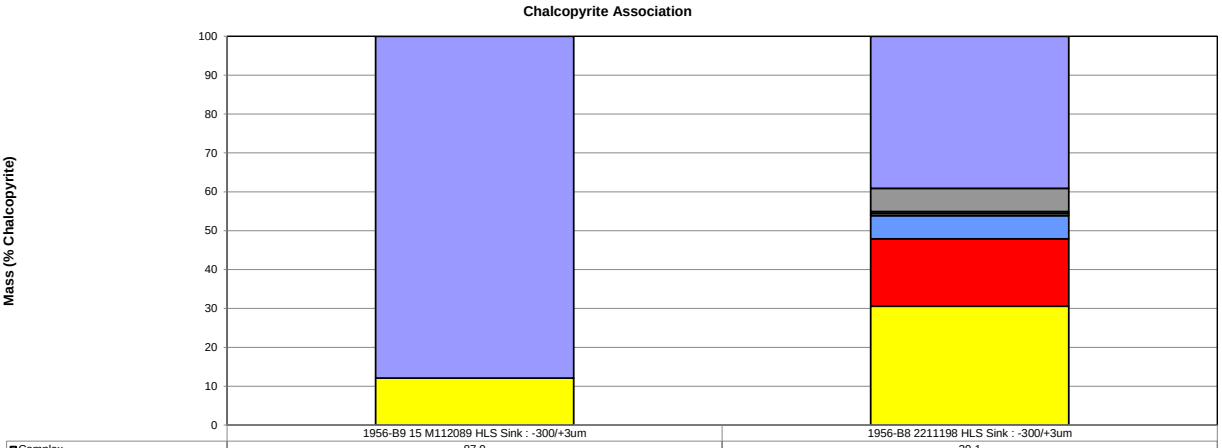
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	0.02	0.03
Cpy:Sph:Silc	0.00	0.00
Cpy:Py:Silc	0.00	0.00
Cpy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Cpy:Quartz:Feldspars	0.00	0.00
Cpy:Other	0.00	0.00
Cpy:Carbonates	0.00	0.00
Cpy:Clays	0.00	0.00
Cpy:Chlorite	0.00	0.00
Cpy:Sericite/Muscovite	0.00	0.00
Cpy:Quartz	0.00	0.00
Cpy:Other Sulphides	0.00	0.00
Cpy:Gersdorffite	0.00	0.00
Cpy:Arsenopyrite	0.00	0.00
Cpy:Galena	0.00	0.00
Cpy:Sphalerite	0.00	0.00
Cpy:Pyrite	0.00	0.01
Lib Cpy	0.00	0.00
Free Cpy	0.00	0.02

Absolute Mass of Chalcopyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Cpy	0.00	0.02
Lib Cpy	0.00	0.00
Cpy:Pyrite	0.00	0.01
Cpy:Sphalerite	0.00	0.00
Cpy:Galena	0.00	0.00
Cpy:Arsenopyrite	0.00	0.00
Cpy:Gersdorffite	0.00	0.00
Cpy:Other Sulphides	0.00	0.00
Cpy:Quartz	0.00	0.00
Cpy:Sericite/Muscovite	0.00	0.00
Cpy:Chlorite	0.00	0.00
Cpy:Clays	0.00	0.00
Cpy:Carbonates	0.00	0.00
Cpy:Other	0.00	0.00
Cpy:Quartz:Feldspars	0.00	0.00
Cpy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Cpy:Py:Silc	0.00	0.00
Cpy:Sph:Silc	0.00	0.00
Complex	0.02	0.03
Total	0.02	0.07

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Chalcopyrite Association



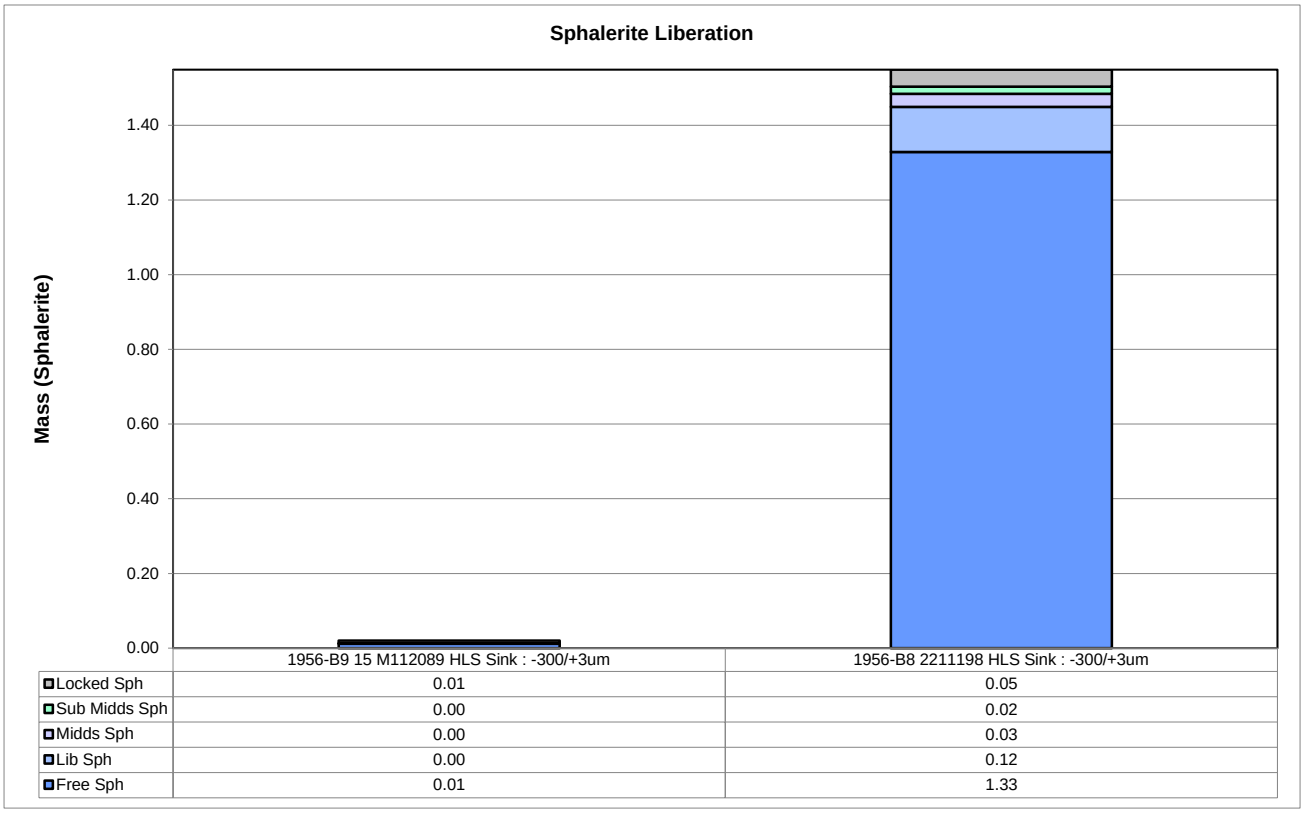
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	87.9	39.1
Cpy:Sph:Silc	0.00	0.00
Cpy:Py:Silc	0.00	5.99
Cpy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Cpy:Quartz:Feldspars	0.00	0.00
Cpy:Other	0.00	0.00
Cpy:Carbonates	0.00	0.49
Cpy:Clays	0.00	0.00
Cpy:Chlorite	0.00	0.00
Cpy:Sericite/Muscovite	0.00	0.00
Cpy:Quartz	0.00	0.00
Cpy:Other Sulphides	0.00	0.00
Cpy:Gersdorffite	0.00	0.00
Cpy:Arsenopyrite	0.00	0.00
Cpy:Galena	0.00	0.53
Cpy:Sphalerite	0.00	6.00
Cpy:Pyrite	0.00	17.3
Lib Cpy	0.00	0.00
Free Cpy	12.1	30.6

Normalized Mass of Chalcopyrite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Cpy	12.1	30.6
Lib Cpy	0.00	0.00
Cpy:Pyrite	0.00	17.3
Cpy:Sphalerite	0.00	6.00
Cpy:Galena	0.00	0.53
Cpy:Arsenopyrite	0.00	0.00
Cpy:Gersdorffite	0.00	0.00
Cpy:Other Sulphides	0.00	0.00
Cpy:Quartz	0.00	0.00
Cpy:Sericite/Muscovite	0.00	0.00
Cpy:Chlorite	0.00	0.00
Cpy:Clays	0.00	0.00
Cpy:Carbonates	0.00	0.49
Cpy:Other	0.00	0.00
Cpy:Quartz:Feldspars	0.00	0.00
Cpy:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Cpy:Py:Silc	0.00	5.99
Cpy:Sph:Silc	0.00	0.00
Complex	87.9	39.1
Total	100.0	100.0

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Sphalerite Liberation



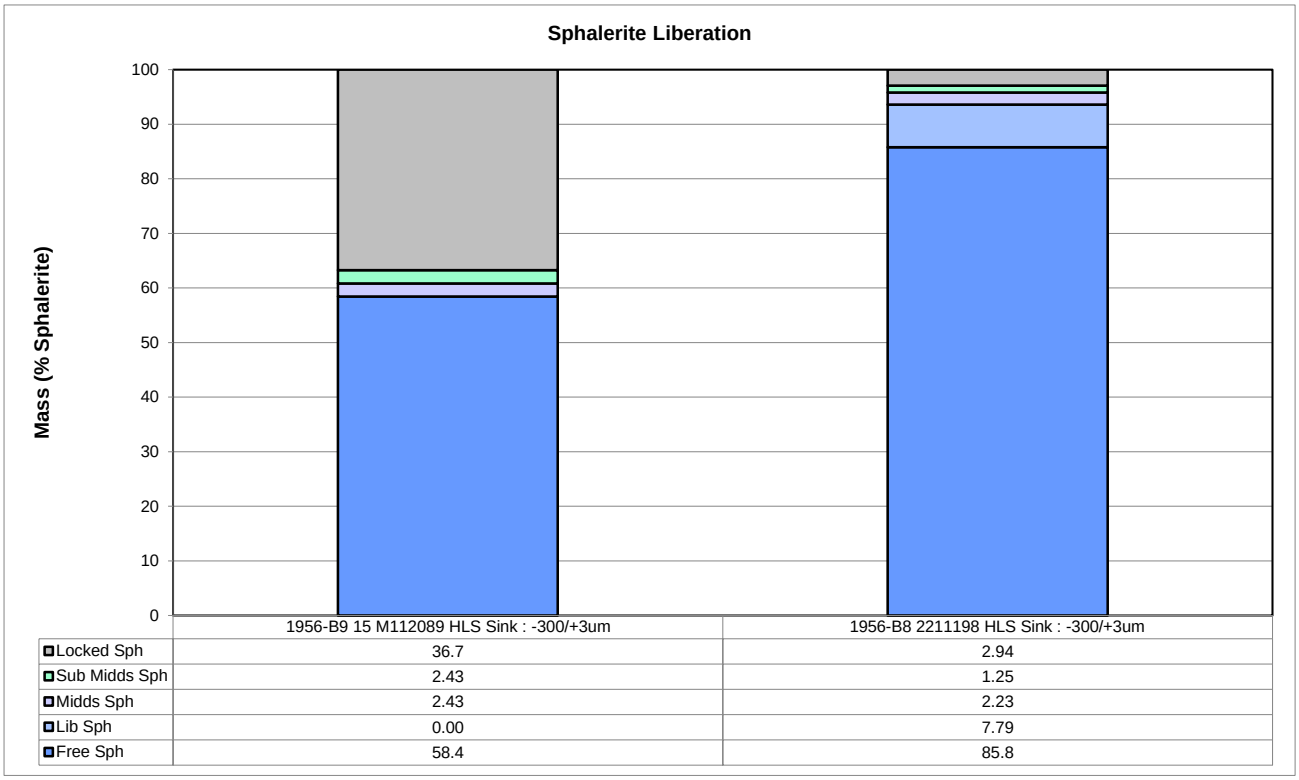
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Sph	0.01	0.05
Sub Midds Sph	0.00	0.02
Midds Sph	0.00	0.03
Lib Sph	0.00	0.12
Free Sph	0.01	1.33

Absolute Mass of Sphalerite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Sph	0.01	1.33
Lib Sph	0.00	0.12
Midds Sph	0.00	0.03
Sub Midds Sph	0.00	0.02
Locked Sph	0.01	0.05
Total	0.02	1.55

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Sphalerite Liberation



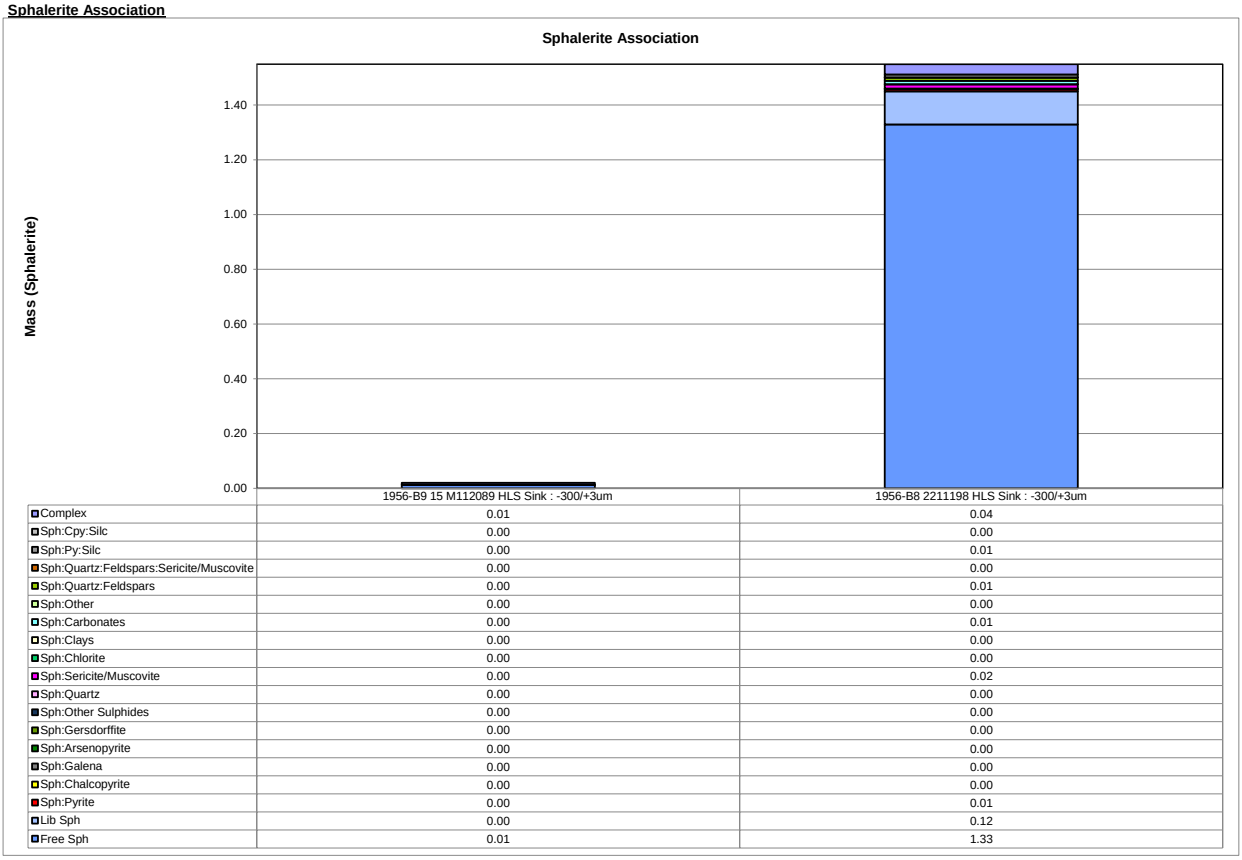
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Sph	36.7	2.94
Sub Midds Sph	2.43	1.25
Midds Sph	2.43	2.23
Lib Sph	0.00	7.79
Free Sph	58.4	85.8

Normalized Mass of Sphalerite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Sph	58.4	85.8
Lib Sph	0.00	7.79
Midds Sph	2.43	2.23
Sub Midds Sph	2.43	1.25
Locked Sph	36.7	2.94
Total	100.0	100.0

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Sphalerite Association



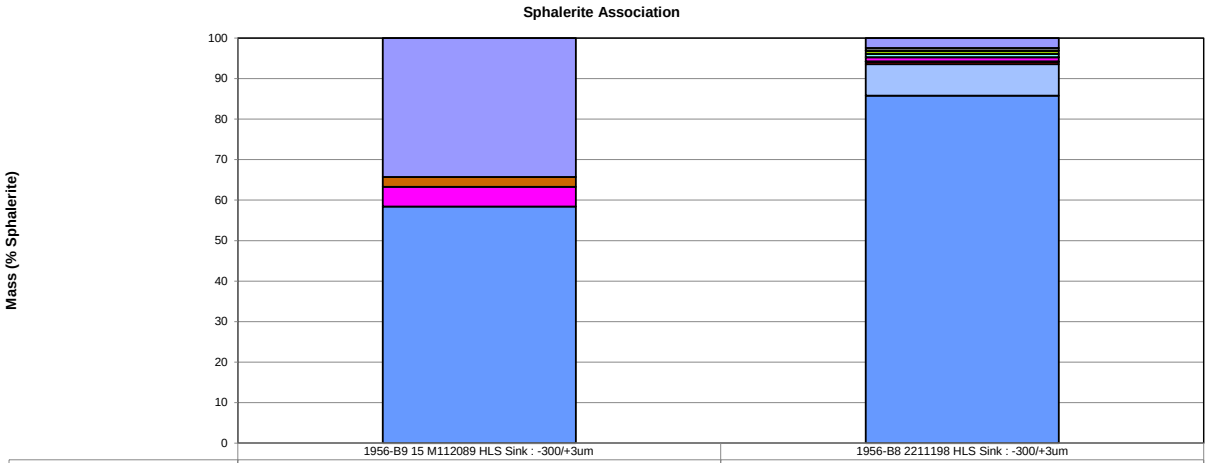
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	0.01	0.04
Sph:Cpy:Silc	0.00	0.00
Sph:Py:Silc	0.00	0.01
Sph:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Sph:Quartz:Feldspars	0.00	0.01
Sph:Other	0.00	0.00
Sph:Carbonates	0.00	0.01
Sph:Clays	0.00	0.00
Sph:Chlorite	0.00	0.00
Sph:Sericite/Muscovite	0.00	0.02
Sph:Quartz	0.00	0.00
Sph:Other Sulphides	0.00	0.00
Sph:Gersdorffite	0.00	0.00
Sph:Arsenopyrite	0.00	0.00
Sph:Galena	0.00	0.00
Sph:Chalcopyrite	0.00	0.00
Sph:Pyrite	0.00	0.01
Lib Sph	0.00	0.12
Free Sph	0.01	1.33

Absolute Mass of Sphalerite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Sph	0.01	1.33
Lib Sph	0.00	0.12
Sph:Pyrite	0.00	0.01
Sph:Chalcopyrite	0.00	0.00
Sph:Galena	0.00	0.00
Sph:Arsenopyrite	0.00	0.00
Sph:Gersdorffite	0.00	0.00
Sph:Other Sulphides	0.00	0.00
Sph:Quartz	0.00	0.00
Sph:Sericite/Muscovite	0.00	0.02
Sph:Chlorite	0.00	0.00
Sph:Clays	0.00	0.00
Sph:Carbonates	0.00	0.01
Sph:Other	0.00	0.00
Sph:Quartz:Feldspars	0.00	0.01
Sph:Quartz:Feldspars:Sericite/Muscovite	0.00	0.00
Sph:Py:Silc	0.00	0.01
Sph:Cpy:Silc	0.00	0.00
Complex	0.01	0.04
Total	0.02	1.55

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Sphalerite Association



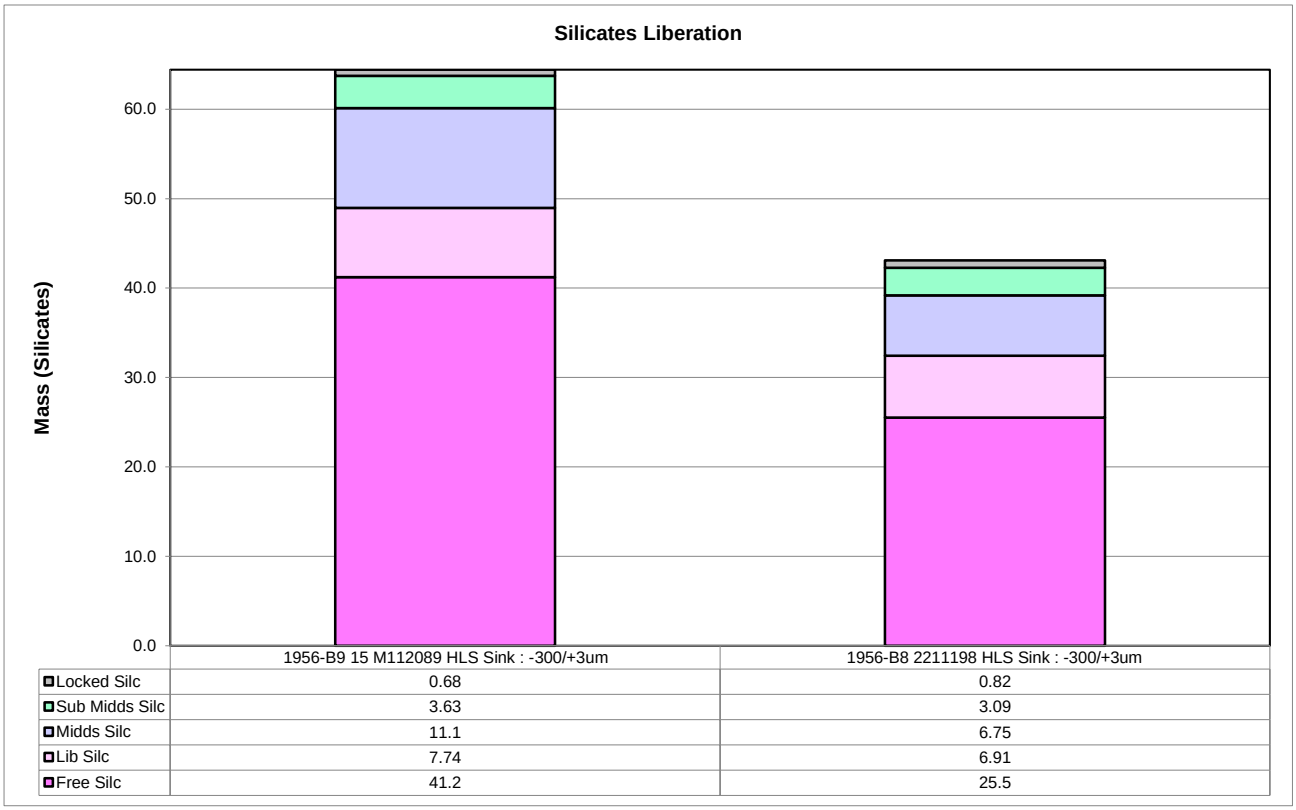
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	34.3	2.43
Sph:Cpy:Silc	0.00	0.00
Sph:Py:Silc	0.00	0.68
Sph:Quartz:Feldspars:Sericite/Muscovite	2.43	0.02
Sph:Quartz:Feldspars	0.00	0.79
Sph:Other	0.00	0.00
Sph:Carbonates	0.00	0.79
Sph:Clays	0.00	0.04
Sph:Chlorite	0.00	0.00
Sph:Sericite/Muscovite	4.86	1.01
Sph:Quartz	0.00	0.09
Sph:Other Sulphides	0.00	0.00
Sph:Gersdorffite	0.00	0.00
Sph:Arsenopyrite	0.00	0.00
Sph:Galena	0.00	0.00
Sph:Chalcopyrite	0.00	0.05
Sph:Pyrite	0.00	0.53
Lib Sph	0.00	7.79
Free Sph	58.4	85.8

Normalized Mass of Sphalerite Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Sph	58.4	85.8
Lib Sph	0.00	7.79
Sph:Pyrite	0.00	0.53
Sph:Chalcopyrite	0.00	0.05
Sph:Galena	0.00	0.00
Sph:Arsenopyrite	0.00	0.00
Sph:Gersdorffite	0.00	0.00
Sph:Other Sulphides	0.00	0.00
Sph:Quartz	0.00	0.09
Sph:Sericite/Muscovite	4.86	1.01
Sph:Chlorite	0.00	0.00
Sph:Clays	0.00	0.04
Sph:Carbonates	0.00	0.79
Sph:Other	0.00	0.00
Sph:Quartz:Feldspars	0.00	0.79
Sph:Quartz:Feldspars:Sericite/Muscovite	2.43	0.02
Sph:Py:Silc	0.00	0.68
Sph:Cpy:Silc	0.00	0.00
Complex	34.3	2.43
Total	100.0	100.0

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Liberation



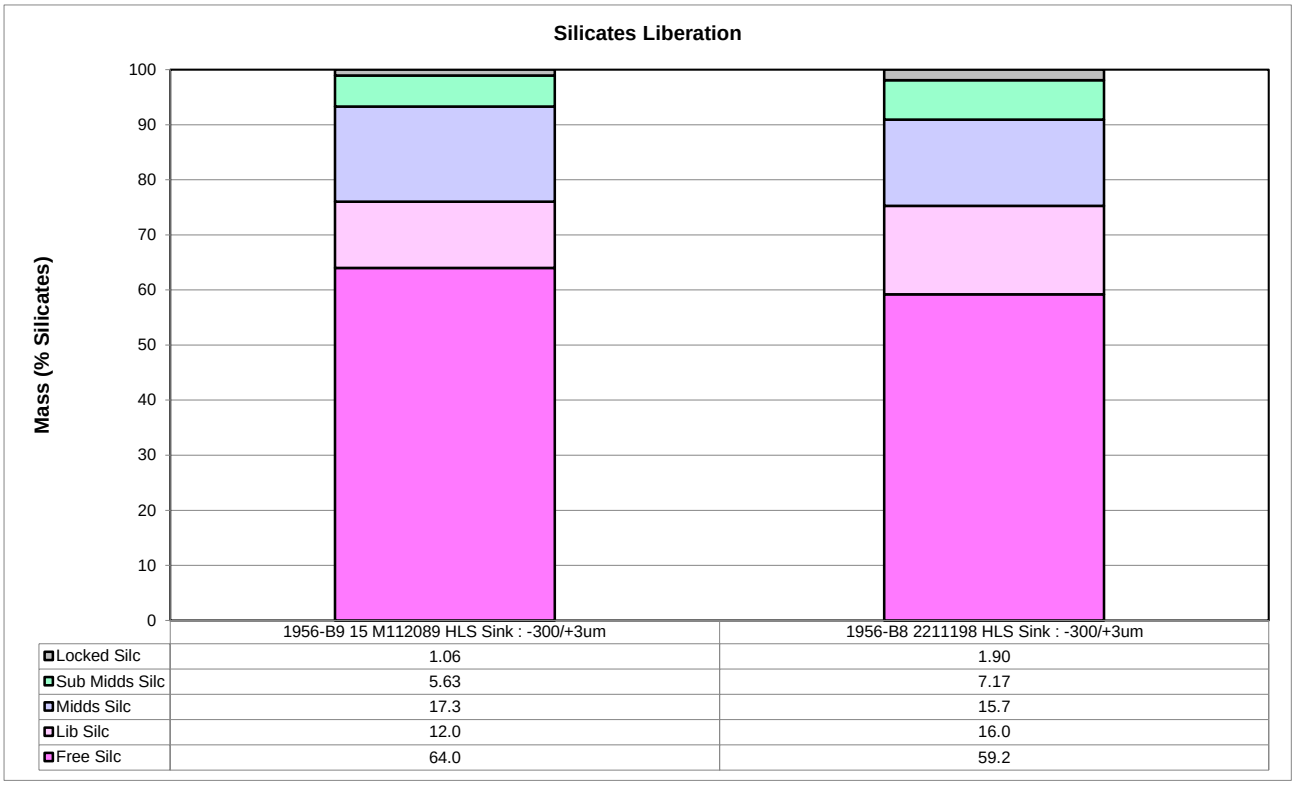
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Silc	0.68	0.82
Sub Midds Silc	3.63	3.09
Midds Silc	11.1	6.75
Lib Silc	7.74	6.91
Free Silc	41.2	25.5

Absolute Mass of Silicates Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Silc	41.2	25.5
Lib Silc	7.74	6.91
Midds Silc	11.1	6.75
Sub Midds Silc	3.63	3.09
Locked Silc	0.68	0.82
Total	64.4	43.1

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Liberation



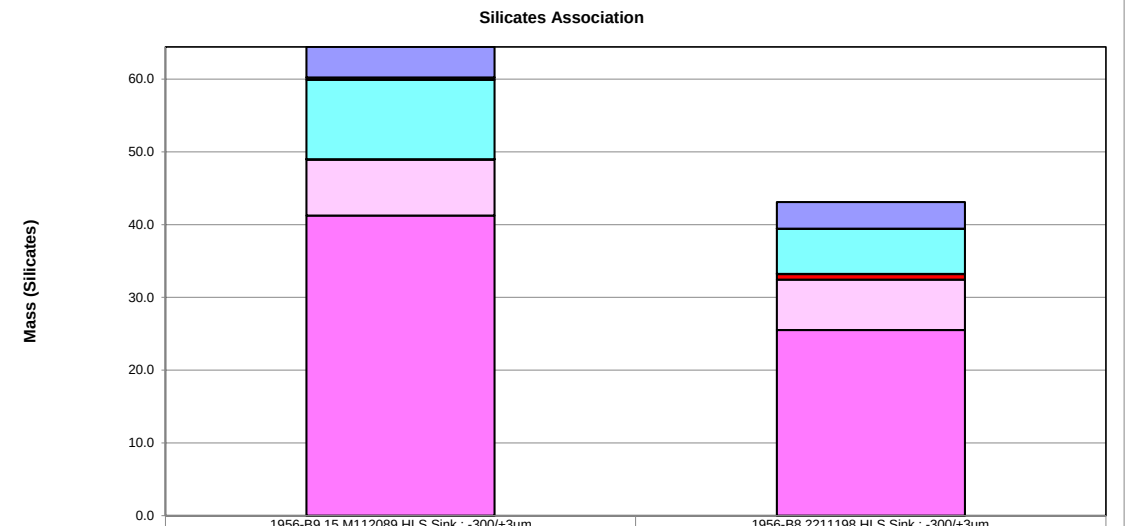
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Locked Silc	1.06	1.90
Sub Midds Silc	5.63	7.17
Midds Silc	17.3	15.7
Lib Silc	12.0	16.0
Free Silc	64.0	59.2

Normalized Mass of Silicates Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Silc	64.0	59.2
Lib Silc	12.0	16.0
Midds Silc	17.3	15.7
Sub Midds Silc	5.63	7.17
Locked Silc	1.06	1.90
Total	100.0	100.0

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Association



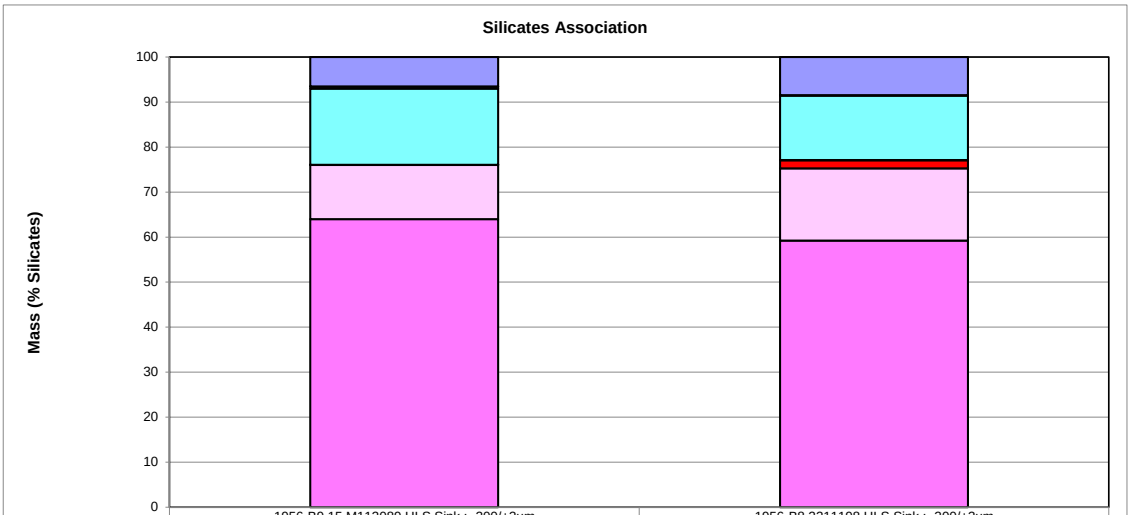
	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	4.20	3.66
Silc:Other	0.01	0.00
Silc:Fe-Oxides	0.31	0.01
Silc:Carbonates	10.9	6.19
Silc:Other Sulphides	0.00	0.00
Silc:Gersdorffite	0.00	0.00
Silc:Arsenopyrite	0.00	0.00
Silc:Galena	0.00	0.00
Silc:Chalcopyrite	0.00	0.00
Silc:Sphalerite	0.00	0.02
Silc:Pyrite	0.02	0.77
Lib Silc	7.74	6.91
Free Silc	41.2	25.5

Absolute Mass of Silicates Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Silc	41.2	25.5
Lib Silc	7.74	6.91
Silc:Pyrite	0.02	0.77
Silc:Sphalerite	0.00	0.02
Silc:Chalcopyrite	0.00	0.00
Silc:Galena	0.00	0.00
Silc:Arsenopyrite	0.00	0.00
Silc:Gersdorffite	0.00	0.00
Silc:Other Sulphides	0.00	0.00
Silc:Carbonates	10.9	6.19
Silc:Fe-Oxides	0.31	0.01
Silc:Other	0.01	0.00
Complex	4.20	3.66
Total	64.4	43.1

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Association



	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Complex	6.52	8.48
Silc:Other	0.01	0.01
Silc:Fe-Oxides	0.48	0.03
Silc:Carbonates	16.9	14.4
Silc:Other Sulphides	0.00	0.00
Silc:Gersdorffite	0.00	0.00
Silc:Arsenopyrite	0.00	0.00
Silc:Galena	0.00	0.01
Silc:Chalcopyrite	0.00	0.00
Silc:Sphalerite	0.00	0.05
Silc:Pyrite	0.04	1.79
Lib Silc	12.0	16.0
Free Silc	64.0	59.2

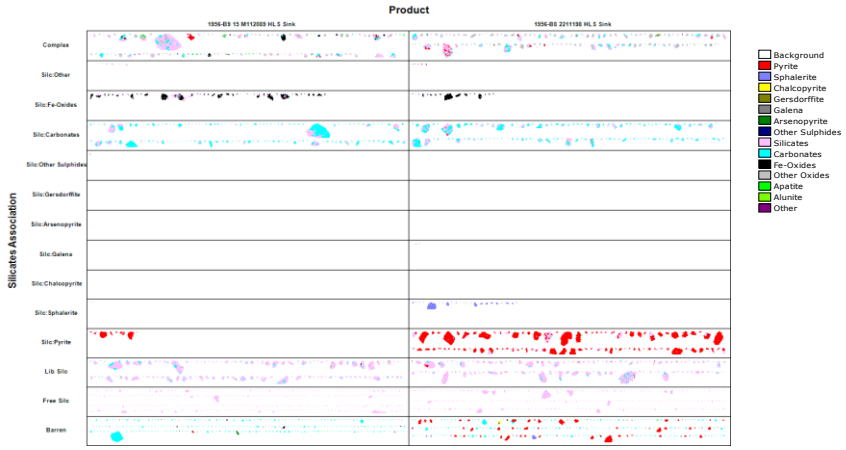
Normalized Mass of Silicates Across Samples

Mineral Name	1956-B9 15 M112089 HLS Sink : -300/+3um	1956-B8 2211198 HLS Sink : -300/+3um
Free Silc	64.0	59.2
Lib Silc	12.0	16.0
Silc:Pyrite	0.04	1.79
Silc:Sphalerite	0.00	0.05
Silc:Chalcopyrite	0.00	0.00
Silc:Galena	0.00	0.01
Silc:Arsenopyrite	0.00	0.00
Silc:Gersdorffite	0.00	0.00
Silc:Other Sulphides	0.00	0.00
Silc:Carbonates	16.9	14.4
Silc:Fe-Oxides	0.48	0.03
Silc:Other	0.01	0.01
Complex	6.52	8.48
Total	100.0	100.0

Gold Canyon Resouces
19032-01
MI5111-MAR22

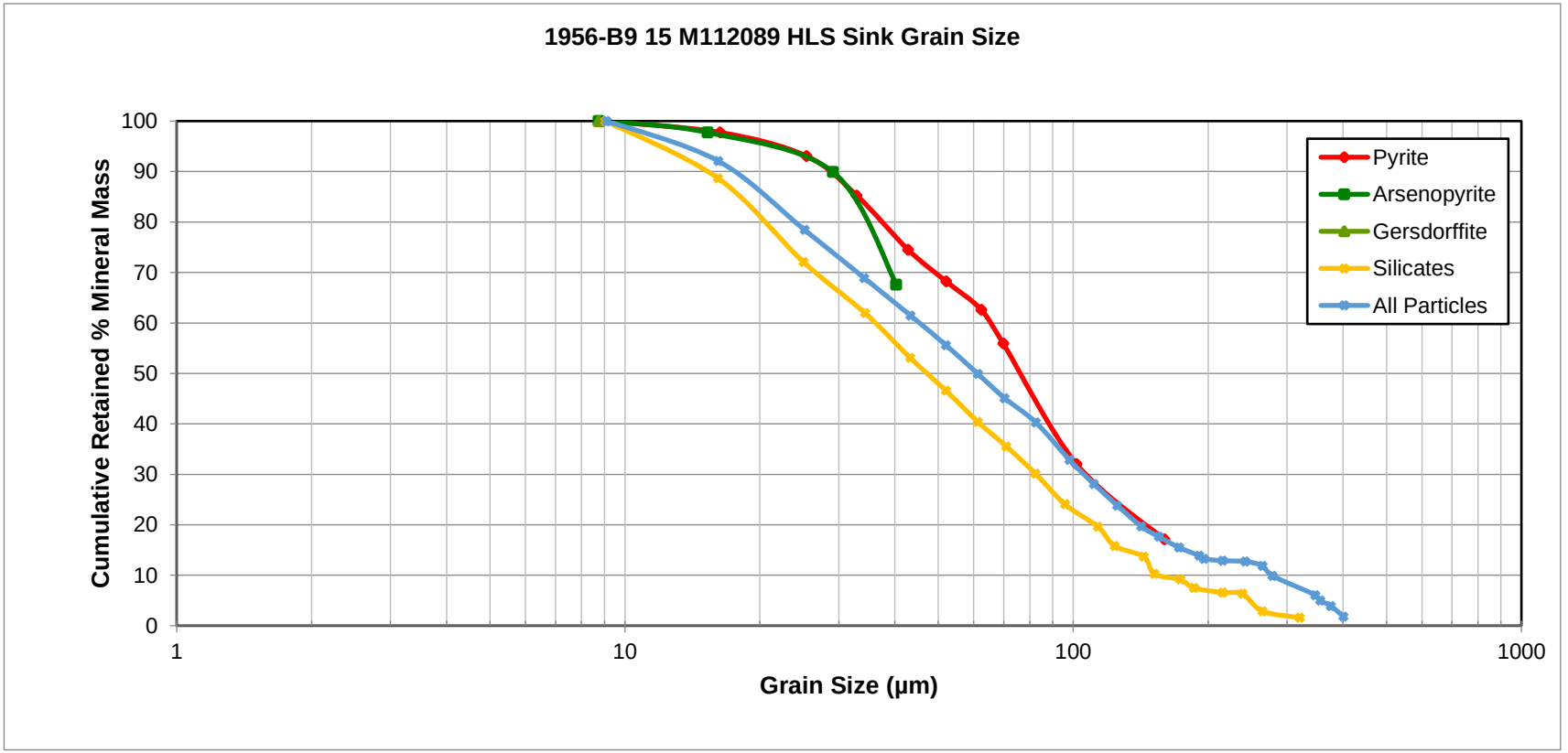
High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Silicates Association



High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

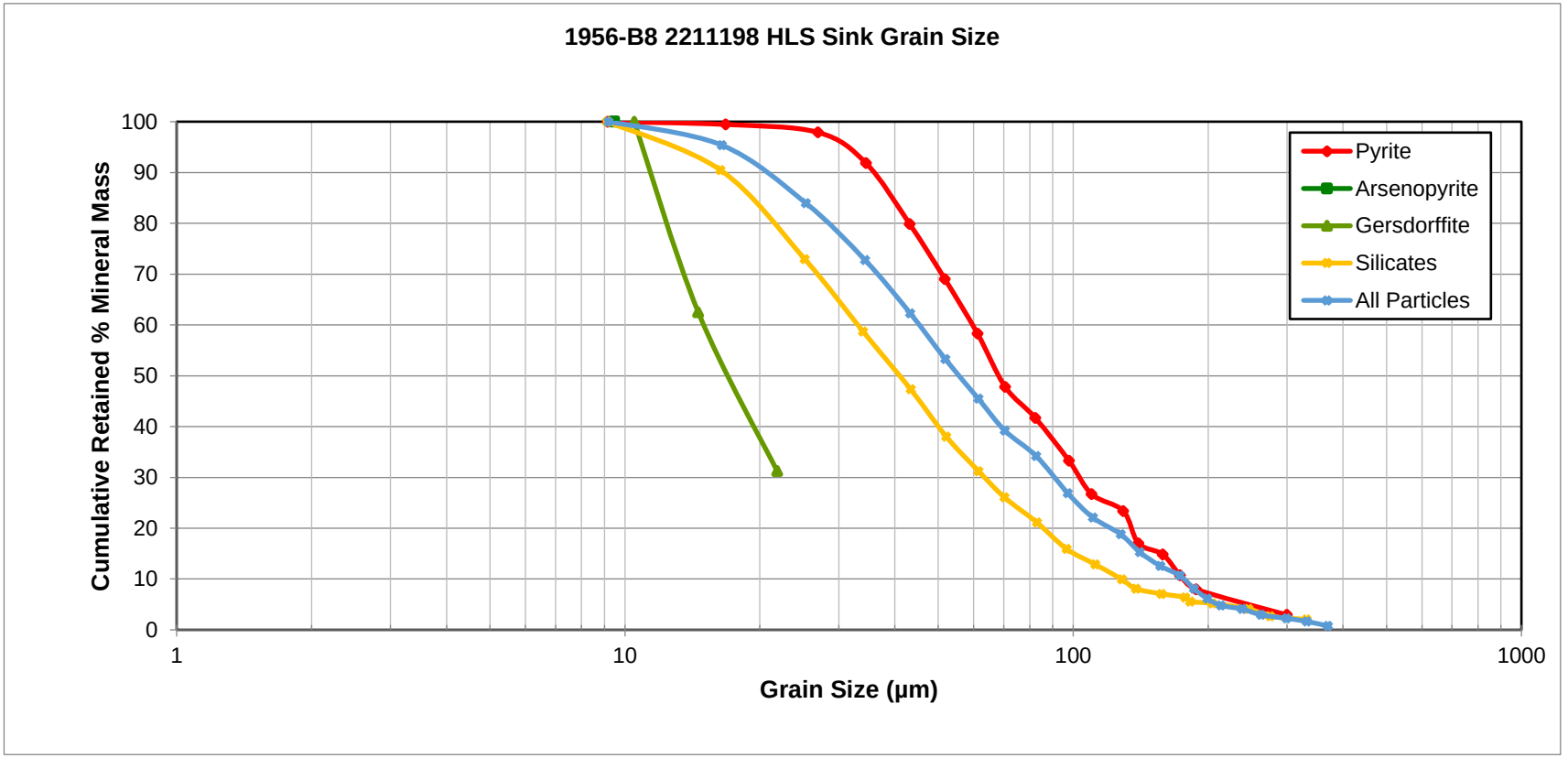
Cumulative Retained Grain Size Distribution



Gold Canyon Resouces
19032-01
MI5111-MAR22

High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Cumulative Retained Grain Size Distribution



Appendix F

EMPA Results

19032-01
Gold Canyon Resources
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EMPA Summary - Pyrite

	Fe	Co	Ni	Cu	As	S
Average - Column 1	46.02	0.03	0.16	0.03	0.08	53.31
Average - Column 2	46.18	0.11	0.12	0.01	0.96	52.80
Average - Column 3	46.09	0.09	0.32	0.07	0.09	53.07

EMPA Summary - Arsenopyrite

	Fe	Co	Ni	Cu	As	Sb	S
Average - Column 1	34.59	0.06	0.08	0.01	43.71	0.00	21.23
Average - Column 3	32.88	1.35	0.37	0.01	45.78	0.01	20.12

EMPA Summary - Sulfarsenide

	Fe	Co	Ni	Cu	As	Sb	S
Average - Column 1	12.09	9.78	12.94	0.02	43.86	0.00	19.99
Average - Column 2	33.74	0.71	0.22	0.01	44.74	0.00	20.68
Average - Column 3	10.72	9.14	15.67	0.00	45.31	0.00	19.88

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EMPA - Pyrite

Results_of_analyses:

		element weight %						
		Fe	Co	Ni	Cu	As	S	Total
1	19032-01 column 1 pyrite 01	45.81	0.00	0.02	0.04	0.00	52.70	98.56
2	19032-01 column 1 pyrite 02	46.46	0.02	0.06	0.00	0.18	53.29	100.03
3	19032-01 column 1 pyrite 03	46.09	0.01	0.00	0.00	0.01	53.41	99.52
4	19032-01 column 1 pyrite 04	46.31	0.00	0.00	0.00	0.14	52.96	99.41
5	19032-01 column 1 pyrite 05	46.21	0.05	0.01	0.00	0.35	53.45	100.08
6	19032-01 column 1 pyrite 06	44.92	0.20	1.31	0.00	0.00	53.72	100.15
7	19032-01 column 1 pyrite 07	45.46	0.00	0.19	0.00	0.00	53.37	99.04
8	19032-01 column 1 pyrite 08	45.97	0.02	0.05	0.09	0.00	53.03	99.16
9	19032-01 column 1 pyrite 09	46.47	0.00	0.04	0.12	0.00	53.33	99.96
10	19032-01 column 1 pyrite 10	45.65	0.05	0.02	0.04	0.18	53.43	99.38
11	19032-01 column 1 pyrite 11	46.84	0.02	0.02	0.00	0.00	53.67	100.55

	Fe	Co	Ni	Cu	As	S
Average - Column 1	46.02	0.03	0.16	0.03	0.08	53.31
Min	44.92	0.00	0.00	0.00	0.00	52.70
Max	46.84	0.20	1.31	0.12	0.35	53.72
Stdev	0.54	0.06	0.39	0.04	0.12	0.30

		Fe	Co	Ni	Cu	As	S	
12	19032-01 column 2 pyrite 01	46.68	0.00	0.13	0.00	0.46	53.39	100.66
13	19032-01 column 2 pyrite 02	45.50	0.05	0.10	0.01	1.92	52.35	99.92
14	19032-01 column 2 pyrite 03	46.74	0.03	0.03	0.00	0.95	52.77	100.52
15	19032-01 column 2 pyrite 04	46.35	0.00	0.03	0.01	0.08	53.45	99.91
16	19032-01 column 2 pyrite 05	46.43	0.04	0.09	0.01	0.62	53.33	100.52
17	19032-01 column 2 pyrite 06	46.38	0.03	0.04	0.00	1.50	52.49	100.44
18	19032-01 column 2 pyrite 07	46.17	0.01	0.01	0.00	3.19	51.62	101.00
19	19032-01 column 2 pyrite 08	45.60	0.11	0.68	0.02	0.82	52.85	100.08
20	19032-01 column 2 pyrite 09	46.53	0.09	0.27	0.02	0.49	53.20	100.61
21	19032-01 column 2 pyrite 10	46.30	0.00	0.04	0.00	1.06	52.88	100.28
22	19032-01 column 2 pyrite 11	46.15	0.01	0.00	0.00	0.80	52.97	99.94
23	19032-01 column 2 pyrite 12	46.50	0.00	0.12	0.00	0.21	53.03	99.86
24	19032-01 column 2 pyrite 13	45.95	0.06	0.22	0.02	0.45	52.72	99.41
25	19032-01 column 2 pyrite 14	46.13	0.04	0.08	0.03	1.77	52.19	100.24
26	19032-01 column 2 pyrite 15	46.10	0.37	0.17	0.00	0.47	52.97	100.07
27	19032-01 column 2 pyrite 16	46.58	0.02	0.06	0.00	0.44	53.53	100.63
28	19032-01 column 2 pyrite 17	45.08	0.01	0.00	0.00	3.91	50.61	99.60
29	19032-01 column 2 pyrite 18	46.03	0.05	0.50	0.00	0.09	53.64	100.32
30	19032-01 column 2 pyrite 19	46.63	0.02	0.02	0.00	0.25	53.10	100.02
31	19032-01 column 2 pyrite 20	46.28	0.17	0.11	0.04	0.29	53.36	100.24
32	19032-01 column 2 pyrite 21	46.53	0.02	0.02	0.02	1.84	52.43	100.86
33	19032-01 column 2 pyrite 22	46.31	0.02	0.05	0.01	1.64	52.73	100.76
34	19032-01 column 2 pyrite 23	46.55	0.00	0.01	0.00	0.04	53.65	100.25
35	19032-01 column 2 pyrite 24	46.09	0.37	0.24	0.02	0.87	52.74	100.33
36	19032-01 column 2 pyrite 25	45.76	0.00	0.05	0.00	1.76	52.09	99.65
37	19032-01 column 2 pyrite 26	45.96	0.42	0.15	0.00	0.50	53.42	100.46
38	19032-01 column 2 pyrite 27	46.47	0.31	0.11	0.00	0.35	52.91	100.15
39	19032-01 column 2 pyrite 28	46.17	0.04	0.20	0.01	0.46	52.80	99.68
40	19032-01 column 2 pyrite 29	45.35	0.78	0.10	0.00	0.69	52.61	99.53
41	19032-01 column 2 pyrite 30	45.74	0.08	0.08	0.02	3.08	51.38	100.38
42	19032-01 column 2 pyrite 31	46.62	0.01	0.04	0.01	0.39	53.17	100.25
43	19032-01 column 2 pyrite 32	46.49	0.17	0.10	0.01	0.40	52.98	100.15
44	19032-01 column 2 pyrite 33	45.87	0.02	0.00	0.00	1.58	52.52	99.99
45	19032-01 column 2 pyrite 34	45.46	0.34	0.19	0.03	0.76	52.56	99.34
46	19032-01 column 2 pyrite 35	46.20	0.16	0.24	0.00	0.49	52.93	100.00
47	19032-01 column 2 pyrite 36	46.97	0.02	0.02	0.00	0.10	53.31	100.42

	Fe	Co	Ni	Cu	As	S
Average - Column 2	46.18	0.11	0.12	0.01	0.96	52.80
Min	45.08	0.00	0.00	0.00	0.04	50.61
Max	46.97	0.78	0.68	0.04	3.91	53.65
Stdev	0.43	0.17	0.14	0.01	0.93	0.64

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EMPA - Pyrite

Results_of_analyses:

		element weight %						
		Fe	Co	Ni	Cu	As	S	Total
1	19032-01 column 3 HLS sink pyrite 01	46.06	0.00	0.05	0.00	0.14	53.71	99.96
2	19032-01 column 3 HLS sink pyrite 02	45.42	1.40	0.00	0.01	0.00	53.27	100.10
3	19032-01 column 3 HLS sink pyrite 03	46.65	0.01	0.00	0.02	0.00	53.43	100.12
4	19032-01 column 3 HLS sink pyrite 04	43.10	0.03	3.78	0.01	0.00	53.26	100.18
5	19032-01 column 3 HLS sink pyrite 05	46.29	0.04	0.05	0.56	0.11	53.12	100.17
6	19032-01 column 3 HLS sink pyrite 06	46.89	0.00	0.02	0.01	0.01	53.05	99.99
7	19032-01 column 3 HLS sink pyrite 07	45.52	0.45	0.38	0.32	0.01	52.98	99.65
8	19032-01 column 3 HLS sink pyrite 08	46.23	0.04	0.09	0.01	0.17	53.16	99.70
9	19032-01 column 3 HLS sink pyrite 09	46.26	0.00	0.14	0.13	0.00	53.37	99.90
10	19032-01 column 3 HLS sink pyrite 10	46.22	0.03	0.02	0.00	0.22	53.01	99.51
11	19032-01 column 3 HLS sink pyrite 11	46.40	0.02	0.01	0.04	0.00	52.92	99.39
12	19032-01 column 3 HLS sink pyrite 12	45.80	0.02	1.08	0.02	0.01	52.96	99.89
13	19032-01 column 3 HLS sink pyrite 13	46.67	0.00	0.10	0.01	0.02	53.77	100.57
14	19032-01 column 3 HLS sink pyrite 14	45.73	0.00	0.45	0.05	1.39	52.22	99.85
15	19032-01 column 3 HLS sink pyrite 15	46.42	0.00	0.21	0.02	0.16	53.56	100.37
16	19032-01 column 3 HLS sink pyrite 16	46.64	0.00	0.05	0.00	0.00	53.64	100.33
17	19032-01 column 3 HLS sink pyrite 17	46.45	0.11	0.05	0.01	0.00	53.22	99.84
18	19032-01 column 3 HLS sink pyrite 18	46.19	0.00	0.17	0.00	0.00	53.27	99.63
19	19032-01 column 3 HLS sink pyrite 19	46.40	0.03	0.00	0.00	0.04	53.35	99.82
20	19032-01 column 3 HLS sink pyrite 20	45.82	0.02	0.18	0.00	0.00	51.99	98.02
21	19032-01 column 3 HLS sink pyrite 21	46.23	0.03	0.21	0.12	0.00	52.17	98.76
22	19032-01 column 3 HLS sink pyrite 22	46.19	0.00	0.00	0.00	0.02	53.65	99.86
23	19032-01 column 3 HLS sink pyrite 23	45.80	0.04	0.60	0.47	0.00	52.29	99.20
24	19032-01 column 3 HLS sink pyrite 24	46.34	0.04	0.33	0.00	0.00	53.00	99.72
25	19032-01 column 3 HLS sink pyrite 25	46.16	0.05	0.38	0.01	0.00	52.35	98.96
26	19032-01 column 3 HLS sink pyrite 26	46.08	0.00	0.39	0.02	0.00	53.19	99.69
27	19032-01 column 3 HLS sink pyrite 27	46.51	0.16	0.00	0.01	0.15	52.86	99.69

	Fe	Co	Ni	Cu	As	S
Average - Column 3	46.09	0.09	0.32	0.07	0.09	53.07
Min	43.10	0.00	0.00	0.00	0.00	51.99
Max	46.89	1.40	3.78	0.56	1.39	53.77
Stdev	0.69	0.27	0.73	0.15	0.27	0.49

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EMPA

Results_of_analyses:

		element weight %							
		Fe	Co	Ni	Cu	As	Sb	S	Total
48	19032-01 column 1 arsenopyrite 01	34.13	0.01	0.31	0.00	43.51	0.00	21.21	99.17
49	19032-01 column 1 arsenopyrite 02	34.45	0.01	0.01	0.00	44.57	0.01	20.48	99.52
50	19032-01 column 1 arsenopyrite 03	34.54	0.27	0.16	0.03	42.91	0.01	21.79	99.71
51	19032-01 column 1 arsenopyrite 04	34.29	0.28	0.30	0.00	43.46	0.01	21.46	99.79
52	19032-01 column 1 arsenopyrite 05	34.55	0.16	0.13	0.01	43.43	0.00	21.64	99.90
53	19032-01 column 1 arsenopyrite 06	34.03	0.01	0.00	0.00	45.25	0.00	20.06	99.36
54	19032-01 column 1 arsenopyrite 07	34.94	0.00	0.00	0.00	43.25	0.00	21.72	99.91
55	19032-01 column 1 arsenopyrite 08	34.88	0.01	0.01	0.01	43.36	0.00	21.42	99.69
56	19032-01 column 1 arsenopyrite 09	34.74	0.01	0.00	0.00	43.77	0.00	21.33	99.85
57	19032-01 column 1 arsenopyrite 10	34.38	0.13	0.10	0.00	43.80	0.00	21.04	99.46
58	19032-01 column 1 arsenopyrite 11	34.47	0.00	0.18	0.00	44.28	0.00	20.87	99.80
59	19032-01 column 1 arsenopyrite 12	34.73	0.05	0.15	0.02	43.73	0.00	21.09	99.76
60	19032-01 column 1 arsenopyrite 13	34.88	0.00	0.01	0.00	43.46	0.00	21.54	99.89
61	19032-01 column 1 arsenopyrite 14	34.90	0.00	0.01	0.01	43.24	0.00	21.56	99.72
62	19032-01 column 1 arsenopyrite 15	35.00	0.00	0.02	0.01	43.01	0.01	21.74	99.80
63	19032-01 column 1 arsenopyrite 16	34.83	0.01	0.01	0.03	43.58	0.00	21.32	99.79
64	19032-01 column 1 arsenopyrite 17	34.37	0.07	0.00	0.00	44.45	0.01	20.72	99.61

	Fe	Co	Ni	Cu	As	Sb	S
Average - Column 1	34.59	0.06	0.08	0.01	43.71	0.00	21.23
Min	34.03	0.00	0.00	0.00	42.91	0.00	20.06
Max	35.00	0.28	0.31	0.03	45.25	0.01	21.79
Stdev	0.30	0.09	0.10	0.01	0.61	0.00	0.48

		Fe	Co	Ni	Cu	As	Sb	S	
33	19032-01 column 3 HLS Sink arsenopyrite 01	34.22	0.20	0.12	0.00	45.62	0.00	20.09	100.25
34	19032-01 column 3 HLS Sink arsenopyrite 02	33.88	0.49	0.16	0.00	45.60	0.01	20.26	100.40
35	19032-01 column 3 HLS Sink arsenopyrite 03	33.01	1.49	0.09	0.03	45.74	0.00	20.14	100.51
36	19032-01 column 3 HLS Sink arsenopyrite 04	34.31	0.01	0.05	0.00	45.85	0.00	20.20	100.43
37	19032-01 column 3 HLS Sink arsenopyrite 05	33.42	0.64	0.40	0.00	45.68	0.00	20.06	100.19
38	19032-01 column 3 HLS Sink arsenopyrite 06	28.44	5.67	0.79	0.03	46.37	0.02	19.62	100.94
39	19032-01 column 3 HLS Sink arsenopyrite 07	34.55	0.04	0.12	0.01	45.68	0.01	20.45	100.84
40	19032-01 column 3 HLS Sink arsenopyrite 08	32.64	1.38	0.54	0.02	45.61	0.00	20.36	100.54
41	19032-01 column 3 HLS Sink arsenopyrite 09	32.85	0.59	1.11	0.01	45.89	0.00	20.08	100.52
42	19032-01 column 3 HLS Sink arsenopyrite 10	33.81	0.46	0.27	0.00	45.35	0.02	20.10	100.02
43	19032-01 column 3 HLS Sink arsenopyrite 11	34.26	0.19	0.16	0.01	45.90	0.00	20.20	100.72
44	19032-01 column 3 HLS Sink arsenopyrite 12	29.14	5.08	0.60	0.00	46.04	0.01	19.88	100.74

	Fe	Co	Ni	Cu	As	Sb	S
Average - Column 3	32.88	1.35	0.37	0.01	45.78	0.01	20.12
Min	28.44	0.01	0.05	0.00	45.35	0.00	19.62
Max	34.55	5.67	1.11	0.03	46.37	0.02	20.45
Stdev	2.01	1.94	0.33	0.01	0.26	0.01	0.22

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EMPA - Sulfarsenide (Gersdorffite)

		Fe	Co	Ni	Cu	As	Sb	S	
65	19032-01 column 1 sulfarsenide 01	10.72	11.51	11.93	0.01	43.97	0.00	19.61	97.76
66	19032-01 column 1 sulfarsenide 02	13.46	8.05	13.94	0.02	43.75	0.00	20.37	99.59

	Fe	Co	Ni	Cu	As	Sb	S
Average - Column 1	12.09	9.78	12.94	0.02	43.86	0.00	19.99
Min	10.72	8.05	11.93	0.01	43.75	0.00	19.61
Max	13.46	11.51	13.94	0.02	43.97	0.00	20.37
Stdev	1.94	2.45	1.42	0.01	0.16	0.00	0.54

		Fe	Co	Ni	Cu	As	Sb	S	
67	19032-01 column 2 sulfarsenide 01	2.15	0.44	33.17	0.03	44.52	1.73	19.19	101.23
68	19032-01 column 2 sulfarsenide 02	11.85	1.67	22.02	0.00	44.56	0.00	20.16	100.27
69	19032-01 column 2 sulfarsenide 03	13.99	3.51	18.03	0.03	44.27	0.00	20.51	100.34
70	19032-01 column 2 sulfarsenide 04	12.24	2.34	20.91	0.00	44.99	0.00	20.07	100.55
71	19032-01 column 2 sulfarsenide 05	9.84	3.64	22.48	0.02	45.04	0.00	19.72	100.74
72	19032-01 column 2 sulfarsenide 06	14.23	3.45	17.72	0.01	44.05	0.00	20.52	99.98
73	19032-01 column 2 sulfarsenide 07	12.22	2.24	21.38	0.00	44.39	0.00	20.00	100.24
74	19032-01 column 2 sulfarsenide 08	12.07	5.76	17.38	0.01	44.94	0.00	20.05	100.22
75	19032-01 column 2 sulfarsenide 09	10.42	1.74	23.26	0.00	45.06	0.00	19.95	100.43
76	19032-01 column 2 sulfarsenide 10	14.39	3.35	17.57	0.00	43.95	0.00	20.58	99.83

	Fe	Co	Ni	Cu	As	Sb	S
Average - Column 2	11.34	2.81	21.39	0.01	44.58	0.17	20.08
Min	2.15	0.44	17.38	0.00	43.95	0.00	19.19
Max	14.39	5.76	33.17	0.03	45.06	1.73	20.58
Stdev	3.57	1.46	4.71	0.01	0.42	0.55	0.42

Results_of_analyses:

element weight %

		Fe	Co	Ni	Cu	As	Sb	S	Total
28	19032-01 column 3 HLS Sink Ni-Co-Fe sulfars	10.47	9.87	14.91	0.00	45.00	0.00	20.26	100.52
29	19032-01 column 3 HLS Sink Ni-Co-Fe sulfars	8.32	10.28	17.27	0.00	45.14	0.00	19.93	100.94
30	19032-01 column 3 HLS Sink Ni-Co-Fe sulfars	11.09	9.24	15.13	0.00	45.26	0.01	20.09	100.82
31	19032-01 column 3 HLS Sink Ni-Co-Fe sulfars	12.27	7.13	16.23	0.00	45.41	0.02	19.68	100.74
32	19032-01 column 3 HLS Sink Ni-Co-Fe sulfars	11.44	9.17	14.82	0.00	45.74	0.00	19.45	100.62

	Fe	Co	Ni	Cu	As	Sb	S
Average - Column 3	10.72	9.14	15.67	0.00	45.31	0.00	19.88
Min	8.32	7.13	14.82	0.00	45.00	0.00	19.45
Max	12.27	10.28	17.27	0.00	45.74	0.02	20.26
Stdev	1.49	1.21	1.06	0.00	0.28	0.01	0.32

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EMPA Summary - Pyrite

	Fe	Co	Ni	Cu	As	S
Average - 19032-01 1956-B8 Sink pyrite	46.54	0.02	0.05	0.01	0.26	52.99
Average - 19032-01 1956-B9 Sink pyrite	46.56	0.04	0.04	0.01	0.13	53.03

EMPA Summary - Arsenopyrite

	Fe	Co	Ni	Cu	As	Sb	S
Average - 19032-01 1956-B9 Sink arsenopyrite	34.57	0.27	0.04	0.00	44.18	0.00	20.92

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Results_of_analyses:

		element weight %						
		Fe	Co	Ni	Cu	As	S	Total
1	19032-01 1956-B8 Sink pyrite 01	46.61	0.00	0.02	0.03	0.02	53.61	100.28
2	19032-01 1956-B8 Sink pyrite 02	46.41	0.04	0.05	0.02	0.11	53.60	100.22
3	19032-01 1956-B8 Sink pyrite 03	46.79	0.00	0.00	0.00	0.16	53.34	100.29
4	19032-01 1956-B8 Sink pyrite 04	46.75	0.02	0.03	0.00	0.11	53.16	100.07
5	19032-01 1956-B8 Sink pyrite 05	47.00	0.01	0.00	0.00	0.02	53.54	100.57
6	19032-01 1956-B8 Sink pyrite 06	46.56	0.02	0.00	0.03	0.03	53.22	99.86
7	19032-01 1956-B8 Sink pyrite 07	46.87	0.03	0.01	0.02	0.09	53.29	100.32
8	19032-01 1956-B8 Sink pyrite 08	46.04	0.00	0.02	0.00	1.47	51.92	99.46
9	19032-01 1956-B8 Sink pyrite 09	46.46	0.02	0.22	0.00	0.18	53.02	99.91
10	19032-01 1956-B8 Sink pyrite 10	46.32	0.01	0.03	0.02	0.91	52.34	99.62
11	19032-01 1956-B8 Sink pyrite 11	46.55	0.03	0.03	0.02	0.08	53.05	99.76
12	19032-01 1956-B8 Sink pyrite 12	46.88	0.00	0.00	0.04	0.05	52.81	99.77
13	19032-01 1956-B8 Sink pyrite 13	46.28	0.04	0.58	0.09	0.03	52.79	99.81
14	19032-01 1956-B8 Sink pyrite 14	46.07	0.05	0.02	0.01	0.28	52.93	99.35
15	19032-01 1956-B8 Sink pyrite 15	46.59	0.00	0.00	0.00	0.02	53.53	100.15
16	19032-01 1956-B8 Sink pyrite 16	46.99	0.01	0.00	0.01	0.00	53.63	100.65
17	19032-01 1956-B8 Sink pyrite 17	46.09	0.00	0.01	0.00	1.08	52.09	99.29
18	19032-01 1956-B8 Sink pyrite 18	46.43	0.03	0.06	0.00	0.11	52.70	99.33
19	19032-01 1956-B8 Sink pyrite 19	46.38	0.03	0.02	0.00	0.38	52.93	99.74
20	19032-01 1956-B8 Sink pyrite 20	46.87	0.08	0.04	0.01	0.14	53.22	100.36
21	19032-01 1956-B8 Sink pyrite 21	46.19	0.01	0.00	0.00	1.32	52.30	99.81
22	19032-01 1956-B8 Sink pyrite 22	46.70	0.00	0.00	0.01	0.07	53.17	99.95
23	19032-01 1956-B8 Sink pyrite 23	46.58	0.02	0.01	0.01	0.04	53.21	99.85
24	19032-01 1956-B8 Sink pyrite 24	46.39	0.01	0.03	0.03	0.58	52.74	99.78
25	19032-01 1956-B8 Sink pyrite 25	46.57	0.01	0.04	0.01	0.07	53.18	99.87
26	19032-01 1956-B8 Sink pyrite 26	46.63	0.00	0.01	0.02	0.01	53.00	99.67
27	19032-01 1956-B8 Sink pyrite 27	46.50	0.00	0.01	0.01	0.07	53.18	99.77
28	19032-01 1956-B8 Sink pyrite 28	46.48	0.00	0.01	0.00	1.48	51.84	99.81
29	19032-01 1956-B8 Sink pyrite 29	46.58	0.09	0.10	0.01	0.16	53.25	100.18
30	19032-01 1956-B8 Sink pyrite 30	46.63	0.00	0.04	0.01	0.03	53.16	99.86
31	19032-01 1956-B8 Sink pyrite 31	46.55	0.05	0.06	0.00	0.07	53.16	99.89
32	19032-01 1956-B8 Sink pyrite 32	46.52	0.01	0.14	0.09	0.04	52.82	99.63
33	19032-01 1956-B8 Sink pyrite 33	46.61	0.04	0.05	0.02	0.09	52.80	99.62
34	19032-01 1956-B8 Sink pyrite 34	46.67	0.02	0.02	0.00	0.01	53.03	99.75
35	19032-01 1956-B8 Sink pyrite 35	46.63	0.00	0.00	0.01	0.03	53.42	100.09
36	19032-01 1956-B8 Sink pyrite 36	46.41	0.02	0.06	0.00	0.13	52.81	99.44

	Fe	Co	Ni	Cu	As	S
Average	46.54	0.02	0.05	0.01	0.26	52.99
Min	46.04	0.00	0.00	0.00	0.00	51.84
Max	47.00	0.09	0.58	0.09	1.48	53.63
Std Dev	0.24	0.02	0.10	0.02	0.43	0.45

Gold Canyon Resouces
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High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

		Fe	Co	Ni	Cu	As	S	
37	19032-01 1956-B9 Sink pyrite 01	46.61	0.00	0.00	0.00	0.08	53.15	99.84
38	19032-01 1956-B9 Sink pyrite 02	46.70	0.01	0.02	0.00	0.17	53.28	100.19
39	19032-01 1956-B9 Sink pyrite 03	46.89	0.01	0.00	0.00	0.06	52.97	99.93
40	19032-01 1956-B9 Sink pyrite 04	46.80	0.00	0.02	0.03	0.04	53.38	100.25
41	19032-01 1956-B9 Sink pyrite 05	46.41	0.00	0.10	0.01	0.54	53.08	100.14
42	19032-01 1956-B9 Sink pyrite 06	46.40	0.01	0.00	0.04	0.06	53.01	99.52
43	19032-01 1956-B9 Sink pyrite 07	45.97	0.20	0.07	0.03	0.43	52.65	99.34
44	19032-01 1956-B9 Sink pyrite 08	46.52	0.01	0.00	0.03	0.27	53.02	99.87
45	19032-01 1956-B9 Sink pyrite 09	46.45	0.03	0.00	0.00	0.34	52.52	99.35
46	19032-01 1956-B9 Sink pyrite 10	46.71	0.05	0.01	0.00	0.19	53.38	100.35
47	19032-01 1956-B9 Sink pyrite 11	46.22	0.05	0.02	0.00	0.14	52.94	99.38
48	19032-01 1956-B9 Sink pyrite 12	46.70	0.00	0.00	0.01	0.06	53.08	99.86
49	19032-01 1956-B9 Sink pyrite 13	46.79	0.00	0.00	0.00	0.27	52.62	99.68
50	19032-01 1956-B9 Sink pyrite 14	46.62	0.01	0.00	0.01	0.04	53.24	99.92
51	19032-01 1956-B9 Sink pyrite 15	46.84	0.01	0.00	0.00	0.11	52.72	99.68
52	19032-01 1956-B9 Sink pyrite 16	46.12	0.17	0.00	0.00	0.08	53.33	99.70
53	19032-01 1956-B9 Sink pyrite 17	46.47	0.05	0.00	0.01	0.02	52.98	99.54
54	19032-01 1956-B9 Sink pyrite 18	46.98	0.00	0.01	0.01	0.29	53.34	100.63
55	19032-01 1956-B9 Sink pyrite 19	47.03	0.00	0.00	0.00	0.04	53.18	100.26
56	19032-01 1956-B9 Sink pyrite 20	46.90	0.00	0.00	0.01	0.04	52.64	99.59
57	19032-01 1956-B9 Sink pyrite 21	46.55	0.07	0.01	0.03	0.08	53.10	99.84
58	19032-01 1956-B9 Sink pyrite 22	46.51	0.01	0.01	0.01	0.08	52.97	99.60
59	19032-01 1956-B9 Sink pyrite 23	46.76	0.20	0.08	0.00	0.07	53.16	100.27
60	19032-01 1956-B9 Sink pyrite 24	45.86	0.01	0.73	0.00	0.13	53.27	100.02
61	19032-01 1956-B9 Sink pyrite 25	46.71	0.10	0.00	0.04	0.05	53.16	100.06
62	19032-01 1956-B9 Sink pyrite 26	46.66	0.06	0.01	0.00	0.06	53.17	99.97
63	19032-01 1956-B9 Sink pyrite 27	46.64	0.02	0.04	0.00	0.08	52.99	99.77
64	19032-01 1956-B9 Sink pyrite 28	46.34	0.00	0.02	0.00	0.12	52.97	99.45
65	19032-01 1956-B9 Sink pyrite 29	46.89	0.01	0.03	0.00	0.01	53.31	100.25
66	19032-01 1956-B9 Sink pyrite 30	46.78	0.00	0.03	0.01	0.01	53.35	100.18
67	19032-01 1956-B9 Sink pyrite 31	45.96	0.08	0.01	0.00	0.20	52.53	98.78
68	19032-01 1956-B9 Sink pyrite 32	46.42	0.02	0.02	0.02	0.11	53.29	99.88
69	19032-01 1956-B9 Sink pyrite 33	46.25	0.01	0.00	0.01	0.07	53.01	99.34
70	19032-01 1956-B9 Sink pyrite 34	46.52	0.00	0.03	0.00	0.04	52.34	98.94
71	19032-01 1956-B9 Sink pyrite 35	46.48	0.02	0.01	0.02	0.28	53.07	99.89

	Fe	Co	Ni	Cu	As	S
Average	46.56	0.04	0.04	0.01	0.13	53.03
Min	45.86	0.00	0.00	0.00	0.01	52.34
Max	47.03	0.20	0.73	0.04	0.54	53.38
Std Dev	0.29	0.05	0.12	0.01	0.12	0.27

Gold Canyon Resouces
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High Definition Mineralogical Analysis using QEMSCAN (Quantitative Evaluation of Materials by Scanning Electron Microscopy)

Results_of_analyses:

		element weight %							
		Fe	Co	Ni	Cu	As	Sb	S	Total
72	19032-01 1956-B9 Sink cobaltite 01	5.90	26.68	3.33	0.05	43.62	0.00	20.69	100.27

		Fe	Co	Ni	Cu	As	Sb	S	
73	19032-01 1956-B9 Sink arsenopyrite 01	34.56	0.08	0.08	0.00	45.29	0.00	20.27	100.27
74	19032-01 1956-B9 Sink arsenopyrite 02	35.03	0.00	0.03	0.00	42.66	0.01	21.73	99.46
75	19032-01 1956-B9 Sink arsenopyrite 04	34.11	0.75	0.02	0.00	44.58	0.00	20.76	100.22

	Fe	Co	Ni	Cu	As	Sb	S
Average	34.57	0.27	0.04	0.00	44.18	0.00	20.92
Min	34.11	0.00	0.02	0.00	42.66	0.00	20.27
Max	35.03	0.75	0.08	0.00	45.29	0.01	21.73
Std Dev	0.46	0.41	0.03	0.00	1.36	0.00	0.74